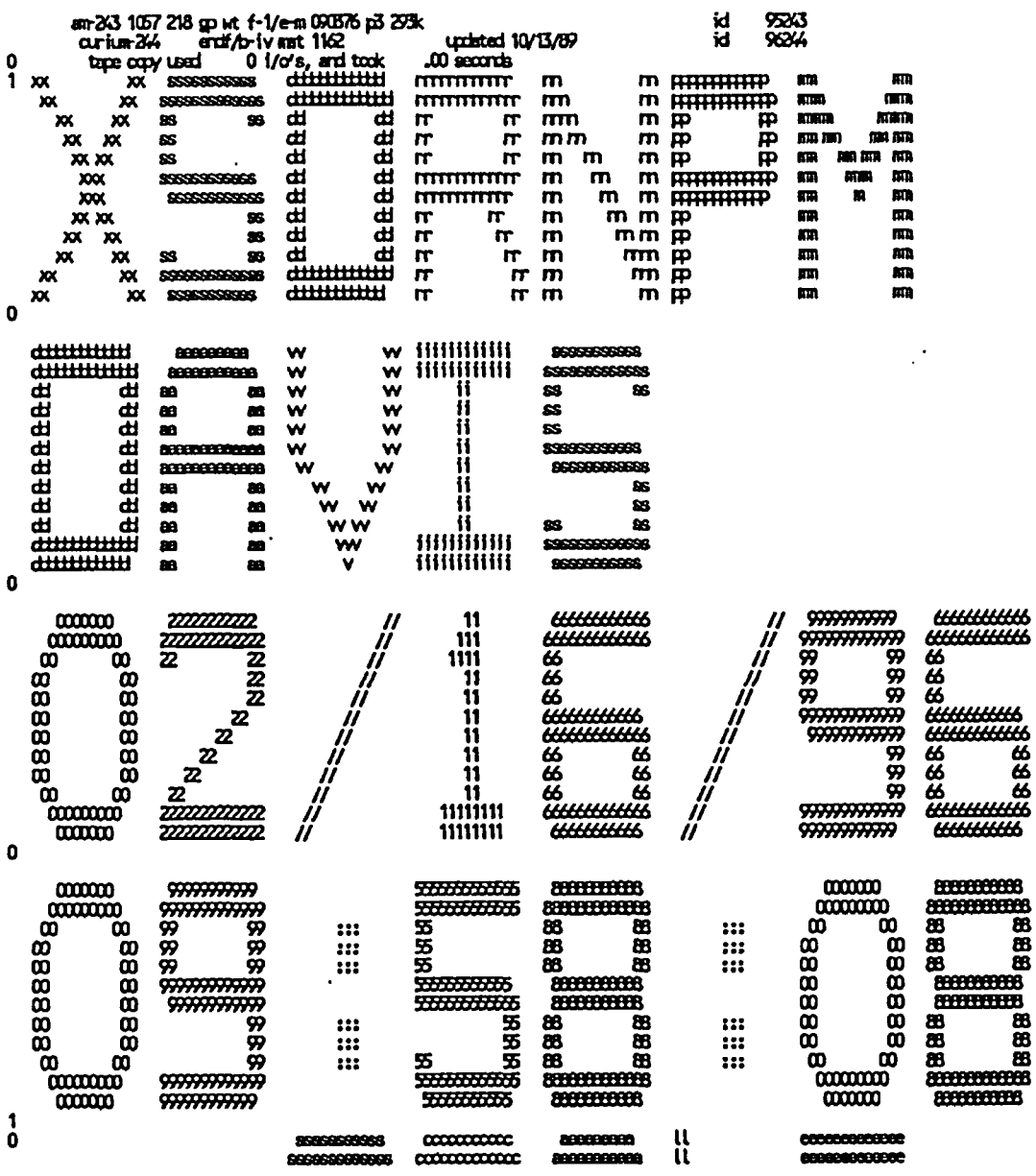
INFORMATION ONLY

```
0absorption        1.93477E+02
 fission           1.07614E+00
- elapsed time     .35 min.
0am-243 1057 218 gp wt f-1/e-m 090376 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   = 4.1914475E-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)= 4.0740029E+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      -6.604232E-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     5.066236E-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/thrm1002    updated 10/13/89           id    1001
        b-10 1273 218ngp 042375 p-3 293k                                         id    5010
```

INFORMATION ONLY

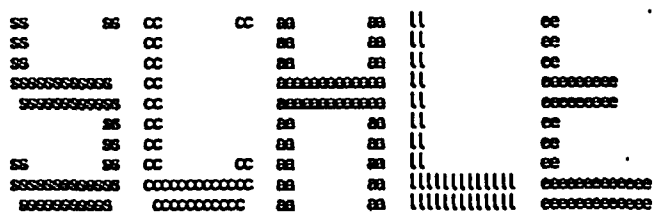
```
boron-11      endf/b-iv mat 1160          updated 10/13/89          id   5011
oxygen-16     endf/b-iv mat 1276          updated 10/13/89          id   8016
oxygen-16     endf/b-iv mat 1276          updated 10/13/89          id      6
kr-83         mt=102,103,103,105,106,107  updated 10/13/89          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 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=5+4 newclacs p-3 295k 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 newclacs p-3 295k 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 newclacs p-3 295k 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 newclacs 218ngp p-3 295k                       id  95241
```

INFORMATION ONLY



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  cccccccccccc  aa        aa  llllllllllll  eeeeeeeeeeeee
 sssssssssss    cccccccccc   aa        aa  llllllllllll  eeeeeeeeeeeee
```



```
*****************************************************************************
*****************************************************************************
*****************************************************************************
*****                                                                   *****
*****                 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:  09:58:08                                  *****
*****                                                                   *****
*****                                                                   *****
*****************************************************************************
*****************************************************************************
*****************************************************************************
```

```
1
                    240 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                    240 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
```

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 igtd)	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
ipn	boundary sources (0/n=no/yes)	0	iez	0/n = none/n activities by zone	0
ifn	0/1/2 = input 39*/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	ntnd	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
ignf	number of broad groups	27	ndsf	pen 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	mcm	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	xpm	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/o, 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.)

	nuclides on tape	cccc identification	mixing table mixture	component	atom density	extra xsect id's
1	999		1	92235	5.95897E-04	
2	1001		1	92234	5.24821E-06	
3	5010		1	92236	2.07230E-05	
4	5011		1	92238	2.20068E-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	2.93210E-06	
11	42095		1	42095	2.67690E-06	
12	42094		1	42093	3.66334E-06	
13	42095		1	42094	5.64806E-06	
14	40802		1	40095	2.02113E-06	
15	41094		1	41094	1.98647E-12	

INFORMATION ONLY

16	42095	1	43099	5.40399E-06
17	43099	1	45103	2.34075E-06
18	44101	1	45105	1.42341E-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	2.44774E-07
23	46108	1	47109	1.71902E-07
24	47109	1	51124	4.79320E-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	9.02456E-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	3.44986E-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	9.89883E-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	2.02361E-07
49	63153	1	63154	1.57326E-08
50	63154	1	63155	3.12565E-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	5.85210E-06
56	92238	1	93237	6.15523E-07
57	93237	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, 3.00wt%, 20gwd/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	4.40985E-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	1.50030E+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	1.72620E+01	6.90070E+05	22	0	22	1.00000E+00	
23	2.25000E-01	1.76058E+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	8.85201E+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	-1.97286E-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	-1.28578E-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	15	0
10					5.22814E-02	-8.21784E-01	15	-4.29665E-02
11					5.22814E-02	-6.01588E-01	14	-3.14537E-02
12					5.22814E-02	-2.20196E-01	13	-1.15128E-02
13					5.22814E-02	2.20196E-01	12	1.15128E-02
14					5.22814E-02	6.01588E-01	11	3.14537E-02
15					5.22814E-02	8.21784E-01	10	4.29665E-02
16					0	-9.83083E-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

Constants for p(3) scattering

Cargl	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	-8.04436E-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	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40330E-01	3.44234E-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	5.00708E-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	3.20862E-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	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20862E-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	6.26438E-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	1.14349E-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	2.22345E+00	1.27890E-01	1.00000E+00		
7	4.07351E-01	4.24781E-01	1	2.55964E+00	9.30429E-02	1.00000E+00		
8	4.42212E-01	4.55169E-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	5.15681E-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	6.80036E-01	7.14313E-01	4	4.27278E+00	3.07702E-01	1.00000E+00		
22	7.48592E-01	7.63982E-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	144	2.10439E-05	1.12496E+00	-1.38615E-01	1.00000E+00	-4.43609E-02	.00000E+00	.0000
2	221	-9.63613E-06	1.13858E+00	-1.26102E-05	-1.51759E-02	-4.62359E-03	.00000E+00	.0000
3	284	3.53239E-06	1.13978E+00	-1.41225E-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	nfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh

INFORMATION ONLY

1	1	1	1	3.9996E-08	2% 1.00000E+00	1
2	2	1	1	4.7568E-08	2% 1.00000E+00	1
3	3	1	1	4.4247E-08	2% 1.00000E+00	1
4	4	1	1	4.3407E-08	2% 1.00000E+00	1
5	5	1	1	4.7654E-08	2% 1.00000E+00	1
6	6	1	1	3.1425E-08	2% 1.00000E+00	1
7	7	1	1	2.3512E-08	2% 1.00000E+00	1
8	8	1	1	5.7076E-09	2% 1.00000E+00	1
9	9	1	2	3.0628E-09	2% 1.00000E+00	1
10	10	1	1	3.1051E-09	2% 1.00000E+00	1
11	11	1	1	3.1598E-09	2% 1.00000E+00	1
12	12	1	2	7.4323E-10	2% 1.00000E+00	1
13	13	1	24	1.1217E-09	2% 1.00000E+00	1
14	14	1	24	1.2854E-09	2% 1.00000E+00	1
15	15	1	24	3.8954E-05	2% 9.99982E-01	1
16	16	1	24	4.8475E-05	2% 9.99987E-01	1
17	17	1	18	1.6011E-05	2% 9.99960E-01	1
18	18	1	18	1.7701E-05	2% 9.99958E-01	1
19	19	1	18	1.5405E-05	2% 9.99955E-01	1
20	20	1	24	5.2263E-05	2% 9.99965E-01	1
21	21	1	18	2.5665E-05	2% 9.99938E-01	1
22	22	1	24	4.6534E-05	2% 9.99991E-01	1
23	23	1	24	2.2612E-06	2% 1.00000E+00	1
24	24	1	24	1.3169E-05	2% 1.00000E+00	1
25	25	1	24	1.5665E-05	2% 1.00000E+00	1
26	26	1	21	1.6710E-05	2% 1.00000E+00	2
27	27	1	2	2.9865E-06	2% 1.00000E+00	2

6 388 -5.48863E-07 1.14015E+00 -7.61250E-07 -8.69375E-06 -5.37447E-06 .00000E+00 .0167

final monitor

lambda 1.14015E+00 production/absorption 1.14014E+00 angular flux on 16

- elapsed time .02 min.

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

0 int. zone number radius int. midpoint area volume prod density

1	1	.00000E+00	1.2955E-02	.00000E+00	2.1090E-03	3.3439E-03
2	1	2.5910E-02	4.3340E-02	1.6279E-01	9.4951E-03	1.5045E-02
3	1	6.0771E-02	8.7510E-02	3.8183E-01	2.9404E-02	4.6683E-02
4	1	1.1424E-01	1.7455E-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	.00000E+00
10	2	4.6950E-01	4.7148E-01	2.9500E+00	1.1698E-02	.00000E+00
11	2	4.7345E-01	4.7543E-01	2.9748E+00	1.1796E-02	.00000E+00
12	2	4.7740E-01	4.7809E-01	2.9996E+00	4.1602E-03	.00000E+00
13	3	4.7879E-01	4.8315E-01	3.0083E+00	2.6526E-02	.00000E+00
14	3	4.8752E-01	4.9998E-01	3.0632E+00	7.8276E-02	.00000E+00
15	3	5.1245E-01	5.2603E-01	3.2197E+00	8.2177E-02	.00000E+00
16	3	5.3736E-01	5.4173E-01	3.3763E+00	2.9742E-02	.00000E+00
17	4	5.4610E-01	5.5351E-01	3.4312E+00	5.1563E-02	.00000E+00
18	4	5.6092E-01	5.7090E-01	3.5244E+00	7.1554E-02	.00000E+00
19	4	5.8087E-01	5.9617E-01	3.6497E+00	1.1462E-01	.00000E+00
20	4	6.1147E-01	6.4575E-01	3.8420E+00	2.7816E-01	.00000E+00
21	4	6.8003E-01	7.1431E-01	4.2727E+00	3.0700E-01	.00000E+00
22	4	7.4859E-01	7.6389E-01	4.7085E+00	1.4687E-01	.00000E+00
23	4	7.7919E-01	7.8916E-01	4.8958E+00	9.8911E-02	.00000E+00
24	4	7.9914E-01	8.0655E-01	5.0215E+00	7.5135E-02	.00000E+00
25		8.1396E-01		5.1143E+00		

1 240 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gad/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	1.31508E+00	1.67389E+00	1.03961E+00	1.57466E+00	3.03077E+00	2.90515E+00	2.07944E+00
2	1.72697E-01	1.31568E+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	1.66863E+00	1.03628E+00	1.56925E+00	3.01991E+00	2.89863E+00	2.07830E+00
5	1.71238E-01	1.29987E+00	1.65454E+00	1.02786E+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	1.54108E+00	2.96518E+00	2.86577E+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	1.26823E+00	1.61537E+00	1.00450E+00	1.51954E+00	2.92485E+00	2.84204E+00	2.06868E+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	9.99024E-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	1.25295E+00	1.59630E+00	9.93605E-01	1.50312E+00	2.89411E+00	2.82456E+00	2.06547E+00
15	1.66101E-01	1.24736E+00	1.58973E+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	2.06333E+00
17	1.65686E-01	1.24087E+00	1.57982E+00	9.82589E-01	1.48499E+00	2.85790E+00	2.80354E+00	2.06269E+00
18	1.65510E-01	1.23829E+00	1.57584E+00	9.79418E-01	1.47993E+00	2.84791E+00	2.79766E+00	2.06166E+00
19	1.65289E-01	1.23521E+00	1.57123E+00	9.76054E-01	1.47424E+00	2.83674E+00	2.79108E+00	2.06033E+00
20	1.64994E-01	1.23124E+00	1.56536E+00	9.71839E-01	1.46716E+00	2.82287E+00	2.78292E+00	2.05901E+00
21	1.64791E-01	1.22846E+00	1.56124E+00	9.68855E-01	1.46212E+00	2.81305E+00	2.77722E+00	2.05791E+00
22	1.64792E-01	1.22834E+00	1.56094E+00	9.68673E-01	1.46160E+00	2.81202E+00	2.77678E+00	2.05814E+00
23	1.64867E-01	1.22919E+00	1.56207E+00	9.69302E-01	1.46278E+00	2.81432E+00	2.77826E+00	2.05842E+00
24	1.64953E-01	1.23019E+00	1.56342E+00	9.70201E-01	1.46424E+00	2.81718E+00	2.78007E+00	2.05869E+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	2.07128E-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	1.30195E+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	6.75539E-01	5.98865E-01	3.72585E-01	2.07371E-01
5	1.58916E+00	1.44776E+00	1.31119E+00	8.05009E-01	6.81638E-01	6.08178E-01	3.73589E-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	1.59539E+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	7.01795E-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	2.09644E-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	8.47037E-01	7.16582E-01	6.60181E-01	3.78657E-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	8.53329E-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	8.87523E-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	7.76432E-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	7.94852E-01	5.72790E-01
6	9.00859E-02	6.72497E-02	1.39821E-01	4.59513E-01	1.31970E-01	2.49097E-01	8.10890E-01	5.88904E-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

INFORMATION ONLY

10	9.11316E-02	6.98023E-02	1.41581E-01	4.64919E-01	1.36420E-01	2.62468E-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	1.37800E-01	2.66453E-01	8.49431E-01	6.27975E-01
15	9.17621E-02	7.12184E-02	1.42619E-01	4.68081E-01	1.38913E-01	2.69608E-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	4.72866E-01	1.43023E-01	2.81378E-01	8.85597E-01	6.65982E-01
21	9.28897E-02	7.38692E-02	1.44483E-01	4.73782E-01	1.43865E-01	2.83835E-01	8.92345E-01	6.73662E-01
22	9.28978E-02	7.39178E-02	1.44500E-01	4.73834E-01	1.43961E-01	2.84125E-01	8.93264E-01	6.75120E-01
23	9.28450E-02	7.38136E-02	1.44421E-01	4.73666E-01	1.43788E-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	2.02854E-02
6	2.45604E-01	1.53679E-01	2.25902E-02
7	2.51990E-01	1.59752E-01	2.44507E-02
8	2.57994E-01	1.65517E-01	2.63057E-02
9	2.61088E-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	2.76768E-02
13	2.63634E-01	1.70660E-01	2.78867E-02
14	2.65988E-01	1.72855E-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	2.73259E-01	1.79391E-01	3.03692E-02
18	2.76595E-01	1.83134E-01	3.15804E-02
19	2.80614E-01	1.87441E-01	3.29992E-02
20	2.86028E-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	1.98865E-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-05	1.08050E-02	9.98830E-01
2	.00000E+00	1.90979E-01	2.26178E-03	1.65430E-01	6.57397E-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	8.77151E-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	9.99971E-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	9.83525E-02	7.45389E-01	3.63396E-02	7.72135E-03	1.42965E-01	1.00001E+00
8	.00000E+00	1.36795E-02	4.25696E-02	6.31051E-01	2.14801E-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	3.62691E-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	8.11298E-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	7.49995E-03	7.95121E-02	-8.06490E-02	1.00000E+00
15	.00000E+00	1.44978E-09	7.58475E-03	8.53715E-02	8.94771E-03	6.66964E-03	-8.06808E-03	1.00099E+00
16	.00000E+00	4.25751E-10	9.12581E-03	4.33987E-02	9.73769E-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

INFORMATION ON

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	2.62865E-02	9.69011E-03	6.64942E-03	-7.85733E-03	1.00038E+00
20	.00000E+00	2.25685E-10	1.12799E-02	1.08306E-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	5.20389E-02	1.16875E-02	5.69047E-02	-5.50674E-02	1.00014E+00
23	.00000E+00	3.66438E-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	-1.28864E-01	1.00017E+00
25	.00000E+00	2.91973E-12	2.09252E-02	4.77306E-02	1.56681E-02	7.13802E-02	-6.61296E-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	-1.68396E-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*db**2	total flux
1	1.67756E-01	1.08060E-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	8.90956E-01
3	1.60952E+00	1.44834E-01	1.67306E+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	1.42065E-01	2.90442E+00	.00000E+00	.00000E+00	1.69875E-03	.00000E+00	1.97966E+00
8	2.05760E+00	2.06187E-02	2.09929E+00	.00000E+00	.00000E+00	1.77522E-03	.00000E+00	1.42814E+00
9	1.59745E+00	-2.12831E-02	1.58647E+00	.00000E+00	.00000E+00	2.42091E-03	.00000E+00	1.09474E+00
10	1.45686E+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	7.93341E-01	.00000E+00	.00000E+00	1.37916E-02	.00000E+00	5.56685E-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	-8.06470E-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	-4.72877E-03	2.07153E-01	.00000E+00	.00000E+00	1.56920E-03	.00000E+00	1.43309E-01
17	9.10908E-02	-4.75746E-03	8.87581E-02	.00000E+00	.00000E+00	2.20864E-03	.00000E+00	6.17808E-02
18	6.91057E-02	-1.06587E-02	6.42002E-02	.00000E+00	.00000E+00	2.54205E-03	.00000E+00	4.57787E-02
19	1.41515E-01	-7.85733E-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	1.28788E-02	.00000E+00	8.99247E-02
22	2.61969E-01	-5.50674E-02	2.32998E-01	.00000E+00	.00000E+00	3.65697E-02	.00000E+00	1.68760E-01
23	8.39527E-01	-1.28646E-01	7.74385E-01	.00000E+00	.00000E+00	8.32005E-02	.00000E+00	5.51995E-01
24	6.18007E-01	-1.28864E-01	5.52211E-01	.00000E+00	.00000E+00	8.61648E-02	.00000E+00	3.99214E-01
25	2.60964E-01	-6.61296E-02	2.26387E-01	.00000E+00	.00000E+00	4.96834E-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	-1.68396E-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	1.62343E+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

INFORMATION ONLY

19	.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	-2.23517E-08	1.00000E+00
21	.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	1.00000E+00
23	.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	-1.49012E-08	1.00000E+00
25	.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	3.72529E-09	1.00000E+00
27	.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	7.63685E-08	9.99992E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dv**2	total flux
1	1.67346E-01	1.08050E-02	1.67756E-01	1.08050E-02	.00000E+00	.00000E+00	.00000E+00	5.31719E-03
2	1.25933E+00	1.13914E-01	1.26345E+00	1.13914E-01	.00000E+00	.00000E+00	.00000E+00	4.03111E-02
3	1.60471E+00	1.44834E-01	1.60952E+00	1.44834E-01	.00000E+00	.00000E+00	.00000E+00	5.10005E-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	4.79360E-02
6	2.90846E+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	2.85649E+00	1.42965E-01	.00000E+00	.00000E+00	.00000E+00	8.99547E-02
8	2.06686E+00	-2.06187E-02	2.06760E+00	2.06187E-02	.00000E+00	.00000E+00	.00000E+00	6.56055E-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	1.33255E+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	2.08427E-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	-7.85733E-03	1.41515E-01	-7.85733E-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	1.36256E-01	-1.91301E-02	.00000E+00	.00000E+00	.00000E+00	4.33240E-03
22	2.63487E-01	-5.50574E-02	2.61966E-01	-5.50574E-02	.00000E+00	.00000E+00	.00000E+00	8.33858E-03
23	8.42744E-01	-1.28644E-01	8.39527E-01	-1.28646E-01	.00000E+00	.00000E+00	.00000E+00	2.66922E-02
24	6.21380E-01	-1.28847E-01	6.18007E-01	-1.28847E-01	.00000E+00	.00000E+00	.00000E+00	1.96579E-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	7.46610E-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	2.76490E-03	1.41650E-05	-2.68044E-03	1.00001E+00
2	.00000E+00	.00000E+00	4.82886E-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	4.19998E-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	1.83666E-02	2.34965E-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	2.94788E-04	-5.77158E-03	1.00002E+00
9	.00000E+00	.00000E+00	7.66388E-03	1.05108E-01	8.76150E-04	1.10829E-03	5.69971E-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	8.68519E-04	1.33410E-03	-1.35452E-03	9.99999E-01
12	.00000E+00	.00000E+00	8.68325E-04	4.67052E-02	8.68953E-04	4.15839E-05	-4.22820E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.68854E-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	6.88478E-04	9.64626E-05	2.76342E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.26961E-04	2.07254E-02	8.48221E-04	8.32506E-05	-2.08997E-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	9.99993E-01
18	.00000E+00	.00000E+00	1.09083E-03	3.06257E-03	9.88825E-04	2.09709E-05	8.10642E-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

INFORMATION ONLY

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-05	1.5241E-03	7.0298E-05	-1.8636E-04	9.9998E-01
22	.00000E+00	.00000E+00	1.9258E-03	1.3508E-02	1.8054E-03	1.5740E-04	-3.6958E-05	9.9994E-01
23	.00000E+00	.00000E+00	2.5755E-03	4.5388E-02	3.3329E-03	6.8751E-04	-1.4446E-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-05	1.1628E-03	3.8424E-04	8.1971E-05	9.9999E-01
27	.00000E+00	.00000E+00	3.3720E-04	1.6496E-05	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-05	-7.7197E-03	9.9998E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rtn rate	fiss rate	flux*db**2	total flux
1	1.6576E-01	8.1265E-03	1.6734E-01	1.0805E-02	9.8787E-05	.00000E+00	.00000E+00	3.6063E-02
2	1.2420E+00	9.5951E-02	1.2943E+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	3.4503E-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	2.8527E+00	1.4296E-01	.00000E+00	.00000E+00	.00000E+00	6.1104E-01
8	2.0657E+00	1.4847E-02	2.0669E+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	-5.7617E-02	1.3325E+00	-5.6097E-02	.00000E+00	.00000E+00	.00000E+00	2.8880E-01
12	8.4046E-01	-6.5083E-02	8.2987E-01	-6.4996E-02	.00000E+00	.00000E+00	.00000E+00	1.8106E-01
13	7.1119E-01	-5.4625E-02	7.0225E-01	-5.4625E-02	.00000E+00	.00000E+00	.00000E+00	1.5321E-01
14	6.5211E-01	-8.0621E-02	6.3956E-01	-8.0649E-02	.00000E+00	.00000E+00	.00000E+00	1.3998E-01
15	3.7812E-01	-8.2720E-03	3.7671E-01	-8.0680E-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	9.1226E-02	-4.7374E-03	.00000E+00	.00000E+00	.00000E+00	1.9857E-02
18	7.1720E-02	-1.0577E-02	7.0007E-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	1.3677E-01	-1.9130E-02	.00000E+00	.00000E+00	.00000E+00	2.9980E-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	-6.1047E-02	1.6999E-01	-6.1315E-02	.00000E+00	.00000E+00	.00000E+00	3.7795E-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	5.1091E+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-05	7.7138E-05	4.1111E-04	-8.1265E-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	6.8650E-02	1.7861E-01	5.3958E-06	-1.3152E-01	9.9977E-01
4	.00000E+00	.00000E+00	6.9845E-02	4.5727E-02	1.5711E-01	3.2220E-06	-8.7261E-02	9.9988E-01
5	.00000E+00	.00000E+00	1.2933E-01	1.4828E-01	2.6866E-01	3.7895E-06	-1.3952E-01	9.9991E-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	5.5215E-01	7.9490E-01	7.0581E-01	2.5342E-05	-1.5368E-01	9.9987E-01
8	.00000E+00	.00000E+00	7.3513E-01	1.0003E+00	7.5000E-01	4.6980E-05	-1.4847E-02	9.9991E-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	7.2145E-01	8.6396E-01	6.9323E-01	2.1110E-04	2.6973E-02	9.9980E-01
11	.00000E+00	.00000E+00	6.9286E-01	8.0354E-01	6.4151E-01	4.5631E-04	5.7516E-02	9.9941E-01
12	.00000E+00	.00000E+00	5.5862E-01	4.1894E-01	4.9259E-01	5.9610E-04	6.5083E-02	9.9979E-01
13	.00000E+00	.00000E+00	4.8897E-01	3.3790E-01	4.3397E-01	8.9761E-04	5.4625E-02	9.9970E-01
14	.00000E+00	.00000E+00	4.6994E-01	3.2468E-01	3.8786E-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	8.6630E-02	1.5654E-02	8.1450E-02	4.3727E-04	4.7487E-03	1.0003E+00
18	.00000E+00	.00000E+00	7.7019E-02	1.2092E-02	6.6073E-02	3.6996E-04	1.0574E-02	1.0003E+00
19	.00000E+00	.00000E+00	1.2859E-01	3.6121E-02	1.1988E-01	7.9174E-04	7.9132E-03	1.0003E+00
20	.00000E+00	.00000E+00	3.1582E-01	2.5517E-01	2.8851E-01	3.2648E-03	2.4050E-02	9.9999E-01

21	.00000E+00	.00000E+00	1.50480E-01	4.99443E-02	1.25928E-01	1.23751E-03	1.95081E-02	1.00004E+00
22	.00000E+00	.00000E+00	2.88144E-01	1.47940E-01	2.30226E-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	1.30090E-01	1.00001E+00
24	.00000E+00	.00000E+00	7.09544E-01	7.33724E-01	5.66368E-01	1.33018E-02	1.29865E-01	1.00001E+00
25	.00000E+00	.00000E+00	4.56501E-01	2.97857E-01	3.83194E-01	7.55472E-03	6.57505E-02	1.00000E+00
26	.00000E+00	.00000E+00	3.59984E-01	3.15751E-01	2.91638E-01	7.29449E-03	6.10573E-02	9.99983E-01
27	.00000E+00	.00000E+00	1.19468E-01	6.58665E-02	1.00339E-01	2.50622E-03	1.66250E-02	9.99998E-01
28	.00000E+00	.00000E+00	9.29610E+00	9.21227E+00	9.29610E+00	5.91468E-02	-5.88402E-02	9.99967E-01
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	nGn rate	fiss rate	flux*dv**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	2.66624E-01	.00000E+00	.00000E+00	.00000E+00	3.23018E+00
7	2.78100E+00	1.75371E-07	2.80537E+00	1.53681E-01	.00000E+00	.00000E+00	.00000E+00	3.18488E+00
8	2.06382E+00	-1.20095E-07	2.06374E+00	1.48471E-02	.00000E+00	.00000E+00	.00000E+00	2.36139E+00
9	1.60856E+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	-5.76517E-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	7.11196E-01	-5.46235E-02	.00000E+00	.00000E+00	.00000E+00	8.23711E-01
14	6.66674E-01	1.05850E-08	6.52118E-01	-8.05213E-02	.00000E+00	.00000E+00	.00000E+00	7.60959E-01
15	3.78673E-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	-4.74425E-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	1.43392E-01	-8.45319E-06	1.39818E-01	-1.95166E-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	2.34019E+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	2.66633E-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	2.30824E-01	7.59087E-03	2.16520E-08	1.00000E+00
5	.00000E+00	1.65227E-01	2.09978E-01	4.88003E-01	3.48884E-01	4.62999E-03	-2.23687E-08	9.99989E-01
6	.00000E+00	1.78884E-01	4.26992E-01	1.34375E+00	5.98476E-01	7.43082E-03	2.37695E-07	1.00001E+00
7	.00000E+00	8.85746E-02	6.62744E-01	1.77541E+00	7.43336E-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	-1.20095E-07	9.99921E-01
9	.00000E+00	9.95166E-04	7.66967E-01	1.55498E+00	7.46198E-01	2.45449E-02	-4.92143E-08	9.99835E-01
10	.00000E+00	7.37715E-05	7.42994E-01	1.40792E+00	7.05827E-01	3.73147E-02	-6.01523E-08	9.99900E-01
11	.00000E+00	5.80890E-06	7.10890E-01	1.29941E+00	6.50479E-01	6.04375E-02	-4.26168E-08	9.99942E-01
12	.00000E+00	4.07714E-07	5.67543E-01	7.03662E-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	5.87708E-02	-1.56201E-09	9.99991E-01
14	.00000E+00	1.28300E-08	4.76906E-01	5.12730E-01	3.98034E-01	8.08780E-02	1.05850E-08	9.99989E-01
15	.00000E+00	1.44993E-09	2.60667E-01	2.35698E-01	2.52567E-01	8.06416E-03	2.09122E-06	1.00005E+00
16	.00000E+00	4.25751E-10	1.77642E-01	1.09528E-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	2.66665E-02	7.35069E-02	1.20225E-02	-3.21498E-06	1.00007E+00
19	.00000E+00	1.38789E-10	1.38113E-01	6.94946E-02	1.30621E-01	7.48710E-03	-5.37192E-06	1.00008E+00
20	.00000E+00	2.25486E-10	3.28366E-01	3.85025E-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

INFORMATION ONLY

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	1.37859E-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	-1.55397E-06	1.00003E+00
26	.00000E+00	2.04733E-12	3.71811E-01	3.57384E-01	2.99769E-01	7.20558E-02	7.83225E-06	9.99998E-01
27	.00000E+00	4.87869E-13	1.21985E-01	7.23609E-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	1.00249E+00	-5.99568E-06	9.99985E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	nžn rate	fiss rate	flux*adj**2	total flux
1	1.66997E-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	2.81858E+00	2.37693E-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	5.86955E+00
8	2.06388E+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	1.58549E+00	.00000E+00	.00000E+00	2.42091E-03	.00000E+00	3.32768E+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	1.37914E-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	-3.21482E-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	2.80468E-01	3.57357E-06	2.32996E-01	.00000E+00	.00000E+00	3.66695E-02	.00000E+00	5.57494E-01
23	8.58288E-01	-5.71100E-07	7.76385E-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	2.80473E-01	-1.55391E-06	2.26387E-01	.00000E+00	.00000E+00	4.98836E-02	.00000E+00	5.60536E-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	-5.99568E-06	2.35678E+01	.00000E+00	2.32343E-03	4.55208E-01	.00000E+00	4.90943E+01

- elapsed time .02 min.

Odirect 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	2.30123E-03	2.46432E-02	3.14960E-02	1.91146E-02	2.92597E-02	5.58960E-02	3.18615E-02	4.61084E-03
2	3.63221E-03	3.82984E-02	4.86870E-02	2.94863E-02	4.48319E-02	8.46411E-02	4.80592E-02	6.95116E-03
3	2.95138E-03	3.26702E-02	4.23869E-02	2.71862E-02	4.25898E-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	1.93152E-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

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	1.44708E-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	1.69751E-02	2.50651E-02	2.53800E-03	1.47750E-03
4	1.91944E-03	3.36057E-03	7.16180E-03	8.11418E-03	6.85388E-03	1.00771E-02	1.10575E-03	6.22081E-04
5	3.33900E-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	3.58259E-03	2.63450E-03	8.07731E-03	6.43045E-03	1.85115E-02	4.32659E-02	4.33146E-02
3	1.47296E-03	3.29718E-03	2.44776E-03	7.48582E-03	5.97175E-03	1.71157E-02	4.01914E-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	8.54377E-04	1.89117E-03	1.42751E-03	4.34692E-03	3.43847E-03	9.83099E-03	2.33568E-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

INFORMATION ONLY

3	2.04908E-02	1.89825E-02	5.19966E-03	5.40975E-01
4	8.29794E-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%, 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	1.70692E-01	1.29416E+00	1.64749E+00	1.02566E+00	1.34788E+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	2.85454E+00	2.06721E+00
3	1.66403E-01	1.24954E+00	1.59208E+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	1.46883E+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	2.88285E+00	2.81808E+00	2.06775E+00

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59044E+00	1.44919E+00	1.31426E+00	8.08612E-01	6.86421E-01	6.12644E-01	3.74057E-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	1.46644E+00	1.35108E+00	8.50858E-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	2.09946E-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	9.16363E-02	7.09144E-02	1.42394E-01	4.67401E-01	1.38578E-01	2.68071E-01	8.53064E-01	6.31378E-01
4	9.27138E-02	7.34609E-02	1.44208E-01	4.72898E-01	1.43093E-01	2.81597E-01	8.86436E-01	6.67204E-01
5	9.15952E-02	7.08572E-02	1.42539E-01	4.67212E-01	1.38578E-01	2.67841E-01	8.54277E-01	6.33868E-01

0zone	grp. 25	grp. 26	grp. 27
1	2.40893E-01	1.49332E-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 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	1.02172E+00	1.03172E+00	1.03257E+00	1.03257E+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	1.00586E+00	1.00008E+00
3	9.96088E-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	9.79095E-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	9.88888E-01	9.68652E-01	9.69045E-01	9.49537E-01	9.91868E-01	9.91508E-01
2	9.99455E-01	9.98161E-01	9.95854E-01	9.92864E-01	9.92948E-01	9.88618E-01	9.98650E-01	9.98285E-01
3	1.00039E+00	9.99361E-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	1.01900E+00	1.01868E+00	1.03046E+00	1.00478E+00	1.00508E+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	9.38714E-01	9.78334E-01	9.78871E-01	9.43651E-01	9.15220E-01	9.38574E-01	9.14851E-01
2	9.95225E-01	9.86177E-01	9.94957E-01	9.95356E-01	9.86564E-01	9.80488E-01	9.86566E-01	9.77728E-01
3	1.00086E+00	1.00109E+00	1.00089E+00	1.00040E+00	9.99995E-01	1.00086E+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	8.95350E-01	8.43786E-01	7.16057E-01
2	9.72573E-01	9.56267E-01	9.20431E-01
3	9.95948E-01	9.85393E-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	1.91144E-02	2.92597E-02	5.58960E-02	3.18415E-02	4.61034E-03

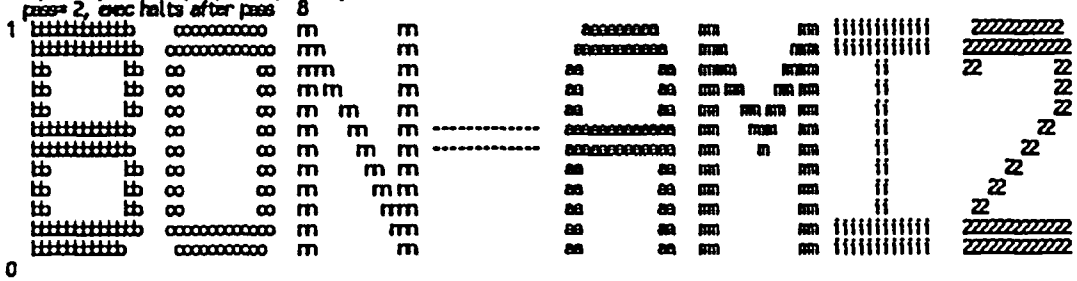
INFORMATION ONLY

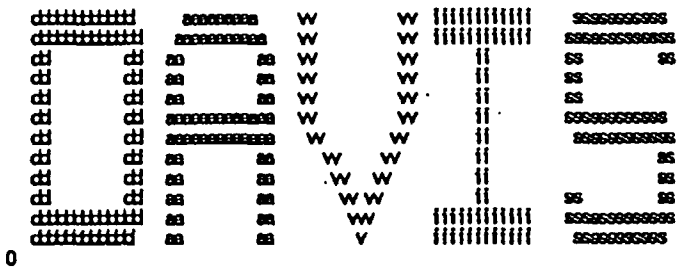
2	3.63221E-03	3.82934E-02	4.86876E-02	2.94863E-02	4.49319E-02	8.46411E-02	4.80592E-02	6.93116E-03
3	2.95138E-03	3.26702E-02	4.29859E-02	2.71862E-02	4.23898E-02	8.04845E-02	4.60468E-02	5.53407E-03
4	1.01878E-03	1.20220E-02	1.64775E-02	1.09272E-02	1.74414E-02	3.33811E-02	1.93152E-02	1.98607E-03
5	1.69031E-03	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	5.75377E-03	8.26024E-03	1.76352E-02	2.02020E-02	1.69731E-02	2.50551E-02	2.53800E-03	1.47790E-03
4	1.91944E-03	3.36057E-03	7.16180E-03	8.11418E-03	6.85335E-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
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	3.58292E-03	2.63450E-03	8.07731E-03	6.43045E-03	1.85115E-02	4.32459E-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	1.64319E-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	1.44409E-02	1.31470E-02	3.44384E-03					
2	2.22285E-02	2.05503E-02	5.66049E-03					
3	2.04903E-02	1.89825E-02	5.19966E-03					
4	8.29796E-03	7.56765E-03	1.90505E-03					
5	1.18116E-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

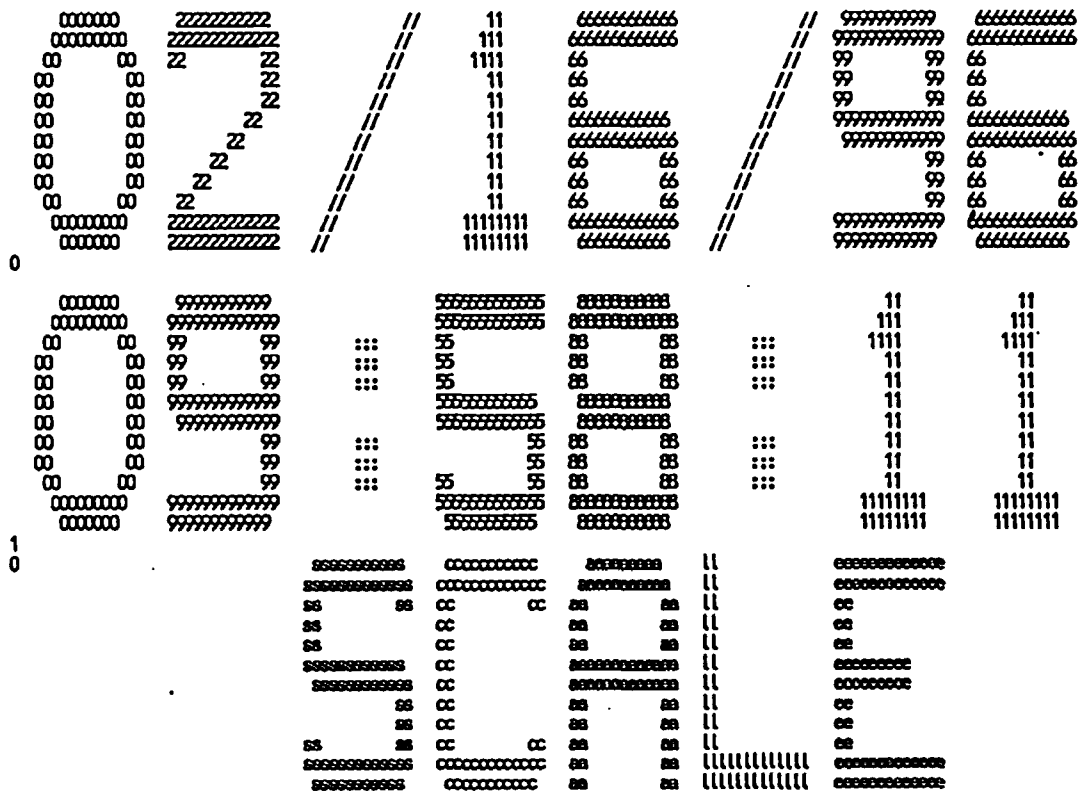
- elapsed time .03 min.

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





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
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
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    1.97098E-04         200006
   7       1      92234    1.73586E-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
```

INFORMATION ONLY

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	44105	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	8.22327E-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	1.88777E-06	200036
37	1	56136	5.51117E-09	200037
38	1	57139	1.88760E-06	200038
39	1	59141	1.39084E-06	200039
40	1	59143	1.33567E-07	200040
41	1	58144	1.20005E-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	6.68815E-08	200053
54	1	63154	5.20859E-09	200054
55	1	63155	1.03382E-08	200055
56	1	40102	4.42681E-05	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09789E-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

Geometry 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**tgrem1 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 218gp from log 12 to log 18   bondarenko trigger 0
0copy     5010  b-10 1273 218gp from log 18 to log  1   bondarenko trigger 0
0copy     5010  b-10 1273 218gp 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  rb-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
```

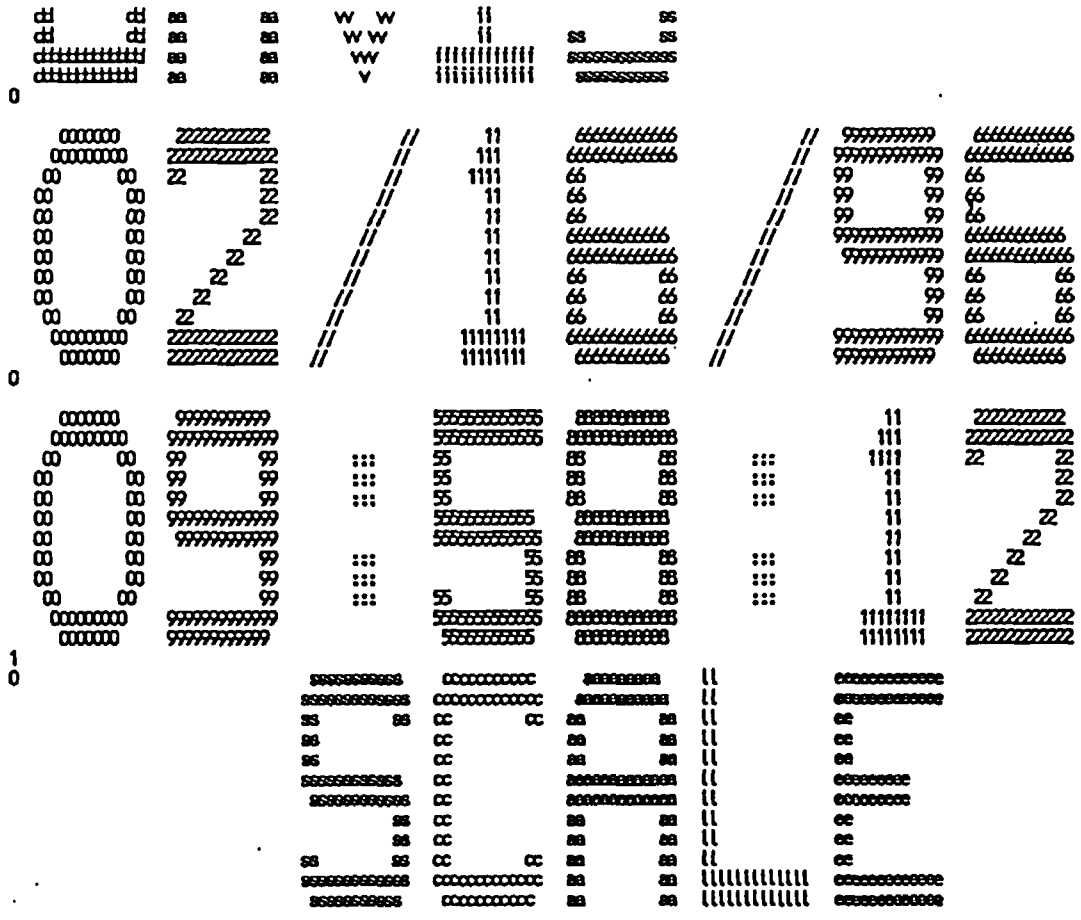
INFORMATION ONLY

```
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                  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/thrml002   updated 10/13/89              id      202
        hydrogen      endf/b-iv mat 1269/thrml002   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
        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
```

INFORMATION ONLY

```
      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 newxlacs p-3 298k 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 newxlacs p-3 298k 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 newxlacs p-3 298k 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 newxlacs 218ngp p-3 298k                          id   200067
     am-243 1057 218 gp wt f-1/e-m 090376 p3 298k                           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    aaaaaaaaa    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
0

  dddddddddddd    aaaaaaaaa    w        w iiiiiiiiiiii    ssssssssssss
  dddddddddddd   aaaaaaaaaaa   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        ssssssssssss
  dd        dd aaaaaaaaaaaa  w      w      ii         ssssssssssss
  dd        dd aa        aa    w    w      ii                  ss
```

INFORMATION ONLY



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 218grp 042575 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

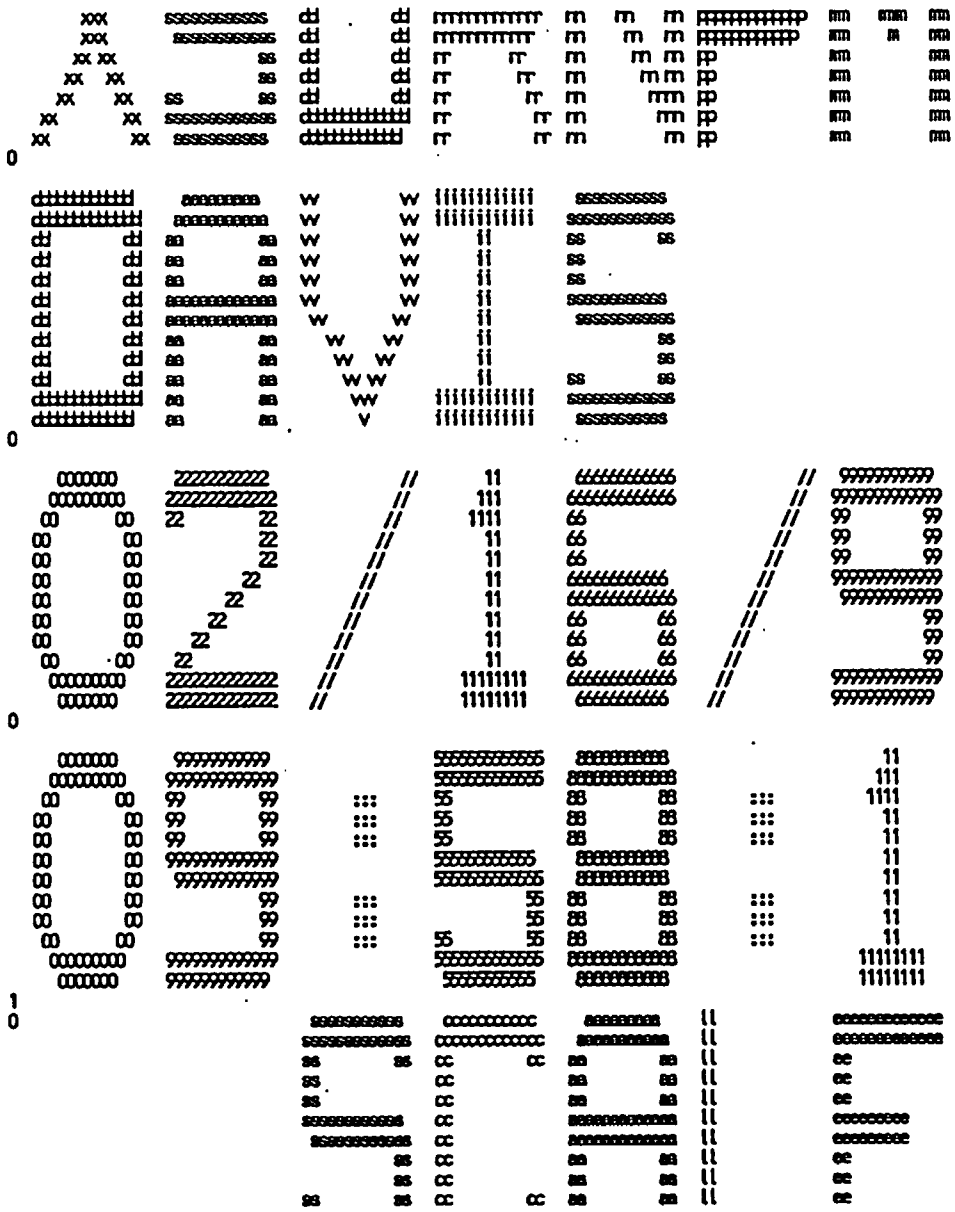
INFORMATION ONLY

```
   63   pu-238 1050 sigo=5+4 newklacs 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 sigo=5+4 newklacs 218ngp p-3 293k                                 95241
   69   am-243 1057 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/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   -7.806033E-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 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
```

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 newlacs p-3 298k 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 298k 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 298k 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 218rgp p-3 298k                             id    95241
      am-243 1057 218 gp wt f-1/e-m 090376 p3 298k                             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  rrr      rrr  pppppppppp  mm        mm
  xx        xx  ssssssssss  dddddddddd  rrrrrrrrrr  rrrr     rrr  pppppppppp  mmm       mmm
    xx    xx  ss        ss  dd        dd  rr        rr  rrrrr    rrr  pp        pp  mmmm     mmmm
     xx  xx   ss            dd        dd  rr        rr  rrr rrr  rrr  pp        pp  mm mm   mm mm
      xx xx   ss            dd        dd  rr        rr  rrr  rrr rrr  pp        pp  mm  mm mm  mm
```

INFORMATION ONLY



INFORMATION ONLY

```
sssssssssssss   cccccccccccc   aa        aa   lllllllllllll   eeeeeeeeeeeee
 sssssssssss     cccccccccc    aa        aa   lllllllllllll   eeeeeeeeeeeee

*****************************************************************************
*****************************************************************************
*****************************************************************************
*****                                                                   *****
*****                 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

 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      ion  outer iteration maximum          25
 mxx  number of mixtures                 3      iclc -1/0/n--flat res/sn/opt           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
 iqm  volumetric sources (0/n=no/yes)    0      idfm 0/1 = none/density factors 39*    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
 timx 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 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=ngted xsect print       -2      mscm 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  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     xnpm 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      15q 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  1.97035E-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  8.85393E-07
   17   40094                                    1      40093  1.21166E-06
   18   40095                                    1      40094  1.86811E-06
   19   40802                                    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

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	46108	8.09598E-08	
28	46108	1	47109	5.66571E-08	
29	47109	1	51124	1.58534E-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	1.33567E-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	4.54728E-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	1.51698E-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-05	
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	93237	2.03586E-07	
62	93237	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 boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left 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	2.40795E+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	4.82128E+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	5.69593E+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	8.17977E+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	3.57866E+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					

1 240 d, second part of ses2h 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	-2.7900E-01	3	0
2	2	3			5.0614E-02	-1.9728E-01	3	-9.9854E-03
3	3	3			5.0614E-02	1.9728E-01	2	9.9854E-03
4	1	3			0	-6.0441E-01	8	0
5					5.5995E-02	-5.5841E-01	8	-3.1045E-02
6					5.5995E-02	-2.3130E-01	7	-1.2859E-02
7					5.5995E-02	2.3130E-01	6	1.2859E-02
8					5.5995E-02	5.5841E-01	5	3.1045E-02
9					0	-8.5077E-01	15	0
10					5.2284E-02	-8.2178E-01	15	-4.2966E-02
11					5.2284E-02	-6.0158E-01	14	-3.1453E-02
12					5.2284E-02	-2.2019E-01	13	-1.1512E-02
13					5.2284E-02	2.2019E-01	12	1.1512E-02
14					5.2284E-02	6.0158E-01	11	3.1453E-02
15					5.2284E-02	8.2178E-01	10	4.2966E-02
16					0	-9.8308E-01	24	0
17					4.5336E-02	-9.6414E-01	24	-4.3709E-02
18					4.5336E-02	-8.1736E-01	23	-3.7065E-02
19					4.5336E-02	-5.4614E-01	22	-2.4759E-02
20					4.5336E-02	-1.9178E-01	21	-8.6944E-03
21					4.5336E-02	1.9178E-01	20	8.6944E-03
22					4.5336E-02	5.4614E-01	19	2.4759E-02
23					4.5336E-02	8.1736E-01	18	3.7065E-02
24					4.5336E-02	9.6414E-01	17	4.3709E-02

0constants for p(3) scattering

0argl	set 1	set 2	set 3	set 4	set 5
1	-2.7900E-01	8.8325E-01	6.7143E-02	-6.1691E-01	-1.7170E-02
2	-1.9728E-01	8.8325E-01	.0000E+00	-4.3622E-01	1.2141E-02
3	1.9728E-01	8.8325E-01	.0000E+00	4.3622E-01	-1.2141E-02

INFORMATION ONLY

4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.76564E-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	6.26863E-01	-1.98656E-01	-4.86839E-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	3.44244E-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	-9.83052E-01	-4.49528E-01	8.36886E-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	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20862E-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	5.92331E-02	1	2.48566E-01	1.47264E-02		0
3	7.90575E-02	1.18588E-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	1.98692E+00	1.76717E-01		
7	3.95288E-01	4.34816E-01	1	2.48566E+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	6.62900E-01	2	4.10154E+00	8.46405E-02		
13	6.73100E-01	6.96683E-01	3	4.22921E+00	2.05662E-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	1.20436E+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	2.86341E+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	-1.84558E-06	1.12851E+00	-1.42524E-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	1.14398E+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	1.11948E-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	9.99928E-01	3
10	10	1	26	1.04653E-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	9.99968E-01	2
17	17	1	27	9.47314E-06	28	1.00002E+00	3
18	18	1	2	5.36616E-05	28	9.99921E-01	3
19	19	1	26	7.43672E-06	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-06	28	1.00003E+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	3.00958E-05	5	1.00002E+00	8

6 531 -1.69257E-06 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	1.97644E-02	.00000E+00	4.90881E-03	.00000E+00
2	1	3.95287E-02	5.92931E-02	2.48346E-01	1.47264E-02	.00000E+00
3	1	7.90575E-02	1.18688E-01	4.96733E-01	5.89057E-02	.00000E+00
4	1	1.58115E-01	1.97644E-01	9.93446E-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	2.48346E+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	3.47733E+00	1.42355E-01	.00000E+00
10	1	5.92931E-01	6.12459E-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	6.96883E-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	7.67053E-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	1.10577E+00	6.34088E+00	1.35731E+00	6.39825E-02
19	4	1.20436E+00	1.30195E+00	7.56724E+00	1.59657E+00	7.37805E-02
20	4	1.39955E+00	1.49714E+00	8.79860E+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	2.31476E+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	3.03286E+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 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	1.22880E-02	8.85680E-02	1.11539E-01	6.86707E-02	1.03474E-01	1.92610E-01	1.92975E-01	1.46890E-01
2	1.22850E-02	8.85978E-02	1.11474E-01	6.86325E-02	1.03421E-01	1.92523E-01	1.92585E-01	1.46884E-01
3	1.22856E-02	8.86003E-02	1.11496E-01	6.86504E-02	1.03456E-01	1.92598E-01	1.92988E-01	1.46895E-01
4	1.22900E-02	8.90093E-02	1.11606E-01	6.87286E-02	1.03586E-01	1.92836E-01	1.93143E-01	1.46924E-01
5	1.23014E-02	8.91483E-02	1.11802E-01	6.88615E-02	1.03802E-01	1.93234E-01	1.93394E-01	1.46968E-01
6	1.23175E-02	8.93597E-02	1.12070E-01	6.90446E-02	1.04100E-01	1.93786E-01	1.93734E-01	1.47034E-01
7	1.23375E-02	8.95846E-02	1.12414E-01	6.92824E-02	1.04488E-01	1.94505E-01	1.94177E-01	1.47094E-01
8	1.23617E-02	8.98904E-02	1.12851E-01	6.95895E-02	1.04995E-01	1.95443E-01	1.94756E-01	1.47177E-01
9	1.23921E-02	9.01594E-02	1.13344E-01	6.98771E-02	1.05463E-01	1.96313E-01	1.95293E-01	1.47264E-01
10	1.24259E-02	9.03708E-02	1.13571E-01	7.01190E-02	1.05885E-01	1.97101E-01	1.95781E-01	1.47294E-01
11	1.24078E-02	9.05451E-02	1.13844E-01	7.03270E-02	1.06238E-01	1.97778E-01	1.96200E-01	1.47339E-01
12	1.24200E-02	9.06752E-02	1.14017E-01	7.04353E-02	1.06408E-01	1.98114E-01	1.96404E-01	1.47382E-01
13	1.24467E-02	9.09120E-02	1.14286E-01	7.05725E-02	1.06595E-01	1.98457E-01	1.96597E-01	1.47451E-01
14	1.24857E-02	9.12894E-02	1.14737E-01	7.08281E-02	1.06975E-01	1.99119E-01	1.96978E-01	1.47542E-01
15	1.25314E-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	7.18650E-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	1.09478E-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	2.01845E-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	2.08790E-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	9.53159E-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	7.43057E-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	9.53725E-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	1.20108E-01	7.42875E-02	1.11563E-01	2.09750E-01	2.03600E-01	1.48877E-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	5.98697E-02	5.35811E-02	2.92296E-02	1.62611E-02
2	1.15817E-01	1.06966E-01	1.00662E-01	6.52774E-02	5.98639E-02	5.35878E-02	2.92318E-02	1.62620E-02
3	1.15815E-01	1.06957E-01	1.00641E-01	6.52536E-02	5.98419E-02	5.35663E-02	2.92256E-02	1.62589E-02
4	1.15810E-01	1.06935E-01	1.00591E-01	6.51962E-02	5.97897E-02	5.34805E-02	2.92104E-02	1.62514E-02
5	1.15803E-01	1.06901E-01	1.00515E-01	6.51087E-02	5.97089E-02	5.33664E-02	2.91877E-02	1.62401E-02
6	1.15793E-01	1.06855E-01	1.00411E-01	6.49858E-02	5.96005E-02	5.32092E-02	2.91578E-02	1.62252E-02
7	1.15780E-01	1.06794E-01	1.00274E-01	6.48339E-02	5.94590E-02	5.30060E-02	2.91201E-02	1.62061E-02
8	1.15766E-01	1.06713E-01	1.00093E-01	6.46285E-02	5.92793E-02	5.27567E-02	2.90726E-02	1.61819E-02
9	1.15755E-01	1.06636E-01	9.99221E-02	6.44369E-02	5.91021E-02	5.24898E-02	2.90259E-02	1.61599E-02
10	1.15754E-01	1.06568E-01	9.97645E-02	6.42625E-02	5.89467E-02	5.22578E-02	2.89782E-02	1.61408E-02
11	1.15759E-01	1.06508E-01	9.96398E-02	6.41257E-02	5.88252E-02	5.20806E-02	2.89399E-02	1.61256E-02
12	1.15754E-01	1.06488E-01	9.95951E-02	6.40721E-02	5.87784E-02	5.20086E-02	2.89418E-02	1.61153E-02
13	1.15709E-01	1.06460E-01	9.95294E-02	6.39901E-02	5.86998E-02	5.19019E-02	2.89268E-02	1.61074E-02
14	1.15637E-01	1.06395E-01	9.93842E-02	6.38126E-02	5.85467E-02	5.16737E-02	2.89022E-02	1.60927E-02
15	1.15560E-01	1.06287E-01	9.91465E-02	6.35332E-02	5.83074E-02	5.13153E-02	2.88644E-02	1.60697E-02
16	1.15452E-01	1.06108E-01	9.87528E-02	6.30735E-02	5.79124E-02	5.07225E-02	2.87985E-02	1.60302E-02
17	1.15355E-01	1.05933E-01	9.83694E-02	6.26136E-02	5.75123E-02	5.01268E-02	2.87147E-02	1.59859E-02
18	1.15286E-01	1.05784E-01	9.80228E-02	6.22208E-02	5.71615E-02	4.96156E-02	2.86263E-02	1.59410E-02
19	1.15231E-01	1.05647E-01	9.77085E-02	6.18547E-02	5.68250E-02	4.91376E-02	2.85325E-02	1.58946E-02
20	1.15206E-01	1.05560E-01	9.75058E-02	6.16183E-02	5.66094E-02	4.88273E-02	2.84618E-02	1.58608E-02
21	1.15192E-01	1.05501E-01	9.73664E-02	6.14540E-02	5.64543E-02	4.86106E-02	2.84079E-02	1.58344E-02
22	1.15188E-01	1.05459E-01	9.72641E-02	6.13369E-02	5.63425E-02	4.84557E-02	2.83668E-02	1.58148E-02
23	1.15182E-01	1.05429E-01	9.71927E-02	6.12537E-02	5.62625E-02	4.83455E-02	2.83368E-02	1.58003E-02
24	1.15179E-01	1.05408E-01	9.71440E-02	6.11977E-02	5.62099E-02	4.82704E-02	2.83157E-02	1.57905E-02
25	1.15177E-01	1.05397E-01	9.71150E-02	6.11633E-02	5.61757E-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	5.21465E-02	4.82127E-02	2.85024E-02	1.57842E-02
27	1.15172E-01	1.05395E-01	9.71114E-02	6.11598E-02	5.21744E-02	4.82228E-02	2.85075E-02	1.57867E-02
28	1.15170E-01	1.05401E-01	9.71277E-02	6.11779E-02	5.21936E-02	4.82485E-02	2.85170E-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	7.02890E-02
2	7.25513E-03	6.03101E-03	1.13708E-02	3.74474E-02	1.21052E-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	7.01856E-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	5.98514E-03	1.13266E-02	3.73065E-02	1.20053E-02	2.53861E-02	8.48468E-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	7.19839E-03	5.92883E-03	1.12726E-02	3.71359E-02	1.18782E-02	2.49866E-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	5.83544E-03	1.11859E-02	3.68778E-02	1.16873E-02	2.43997E-02	8.13251E-02	6.49486E-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	5.79203E-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	1.10574E-02	3.64633E-02	1.13509E-02	2.33405E-02	7.80935E-02	6.12981E-02
17	7.01638E-03	5.58604E-03	1.09973E-02	3.62690E-02	1.11983E-02	2.28638E-02	7.66686E-02	5.97508E-02
18	7.00119E-03	5.52225E-03	1.09402E-02	3.60906E-02	1.10680E-02	2.24547E-02	7.53061E-02	5.83838E-02
19	6.95903E-03	5.46633E-03	1.08864E-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	5.40339E-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	5.39766E-02
24	6.90593E-03	5.36556E-03	1.07726E-02	3.55600E-02	1.07189E-02	2.13402E-02	7.09468E-02	5.36609E-02
25	6.90266E-03	5.36068E-03	1.07657E-02	3.55405E-02	1.07060E-02	2.12974E-02	7.07479E-02	5.34489E-02
26	6.90190E-03	5.35880E-03	1.07651E-02	3.55341E-02	1.07012E-02	2.12788E-02	7.06508E-02	5.33360E-02
27	6.90258E-03	5.35990E-03	1.07669E-02	3.55397E-02	1.07036E-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	7.06936E-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	2.27753E-02	4.32162E-03
4	3.14747E-02	2.26333E-02	4.29088E-03
5	3.12384E-02	2.24247E-02	4.24636E-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	4.01022E-03
9	2.95708E-02	2.09204E-02	3.91846E-03
10	2.91905E-02	2.05718E-02	3.83928E-03
11	2.89360E-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	3.69380E-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	2.73535E-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	1.49299E-02	2.50670E-03
26	2.27206E-02	1.48862E-02	2.49985E-03
27	2.27052E-02	1.48704E-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	-6.86619E-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	-1.98527E-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	9.99869E-01
10	.00000E+00	.00000E+00	5.70158E-02	6.90680E-02	5.55054E-02	3.60085E-05	1.49945E-03	9.99895E-01
11	.00000E+00	.00000E+00	5.57952E-02	6.54509E-02	5.22535E-02	5.50166E-05	3.48016E-03	9.99938E-01
12	.00000E+00	.00000E+00	4.53160E-02	3.50229E-02	4.12088E-02	6.01238E-05	4.04784E-03	9.99979E-01
13	.00000E+00	.00000E+00	4.04788E-02	2.85696E-02	3.66388E-02	8.46329E-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	1.16663E-03	9.99999E-01
16	.00000E+00	.00000E+00	1.43052E-02	4.65237E-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	5.89777E-03	3.36883E-05	6.48474E-04	1.00000E+00
19	.00000E+00	.00000E+00	1.10259E-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	2.49861E-02	2.87528E-04	1.99575E-03	1.00001E+00
21	.00000E+00	.00000E+00	1.33346E-02	4.57259E-03	1.18868E-02	1.14683E-04	1.32340E-03	1.00000E+00
22	.00000E+00	.00000E+00	2.68219E-02	1.45137E-02	2.25864E-02	2.78769E-04	3.95628E-03	1.00002E+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	5.10186E-02	3.46880E-02	4.46265E-02	8.81621E-04	5.51002E-03	1.00000E+00
26	.00000E+00	.00000E+00	4.07276E-02	3.87085E-02	3.57524E-02	8.95196E-04	4.07927E-03	1.00002E+00
27	.00000E+00	.00000E+00	1.39997E-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	9.99979E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux**2	total flux
1	1.24026E-02	-6.86193E-04	1.22621E-02	.00000E+00	3.50351E-11	.00000E+00	1.80658E-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	1.13743E-01	-1.04207E-02	1.11595E-01	.00000E+00	.00000E+00	.00000E+00	9.15590E-05	1.41375E-01
4	7.02585E-02	-6.86619E-03	6.89048E-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	-1.98527E-02	1.92694E-01	.00000E+00	.00000E+00	.00000E+00	8.33628E-05	2.44701E-01
7	1.96053E-01	-1.20143E-02	1.93018E-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	1.84858E-01
9	1.15757E-01	2.76213E-04	1.15814E-01	.00000E+00	.00000E+00	.00000E+00	2.16556E-05	1.45495E-01
10	1.06523E-01	1.49945E-03	1.06961E-01	.00000E+00	.00000E+00	.00000E+00	1.91525E-05	1.34178E-01
11	9.96734E-02	3.48016E-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	6.98391E-02
14	5.21298E-02	5.39045E-03	5.35497E-02	.00000E+00	.00000E+00	.00000E+00	8.52431E-06	6.65295E-02
15	2.89721E-02	1.16663E-03	2.92270E-02	.00000E+00	.00000E+00	.00000E+00	4.50400E-06	3.65828E-02
16	1.61295E-02	5.78567E-04	1.62599E-02	.00000E+00	.00000E+00	.00000E+00	2.26695E-06	2.05594E-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	6.02890E-03	.00000E+00	.00000E+00	.00000E+00	7.46804E-07	7.47947E-03
19	1.12046E-02	6.43095E-04	1.13685E-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	5.48085E-06	4.67613E-02
21	1.17155E-02	1.32340E-03	1.21031E-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	2.80652E-06	3.16192E-02
23	8.15744E-02	1.23956E-02	8.61215E-02	.00000E+00	.00000E+00	.00000E+00	8.70913E-06	1.05597E-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	2.76648E-02
27	3.79469E-03	6.88214E-04	4.33862E-03	.00000E+00	.00000E+00	.00000E+00	1.12286E-07	5.13952E-03

INFORMATION ONLY

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	9.99936E-01
4	.00000E+00	.00000E+00	2.82531E-04	2.29473E-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	1.68250E-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	1.16972E-04	9.20258E-03	4.63118E-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	9.99935E-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	-9.06098E-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	8.57114E-06	-2.78852E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.49199E-05	1.72266E-03	5.03974E-05	6.33185E-06	-1.14143E-05	9.99969E-01
16	.00000E+00	.00000E+00	5.62568E-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	1.87468E-06	-1.21092E-06	9.99969E-01
18	.00000E+00	.00000E+00	6.55613E-05	1.95985E-04	6.26570E-05	1.61502E-06	1.31881E-06	9.99987E-01
19	.00000E+00	.00000E+00	6.35760E-05	4.28613E-04	6.32380E-05	3.32598E-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	4.14788E-04	9.90781E-05	5.14164E-06	-1.42420E-05	9.99984E-01
22	.00000E+00	.00000E+00	1.31719E-04	9.46974E-04	1.26509E-04	1.22223E-05	-6.99385E-06	9.99997E-01
23	.00000E+00	.00000E+00	1.91860E-04	3.35163E-03	2.44597E-04	5.44158E-05	-1.07192E-04	1.00000E+00
24	.00000E+00	.00000E+00	3.13404E-04	2.51201E-03	3.44735E-04	6.46610E-05	-9.30531E-05	1.00001E+00
25	.00000E+00	.00000E+00	3.18690E-04	1.01014E-03	2.59997E-04	3.57478E-05	2.29138E-05	1.00001E+00
26	.00000E+00	.00000E+00	1.35291E-04	7.88964E-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-05	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	nGn rate	fiss rate	flux**2	total flux
1	1.32278E-02	-8.41560E-04	1.24028E-02	-6.86192E-04	5.66822E-06	.00000E+00	1.56693E-06	2.06924E-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	1.13744E-01	-1.04207E-02	.00000E+00	.00000E+00	1.25895E-05	1.89909E-02
4	7.04754E-02	-6.85380E-03	7.02586E-02	-6.82619E-03	.00000E+00	.00000E+00	7.40990E-06	1.17317E-02
5	1.06464E-01	-1.03870E-02	1.06125E-01	-1.03997E-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	1.96063E-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	1.15744E-01	5.91553E-04	1.15757E-01	2.76213E-04	.00000E+00	.00000E+00	4.57967E-06	1.92950E-02
10	1.06488E-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	6.40564E-02	4.04110E-03	6.41626E-02	4.04784E-03	.00000E+00	.00000E+00	3.20855E-06	1.06863E-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	5.19658E-02	5.38766E-03	5.21298E-02	5.39045E-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	1.61298E-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	5.83395E-03	6.49793E-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	3.69223E-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	5.71933E-07	1.94944E-03
22	2.43863E-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	1.17095E-02	6.51694E-02	1.18026E-02	.00000E+00	.00000E+00	3.14467E-06	1.08366E-02
25	2.88684E-02	5.53294E-03	2.89769E-02	5.51002E-03	.00000E+00	.00000E+00	1.39004E-06	4.81866E-03
26	2.08078E-02	4.07485E-03	2.08753E-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	6.31693E-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

INFORMATION ONLY

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	2.5373E-04	3.3589E-04	2.7964E-05	-3.6578E-04	9.9986E-01
2	.00000E+00	.00000E+00	1.9269E-04	3.2238E-03	4.2372E-03	9.2126E-05	-4.1364E-03	9.9987E-01
3	.00000E+00	.00000E+00	2.0104E-03	2.8963E-03	7.5388E-03	4.9175E-05	-5.5743E-03	9.9991E-01
4	.00000E+00	.00000E+00	2.9541E-03	1.9186E-03	6.5921E-03	2.2390E-05	-3.6604E-03	9.9995E-01
5	.00000E+00	.00000E+00	5.4481E-03	6.1673E-03	1.1173E-02	2.6577E-05	-5.7517E-03	9.9996E-01
6	.00000E+00	.00000E+00	1.1468E-02	1.8481E-02	2.1985E-02	4.5158E-05	-1.0544E-02	1.0000E+00
7	.00000E+00	.00000E+00	2.2597E-02	3.2379E-02	2.8750E-02	3.2512E-05	-6.1853E-03	9.9992E-01
8	.00000E+00	.00000E+00	2.9775E-02	4.1141E-02	3.0848E-02	1.9115E-05	-8.8066E-04	9.9991E-01
9	.00000E+00	.00000E+00	3.0408E-02	3.7955E-02	3.0057E-02	1.5302E-05	3.3788E-04	9.9982E-01
10	.00000E+00	.00000E+00	2.9871E-02	3.6045E-02	2.8967E-02	1.8792E-05	8.8576E-04	9.9990E-01
11	.00000E+00	.00000E+00	2.9139E-02	3.3982E-02	2.7130E-02	2.8575E-05	1.9804E-03	9.9945E-01
12	.00000E+00	.00000E+00	2.3664E-02	1.8058E-02	2.1247E-02	3.1103E-05	2.2797E-03	9.9981E-01
13	.00000E+00	.00000E+00	2.0326E-02	1.4720E-02	1.8578E-02	4.3607E-05	2.0057E-03	9.9973E-01
14	.00000E+00	.00000E+00	2.0843E-02	1.4497E-02	1.7318E-02	6.9957E-05	2.9551E-03	9.9990E-01
15	.00000E+00	.00000E+00	1.1150E-02	5.6845E-03	1.0649E-02	5.8981E-05	4.4230E-04	1.0000E+00
16	.00000E+00	.00000E+00	7.3785E-03	2.4097E-03	7.0928E-03	4.0186E-05	2.3896E-04	1.0000E+00
17	.00000E+00	.00000E+00	3.8118E-03	6.9201E-04	3.6005E-03	1.9809E-05	1.9147E-04	9.9995E-01
18	.00000E+00	.00000E+00	3.3918E-03	5.4761E-04	2.9922E-03	1.7135E-05	3.8239E-04	1.0000E+00
19	.00000E+00	.00000E+00	5.6615E-03	1.6035E-03	5.3313E-03	3.5977E-05	3.1888E-04	9.9999E-01
20	.00000E+00	.00000E+00	1.4028E-02	1.1405E-02	1.2895E-02	1.4874E-04	9.8457E-04	1.0001E+00
21	.00000E+00	.00000E+00	6.8674E-03	2.3258E-03	6.0505E-03	5.8527E-05	7.3966E-04	1.0000E+00
22	.00000E+00	.00000E+00	1.3463E-02	7.2744E-03	1.1320E-02	1.3972E-04	2.1858E-03	1.0001E+00
23	.00000E+00	.00000E+00	3.5340E-02	4.3713E-02	2.8705E-02	6.3466E-04	5.9988E-03	1.0002E+00
24	.00000E+00	.00000E+00	3.7760E-02	4.0325E-02	3.1127E-02	7.3364E-04	5.8975E-03	1.0002E+00
25	.00000E+00	.00000E+00	2.4942E-02	1.6844E-02	2.1670E-02	4.2811E-04	2.8504E-03	1.0001E+00
26	.00000E+00	.00000E+00	1.9821E-02	1.0381E-02	1.6977E-02	4.2509E-04	2.4191E-03	1.0001E+00
27	.00000E+00	.00000E+00	6.6766E-03	3.8625E-03	5.9146E-03	1.4778E-04	6.1419E-04	1.0000E+00
28	.00000E+00	.00000E+00	4.1957E-01	4.1681E-01	4.1957E-01	3.4104E-03	-3.4003E-03	9.9977E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.2557E-02	-1.2063E-03	1.2627E-02	-8.4156E-04	1.8572E-11	.00000E+00	1.0063E-05	8.2216E-03
2	9.2053E-02	-1.2896E-02	9.0741E-02	-8.7599E-03	.00000E+00	.00000E+00	4.6728E-05	6.0128E-02
3	1.1571E-01	-1.6737E-02	1.1409E-01	-1.1162E-02	.00000E+00	.00000E+00	4.8947E-05	7.5579E-02
4	7.1403E-02	-1.0514E-02	7.0475E-02	-6.8538E-03	.00000E+00	.00000E+00	2.2256E-05	4.6614E-02
5	1.0693E-01	-1.6138E-02	1.0546E-01	-1.0387E-02	.00000E+00	.00000E+00	2.6420E-05	6.9821E-02
6	2.0089E-01	-2.9382E-02	1.9822E-01	-1.8857E-02	.00000E+00	.00000E+00	4.4692E-05	1.3118E-01
7	1.9987E-01	-1.7622E-02	1.9546E-01	-1.1437E-02	.00000E+00	.00000E+00	3.1480E-05	1.2973E-01
8	1.4769E-01	-3.6606E-03	1.4740E-01	-2.7709E-03	.00000E+00	.00000E+00	1.7183E-05	9.7126E-02
9	1.1551E-01	9.2933E-04	1.1574E-01	5.9155E-04	.00000E+00	.00000E+00	1.1329E-05	7.6116E-02
10	1.0622E-01	2.3329E-03	1.0548E-01	1.4438E-03	.00000E+00	.00000E+00	9.9868E-06	7.0043E-02
11	9.9083E-02	5.3800E-03	9.9580E-02	3.3995E-03	.00000E+00	.00000E+00	9.2763E-06	6.5356E-02
12	6.3366E-02	6.3170E-03	6.4065E-02	4.0411OE-03	.00000E+00	.00000E+00	5.4088E-06	4.1976E-02
13	5.4149E-02	5.7579E-03	5.4756E-02	3.7541E-03	.00000E+00	.00000E+00	4.5058E-06	3.5881E-02
14	5.1101E-02	8.3428E-03	5.1985E-02	5.3876E-03	.00000E+00	.00000E+00	4.3535E-06	3.3978E-02
15	2.8843E-02	1.5965E-03	2.8936E-02	1.1542IE-03	.00000E+00	.00000E+00	2.3419E-06	1.9021E-02
16	1.6056E-02	8.1347E-04	1.6112E-02	5.7519E-04	.00000E+00	.00000E+00	1.1792E-06	1.0591OE-02
17	7.0957E-03	5.6854E-04	7.1483E-03	3.7068E-04	.00000E+00	.00000E+00	4.8011E-07	4.6908E-03
18	5.7145E-03	1.0521E-03	5.8339E-03	6.4493E-04	.00000E+00	.00000E+00	3.8010E-07	3.8077E-03
19	1.1038E-02	9.5894E-04	1.1187E-02	6.4010E-04	.00000E+00	.00000E+00	7.6982E-07	7.3397E-03
20	3.6585E-02	2.9768E-03	3.6870E-02	1.9922E-03	.00000E+00	.00000E+00	2.8554E-06	2.4191E-02
21	1.1448E-02	2.0478E-03	1.1680E-02	1.3097E-03	.00000E+00	.00000E+00	6.9930E-07	7.6257OE-03
22	2.3643E-02	6.1351OE-03	2.4385E-02	3.9468E-03	.00000E+00	.00000E+00	1.4487E-06	1.5848OE-02
23	7.8965E-02	1.8288E-02	8.1285E-02	1.2288E-02	.00000E+00	.00000E+00	4.3590E-06	5.2849E-02
24	6.2248E-02	1.7607E-02	6.4915TE-02	1.1709E-02	.00000E+00	.00000E+00	2.5725E-06	4.1958E-02
25	2.7369E-02	8.3834E-03	2.8868E-02	5.5329E-03	.00000E+00	.00000E+00	8.7834E-07	1.8569E-02
26	1.8863E-02	6.4940E-03	2.0807E-02	4.0748E-03	.00000E+00	.00000E+00	4.5276E-07	1.2946E-02
27	3.3704E-03	1.3202IE-03	3.7884E-03	7.0600E-04	.00000E+00	.00000E+00	5.1918E-08	2.3763IE-03
28	1.7888E+00	-1.0850E-02	1.7892E+00	-7.4747E-03	1.8572E-11	.00000E+00	3.1108E-04	1.1636E+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	1.70971E-01	1.51509E-02	1.28963E-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	9.99986E-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	1.66069E-01	1.90752E-01	4.43728E-01	3.34456E-01	5.22670E-03	1.61386E-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	6.95078E-01	8.35657E-03	1.76231E-02	9.99988E-01
8	.00000E+00	1.36510E-02	6.89167E-01	1.57532E+00	6.85782E-01	1.34511E-02	3.66075E-03	9.99972E-01
9	.00000E+00	9.91007E-04	6.77875E-01	1.37068E+00	6.57763E-01	2.21066E-02	-9.33803E-04	9.99868E-01
10	.00000E+00	7.36106E-05	6.54847E-01	1.24451E+00	6.25907E-01	3.34119E-02	-2.33196E-03	9.99897E-01
11	.00000E+00	5.79123E-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	5.02028E-01	3.99663E-01	5.35376E-02	-5.75748E-03	9.99976E-01
14	.00000E+00	1.28000E-08	4.30968E-01	4.72118E-01	3.64468E-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	-1.60078E-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	4.93557E-03	-5.67265E-04	1.00003E+00
18	.00000E+00	9.79542E-11	7.87397E-02	2.46702E-02	6.85430E-02	1.12269E-02	-1.05496E-03	1.00006E+00
19	.00000E+00	1.38486E-10	1.27989E-01	6.45629E-02	1.21350E-01	6.99804E-03	-9.58057E-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	3.82425E-11	2.95188E-01	2.10436E-01	2.40256E-01	5.90774E-02	-6.13913E-03	1.00005E+00
23	.00000E+00	3.45638E-11	7.15845E-01	1.10448E+00	5.91988E-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	-8.38542E-03	1.00002E+00
26	.00000E+00	2.04286E-12	3.89475E-01	3.80691E-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*adj**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	3.26514E-01
2	9.53250E-02	-9.01340E-08	9.20530E-02	-1.28964E-02	1.62522E-05	1.09287E-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-08	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	2.09698E-01	-2.34811E-07	2.00899E-01	-2.99822E-02	.00000E+00	1.48188E-03	1.73113E-03	5.31797E+00
7	2.03560E-01	5.61110E-07	1.99580E-01	-1.76225E-02	.00000E+00	1.49704E-03	1.22593E-03	5.16913E+00
8	1.48864E-01	8.97995E-08	1.47697E-01	-3.66066E-03	.00000E+00	1.56078E-03	6.97367E-04	3.78712E+00
9	1.15171E-01	-4.37011E-06	1.15517E-01	9.29433E-04	.00000E+00	2.13599E-03	4.70572E-04	2.98326E+00
10	1.05405E-01	6.26909E-07	1.05222E-01	2.33259E-03	.00000E+00	4.55726E-03	4.28092E-04	2.68604E+00
11	9.71375E-02	1.37020E-06	9.90083E-02	5.38001E-03	.00000E+00	9.54164E-03	3.86577E-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	8.34288E-03	.00000E+00	8.45267E-03	1.78256E-04	1.23668E+00
15	2.83257E-02	-4.46383E-06	2.88643E-02	1.59652E-03	.00000E+00	2.14073E-03	1.11784E-04	7.22782E-01
16	1.57945E-02	-3.07762E-06	1.60668E-02	8.13479E-04	.00000E+00	1.44688E-03	5.85730E-05	4.02934E-01
17	6.90660E-03	1.28506E-06	7.09457E-03	5.68547E-04	.00000E+00	2.04339E-03	2.34470E-05	1.76882E-01
18	5.36478E-03	-2.77755E-06	5.71451E-03	1.05218E-03	.00000E+00	2.37041E-03	1.62795E-05	1.37488E-01
19	1.07752E-02	5.88876E-07	1.10981E-02	9.58947E-04	.00000E+00	3.29172E-03	3.72886E-05	2.75244E-01
20	3.55610E-02	-1.05754E-05	3.66854E-02	2.97665E-03	.00000E+00	1.58574E-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	3.12587E-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	1.12361E-04	1.39159E+00
25	2.27252E-02	-6.15187E-08	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	4.86663E-02	1.86382E-05	3.92268E-01
27	2.49733E-03	-5.14804E-08	3.37046E-03	1.32021E-03	.00000E+00	1.35708E-02	1.90395E-06	6.60215E-02
28	1.75450E+00	-1.95233E-05	1.78888E+00	-1.08750E-02	2.18144E-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-05	-9.97737E-09	9.98896E-01
2	.00000E+00	1.91371E-01	7.31705E-03	2.57885E-01	1.85272E-01	1.54294E-02	-9.01340E-08	1.00001E+00
3	.00000E+00	2.15417E-01	7.60814E-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	4.45803E-01	3.66744E-01	5.31966E-03	-1.84250E-07	9.99990E-01
6	.00000E+00	1.78657E-01	4.23332E-01	1.25626E+00	5.98508E-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	9.99877E-01
10	.00000E+00	7.36106E-05	7.41808E-01	1.35461E+00	7.08430E-01	3.35259E-02	6.26902E-07	9.99868E-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	5.73665E-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	1.28000E-08	4.90796E-01	5.17266E-01	4.15586E-01	7.48564E-02	1.48095E-07	9.99988E-01
15	.00000E+00	1.44677E-09	2.71502E-01	2.34877E-01	2.65773E-01	7.71631E-03	-4.46383E-06	1.00006E+00
16	.00000E+00	4.24821E-10	1.84778E-01	1.08560E-01	1.79986E-01	4.83414E-03	-3.07762E-06	1.00006E+00
17	.00000E+00	1.36813E-10	9.91754E-02	3.47722E-02	9.41756E-02	4.99553E-03	1.28506E-06	1.00003E+00
18	.00000E+00	9.70542E-11	8.87569E-02	2.64875E-02	7.74756E-02	1.12793E-02	-2.77755E-06	1.00005E+00
19	.00000E+00	1.38486E-10	1.44163E-01	6.97047E-02	1.37066E-01	7.10192E-03	5.85987E-07	1.00008E+00
20	.00000E+00	2.25193E-10	3.45203E-01	3.98476E-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	1.23885E+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	4.95625E-01	8.56973E-02	-6.15182E-08	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	1.26806E-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	n2n rate	fiss rate	flux*dv**2	total flux
1	1.28568E-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	1.11593E-01	.00000E+00	.00000E+00	1.33500E-02	1.97097E-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	2.09698E-01	-2.34811E-07	1.92694E-01	.00000E+00	.00000E+00	1.48188E-03	1.89265E-03	5.72695E+00
7	2.08560E-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	1.05406E-01	6.26902E-07	1.06961E-01	.00000E+00	.00000E+00	4.55726E-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	5.58606E-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	2.85257E-02	-4.46383E-06	2.92270E-02	.00000E+00	.00000E+00	2.14073E-03	1.20052E-04	7.85212E-01
16	1.57945E-02	-3.07762E-06	1.62599E-02	.00000E+00	.00000E+00	1.44688E-03	6.29105E-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	1.76950E-05	1.49749E-01
19	1.07752E-02	5.85876E-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	1.56574E-02	1.41864E-04	9.85535E-01
21	1.07126E-02	-3.10257E-06	1.21031E-02	.00000E+00	.00000E+00	1.22900E-02	3.39395E-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	7.07295E-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-08	3.17159E-02	.00000E+00	.00000E+00	5.27926E-02	4.21610E-05	6.57227E-01
26	1.48782E-02	-2.52953E-07	2.28503E-02	.00000E+00	.00000E+00	4.86568E-02	2.10117E-05	4.35893E-01
27	2.49733E-03	-5.16804E-08	4.33962E-03	.00000E+00	.00000E+00	1.35703E-02	2.24294E-06	7.41698E-02
28	1.75450E+00	-1.95253E-05	1.77553E+00	.00000E+00	2.18713E-03	4.55157E-01	1.29569E-02	4.84254E+01

- elapsed time .02 min.
Odirect 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	5.86306E-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	2.38526E-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	8.72686E-04	7.85705E-04	1.00879E-03	3.13745E-04	1.56159E-04
2	1.78669E-03	1.95277E-03	2.04380E-03	1.59939E-03	1.41152E-03	1.66205E-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	1.87900E-04
4	1.19407E-03	1.09414E-03	1.03042E-03	6.77811E-04	6.01782E-04	6.33781E-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	4.46703E-04	2.51664E-04	6.75516E-04	2.16474E-03	2.01510E-03
2	1.65665E-04	1.94151E-04	2.66197E-04	8.59307E-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	3.28600E-03	3.13057E-03
4	6.96208E-05	6.48574E-05	1.12983E-04	3.86197E-04	1.31387E-04	3.30358E-04	1.11594E-03	9.12768E-04
5	7.17055E-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	1.85235E-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	3.45364E-02
5	4.42179E-04	2.79969E-04	3.75563E-05	3.54095E-02

fbroad 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	1.271E-01	3.6830E+05	1.2516E-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	1.1905E+00	2.45236E-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	1.1440E+00	2.03512E-01
5	4.11057E-01	1.1437E+00	2.03513E-01

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

Ozone	grp. 1	grp. 2	grp. 3
1	9.42516E-01	9.99035E-01	1.20619E+00
2	9.55251E-01	9.97257E-01	1.15658E+00
3	9.62383E-01	9.97588E-01	1.13713E+00
4	1.00410E+00	1.00028E+00	9.8524E-01
5	1.00000E+00	1.00000E+00	1.00000E+00

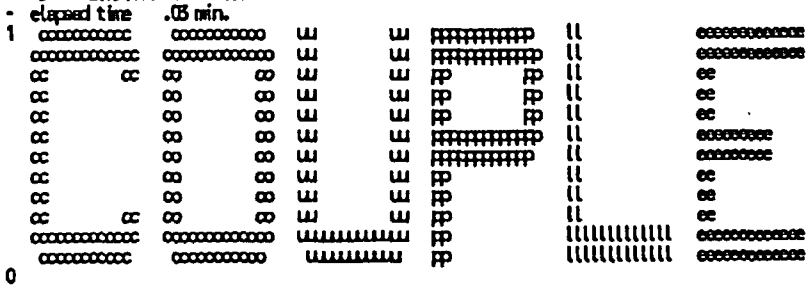
0cell averaged currents

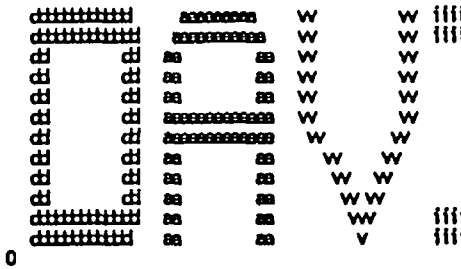
Ozone	grp. 1	grp. 2	grp. 3
1	1.70157E-02	1.81279E-02	6.77788E-03
2	1.90707E-02	2.55619E-02	1.05713E-02
3	1.91358E-02	2.19801E-02	1.06691E-02
4	1.51265E-02	1.62707E-02	3.13845E-03
5	1.53321E-02	1.65477E-02	3.53005E-03

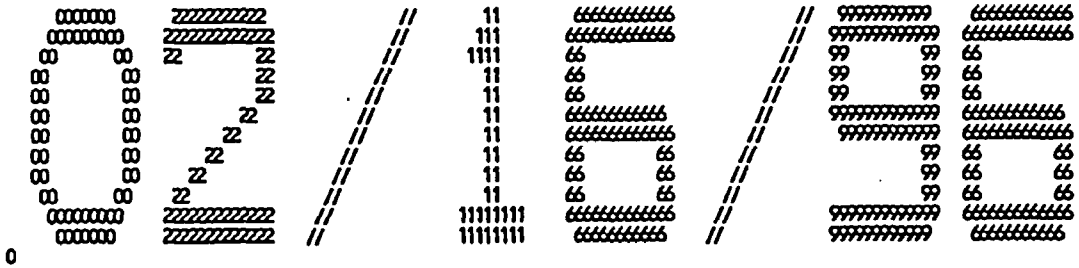
Ozone	volume	vol. fraction
1	1.2565E+00	4.5625E-02
2	1.6668?E-01	6.0516E-03
3	6.5926E-01	2.3930?E-02

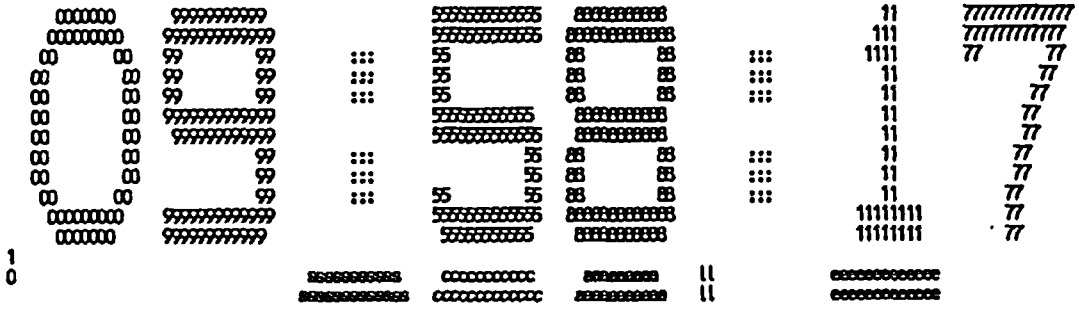
INFORMATION ONLY

```
   4    2.5463E+01    9.2442E-01
   5    2.7544E+01    1.0000E+00
 - elapsed time    .03 min.
1
0
0
0
1
0
```









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  cccccccccccc  aa        aa  lllllllllllll  eeeeeeeeeeeee
 sssssssssss    cccccccccc   aa        aa  lllllllllllll  eeeeeeeeeeeee
```

```
*****************************************************************************
*****************************************************************************
*****************************************************************************
*****                                                                   *****
*****                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 -1$$ 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 jactl) 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	2.75385E-01
10010	tot-cap	2.75385E-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
451080 to 451020	1.94081E-03
451080 to 451040	3.40500E+02
451080 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 461050	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-08
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	2.08131E-01
551370	tot-cap	2.08131E-01
561360	to 561370	8.14606E-01
561360	tot-cap	8.14606E-01
571390	to 571400	7.56554E+00
571390	tot-cap	7.56554E+00
581440	to 581450	1.14875E+00
581440	tot-cap	1.14875E+00
591410	to 591400	5.07440E-08
591410	to 591390	1.45800E-06
591410	to 571370	2.19084E-06
591410	to 20040	4.52888E-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	1.96951E+02
601430	to 591430	3.30457E-05
601430	to 10020	2.05757E-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	9.97664E-02

INFORMATION ONLY

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	7.86523E-06
611470	to 601450	2.96207E-06
611470	to 10030	2.96207E-06
611470	to 591450	4.45366E-09
611470	to 20030	4.45366E-09
611470	to 591440	6.23666E-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	6.40862E-03
621470	to 601430	5.62185E-05
621470	to 20040	1.09573E-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	1.26848E+02
621500	tot-cap	1.26848E+02
621510	to 621500	1.34695E-01

INFORMATION ONLY

621510 to 621480	1.20109E-04
621510 to 601470	1.35716E-05
621510 to 20040	1.06235E-04
621510 to 611500	1.64465E-06
621510 to 10010	1.28357E-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	3.85368E-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-08
631530 to 20030	2.20463E-08
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-08
631540 to 20030	1.40944E-08
631540 to 611510	6.56784E-04
631540 tot-cap	1.03483E+03
631550 to 631540	2.05034E-02

INFORMATION ONLY

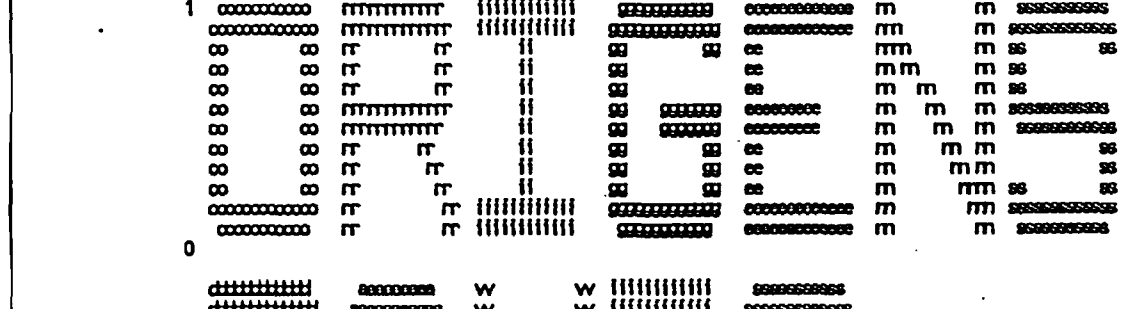
631550	to 631530	5.74142E-05
631550	to 611510	1.54638E-06
631550	to 20040	7.61090E-06
631550	to 621540	3.13068E-06
631550	to 10010	6.58607E-06
631550	to 631560	2.50529E+03
631550	to 621550	5.05278E-06
631550	to 10020	1.60740E-06
631550	to 621530	5.32104E-07
631550	to 10030	5.32104E-07
631550	to 611530	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	3.85763E+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	6.97868E+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	8.45501E+00
932370	to 932360	1.26585E-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	2.02105E+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	1.05264E-02
942390	fission	8.54735E+02
942390	nu-sigf	2.45731E+03

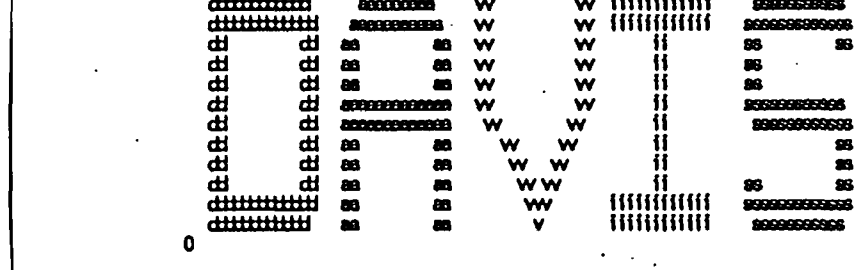
INFORMATION ONLY

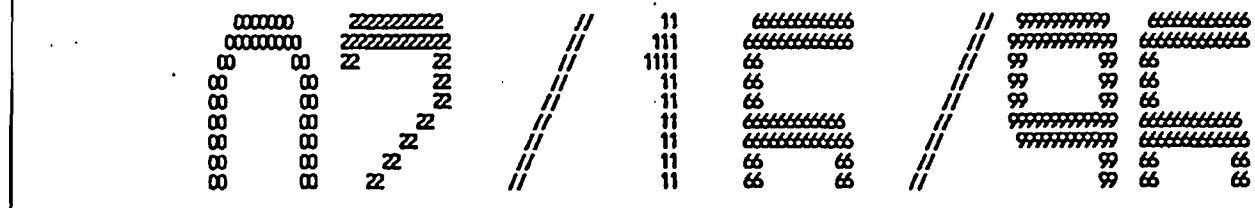
```
                942390 to 942370  1.80436E-05
                942390 to 942360  1.78869E-08
                942390 to 942400  4.83359E+02
                942390 tot-cap    1.33811E+03
                942400 to 942390  4.98738E-03
                942400 fission    5.21918E+00
                942400 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    8.90576E+02
                942410 nu-sigf    2.61233E+03
                942410 to 942390  1.04138E-04
                942410 to 942420  2.94405E+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    3.00798E+02
                952410 fission    1.16252E+01
                952410 nu-sigf    3.74443E+01
                952410 to 952420  1.00417E+03
                952410 tot-cap    1.01579E+03
                952430 fission    2.99676E+00
                952430 nu-sigf    1.00699E+01
                952430 to 952440  3.82722E+02
                952430 tot-cap    3.85718E+02
                952440 to 952430  4.88608E-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)
```

INFORMATION ONLY

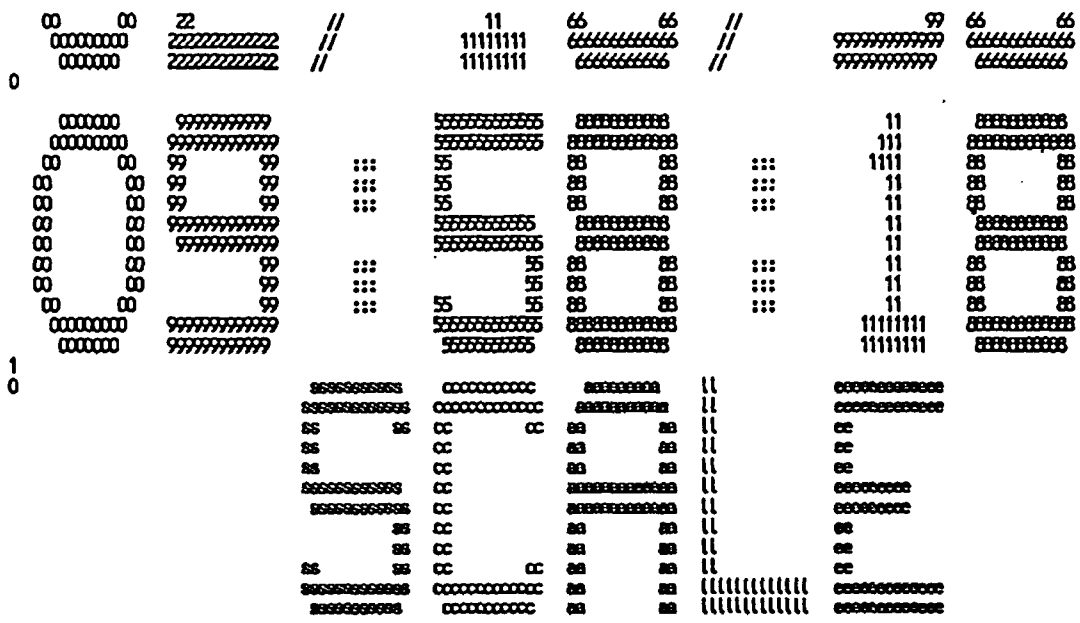
```
0the fission product transitions for  942380 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  942380 to 942381 was not used, because  942381 is not in library., (in 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 *
```







INFORMATION ONLY



```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****                 program verification information       *****
*****                 code system:  scale  version:  4.2    *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****                                                       *****
*****                                                       *****
*****                      program:  c0c00h                 *****
*****                                                       *****
*****                 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, qm =    9.118E-04
0            half-norm of matrix used, am =    7.0000E+00
0            4-place-accuracy-retention ratio, ratio4 =    6.451E-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 "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 *
        *                                                                  *
        ********************************************************************
```

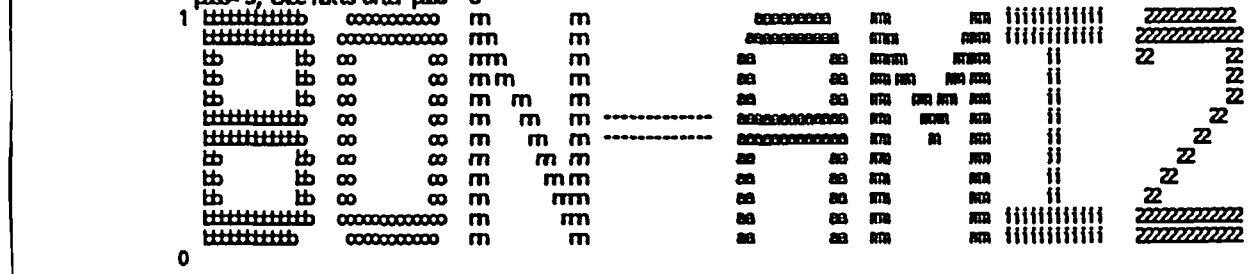
```
0       *                                                                    *
        **********************************************************************
0               .other identification and sizes of library.
0                 data set name:  ft15f001
0               2/16/1996    date library 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                  7985      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-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 4.08E-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 1.03E-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 7.90E-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 1.65E-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 1.08E-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 2.46E-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 5.08E-19
   am240 8.34E-18 1.99E-17 3.78E-17 6.46E-17 1.02E-16 1.02E-16 1.52E-16 2.17E-16
   am241 1.30E-09 3.09E-09 5.85E-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 1.06E-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 1.85E-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 2.28E-02 2.28E-02 2.28E-02 2.28E-02
```

INFORMATION ONLY

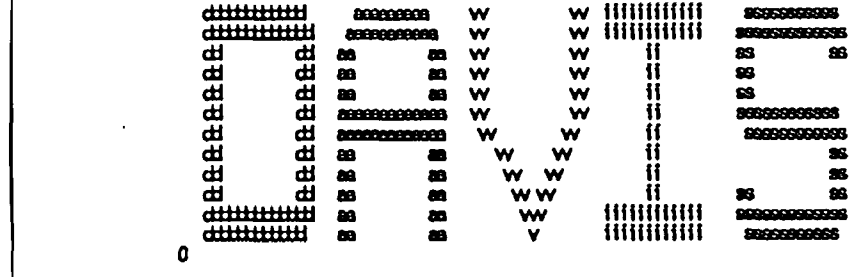
```
0   flux              1.65E+13  1.64E+13  1.64E+13  1.64E+13   .00E+00  1.64E+13  1.63E+13
0  .results on logical unit no. 71, position  1, for time step  7, subcase 1. (run position 1, case position 1)
   title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0  .results on logical 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
0ndset          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
0jcpt           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
0non             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 1.600064E+02  .000000E+00  .000000E+00 1.000000E-08
0mzero           4
           0        689        129        879
0pow             3
   .000000E+00  .000000E+00  .000000E+00
0 linp           9
           6          0         51         26          2       3000       1000       1697         94
```

INFORMATION ONLY

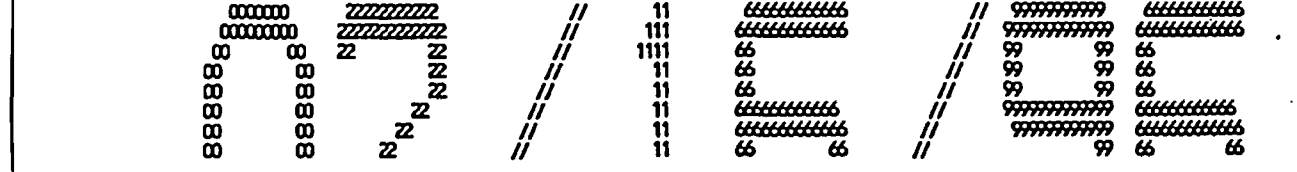
```
 n-gamma, fission and total mev/fission =          5.2408E+00     1.9492E+02     2.0016E+02
 start of interval flux =        1.6520E+13
 n-gamma, fission and total mev/fission =          5.3397E+00     1.9505E+02     2.0039E+02
 start of interval flux =        1.6459E+13
 n-gamma, fission and total mev/fission =          5.4422E+00     1.9518E+02     2.0062E+02
 start of interval flux =        1.6411E+13
 n-gamma, fission and total mev/fission =          5.5462E+00     1.9530E+02     2.0085E+02
 start of interval flux =        1.6577E+13
 start of interval flux =         .0000E+00
 n-gamma, fission and total mev/fission =          5.6579E+00     1.9542E+02     2.0107E+02
 start of interval flux =        1.6354E+13
 n-gamma, fission and total mev/fission =          5.7568E+00     1.9553E+02     2.0128E+02
 start of interval flux =        1.6343E+13
0 case or subcase    1  ses2h: 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=nalt8,skipcellwt,skipshipdata
  pass= 3, exec halts after pass  8
```

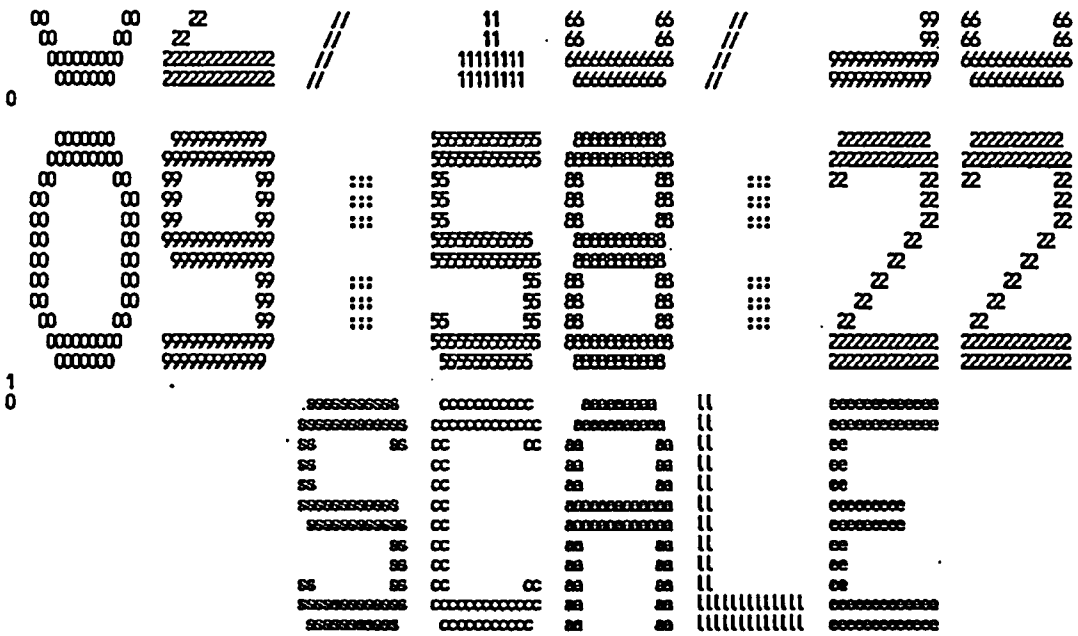


```
0
```



```
0
```





INFORMATION ONLY

program verification information

code system: scale version: 4.2

program: c0:003

creation date: 04/27/95

library: /nautronics/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
0iibl--shielded cross section edit option (0/1--no/yes)             0
0iibr--bondarenko factor edit option (0/1--no/yes)                  0
0isxopt--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	2.22578E-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	6.82843E-09	61148
41	1	60147	1.32714E-07	60147
42	1	62147	3.65895E-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	4.25156E-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	9.78898E-06	55133
56	1	95237	1.23726E-06	95237
57	1	94238	7.99718E-08	94238
58	1	94239	6.54088E-05	94239
59	1	94240	7.15776E-06	94240
60	1	94241	2.50859E-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	1.64668E-10	96244
65	1	999	1.00000E-20	999
66	4	999	1.00000E-20	66

Geometry and material description

Zone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	1	4.68122E-01	9.75000E+02	9.05814E-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

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

Copy 999 1/v cross sectio from log 12 to log 18 bondarenko trigger 0
Copy 999 1/v cross sectio from log 18 to log 1 bondarenko trigger 0
Copy 999 1/v cross sectio from log 18 to log 1 bondarenko trigger 0
Copy 1001 hydrogen from log 12 to log 1 bondarenko trigger 0
Copy 5010 b-10 1273 218grp 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

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 218grp 042395 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 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
```

```
0
```

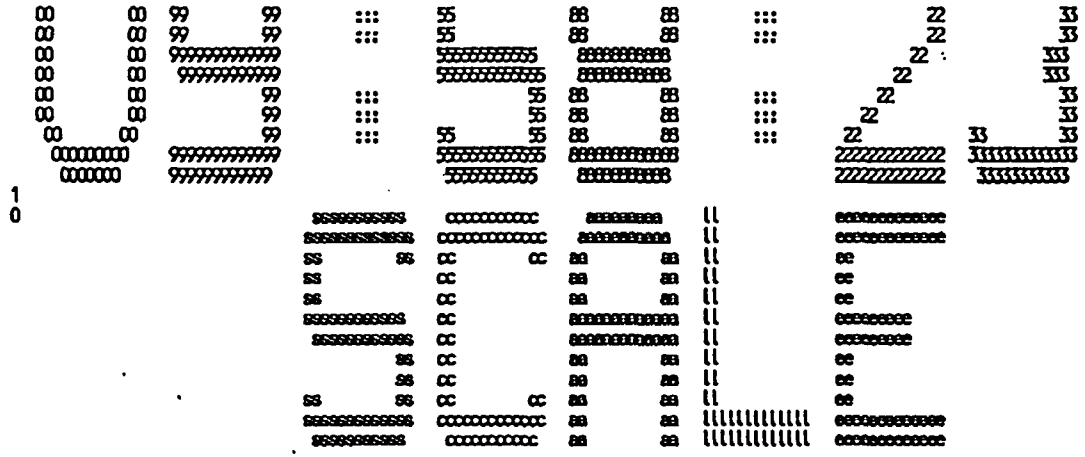
```
0
```

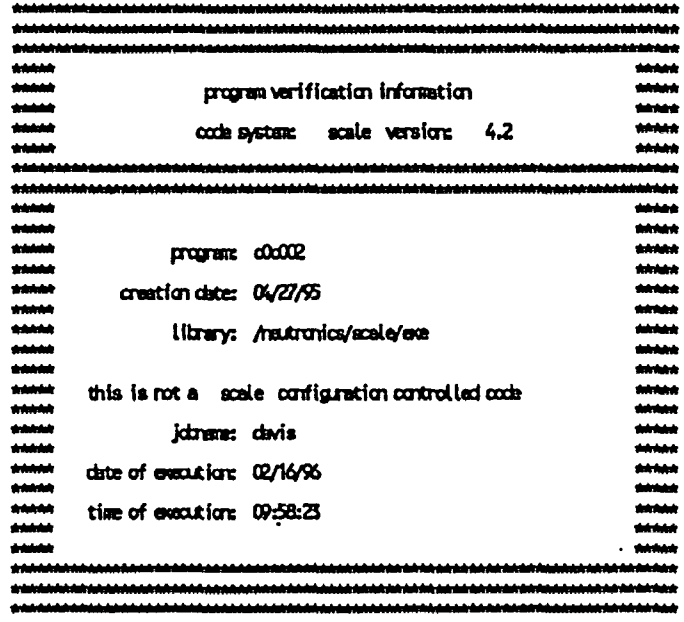
```
0
```

```
0
```

```
0
```

INFORMATION ONLY





-lq 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 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/thrmal002   updated 10/13/89           1001
    3   b-10 1273 218grp 04235 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=102,103,108,105,106,107     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          40802
   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 1284             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 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 sigo=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 sigo=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 sigo=5+4 newklacs 218ngp 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/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)    = 3.4269261E-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      =  237.933          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   -1.251898E-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

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   = 5.4740635E-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)= 3.1194320E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 3.4803137E+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   = 9.2634236E-06
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)= 1.8433756E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 2.0566324E+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     -3.996329E-07    .000000E+00   -3.981763E-04
   9     -1.740391E-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  =    6.385          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
```

INFORMATION ONLY

```
  8      -1.788596E-03     .000000E+00   -4.286997E+00
  9      -5.898375E-02     .000000E+00   -2.695297E+00
 10      -6.959955E-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    = 3.6019208E-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)= 4.7407952E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 5.2892492E+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    = 6.1215037E-06
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)= 2.7895055E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 3.1122184E+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    = 8.9671930E-06
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.
```

INFORMATION ONLY

```
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      -1.143065E-02    .000000E+00   -5.397383E-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   = 7.899009E-06
0spin factor (g)          =  8785.250          lump dimension (a-bar)   = 4.681220E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.425926E-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   -1.328279E-02
  13      -2.097746E-01    .000000E+00   -5.664530E-03
  14       2.376605E-04    .000000E+00   -4.179696E-05
0excess resonance integrals
0                 resolved
0absorption      7.9672E+01
 fission         .0000E+00
- elapsed time    .03 min.
0 ru-102        mt=102                  updated 10/13/89          44102    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   = 4.405653E-06
 0spin factor (g)          =      .500          lump dimension (a-bar)   = 4.681220E-01
 0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.425926E-01
 0the absorber will be treated by the nordheim integral method.
 0mass of moderator-1    =    15.995              sigma(per absorber atom)= 3.875747E+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
```

INFORMATION ONLY

12	-1.027692E-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	3.364664E-03
16	3.688781E+01	.000000E+00	-4.548918E-02
17	-1.851598E+02	.000000E+00	-1.432801E-01
18	8.764008E+01	.000000E+00	2.615952E-01
19	1.155327E+01	.000000E+00	-1.661123E-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

Oexcess resonance integrals
0 resolved
Oabsorption 1.15654E+03
fission .00000E+00
- elapsed time .05 min.
0 rh-105 mt= 102 45105 temperature= 975.00
0 pd-105 mt=102 updated 10/13/89 46105 temperature= 975.00
Oresonance data for this nuclide
Omass number (a) = 104.004 temperature(kelvin) = 975.000
Opotential scatter sigma = 4.069 lumped nuclear density = 2.491164?E-06
Ospin factor (g) = 15210.000 lump dimension (a-bar) = 4.681220?E-01
Oinner radius = .0000000E+00 dancoff correction (c) = 3.426926?E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1 = 15.995 sigma(per absorber atom)= 6.854612?E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2 = 237.983 sigma(per absorber atom)= 7.647610?E+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
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

Oexcess resonance integrals
0 resolved
Oabsorption 6.1295E+01
fission .00000E+00
- elapsed time .07 min.
0 pd-108 mt=102 updated 10/13/89 46108 temperature= 975.00
Oresonance data for this nuclide
Omass number (a) = 106.977 temperature(kelvin) = 975.000
Opotential scatter sigma = 4.146 lumped nuclear density = 5.440544E-07
Ospin factor (g) = 21175.100 lump dimension (a-bar) = 4.681220?E-01
Oinner radius = .0000000E+00 dancoff correction (c) = 3.426926?E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1 = 15.995 sigma(per absorber atom)= 3.138650?E+05
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2 = 237.983 sigma(per absorber atom)= 3.501755?E+05
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
11	1.170557E-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	-1.840804E-01	.000000E+00	8.089888E-05
16	2.946894E-04	.000000E+00	-9.255707E-06

INFORMATION ONLY

```
0excess resonance integrals
0                resolved
0absorption      2.13516E+02
 fission         .0000E+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  = 3.9128643E-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   = 237.983              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         .0000E+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   = 237.983              sigma(per absorber atom)= 4.5765258E+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    -1.157152E-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         .0000E+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
```

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)= 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    9.787181E-01
 fission       .0000E+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   = 9.7889797E-06
0spin factor (g)       =  374.437          lump diameter (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     -5.044485E-02    .000000E+00   -8.853554E-02
  12     -7.794365E-02    .000000E+00   -1.087077E-02
  13     -1.298005E-01    .000000E+00   -7.041851E-03
  14     -5.816874E+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    3.597571E+02
 fission       .0000E+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 diameter (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
```

INFORMATION ONLY

```
Qmoderator-1 will be treated by the nordheim integral method.
Qmass of moderator-2    =  237.953              sigma(per absorber atom)= 4.4096290E+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
  10       1.325435E-06     .000000E+00    5.726989E-07
  11       1.778946E-05     .000000E+00    1.536195E-05
Qexcess resonance integrals
0                  resolved
Qabsorption       1.38476E+00
 fission           .00000E+00
- elapsed time    .10 min.
0 la-139        mt=102                    updated 10/13/89          57139    temperature=  975.00
Qresonance data for this nuclide
Qmass number (a)          =  137.713          temperature(kelvin)      =  975.000
Qpotential scatter sigma  =    4.906          lumped nuclear density   = 9.4329744E-06
Qspin factor (g)          =  145.855          lump dimension (a-bar)   = 4.6812201E-01
Qinner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
Qthe absorber will be treated by the nordheim integral method.
Qmass of moderator-1    =   15.995              sigma(per absorber atom)= 1.8102422E+04
Qmoderator-1 will be treated by the nordheim integral method.
Qmass of moderator-2    =  237.953              sigma(per absorber atom)= 2.0196658E+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
   9       2.513561E-05     .000000E+00    4.217379E-03
  10      -2.130884E-04     .000000E+00   -1.470223E-02
  11        .000000E+00     .000000E+00     .000000E+00
  12      -3.235367E-02     .000000E+00   -1.955698E-02
Qexcess resonance integrals
0                  resolved
Qabsorption       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
Qresonance data for this nuclide
Qmass number (a)          =  139.697          temperature(kelvin)      =  975.000
Qpotential scatter sigma  =    4.953          lumped nuclear density   = 7.6168221E-06
Qspin factor (g)          = 1026.500          lump dimension (a-bar)   = 4.6812201E-01
Qinner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
Qthe absorber will be treated by the nordheim integral method.
Qmass of moderator-1    =   15.995              sigma(per absorber atom)= 2.2418758E+04
Qmoderator-1 will be treated by the nordheim integral method.
Qmass of moderator-2    =  237.953              sigma(per absorber atom)= 2.5012344E+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      -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
Qexcess resonance integrals
0                  resolved
Qabsorption       1.22139E+01
 fission           .00000E+00
- elapsed time    .12 min.
0 pr-143        mt=102                    updated 10/13/89          59143    temperature=  975.00
```

INFORMATION ONLY

```
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)        =  1964.850       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)= 2.2007103E+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   -3.557578E-02
  11     -3.474493E-02    .000000E+00   -1.048061E-01
  12     -8.615515E-01    .000000E+00   -5.427825E+00
  13      9.626083E-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   -1.069940E-04
  18      8.539907E-04    .000000E+00   -9.315782E-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.
```

INFORMATION ONLY

```
Omass of moderator-1    =    15.995              sigma(per absorber atom)= 6.8734750E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.983              sigma(per absorber atom)= 7.6686547E+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
  12      -1.223089E-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
Oexcess resonance integrals
0                  resolved
Oabsorption       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
Oresonance data for this nuclide
Omass number (a)          =   145.653          temperature(kelvin)       =   975.000
Opotential scatter sigma  =     5.093          lumped nuclear density    = 3.6589458E-07
Ospin factor (g)          =      .000          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)= 4.6669094E+05
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.983              sigma(per absorber atom)= 5.2068159E+05
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
  11       2.896982E-01    .000000E+00    1.129878E+00
  12       1.167188E+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   -1.924454E-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
Oexcess resonance integrals
0                  resolved
Oabsorption       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
Oresonance data for this nuclide
Omass number (a)          =   147.638          temperature(kelvin)       =   975.000
Opotential scatter sigma  =     3.260          lumped nuclear density    = 7.5195587E-08
Ospin factor (g)          = 10407.900          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)= 2.2708740E+06
Omoderator-1 will be treated by the nordheim integral method.
```

INFORMATION ONLY

```
0mass of moderator-2    =   237.953          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     1.500885E-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    =   237.953          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    -6.375778E-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    -3.095665E+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    =   237.953          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  -1.795795E-02
  15     1.491918E+01    .000000E+00   7.558613E-02
  16    -2.177258E+01    .000000E+00  -6.173761E-02
  17     1.738946E+02    .000000E+00   8.296881E-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
```

INFORMATION ONLY

```
  22      6.95253E-02      .000000E+00    3.838926E-03
  23     -1.09192E-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   = 8.486045E-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)= 2.011530E+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    1.158914E-04
  10     -6.300000E-04      .000000E+00   -1.018422E-02
  11     -9.556686E-03      .000000E+00   -3.651736E-02
  12     -6.599117E-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   = 3.950522E-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     -7.127644E-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    8.159347E-03
  17      1.506616E-01      .000000E+00   -3.437751E-03
  18      7.726889E-02      .000000E+00   -2.251245E-03
  19      5.055488E-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.
```

INFORMATION ONLY

```
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)= 2.1394400E+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   -1.839441E-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   -7.466390E-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    1.626851E-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      -1.659955E+03    .000000E+00    7.392510E-01
0excess resonance integrals
0                  resolved
```

INFORMATION ONLY

```
0absorption      3.97067E+04
 fission          .00000E+00
- elapsed time    .18 min.
0u-234 1043 sigo=5+4 newklacs 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   = 5.0467297E-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    =  237.985          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   -7.041884E-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   = 5.4047973E-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)= 3.1594098E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.049          sigma(per absorber atom)= 3.3905756E+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   -1.398543E+00   -5.229959E-02
  13     -7.708092E+00   -3.834183E+00   -1.662088E-01
  14     -6.189115E+00   -3.789033E+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 newklacs 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   = 3.0808562E-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)= 5.5426050E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.934          sigma(per absorber atom)= 6.1827402E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
```

INFORMATION ONLY

```
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   -5.583938E-01
  13      -6.051546E-02     .000000E+00   -3.357721E-03
  14      -2.886298E+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    = 2.1962663E-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)= 7.7749991E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   235.041          sigma(per absorber atom)= 3.3476946E-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      -3.944036E-02     .000000E+00   -4.050720E-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   -1.769248E+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    = 1.2372562E-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)= 1.3801481E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.4803898E+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    4.388553E-04
  14      -1.946115E-02   -2.886008E-06   -9.108837E-04
0excess resonance integrals
0                  resolved
0absorption       2.93165E+02
 fission          1.38589E-01
- elapsed time    .27 min.
0pu-238 1050 sigo=5+4 newxlacs p-3 293k f-1/a-m(1.+5)                  94238     temperature=   975.00
```

INFORMATION ONLY

```
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  -5.489853E-05
  13      4.134514E-01   7.566257E-02  -9.305859E-03
  14     -3.822731E-01  -6.983654E-02   8.538894E-03
0excess resonance integrals
0              resolved
0absorption    8.25906E+01
 fission       9.08542E+00
- elapsed time    .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89          9439    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  -1.625044E-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          9440    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   = 7.157782E-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)= 2.385657E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051          sigma(per absorber atom)= 2.558930E+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
```

INFORMATION ONLY

10	-1.671842E-03	-1.040354E-04	-7.659151E-03
11	-5.483094E-02	-3.168331E-04	-7.304044E-02
12	-7.702685E-01	-4.205388E-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	3.341530E-06	3.472721E-03
16	3.193529E+00	6.092609E-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

Oexcess resonance integrals
0 resolved
Oabsorption 6.34075E+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
Oresonance data for this nuclide
Omass number (a) = 238.978 temperature(kelvin) = 975.000
Opotential scatter sigma = 10.939 lumped nuclear density = 2.509587E-06
Ospin factor (g) = 1642.100 lump dimension (a-bar) = 4.681220E-01
Oinner radius = .000000E+00 dancoff correction (c) = 3.426926E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1 = 15.995 sigma(per absorber atom)= 6.804835E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2 = 238.051 sigma(per absorber atom)= 7.299078E+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
12	9.910288E-03	8.763954E-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

Oexcess resonance integrals
0 resolved
Oabsorption 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
Oresonance data for this nuclide
Omass number (a) = 240.145 temperature(kelvin) = 975.000
Opotential scatter sigma = 10.694 lumped nuclear density = 1.172537E-07
Ospin factor (g) = 6606.710 lump dimension (a-bar) = 4.681220E-01
Oinner radius = .000000E+00 dancoff correction (c) = 3.426926E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1 = 15.995 sigma(per absorber atom)= 1.456326E+06
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2 = 238.051 sigma(per absorber atom)= 1.562100E+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
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

INFORMATION ONLY

```
  18      1.11250E-02     .000000E+00   -1.43067E-03
0excess resonance integrals
0                resolved
0absorption      1.11086E+03
 fission          .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp-5+4 newklacs 218grp 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  = 3.397043E-08
0spin factor (g)          = 82058.203          lump dimension (a-bar)  = 4.681220E-01
0inner radius             =  .000000E+00       dancoff correction (c)  = 3.425926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995           sigma(per absorber atom)= 5.026765E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051           sigma(per absorber atom)= 5.391811E+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     -4.315571E-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  = 4.264787E-09
0spin factor (g)          = 82052.602          lump dimension (a-bar)  = 4.681220E-01
0inner radius             =  .000000E+00       dancoff correction (c)  = 3.425926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995           sigma(per absorber atom)= 4.003943E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051           sigma(per absorber atom)= 4.294754E+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  = 1.646575E-10
0spin factor (g)          = 5251.150          lump dimension (a-bar)  = 4.681220E-01
0inner radius             =  .000000E+00       dancoff correction (c)  = 3.425926E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995           sigma(per absorber atom)= 1.037059E+09
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051           sigma(per absorber atom)= 1.112392E+09
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
```

INFORMATION ONLY

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	8.386877E-02	5.017790E-03	1.583305E-02

0excess resonance integrals

0	resolved
0absorption	6.139013E+02
fission	3.542211E+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 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

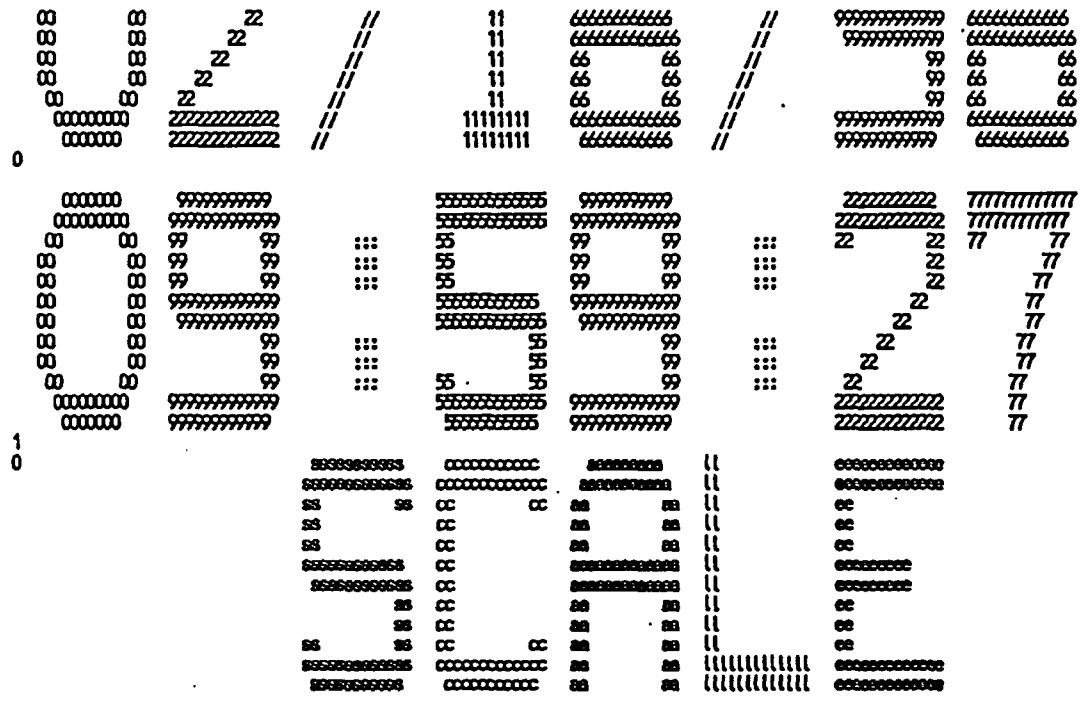
table of contents

1/v cross sections normalized to 1.0 at 0.0253 ev			id	999
hydrogen	endf/b-iv mat 1269/thrm1002	updated 10/13/89	id	1001
b-10 1273 218gp 042575 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

INFORMATION ONLY

```
      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 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 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  ssssssssss  dddddddddd  rrrrrrrrrr  m       m  pppppppppp  mm       mm
  xx       xx  ssssssssssss 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  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     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      m m  pp          mm         mm
    xx    xx   ss       ss  dd      dd  rr      rr  m       mm  pp          mm         mm
  xx       xx  ssssssssssss dddddddddd  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
 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        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
 dddddddddd  aa      aa       ww     iiiiiiiiiiii   ssssssssssss
 dddddddddd  aa      aa        v     iiiiiiiiiiii    ssssssssss
0

   0000000     22222222222          //      11      666666666666          //  99999999999   666666666666
  000000000    22222222222          //     111      6666666666666         //  9999999999999  6666666666666
 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



program verification information

code system: scale version: 4.2

program: a0c001

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
 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--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      id1  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
 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 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/sc/a           0      nusf table length or max order         4
 ipp  -2/-1/0/n=wgted xsect print       -2      msom 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
```

INFORMATION ONLY

INFORMATION ONLY

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	mixing table mixture	component	atom density	extra xsect id's
	1	999		1	92235	5.40480E-04	
	2	1001		1	92234	5.06736E-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	4.40388E-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	2.48433E-06	
	40	60145		1	61148	6.82848E-09	
	41	60147		1	60147	1.32716E-07	
	42	61147		1	62147	3.65893E-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	8.48004E-07	
	47	62151		1	64155	7.98151E-10	
	48	62152		1	63153	3.95052E-07	
	49	63153		1	63154	4.62875E-08	
	50	63154		1	63155	5.11217E-08	
	51	63155		2	40802	4.25156E-02	

INFORMATION ONLY

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	9237	1.23726E-06
57	9237	1	9238	7.99718E-08
58	9238	1	9239	6.54028E-05
59	9239	1	9240	7.15776E-06
60	9240	1	9241	2.50935E-06
61	9241	1	9242	1.17254E-07
62	9242	1	9241	3.39704E-08
63	9241	1	9243	4.26479E-09
64	9243	1	9244	1.64658E-10
65	9244	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, 3.00w%, 20gd/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	4.40685E-01	2.89737E+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	1.70844E+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	9.99998E-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	1.87285E+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, 3.00w%, 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

INFORMATION ONLY

3	2	3		5.06143E-02	1.97285E-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	-2.20195E-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				4.53365E-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

Constants for p(3) scattering

angl	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	-1.97285E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97285E-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	5.42852E-01	-1.91694E-01	-3.44265E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44264E-01
12	-2.20195E-01	-8.57235E-02	-5.42852E-01	-5.13643E-02	3.44265E-01
13	2.20195E-01	-8.57235E-02	-5.42852E-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	5.42852E-01	1.91694E-01	3.44265E-01
16	-9.83052E-01	-4.49528E-01	8.36886E-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	3.20952E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20952E-01	2.78178E-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	-2.78178E-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	6.24438E-01

1 int

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	9.48518E-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	2.22345E+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		

INFORMATION ONLY

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	3.06325E+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	5.53613E-01	4	3.43125E+00	5.15631E-02	1.00000E+00
18	5.60928E-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	7.63883E-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.

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-05	.00000E+00	.0000
3	273	1.62259E-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	nsf int.	max. scale factor	coarse mesh
1	1	1	1	3.80860E-08	2x	1.00000E+00	1
2	2	1	1	4.46907E-08	2x	1.00000E+00	1
3	3	1	1	4.10994E-08	2x	1.00000E+00	1
4	4	1	1	3.97392E-08	2x	1.00000E+00	1
5	5	1	1	4.12062E-08	2x	1.00000E+00	1
6	6	1	1	2.63373E-08	2x	1.00000E+00	1
7	7	1	1	1.85585E-08	2x	1.00000E+00	1
8	8	1	1	4.40921E-09	2x	1.00000E+00	1
9	9	1	2	2.34214E-09	2x	1.00000E+00	1
10	10	1	1	2.37749E-09	2x	1.00000E+00	1
11	11	1	1	2.63404E-09	2x	1.00000E+00	1
12	12	1	24	4.39035E-09	2x	1.00000E+00	1
13	13	1	24	5.87595E-09	2x	1.00000E+00	1
14	14	1	24	5.61334E-09	2x	1.00000E+00	1
15	15	1	24	4.08695E-05	2x	9.99977E-01	1
16	16	1	24	5.07017E-05	2x	9.99983E-01	1
17	17	1	18	1.82136E-05	2x	9.99956E-01	1
18	18	1	18	2.09272E-05	2x	9.99955E-01	1
19	19	1	18	1.73670E-05	2x	9.99951E-01	1
20	20	1	24	5.16144E-05	2x	9.99965E-01	1
21	21	1	18	2.48156E-05	2x	9.99938E-01	1
22	22	1	24	4.66957E-05	2x	9.99980E-01	1
23	23	1	24	2.32620E-06	2x	1.00000E+00	1
24	24	1	24	1.39544E-05	2x	1.00001E+00	1
25	25	1	24	1.72744E-05	2x	1.00000E+00	1
26	26	1	1	1.01266E-05	2x	9.99997E-01	2
27	27	1	2	4.45654E-06	2x	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/htu 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	9.48518E-03	1.46266E-02
3	1	6.07710E-02	8.75100E-02	3.81839E-01	2.94045E-02	4.53365E-02

INFORMATION ONLY

4	1	1.14246E-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	2.22546E+00	1.27890E-01	2.09003E-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	1.25603E-01
9	2	4.68122E-01	4.68814E-01	2.94130E+00	4.09946E-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	1.17988E-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	3.06525E+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	7.63897E-01	4.70354E+00	1.46875E-01	.00000E+00
23	4	7.79198E-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, 3.00wt%, 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	1.67763E+00	1.04071E+00	1.57532E+00	3.03095E+00	2.95628E+00	2.08005E+00
2	1.75177E-01	1.32267E+00	1.67826E+00	1.04121E+00	1.57602E+00	3.03223E+00	2.95694E+00	2.08012E+00
3	1.75120E-01	1.32205E+00	1.67748E+00	1.04073E+00	1.57523E+00	3.03062E+00	2.95497E+00	2.07992E+00
4	1.74725E-01	1.31778E+00	1.67201E+00	1.03740E+00	1.56972E+00	3.02000E+00	2.84857E+00	2.07857E+00
5	1.73002E-01	1.30685E+00	1.66814E+00	1.02858E+00	1.55460E+00	2.99408E+00	2.88258E+00	2.07627E+00
6	1.72524E-01	1.29435E+00	1.64253E+00	1.01938E+00	1.54181E+00	2.96549E+00	2.85599E+00	2.07339E+00
7	1.71586E-01	1.28464E+00	1.63050E+00	1.01242E+00	1.53069E+00	2.94444E+00	2.85395E+00	2.07122E+00
8	1.70655E-01	1.27515E+00	1.61897E+00	1.00567E+00	1.52084E+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	2.83664E+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	1.60976E+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	1.25963E+00	1.59987E+00	9.94677E-01	1.50393E+00	2.89452E+00	2.82484E+00	2.06601E+00
15	1.68494E-01	1.25310E+00	1.59144E+00	9.88560E-01	1.49553E+00	2.87786E+00	2.81524E+00	2.06388E+00
16	1.68210E-01	1.24960E+00	1.58648E+00	9.85830E-01	1.49080E+00	2.86630E+00	2.80852E+00	2.06437E+00
17	1.68073E-01	1.24799E+00	1.58337E+00	9.83560E-01	1.48882E+00	2.85834E+00	2.80388E+00	2.06423E+00
18	1.67894E-01	1.24495E+00	1.57988E+00	9.80585E-01	1.48078E+00	2.84836E+00	2.79777E+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	1.23950E+00	1.56890E+00	9.73009E-01	1.46799E+00	2.82533E+00	2.78525E+00	2.06353E+00
21	1.67165E-01	1.23611E+00	1.56447E+00	9.70025E-01	1.46296E+00	2.81351E+00	2.77755E+00	2.06344E+00
22	1.67165E-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	1.46562E+00	2.81479E+00	2.77857E+00	2.06395E+00
24	1.67329E-01	1.23685E+00	1.56697E+00	9.71370E-01	1.46508E+00	2.81765E+00	2.78057E+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	1.30134E+00	7.94800E-01	6.71758E-01	5.90036E-01	3.71152E-01	2.05765E-01
2	1.58614E+00	1.44461E+00	1.30125E+00	7.94668E-01	6.71548E-01	5.90650E-01	3.71122E-01	2.05744E-01
3	1.58633E+00	1.44482E+00	1.30172E+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	6.74986E-01	5.95154E-01	3.71615E-01	2.06025E-01
5	1.58997E+00	1.44900E+00	1.31289E+00	8.05783E-01	6.80263E-01	6.04634E-01	3.72622E-01	2.06610E-01
6	1.59287E+00	1.45239E+00	1.32002E+00	8.14143E-01	6.85975E-01	6.15124E-01	3.73705E-01	2.07248E-01
7	1.59500E+00	1.45481E+00	1.32527E+00	8.20540E-01	6.91165E-01	6.22945E-01	3.74485E-01	2.07713E-01
8	1.59715E+00	1.45701E+00	1.33006E+00	8.26130E-01	6.97922E-01	6.30163E-01	3.75181E-01	2.08134E-01
9	1.59829E+00	1.45815E+00	1.33253E+00	8.28986E-01	7.00395E-01	6.33914E-01	3.75539E-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

INFORMATION ONLY

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	1.59883E+00	1.45877E+00	1.33387E+00	8.30681E-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	1.46034E+00	1.33700E+00	8.34283E-01	7.04905E-01	6.40612E-01	3.76221E-01	2.08775E-01
15	1.60148E+00	1.46188E+00	1.34040E+00	8.38154E-01	7.08205E-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	7.11865E-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	1.46698E+00	1.34915E+00	8.47885E-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	8.54185E-01	7.21531E-01	6.65525E-01	3.78162E-01	2.10135E-01
22	1.60472E+00	1.46875E+00	1.35501E+00	8.54414E-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	7.21057E-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	4.41026E-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	1.17705E-01	2.07207E-01	7.26784E-01	5.24641E-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	4.42288E-01	1.18868E-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	5.44753E-01
6	8.81803E-02	5.79073E-02	1.34458E-01	4.48175E-01	1.23952E-01	2.25724E-01	7.64055E-01	5.60533E-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	8.93988E-02	6.18375E-02	1.36521E-01	4.53583E-01	1.28783E-01	2.40525E-01	7.92603E-01	5.88176E-01
10	8.94397E-02	6.19543E-02	1.36587E-01	4.53762E-01	1.28955E-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	5.90208E-01
12	8.95347E-02	6.22300E-02	1.36745E-01	4.54188E-01	1.29290E-01	2.42001E-01	7.95563E-01	5.90970E-01
13	8.96115E-02	6.24500E-02	1.36872E-01	4.54520E-01	1.29576E-01	2.42851E-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	8.09889E-01	6.03822E-01
16	9.03938E-02	6.46474E-02	1.38199E-01	4.57949E-01	1.32484E-01	2.51131E-01	8.13814E-01	6.07819E-01
17	9.05475E-02	6.50908E-02	1.38461E-01	4.58609E-01	1.33049E-01	2.52865E-01	8.17473E-01	6.11478E-01
18	9.07569E-02	6.57088E-02	1.38813E-01	4.59509E-01	1.33852E-01	2.55344E-01	8.22927E-01	6.17288E-01
19	9.09985E-02	6.64198E-02	1.39220E-01	4.60653E-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	2.66665E-01	8.44652E-01	6.40871E-01
22	9.15380E-02	6.80515E-02	1.40125E-01	4.62874E-01	1.37248E-01	2.66978E-01	8.45642E-01	6.42259E-01
23	9.14775E-02	6.78980E-02	1.40019E-01	4.62589E-01	1.37051E-01	2.66346E-01	8.44340E-01	6.41098E-01
24	9.14045E-02	6.77041E-02	1.39882E-01	4.62251E-01	1.36756E-01	2.65568E-01	8.42618E-01	6.39445E-01

0 int.	grp. 25	grp. 26	grp. 27
1	2.16177E-01	1.30156E-01	1.68247E-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	1.33234E-01	1.77167E-02
5	2.26662E-01	1.39805E-01	1.95694E-02
6	2.34528E-01	1.47266E-01	2.17378E-02
7	2.40648E-01	1.52954E-01	2.34877E-02
8	2.46178E-01	1.58568E-01	2.52294E-02
9	2.49120E-01	1.61213E-01	2.61617E-02
10	2.49546E-01	1.61596E-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	1.69697E-01	2.84318E-02
17	2.60644E-01	1.71616E-01	2.90686E-02
18	2.63760E-01	1.74960E-01	3.00029E-02
19	2.69568E-01	1.79025E-01	3.15437E-02
20	2.72740E-01	1.84659E-01	3.33080E-02

INFORMATION ONLY

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	2.60758E-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	4.44888E-03	1.33500E-01	9.99992E-01
6	.00000E+00	1.78574E-01	1.34568E-01	6.53782E-01	5.44055E-02	7.04574E-03	2.51482E-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	1.40834E-02	2.06706E-02	1.00004E+00
9	.00000E+00	9.88735E-04	2.17113E-02	5.35049E-01	2.06561E-02	2.31899E-02	-2.11456E-02	9.99991E-01
10	.00000E+00	7.34111E-05	2.06780E-02	4.59547E-01	1.06795E-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	9.99959E-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	1.51885E-01	7.45442E-03	8.08620E-02	-8.21511E-02	1.00000E+00
15	.00000E+00	1.44343E-09	7.54253E-03	8.50857E-02	8.92281E-03	6.68092E-03	-8.09078E-03	1.00190E+00
16	.00000E+00	4.23842E-10	9.07568E-03	4.31122E-02	9.67680E-03	4.51264E-03	-5.11394E-03	1.00146E+00
17	.00000E+00	1.36498E-10	7.83887E-03	1.48801E-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	1.05606E-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	2.18035E-02	-2.11760E-02	1.00056E+00
22	.00000E+00	3.81541E-11	1.27653E-02	4.69140E-02	1.05478E-02	3.34035E-02	-6.11984E-02	1.00023E+00
23	.00000E+00	3.64798E-11	1.57917E-02	1.77040E-01	1.94305E-02	1.23766E-01	-1.27468E-01	1.00042E+00
24	.00000E+00	9.92928E-12	2.34777E-02	1.20853E-01	2.33514E-02	1.22645E-01	-1.22564E-01	1.00080E+00
25	.00000E+00	2.90664E-12	1.99277E-02	4.55053E-02	1.49592E-02	6.73957E-02	-6.24338E-02	1.00022E+00
26	.00000E+00	2.08815E-12	9.74403E-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	-1.59088E-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	rdn rate	fiss rate	flux*dv**2	total flux
1	1.70174E-01	1.09607E-02	1.75054E-01	.00000E+00	2.23497E-03	2.60459E-03	.00000E+00	1.19208E-01
2	1.27029E+00	1.14487E-01	1.32142E+00	.00000E+00	1.73374E-03	1.18240E-02	.00000E+00	8.95746E-01
3	1.61311E+00	1.44988E-01	1.67652E+00	.00000E+00	.00000E+00	1.45429E-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	2.83678E+00	1.42763E-01	2.90654E+00	.00000E+00	.00000E+00	1.62640E-03	.00000E+00	1.97980E+00
8	2.06815E+00	2.06705E-02	2.07998E+00	.00000E+00	.00000E+00	1.67775E-03	.00000E+00	1.42652E+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	1.33243E+00	-5.58644E-02	1.30372E+00	.00000E+00	.00000E+00	1.01361E-02	.00000E+00	9.05947E-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	4.70885E-01
14	6.33755E-01	-8.21511E-02	5.91297E-01	.00000E+00	.00000E+00	8.78188E-03	.00000E+00	4.19398E-01
15	3.75527E-01	-8.09078E-03	3.71197E-01	.00000E+00	.00000E+00	2.20574E-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	1.42628E-01
17	8.93508E-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	1.36508E-01	-9.40708E-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	-1.27468E-01	7.27752E-01	.00000E+00	.00000E+00	8.00368E-02	.00000E+00	5.19795E-01
24	5.87945E-01	-1.22564E-01	5.25378E-01	.00000E+00	.00000E+00	7.97521E-02	.00000E+00	3.79811E-01

INFORMATION ONLY

25	2.49004E-01	-6.24438E-02	2.16400E-01	.00000E+00	.00000E+00	4.57852E-02	.00000E+00	1.58999E-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	1.48656E-02	.00000E+00	.00000E+00	1.18066E-02	.00000E+00	1.41831E-02
28	2.34541E+01	6.39951E-02	2.34271E+01	.00000E+00	2.25290E-03	4.35177E-01	.00000E+00	1.61385E+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	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	-6.33299E-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	1.09606E-02	1.70174E-01	1.09607E-02	.00000E+00	.00000E+00	.00000E+00	5.39883E-03
2	1.26626E+00	1.14487E-01	1.27029E+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	9.99390E-01	8.76831E-02	1.00226E+00	8.76851E-02	.00000E+00	.00000E+00	.00000E+00	3.17635E-02
5	1.51133E+00	1.33502E-01	1.51514E+00	1.33502E-01	.00000E+00	.00000E+00	.00000E+00	4.80215E-02
6	2.90889E+00	2.51482E-01	2.91569E+00	2.51482E-01	.00000E+00	.00000E+00	.00000E+00	9.24181E-02
7	2.85299E+00	1.42763E-01	2.86976E+00	1.42763E-01	.00000E+00	.00000E+00	.00000E+00	8.99634E-02
8	2.06739E+00	2.05705E-02	2.06815E+00	2.05705E-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	4.23099E-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	-5.52508E-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	2.08497E-01	-5.11592E-03	2.08346E-01	-5.11592E-03	.00000E+00	.00000E+00	.00000E+00	6.61423E-03
17	8.95471E-02	-5.58201E-03	8.95908E-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	1.98878E-03
19	1.36766E-01	-9.40705E-03	1.36508E-01	-9.40705E-03	.00000E+00	.00000E+00	.00000E+00	4.33614E-03
20	4.54255E-01	-2.47475E-02	4.53547E-01	-2.47475E-02	.00000E+00	.00000E+00	.00000E+00	1.44043E-02
21	1.28532E-01	-2.11760E-02	1.28750E-01	-2.11760E-02	.00000E+00	.00000E+00	.00000E+00	4.05518E-03
22	2.42103E-01	-6.11984E-02	2.40402E-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

INFORMATION ONLY

26	1.62576E-01	-5.76195E-02	1.61100E-01	-5.76195E-02	.00000E+00	.00000E+00	.00000E+00	5.13686E-03
27	2.65416E-02	-1.59038E-02	2.61330E-02	-1.59038E-02	.00000E+00	.00000E+00	.00000E+00	8.36021E-04
28	2.34469E+01	6.39932E-02	2.34541E+01	6.39931E-02	.00000E+00	.00000E+00	.00000E+00	7.44253E-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	3.74152E-03	2.80474E-03	1.43732E-05	-2.71906E-03	1.00001E+00
2	.00000E+00	.00000E+00	4.88842E-04	2.58014E-02	1.85137E-02	5.12586E-05	-1.80754E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.62886E-03	5.00266E-02	1.58179E-02	1.36826E-04	-1.33248E-02	9.99993E-01
4	.00000E+00	.00000E+00	5.11053E-03	4.20485E-02	5.44442E-03	1.08225E-04	-4.36708E-04	9.99996E-01
5	.00000E+00	.00000E+00	1.10180E-02	8.15850E-02	5.15964E-03	1.51991E-04	5.70606E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.84231E-02	2.34978E-01	3.21046E-03	3.19974E-04	1.48927E-02	1.00000E+00
7	.00000E+00	.00000E+00	1.22704E-02	2.35139E-01	1.18193E-03	3.44682E-04	1.07440E-02	9.99999E-01
8	.00000E+00	.00000E+00	2.15752E-03	1.58514E-01	7.63277E-03	2.94795E-04	-5.77069E-03	1.00002E+00
9	.00000E+00	.00000E+00	7.66897E-03	1.05152E-01	8.78556E-04	1.10880E-03	5.68073E-03	9.99995E-01
10	.00000E+00	.00000E+00	8.77730E-04	8.55144E-02	8.48652E-04	8.35100E-04	-8.05790E-04	9.99999E-01
11	.00000E+00	.00000E+00	8.48513E-04	7.69778E-02	8.69351E-04	1.33668E-03	-1.35650E-03	1.00000E+00
12	.00000E+00	.00000E+00	8.69357E-04	4.67526E-02	8.69815E-04	4.16252E-05	-4.21554E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.69817E-04	3.95207E-02	8.06194E-04	6.00038E-05	3.62098E-06	1.00000E+00
14	.00000E+00	.00000E+00	8.06195E-04	3.66606E-02	6.79566E-04	9.60480E-05	3.06027E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.25794E-04	2.06732E-02	8.46087E-04	8.30211E-05	-2.04784E-04	9.99941E-01
16	.00000E+00	.00000E+00	9.47810E-04	1.09843E-02	9.51590E-04	5.17606E-05	-5.51790E-05	9.99941E-01
17	.00000E+00	.00000E+00	1.03311E-03	4.12690E-03	1.01585E-03	2.48515E-05	-7.62660E-06	9.99994E-01
18	.00000E+00	.00000E+00	1.06906E-03	2.74686E-03	8.86957E-04	1.88105E-05	1.63304E-04	9.99999E-01
19	.00000E+00	.00000E+00	9.19272E-04	6.84829E-03	1.01040E-03	4.43675E-05	-1.35426E-04	9.99995E-01
20	.00000E+00	.00000E+00	1.21060E-03	2.50165E-02	1.06307E-03	1.85918E-04	-3.75081E-05	9.99966E-01
21	.00000E+00	.00000E+00	1.34875E-03	6.06549E-03	1.44405E-03	6.66027E-05	-1.61819E-04	9.99997E-01
22	.00000E+00	.00000E+00	1.82261E-03	1.24574E-02	1.66482E-03	1.45151E-04	1.28821E-05	9.99995E-01
23	.00000E+00	.00000E+00	2.41147E-03	4.28920E-02	3.14899E-03	6.49560E-04	-1.38707E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.85957E-03	3.01764E-02	4.14126E-03	7.02548E-04	-9.84915E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.72885E-03	1.16002E-02	2.98574E-03	3.94554E-04	3.48464E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.55394E-03	8.41259E-03	1.11172E-03	3.67335E-04	7.48334E-05	1.00000E+00
27	.00000E+00	.00000E+00	3.22360E-04	1.57856E-03	8.13744E-07	1.15516E-04	2.06027E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.48869E-02	1.40536E+00	8.49869E-02	7.74487E-03	-7.64218E-03	9.99981E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r0n rate	fiss rate	flux*df**2	total flux
1	1.68154E-01	8.24158E-03	1.69758E-01	1.09606E-02	1.00211E-04	.00000E+00	.00000E+00	3.66825E-02
2	1.24880E+00	9.64112E-02	1.26624E+00	1.14487E-01	.00000E+00	.00000E+00	.00000E+00	2.72274E-01
3	1.58525E+00	1.31664E-01	1.60890E+00	1.44888E-01	.00000E+00	.00000E+00	.00000E+00	3.45814E-01
4	9.84981E-01	8.72464E-02	9.99590E-01	8.76831E-02	.00000E+00	.00000E+00	.00000E+00	2.14774E-01
5	1.48825E+00	1.39208E-01	1.51033E+00	1.33508E-01	.00000E+00	.00000E+00	.00000E+00	3.24981E-01
6	2.86319E+00	2.66375E-01	2.90884E+00	2.54482E-01	.00000E+00	.00000E+00	.00000E+00	6.25408E-01
7	2.80668E+00	1.53607E-01	2.85259E+00	1.42763E-01	.00000E+00	.00000E+00	.00000E+00	6.11107E-01
8	2.05427E+00	1.48999E-02	2.06738E+00	2.06708E-02	.00000E+00	.00000E+00	.00000E+00	4.47640E-01
9	1.60213E+00	-1.54648E-02	1.59808E+00	-2.11456E-02	.00000E+00	.00000E+00	.00000E+00	3.46948E-01
10	1.46317E+00	-2.67472E-02	1.45881E+00	-2.59414E-02	.00000E+00	.00000E+00	.00000E+00	3.16648E-01
11	1.34321E+00	-5.72209E-02	1.33396E+00	-5.58644E-02	.00000E+00	.00000E+00	.00000E+00	2.90144E-01
12	8.41297E-01	-6.51325E-02	8.30697E-01	-6.50004E-02	.00000E+00	.00000E+00	.00000E+00	1.81242E-01
13	7.10886E-01	-5.52472E-02	7.01865E-01	-5.52508E-02	.00000E+00	.00000E+00	.00000E+00	1.53140E-01
14	6.49463E-01	-8.21206E-02	6.36066E-01	-8.21510E-02	.00000E+00	.00000E+00	.00000E+00	1.39883E-01
15	3.77182E-01	-8.29558E-03	3.75758E-01	-8.09079E-03	.00000E+00	.00000E+00	.00000E+00	8.15947E-02
16	2.09336E-01	-5.16910E-03	2.08491E-01	-5.11358E-03	.00000E+00	.00000E+00	.00000E+00	4.52811E-02
17	9.06515E-02	-5.58864E-03	8.95471E-02	-5.58207E-03	.00000E+00	.00000E+00	.00000E+00	1.95079E-02
18	6.47998E-02	-1.56238E-02	6.22592E-02	-1.57877E-02	.00000E+00	.00000E+00	.00000E+00	1.37854E-02
19	1.38259E-01	-9.54265E-03	1.36766E-01	-9.40708E-03	.00000E+00	.00000E+00	.00000E+00	2.98133E-02
20	4.58198E-01	-2.47850E-02	4.54286E-01	-2.47475E-02	.00000E+00	.00000E+00	.00000E+00	9.88956E-02
21	1.32694E-01	-2.13578E-02	1.28332E-01	-2.11760E-02	.00000E+00	.00000E+00	.00000E+00	2.84128E-02
22	2.51697E-01	-6.11855E-02	2.42108E-01	-6.11984E-02	.00000E+00	.00000E+00	.00000E+00	5.35756E-02
23	8.14988E-01	-1.28652E-01	7.95748E-01	-1.27496E-01	.00000E+00	.00000E+00	.00000E+00	1.74674E-01
24	6.08804E-01	-1.23544E-01	5.91151E-01	-1.22564E-01	.00000E+00	.00000E+00	.00000E+00	1.30177E-01
25	2.59214E-01	-6.20953E-02	2.50636E-01	-6.24438E-02	.00000E+00	.00000E+00	.00000E+00	5.53362E-02
26	1.70078E-01	-5.75446E-02	1.62576E-01	-5.76195E-02	.00000E+00	.00000E+00	.00000E+00	3.61525E-02

INFORMATION ONLY

27	2.85232E-02	-1.56978E-02	2.65416E-02	-1.59038E-02	.00000E+00	.00000E+00	.00000E+00	5.99467E-03
28	2.34259E+01	5.63513E-02	2.34199E+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	7.88498E-03	4.17035E-04	-8.24157E-03	9.99949E-01
2	.00000E+00	.00000E+00	4.48981E-03	7.59598E-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	-1.31665E-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	1.29608E-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	-1.53607E-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	9.99898E-01
11	.00000E+00	.00000E+00	6.99883E-01	8.04457E-01	6.42267E-01	4.56830E-04	5.72210E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.59151E-01	4.19864E-01	4.95433E-01	5.96705E-04	6.51325E-02	9.99979E-01
13	.00000E+00	.00000E+00	4.88977E-01	3.37852E-01	4.33347E-01	8.97357E-04	5.52472E-02	9.99970E-01
14	.00000E+00	.00000E+00	4.70026E-01	3.23600E-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	8.62618E-02	1.54188E-02	8.02224E-02	4.30679E-04	5.58695E-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	1.46277E-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	2.78631E-01	6.96414E-03	5.75428E-02	1.00001E+00
27	.00000E+00	.00000E+00	1.13989E-01	6.29167E-02	9.58472E-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	-5.65700E-02	9.99988E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*adj**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	-1.85576E-08	2.85315E+00	2.66575E-01	.00000E+00	.00000E+00	.00000E+00	3.23071E+00
7	2.78133E+00	1.01439E-07	2.80668E+00	1.53607E-01	.00000E+00	.00000E+00	.00000E+00	3.18526E+00
8	2.06435E+00	4.71046E-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	3.97159E-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	8.52463E-01	-4.70633E-08	8.41297E-01	-6.51325E-02	.00000E+00	.00000E+00	.00000E+00	9.74828E-01
13	7.19952E-01	-9.27500E-09	7.10888E-01	-5.52472E-02	.00000E+00	.00000E+00	.00000E+00	8.23472E-01
14	6.62269E-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	-8.26558E-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	1.38329E-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	1.55998E-01
22	2.63122E-01	2.64454E-06	2.51607E-01	-6.11866E-02	.00000E+00	.00000E+00	.00000E+00	3.00882E-01
23	8.41693E-01	-5.58063E-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

INFORMATION ONLY

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	2.10325E-02	3.60903E-03	9.51706E-09	9.98826E-01	
2	.00000E+00	1.91850E-01	7.27557E-03	2.67948E-01	1.84634E-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	1.57085E-02	3.61414E-08	9.99985E-01	
4	.00000E+00	1.24085E-01	1.14020E-01	1.99300E-01	2.30566E-01	7.53892E-03	3.75537E-08	1.00000E+00	
5	.00000E+00	1.64899E-01	2.08942E-01	4.88521E-01	3.68741E-01	4.60445E-03	5.86933E-08	9.99989E-01	
6	.00000E+00	1.78374E-01	4.27561E-01	1.34390E+00	5.98550E-01	7.37721E-03	-1.80576E-08	1.00001E+00	
7	.00000E+00	8.83271E-02	6.63086E-01	1.77534E+00	7.43414E-01	8.00577E-03	1.01438E-07	9.99989E-01	
8	.00000E+00	1.36205E-02	7.80003E-01	1.78978E+00	7.78513E-01	1.43741E-02	4.74046E-08	9.99901E-01	
9	.00000E+00	9.88735E-04	7.69859E-01	1.55672E+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	3.70548E-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	6.45025E-02	-4.70533E-08	9.99974E-01	
13	.00000E+00	6.44511E-08	4.99603E-01	5.54034E-01	4.40209E-01	5.94085E-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	2.38080E-01	2.51944E-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	2.40588E-02	6.70858E-02	1.78893E-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	2.26774E-10	3.21742E-01	3.79767E-01	2.92864E-01	2.88523E-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	3.85364E-01	7.49903E-02	-8.85322E-07	1.00004E+00	
26	.00000E+00	2.03815E-12	3.54258E-01	3.41285E-01	2.86222E-01	6.80043E-02	-2.05815E-06	1.00004E+00	
27	.00000E+00	4.85702E-13	1.16352E-01	6.91476E-02	9.69772E-02	1.93729E-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*dv**2	total flux	
1	1.67374E-01	9.51706E-09	1.75064E-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	1.18340E-02	.00000E+00	2.62479E+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	1.46884E+00	5.84933E-08	1.57460E+00	.00000E+00	.00000E+00	1.83944E-03	.00000E+00	3.11997E+00	
6	2.81914E+00	-1.80576E-08	3.02557E+00	.00000E+00	.00000E+00	1.62739E-03	.00000E+00	6.00132E+00	
7	2.78133E+00	1.01438E-07	2.90564E+00	.00000E+00	.00000E+00	1.62640E-03	.00000E+00	5.86612E+00	
8	2.06436E+00	4.74046E-08	2.07996E+00	.00000E+00	.00000E+00	1.67775E-03	.00000E+00	4.30877E+00	
9	1.60426E+00	1.44253E-07	1.59631E+00	.00000E+00	.00000E+00	2.28580E-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	8.52453E-01	-4.70533E-08	7.95094E-01	.00000E+00	.00000E+00	1.31558E-02	.00000E+00	1.73968E+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	2.00834E-03	.00000E+00	1.87304E-01	
18	6.76043E-02	-3.45730E-06	5.32102E-02	.00000E+00	.00000E+00	2.00612E-03	.00000E+00	1.31949E-01	
19	1.39831E-01	-5.72888E-06	1.31752E-01	.00000E+00	.00000E+00	3.19801E-03	.00000E+00	2.86198E-01	
20	4.62087E-01	2.19781E-06	4.41158E-01	.00000E+00	.00000E+00	1.65072E-02	.00000E+00	9.49316E-01	
21	1.36618E-01	-8.18188E-06	1.17877E-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	8.00568E-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	2.75942E-01	-8.85322E-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	1.18066E-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	

INFORMATION ONLY

- 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	3.84868E-02	4.87395E-02	2.94756E-02	4.48780E-02	8.45388E-02	4.79912E-02	6.94868E-03
3	2.99390E-03	3.28340E-02	4.30313E-02	2.71787E-02	4.23465E-02	8.03880E-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	1.92834E-02	1.99253E-03
5	1.71392E-03	1.88345E-02	2.47151E-02	1.56028E-02	2.43366E-02	4.64580E-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	4.75259E-03	5.81259E-03	1.24864E-02	1.44916E-02	1.29077E-02	1.81939E-02	1.85083E-03	1.14541E-03
2	7.10833E-03	8.72014E-03	1.87794E-02	2.18808E-02	1.85752E-02	2.76159E-02	2.71997E-03	1.71908E-03
3	5.71089E-03	8.18239E-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	1.03634E-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	5.53686E-03	4.65845E-03	1.33223E-02	2.81858E-02	2.69234E-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	2.77655E-03	1.71774E-03	4.48411E-03	3.79719E-03	1.08898E-02	2.31125E-02	2.21147E-02

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.36428E-02	1.24030E-02	3.25945E-03	3.84827E-01
2	2.09914E-02	1.93698E-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	1.11589E-02	1.01850E-02	2.66043E-03	3.12590E-01

1 400 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	1.73149E-01	1.30112E+00	1.65109E+00	1.02680E+00	1.50011E+00	2.98179E+00	2.87576E+00	2.07500E+00
2	1.69263E-01	1.26825E+00	1.61068E+00	1.00089E+00	1.51319E+00	2.91216E+00	2.85481E+00	2.06776E+00
3	1.68800E-01	1.25632E+00	1.59568E+00	9.91904E-01	1.49952E+00	2.88571E+00	2.81975E+00	2.06548E+00
4	1.67370E-01	1.23781E+00	1.56870E+00	9.72852E-01	1.46767E+00	2.82272E+00	2.76300E+00	2.05570E+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	1.45046E+00	1.31594E+00	8.08928E-01	6.83988E-01	6.09198E-01	3.73073E-01	2.08881E-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	3.76498E-01	2.08934E-01
4	1.60414E+00	1.46760E+00	1.35259E+00	8.51721E-01	7.19475E-01	6.62442E-01	3.77944E-01	2.09771E-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	1.22625E-01	2.21282E-01	7.35026E-01	5.51696E-01
2	8.94680E-02	6.21876E-02	1.36686E-01	4.53889E-01	1.25042E-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	6.00567E-01
4	9.13165E-02	6.73765E-02	1.39753E-01	4.61904E-01	1.36296E-01	2.62186E-01	8.38920E-01	6.34726E-01
5	8.99875E-02	6.33952E-02	1.37495E-01	4.56086E-01	1.31058E-01	2.46779E-01	8.07058E-01	6.03088E-01

0zone	grp. 25	grp. 26	grp. 27
1	2.30083E-01	1.43152E-01	2.06017E-02
2	2.48847E-01	1.61866E-01	2.63436E-02
3	2.55330E-01	1.66721E-01	2.76604E-02
4	2.73501E-01	1.85517E-01	3.36451E-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	1.00291E+00	1.00562E+00	1.00704E+00	1.00852E+00	1.00950E+00	1.01003E+00	1.00586E+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	9.68425E-01	9.68653E-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	9.98654E-01	9.98094E-01
3	1.00089E+00	9.99960E-01	1.00003E+00	1.00060E+00	1.00070E+00	1.00114E+00	1.00092E+00	1.00056E+00
4	1.00293E+00	1.00143E+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	9.95718E-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	9.96068E-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	9.72593E-01	9.56730E-01	9.21219E-01
3	9.98589E-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	2.92078E-02	5.58110E-02	3.17882E-02	4.62073E-03
2	3.68653E-03	3.84858E-02	4.87392E-02	2.94756E-02	4.48780E-02	8.45382E-02	4.79912E-02	6.94858E-03
3	2.99390E-03	3.26340E-02	4.30313E-02	2.71787E-02	4.25468E-02	8.05980E-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	2.43346E-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	1.87784E-02	2.18800E-02	1.85732E-02	2.76159E-02	2.71977E-03	1.71908E-03
3	5.71088E-03	8.18257E-03	1.75682E-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	8.12566E-03	6.98056E-03	1.02636E-02	1.11012E-03	6.68388E-04
5	3.31430E-03	4.73851E-03	1.01667E-02	1.17014E-02	9.95242E-03	1.47398E-02	1.52246E-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	3.40662E-03	2.11873E-03	5.53685E-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	7.11814E-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	2.65568E-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	1.24000E-02	3.25945E-03
2	2.09914E-02	1.93696E-02	5.34630E-03
3	1.93504E-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

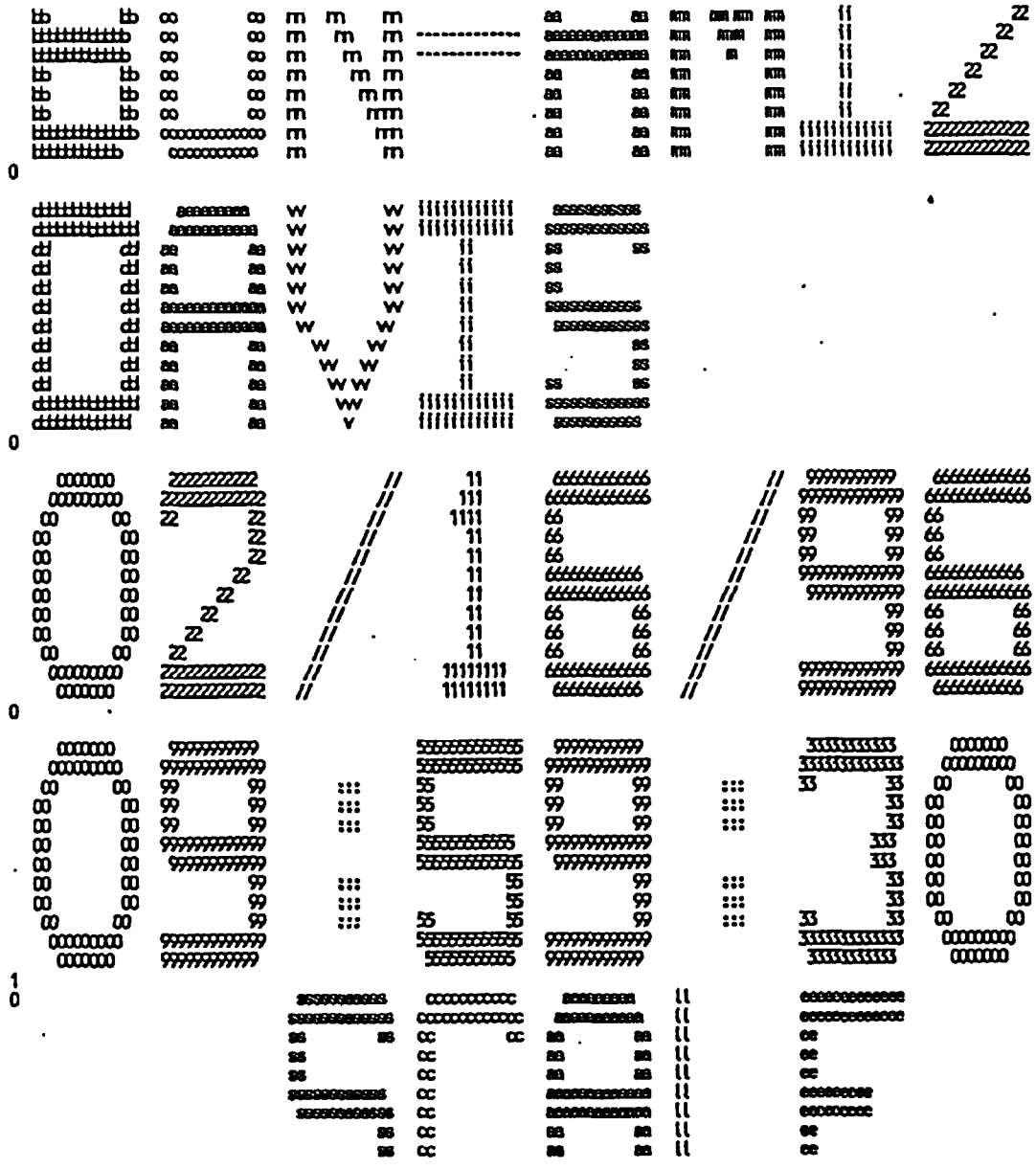
Ozone	volume	vol. fraction
1	6.88443E-01	3.30753E-01
2	3.17352E-02	1.52468E-02
3	2.16724E-01	1.04122E-01
4	1.14454E+00	5.49878E-01
5	2.08144E+00	1.00000E+00

- elapsed time .03 min.

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

1 tttttttttttb ccccccccccc rr rr aaaaaaaa rr rr iiiiiiiiiiii zzzzzzzzzz
tttttttttttb ccccccccccccc rr rr aaaaaaaaaa rrrr rrrr iiiiiiiiiiii zzzzzzzzzz
tt tt cc cc rrrr rr aa aa rrrrr rrrrr ii 22 22
tt tt cc cc rr rr rr aa aa rr rr rr ii 22 22

INFORMATION ONLY



INFORMATION ONLY

```
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:  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
0isn--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
0isscpt--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.

Mixing table

Ientry	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	40802	4.25156E-02	205
6	1	92235	1.78765E-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	2.18432E-09	200032
33	1	54136	4.97840E-06	200033
34	1	55134	7.36175E-08	200034
35	1	55135	1.55852E-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	2.51925E-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	8.21669E-07	200044
45	1	61148	2.25864E-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

INFORMATION ONLY

52	1	64155	2.63991E-10	200052
53	1	63153	1.30668E-07	200053
54	1	63154	1.53097E-08	200054
55	1	63155	1.69088E-08	200055
56	1	40802	4.42681E-05	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	1.12568E-08	200067
68	1	95243	1.41059E-09	200068
69	1	96244	5.44610E-11	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	6.75100E-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

8057 locations of 200000 available are required to make a new master containing the self-shielded values

Zero nuclides in your problem have bondarenko factor data**bonami 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 21thgp	from log	12	to log	18 bondarenko trigger 0
Copy	5010	b-10 1273 21thgp	from log	18	to log	1 bondarenko trigger 0
Copy	5010	b-10 1273 21thgp	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

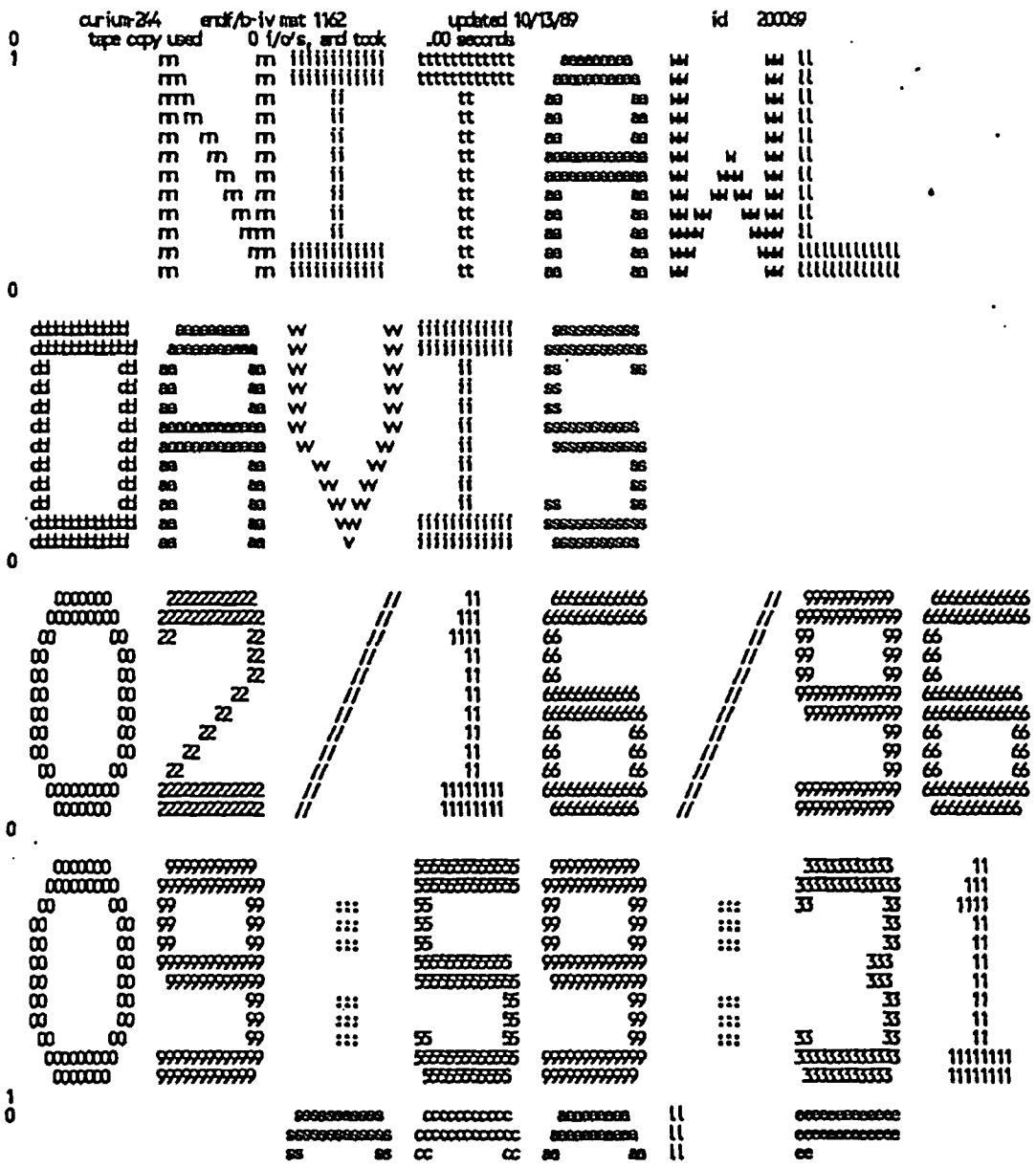
INFORMATION ONLY

```
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 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          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 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

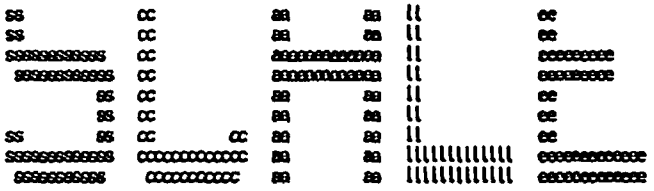
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	id	200011
kr-83	mt=102,103,103,105,106,107	updated 10/13/89	id	200012
kr-85	mt= 102		id	200013
sr-90	mt=102	updated 10/13/89	id	200014
y-89	mt=102	updated 10/13/89	id	200015
zr-93	mt= 102		id	200017
zr-94	mt=102	updated 10/13/89	id	200018
zr-95	mt=102	updated 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 newklacs p-3 295k 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 newklacs p-3 295k 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 newklacs p-3 295k 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 newklacs 218ngp p-3 295k			id	200067
am-243 1057 218 gp wt f-1/e-m 090376 p3 295k			id	200068

INFORMATION ONLY



INFORMATION ONLY

```
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:  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 218grp 04295 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 218grp 04295 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=102,103,105,105,106,107     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    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 newxlacs p-3 298k 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 newxlacs p-3 298k 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 newxlacs p-3 298k 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 sigo=5+4 newxlacs 218ngp p-3 298k                       95241
   69   am-243 1057 218 gp wt f-1/e-m 090376 p3 298k                        95243
   70   curium-244  endf/b-iv mat 1162            updated 10/13/89          96244
0 hydrogen      endf/b-iv mat 1269/thnm1002   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 298k                                        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   -7.806083E-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

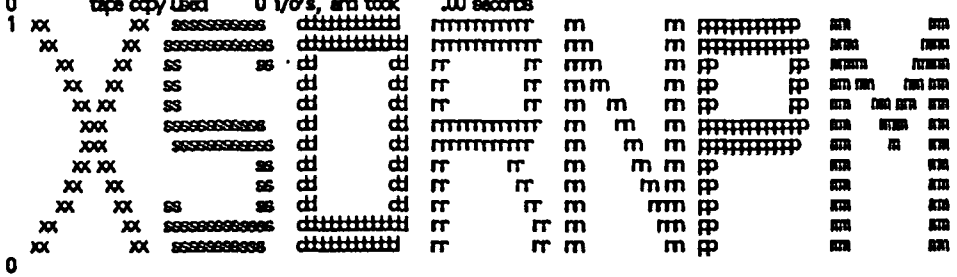
the title of the parent case is as follows
xsdrn weighted tape-parent case entitled-- 400 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp

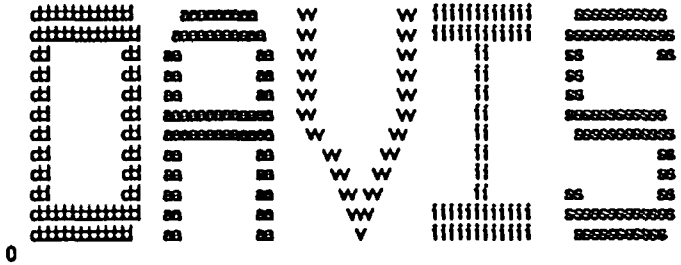
tape id	8670	number of nuclides	70
number of neutron groups	27	number of gamma groups	0
first thermal group	15	logical unit	4

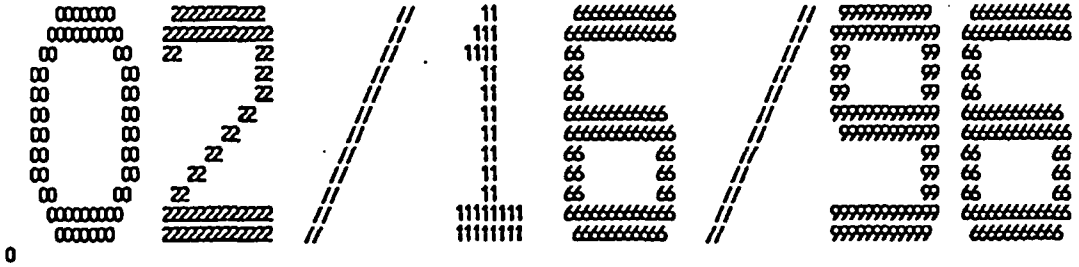
table of contents

hydrogen	endf/b-iv mat 1269/thrml002	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/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 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

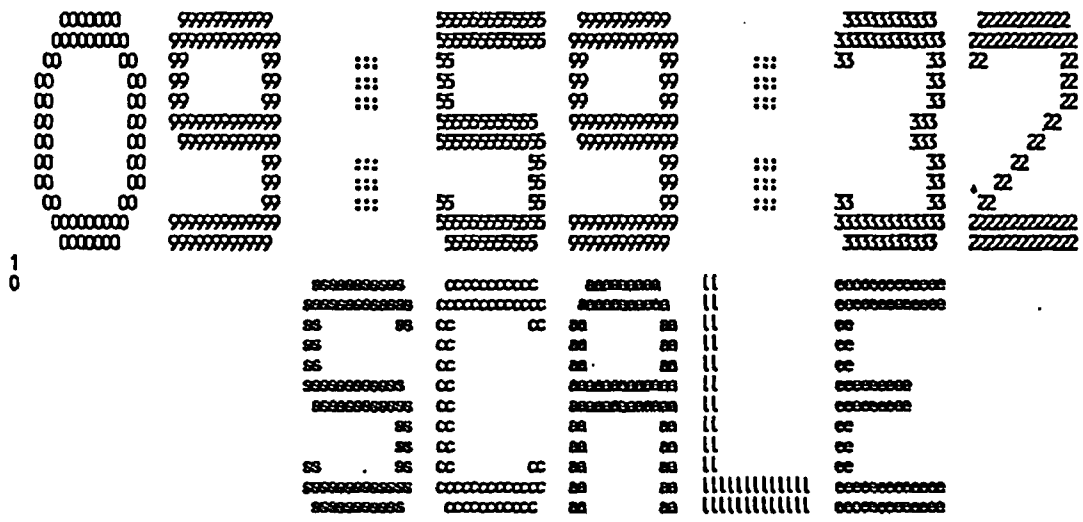






```
      sm-152        mt=102,103,104,105,106,107    updated 10/13/89          id    62152
      eu-153        mt=102,103,104,105,106,107    updated 10/13/89          id    63153
      eu-154        mt=102,103,104,105,106,107    updated 10/13/89          id    63154
      eu-155        mt=102,103,104,105,106,107    updated 10/13/89          id    63155
      gd-155        mt=102                        updated 10/13/89          id    64155
     u-234 1043 sigo=5+4 nawlacs p-3 298k 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 nawlacs p-3 298k 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 nawlacs p-3 298k 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 nawlacs 218ngp p-3 298k                           id    95241
     am-243 1057 218 gp wt f-1/e-m 090576 p3 298k                           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  rrrrrrrrrrr  m       m  pppppppppp  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 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  rrrrrrrrrrr  m   m   m  pppppppppp  mm   mmm   mm
      xxx       ssssssssss  dd       dd  rrrrrrrrrrr  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 ddddddddddd rr         rr m       mm  pp          mm         mm
 xx         xx  ssssssssss  ddddddddddd  rr         rr m       m  pp          mm         mm
0

 ddddddddddd    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
 ddddddddddd  aa       aa       ww    iiiiiiiiiiii   ssssssssssss
 ddddddddddd  aa       aa        v    iiiiiiiiiiii    ssssssssss
0

   000000     22222222222          //      11      666666666666          //  99999999999   666666666666
  00000000    22222222222          //     111      666666666666          //  99999999999   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          //  99999999999   666666666666
 00      00       22             //      11      666666666666          //   99999999999  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          //  99999999999   666666666666
    000000    22222222222        //    11111111   666666666666          //  99999999999   666666666666
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

 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        ioa  outer iteration maximum          25
 mxx  number of mixtures                 3        iclc -1/0/n--flat res/sn/opt           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        id1  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        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
 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=wgted xsect print       -2        macm 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        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.)
```

INFORMATION ONLY

0

	nuclides on tape	cccc identification	mixing table 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	42095	2.02470E-06	
17	40094		1	40093	1.97826E-06	
18	40095		1	40094	3.06390E-06	
19	40802		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	46108	1.79948E-07	
28	46108		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	1.42899E-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	8.21699E-07	
45	60145		1	61148	2.25854E-09	
46	60147		1	60147	4.38963E-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	64156	2.63991E-10	
53	62152		1	63153	1.30688E-07	
54	63153		1	63154	1.53097E-08	
55	63154		1	63155	1.69088E-08	
56	63155		1	40802	4.42681E-05	
57	64155		1	1001	2.30630E-02	
58	92234		1	5010	2.09787E-06	

INFORMATION ONLY

59	92235	1	5011	8.51673E-06	
60	92236	1	55133	3.23773E-06	
61	92238	1	95237	4.07926E-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	3.87830E-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 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	4.40969E-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	1.46536E+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	1.50830E+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	1.70844E+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	4.86953E+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						

1 400 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					5.59953E-02	-5.58410E-01	8	-3.10450E-02

INFORMATION ONLY

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	-2.20196E-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

Constants for p(3) scattering

angl	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	-8.04436E-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	1.61276E-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	6.28863E-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	3.44245E-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	1.40830E-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	-6.24439E-01
18	-8.17361E-01	-4.49528E-01	3.20862E-01	4.16520E-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	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20862E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20862E-01	-4.16520E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24439E-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	3.95289E-02	5.92931E-02	1	2.48566E-01	1.47284E-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	1.98698E+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	2.55259E-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			

INFORMATION ONLY

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	2.86341E+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	209	-6.79447E-06	1.10245E+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	-3.48739E-05	-3.42568E-04	-1.73054E-04	.00000E+00	.0167
5	490	-3.09952E-07	1.11519E+00	-7.12395E-06	-7.15464E-05	-3.53365E-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	1.87323E-06	28	1.00000E+00	1
2	2	1	17	2.27993E-06	28	1.00000E+00	1
3	3	1	17	2.11385E-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	4.45262E-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	9.99926E-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	6.33971E-05	28	9.99945E-01	3
22	22	1	23	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	3.33667E-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	-1.32887E-06	-1.47463E-05	-7.73286E-06	.00000E+00	.0167

final monitor
lambda 1.11520E+00 production/absorption 1.12981E+00 angular flux on 16

- elapsed time .02 min.

1 400 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

INFORMATION ONLY

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	2.76707E-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	6.96885E-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	5.23051E-01	2.53798E-02
17	4	9.11591E-01	9.60388E-01	5.72769E+00	5.88891E-01	2.76388E-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	1.85603E+00	8.15879E-02
21	4	1.59473E+00	1.69232E+00	1.00200E+01	2.07540E+00	9.12662E-02
22	4	1.78991E+00	1.88750E+00	1.12463E+01	2.31478E+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	3.05285E+00	1.30355E-01
26	4	2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.40759E-01
27	4	2.76582E+00	2.81461E+00	1.73781E+01	1.72580E+00	7.42165E-02
28	4	2.86341E+00	2.91220E+00	1.79910E+01	1.78571E+00	7.68256E-02
29		2.96100E+00		1.86045E+01		

1 400 d, second part of search 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	1.25006E-02	8.95125E-02	1.11786E-01	6.87356E-02	1.02498E-01	1.92564E-01	1.92956E-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	8.97148E-02	1.12117E-01	6.89647E-02	1.02877E-01	1.93276E-01	1.93415E-01	1.46995E-01
6	1.25358E-02	8.98574E-02	1.12388E-01	6.91479E-02	1.03174E-01	1.93828E-01	1.93754E-01	1.47050E-01
7	1.25562E-02	9.01839E-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	7.02234E-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	1.47356E-01
12	1.26404E-02	9.12817E-02	1.14336E-01	7.05888E-02	1.05481E-01	1.98151E-01	1.96420E-01	1.47401E-01
13	1.26574E-02	9.15202E-02	1.14605E-01	7.05764E-02	1.05671E-01	1.98492E-01	1.96613E-01	1.47477E-01
14	1.27071E-02	9.19001E-02	1.15057E-01	7.09215E-02	1.06047E-01	1.99153E-01	1.96993E-01	1.47568E-01
15	1.27538E-02	9.23889E-02	1.15679E-01	7.13178E-02	1.06644E-01	2.00227E-01	1.97623E-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	1.48036E-01
18	1.29563E-02	9.45867E-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	1.19285E-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	1.48606E-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	1.48808E-01
23	1.30725E-02	9.59439E-02	1.20357E-01	7.43514E-02	1.11557E-01	2.09598E-01	2.03478E-01	1.48872E-01
24	1.30769E-02	9.59992E-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	1.20492E-01	7.44305E-02	1.11693E-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	1.20428E-01	7.43853E-02	1.11622E-01	2.09765E-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	1.62050E-02

INFORMATION ONLY

2	1.5851E-01	1.0702E-01	1.0074E-01	6.5331E-02	5.9857E-02	5.3477E-02	2.9171E-02	1.6206E-02
3	1.5849E-01	1.0701E-01	1.0072E-01	6.5307E-02	5.9845E-02	5.3451E-02	2.9165E-02	1.6202E-02
4	1.5845E-01	1.0699E-01	1.0067E-01	6.5249E-02	5.9784E-02	5.3368E-02	2.9150E-02	1.6194E-02
5	1.5838E-01	1.0696E-01	1.0059E-01	6.5162E-02	5.9715E-02	5.3251E-02	2.9127E-02	1.6183E-02
6	1.5828E-01	1.0691E-01	1.0049E-01	6.5043E-02	5.9602E-02	5.3092E-02	2.9097E-02	1.6167E-02
7	1.5815E-01	1.0685E-01	1.0035E-01	6.4887E-02	5.9459E-02	5.2884E-02	2.9059E-02	1.6147E-02
8	1.5801E-01	1.0677E-01	1.0017E-01	6.4681E-02	5.9272E-02	5.2615E-02	2.9011E-02	1.6122E-02
9	1.5780E-01	1.0669E-01	1.0000E-01	6.4490E-02	5.9098E-02	5.2357E-02	2.8968E-02	1.6098E-02
10	1.5760E-01	1.0662E-01	9.9852E-02	6.4315E-02	5.8942E-02	5.2126E-02	2.8930E-02	1.6078E-02
11	1.5755E-01	1.0657E-01	9.9727E-02	6.4178E-02	5.8817E-02	5.1944E-02	2.8897E-02	1.6060E-02
12	1.5750E-01	1.0655E-01	9.9615E-02	6.4124E-02	5.8766E-02	5.1870E-02	2.8879E-02	1.6052E-02
13	1.5745E-01	1.0652E-01	9.9618E-02	6.4042E-02	5.8692E-02	5.1762E-02	2.8864E-02	1.6043E-02
14	1.5674E-01	1.0645E-01	9.9436E-02	6.3865E-02	5.8538E-02	5.1539E-02	2.8839E-02	1.6027E-02
15	1.5597E-01	1.0635E-01	9.9257E-02	6.3586E-02	5.8266E-02	5.1164E-02	2.8802E-02	1.6003E-02
16	1.5540E-01	1.0617E-01	9.8850E-02	6.3125E-02	5.7866E-02	5.0560E-02	2.8733E-02	1.5960E-02
17	1.5395E-01	1.0600E-01	9.8553E-02	6.2664E-02	5.7492E-02	4.9953E-02	2.8651E-02	1.5913E-02
18	1.5326E-01	1.0585E-01	9.8118E-02	6.2275E-02	5.7137E-02	4.9433E-02	2.8561E-02	1.5866E-02
19	1.5272E-01	1.0571E-01	9.7805E-02	6.1905E-02	5.6801E-02	4.8966E-02	2.8467E-02	1.5818E-02
20	1.5224E-01	1.0563E-01	9.7603E-02	6.1668E-02	5.6588E-02	4.8631E-02	2.8395E-02	1.5782E-02
21	1.5233E-01	1.0557E-01	9.7425E-02	6.1504E-02	5.6428E-02	4.8410E-02	2.8341E-02	1.5755E-02
22	1.5227E-01	1.0553E-01	9.7362E-02	6.1387E-02	5.6311E-02	4.8253E-02	2.8299E-02	1.5735E-02
23	1.5223E-01	1.0550E-01	9.7291E-02	6.1308E-02	5.6230E-02	4.8141E-02	2.8268E-02	1.5720E-02
24	1.5221E-01	1.0548E-01	9.7233E-02	6.1247E-02	5.6175E-02	4.8065E-02	2.8247E-02	1.5710E-02
25	1.5218E-01	1.0547E-01	9.7214E-02	6.1213E-02	5.6143E-02	4.8010E-02	2.8236E-02	1.5703E-02
26	1.5214E-01	1.0546E-01	9.7205E-02	6.1208E-02	5.6133E-02	4.8006E-02	2.8234E-02	1.5703E-02
27	1.5213E-01	1.0546E-01	9.7210E-02	6.1209E-02	5.6141E-02	4.8016E-02	2.8239E-02	1.5706E-02
28	1.5212E-01	1.0547E-01	9.7226E-02	6.1227E-02	5.6160E-02	4.8042E-02	2.8249E-02	1.5710E-02
0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	7.1886E-03	5.7740E-03	1.1136E-02	3.6756E-02	1.7026E-02	2.4511E-02	8.2562E-02	6.7903E-02
2	7.1897E-03	5.7750E-03	1.1137E-02	3.6799E-02	1.7028E-02	2.4513E-02	8.2547E-02	6.7274E-02
3	7.1857E-03	5.7697E-03	1.1132E-02	3.6746E-02	1.6988E-02	2.4481E-02	8.2238E-02	6.7141E-02
4	7.1809E-03	5.7568E-03	1.1122E-02	3.6716E-02	1.6714E-02	2.4409E-02	8.1967E-02	6.6855E-02
5	7.1721E-03	5.7372E-03	1.1106E-02	3.6670E-02	1.6537E-02	2.4301E-02	8.1581E-02	6.6307E-02
6	7.1603E-03	5.7101E-03	1.1084E-02	3.6605E-02	1.5991E-02	2.4156E-02	8.1065E-02	6.5865E-02
7	7.1448E-03	5.6744E-03	1.1056E-02	3.6531E-02	1.5322E-02	2.3966E-02	8.0405E-02	6.5145E-02
8	7.1246E-03	5.6288E-03	1.1020E-02	3.6429E-02	1.4557E-02	2.3720E-02	7.9580E-02	6.4342E-02
9	7.1059E-03	5.5821E-03	1.0987E-02	3.6316E-02	1.3806E-02	2.3491E-02	7.8834E-02	6.3432E-02
10	7.0889E-03	5.5409E-03	1.0956E-02	3.6252E-02	1.3113E-02	2.3286E-02	7.8186E-02	6.2756E-02
11	7.0752E-03	5.5083E-03	1.0932E-02	3.6185E-02	1.2621E-02	2.3131E-02	7.7715E-02	6.2257E-02
12	7.0655E-03	5.4978E-03	1.0922E-02	3.6180E-02	1.2443E-02	2.3079E-02	7.7570E-02	6.2128E-02
13	7.0618E-03	5.4775E-03	1.0909E-02	3.6121E-02	1.2153E-02	2.2984E-02	7.7287E-02	6.1819E-02
14	7.0569E-03	5.4322E-03	1.0881E-02	3.6043E-02	1.1480E-02	2.2771E-02	7.6665E-02	6.1202E-02
15	7.0200E-03	5.3603E-03	1.0838E-02	3.5925E-02	1.1063E-02	2.2440E-02	7.5755E-02	6.0143E-02
16	6.9777E-03	5.2405E-03	1.0766E-02	3.5726E-02	1.0871E-02	2.1983E-02	7.4389E-02	5.8618E-02
17	6.9348E-03	5.1235E-03	1.0692E-02	3.5526E-02	1.0701E-02	2.1371E-02	7.2941E-02	5.7129E-02
18	6.8968E-03	5.0303E-03	1.0624E-02	3.5339E-02	1.0558E-02	2.0921E-02	7.1586E-02	5.5712E-02
19	6.8604E-03	4.9480E-03	1.0558E-02	3.5163E-02	1.0425E-02	2.0500E-02	7.0221E-02	5.4290E-02
20	6.8340E-03	4.8816E-03	1.0512E-02	3.5042E-02	1.0336E-02	2.0227E-02	6.9248E-02	5.3279E-02
21	6.8163E-03	4.8569E-03	1.0479E-02	3.4927E-02	1.0274E-02	2.0054E-02	6.8518E-02	5.2526E-02
22	6.8057E-03	4.8420E-03	1.0458E-02	3.4859E-02	1.0230E-02	1.9845E-02	6.7965E-02	5.1958E-02
23	6.7968E-03	4.8260E-03	1.0438E-02	3.4803E-02	1.0198E-02	1.9780E-02	6.7551E-02	5.1533E-02
24	6.7902E-03	4.8153E-03	1.0426E-02	3.4772E-02	1.0176E-02	1.9722E-02	6.7251E-02	5.1225E-02
25	6.7867E-03	4.8089E-03	1.0419E-02	3.4751E-02	1.0162E-02	1.9676E-02	6.7053E-02	5.1018E-02
26	6.7858E-03	4.8063E-03	1.0417E-02	3.4745E-02	1.0157E-02	1.9657E-02	6.6957E-02	5.0908E-02
27	6.7859E-03	4.8073E-03	1.0419E-02	3.4750E-02	1.0158E-02	1.9658E-02	6.6947E-02	5.0883E-02
28	6.7864E-03	4.8104E-03	1.0423E-02	3.4762E-02	1.0164E-02	1.9673E-02	6.6999E-02	5.0918E-02
0 int.	grp. 25	grp. 26	grp. 27					
1	3.0839E-02	2.1906E-02	4.1599E-03					
2	3.0578E-02	2.1893E-02	4.1568E-03					
3	3.0806E-02	2.1829E-02	4.1438E-03					

INFORMATION ONLY

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	2.92655E-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	3.63697E-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	3.32993E-03
16	2.57315E-02	1.76111E-02	3.10172E-03
17	2.49330E-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	1.51714E-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	2.43669E-03
24	2.19060E-02	1.43925E-02	2.41907E-03
25	2.18021E-02	1.43188E-02	2.40741E-03
26	2.17446E-02	1.42760E-02	2.40071E-03
27	2.17277E-02	1.42650E-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	1.75746E-04	-7.79466E-03	9.99963E-01
3	.00000E+00	.00000E+00	3.79536E-03	5.43308E-03	1.61368E-02	9.22634E-05	-1.03344E-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	2.08493E-02	4.95945E-05	-1.06881E-02	9.99992E-01
6	.00000E+00	.00000E+00	2.14361E-02	3.44799E-02	4.09796E-02	8.43484E-05	-1.96277E-02	9.99995E-01
7	.00000E+00	.00000E+00	4.21852E-02	6.09506E-02	5.41196E-02	6.12018E-05	-1.19941E-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	9.99805E-01
11	.00000E+00	.00000E+00	5.58257E-02	6.55068E-02	5.22981E-02	5.50834E-05	3.47392E-03	9.99759E-01
12	.00000E+00	.00000E+00	4.53517E-02	3.50518E-02	4.12427E-02	6.03735E-05	4.04653E-03	9.99779E-01
13	.00000E+00	.00000E+00	4.05122E-02	2.85695E-02	3.66385E-02	8.46320E-05	3.79026E-03	9.99969E-01
14	.00000E+00	.00000E+00	3.94478E-02	2.83211E-02	3.38317E-02	1.36578E-04	5.47987E-03	9.99888E-01
15	.00000E+00	.00000E+00	2.17288E-02	1.00997E-02	2.04384E-02	1.13197E-04	1.17730E-03	9.99959E-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	3.78488E-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	1.09083E-02	3.03867E-03	1.00851E-02	6.80572E-05	7.56118E-04	1.00001E+00
20	.00000E+00	.00000E+00	2.68510E-02	2.16304E-02	2.44561E-02	2.82105E-04	2.11268E-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	2.66914E-04	4.32348E-03	1.00001E+00
23	.00000E+00	.00000E+00	6.85329E-02	8.34136E-02	5.47754E-02	1.21087E-03	1.25403E-02	1.00004E+00
24	.00000E+00	.00000E+00	7.33842E-02	7.81564E-02	6.05612E-02	1.42734E-03	1.13952E-02	1.00005E+00
25	.00000E+00	.00000E+00	4.85734E-02	3.32269E-02	4.27465E-02	8.44487E-04	5.28160E-03	1.00002E+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	1.32287E-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	rdn rate	fiss rate	flux*adj**2	total flux
1	1.26224E-02	-6.98354E-04	1.25068E-02	.00000E+00	3.56540E-11	.00000E+00	1.98222E-05	1.57825E-02
2	9.10870E-02	-7.79466E-03	8.96060E-02	.00000E+00	.00000E+00	.00000E+00	8.81274E-05	1.13590E-01
3	1.14068E-01	-1.03344E-02	1.11900E-01	.00000E+00	.00000E+00	.00000E+00	9.18164E-05	1.41773E-01

INFORMATION ONLY

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	2.44749E-01
7	1.96079E-01	-1.99496E-02	1.93089E-01	.00000E+00	.00000E+00	.00000E+00	5.92586E-05	2.44207E-01
8	1.47344E-01	-2.42176E-03	1.46923E-01	.00000E+00	.00000E+00	.00000E+00	3.27104E-05	1.84850E-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	1.48134E-03	1.07102E-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	4.04263E-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	8.74495E-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	2.91677E-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	4.25060E-04	7.18759E-03	.00000E+00	.00000E+00	.00000E+00	9.18333E-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	2.76887E-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	1.07657E-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	1.05369E-03	1.39778E-05	-1.01956E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.47884E-04	2.75482E-03	8.71089E-04	2.01597E-05	-7.43311E-04	9.99995E-01
4	.00000E+00	.00000E+00	2.84131E-04	2.29810E-03	2.97954E-04	1.30594E-05	-2.66714E-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	1.17099E-04	9.20412E-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-06	3.16394E-04	9.99977E-01
10	.00000E+00	.00000E+00	5.30482E-05	4.98332E-03	4.94332E-05	5.92865E-06	-5.56864E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.94466E-05	4.44910E-03	5.02961E-05	8.99049E-06	-9.07094E-05	1.00000E+00
12	.00000E+00	.00000E+00	5.02464E-05	2.75857E-03	5.13184E-05	5.66705E-06	-6.76324E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.13185E-05	2.35694E-03	4.80799E-05	6.31534E-06	-3.07250E-06	9.99999E-01
14	.00000E+00	.00000E+00	4.80800E-05	2.23946E-03	4.21840E-05	8.54857E-06	-2.45427E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.47981E-05	1.22002E-03	4.99514E-05	6.31821E-06	-1.14141E-05	9.99969E-01
16	.00000E+00	.00000E+00	5.60781E-05	6.49237E-04	5.62444E-05	3.84798E-06	-3.98967E-06	9.99963E-01
17	.00000E+00	.00000E+00	6.20020E-05	2.48568E-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	6.17236E-05	3.24660E-06	-4.67128E-06	9.99977E-01
20	.00000E+00	.00000E+00	7.57261E-05	1.52450E-03	6.48122E-05	1.31067E-05	-2.13273E-06	9.99973E-01
21	.00000E+00	.00000E+00	8.70456E-05	3.99105E-04	9.53318E-05	4.94725E-06	-1.32096E-05	9.99986E-01
22	.00000E+00	.00000E+00	1.26263E-04	8.95497E-04	1.19880E-04	1.15625E-05	-4.98162E-06	9.99996E-01
23	.00000E+00	.00000E+00	1.82549E-04	3.17782E-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	5.89847E-05	-8.58902E-05	1.00001E+00
25	.00000E+00	.00000E+00	3.05008E-04	9.67478E-04	2.49016E-04	3.42578E-05	2.17882E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.29578E-04	7.56319E-04	9.99495E-05	3.39527E-06	-4.33787E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.89815E-05	1.59608E-04	8.22357E-08	1.18415E-05	1.70544E-05	1.00001E+00
28	.00000E+00	.00000E+00	5.09332E-05	8.14601E-02	5.09332E-05	6.26059E-04	-6.20222E-04	9.99994E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rtn rate	fiss rate	flux*cb**2	total flux
1	1.26481E-02	-8.56474E-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	-1.00344E-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	8.62403E-06	1.7568E-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	5.84706E-04	1.15793E-01	2.69312E-04	.00000E+00	.00000E+00	4.58111E-06	1.93011E-02
10	1.06545E-01	1.42866E-03	1.06588E-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	4.04285E-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	1.16586E-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	7.06775E-03	4.23830E-04	7.07912E-03	4.25050E-04	.00000E+00	.00000E+00	3.47178E-07	1.17897E-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	1.09197E-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	5.50806E-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	1.22578E-02	7.78185E-02	1.23408E-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	2.76488E-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	9.27285E-07	3.24852E-03
27	3.65316E-03	6.73660E-04	3.65920E-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	3.26545E-03	4.26665E-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	2.98483E-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	2.48958E-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	3.23819E-02	2.87528E-02	3.25154E-05	-6.17498E-03	9.99991E-01
8	.00000E+00	.00000E+00	2.99803E-02	4.11483E-02	3.06538E-02	1.91192E-05	-8.88860E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04122E-02	3.79573E-02	3.00666E-02	1.53077E-05	3.33721E-04	9.99889E-01
10	.00000E+00	.00000E+00	2.98807E-02	3.60666E-02	2.89849E-02	1.88085E-05	8.80192E-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	2.27601E-03	9.99982E-01
13	.00000E+00	.00000E+00	2.09422E-02	1.47182E-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	4.00203E-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	1.38152E-02	1.11805E-02	1.26411E-02	1.45815E-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	1.32522E-02	6.86523E-03	1.06839E-02	1.31863E-04	2.41643E-03	1.00001E+00
23	.00000E+00	.00000E+00	3.39578E-02	4.16726E-02	2.73653E-02	6.04041E-04	5.96657E-03	1.00002E+00
24	.00000E+00	.00000E+00	3.61386E-02	3.85702E-02	2.97727E-02	7.01708E-04	5.66250E-03	1.00003E+00
25	.00000E+00	.00000E+00	2.38829E-02	1.61333E-02	2.07555E-02	4.10035E-04	2.71698E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.80825E-02	1.76252E-02	1.62774E-02	4.07566E-04	2.29795E-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	-3.28265E-03	9.99975E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*db**2	total flux
1	1.27800E-02	-1.22671E-03	1.26481E-02	-8.56474E-04	1.89021E-11	.00000E+00	1.02638E-05	8.36737E-03
2	9.26692E-02	-1.29782E-02	9.13489E-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	7.57403E-02
4	7.15465E-02	-1.05102E-02	7.05788E-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	2.64388E-05	6.98971E-02

INFORMATION ONLY

6	2.00871E-01	-2.95395E-02	1.98265E-01	-1.88084E-02	.00000E+00	.00000E+00	4.46996E-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	1.71866E-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	1.06543E-01	1.42866E-03	.00000E+00	.00000E+00	9.99080E-06	7.00663E-02
11	9.90944E-02	5.35508E-03	9.96685E-02	3.38321E-03	.00000E+00	.00000E+00	9.28590E-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	8.48690E-03	5.18477E-02	5.47721E-03	.00000E+00	.00000E+00	4.34136E-06	3.38829E-02
15	2.87815E-02	1.61121E-03	2.89734E-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	1.09197E-02	7.51447E-04	.00000E+00	.00000E+00	7.40018E-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	1.12397E-02	1.43957E-03	.00000E+00	.00000E+00	6.71906E-07	7.32790E-03
22	2.22635E-02	6.73514E-03	2.30646E-02	4.31871E-03	.00000E+00	.00000E+00	1.36727E-06	1.49566E-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	8.03038E-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	1.25639E-03	3.63316E-03	6.73660E-04	.00000E+00	.00000E+00	4.98052E-08	2.27959E-03
28	1.75535E+00	-1.05122E-02	1.75864E+00	-7.22974E-05	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	9.98001E-01
2	.00000E+00	1.95525E-01	6.85378E-03	2.48705E-01	1.71191E-01	1.52262E-02	1.29761E-02	1.00002E+00
3	.00000E+00	2.15618E-01	7.06990E-02	2.56701E-01	2.53277E-01	1.63444E-02	1.67591E-02	9.99988E-01
4	.00000E+00	1.24001E-01	1.04953E-01	1.76851E-01	2.10573E-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	2.98304E-02	1.00001E+00
7	.00000E+00	8.80747E-02	5.92882E-01	1.56441E+00	6.56091E-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	3.65971E-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	1.24691E+00	6.24314E-01	3.31867E-02	-2.30688E-03	9.99898E-01
11	.00000E+00	5.75899E-06	6.28420E-01	1.15921E+00	5.79823E-01	3.59732E-02	-5.35353E-03	9.99940E-01
12	.00000E+00	4.05599E-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	3.68406E-01	7.60782E-02	-8.48526E-03	9.99990E-01
15	.00000E+00	1.43871E-09	2.37987E-01	2.16462E-01	2.32065E-01	7.52740E-03	-1.61400E-03	1.00013E+00
16	.00000E+00	4.22456E-10	1.62648E-01	1.00837E-01	1.58397E-01	5.08498E-03	-8.55121E-04	1.00013E+00
17	.00000E+00	1.36061E-10	8.74822E-02	3.19811E-02	8.25889E-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	6.25668E-02	1.17864E-01	8.04437E-03	-1.13603E-03	1.00011E+00
20	.00000E+00	2.23939E-10	2.98152E-01	3.55475E-01	2.74113E-01	2.71452E-02	-3.14685E-03	1.00014E+00
21	.00000E+00	3.27775E-11	1.48254E-01	7.32826E-02	1.28359E-01	2.21013E-02	-2.25739E-03	1.00007E+00
22	.00000E+00	3.80258E-11	2.85387E-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	5.62352E-01	1.40611E-01	-1.81957E-02	1.00008E+00
24	.00000E+00	9.89678E-12	7.26704E-01	8.98756E-01	5.99529E-01	1.44092E-01	-1.69575E-02	1.00007E+00
25	.00000E+00	2.89713E-12	4.80701E-01	3.63708E-01	4.08696E-01	8.00160E-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	1.00005E+00
27	.00000E+00	4.84114E-13	1.22721E-01	7.36786E-02	1.05332E-01	2.05441E-02	-1.25642E-03	1.00001E+00
28	.00000E+00	1.00000E+00	9.19945E+00	1.46682E+01	9.19945E+00	9.91752E-01	1.04954E-02	9.99999E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*db**2	total flux
1	1.30728E-02	-8.23645E-09	1.27800E-02	-1.22671E-05	2.19980E-03	2.45359E-03	2.88654E-04	3.32259E-01
2	9.55542E-02	-9.25957E-08	9.26692E-02	-1.29762E-02	1.60923E-05	1.09749E-02	1.57752E-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	-7.46999E-08	7.15465E-02	-1.05102E-02	.00000E+00	5.74283E-03	8.82679E-04	1.86748E+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	-1.39526E-07	2.00871E-01	-2.95395E-02	.00000E+00	1.44218E-03	1.73119E-03	5.31835E+00

INFORMATION ONLY

INFORMATION ONLY

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	1.06387E-01	2.30885E-03	.00000E+00	4.27260E-03	4.28297E-04	2.68789E+00
11	9.72367E-02	1.50113E-06	9.90944E-02	5.35503E-03	.00000E+00	9.02446E-03	3.86574E-04	2.48091E+00
12	6.12403E-02	-2.23212E-07	6.34188E-02	6.32098E-03	.00000E+00	1.18567E-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	6.79032E-03	1.20404E-06	7.00473E-03	6.44412E-04	.00000E+00	1.86025E-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	1.23795E-01
19	1.04274E-02	-5.21187E-06	1.08129E-02	1.12982E-03	.00000E+00	2.97504E-03	3.57887E-05	2.66559E-01
20	3.47734E-02	-9.93119E-06	3.58560E-02	3.13671E-03	.00000E+00	1.54612E-02	1.28559E-04	8.86591E-01
21	1.01609E-02	-3.17839E-06	1.09799E-02	2.25421E-03	.00000E+00	1.33112E-02	2.91880E-05	2.61231E-01
22	1.96854E-02	-3.66302E-06	2.22436E-02	6.73514E-03	.00000E+00	3.92745E-02	5.30624E-05	5.08776E-01
23	6.70855E-02	7.43641E-06	7.52774E-02	1.82042E-02	.00000E+00	8.27260E-02	1.80688E-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	2.17400E-02	4.55754E-07	2.62168E-02	8.02028E-03	.00000E+00	4.88251E-02	3.65120E-05	5.70158E-01
26	1.42682E-02	-2.01242E-07	1.80720E-02	6.18931E-03	.00000E+00	4.49767E-02	1.79214E-05	3.76320E-01
27	2.39824E-03	-3.56412E-08	3.23610E-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	2.18656E-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	2.29508E-01	7.84853E-03	-7.46999E-08	9.99999E-01
5	.00000E+00	1.64661E-01	2.07554E-01	4.66115E-01	3.66914E-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	7.38026E-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	1.48806E+00	7.45581E-01	2.20952E-02	5.86745E-06	9.99886E-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	6.57826E-01	5.41668E-02	1.50113E-06	9.99940E-01
12	.00000E+00	4.04559E-07	5.74063E-01	6.88512E-01	5.15718E-01	5.83594E-02	-2.23212E-07	9.99975E-01
13	.00000E+00	6.42408E-08	5.09515E-01	5.48460E-01	4.55082E-01	5.62482E-02	-1.09516E-06	9.99973E-01
14	.00000E+00	1.27307E-08	4.90657E-01	5.16054E-01	4.14550E-01	7.62952E-02	-3.63766E-07	9.99989E-01
15	.00000E+00	1.43871E-09	2.70871E-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	5.20583E-03	-3.27042E-06	1.00011E+00
17	.00000E+00	1.34051E-10	9.86924E-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	8.15078E-03	-5.21187E-06	1.00010E+00
20	.00000E+00	2.23936E-10	3.38592E-01	3.88810E-01	3.11275E-01	2.75863E-02	-9.93112E-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	3.22699E-01	2.16794E-01	2.56684E-01	6.59968E-02	-3.66302E-06	1.00007E+00
23	.00000E+00	3.63403E-11	7.87302E-01	1.17648E+00	6.44756E-01	1.42679E-01	7.43641E-06	1.00008E+00
24	.00000E+00	9.89678E-12	8.36526E-01	1.01839E+00	6.90193E-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	1.00005E+00
27	.00000E+00	4.84114E-13	1.42378E-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	1.00288E+00	-1.67535E-05	9.99997E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	nsn rate	fiss rate	flux^2	total flux
1	1.30728E-02	-8.23645E-09	1.25088E-02	.00000E+00	2.20557E-03	2.45389E-03	3.19615E-04	3.56548E-01
2	9.59542E-02	-9.29967E-08	8.96060E-02	.00000E+00	1.60925E-05	1.09749E-02	1.72350E-03	2.62561E+00
3	1.20401E-01	-8.61707E-08	1.11900E-01	.00000E+00	.00000E+00	1.33511E-02	1.97816E-03	3.29936E+00
4	7.43487E-02	-7.46999E-08	6.88059E-02	.00000E+00	.00000E+00	5.74285E-03	9.54011E-04	2.03324E+00
5	1.11573E-01	-1.30847E-07	1.02576E-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

INFORMATION ONLY

8	1.48889E-01	3.86691E-08	1.46923E-01	.00000E+00	.00000E+00	1.47659E-03	7.52782E-04	4.09437E+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	1.96870E-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	1.69358E+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	2.91677E-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	6.24918E-05	4.34428E-01
17	6.79082E-03	1.20404E-06	7.18759E-03	.00000E+00	.00000E+00	1.86025E-03	2.45759E-05	1.88289E-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	3.85268E-05	2.89468E-01
20	3.47734E-02	-9.93118E-06	3.67536E-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	3.17576E-05	2.84908E-01
22	1.96854E-02	-3.64302E-06	2.45089E-02	.00000E+00	.00000E+00	3.92745E-02	5.82549E-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	3.08848E-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	4.49787E-02	2.01967E-05	4.18116E-01
27	2.39824E-03	-3.56412E-08	4.16017E-03	.00000E+00	.00000E+00	1.25808E-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-05	3.18195E-03	5.52755E-03	3.71888E-03	1.74298E-03
2	6.81981E-04	4.94262E-03	5.77093E-03	3.43856E-03	4.29882E-03	6.19941E-03	4.33682E-03	2.14774E-03
3	1.14767E-03	5.42678E-03	5.85714E-03	2.91225E-05	3.86410E-03	6.78687E-03	4.38250E-03	1.82336E-03
4	7.89463E-04	4.26023E-03	4.91986E-03	2.38575E-05	2.82822E-03	4.80213E-03	3.32659E-03	1.79705E-03
5	8.11503E-04	4.32615E-03	4.96356E-03	2.41016E-05	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	1.09356E-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	1.29307E-03	1.22050E-03	1.11105E-03	1.54174E-03	3.75369E-04	1.93933E-04
4	1.19657E-03	1.09447E-03	1.03050E-03	6.77878E-04	6.01321E-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	1.49957E-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	7.08928E-05	1.14890E-04	3.85285E-04	1.34023E-04	3.35726E-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	1.20878E-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	5.52600E-02
3	1.41351E-03	1.08338E-03	1.99854E-04	5.18804E-02
4	3.70890E-04	2.25540E-04	2.79488E-05	3.45350E-02
5	4.25833E-04	2.69089E-04	3.60738E-05	3.54158E-02

%broad 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	1.5034E+05	9.7744E+06	2.8069E-01
3	4.0000E-01	1.2654E-01	3.6728E+05	1.2248E-10
4	1.0000E-05			

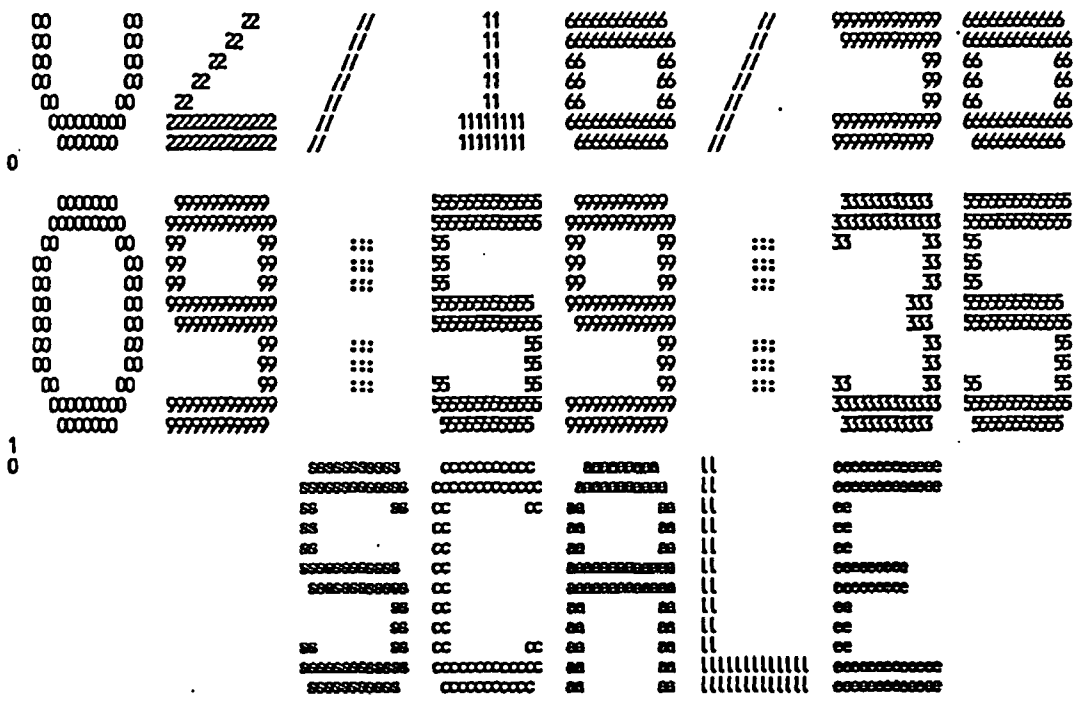
1 400 d, second part of sas2h pass to make library
0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3
1	3.88749E-01	1.13781E+00	2.34521E-01
2	3.95985E-01	1.13902E+00	2.24999E-01

INFORMATION ONLY

```
    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 1.95340E-01
Oflux disadvantage factors (zone average/cell average-flux)

Ozone  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
Ocell averaged currents

Ozone  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 1.05620E-02
    4 1.51825E-02 1.62791E-02 3.07336E-03
    5 1.53894E-02 1.66635E-02 3.46346E-03
Ozone      volume     vol. fraction

   1    1.25668E+00    4.56234E-02
   2    1.66687E-01    6.05168E-03
   3    6.58268E-01    2.38987E-02
   4    2.54624E+01    9.24126E-01
   5    2.75440E+01    1.00000E+00
- elapsed time   .03 min.
1
0
0
```

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:  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 jacb) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from ampx (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  3.32705E-03
                50100 to  10020  3.32705E-03
                50100 to  30070  3.20410E+03
                50100 to  20040  3.20427E+03
                50100 to  10030  8.26806E-02
                50100 tot-cap    3.20421E+03
                50110 to  50100  9.51898E-06
                50110 to  50120  4.23931E-03
                50110 to  40110  1.21472E-06
                50110 to  10010  1.21472E-06
                50110 to  40090  1.08401E-05
                50110 to  10030  1.08401E-05
                50110 to  30080  1.41512E-04
                50110 to  20040  1.41512E-04
                50110 tot-cap    4.40240E-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
390880 to 390900	9.64542E-01
390890 tot-cap	9.64542E-01
400930 to 400940	1.24328E+01
400930 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	5.75999E-03
430990 to 431000	8.45651E+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	2.07803E-03
451030 to 451040	3.46027E+02
451030 tot-cap	3.46025E+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	1.22524E-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	8.72808E-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	2.50800E-07
541360 to 20040	2.50800E-07
541360 tot-cap	1.36657E-01
551330 to 551320	7.58235E-03
551330 to 551340	9.64131E+01
551330 to 541330	8.28025E-04
551330 to 10010	8.28025E-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	4.85929E-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	4.60317E-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	5.00721E-04
601430	tot-cap	1.96659E+02
601450	to 601440	1.06753E-01
601450	to 601430	1.08331E-04
601450	to 581410	7.70777E-06
601450	to 20040	1.95360E-04
601450	to 591440	2.03483E-06
601450	to 10010	1.32486E-05
601450	to 601460	7.45570E+01
601450	to 591450	1.26369E-05
601450	to 10020	1.22524E-06
601450	to 591430	1.92846E-06
601450	to 10080	1.92846E-06
601450	to 581430	3.92636E-09
601450	to 20080	3.92636E-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	6.85685E-08
621470	to 601430	5.97975E-05

INFORMATION ONLY

621470 to 20040	1.15630E-03
621470 to 611460	1.38191E-04
621470 to 10010	1.97959E-04
621470 to 621480	2.17637E+02
621470 to 611470	1.74704E-04
621470 to 10020	1.14896E-04
621470 to 611450	1.23572E-04
621470 to 10030	1.23572E-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
621480 to 621480	4.30478E-02
621480 to 621470	3.41769E-05
621480 to 621500	4.48465E+04
621480 to 611480	4.42698E-04
621480 to 10010	4.42698E-04
621480 to 601460	4.42698E-04
621480 to 20040	4.42698E-04
621480 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-05
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	5.41897E-04
631530 tot-cap	5.87278E+02
631540 to 631530	2.67388E-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	1.72103E-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	2.52617E+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	8.59985E+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	3.00576E+00

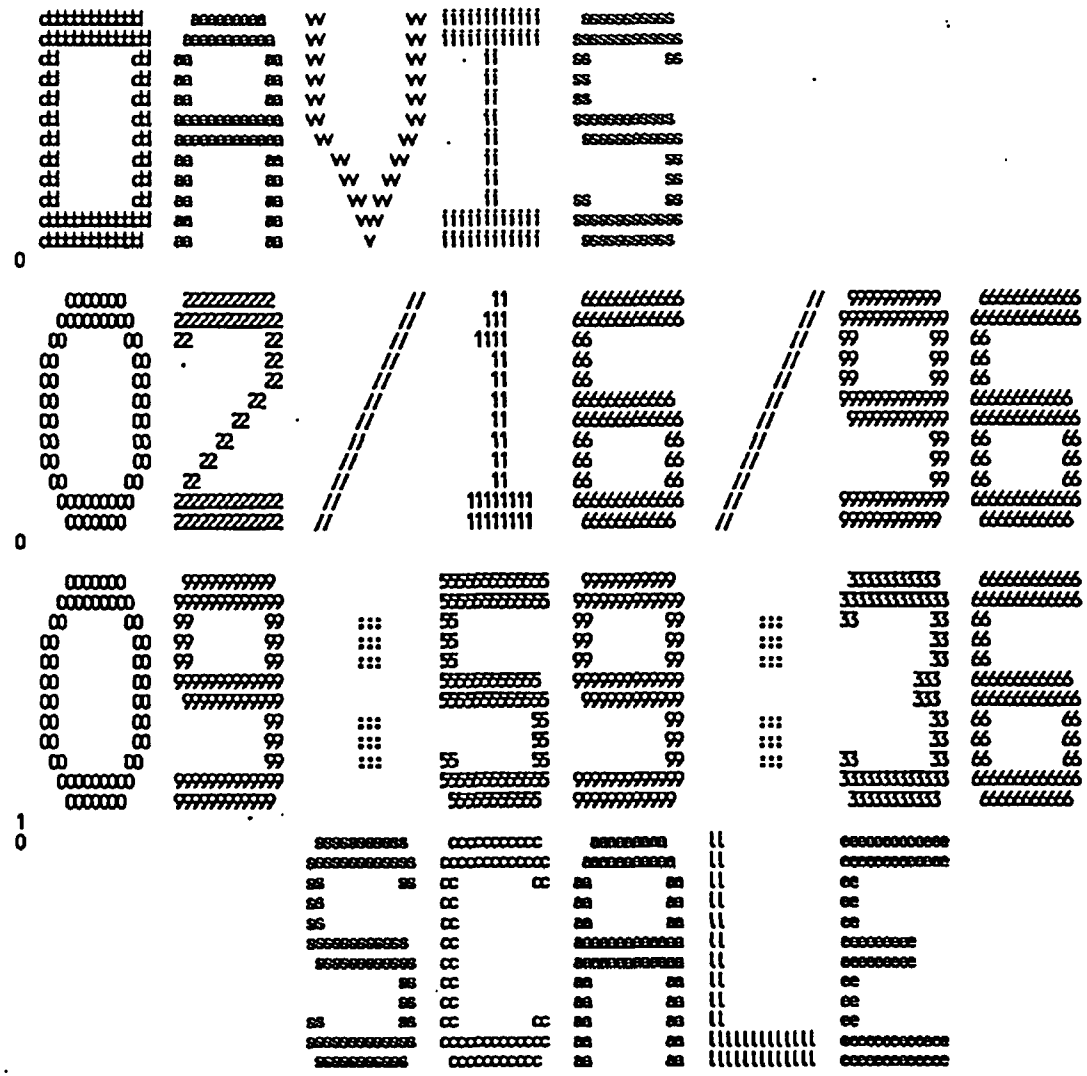
INFORMATION ONLY

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-05
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	2.74869E+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	1.95198E-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	3.86612E+01
952410	to 952420	1.00850E+03
952410	tot-cap	1.02042E+03
952430	fission	3.16277E+00
952430	nu-sigf	1.06299E+01
952430	to 952440	3.97104E+02
952430	tot-cap	4.00267E+02
962440	to 962430	5.23188E-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
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
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  952430 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 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
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, cpn =     9.1188E-04
0             half-norm of matrix used, axn =     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-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...
         pass  1
         pass  0
```

INFORMATION ONLY

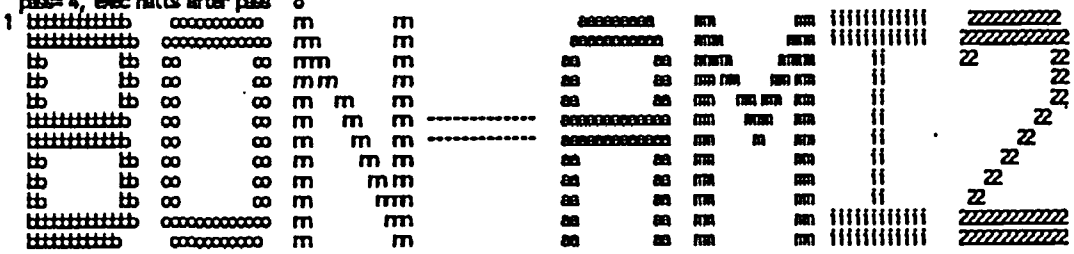
INFORMATION ONLY

```
      *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, 3.00wt%, 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)
            charge    360.0 d    400.0 d    440.0 d    480.0 d    480.0 d    520.0 d    560.0 d
      u230  9.43E-22  1.21E-21  1.49E-21  1.83E-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  2.28E-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  2.33E-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 8.08E-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
```

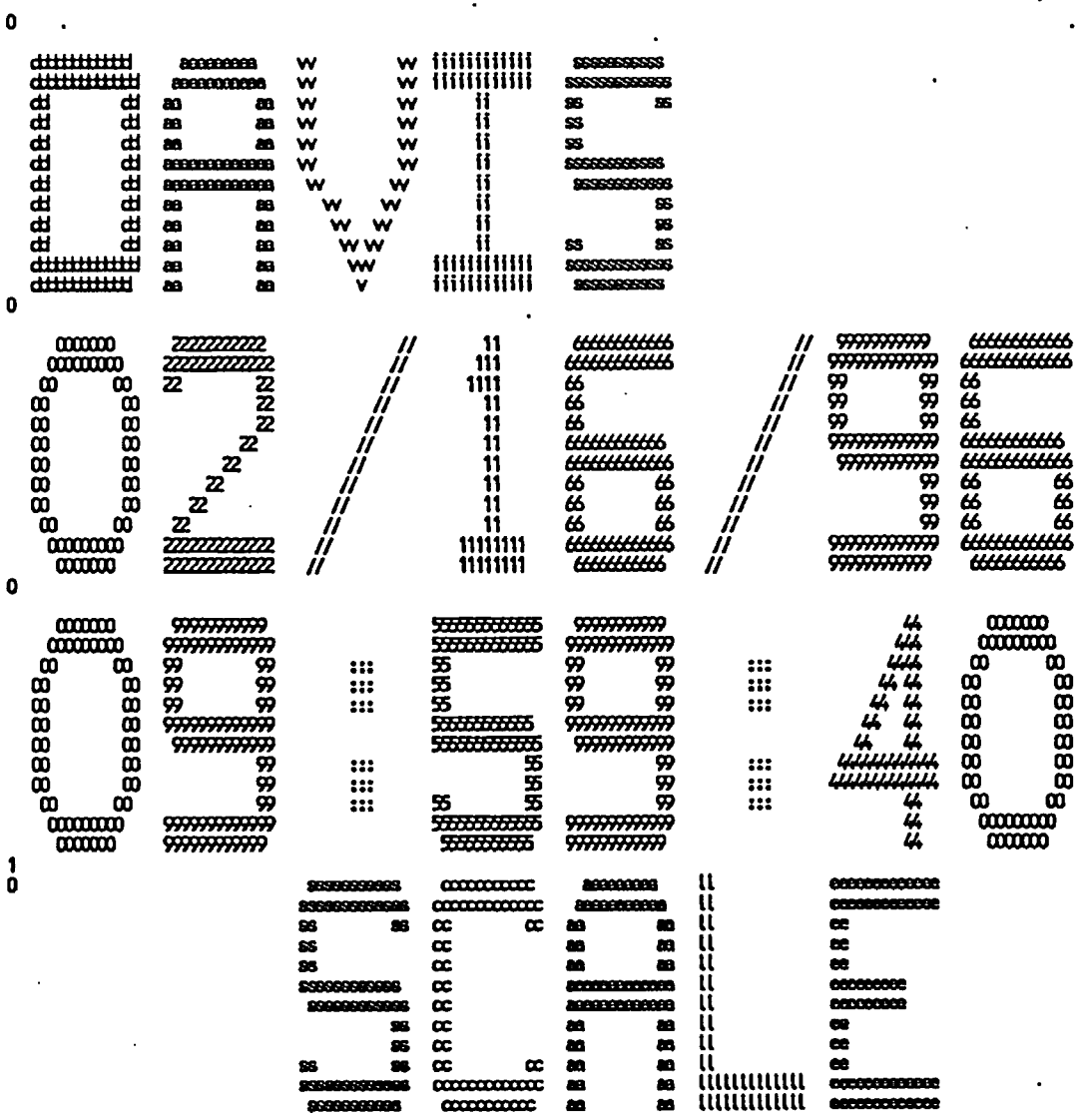
INFORMATION ONLY

```
    rp240  1.09E-11  1.42E-11  1.42E-11  1.42E-11  1.41E-11  1.04E-11  1.41E-11  1.42E-11
    rp241   .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  1.88E-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  1.16E-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  1.06E-11  1.68E-11  2.08E-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  3.85E-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  6.46E-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  5.16E-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  5.08E-13  9.10E-13  1.46E-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, 3.00wt%, 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

Ordset          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.
    1140  66991
    used  101044 in size  200000
0jqpt          12
          0          0          0          0          0          0          0          0          0          0
          0          0
0therm          4
 5.096365E-01 4.040221E-01 3.094528E+00 1.000000E-31
0hcn            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
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
 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 2.0134E+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  ses2h: 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
```



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:  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
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
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

Centry	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	9.77059E-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	1.88698E-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	1.62136E-10	51124
25	1	54131	5.77241E-06	54131
26	1	54132	1.00605E-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	40802	4.25156E-02	40802
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	1.97948E-06	93237
57	1	94238	1.77348E-07	94238
58	1	94239	8.26635E-05	94239
59	1	94240	1.15798E-05	94240

INFORMATION ONLY

60	1	94241	5.05481E-06	94241
61	1	94242	3.41071E-07	94242
62	1	95241	9.66355E-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 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
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

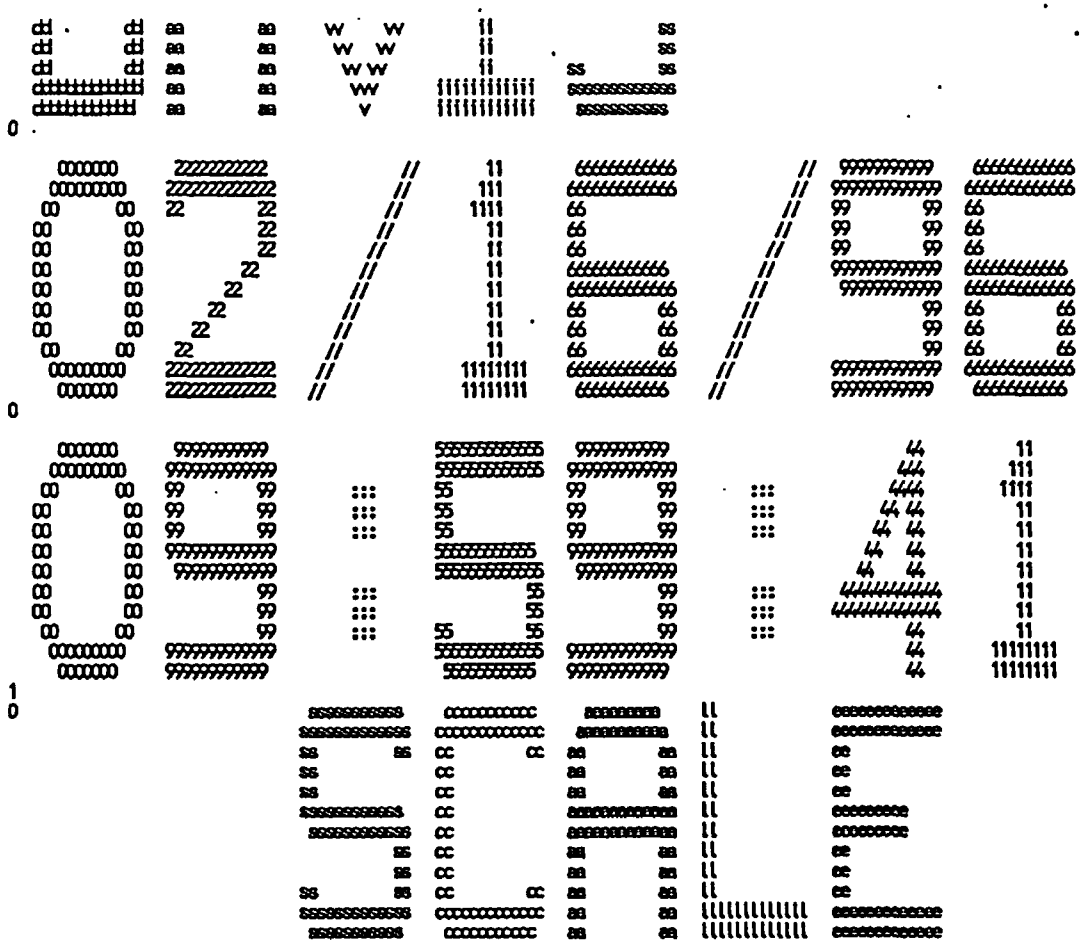
INFORMATION ONLY

```
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/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
```

INFORMATION ONLY

```
      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-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 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              rm        rm iiiiiiiiiiii   tttttttttttt     aaaaaaaaa   ww        ww ll
               rmm       rm iiiiiiiiiiii   tttttttttttt     aaaaaaaaaa  ww        ww ll
               rmm       rm      ii            tt        aa        aa ww        ww ll
               rm rm     rm      ii            tt        aa        aa ww        ww ll
               rm  rm    rm      ii            tt        aa        aa ww        ww ll
               rm   rm   rm      ii            tt        aaaaaaaaaaaa ww    w   ww ll
               rm    rm  rm      ii            tt        aaaaaaaaaaaa ww   www  ww ll
               rm     rm rm      ii            tt        aa        aa ww  ww ww ww ll
               rm      rm rm     ii            tt        aa        aa ww ww   ww ww ll
               rm       rmm      ii            tt        aa        aa wwww     wwww ll
               rm        rm iiiiiiiiiiii      tt        aa        aa www       www llllllllllll
               rm        rm iiiiiiiiiiii      tt        aa        aa ww        ww llllllllllll
0

   dddddddddddd     aaaaaaaaa    w        w iiiiiiiiiiii     ssssssssssss
   dddddddddddd    aaaaaaaaaaa   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
```

INFORMATION ONLY



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:  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 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 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
```

INFORMATION ONLY

```
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 newxlacs 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 newxlacs 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 newxlacs 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 newxlacs 218ngp 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/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
```

INFORMATION ONLY

```
                    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  = 9.7708285E-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      =  257.933          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     -1.388983E-03    .000000E+00   -1.759590E-03
  12      2.166790E-02    .000000E+00    9.901676E-03
  13     -3.216016E-01    .000000E+00   -9.862398E-02
  14      4.782766E-05    .000000E+00   -1.722850E-05
0excess resonance integrals
0                resolved
0absorption     1.4490E+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  = 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      =  257.933          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    .000000E+00   -8.242978E-05
  10     -4.720001E-05    .000000E+00   -1.330676E-04
0excess resonance integrals
0                resolved
0absorption     1.4644E-01
 fission        .0000E+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
```

INFORMATION ONLY

INFORMATION ONLY

```
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =   237.953              sigma(per absorber atom)= 1.490222E+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    3.439.0E-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
0spin factor (g)          =    1.079        lump dimension (a-bar)  = 5.461000E-01
0inner radius             = 4.787899E-01    dancoff correction (c)  = 5.056463E-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     -1.780926E-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     -1.885957E-01    .000000E+00   -7.920912E-01
0excess resonance integrals
0              resolved
0absorption    2.2853.E-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  = 5.489708E-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)= 3.110507E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =   237.953             sigma(per absorber atom)= 3.470856E+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  = 9.680285E-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)= 1.7639945E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.9680678E+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      -2.768862E+00    .000000E+00   -3.186731E+00
  13       1.591845E-04    .000000E+00   -2.397023E-05
0excess resonance integrals
0                  resolved
0absorption       9.97889E+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    = 1.2446981E-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)= 1.3718964E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.5306087E+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   -7.532898E-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   -2.802316E-04
  17       2.074402E-04    .000000E+00   -1.192082E-05
0excess resonance integrals
0                  resolved
0absorption       3.27549E+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    = 1.1066534E-05
0spin factor (g)          =  8785.290          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)= 1.5430277E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.7215379E+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
```

INFORMATION ONLY

```
  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          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   = 6.4755109E-06
0spin factor (g)          =      .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)= 2.6370074E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 2.9420779E+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     -2.977085E-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      2.298552E-01    .000000E+00    3.324061E-03
  16      3.506692E+01    .000000E+00   -5.387979E-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      1.089838E+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    1.799034E-03
0excess resonance integrals
0                 resolved
0absorption      1.15157E+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   = 3.8154349E-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)= 4.4754977E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 4.9932598E+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
```

INFORMATION ONLY

```
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    = 9.3032725E-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)= 1.8354798E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 2.0478233E+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       6.898835E-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       2.946586E-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    = 6.6833451E-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)= 2.5550053E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 2.8505872E+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   -2.078532E-03
  12      -7.117940E-01    .000000E+00   -3.246696E-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    = 5.7724055E-06
0spin factor (g)          =   246.825          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
```

INFORMATION ONLY

INFORMATION ONLY

```
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 2.958206E+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   -1.146861E-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  = 1.006052E-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      3.338609E-08     .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
```

```
  12      -1.087364E-01     .000000E+00   -1.514590E-02
  13      -1.806647E-01     .000000E+00   -9.834943E-03
  14      -8.027154E+00     .000000E+00   -3.517231E-01
  15       5.625014E-03     .000000E+00   -4.054422E-04
  16       2.777885E-03     .000000E+00   -2.215274E-04
  17       2.352273E-03     .000000E+00   -1.830700E-04
  18       2.215057E-03     .000000E+00   -1.679488E-04
  19       1.317054E-03     .000000E+00   -9.671629E-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    = 8.1511402E-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)= 2.0949178E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.983          sigma(per absorber atom)= 2.3372750E+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      1.38475E+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    = 1.3107317E-05
0spin factor (g)          =   145.855          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)= 1.3027813E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.983          sigma(per absorber atom)= 1.4534978E+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.
```

INFORMATION ONLY

```
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  = 1.098705E-05
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)= 1.554192E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.733995E+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    -1.466163E-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     1.217A2E+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  = 1.066310E-05
0spin factor (g)          =  1964.860          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)= 1.601407E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.786671E+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     -2.502638E-01     .000000E+00    -2.911259E+00
  12     -1.644718E-01     .000000E+00    -8.092445E-02
0excess resonance integrals
0                resolved
0absorption     5.1066E+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  = 7.739668E-06
0spin factor (g)          =  1007.250          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)= 2.206298E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 2.461533E+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
```

INFORMATION ONLY

```
  10      -3.127119E-03     .000000E+00   -4.923112E-02
  11      -4.765503E-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       5.904867E-03     .000000E+00   -4.619551E-04
  16       1.326684E-03     .000000E+00   -1.451367E-04
  17       9.642499E-04     .000000E+00   -1.063983E-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
```

INFORMATION ONLY

```
  12    1.088846E+00    .000000E+00   -1.408563E+00
  13   -2.806831E+00    .000000E+00   -1.302602E+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   -2.401539E-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
Oexcess resonance integrals
0                resolved
Oabsorption      7.25525E+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
Oresonance data for this nuclide
Omass number (a)        =   147.638          temperature(kelvin)     =  975.000
Opotential scatter sigma =    3.260          lumped nuclear density  = 8.0202490E-08
Ospin factor (g)        = 10407.900          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)= 2.1291073E+06
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  257.933           sigma(per absorber atom)= 2.3754198E+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
  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   -7.090898E-03
Oexcess resonance integrals
0                resolved
Oabsorption      8.04343E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-150      mt=102                      updated 10/13/89          62150    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)        =   148.629          temperature(kelvin)     =  975.000
Opotential scatter sigma =    5.162          lumped nuclear density  = 2.5441905E-06
Ospin factor (g)        =  4376.420          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)= 6.7117500E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  257.933           sigma(per absorber atom)= 7.4882203E+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   -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
Oexcess resonance integrals
0                resolved
Oabsorption      2.89852E+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    = 3.3200570E-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)= 5.1432759E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.983            sigma(per absorber atom)= 5.7382925E+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    = 1.2446013E-06
0spin factor (g)          =  863.594          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)= 1.3720031E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.983            sigma(per absorber atom)= 1.5307278E+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       4.225402E-02    .000000E+00    1.027737E-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    = 6.3078977E-07
```

INFORMATION ONLY

```
Ospin factor (g)          = 12265.900          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)= 2.7070775E+05
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953            sigma(per absorber atom)= 3.0202547E+05
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
  12      -2.772846E-01     .000000E+00    -5.409002E-02
  13      -1.013753E-01     .000000E+00    -2.071329E-03
  14      -6.824808E-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       1.505605E-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
Oexcess resonance integrals
O                  resolved
Oabsorption       1.35519E+03
 fission           .00000E+00
- elapsed time     .17 min.
O eu-154        mt=102,103,104,105,106,107    updated 10/13/89          63154    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =   152.601          temperature(kelvin)       =   975.000
Opotential scatter sigma  =     9.731          lumped nuclear density    = 9.5298013E-08
Ospin factor (g)          = 19135.801          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)= 1.7918495E+06
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953            sigma(per absorber atom)= 1.9991453E+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
  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
Oexcess resonance integrals
O                  resolved
Oabsorption       2.13692E+03
 fission           .00000E+00
- elapsed time     .18 min.
O eu-155        mt=102,103,104,105,106,107    updated 10/13/89          63155    temperature=  975.00
O gd-155        mt=102                        updated 10/13/89          64155    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =   153.592          temperature(kelvin)       =   975.000
Opotential scatter sigma  =     5.277          lumped nuclear density    = 1.1837075E-09
Ospin factor (g)          = 12700.100          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)= 1.4425835E+08
```

INFORMATION ONLY

```
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.933              sigma(per absorber atom)= 1.6094734E+08
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
  12      -1.439291E+00     .000000E+00    -1.839456E-01
  13       1.541241E+00     .000000E+00     1.985186E-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
Oexcess resonance integrals
O                  resolved
Oabsorption       3.97057E+04
 fission           .00000E+00
- elapsed time     .18 min.
Ou-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                    92234     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   232.029          temperature(kelvin)       =   975.000
Opotential scatter sigma  =    10.021          lumped nuclear density    = 4.8493789E-06
Ospin factor (g)          =  6948.450          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)= 3.5212695E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.935              sigma(per absorber atom)= 3.9274359E+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
  11      -2.320080E-02     .000000E+00    -6.765317E-02
  12      -1.891160E-01     .000000E+00    -7.924187E-02
  13       7.759874E-04     .000000E+00    -6.471546E-04
  14      -1.852598E+01     .000000E+00    -3.033657E+00
Oexcess resonance integrals
O                  resolved
Oabsorption       5.81870E+02
 fission           .00000E+00
- elapsed time     .20 min.
O uranium-235    endf/b-iv mat 1261          updated 10/13/89          92235     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   233.025          temperature(kelvin)       =   975.000
Opotential scatter sigma  =    11.500          lumped nuclear density    = 4.9025129E-04
Ospin factor (g)          = 15171.100          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)= 3.4831055E+02
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   238.049              sigma(per absorber atom)= 3.7379553E+02
```

INFORMATION ONLY

```
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   -3.895792E-02
0excess resonance integrals
0                 resolved
0absorption       2.10693E+02
 fission          1.25499E+02
- elapsed time    .22 min.
0u-236 1163 sigo=5+4 newxlacs 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   = 3.9825801E-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)= 4.2878804E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.934          sigma(per absorber atom)= 4.7831025E+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   = 2.1918545E-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)= 7.7906489E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   235.041          sigma(per absorber atom)= 3.3544329E-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      -3.939976E-02    .000000E+00   -4.046979E-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   -4.998776E+01
  13      -5.401412E+01    .000000E+00   -1.789151E+01
  14      -1.045006E+02    .000000E+00   -6.059761E+00
0excess resonance integrals
0                 resolved
0absorption       1.80080E+01
 fission          5.03969E-04
- elapsed time    .23 min.
```

INFORMATION ONLY

```
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   = 1.9794916E-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)= 8.6264414E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 9.2529891E+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      -6.338531E-02   -2.012413E-06   -7.400325E-03
  12       3.148655E-02   -9.852385E-05    7.995239E-03
  13      -4.917675E-03    8.935276E-05   -4.406471E-04
  14      -4.483762E-02   -5.801127E-06   -1.160987E-03
0excess resonance integrals .
0                 resolved
0absorption      2.93103E+02
 fission         1.38574E-01
- elapsed time    .27 min.
0pu-238 1050 sigo=5+4 newxlacs 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  =    10.890          lumped nuclear density   = 1.7734772E-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)= 9.6285250E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.0327856E+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      -8.062604E-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   = 8.2663486E-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)= 2.0657207E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 2.2157563E+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
```

INFORMATION ONLY

INFORMATION ONLY

```
  11     -1.731143E-01  -6.962568E-02  -5.309264E-02
  12     -1.543933E+00  -5.794014E-01  -2.033134E-01
  13     -5.069869E+00  -2.983289E+00  -7.734127E-02
  14     -1.616615E+00  -8.598663E-01  -1.447852E-02
0excess resonance integrals
0                resolved
0absorption      3.0960E+02
 fission         1.7387E+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   -1.669441E-04   -1.253630E-02
  11     -8.856678E-02   -5.120134E-04   -1.178721E-01
  12     -1.236512E+00   -6.752137E-03   -1.188653E+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     -6.409366E+03   -1.225256E+00   -5.070545E+02
  19      7.663346E+02    1.462583E-01    5.942857E+01
  20     -9.327890E+01   -1.780269E-02    1.798134E+00
0excess resonance integrals
0                resolved
0absorption      5.5642E+03
 fission         2.0791OE+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  =   10.599          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    5.139614E-03    6.305210E-04
  13     -3.513053E-01   -2.733082E-01   -1.028470E-02
  14     -2.874569E-01   -1.940983E-01   -1.548980E-05
  15      1.794222E-02    1.608441E-02   -4.673214E-04
0excess resonance integrals
0                resolved
```

```
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   -2.272786E-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      1.550392E-02    .000000E+00   -1.848240E-03
  18      1.112569E-02    .000000E+00   -1.430698E-03
0excess resonance integrals
0                resolved
0absorption      1.10786E+03
 fission         .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp=5+4 newxlacs 218ngp p-3 298k                          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 298k                           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.
```

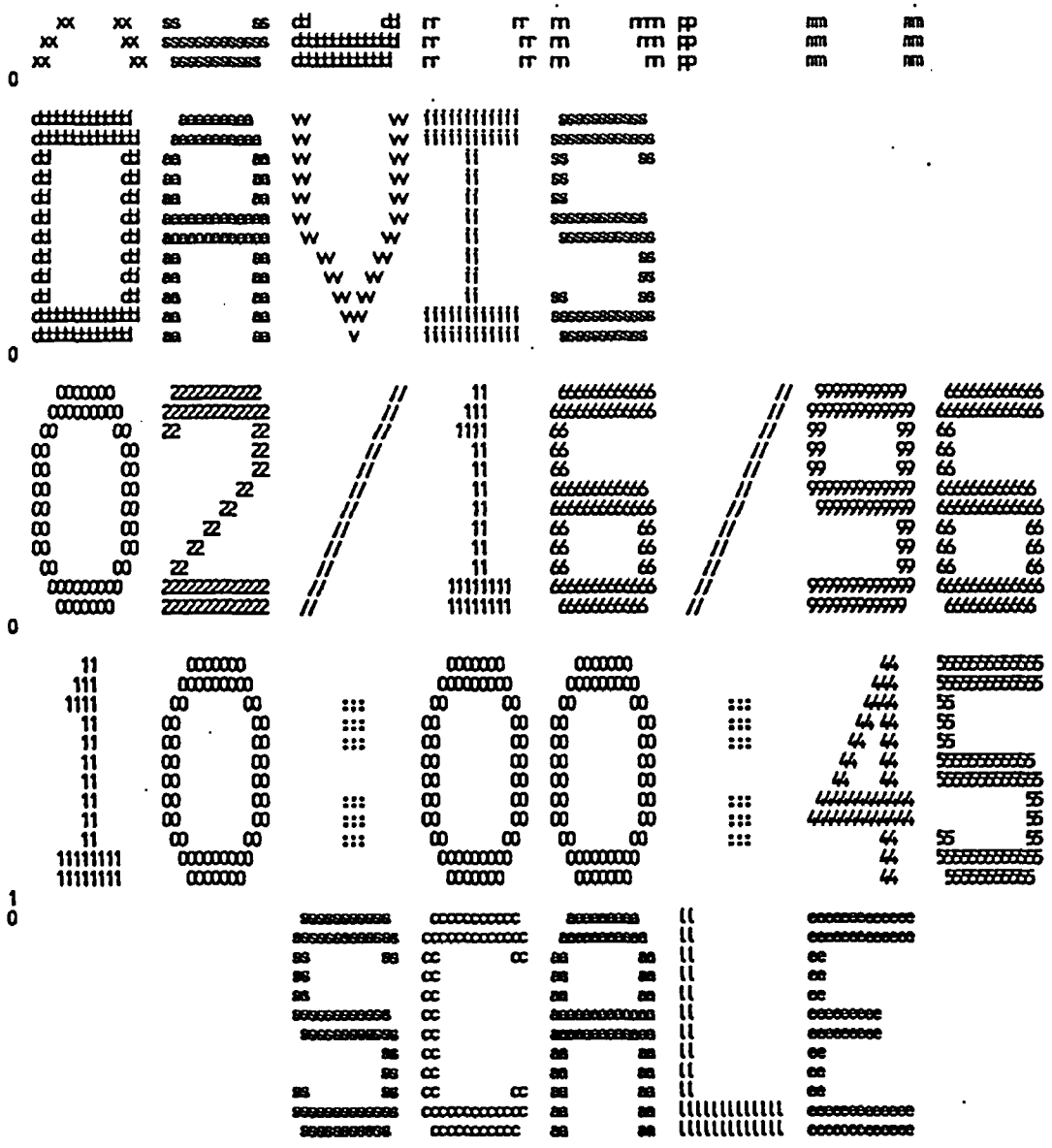
INFORMATION ONLY

INFORMATION ONLY

```
Omass of moderator-2    =   238.051              sigma(per absorber atom)= 9.9176360E+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
  13      -6.806792E-03    .000000E+00    4.328656E-04
  14       2.134225E-02    .000000E+00    2.224311E-04
Oexcess resonance integrals
0                  resolved
Oabsorption        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
Oresonance data for this nuclide
Omass number (a)          =   242.133          temperature(kelvin)      =   975.000
Opotential scatter sigma  =    10.320          lumped nuclear density   = 1.0461749E-09
Ospin factor (g)          =  5251.150          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)= 1.6322288E+08
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   238.051              sigma(per absorber atom)= 1.7507795E+08
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
  11       2.553260E-04    6.986240E-06    3.015316E-04
  12       6.831913E-04    3.211379E-05    1.340608E-04
  13       2.708539E-03    1.329417E-04    7.121908E-04
  14       7.958634E-02    4.761576E-03    1.462926E-02
Oexcess resonance integrals
0                  resolved
Oabsorption        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/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
```

INFORMATION ONLY

```
      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 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 218rgp 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  ssssssssss  dddddddddd  rrrrrrrrrr  rrr       rrr  pppppppppp  mm        mm
   xx       xx  ssssssssssss dddddddddd  rrrrrrrrrr  rrrr      rrr  pppppppppp  mmm       mmm
    xx     xx  ss        ss  dd       dd  rr       rr  rrrrr     rrr  pp       pp  mmmm     mmmm
     xx   xx   ss            dd       dd  rr       rr  rrr rrr   rrr  pp       pp  mm mm   mm mm
      xx xx    ss            dd       dd  rr       rr  rrr  rrr  rrr  pp       pp  mm  mm mm  mm
       xxx     ssssssssssss  dd       dd  rrrrrrrrrr  rrr   rrr  rrr  pppppppppp  mm   mmm   mm
       xxx      ssssssssssss dd       dd  rrrrrrrrrr  rrr    rrr  rrr  pppppppppp  mm    m    mm
      xx xx             ss  dd       dd  rr      rr  rrr     rrr  rrr  pp          mm         mm
     xx   xx            ss  dd       dd  rr      rr  rrr      rrr rrr  pp          mm         mm
```



INFORMATION ONLY

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
 ima  number of zones                    4      isct order of scattering               3
 in   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
 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 rd/pch r/both    53
 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
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 39*/34*/use last	53	iai	0/1=none/activities by interval	0
tmx	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
iblh	activity data unit	0	rtrd	bard 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
ignf	number of broad groups	27	nbsf	psn g-g or file number	4
itp	0/10/20/30/40 0/c/e/ac/a	0	nusf	table length or max order	4
ipp	-2/-1/0/n=edited xsect print	-2	nscn	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	xnpa	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.)

	nuclides on tape	cccc identification	mixing table mixture	mixing table component	atom density	extra xsect id's
1	999		1	92235	4.90251E-04	
2	1001		1	92234	4.84738E-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	42095		1	42095	9.68029E-06	
12	40094		1	40093	8.21428E-06	
13	40095		1	40094	1.27843E-05	
14	40802		1	40095	2.07590E-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	1.88628E-08	
19	44106		1	44101	1.10665E-05	
20	45103		1	44106	1.68007E-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	5.77241E-06	
26	54131		1	54132	1.00606E-05	
27	54132		1	54135	6.65420E-09	

INFORMATION ONLY

INFORMATION ONLY

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	8.83978E-09
41	60147	1	60147	1.31597E-07
42	61147	1	62147	6.67818E-07
43	61148	1	62149	8.08025E-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	40802	4.25156E-02
52	64155	3	1001	4.19420E-02
53	90234	3	5010	3.81515E-06
54	90235	3	5011	1.54884E-05
55	90236	1	55133	1.36295E-05
56	90238	1	93237	1.97940E-06
57	93237	1	94238	1.77340E-07
58	94238	1	94239	8.26636E-05
59	94239	1	94240	1.15796E-05
60	94240	1	94241	5.05481E-06
61	94241	1	94242	3.41071E-07
62	94242	1	95241	9.66356E-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	lethergy 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	2.88757E+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	1.46538E+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	

INFORMATION ONLY

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	5.69599E+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	1.50080E+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	1.59999E+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	4.86933E+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%, 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	-1.97286E-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	-1.28592E-02
7					5.55953E-02	2.31301E-01	6	1.28592E-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	-3.14637E-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	3.14637E-02
15					5.22844E-02	8.21784E-01	10	4.29665E-02
16					0	-9.83052E-01	24	0
17					4.53366E-02	-9.64143E-01	24	-4.37099E-02
18					4.53366E-02	-8.17361E-01	23	-3.70655E-02
19					4.53366E-02	-5.46143E-01	22	-2.47597E-02
20					4.53366E-02	-1.91780E-01	21	-8.69444E-03
21					4.53366E-02	1.91780E-01	20	8.69444E-03
22					4.53366E-02	5.46143E-01	19	2.47597E-02
23					4.53366E-02	8.17361E-01	18	3.70655E-02
24					4.53366E-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	2.25714E-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	6.26863E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42852E-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	-5.42852E-01	-5.13643E-02	3.44245E-01

INFORMATION ONLY

13	2.20194E-01	-8.57235E-02	-5.42852E-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	5.42852E-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	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20852E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20852E-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	-3.20852E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20852E-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	2.10506E-03	1.00000E+00	0
2	2.59102E-02	4.33405E-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	1.14346E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0
5	2.34061E-01	2.93567E-01	1	1.47056E+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	9.30425E-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	5.24903E-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	5.15681E-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	6.45795E-01	4	3.84201E+00	2.78169E-01	1.00000E+00	
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07703E-01	1.00000E+00	
22	7.48592E-01	7.63882E-01	4	4.70854E+00	1.46875E-01	1.00000E+00	
23	7.79183E-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	-9.52034E-06	1.08075E+00	-1.44108E-05	-8.42885E-03	-3.60698E-03	.00000E+00	.0000
3	269	1.26498E-05	1.08152E+00	-2.11928E-04	-1.04988E-03	-7.90825E-04	.00000E+00	.0000
4	314	3.15023E-06	1.08185E+00	-4.38725E-05	-2.33589E-04	-1.68522E-04	.00000E+00	.0167
5	343	-1.44547E-05	1.08211E+00	-9.74334E-06	-4.97653E-05	-3.22620E-05	.00000E+00	.0167

grp to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	1.84055E-08	2%	1.00000E+00	1
2	1	1	1.97450E-08	2%	1.00000E+00	1
3	1	1	1.70298E-08	2%	1.00000E+00	1
4	1	1	1.49782E-08	2%	1.00000E+00	1
5	1	1	8.71266E-09	2%	1.00000E+00	1
6	1	1	3.09274E-09	2%	1.00000E+00	1
7	1	2	1.84984E-09	2%	1.00000E+00	1
8	1	2%	1.01951E-09	2%	1.00000E+00	1
9	1	1	1.96840E-09	2%	1.00000E+00	1
10	1	1	1.75084E-09	2%	1.00000E+00	1
11	1	1	1.78388E-09	2%	1.00000E+00	1
12	1	2%	3.26841E-09	2%	1.00000E+00	1

13	13	1	24	4.4052E-09	24	1.00000E+00	1
14	14	1	24	4.2190E-09	24	1.00000E+00	1
15	15	1	24	3.7911E-05	24	9.99977E-01	1
16	16	1	24	4.6988E-05	24	9.99982E-01	1
17	17	1	24	6.0180E-05	24	9.99989E-01	1
18	18	1	18	2.1648E-05	24	9.99959E-01	1
19	19	1	24	5.9130E-05	24	9.99984E-01	1
20	20	1	24	4.6285E-05	24	9.99967E-01	1
21	21	1	18	2.4987E-05	24	9.99945E-01	1
22	22	1	24	4.2250E-05	24	9.99989E-01	1
23	23	1	24	1.9822E-06	24	1.00000E+00	1
24	24	1	2	9.3199E-06	24	1.00001E+00	1
25	25	1	24	1.6361E-05	24	1.00000E+00	1
26	26	1	1	1.0673E-05	24	9.99996E-01	2
27	27	1	2	4.9180E-06	24	1.00000E+00	2

6 370 -3.3589E-07 1.0819E+00 -2.1837E-06 -9.7860E-06 -6.6053E-06 .0000E+00 .0167

final monitor

lambda 1.0819E+00 production/absorption 1.0819E+00 angular flux on 16

- elapsed time .02 min.

1 560 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	3.1663E-03
2	1	2.5910E-02	4.3340E-02	1.6279E-01	9.4851E-03	1.4245E-02
3	1	6.0771E-02	8.7510E-02	3.8183E-01	2.9405E-02	4.4206E-02
4	1	1.1424E-01	1.7416E-01	7.1784E-01	1.3110E-01	1.9868E-01
5	1	2.3406E-01	2.9896E-01	1.4706E+00	2.2129E-01	3.4382E-01
6	1	3.5387E-01	3.8061E-01	2.2234E+00	1.2780E-01	2.0385E-01
7	1	4.0735E-01	4.2678E-01	2.5594E+00	9.3042E-02	1.5115E-01
8	1	4.4221E-01	4.5516E-01	2.7785E+00	7.4100E-02	1.2251E-01
9	2	4.6812E-01	4.8881E-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	1.1756E-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	5.2403E-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	5.1583E-02	.0000E+00
18	4	5.6092E-01	5.7090E-01	3.5244E+00	7.1654E-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	7.6887E-01	4.7085E+00	1.4687E-01	.0000E+00
23	4	7.7919E-01	7.8916E-01	4.8658E+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		

1 560 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	1.7725E-01	1.3281E+00	1.6809E+00	1.0417E+00	1.5795E+00	3.0511E+00	2.9054E+00	2.0805E+00
2	1.7731E-01	1.3287E+00	1.6814E+00	1.0422E+00	1.5766E+00	3.0524E+00	2.9061E+00	2.0806E+00
3	1.7726E-01	1.3281E+00	1.6806E+00	1.0417E+00	1.5758E+00	3.0503E+00	2.9051E+00	2.0805E+00
4	1.7685E-01	1.3238E+00	1.6751E+00	1.0384E+00	1.5705E+00	3.0203E+00	2.8987E+00	2.0794E+00
5	1.7583E-01	1.3129E+00	1.6613E+00	1.0300E+00	1.5573E+00	2.9943E+00	2.8832E+00	2.0768E+00
6	1.7443E-01	1.3004E+00	1.6457E+00	1.0206E+00	1.5425E+00	2.9658E+00	2.8662E+00	2.0739E+00
7	1.7369E-01	1.2906E+00	1.6337E+00	1.0134E+00	1.5314E+00	2.9448E+00	2.8538E+00	2.0717E+00
8	1.7275E-01	1.2811E+00	1.6221E+00	1.0067E+00	1.5211E+00	2.9256E+00	2.8426E+00	2.0697E+00
9	1.7223E-01	1.2759E+00	1.6159E+00	1.0031E+00	1.5156E+00	2.9156E+00	2.8368E+00	2.0686E+00
10	1.7213E-01	1.2749E+00	1.6147E+00	1.0024E+00	1.5146E+00	2.9138E+00	2.8358E+00	2.0684E+00
11	1.7197E-01	1.2734E+00	1.6129E+00	1.0014E+00	1.5132E+00	2.9113E+00	2.8344E+00	2.0681E+00

INFORMATION ONLY

12	1.71870E-01	1.27263E+00	1.61178E+00	1.00089E+00	1.51233E+00	2.90987E+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	1.24330E+00	1.57203E+00	9.74080E-01	1.46878E+00	2.82382E+00	2.78361E+00	2.06407E+00
21	1.69218E-01	1.24050E+00	1.56790E+00	9.71095E-01	1.46376E+00	2.81400E+00	2.77782E+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	2.77886E+00	2.06448E+00
24	1.69384E-01	1.24264E+00	1.57009E+00	9.72639E-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	1.31607E+00	7.95512E-01	6.71182E-01	5.87528E-01	3.70100E-01	2.04382E-01
2	1.58694E+00	1.44589E+00	1.31487E+00	7.95281E-01	6.70971E-01	5.87261E-01	3.70074E-01	2.04359E-01
3	1.58713E+00	1.44610E+00	1.31533E+00	7.95825E-01	6.71425E-01	5.87935E-01	3.70751E-01	2.04404E-01
4	1.58816E+00	1.44733E+00	1.31797E+00	7.98909E-01	6.74040E-01	5.91827E-01	3.73574E-01	2.04662E-01
5	1.59075E+00	1.45033E+00	1.32447E+00	8.06515E-01	6.80486E-01	6.01479E-01	3.71595E-01	2.05259E-01
6	1.59363E+00	1.45361E+00	1.32158E+00	8.14850E-01	6.87572E-01	6.12163E-01	3.72694E-01	2.05979E-01
7	1.59583E+00	1.45601E+00	1.32681E+00	8.21038E-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	2.06939E-01
9	1.59899E+00	1.45931E+00	1.33404E+00	8.29760E-01	7.00126E-01	6.31519E-01	3.74551E-01	2.07175E-01
10	1.59919E+00	1.45950E+00	1.33444E+00	8.30236E-01	7.00535E-01	6.31992E-01	3.74612E-01	2.07216E-01
11	1.59947E+00	1.45978E+00	1.33501E+00	8.30917E-01	7.01118E-01	6.32795E-01	3.74699E-01	2.07274E-01
12	1.59966E+00	1.45998E+00	1.33537E+00	8.31357E-01	7.01498E-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	7.04683E-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	6.46256E-01	3.76120E-01	2.08177E-01
17	1.60303E+00	1.46480E+00	1.34576E+00	8.43278E-01	7.11708E-01	6.48529E-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	6.63446E-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	8.54542E-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	1.26526E-01	4.31253E-01	1.11293E-01	1.88516E-01	6.92956E-01	5.05696E-01
2	8.43977E-02	4.40589E-02	1.26286E-01	4.31126E-01	1.11225E-01	1.88382E-01	6.92536E-01	5.05349E-01
3	8.44475E-02	4.42477E-02	1.26574E-01	4.31332E-01	1.11413E-01	1.89773E-01	6.93574E-01	5.06528E-01
4	8.47397E-02	4.51682E-02	1.26900E-01	4.32512E-01	1.12444E-01	1.92805E-01	6.92564E-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	5.02950E-02	1.29583E-01	4.38580E-01	1.17829E-01	2.09044E-01	7.29600E-01	5.39721E-01
7	8.68531E-02	5.23698E-02	1.30602E-01	4.40905E-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	1.31990E-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	1.32186E-01	4.44571E-01	1.23514E-01	2.26349E-01	7.60142E-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	8.82064E-02	5.71589E-02	1.32869E-01	4.46166E-01	1.24921E-01	2.30314E-01	7.67726E-01	5.75269E-01
15	8.85891E-02	5.85268E-02	1.33521E-01	4.47648E-01	1.26228E-01	2.34044E-01	7.74681E-01	5.81488E-01
16	8.88345E-02	5.90644E-02	1.33947E-01	4.48597E-01	1.27066E-01	2.36404E-01	7.79071E-01	5.85305E-01
17	8.90140E-02	5.96200E-02	1.34253E-01	4.49267E-01	1.27712E-01	2.38245E-01	7.82697E-01	5.88516E-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	2.43936E-01	7.94526E-01	6.01023E-01
20	8.99014E-02	6.24211E-02	1.35747E-01	4.52592E-01	1.31080E-01	2.47880E-01	8.03097E-01	6.10051E-01
21	9.01556E-02	6.32566E-02	1.36172E-01	4.53533E-01	1.32009E-01	2.50744E-01	8.09564E-01	6.17057E-01

INFORMATION ONLY

INFORMATION ONLY

22	9.01746E-02	6.33218E-02	1.36197E-01	4.53666E-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	2.50592E-01	8.09236E-01	6.17274E-01
24	9.00219E-02	6.28831E-02	1.35927E-01	4.52900E-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	1.26486E-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	2.32408E-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	2.44888E-01	1.59966E-01	2.64544E-02
15	2.47983E-01	1.62589E-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	3.05053E-02
20	2.63128E-01	1.78296E-01	3.21929E-02
21	2.67081E-01	1.82611E-01	3.35798E-02
22	2.67942E-01	1.83714E-01	3.39321E-02
23	2.67426E-01	1.83334E-01	3.39442E-02
24	2.66652E-01	1.82636E-01	3.37896E-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	6.63878E-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	2.59538E-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	9.84539E-02	7.45017E-01	3.68355E-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	2.30617E-02	-2.10198E-02	9.99971E-01
10	.00000E+00	7.31557E-05	2.06952E-02	4.60513E-01	1.06908E-02	3.57908E-02	-2.57133E-02	1.00001E+00
11	.00000E+00	5.75541E-06	1.08912E-02	4.22014E-01	8.14066E-03	5.82081E-02	-5.56523E-02	1.00001E+00
12	.00000E+00	4.06308E-07	8.14077E-03	2.38761E-01	9.36720E-03	6.39537E-02	-6.51767E-02	9.99958E-01
13	.00000E+00	6.42004E-08	9.36721E-03	1.77659E-01	6.15371E-03	5.89860E-02	-5.57725E-02	1.00001E+00
14	.00000E+00	1.27228E-08	6.15371E-03	1.51950E-01	7.41759E-03	8.22587E-02	-8.35227E-02	1.00000E+00
15	.00000E+00	1.43782E-09	7.50490E-03	8.47901E-02	8.89666E-03	6.76057E-02	-8.19645E-02	1.00282E+00
16	.00000E+00	4.22195E-10	9.06421E-03	4.28271E-02	9.61462E-03	4.94331E-02	-5.52444E-02	1.00211E+00
17	.00000E+00	1.39967E-10	7.74308E-03	1.44958E-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	2.44088E-02	8.96946E-03	8.96532E-03	-1.09213E-02	1.00073E+00
20	.00000E+00	2.23800E-10	1.02950E-02	1.03125E-01	9.74678E-03	2.57831E-02	-2.53119E-02	1.00132E+00
21	.00000E+00	3.27571E-11	9.21705E-03	2.17526E-02	8.43469E-03	2.33962E-02	-2.25684E-02	1.00046E+00
22	.00000E+00	3.80057E-11	1.21888E-02	4.32560E-02	9.73527E-03	6.75239E-02	-6.50935E-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	9.85064E-12	2.25067E-02	1.16329E-01	2.26804E-02	1.17694E-01	-1.17733E-01	1.00044E+00
25	.00000E+00	2.89533E-12	1.92130E-02	4.39144E-02	1.44653E-02	6.43568E-02	-5.96142E-02	1.00035E+00
26	.00000E+00	2.03022E-12	9.42339E-03	3.04366E-02	6.47886E-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	5.42238E+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**2	total flux

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	1.14986E-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	7.06257E-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	1.58875E-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	5.57725E-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	2.04411E-01	.00000E+00	.00000E+00	1.44179E-03	.00000E+00	1.41533E-01
17	8.76697E-02	-6.46574E-03	8.44543E-02	.00000E+00	.00000E+00	1.82542E-03	.00000E+00	5.90763E-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	8.86552E-02
20	4.44088E-01	-2.53119E-02	4.31366E-01	.00000E+00	.00000E+00	1.60106E-02	.00000E+00	3.00697E-01
21	1.29088E-01	-2.25584E-02	1.11389E-01	.00000E+00	.00000E+00	1.45424E-02	.00000E+00	8.00556E-02
22	2.24986E-01	-6.50953E-02	1.89539E-01	.00000E+00	.00000E+00	4.15271E-02	.00000E+00	1.40648E-01
23	7.57788E-01	-1.26468E-01	6.93485E-01	.00000E+00	.00000E+00	7.74830E-02	.00000E+00	4.96108E-01
24	5.66222E-01	-1.17753E-01	5.06153E-01	.00000E+00	.00000E+00	7.46668E-02	.00000E+00	3.68856E-01
25	2.40462E-01	-5.96142E-02	2.09886E-01	.00000E+00	.00000E+00	4.26923E-02	.00000E+00	1.53130E-01
26	1.55781E-01	-5.49278E-02	1.26664E-01	.00000E+00	.00000E+00	3.92310E-02	.00000E+00	9.55977E-02
27	2.53388E-02	-1.51936E-02	1.65069E-02	.00000E+00	.00000E+00	1.10668E-02	.00000E+00	1.38219E-02
28	2.35536E+01	6.20775E-02	2.33257E+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*db**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

INFORMATION ONLY

INFORMATION ONLY

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	3.17976E-02
5	1.51210E+00	1.33369E-01	1.51593E+00	1.33369E-01	.00000E+00	.00000E+00	.00000E+00	4.80460E-02
6	2.90926E+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	8.99736E-02
8	2.06794E+00	2.07218E-02	2.06870E+00	2.07217E-02	.00000E+00	.00000E+00	.00000E+00	6.56386E-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	1.33564E+00	-5.56522E-02	1.33594E+00	-5.56525E-02	.00000E+00	.00000E+00	.00000E+00	4.23578E-02
12	8.31467E-01	-6.51767E-02	8.29634E-01	-6.51765E-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	2.07523E-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	-1.09215E-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	1.23089E-01	-2.25584E-02	.00000E+00	.00000E+00	.00000E+00	3.91608E-03
22	2.26790E-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	7.57788E-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	1.55981E-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	1.45477E-05	-2.75348E-03	1.00002E+00
2	.00000E+00	.00000E+00	4.95860E-04	2.59223E-02	1.86008E-02	5.14987E-05	-1.81564E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.64593E-03	5.01259E-02	1.58483E-02	1.37098E-04	-1.33394E-02	9.99938E-01
4	.00000E+00	.00000E+00	5.13070E-03	4.20944E-02	5.46081E-03	1.08337E-04	-4.22552E-04	9.99986E-01
5	.00000E+00	.00000E+00	1.10582E-02	8.14275E-02	5.16252E-03	1.52070E-04	5.76348E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.84734E-02	2.35015E-01	3.21094E-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	1.58658E-01	7.65480E-03	2.94873E-04	-5.76991E-03	1.00002E+00
9	.00000E+00	.00000E+00	7.66802E-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	-8.06628E-04	9.99988E-01
11	.00000E+00	.00000E+00	8.49175E-04	7.70634E-02	8.70817E-04	1.33917E-03	-1.35857E-03	1.00000E+00
12	.00000E+00	.00000E+00	8.70323E-04	4.67968E-02	8.70630E-04	4.16641E-05	-4.20883E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.70631E-04	3.95085E-02	8.09555E-04	5.99859E-05	4.71622E-05	1.00000E+00
14	.00000E+00	.00000E+00	8.05956E-04	3.59234E-02	6.76981E-04	9.56835E-05	3.32668E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.20965E-04	2.06197E-02	8.43858E-04	8.28063E-05	-2.05243E-04	9.99946E-01
16	.00000E+00	.00000E+00	9.43792E-04	1.03848E-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	2.44708E-02	1.04119E-03	1.82091E-04	-5.39577E-05	9.99971E-01
21	.00000E+00	.00000E+00	1.30334E-03	5.79153E-03	1.36339E-03	6.38042E-05	-1.43766E-04	9.99996E-01
22	.00000E+00	.00000E+00	1.76531E-03	1.17026E-02	1.56403E-03	1.36056E-04	4.52359E-05	9.99996E-01
23	.00000E+00	.00000E+00	2.29357E-03	4.10468E-02	3.01349E-03	6.21609E-04	-1.34172E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.70552E-03	2.90697E-02	3.98800E-03	6.76285E-04	-9.59478E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.59428E-03	1.11990E-02	2.88348E-03	3.80909E-04	3.30836E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.50017E-03	8.13789E-03	1.09542E-03	3.55341E-04	6.95463E-05	1.00000E+00
27	.00000E+00	.00000E+00	3.11835E-04	1.53002E-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	7.66549E-03	-7.54130E-03	9.99984E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*db**2	total flux
1	1.70219E-01	8.34280E-03	1.71863E-01	1.10953E-02	1.01442E-04	.00000E+00	.00000E+00	3.70525E-02
2	1.25465E+00	9.68289E-02	1.27218E+00	1.14985E-01	.00000E+00	.00000E+00	.00000E+00	2.73550E-01

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	1.48804E+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	2.90986E+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	2.05794E+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	1.46425E+00	-2.65200E-02	1.45997E+00	-2.57133E-02	.00000E+00	.00000E+00	.00000E+00	3.16855E-01
11	1.34468E+00	-5.70106E-02	1.33546E+00	-5.56522E-02	.00000E+00	.00000E+00	.00000E+00	2.90467E-01
12	8.42086E-01	-6.52188E-02	8.31467E-01	-6.51767E-02	.00000E+00	.00000E+00	.00000E+00	1.81412E-01
13	7.10714E-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	6.33902E-01	-8.35227E-02	.00000E+00	.00000E+00	.00000E+00	1.38653E-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	2.07323E-01	-5.52345E-03	.00000E+00	.00000E+00	.00000E+00	4.50656E-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	5.80524E-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	2.88592E-02
20	4.48850E-01	-2.53669E-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	-2.25584E-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	5.86348E-01	-1.18693E-01	5.69301E-01	-1.17753E-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	5.34225E-02
26	1.64475E-01	-5.48584E-02	1.57328E-01	-5.49278E-02	.00000E+00	.00000E+00	.00000E+00	3.46527E-02
27	2.76194E-02	-1.49945E-02	2.57287E-02	-1.51986E-02	.00000E+00	.00000E+00	.00000E+00	5.80759E-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 gp.	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	1.79577E-01	5.61885E-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	7.09989E-01	2.53491E-05	-1.53359E-01	9.99987E-01
8	.00000E+00	.00000E+00	7.35415E-01	1.00075E+00	7.50389E-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	9.99866E-01
11	.00000E+00	.00000E+00	7.00356E-01	8.05312E-01	6.42680E-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	3.37758E-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	1.45957E-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	5.57800E-03	9.99994E-01
17	.00000E+00	.00000E+00	8.58657E-02	1.51818E-02	7.89305E-02	4.24066E-04	6.47653E-03	9.99996E-01
18	.00000E+00	.00000E+00	7.61187E-02	1.02846E-02	5.61972E-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	2.44292E-01	2.76137E-01	3.12658E-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	2.09855E-01	2.47774E-03	6.50601E-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	6.48668E-01	6.72083E-01	5.18787E-01	1.21843E-02	1.18698E-01	1.00000E+00
25	.00000E+00	.00000E+00	4.18654E-01	2.75939E-01	3.52423E-01	6.94805E-03	5.98826E-02	1.00000E+00
26	.00000E+00	.00000E+00	3.30566E-01	2.91208E-01	2.68966E-01	6.72748E-03	5.48562E-02	1.00001E+00
27	.00000E+00	.00000E+00	1.09857E-01	6.08041E-02	9.26289E-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 gp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rfln rate	fiss rate	flux*db**2	total flux
1	1.69430E-01	-6.09065E-09	1.70219E-01	8.34280E-08	4.38057E-10	.00000E+00	.00000E+00	1.93914E-01
2	1.24317E+00	-1.05065E-08	1.25486E+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

INFORMATION ONLY

INFORMATION ONLY

4	9.72908E-01	-1.06295E-08	9.86054E-01	8.72971E-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	2.81963E+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	1.46519E-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	1.44925E+00	-2.66200E-02	.00000E+00	.00000E+00	.00000E+00	1.68097E+00
11	1.35474E+00	-7.11370E-08	1.34468E+00	-5.70100E-02	.00000E+00	.00000E+00	.00000E+00	1.54774E+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	-1.09928E-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	-8.40179E-03	.00000E+00	.00000E+00	.00000E+00	4.31478E-01
16	2.08885E-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	8.88982E-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	4.48650E-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	2.46090E-01	2.05832E-06	2.37005E-01	-6.50481E-02	.00000E+00	.00000E+00	.00000E+00	2.83581E-01
23	8.06606E-01	-3.86636E-07	7.80174E-01	-1.27809E-01	.00000E+00	.00000E+00	.00000E+00	9.20088E-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	1.82258E-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	-3.95648E-06	2.33241E+01	5.45300E-02	4.38057E-10	.00000E+00	.00000E+00	2.67300E+01

1fire group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.25446E-02	.00000E+00	2.24312E-02	2.12892E-02	3.64651E-03	-6.00055E-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	-1.05295E-08	1.00000E+00
5	.00000E+00	1.64616E-01	2.08654E-01	4.89620E-01	3.68888E-01	4.58559E-03	-4.71655E-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	7.93453E-03	1.78610E-08	9.99989E-01
8	.00000E+00	1.35691E-02	7.80152E-01	1.79019E+00	7.75518E-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	3.68580E-02	-6.20540E-08	9.99700E-01
11	.00000E+00	5.75541E-06	7.11896E-01	1.30439E+00	6.51941E-01	6.00226E-02	-7.11370E-08	9.99542E-01
12	.00000E+00	4.06308E-07	5.68715E-01	7.05317E-01	5.04137E-01	6.45927E-02	-1.05156E-08	9.99774E-01
13	.00000E+00	6.42004E-08	5.00084E-01	5.54959E-01	4.40155E-01	5.99433E-02	-1.09928E-08	9.99771E-01
14	.00000E+00	1.27228E-08	4.77108E-01	5.10836E-01	3.95259E-01	8.38137E-02	-1.69050E-09	9.99930E-01
15	.00000E+00	1.43782E-09	2.59479E-01	2.34356E-01	2.51307E-01	8.12826E-03	6.47627E-07	1.00017E+00
16	.00000E+00	4.22193E-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	9.46454E-02	3.39804E-02	8.75028E-02	7.12988E-03	4.58511E-07	1.00013E+00
18	.00000E+00	9.73483E-11	8.43415E-02	2.20988E-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	7.32844E-02	1.28863E-01	2.45239E-02	-7.10584E-06	1.00013E+00
22	.00000E+00	3.80067E-11	2.86316E-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	5.21283E-01	1.34250E-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	4.41462E-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	-6.00055E-09	1.77195E-01	.00000E+00	2.35985E-03	2.62977E-03	.00000E+00	3.57072E-01
2	1.24317E+00	-1.05055E-08	1.32751E+00	.00000E+00	1.71854E-05	1.18502E-02	.00000E+00	2.65726E+00
3	1.57095E+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	2.06991E+00

INFORMATION ONLY

5	1.46663E+00	-4.71665E-03	1.57523E+00	.00000E+00	.00000E+00	1.82507E-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	3.33057E+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	2.04116E-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	1.19880E-01
19	1.36851E-01	6.49785E-07	1.26380E-01	.00000E+00	.00000E+00	2.89265E-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	2.46090E-01	2.05832E-06	1.85539E-01	.00000E+00	.00000E+00	4.15271E-02	.00000E+00	4.82125E-01
23	8.06606E-01	-3.86634E-07	6.95488E-01	.00000E+00	.00000E+00	7.74830E-02	.00000E+00	1.60746E+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	2.09888E-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	1.10668E-02	.00000E+00	5.78549E-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.
Odirect 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	3.86538E-02	4.87869E-02	2.94684E-02	4.48333E-02	8.44490E-02	4.79530E-02	6.98581E-03
3	3.08067E-03	3.29767E-02	4.30731E-02	2.71742E-02	4.23105E-02	8.03234E-02	4.59382E-02	5.56634E-03
4	1.04615E-03	1.21344E-02	1.65107E-02	1.09844E-02	1.74148E-02	3.33252E-02	1.92744E-02	1.99850E-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	1.26357E-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	2.19058E-02	1.87488E-02	2.80770E-02	2.75530E-03	1.85708E-03
3	5.67144E-03	8.11162E-03	1.74975E-02	2.02581E-02	1.73291E-02	2.59472E-02	2.57808E-03	1.72469E-03
4	1.88539E-03	3.30102E-03	7.10645E-03	8.13598E-03	6.99506E-03	1.04338E-02	1.12452E-03	7.20699E-04
5	3.29160E-03	4.69733E-03	1.01286E-02	1.17166E-02	1.00455E-02	1.49852E-02	1.54228E-03	1.01528E-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	1.40083E-02	2.79502E-02	2.58666E-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	2.00981E-03	6.12758E-03	3.42052E-03	7.87317E-03	7.08047E-03	2.02184E-02	3.94995E-02	3.67274E-02
4	8.08923E-04	2.41974E-03	1.39868E-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	2.29844E-02	2.12498E-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	2.18567E-01
5	1.06570E-02	9.71408E-03	2.54374E-03	3.12951E-01

1 560 d, sa2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
Ocell 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	1.86429E+00	1.02585E+00	1.55081E+00	2.98210E+00	2.87601E+00	2.07557E+00
2	1.72052E-01	1.27417E+00	1.61384E+00	1.00197E+00	1.51398E+00	2.91258E+00	2.80513E+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	2.06605E+00
4	1.69425E-01	1.24361E+00	1.57184E+00	9.73905E-01	1.46846E+00	2.82530E+00	2.78537E+00	2.06424E+00
5	1.71550E-01	1.26704E+00	1.60256E+00	9.95479E-01	1.49771E+00	2.88569E+00	2.81852E+00	2.06824E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59208E+00	1.45173E+00	1.31751E+00	8.10131E-01	6.83540E-01	6.06130E-01	3.72052E-01	2.06584E-01
2	1.59933E+00	1.45963E+00	1.33472E+00	8.30675E-01	7.00825E-01	6.32567E-01	3.74855E-01	2.07245E-01
3	1.60160E+00	1.46221E+00	1.34029E+00	8.37065E-01	7.06408E-01	6.40589E-01	3.75518E-01	2.07801E-01
4	1.60483E+00	1.46869E+00	1.35403E+00	8.52526E-01	7.19374E-01	6.60316E-01	3.76986E-01	2.08936E-01
5	1.60017E+00	1.46227E+00	1.34022E+00	8.36559E-01	7.05859E-01	6.39904E-01	3.75144E-01	2.07683E-01
Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.58089E-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	1.31109E-01	2.48118E-01	8.03894E-01	6.11151E-01
5	8.85662E-02	5.73543E-02	1.33131E-01	4.46655E-01	1.25613E-01	2.31630E-01	7.72281E-01	5.80714E-01
Ozone	grp. 25	grp. 26	grp. 27					
1	2.22630E-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	2.76992E-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	1.02170E+00	1.03168E+00	1.03228E+00	1.03256E+00	1.03408E+00	1.03413E+00	1.02836E+00	1.00856E+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	9.79025E-01	9.87492E-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	9.94709E-01	9.92795E-01	9.83053E-01	9.68409E-01	9.68325E-01	9.47190E-01	9.91700E-01	9.86894E-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	9.99759E-01	1.00003E+00	1.00050E+00	1.00071E+00	1.00119E+00	1.00094E+00	1.00057E+00
4	1.00297E+00	1.00439E+00	1.01080E+00	1.01909E+00	1.01912E+00	1.03187E+00	1.00485E+00	1.00608E+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	9.77866E-01	9.26477E-01	8.81983E-01	9.33112E-01	9.15123E-01
2	9.93168E-01	9.72614E-01	9.92847E-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	1.04567E+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					

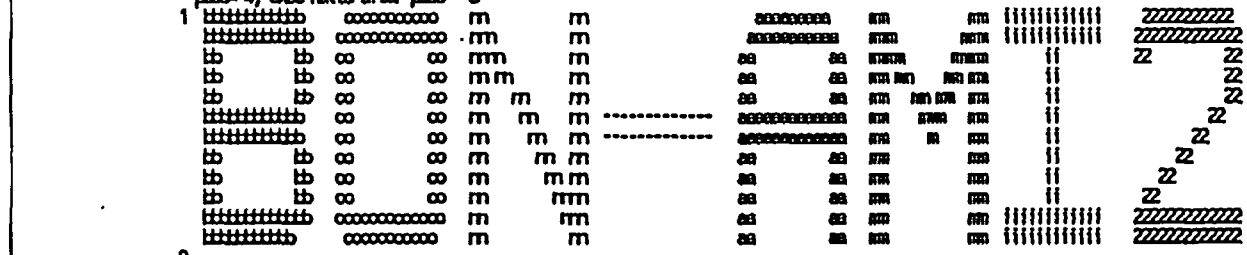
Ocell averaged currents

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.57800E-03	2.48958E-02	3.15170E-02	1.90786E-02	2.91628E-02	5.57854E-02	3.17414E-02	4.63097E-03
2	3.72979E-03	3.86535E-02	4.87869E-02	2.94684E-02	4.48333E-02	8.44494E-02	4.79330E-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	1.88099E-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	1.34227E-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	1.74495E-02	2.02581E-02	1.75291E-02	2.59472E-02	2.57808E-03	1.72469E-03
4	1.88639E-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	1.01528E-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	2.79302E-02	2.58668E-02

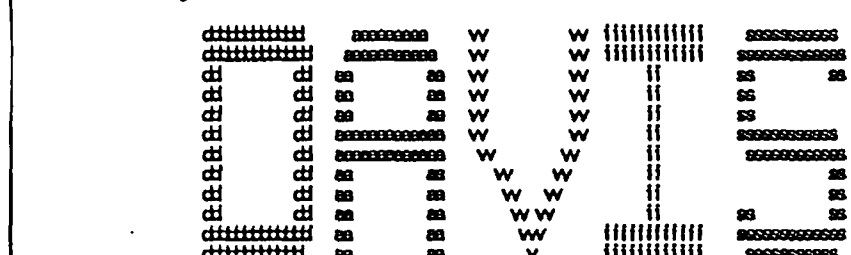
INFORMATION ONLY

INFORMATION ONLY

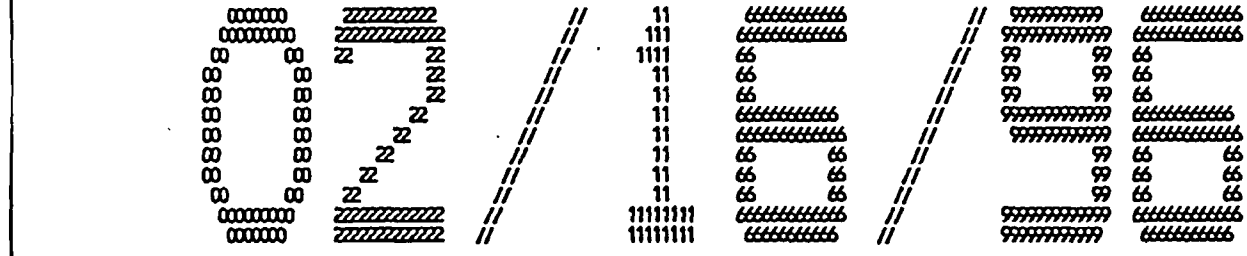
```
    2 2.17352E-03 6.66691E-03 3.67127E-03 8.50867E-03 7.58290E-03 2.18818E-02 4.25139E-02 3.95780E-02
    3 2.00981E-03 6.12758E-03 3.42052E-03 7.87317E-03 7.03047E-03 2.02184E-02 3.94995E-02 3.67274E-02
    4 8.08323E-04 2.41974E-03 1.39868E-03 3.21777E-03 2.82516E-03 8.09754E-03 1.62198E-02 1.50828E-02
    5 1.16233E-03 3.46035E-03 1.99532E-03 4.59231E-03 4.05846E-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 1.84738E-02 1.70567E-02 4.69107E-03
    4 7.48920E-03 6.80681E-03 1.71927E-03
    5 1.06571E-02 9.71408E-03 2.54374E-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= 4, exec halts after pass  8
```



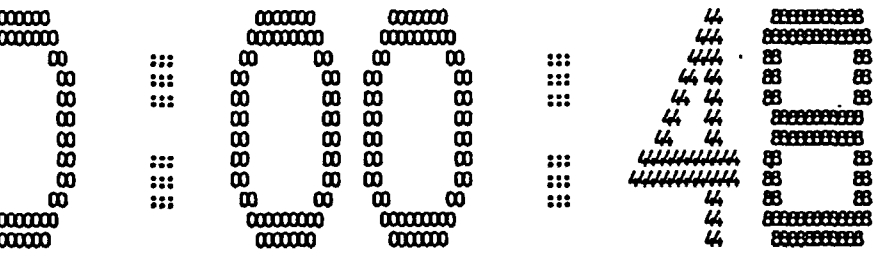
```
0
```

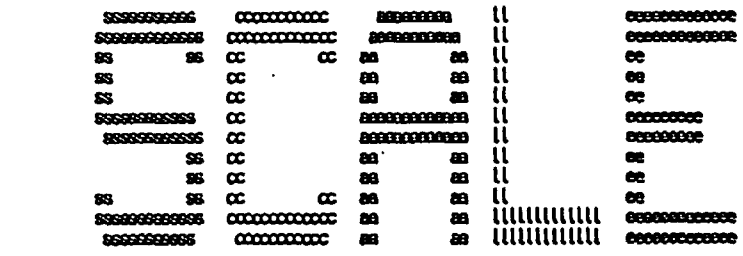


```
0
```



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: 10:00:48

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
 0mx--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     1.60393E-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     3.23193E-07          200012
    13        1    36085     1.55770E-07          200013
    14        1    39090     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
```

INFORMATION ONLY

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	1.39898E-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	1.94158E-06	200041
42	1	60143	3.52685E-06	200042
43	1	60145	2.55992E-06	200043
44	1	61147	1.03903E-06	200044
45	1	61148	2.92378E-09	200045
46	1	60147	4.35262E-08	200046
47	1	62147	2.20883E-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	4.11655E-07	200051
52	1	64155	3.91515E-10	200052
53	1	63153	2.08635E-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	93237	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

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	1.23052E+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**bonami 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 218rgp	from log 12 to log 18	bondarenko trigger	0
Ocopy	5010	b-10 1273 218rgp	from log 18 to log 1	bondarenko trigger	0
Ocopy	5010	b-10 1273 218rgp	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

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

INFORMATION ONLY

```
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/thrm1002   updated 10/13/89             id      202
       hydrogen       endf/b-iv mat 1269/thrm1002   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
       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
```

INFORMATION ONLY

INFORMATION ONLY

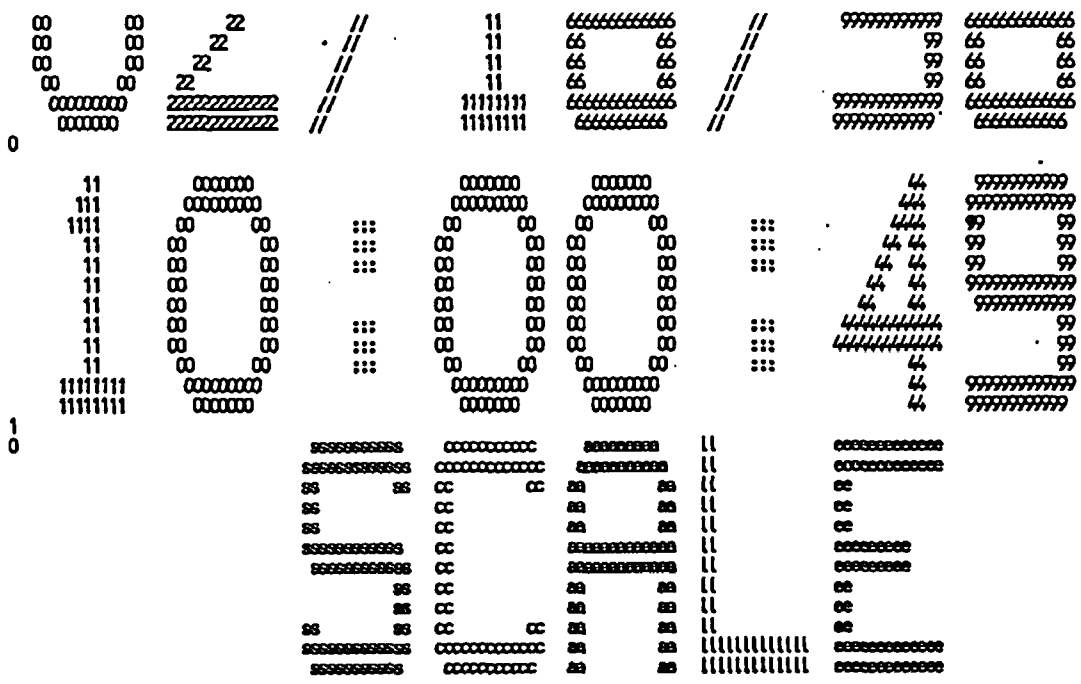
```
      nd-147        mt=102                          updated 10/13/89          id   200046
      pm-147        mt=102                          updated 10/13/89          id   200044
      pm-148          mt=  102                                                id   200045
      sm-147        endf/b-v 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 newxlacs 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 newxlacs 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 newxlacs 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 newxlacs 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
```

```
0
```

```
0
```

```
0
```

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:  10:00:49                                   *****
                    *****                                                                  *****
                    *****                                                                  *****
                    ************************************************************************
                    ************************************************************************
                    ************************************************************************
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/thnm1002   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/thnm1002   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
```

INFORMATION ONLY

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    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
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-m(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-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 newlacs 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 sigo=5+4 newlacs 218ngp p-3 293k                          95241
69    am-243 1057 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 218ngp 042375 p-3 293k                                     203   temperature=  607.60
                    thermal scattering matrix number  2 at a temperature of   550.00 was selected.
```

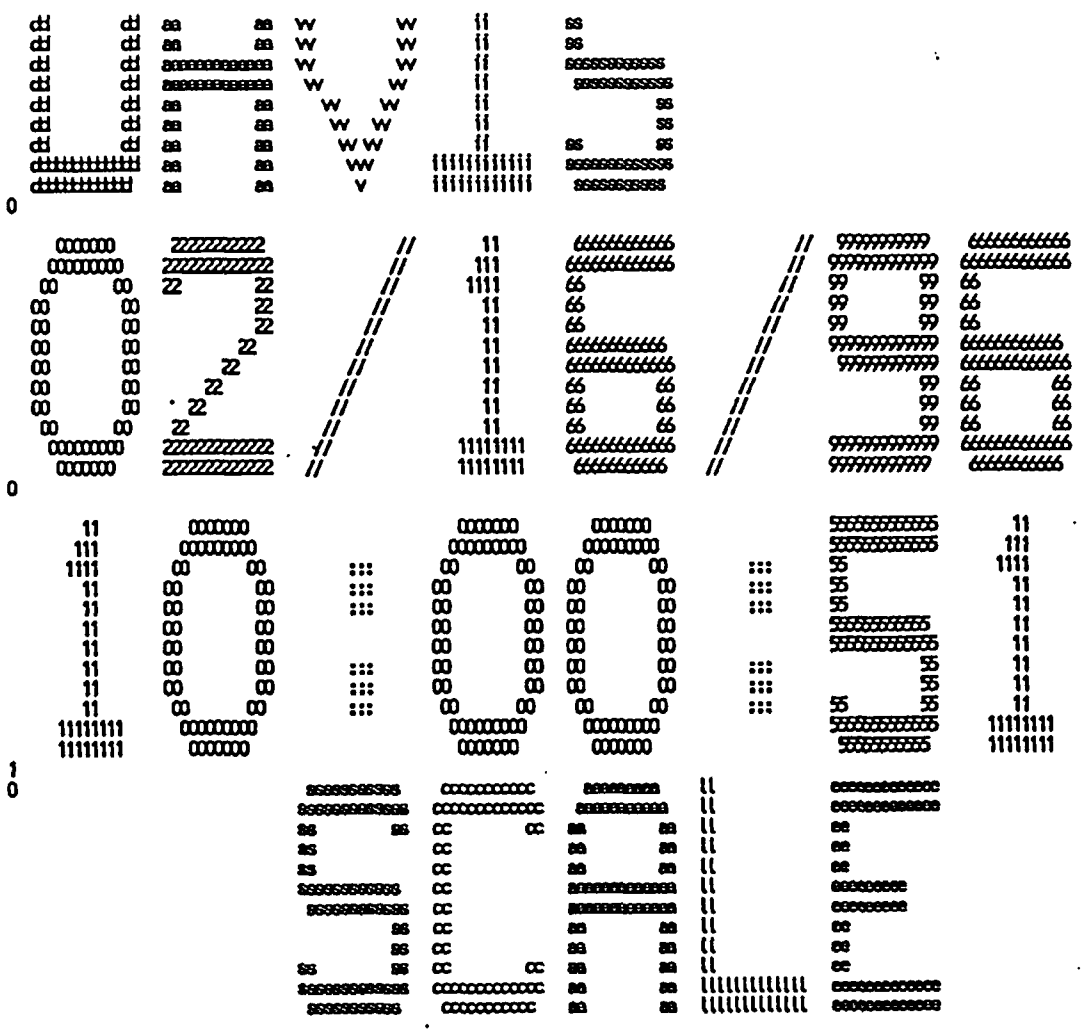
INFORMATION ONLY

```
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   = 4.2515602E-02
0spin factor (g)          =    1.079          lump dimension (m-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   -7.806033E-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 10:00:49
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled--  560 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   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 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 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=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 sigp=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 sigp=5+4 newlacs 218grp p-3 295k                          id   95241
      am-243 1057 218 gp wt f-1/e-m 090876 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   ddddddddd   rrrrrrrrr   m       m  ppppppppp   mm       mm
   xx      xx  sssssssssss  ddddddddddd  rrrrrrrrrr  mm      m  ppppppppppp  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
      xxxx     ss           dd      dd  rr      rr  m  m    m  pp      pp  mm  mmm  mm
       xx      sssssssss    dd      dd  rrrrrrrrr   m   m   m  ppppppppp   mm   m   mm
       xx       sssssssss   dd      dd  rrrrrrrrr   m    m  m  ppppppppp   mm       mm
      xxxx            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  ddddddddddd  rr       rr m      m  pp          mm       mm
  xx        xx  sssssssss   ddddddddd   rr       rr m      m  pp          mm       mm
0

  ddddddddddd    aaaaaaaa   w       w  iiiiiiiiiii   sssssssss
  ddddddddddd   aaaaaaaaaa  w       w  iiiiiiiiiii  sssssssssss
  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:  /neutronics/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

 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       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
 rng  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/snce/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 nbnd band rebeln 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 nusf table length or max order 6
ipp -2/-1/0/n=gated xsect print -2 nsca 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 xnpa new parameter 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 on tape	cccc identification	mixing table 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	1.62152E-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	40095		1	42095	3.20178E-06	
17	40094		1	40098	2.71690E-06	
18	40095		1	40094	4.22845E-06	
19	40802		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	1.90924E-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	1.39093E-07	

INFORMATION ONLY

35	55133	1	55135	2.19558E-06
36	55134	1	55137	4.36275E-06
37	55135	1	56136	2.69601E-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	2.55998E-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	40802	4.42681E-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	4.50801E-06
61	92238	1	95237	6.54722E-07
62	93237	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	4.60681E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40969E-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	1.01056E+07	2	0	12	1.00000E+00	

INFORMATION ONLY

13	3.00000E+01	1.27169E+01	5.69592E+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	1.59999E+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	8.17974E+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	3.57866E+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 sas2h pass to make library

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	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	-1.28592E-02
7					5.55953E-02	2.31301E-01	6	1.28592E-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	-4.29668E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20198E-01	13	-1.15128E-02
13					5.22844E-02	2.20198E-01	12	1.15128E-02
14					5.22844E-02	6.01588E-01	11	3.14537E-02
15					5.22844E-02	8.21784E-01	10	4.29668E-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	6.76143E-02	-6.16919E-01	-1.71707E-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	2.25714E-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	6.26863E-01	-1.98456E-01	-4.86635E-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	-2.20198E-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

INFORMATION ONLY

16	-9.83032E-01	-4.49528E-01	8.36886E-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	4.16520E-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	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20862E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20862E-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	1.97644E-02	1	0	4.90881E-03		0
2	3.95287E-02	5.93531E-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	1.98692E+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	5.72768E+00	5.88591E-01		
18	1.00918E+00	1.10577E+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	1.85603E+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	1.98508E+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	197	1.88423E-05	1.07849E+00	-8.68900E-02	1.00000E+00	-2.64515E-02	.00000E+00	.0000
2	295	-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	-2.11296E-04	-1.36124E-03	-7.65847E-04	.00000E+00	.0167
4	428	-3.55400E-06	1.08881E+00	-4.25534E-05	-3.02778E-04	-1.65471E-04	.00000E+00	.0167
5	463	2.75520E-06	1.08879E+00	-9.24429E-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	17	1.52991E-06	28	1.00000E+00	1
2	1	17	1.85022E-06	28	1.00000E+00	1
3	1	17	1.70944E-06	28	1.00000E+00	1
4	1	17	1.66246E-06	28	1.00000E+00	1
5	1	17	1.71501E-06	28	1.00000E+00	1
6	1	17	1.15781E-06	28	1.00000E+00	1
7	1	17	7.13494E-07	28	9.99999E-01	2
8	1	15	1.38883E-07	28	1.00000E+00	2
9	1	27	6.91892E-06	28	1.00001E+00	3
10	1	26	1.58965E-06	28	9.99998E-01	3
11	1	26	2.98429E-06	28	9.99997E-01	3

INFORMATION ONLY

12	12	1	26	1.2587E-06	28	1.00000E+00	3
13	13	1	26	1.7634E-06	28	9.99998E-01	3
14	14	1	25	5.9717E-07	28	9.99998E-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	9.99866E-01	3
18	18	1	2	5.7420E-05	28	9.99952E-01	3
19	19	1	2	4.9302E-05	28	9.99903E-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	1.00002E+00	4
25	25	1	1	2.9187E-05	8	1.00001E+00	5
26	26	1	1	2.1845E-05	6	1.00002E+00	6
27	27	1	1	2.0259E-05	5	1.00001E+00	8

6 480 -2.8583E-06 1.0888E+00 -1.8861E-06 -1.4194E-05 -7.8710E-06 .0000E+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	.0000E+00	1.9764E-02	.0000E+00	4.9088E-03	.0000E+00
2	1	3.9528E-02	5.9288E-02	2.4836E-01	1.4726E-02	.0000E+00
3	1	7.9057E-02	1.1858E-01	4.9573E-01	5.8905E-02	.0000E+00
4	1	1.5811E-01	1.9764E-01	9.9346E-01	9.8176E-02	.0000E+00
5	1	2.3717E-01	2.7670E-01	1.4902E+00	1.3744E-01	.0000E+00
6	1	3.1623E-01	3.5575E-01	1.9869E+00	1.7671E-01	.0000E+00
7	1	3.9528E-01	4.3481E-01	2.4836E+00	2.1598E-01	.0000E+00
8	1	4.7434E-01	5.1387E-01	2.9804E+00	2.5525E-01	.0000E+00
9	1	5.5340E-01	5.7316E-01	3.4771E+00	1.4235E-01	.0000E+00
10	1	5.9293E-01	6.1269E-01	3.7250E+00	1.5217E-01	.0000E+00
11	2	6.3246E-01	6.4262E-01	3.9738E+00	8.2046E-02	.0000E+00
12	2	6.5278E-01	6.6294E-01	4.1015E+00	8.4640E-02	.0000E+00
13	3	6.7310E-01	6.9683E-01	4.2292E+00	2.0556E-01	.0000E+00
14	3	7.2056E-01	7.4355E-01	4.5243E+00	2.1942E-01	.0000E+00
15	3	7.6703E-01	7.9051E-01	4.8194E+00	2.3328E-01	.0000E+00
16	4	8.1400E-01	8.6279E-01	5.1145E+00	5.2051E-01	2.4810E-02
17	4	9.1159E-01	9.6039E-01	5.7276E+00	5.8897E-01	2.7010E-02
18	4	1.0091E+00	1.1057E+00	6.3408E+00	1.3573E+00	6.0990E-02
19	4	1.2023E+00	1.3019E+00	7.5672E+00	1.9365E+00	7.0389E-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	1.3736E-01
27	4	2.7658E+00	2.8146E+00	1.7378E+01	1.7258E+00	7.2443E-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	6.8851E-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	1.4698E-01
3	1.2676E-02	9.0006E-02	1.1207E-01	6.8841E-02	1.0259E-01	1.9267E-01	1.9308E-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	1.9363E-01	1.4702E-01
6	1.2711E-02	9.0423E-02	1.1264E-01	6.9235E-02	1.0324E-01	1.9386E-01	1.9377E-01	1.4707E-01

INFORMATION ONLY

7	1.27319E-02	9.06691E-02	1.12991E-01	6.94738E-02	1.05628E-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	7.05180E-02	1.05377E-01	1.97850E-01	1.96239E-01	1.47395E-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	9.36734E-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	9.50938E-02	1.18805E-01	7.32552E-02	1.09622E-01	2.05637E-01	2.00879E-01	1.48218E-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	2.08824E-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	7.44692E-02	1.11675E-01	2.09779E-01	2.03604E-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	1.00810E-01	6.53588E-02	5.58563E-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	9.99269E-02	6.43664E-02	5.49445E-02	5.20103E-02	2.88703E-02	1.60171E-02
11	1.15833E-01	1.06532E-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	1.59888E-02
13	1.15783E-01	1.06584E-01	9.97028E-02	6.40857E-02	5.46853E-02	5.16340E-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	6.36388E-02	5.42981E-02	5.10339E-02	2.87402E-02	1.59376E-02
16	1.15530E-01	1.06240E-01	9.89525E-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	5.34814E-02	4.98016E-02	2.85873E-02	1.58422E-02
18	1.15367E-01	1.05921E-01	9.82090E-02	6.23004E-02	5.31261E-02	4.92724E-02	2.84965E-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	4.82544E-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	6.12956E-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	4.78338E-02	2.81666E-02	1.56234E-02
26	1.15258E-01	1.05539E-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	4.78354E-02	2.81701E-02	1.56252E-02
28	1.15255E-01	1.05544E-01	9.73200E-02	6.12761E-02	5.21397E-02	4.78603E-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-05	1.00272E-02	3.61667E-02	1.13884E-02	2.36176E-02	7.95371E-02	6.50857E-02
2	7.12397E-03	5.56426E-05	1.00388E-02	3.61712E-02	1.13894E-02	2.36195E-02	7.95321E-02	6.50707E-02
3	7.12109E-03	5.55785E-05	1.00252E-02	3.61577E-02	1.13791E-02	2.35861E-02	7.94143E-02	6.49410E-02
4	7.11461E-03	5.54180E-05	1.00111E-02	3.61261E-02	1.13554E-02	2.35102E-02	7.91554E-02	6.46618E-02
5	7.10477E-03	5.51740E-05	1.00928E-02	3.60786E-02	1.13195E-02	2.33972E-02	7.87713E-02	6.42486E-02
6	7.09146E-03	5.48392E-05	1.00681E-02	3.60151E-02	1.12710E-02	2.32440E-02	7.82597E-02	6.36979E-02
7	7.07410E-03	5.43969E-05	1.00361E-02	3.59331E-02	1.12078E-02	2.30444E-02	7.76078E-02	6.29978E-02
8	7.05134E-03	5.38069E-05	1.00945E-02	3.58273E-02	1.11243E-02	2.27865E-02	7.67841E-02	6.21178E-02

INFORMATION ONLY

9	7.08017E-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	5.27575E-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	3.55736E-02	1.09210E-02	2.21626E-02	7.48314E-02	6.01865E-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	2.20079E-02	7.45084E-02	5.97669E-02
14	6.96177E-03	5.13767E-03	1.06346E-02	3.54271E-02	1.08002E-02	2.17815E-02	7.38895E-02	5.90854E-02
15	6.95221E-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	1.05038E-02	2.08548E-02	7.15960E-02	5.66645E-02
17	6.83436E-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	6.76769E-02	5.26585E-02
20	6.72335E-03	4.46269E-03	1.02093E-02	3.43687E-02	9.98348E-03	1.90784E-02	6.65093E-02	5.14726E-02
21	6.70406E-03	4.42307E-03	1.01723E-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	4.97657E-02
24	6.67328E-03	4.36506E-03	1.01120E-02	3.41029E-02	9.76454E-03	1.85548E-02	6.45241E-02	4.94620E-02
25	6.66857E-03	4.35739E-03	1.01041E-02	3.40806E-02	9.75008E-03	1.85080E-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	2.93552E-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	3.72647E-03
9	2.74122E-02	1.94217E-02	3.64001E-03
10	2.70597E-02	1.91008E-02	3.56702E-03
11	2.68258E-02	1.88933E-02	3.52295E-03
12	2.67754E-02	1.88620E-02	3.52003E-03
13	2.66057E-02	1.87072E-02	3.47849E-03
14	2.62228E-02	1.83590E-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	1.44298E-02	2.42659E-03
22	2.15592E-02	1.42186E-02	2.39132E-03
23	2.13524E-02	1.40661E-02	2.36638E-03
24	2.12084E-02	1.39581E-02	2.34908E-03
25	2.11008E-02	1.38766E-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	1.38522E-02	2.32844E-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	4.98906E-04	6.55730E-04	5.44336E-05	-7.08125E-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	5.44566E-03	1.41488E-02	9.23688E-05	-1.04460E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.56442E-03	3.59330E-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	-1.06792E-02	9.99991E-01
6	.00000E+00	.00000E+00	2.14641E-02	3.44857E-02	4.08877E-02	8.42651E-05	-1.98078E-02	9.99999E-01
7	.00000E+00	.00000E+00	4.22069E-02	6.07580E-02	5.41262E-02	6.12092E-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

INFORMATION ONLY

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	9.99836E-01
11	.00000E+00	.00000E+00	5.58617E-02	6.55604E-02	5.23408E-02	5.51286E-05	3.45910E-03	9.99740E-01
12	.00000E+00	.00000E+00	4.53861E-02	3.50795E-02	4.12754E-02	6.04213E-05	4.05131E-03	9.99778E-01
13	.00000E+00	.00000E+00	4.05438E-02	2.85727E-02	3.66426E-02	8.44415E-05	3.81776E-03	9.99769E-01
14	.00000E+00	.00000E+00	3.94615E-02	2.82648E-02	3.37644E-02	1.36406E-04	5.56112E-03	9.99788E-01
15	.00000E+00	.00000E+00	2.17034E-02	1.08877E-02	2.08970E-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	6.81851E-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	1.08108E-02	2.97767E-03	9.85263E-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	1.28048E-02	4.28748E-03	1.11537E-02	1.09523E-04	1.54372E-03	9.99999E-01
22	.00000E+00	.00000E+00	2.54533E-02	1.32586E-02	2.06331E-02	2.54660E-04	4.56536E-03	1.00001E+00
23	.00000E+00	.00000E+00	6.63188E-02	8.05025E-02	5.28638E-02	1.16862E-03	1.22859E-02	1.00008E+00
24	.00000E+00	.00000E+00	7.10188E-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	1.28059E-02	7.75891E-03	1.18808E-02	2.96857E-04	6.32156E-04	1.00000E+00
28	.00000E+00	.00000E+00	7.96702E-01	7.91928E-01	7.96702E-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*dv**2	total flux
1	1.27992E-02	-7.08125E-04	1.26847E-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	-6.82359E-03	6.88958E-02	.00000E+00	.00000E+00	.00000E+00	4.16804E-05	8.73901E-02
5	1.05263E-01	-1.05792E-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	-1.97795E-02	1.93064E-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	2.16686E-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	9.98456E-02	3.45910E-03	1.03814E-01	.00000E+00	.00000E+00	.00000E+00	1.78986E-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	3.81778E-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	6.62346E-02
15	2.88493E-02	1.19265E-03	2.91007E-02	.00000E+00	.00000E+00	.00000E+00	4.48547E-06	3.66322E-02
16	1.60049E-02	6.28574E-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	6.81706E-03
19	1.09014E-02	8.61393E-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	1.09548E-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	2.36098E-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	4.84002E-06	7.89625E-02
25	2.68618E-02	5.10337E-03	2.94026E-02	.00000E+00	.00000E+00	.00000E+00	1.67882E-06	3.54527E-02
26	1.89193E-02	3.75412E-03	2.12106E-02	.00000E+00	.00000E+00	.00000E+00	8.85034E-07	2.53091E-02
27	3.52607E-03	6.32156E-04	4.02919E-03	.00000E+00	.00000E+00	.00000E+00	1.04288E-07	4.77332E-03
28	1.74978E+00	-6.43513E-03	1.75693E+00	.00000E+00	3.61531E-11	.00000E+00	5.87582E-04	2.20519E+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	2.18979E-04	1.63718E-04	2.45602E-06	-1.60335E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.85780E-05	1.44859E-03	1.08943E-03	1.39525E-05	-1.02481E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.48997E-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	1.25988E-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	6.35799E-03	5.30007E-05	7.66898E-05	3.15442E-04	9.99980E-01

INFORMATION ONLY

10	.00000E+00	.00000E+00	5.30655E-05	4.98617E-03	4.94715E-03	5.93184E-05	-5.57264E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.94744E-05	4.45287E-03	5.02888E-03	8.99811E-05	-9.07890E-05	9.99998E-01
12	.00000E+00	.00000E+00	5.02889E-05	2.76055E-03	5.13597E-03	5.67154E-06	-6.74790E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.13592E-05	2.35700E-03	4.80811E-03	6.31551E-06	-3.08566E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80811E-05	2.23332E-03	4.20872E-03	8.52895E-06	-2.55599E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.46912E-05	1.21745E-03	4.98264E-03	6.30490E-06	-1.14019E-06	9.99969E-01
16	.00000E+00	.00000E+00	5.59033E-05	6.46727E-04	5.60269E-03	3.83305E-06	-3.98204E-06	9.99964E-01
17	.00000E+00	.00000E+00	6.13731E-05	2.46542E-04	6.06858E-03	1.85266E-06	-1.13642E-06	9.99981E-01
18	.00000E+00	.00000E+00	6.38657E-05	1.73619E-04	5.60608E-03	1.44544E-06	6.36990E-06	9.99992E-01
19	.00000E+00	.00000E+00	5.75836E-05	4.09206E-04	6.05747E-03	3.17534E-06	-5.94876E-06	9.99981E-01
20	.00000E+00	.00000E+00	7.38647E-05	1.48866E-03	6.37136E-03	1.28845E-05	-2.67895E-06	9.99978E-01
21	.00000E+00	.00000E+00	8.47763E-05	3.86987E-04	9.24372E-03	4.79701E-06	-1.24370E-05	9.99987E-01
22	.00000E+00	.00000E+00	1.22131E-04	8.57902E-04	1.14656E-04	1.11071E-05	-3.58606E-06	9.99997E-01
23	.00000E+00	.00000E+00	1.75714E-04	3.06359E-03	2.24948E-04	5.00445E-06	-9.92985E-06	1.00000E+00
24	.00000E+00	.00000E+00	2.89152E-04	2.32317E-03	3.18820E-04	5.70256E-06	-8.67415E-06	1.00000E+00
25	.00000E+00	.00000E+00	2.95007E-04	9.36406E-04	2.41018E-04	3.31381E-06	2.08272E-06	1.00000E+00
26	.00000E+00	.00000E+00	1.25413E-04	7.32592E-04	9.68139E-05	3.28876E-06	-4.29805E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.80725E-05	1.54644E-04	7.95795E-05	1.14734E-06	1.65162E-06	1.00000E+00
28	.00000E+00	.00000E+00	5.05904E-03	8.11387E-02	5.05904E-03	6.18946E-04	-6.13004E-04	9.99990E-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	-7.08123E-04	5.84947E-06	.00000E+00	1.61703E-06	2.13541E-03
2	9.18404E-02	-8.85821E-03	9.15777E-02	-7.85340E-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	-6.82559E-03	.00000E+00	.00000E+00	7.42710E-06	1.17637E-02
5	1.05602E-01	-1.03612E-02	1.05263E-01	-1.05792E-02	.00000E+00	.00000E+00	8.62586E-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	1.96307E-01	-1.13978E-02	1.96101E-01	-1.19779E-02	.00000E+00	.00000E+00	8.35251E-06	3.27278E-02
8	1.47460E-01	-2.76991E-03	1.47373E-01	-2.42175E-03	.00000E+00	.00000E+00	5.27554E-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	9.98656E-02	3.45910E-03	.00000E+00	.00000E+00	4.76239E-06	1.66334E-02
12	6.41997E-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	2.73697E-06	9.13320E-03
14	5.17277E-02	5.55888E-03	5.18761E-02	5.56112E-03	.00000E+00	.00000E+00	2.58041E-06	8.63231E-03
15	2.88123E-02	1.18105E-03	2.88493E-02	1.19065E-03	.00000E+00	.00000E+00	1.41575E-06	4.80516E-03
16	1.59870E-02	6.24742E-04	1.60042E-02	6.28574E-04	.00000E+00	.00000E+00	7.85528E-07	2.66602E-03
17	6.98752E-03	4.72211E-04	6.99992E-03	4.73347E-04	.00000E+00	.00000E+00	3.43264E-07	1.16552E-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	1.06781E-02	8.55444E-04	1.07014E-02	8.61398E-04	.00000E+00	.00000E+00	5.24242E-07	1.78144E-03
20	3.55359E-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	3.76982E-03	1.89192E-02	3.75412E-03	.00000E+00	.00000E+00	8.98146E-07	3.14661E-03
27	3.52022E-03	6.48672E-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	1.98661E-04	3.26259E-03	4.28861E-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	9.99971E-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	-1.05208E-02	9.99999E-01
7	.00000E+00	.00000E+00	2.26210E-02	3.23863E-02	2.87568E-02	3.25188E-05	-6.16695E-03	9.99992E-01
8	.00000E+00	.00000E+00	2.98659E-02	4.11564E-02	3.08979E-02	1.91225E-05	-8.90883E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04181E-02	3.79959E-02	3.00765E-02	1.53128E-05	3.29858E-04	9.99889E-01
10	.00000E+00	.00000E+00	2.98859E-02	3.60878E-02	2.90018E-02	1.88145E-05	8.72389E-04	9.99900E-01

INFORMATION ONLY

11	.00000E+00	.00000E+00	2.91688E-02	3.40425E-02	2.71781E-02	2.86254E-05	1.96391E-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	2.09586E-02	1.47179E-02	1.88747E-02	4.35990E-05	2.04124E-03	9.99974E-01
14	.00000E+00	.00000E+00	2.08525E-02	1.44215E-02	1.72276E-02	6.95982E-05	3.05659E-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	2.39389E-03	7.04231E-03	3.98539E-05	2.67583E-04	1.00000E+00
17	.00000E+00	.00000E+00	3.78542E-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	2.66082E-03	1.51769E-05	6.94574E-04	1.00000E+00
19	.00000E+00	.00000E+00	5.55062E-03	1.53097E-03	5.08117E-03	3.42892E-05	4.35114E-04	1.00001E+00
20	.00000E+00	.00000E+00	1.36278E-02	1.09886E-02	1.24244E-02	1.43318E-04	1.05996E-03	1.00001E+00
21	.00000E+00	.00000E+00	6.55215E-03	2.16447E-03	5.68079E-03	5.42814E-05	8.67080E-04	9.99999E-01
22	.00000E+00	.00000E+00	1.29094E-02	6.56604E-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	6.78357E-04	5.48083E-03	1.00002E+00
25	.00000E+00	.00000E+00	2.31007E-02	1.56163E-02	2.00904E-02	3.96899E-04	2.61320E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.85681E-02	1.70738E-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	rdn rate	fiss rate	flux*db**2	total flux
1	1.29591E-02	-1.24388E-05	1.28253E-02	-8.68464E-04	1.91669E-11	.00000E+00	1.03872E-05	8.48457E-03
2	9.31681E-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	7.06573E-02	-6.84913E-03	.00000E+00	.00000E+00	2.23152E-05	4.67876E-02
5	1.07066E-01	-1.61017E-02	1.05603E-01	-1.03612E-02	.00000E+00	.00000E+00	2.66549E-05	6.99114E-02
6	2.00904E-01	-2.93056E-02	1.98298E-01	-1.87853E-02	.00000E+00	.00000E+00	4.47074E-05	1.31235E-01
7	1.98020E-01	-1.75662E-02	1.96507E-01	-1.13928E-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	1.15822E-01	5.78015E-04	.00000E+00	.00000E+00	1.13365E-05	7.61660E-02
10	1.06351E-01	2.26720E-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	9.29389E-06	6.55109E-02
12	6.34683E-02	6.32456E-03	6.41597E-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	5.55658E-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	1.86899E-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	7.23089E-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	2.75192E-06	2.33082E-02
21	1.06201E-02	2.39857E-03	1.08969E-02	1.53129E-03	.00000E+00	.00000E+00	6.50794E-07	7.09766E-03
22	2.12198E-02	7.12838E-03	2.20304E-02	4.56178E-03	.00000E+00	.00000E+00	1.30748E-06	1.43025E-02
23	7.24599E-02	1.81208E-02	7.47658E-02	1.21864E-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	1.20862E-02
27	3.13751E-03	1.20776E-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-05	9.98901E-01
2	.00000E+00	1.93451E-01	6.95103E-03	2.49902E-01	1.72098E-01	1.52778E-02	1.30409E-02	1.00008E+00
3	.00000E+00	2.15779E-01	7.10660E-02	2.57201E-01	2.53828E-01	1.62432E-02	1.67778E-02	9.99888E-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	6.85342E-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	1.39170E+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	6.34712E-01	3.29826E-02	-2.28817E-03	9.99903E-01
11	.00000E+00	5.73310E-06	6.28783E-01	1.16117E+00	5.81057E-01	5.38009E-02	-5.33400E-03	9.99945E-01

INFORMATION ONLY

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-08	4.48175E-01	5.03635E-01	3.99449E-01	5.45948E-02	-5.85654E-03	9.99973E-01
14	.00000E+00	1.26735E-08	4.31066E-01	4.70113E-01	3.62300E-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	3.14685E-02	8.11539E-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	1.37096E-10	1.22542E-01	6.07375E-02	1.14678E-01	9.14271E-03	-1.29525E-03	1.00019E+00
20	.00000E+00	2.22852E-10	2.98208E-01	3.48657E-01	2.69031E-01	2.74015E-02	-3.27833E-03	1.00018E+00
21	.00000E+00	3.26301E-11	1.44854E-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	5.78884E-01	1.38722E-01	-1.64675E-02	1.00010E+00
25	.00000E+00	2.88611E-12	4.64370E-01	3.51868E-01	3.95410E-01	7.66698E-02	-7.73850E-03	1.00006E+00
26	.00000E+00	2.00235E-12	3.59944E-01	3.53346E-01	2.96283E-01	6.99957E-02	-5.95318E-03	1.00006E+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	nön rate	fiss rate	flux*adj**2	total flux
1	1.32652E-02	-6.95225E-09	1.29591E-02	-1.26388E-03	2.22678E-03	2.48146E-03	2.92653E-04	3.36935E-01
2	9.66634E-02	-6.52760E-08	9.31681E-02	-1.30409E-02	1.59615E-05	1.10063E-02	1.58669E-03	2.44945E+00
3	1.20666E-01	-9.26605E-08	1.16307E-01	-1.67779E-02	.00000E+00	1.33450E-02	1.82658E-03	3.06311E+00
4	7.44527E-02	-7.14484E-08	7.16350E-02	-1.05079E-02	.00000E+00	5.73192E-03	8.85625E-04	1.88964E+00
5	1.11647E-01	-9.81703E-08	1.07066E-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	-2.98066E-02	.00000E+00	1.40359E-03	1.73152E-03	5.31884E+00
7	2.03569E-01	-5.84223E-07	1.98020E-01	-1.75662E-02	.00000E+00	1.37206E-03	1.22622E-03	5.16943E+00
8	1.48917E-01	-7.29270E-08	1.47752E-01	-3.66025E-03	.00000E+00	1.39834E-03	6.97876E-04	3.78851E+00
9	1.15253E-01	4.32258E-06	1.15593E-01	9.07712E-04	.00000E+00	1.87880E-03	4.71088E-04	2.98538E+00
10	1.03550E-01	-9.69711E-07	1.06351E-01	2.28720E-03	.00000E+00	4.01284E-03	4.23496E-04	2.66968E+00
11	9.73314E-02	-1.77639E-06	9.91815E-02	5.33222E-03	.00000E+00	8.54482E-03	3.85770E-04	2.48525E+00
12	6.12884E-02	4.14981E-07	6.34683E-02	6.33456E-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	4.78788E-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	-4.57034E-06	2.87198E-02	1.63196E-03	.00000E+00	1.92742E-03	1.11247E-04	7.19536E-01
16	1.56334E-02	-3.10808E-06	1.59224E-02	8.92525E-04	.00000E+00	1.33047E-03	5.78601E-05	3.98904E-01
17	6.67426E-03	-3.99226E-06	6.91462E-03	7.23082E-04	.00000E+00	1.69259E-03	2.22114E-05	1.70683E-01
18	4.36082E-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	3.43877E-05	2.58742E-01
20	3.41050E-02	-9.13532E-06	3.52354E-02	3.26920E-03	.00000E+00	1.50121E-02	1.25758E-04	8.71708E-01
21	9.75682E-03	-3.55369E-06	1.06201E-02	2.39357E-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	3.40852E-06	7.26599E-02	1.81208E-02	.00000E+00	8.03394E-02	1.72789E-04	1.66572E+00
24	4.91885E-02	-5.81248E-07	5.75483E-02	1.64658E-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	5.51998E-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-08	3.13751E-03	1.20719E-03	.00000E+00	1.17908E-02	1.78722E-06	6.15910E-02
28	1.73620E+00	-3.23576E-05	1.74758E+00	-1.02434E-02	2.24272E-03	4.22563E-01	1.19306E-02	4.42743E+01

1fine group summry 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	2.21402E-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	1.29886E-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	5.28687E-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	8.77260E-02	6.58662E-01	1.67000E+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	7.28725E-05	7.42281E-01	1.35746E+00	7.09353E-01	3.30968E-02	-9.69711E-07	9.99901E-01
11	.00000E+00	5.73310E-06	7.13953E-01	1.26522E+00	6.59926E-01	5.39747E-02	-1.77639E-06	9.99944E-01
12	.00000E+00	4.02740E-07	5.76548E-01	6.90431E-01	5.16131E-01	5.84334E-02	4.14981E-07	9.99974E-01

INFORMATION ONLY

13	.00000E+00	6.39515E-08	5.09726E-01	5.49283E-01	4.55014E-01	5.47295E-02	-5.72706E-07	9.99973E-01
14	.00000E+00	1.26736E-08	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	-3.10808E-06	1.00016E+00
17	.00000E+00	1.35440E-10	9.82526E-02	3.37009E-02	9.15477E-02	6.69839E-03	-3.99226E-06	1.00016E+00
18	.00000E+00	9.69708E-11	8.76509E-02	2.24768E-02	6.69307E-02	2.12958E-02	-1.69847E-06	1.00007E+00
19	.00000E+00	1.37094E-10	1.38961E-01	6.56654E-02	1.29702E-01	9.24686E-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	3.76584E-11	3.14078E-01	2.04921E-01	2.43881E-01	7.01732E-02	-3.21688E-06	1.00008E+00
23	.00000E+00	3.61988E-11	7.61279E-01	1.13086E+00	6.19973E-01	1.41215E-01	3.40352E-06	1.00011E+00
24	.00000E+00	9.85229E-12	8.07507E-01	9.83431E-01	6.66599E-01	1.40838E-01	-5.81268E-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	2.00235E-12	4.16211E-01	4.07088E-01	3.45337E-01	7.08544E-02	-1.79258E-07	1.00006E+00
27	.00000E+00	4.81957E-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	rdn rate	fiss rate	flux*dv**2	total flux
1	1.32552E-02	-6.95225E-09	1.26874E-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	1.12165E-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	-9.81703E-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	1.40839E-03	1.86959E-03	5.72788E+00
7	2.08569E-01	-5.84223E-07	1.93054E-01	.00000E+00	.00000E+00	1.37206E-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	1.00077E-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	1.44806E+00
14	4.78788E-02	-1.98471E-07	5.33628E-02	.00000E+00	.00000E+00	7.80568E-03	1.90960E-04	1.33566E+00
15	2.81867E-02	-4.57024E-06	2.91097E-02	.00000E+00	.00000E+00	1.92742E-03	1.19480E-04	7.79512E-01
16	1.56334E-02	-3.10808E-06	1.61490E-02	.00000E+00	.00000E+00	1.33047E-03	6.20660E-05	4.32289E-01
17	6.67426E-03	-3.99226E-06	7.12217E-03	.00000E+00	.00000E+00	1.69258E-03	2.30528E-05	1.85211E-01
18	4.36092E-03	-1.69847E-06	5.56095E-03	.00000E+00	.00000E+00	1.50862E-03	1.25114E-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	3.41080E-02	-9.13532E-06	3.61650E-02	.00000E+00	.00000E+00	1.50121E-02	1.35721E-04	9.46068E-01
21	9.75683E-03	-3.55369E-06	1.13856E-02	.00000E+00	.00000E+00	1.39644E-02	3.01056E-05	2.73844E-01
22	1.85156E-02	-3.21688E-06	2.36098E-02	.00000E+00	.00000E+00	4.12870E-02	5.38324E-05	5.26215E-01
23	6.43097E-02	3.40352E-06	7.95166E-02	.00000E+00	.00000E+00	8.03594E-02	1.88464E-04	1.82508E+00
24	4.91885E-02	-5.81268E-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	4.02916E-03	.00000E+00	.00000E+00	1.17908E-02	2.10219E-06	6.91608E-02
28	1.73620E+00	-3.25378E-05	1.75693E+00	.00000E+00	2.24857E-03	4.22563E-01	1.29331E-02	4.79809E+01

- elapsed time .02 min.

Odirect 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	3.18314E-03	5.52617E-03	3.71774E-03	1.74328E-03
2	6.91531E-04	4.96888E-03	5.78279E-03	3.44171E-03	4.29908E-03	6.15591E-03	4.33455E-03	2.14811E-03
3	1.16375E-03	5.45369E-03	5.86882E-03	2.91415E-03	3.86310E-03	6.78281E-03	4.37964E-03	1.82567E-03
4	7.99375E-04	4.28258E-03	4.98001E-03	2.38791E-03	2.82864E-03	4.80131E-03	3.32657E-03	1.79788E-03
5	8.22747E-04	4.34888E-03	4.97383E-03	2.41233E-03	2.87840E-03	4.88928E-03	3.37580E-03	1.79994E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11288E-03	1.01465E-03	1.09481E-03	8.73901E-04	7.91769E-04	1.08299E-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	6.26144E-04	3.43908E-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	1.19509E-03	1.09481E-03	1.08054E-03	6.77942E-04	6.01865E-04	6.41390E-04	3.11253E-04	1.61329E-04
5	1.19319E-03	1.09540E-03	1.08977E-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	7.68202E-04	2.13828E-03	1.89839E-03
2	1.77245E-04	2.91583E-04	2.93430E-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	4.21506E-04	1.24608E-03	3.25212E-03	2.93205E-03
4	7.07468E-05	7.53990E-05	1.17095E-04	3.84825E-04	1.35903E-04	3.40228E-04	1.07862E-03	8.60599E-04
5	7.39512E-05	8.73712E-05	1.23248E-04	3.97865E-04	1.50383E-04	3.86550E-04	1.19240E-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	2.18904E-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	1.9675E+09	7.2026E-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	3.89825E-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 disadvantage 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	9.98223E-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

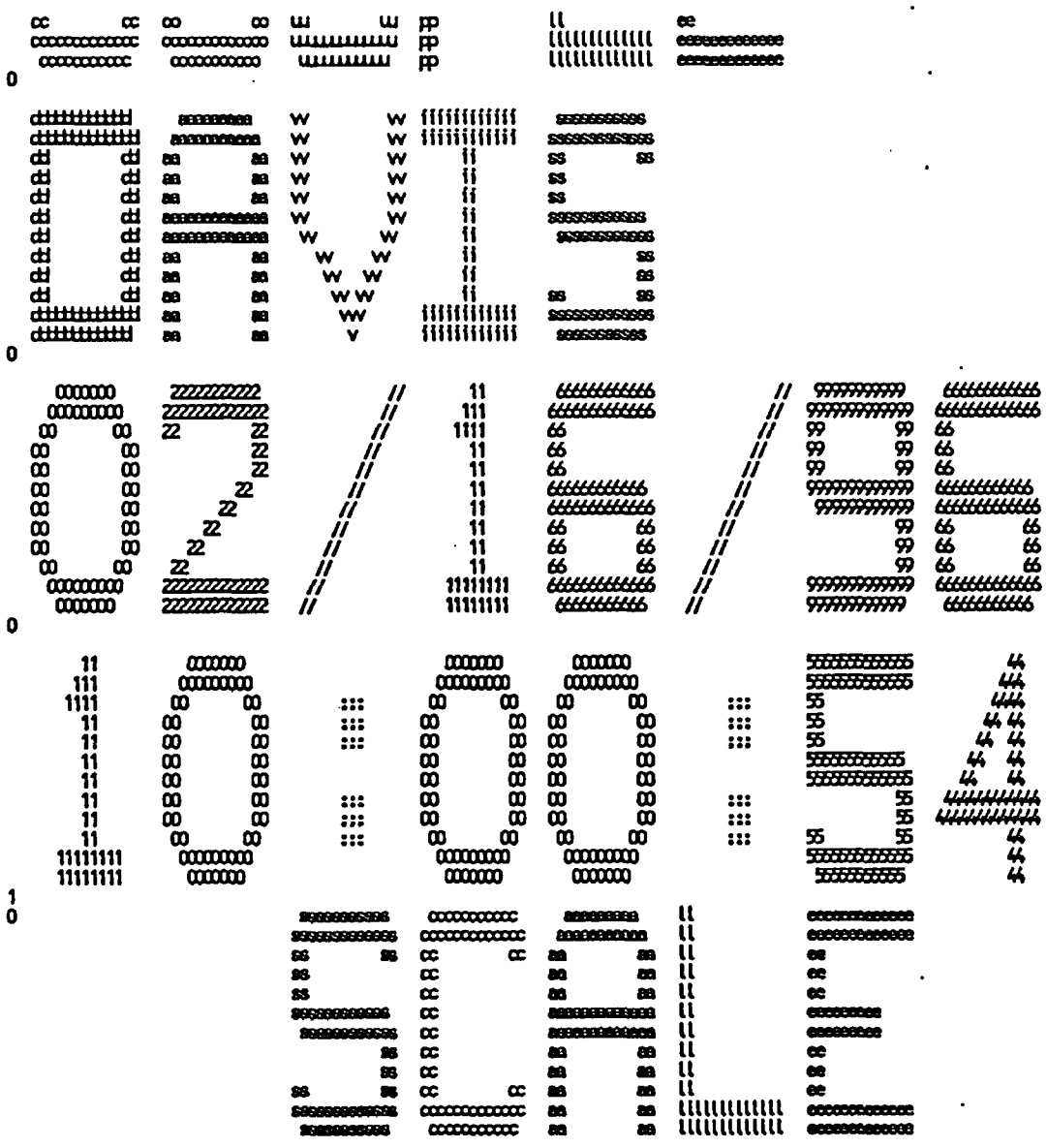
Ozone	grp. 1	grp. 2	grp. 3
1	1.71420E-02	1.82998E-02	6.62971E-03
2	1.91840E-02	2.57438E-02	1.03446E-02
3	1.92634E-02	2.22676E-02	1.04427E-02
4	1.52285E-02	1.62880E-02	3.02171E-03
5	1.54362E-02	1.65799E-02	3.40798E-03

Ozone	volume	vol. fraction
1	1.25665E+00	4.56236E-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 .03 min.

```
1  ccccccccccc    cccccccccccc   uu        uu  pppppppppppp   ll          eeeeeeeeeeeee
   ccccccccccccc  cccccccccccccc  uu        uu  pppppppppppp   ll          eeeeeeeeeeeee
   cc        cc   cc        cc   uu        uu  pp        pp   ll          ee
   cc             cc        cc   uu        uu  pp        pp   ll          ee
   cc             cc        cc   uu        uu  pp        pp   ll          ee
   cc             cc        cc   uu        uu  pppppppppppp   ll          eeeeeeeee
   cc             cc        cc   uu        uu  pppppppppppp   ll          eeeeeeeee
   cc             cc        cc   uu        uu  pp             ll          ee
   cc             cc        cc   uu        uu  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 jadd) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from ampx (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	1.00341E-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	2.49052E-02
360830	to 360820	1.99539E-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	3.72615E-08
360830	to 20030	3.72615E-08
360830	to 340800	4.37489E-05
360830	to 20040	4.37489E-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	9.75880E-01
390850	tot-cap	9.75880E-01
400930	to 400940	1.28927E+01
400930	tot-cap	1.28927E+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
430930	to 430880	6.04825E-03
430930	to 431000	8.67995E+01
430930	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
451030	to 451020	2.19045E-03

INFORMATION ONLY

451080 to 451040	3.49009E+02
451080 tot-cap	3.49011E+02
451050 to 451060	8.09421E+03
451050 tot-cap	8.09421E+03
461060 to 461060	3.27097E+01
461060 tot-cap	3.27097E+01
461080 to 461090	6.58777E+01
461080 tot-cap	6.58777E+01
471090 to 471080	5.09875E-03
471090 to 471100	3.58892E+02
471090 to 461090	2.89043E-04
471090 to 10010	2.89043E-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	3.72901E-05
541310 to 10010	3.72901E-05
541310 to 531300	5.17949E-07
541310 to 10020	5.17949E-07
541310 to 531290	5.31105E-07
541310 to 10080	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-06
541320 to 10010	7.62170E-06
541320 to 531310	3.21580E-07
541320 to 10020	3.21580E-07
541320 to 531300	4.33008E-08
541320 to 10080	4.33008E-08
541320 to 521290	9.37729E-07
541320 to 20040	9.37729E-07
541320 tot-cap	9.06889E-01
541350 to 541360	1.45959E+06
541350 tot-cap	1.45959E+06
541360 to 541350	1.70674E-02
541360 to 541340	5.21279E-05
541360 to 541370	1.21829E-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-08
541360 to 10080	2.65078E-08
541360 to 521330	2.64371E-07
541360 to 20040	2.64371E-07
541360 tot-cap	1.38944E-01
551330 to 551320	7.99233E-08
551330 to 551340	9.87234E+01
551330 to 541330	8.68658E-04
551330 to 10010	8.68658E-04

INFORMATION ONLY

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	1.6465E-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	4.1366E-09
601450	to 20030	4.1366E-09

INFORMATION ONLY

601450 to 581420	1.9473E-04
601450 tot-cap	7.6445E+01
601470 to 601480	1.8206E+02
601470 tot-cap	1.8206E+02
611470 to 611460	3.0768E-02
611470 to 611450	9.6001E-05
611470 to 591430	8.5269E-06
611470 to 20040	7.9090E-05
611470 to 601460	1.1766E-05
611470 to 10010	2.6816E-05
611470 to 611480	5.6579E+02
611470 to 601470	2.3905E-05
611470 to 10020	8.8543E-06
611470 to 601450	3.3430E-06
611470 to 10030	3.3430E-06
611470 to 591450	5.0264E-09
611470 to 20030	5.0264E-09
611470 to 591440	7.0563E-05
611470 tot-cap	5.6582E+02
611480 to 611490	1.1986E+04
611480 tot-cap	1.1986E+04
621470 to 621460	8.0267E-02
621470 to 621450	7.2273E-05
621470 to 601430	6.2708E-05
621470 to 20040	1.2068E-05
621470 to 611460	1.4566E-04
621470 to 10010	2.0828E-04
621470 to 621480	2.2659E+02
621470 to 611470	1.8373E-04
621470 to 10020	1.2110E-04
621470 to 611450	1.3006E-04
621470 to 10030	1.3006E-04
621470 to 601450	5.9835E-06
621470 to 20030	5.9835E-06
621470 to 601440	1.1441E-05
621470 to 621471	1.5921E+00
621470 tot-cap	2.2668E+02
621480 to 621480	4.5369E-02
621480 to 621470	3.6024E-05
621480 to 621500	4.4960E+04
621480 to 611480	4.6490E-04
621480 to 10010	4.6490E-04
621480 to 601460	4.6490E-04
621480 to 20040	4.6490E-04
621480 tot-cap	4.4960E+04
621500 to 621510	1.3100E+02
621500 tot-cap	1.3100E+02
621510 to 621500	1.5153E-01
621510 to 621480	1.3569E-04
621510 to 601470	1.5250E-05
621510 to 20040	1.1878E-04
621510 to 611500	1.8562E-06
621510 to 10010	1.4446E-05
621510 to 621520	4.9013E+03
621510 to 611510	1.3319E-05
621510 to 10020	7.2213E-07
621510 to 611460	1.3126E-06
621510 to 10030	1.3126E-06
621510 to 601460	1.3520E-09
621510 to 20030	1.3520E-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	6.22333E-05
631530 to 631540	6.01907E+02
631530 to 621530	5.97147E-05
631530 to 10020	4.85759E-06
631530 to 621510	1.08864E-06
631530 to 10030	1.08864E-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-05
631540 to 631550	1.05700E+03
631540 to 621540	1.18422E-05
631540 to 10020	2.21498E-06
631540 to 621520	3.75203E-06
631540 to 10030	3.75203E-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	8.58505E-06
631550 to 621540	3.53339E-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	6.84089E-06
631550	tot-cap	2.53915E+03
641550	to 641540	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	1.86563E+02
922350	to 922340	2.77011E-02
922350	fission	3.58046E+02
922350	nu-sigf	8.67034E+02
922350	to 922330	2.64796E-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	3.98628E-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	5.37944E-05
932370	to 932380	2.92721E+02
932370	to 932371	7.31933E-01
932370	tot-cap	2.97663E+02
942380	to 942370	2.26019E-03
942380	fission	2.15714E+01
942380	nu-sigf	6.13885E+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	2.01878E-08
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

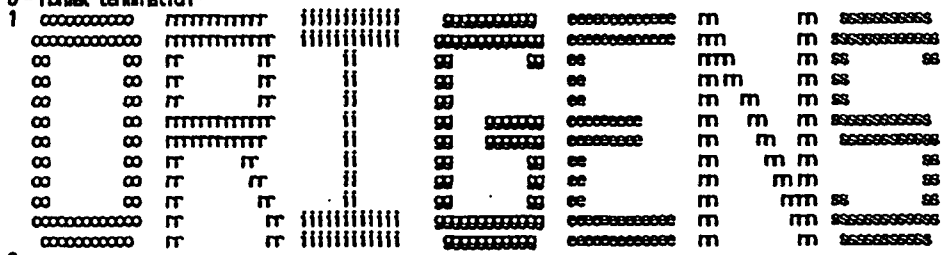
INFORMATION ONLY

INFORMATION ONLY

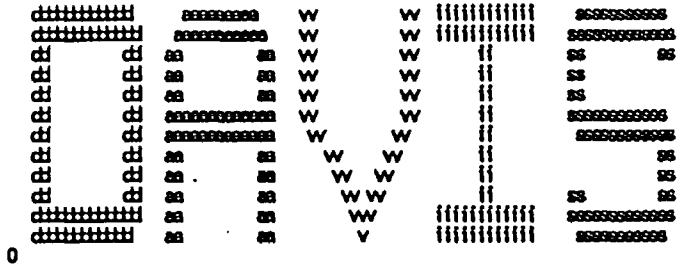
```
                942410 nu-sigf   2.62283E+03
                942410 to 942390 1.17533E-04
                942410 to 942420 2.93295E+02
                942410 tot-cap   1.18727E+03
                942420 to 942410 2.29460E-02
                942420 fission   4.27078E+00
                942420 nu-sigf   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   1.02328E+03
                952430 fission   3.29622E+00
                952430 nu-sigf   1.10818E+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   4.96557E+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

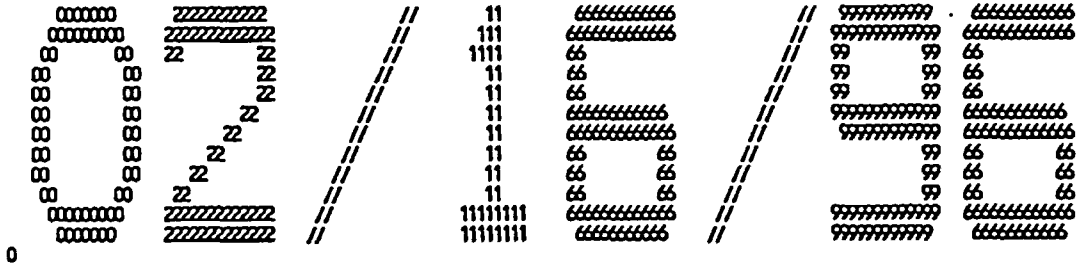
Ouse substitute nuclide in block 8 data. or, update with new fission yield data.
Othe fission product transitions for 952430 were not used. library fissile nuclides are
922330 922350 942410 922380 942390
Ouse substitute nuclide in block 8 data. or, update with new fission yield data.
Othe fission product 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 *



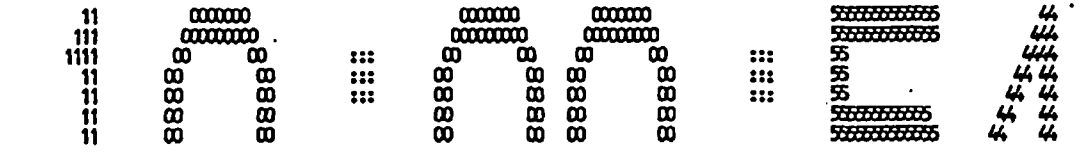
0



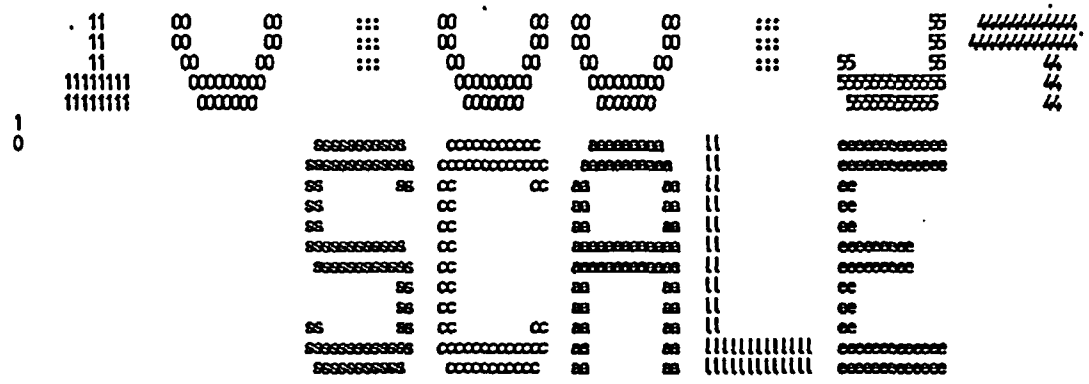
0

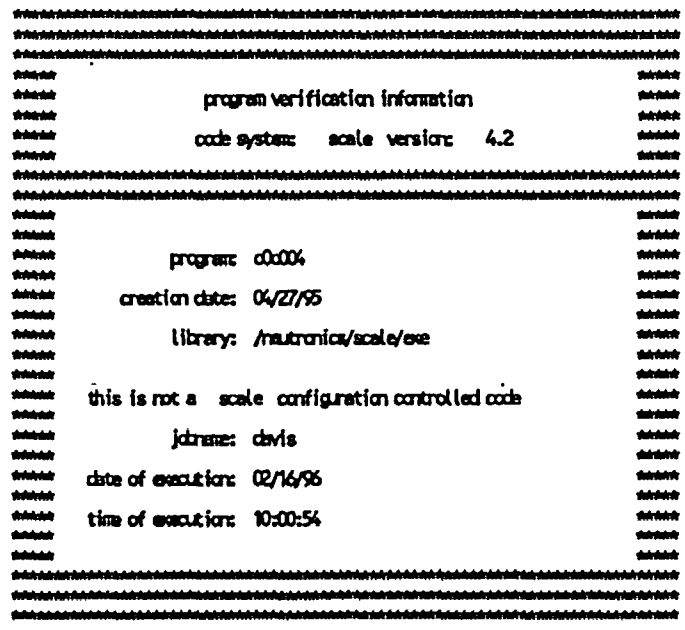


0



INFORMATION ONLY






```
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, qm =    9.1188E-04
0          half-norm of matrix used, anm =    7.0000E+00
0          4-place-accuracy-retention ratio, ratio4 =    6.4514E-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  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 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 ul2 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                7885     number of nonzero off-diagonal matrix elements
0       ************************************************************************
0
1
```

INFORMATION ONLY

sas2h: babcock wilcox 15x15, 3.00w%, 20g-d/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	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	4.35E-21	4.38E-21	5.10E-21	5.85E-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	4.85E-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	5.62E-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	5.86E-09
u240	.00E+00	7.72E-35	1.71E-34	3.56E-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	2.83E-06
np238	1.94E-09	2.21E-09	2.45E-09	2.70E-09	2.96E-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	1.88E-12	2.25E-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	1.25E-07	1.49E-07	1.78E-07	2.10E-07	2.46E-07	2.46E-07	2.86E-07	3.28E-07
pu239	7.50E-05	7.98E-05	8.32E-05	8.69E-05	9.04E-05	9.04E-05	9.36E-05	9.68E-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	8.65E-29
pu246	.00E+00	9.00E-33	2.10E-32	4.46E-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	5.25E-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	2.28E-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	4.65E-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	1.06E-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	4.36E-16	8.72E-16	1.64E-15	2.94E-15	5.08E-15	5.08E-15	8.40E-15	1.35E-14

1

sas2h: babcock wilcox 15x15, 3.00w%, 20g-d/mtu burn high temp actinides page 2
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)

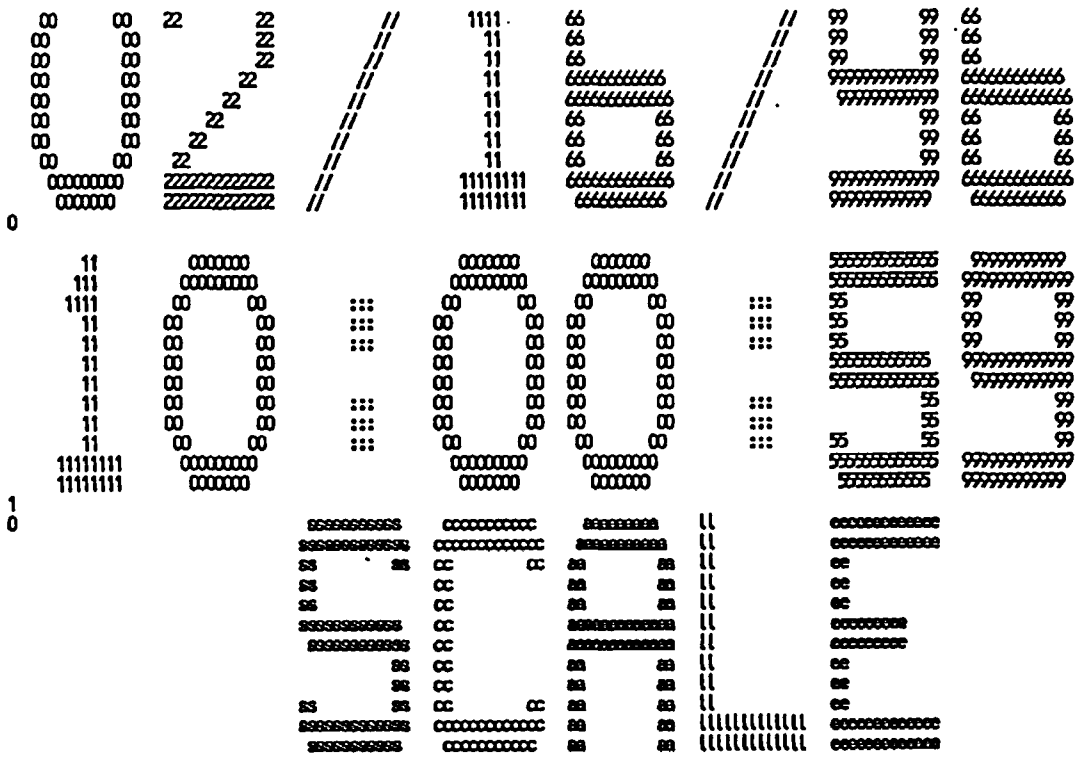
INFORMATION ONLY

```
            charge  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 4.96E-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
0ndset          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
  5.102450E-01 4.194440E-01 3.225492E+00 1.000000E-31
0rcn             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 4.800385E+02  .000000E+00  .000000E+00 1.000000E-08
```

INFORMATION ONLY

```
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
 n-gamma, fission and total mev/fission =          6.1975E+00     1.9583E+02     2.0203E+02
 start of interval flux =        1.60283E+13
 n-gamma, fission and total mev/fission =          6.2896E+00     1.9593E+02     2.0222E+02
 start of interval flux =        1.60309E+13
 n-gamma, fission and total mev/fission =          6.3902E+00     1.9602E+02     2.0241E+02
 start of interval flux =        1.60378E+13
 n-gamma, fission and total mev/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 mev/fission =          6.6029E+00     1.9621E+02     2.0281E+02
 start of interval flux =        1.60661E+13
 n-gamma, fission and total mev/fission =          6.6899E+00     1.9629E+02     2.0298E+02
 start of interval flux =        1.60891E+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
1 bbbbbbbbbbb    cccccccccc  m        m                aaaaaaaa   mm        mm iiiiiiiiiiii   zzzzzzzzzz
  bbbbbbbbbbb  cccccccccccc  mm       m               aaaaaaaaaa  mmm      mmm iiiiiiiiiiii  zzzzzzzzzzzz
  bb       bb  cc        cc  mmm      m              aa        aa  mmmm    mmmm     ii       22        22
  bb       bb  cc        cc  m m      m              aa        aa  mm mm   mm mm     ii                 22
  bb       bb  cc        cc  m  m     m              aa        aa  mm  mm mm  mm     ii                 22
  bbbbbbbbbbb  cc        cc  m   m    m ------------ aaaaaaaaaaaa  mm   mmm   mm     ii               22
  bbbbbbbbbbb  cc        cc  m    m   m ------------ aaaaaaaaaaaa  mm    m    mm     ii             22
  bb       bb  cc        cc  m     m  m              aa        aa  mm         mm     ii           22
  bb       bb  cc        cc  m      m m              aa        aa  mm         mm     ii         22
  bb       bb  cc        cc  m       mm              aa        aa  mm         mm     ii       22
  bbbbbbbbbbb  cccccccccccc  m        m              aa        aa  mm         mm iiiiiiiiiiii  zzzzzzzzzzzz
  bbbbbbbbbbb    cccccccccc  m        m              aa        aa  mm         mm iiiiiiiiiiii  zzzzzzzzzzzz
0

  dbbbbbbbbbb     aaaaaaaa   w        w iiiiiiiiiiii   ssssssssss
  dbbbbbbbbbbb   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
  dbbbbbbbbbbb  aa        aa       ww     iiiiiiiiiiii  ssssssssssss
  dbbbbbbbbbb   aa        aa        v     iiiiiiiiiiii   ssssssssss
0

    0000000     zzzzzzzzzz          //      11      666666666666          //  99999999999   666666666666
   000000000    zzzzzzzzzzzz        //      111     6666666666666         //  999999999999  6666666666666
```

INFORMATION ONLY



program verification information

code system: scale version: 4.2

program: c0.008

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
 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                                         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    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    1.02024E-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	6.39798E-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	1.62386E-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

Geometry and material description

Zone	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

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 18 bondarenko trigger 0

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

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

INFORMATION ONLY

```
Copy    1001  hydrogen        from lag 12 to lag  1   bondarenko trigger 0
Copy    5010  b-10 1273 218rgp from lag 12 to lag  1   bondarenko trigger 0
Copy    5011  boron-11        from lag 12 to lag  1   bondarenko trigger 0
Copy    8016  oxygen-16       from lag 12 to lag 18   bondarenko trigger 0
Copy    8016  oxygen-16       from lag 18 to lag  1   bondarenko trigger 0
Copy    8016  oxygen-16       from lag 18 to lag  1   bondarenko trigger 0
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 sigs= 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 sigs= 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 1050 sigs 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
```

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 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/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
      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 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 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
```

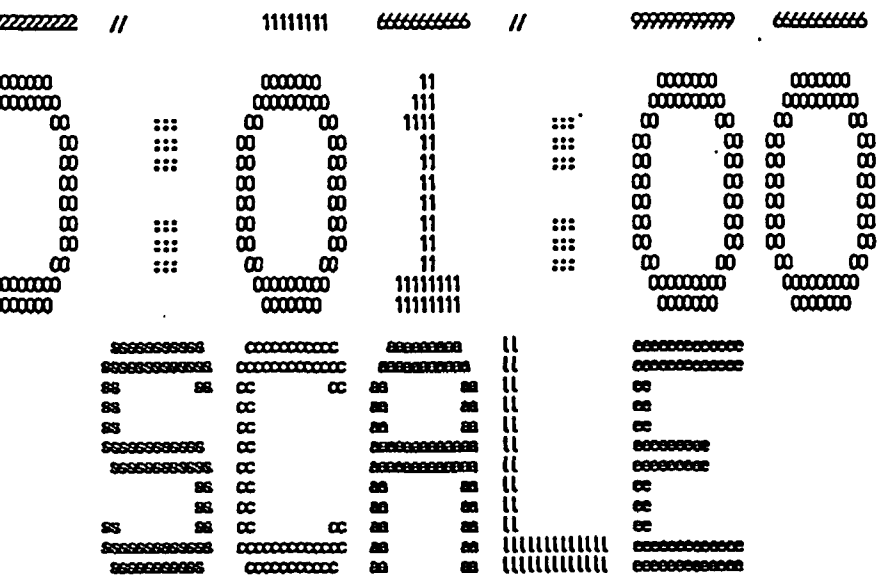
```
0
```

```
0
```

```
0
```

INFORMATION ONLY

```
     0000000    2222222222222   //          11111111    66666666666   //          999999999999   66666666666
0

       11         0000000                    0000000        11                      0000000        0000000
      111        000000000                  000000000       111                    000000000      000000000
     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    000000000                  000000000    11111111                 000000000      000000000
     11111111     0000000                    0000000     11111111                  0000000        0000000
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

```
                    *****                                                                  *****
                    ************************************************************************
                    ************************************************************************
                    ************************************************************************
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 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 295k                                           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           40502
   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
```

INFORMATION ONLY

```
  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 newxlacs 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 newxlacs 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 newxlacs 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 newxlacs 218ngp 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/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   = 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    =  237.983          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
```

INFORMATION ONLY

```
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   -1.723045E-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   = 1.0202441E-05
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)= 1.6737141E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 1.8673432E+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      -2.549601E-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   = 1.6222863E-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)= 1.0525867E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 1.1743585E+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      -3.135593E-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   = 4.2515602E-02
```

INFORMATION ONLY

```
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      -1.780596E-03     .000000E+00   -1.286907E+00
   9      -5.893373E-02     .000000E+00   -2.695297E+00
  10      -6.959935E-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)    = 4.6812201E-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)= 2.2653258E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 2.5273973E+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    9.253030E-04
  14       9.836712E-03     .000000E+00   -4.064845E-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)    = 4.6812201E-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)= 1.2967796E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 1.4468017E+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   -8.604292E-03
  12      -3.707084E+00     .000000E+00   -4.265654E+00
  13       1.583315E-04     .000000E+00   -2.254974E-05
0excess resonance integrals
0                  resolved
0absorption       9.86300E+01
 fission           .00000E+00
- elapsed time     .02 min.
0 tc-99          mt=102                    updated 10/13/89          43099     temperature=   975.00
```

INFORMATION ONLY

```
Oresonance data for this nuclide
Omass number (a)          =   98.150          temperature(kelvin)      =   975.000
Opotential scatter sigma  =    6.000          lumped nuclear density   = 1.584425E-05
Ospin factor (g)          = 4527.940          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)= 1.0777272E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2      =  237.933          sigma(per absorber atom)= 1.2024076E+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
  11      -2.038773E-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   -2.274936E-01
  15       1.070480E-02    .000000E+00   -5.392398E-04
  16       4.836007E-03    .000000E+00   -2.802095E-04
  17       2.073935E-04    .000000E+00   -1.191064E-05
Oexcess resonance integrals
O                 resolved
Oabsorption      3.25462E+02
 fission          .00000E+00
- elapsed time    .03 min.
O ru-101        mt=102                    updated 10/13/89          44101    temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =  100.039          temperature(kelvin)      =   975.000
Opotential scatter sigma  =    3.965          lumped nuclear density   = 1.4230770E-05
Ospin factor (g)          = 8765.290          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)= 1.1999329E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2      =  237.933          sigma(per absorber atom)= 1.3387510E+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
  11      -3.624243E-02    .000000E+00   -3.672971E-03
  12      -1.064926E-01    .000000E+00   -2.812458E-02
  13      -3.819152E-01    .000000E+00   -1.028591E-02
  14       2.372863E-04    .000000E+00   -4.161137E-05
Oexcess resonance integrals
O                 resolved
Oabsorption      7.95820E+01
 fission          .00000E+00
- elapsed time    .03 min.
O ru-106        mt=102                    updated 10/13/89          44106    temperature=   975.00
O rh-103        mt=102                    updated 10/13/89          45103    temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =  102.021          temperature(kelvin)      =   975.000
Opotential scatter sigma  =    5.408          lumped nuclear density   = 8.5154315E-06
Ospin factor (g)          =     .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)= 2.0052971E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2      =  237.933          sigma(per absorber atom)= 2.2372861E+04
Omoderator-2 will be treated by the nordheim integral method.
```

INFORMATION ONLY

```
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        3.328770E+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        1.087088E+00      .000000E+00    -2.470565E-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    = 5.2778869E-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)= 3.2353799E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 3.6096754E+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    -1.338439E-03
 13       -1.381487E-02      .000000E+00    -6.986314E-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    = 1.3953571E-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)= 1.2255271E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 1.3673061E+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
```

INFORMATION ONLY

```
  11    1.170302E-04    .000000E+00   3.532026E-04
  12   -1.263694E+00    .000000E+00  -9.304958E-01
  13    6.869441E-03    .000000E+00   1.844850E-03
  14    8.561260E-02    .000000E+00  -3.207805E-05
  15   -1.840706E-01    .000000E+00   8.083708E-05
  16    2.946590E-04    .000000E+00  -9.255679E-06
Oexcess resonance integrals
0                resolved
Oabsorption      2.1256OE+02
 fission          .00000E+00
- elapsed time    .07 min.
O silver-109    endf/b-iv mat 1139          updated 10/13/89          47109    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)         =   107.969          temperature(kelvin)     =  975.000
Opotential scatter sigma =     4.988          lumped nuclear density  = 9.8975897E-07
Ospin factor (g)         =  1441.870          lump dimension (a-bar)  = 4.6812201E-01
Odimer 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)= 1.7252653E+05
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2     =   257.933          sigma(per absorber atom)= 1.9848583E+05
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    -9.786543E-05    .000000E+00   -9.223403E-05
  11    -4.345954E-03    .000000E+00   -3.223391E-03
  12    -7.193846E-01    .000000E+00   -3.343605E-02
  13     7.670446E-01    .000000E+00    3.380743E-02
  14    -9.331539E+00    .000000E+00   -8.741142E-01
Oexcess resonance integrals
0                resolved
Oabsorption      1.3910IE+03
 fission          .00000E+00
- elapsed time    .07 min.
O sb-124        mt=102                      updated 10/13/89          51124    temperature=  975.00
O xe-131        mt=102,103,104,105,106      updated 10/13/89          54131    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)         =   129.781          temperature(kelvin)     =  975.000
Opotential scatter sigma =     4.301          lumped nuclear density  = 7.3108026E-06
Ospin factor (g)         =   246.825          lump dimension (a-bar)  = 4.6812201E-01
Odimer 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)= 2.3357174E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2     =   257.933          sigma(per absorber atom)= 2.6059324E+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    -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    -6.002638E+01    .000000E+00   -1.407475E+02
  14     1.073748E-02    .000000E+00    1.503469E-02
Oexcess resonance integrals
0                resolved
Oabsorption      7.7038E+02
 fission          .00000E+00
```

INFORMATION ONLY

```
 - 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  = 1.3225989E-05
0spin factor (g)          =  675.859          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      3.345201E-08    .000000E+00   -9.291078E-07
0excess resonance integrals
0                resolved
0absorption     9.7372E-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   -3.152509E-04
  10     -2.382956E-03    .000000E+00   -4.567852E-03
  11     -8.948968E-02    .000000E+00   -1.566151E-01
  12     -1.388060E-01    .000000E+00   -1.928295E-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      2.215039E-03    .000000E+00   -1.679543E-04
  19      1.317312E-03    .000000E+00   -9.676463E-05
0excess resonance integrals
0                resolved
0absorption     3.5386E+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
```

INFORMATION ONLY

```
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    =  237.953          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       1.198235E-06    .000000E+00    5.099283E-07
  11       4.140539E-07    .000000E+00    7.002787E-07
Oexcess resonance integrals
0                  resolved
Oabsorption       1.38473E+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)= 1.0203004E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  237.953          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    =  237.953          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      -9.223772E-02    .000000E+00   -1.226486E+00
  12      -2.091378E-03    .000000E+00   -2.041713E-04
```

INFORMATION ONLY

```
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)          =  1964.860          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)= 1.2764813E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933          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      -1.332625E-04    .000000E+00   -6.817683E-05
  11      -3.122534E-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    =  237.933          sigma(per absorber atom)= 1.9497988E+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   -6.238655E-02
  11      -6.007329E-02    .000000E+00   -1.817612E-01
  12      -1.459763E+00    .000000E+00   -9.188078E+00
  13       9.598655E-05    .000000E+00    2.042558E-04
  14      -1.322929E+00    .000000E+00   -3.478237E-02
  15       5.901529E-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   -2.919262E-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
```

INFORMATION ONLY

```
Oresonance data for this nuclide
Omass number (a)          =   145.653          temperature(kelvin)      =   975.000
Opotential scatter sigma  =     5.093          lumped nuclear density   = 3.6431304E-06
Ospin factor (g)          = 21589.500          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)= 4.6871695E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 5.2294195E+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
  12      -1.823680E-01    .000000E+00   -5.851357E-02
  13      -4.676967E-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
Oexcess resonance integrals
0                  resolved
Oabsorption       2.01524E+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
Oresonance data for this nuclide
Omass number (a)          =   145.653          temperature(kelvin)      =   975.000
Opotential scatter sigma  =     5.093          lumped nuclear density   = 1.0192879E-06
Ospin factor (g)          =      .000          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)= 1.6752842E+05
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 1.8690948E+05
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
  11       2.767026E-01    .000000E+00    1.093160E+00
  12       9.978251E-01    .000000E+00   -1.498843E+00
  13      -3.338374E+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
Oexcess resonance integrals
0                  resolved
Oabsorption       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
Oresonance data for this nuclide
Omass number (a)          =   147.638          temperature(kelvin)      =   975.000
```

INFORMATION ONLY

```
0potential scatter sigma =     3.260          lumped nuclear density    = 8.4049255E-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)= 2.0316621E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 2.2667015E+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      8.546605E-03     .000000E+00    3.071165E-02
  12     -5.476413E-02     .000000E+00   -1.810656E-01
  13      2.318233E-02     .000000E+00    2.840699E-03
  14      5.777774E-03     .000000E+00   -7.572224E-03
0excess resonance integrals
0                resolved
0absorption      8.04337E+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    = 3.3563288E-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)= 5.0876930E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 5.6762789E+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     -1.140486E-03     .000000E+00   -1.081808E-02
  11     -2.526795E-02     .000000E+00   -2.863482E-01
  12     -8.222108E-02     .000000E+00   -2.484979E-02
  13     -5.859069E+00     .000000E+00   -4.613210E+00
  14      1.065659E-04     .000000E+00   -6.400712E-05
0excess resonance integrals
0                resolved
0absorption      2.88255E+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    = 3.6886007E-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)= 4.6298894E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 5.1649550E+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     -2.119385E-01     .000000E+00   -2.082594E-02
  15      1.487428E+01     .000000E+00    7.527953E-02
```

INFORMATION ONLY

```
  16     -2.180708E+01     .000000E+00   -6.198250E-02
  17      1.736728E+02     .000000E+00    8.278137E-01
  18     -3.206240E+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       2.05636E+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   = 1.6314026E-06
0spin factor (g)          =   863.594          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)= 1.0467048E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953             sigma(per absorber atom)= 1.1677961E+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   -2.024388E-02
  11     -1.885441E-02     .000000E+00   -7.182702E-02
  12     -1.270521E-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       2.76491E+03
 fission           .00000E+00
- elapsed time    .17 min.
0 su-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   = 9.0325670E-07
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)= 1.8904891E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953             sigma(per absorber atom)= 2.1091964E+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   -5.575946E-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   -3.437732E-03
  18      7.726870E-02     .000000E+00   -2.231232E-03
  19      5.055447E-02     .000000E+00   -1.541113E-03
```

INFORMATION ONLY

```
  20     -1.25380E-01     .000000E+00  -1.27502E-03
0excess resonance integrals
0              resolved
0absorption      1.35457E+03
 fission          .0000E+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     -3.90412E-01     .000000E+00  -6.09452E-02
  13     -3.13509E-01     .000000E+00  -2.49586E-02
  14      3.30092E-01     .000000E+00   1.46507E-02
  15      1.59710E-01     .000000E+00   2.09798E-02
  16      7.21469E+00     .000000E+00   9.23393E-02
  17     -1.44071E+02     .000000E+00  -1.89671E+00
  18      1.13598E+02     .000000E+00   1.85820E+00
  19     -1.01468E+02     .000000E+00   1.18730E+00
0excess resonance integrals
0              resolved
0absorption      2.13664E+03
 fission          .0000E+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     -1.43980E+00     .000000E+00  -1.83947E-01
  13      1.54116E+00     .000000E+00   1.98509E-01
  14      2.19000E-01     .000000E+00   9.80604E-03
  15     -3.33665E-01     .000000E+00  -7.19712E-05
  16      1.47735E+00     .000000E+00  -4.14866E-03
  17      1.56865E-01     .000000E+00  -1.47914E-03
  18      9.60514E-02     .000000E+00  -1.07805E-03
  19      6.29532E-02     .000000E+00  -8.03647E-04
  20      1.67048E-02     .000000E+00   1.62647E-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      -2.127812E+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       3.97046E+04
 fission           .00000E+00
- elapsed time     .18 min.
0u-234 1043 sigo=5+4 newklacs 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    = 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      -2.226899E-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      -1.782032E+01     .000000E+00   -2.918325E+00
0excess resonance integrals
0                  resolved
0absorption       5.82763E+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    = 4.444934E-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   -1.416060E-01
  14      -5.261562E+00   -3.231865E+00   -3.592915E-02
0excess resonance integrals
0                  resolved
0absorption       2.12116E+02
 fission          1.26292E+02
- elapsed time     .22 min.
0u-236 1163 sigo=5+4 newklacs 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    = 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
```

INFORMATION ONLY

INFORMATION ONLY

```
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    =   237.954              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      -2.324609E-01     .000000E+00    -5.852797E-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)          =   666.527          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)= 7.806716E+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      -9.706285E+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       5.0401?E-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       2.491778E-02    -1.071069E-04     7.235728E-03
  13      -2.751440E-02     8.779010E-06    -1.433366E-03
  14      -7.346514E-02    -9.089304E-06    -1.443095E-03
```

INFORMATION ONLY

0excess resonance integrals
0 resolved
0absorption 2.93033E+02
fission 1.38557E-01
- elapsed time .27 min.
0pu-238 1050 sigo=5+4 ns=klacs p-3 295k f-1/e-m(1.+5) 9423 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	-1.392854E-04	-6.016181E-04
13	4.025275E-01	7.519357E-02	-1.026164E-02
14	-3.825054E-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 9439 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 = 9.6627592E-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)= 1.7690300E+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	-8.120056E-02	-6.177880E-02
12	-1.791471E+00	-6.726600E-01	-2.357042E-01
13	-5.869739E+00	-3.453878E+00	-8.968408E-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 9440 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.

INFORMATION ONLY

```
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  -1.839715E-04
  10     -3.866992E-03  -2.392602E-04  -1.766385E-02
  11     -1.237893E-01  -7.198899E-04  -1.646513E-01
  12     -1.718637E+00  -9.389978E-03  -1.648603E+00
  13     -2.116805E-01  -1.297953E-03  -1.542845E-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      4.603201E+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  -1.785835E-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  = 8.0856651E-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)= 2.110975E+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  -8.718508E-04
  15      1.790424E-02   1.604463E-02  -4.657629E-04
0excess resonance integrals
0              resolved
0absorption    5.0805E+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  = 7.2571878E-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)= 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
```

INFORMATION ONLY

```
  12     -4.052668E-02     .000000E+00   -7.886203E-02
  13     -1.853779E-05     .000000E+00    3.537324E-06
  14      8.138350E-02     .000000E+00    1.523547E-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      1.10276E+03
 fission          .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp=5+4 newxlacs 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   = 1.9917950E-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      1.93451E+02
 fission         1.07595E+00
- elapsed time    .32 min.
0am-243 1057 218 gp wt f-1/e-m 090376 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   = 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            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   = 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
```

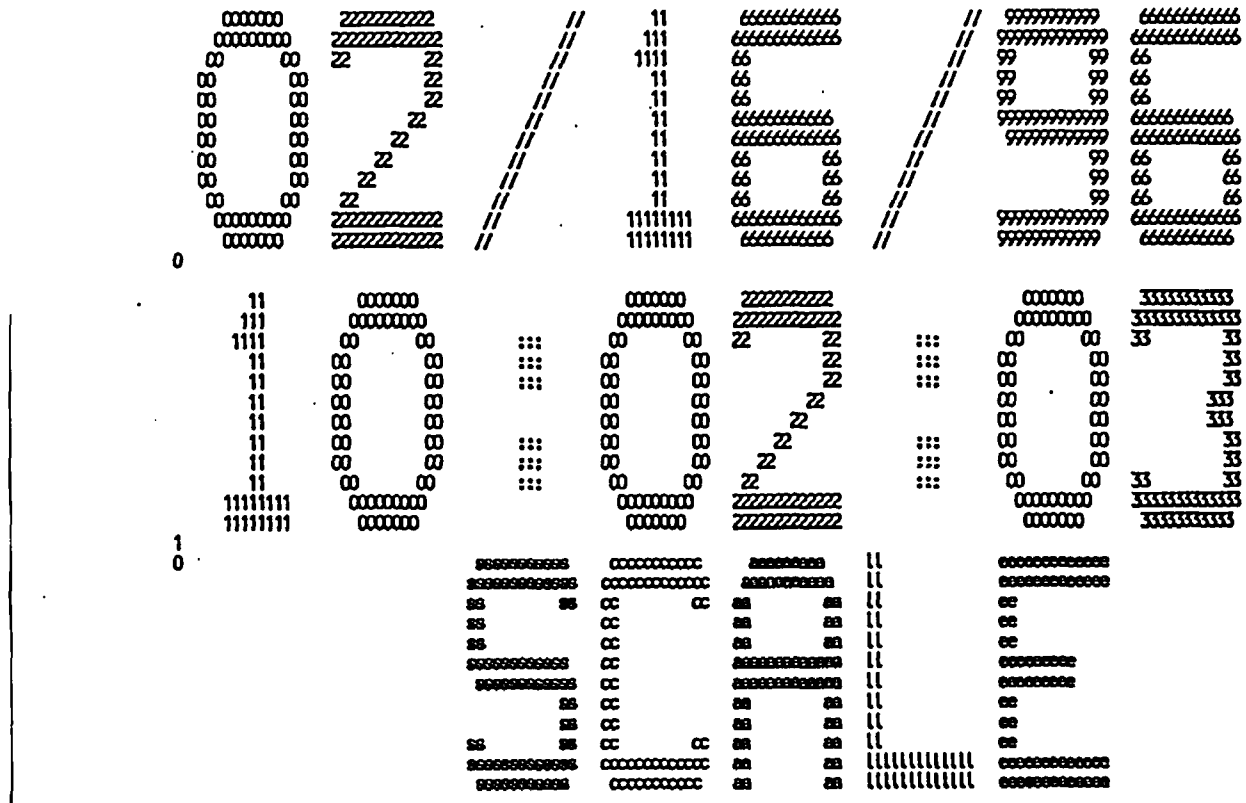
INFORMATION ONLY

```
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)= 4.584929E+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   6.736606E-06   2.889803E-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 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/thnm1002   updated 10/13/89             id    1001
       b-10 1273 218ngp 042375 p-3 298k                                           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 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 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  ssssssssss  dddddddddd  rrrrrrrrrr  rrr       rrr  pppppppppp  mm        mm
   xx      xx  ssssssssssss  dddddddddd  rrrrrrrrrrr  rrrr      rrr  pppppppppp  mmm      mmm
    xx    xx  ss        ss  dd        dd  rr        rr  rrrrr     rrr  pp        pp  mmmm    mmmm
     xx  xx   ss            dd        dd  rr        rr  rrr rrr   rrr  pp        pp  mm mm  mm mm
      xx xx   ss            dd        dd  rr        rr  rrr  rrr  rrr  pp        pp  mm  mm mm  mm
       xxx    ssssssssssss  dd        dd  rrrrrrrrrrr  rrr   rrr  rrr  pppppppppp  mm   mmm   mm
       xxx     ssssssssssss  dd        dd  rrrrrrrrrrr  rrr    rrr  rrr  pppppppppp  mm    m    mm
      xx xx            ss  dd        dd  rr       rr  rrr     rrr  rrr  pp          mm        mm
     xx  xx            ss  dd        dd  rr        rr  rrr      rrr  rrr  pp          mm        mm
    xx    xx  ss        ss  dd        dd  rr        rr  rrr       rrrr  pp          mm        mm
   xx      xx  ssssssssssss  dddddddddd  rr        rr  rrr        rrrr  pp          mm        mm
  xx        xx  ssssssssssss  dddddddddd  rr        rr  rrr         rrr  pp          mm        mm
0

  dddddddddd    aaaaaaaaa   w         w  iiiiiiiiiiii   ssssssssssss
  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        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
  dddddddddd    aa        aa       ww     iiiiiiiiiiii   ssssssssssss
  dddddddddd    aa        aa        v     iiiiiiiiiiii   ssssssssssss
0
```

INFORMATION ONLY



program verification information

code system: scale version: 4.2

program: c0c001

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:  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

 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       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
 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
 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 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 max order         4
 ipp  -2/-1/0/n=wgted xsect print       -2       mscm 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, sas3h: 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.)

	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-06	
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	40802		1	40095	2.03583E-06	
15	41094		1	41094	7.53997E-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	1.39834E-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	6.68978E-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	8.40428E-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	9.08257E-07
49	63153	1	63154	1.63879E-07
50	63154	1	63155	9.91552E-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	1.73735E-05
56	92238	1	95237	2.81758E-06
57	95237	1	94238	3.26250E-07
58	94238	1	94239	9.65273E-05
59	94239	1	94240	1.62388E-05
60	94240	1	94241	8.08857E-06
61	94241	1	94242	7.25719E-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

INFORMATION ONLY

```
 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, 3.00wt%, 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	4.40386E-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	9.80618E+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	1.58657E+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	4.86953E+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	2.71892E+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

1 720 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	-1.97286E-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	-1.28578E-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	-9.83032E-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	-3.07864E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.25713E-01	3.07864E-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	-1.40530E-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	-9.83032E-01	-4.44528E-01	8.36885E-01	5.00705E-01	-7.51005E-01
17	-9.64143E-01	-4.44528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.44528E-01	3.20862E-01	4.16520E-01	1.46514E-01
19	-5.46143E-01	-4.44528E-01	-3.20862E-01	2.78178E-01	7.36575E-01
20	-1.91780E-01	-4.44528E-01	-7.73181E-01	9.76824E-02	4.17234E-01
21	1.91780E-01	-4.44528E-01	-7.73181E-01	-9.76824E-02	-4.17234E-01
22	5.46143E-01	-4.44528E-01	-3.20862E-01	-2.78178E-01	-7.36575E-01
23	8.17361E-01	-4.44528E-01	3.20862E-01	-4.16520E-01	-1.46514E-01
24	9.64143E-01	-4.44528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int

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	1.14244E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.99367E-01	1	1.47065E+00	2.21259E-01	1.00000E+00		

INFORMATION ONLY

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	9.30425E-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	4.69307E-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	4.77406E-01	4.78098E-01	2	2.99962E+00	4.16023E-03	0
13	4.78990E-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	5.53613E-01	4	3.43125E+00	5.15631E-02	1.00000E+00
18	5.60928E-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	6.80084E-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.

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	-1.85484E-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	-1.89910E-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	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	1.60256E-07	24	1.00000E+00	1
2	1	1	1.82710E-07	24	1.00000E+00	1
3	1	1	1.66012E-07	24	1.00000E+00	1
4	1	1	1.57203E-07	24	1.00000E+00	1
5	1	1	1.47925E-07	24	1.00000E+00	1
6	1	1	8.90491E-08	24	1.00000E+00	1
7	1	1	5.57681E-08	24	1.00000E+00	1
8	1	1	1.21885E-08	24	1.00000E+00	1
9	1	2	7.34707E-09	24	1.00000E+00	1
10	1	2	7.04445E-09	24	1.00000E+00	1
11	1	2	7.28211E-09	24	1.00000E+00	1
12	1	24	1.75957E-08	24	1.00000E+00	1
13	1	24	2.20915E-08	24	1.00000E+00	1
14	1	24	2.13140E-08	24	1.00000E+00	1
15	1	20	4.85868E-05	24	9.99838E-01	1
16	1	20	5.97910E-05	24	9.99844E-01	1
17	1	19	7.68363E-05	24	9.99850E-01	1
18	2	24	4.75161E-05	24	1.00008E+00	1
19	1	20	7.57303E-05	24	9.99834E-01	1
20	1	20	5.73101E-05	24	9.99794E-01	1
21	2	24	5.05713E-05	24	1.00002E+00	1
22	1	19	5.68041E-05	24	9.99885E-01	1
23	1	24	1.09517E-05	24	1.00000E+00	1
24	1	24	4.63568E-05	24	1.00008E+00	1
25	1	24	5.66416E-05	24	1.00002E+00	1
26	1	2	2.57303E-05	24	1.00002E+00	2
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	-2.85992E-05	.00000E+00	.0167

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

- elapsed time .02 min.

INFORMATION ONLY

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	2.59102E-02	4.33406E-02	1.62798E-01	9.48518E-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	1.47066E+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	9.30425E-02	1.47785E-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	4.99387E-01	3.06325E+00	7.82768E-02	.00000E+00
15	3	5.12445E-01	5.24403E-01	3.21978E+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	5.53613E-01	3.43125E+00	5.15631E-02	.00000E+00
18	4	5.60926E-01	5.70900E-01	3.52440E+00	7.16548E-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	1.33855E+00	1.68345E+00	1.04266E+00	1.57657E+00	3.05139E+00	2.90669E+00	2.08120E+00
2	1.79212E-01	1.33418E+00	1.68429E+00	1.04316E+00	1.57727E+00	3.05269E+00	2.90685E+00	2.08126E+00
3	1.79155E-01	1.33356E+00	1.68351E+00	1.04269E+00	1.57649E+00	3.05100E+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	2.89902E+00	2.08001E+00
5	1.77714E-01	1.31833E+00	1.66424E+00	1.03101E+00	1.55797E+00	2.99465E+00	2.88534E+00	2.07740E+00
6	1.76514E-01	1.30588E+00	1.64865E+00	1.02164E+00	1.54325E+00	2.96621E+00	2.86966E+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	2.07025E+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	1.51395E+00	2.91174E+00	2.83477E+00	2.06872E+00
12	1.73712E-01	1.27770E+00	1.61466E+00	1.00185E+00	1.51308E+00	2.91011E+00	2.83388E+00	2.06853E+00
13	1.73517E-01	1.27585E+00	1.61244E+00	1.00059E+00	1.51127E+00	2.90667E+00	2.83195E+00	2.06815E+00
14	1.72987E-01	1.27068E+00	1.60592E+00	9.96753E-01	1.50564E+00	2.89541E+00	2.82553E+00	2.06711E+00
15	1.72350E-01	1.26419E+00	1.59752E+00	9.91434E-01	1.49706E+00	2.87877E+00	2.81593E+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	1.48756E+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	1.25289E+00	1.58076E+00	9.79204E-01	1.47652E+00	2.83816E+00	2.79214E+00	2.06495E+00
20	1.71242E-01	1.24886E+00	1.57488E+00	9.75078E-01	1.46955E+00	2.82363E+00	2.78400E+00	2.06460E+00
21	1.71031E-01	1.24605E+00	1.57074E+00	9.72092E-01	1.46452E+00	2.81440E+00	2.77851E+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	1.71195E-01	1.24780E+00	1.57285E+00	9.73436E-01	1.46663E+00	2.81862E+00	2.78114E+00	2.06528E+00
25	1.71195E-01	1.24780E+00	1.57285E+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	1.59778E+00	1.44719E+00	1.30657E+00	7.96177E-01	6.70742E-01	5.84150E-01	3.68940E-01	2.02984E-01
2	1.59771E+00	1.44705E+00	1.30636E+00	7.95965E-01	6.70531E-01	5.84161E-01	3.68900E-01	2.02960E-01
3	1.59769E+00	1.44731E+00	1.30683E+00	7.96495E-01	6.70994E-01	5.84571E-01	3.68987E-01	2.03008E-01
4	1.59592E+00	1.44852E+00	1.30946E+00	7.99580E-01	6.75228E-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

INFORMATION ONLY

6	1.59437E+00	1.45475E+00	1.32302E+00	8.15687E-01	6.87282E-01	6.09496E-01	3.71589E-01	2.04702E-01
7	1.59654E+00	1.45713E+00	1.32824E+00	8.21806E-01	6.92576E-01	6.17606E-01	3.72358E-01	2.05243E-01
8	1.59860E+00	1.45925E+00	1.33295E+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	3.73540E-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	3.73697E-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	1.46234E+00	1.33990E+00	8.35792E-01	7.04547E-01	6.35890E-01	3.74195E-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	1.46565E+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	1.34988E+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	6.61592E-01	3.76217E-01	2.08098E-01
22	1.60608E+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	2.07998E-01
24	1.60572E+00	1.47023E+00	1.35648E+00	8.54453E-01	7.20250E-01	6.59847E-01	3.75828E-01	2.07908E-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	3.68568E-02	1.21575E-01	4.22940E-01	1.06268E-01	1.75895E-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	3.83301E-02	1.22275E-01	4.24354E-01	1.07545E-01	1.79683E-01	6.73457E-01	4.97539E-01
5	8.34796E-02	4.09748E-02	1.23752E-01	4.27316E-01	1.10240E-01	1.87644E-01	6.87741E-01	5.10257E-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	2.03533E-01	7.15343E-01	5.35237E-01
8	8.56890E-02	4.93283E-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	1.28068E-01	4.36211E-01	1.18758E-01	2.13661E-01	7.31869E-01	5.50858E-01
10	8.60674E-02	5.08487E-02	1.28143E-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	2.14864E-01	7.33980E-01	5.52240E-01
12	8.61981E-02	5.12564E-02	1.28360E-01	4.36835E-01	1.19324E-01	2.15302E-01	7.34780E-01	5.52952E-01
13	8.62942E-02	5.15806E-02	1.28514E-01	4.37188E-01	1.19642E-01	2.16224E-01	7.36416E-01	5.54405E-01
14	8.66099E-02	5.25833E-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	4.39797E-01	1.22000E-01	2.22966E-01	7.48419E-01	5.64857E-01
16	8.73227E-02	5.47874E-02	1.30256E-01	4.40764E-01	1.22872E-01	2.25420E-01	7.52778E-01	5.68592E-01
17	8.75266E-02	5.54283E-02	1.30600E-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	1.31600E-01	4.43427E-01	1.25587E-01	2.33259E-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	5.98328E-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	5.94501E-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	2.39051E-01	7.80956E-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	2.39514E-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	1.53139E-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	2.38576E-01	1.56072E-01	2.58468E-02					
15	2.41457E-01	1.58587E-01	2.65125E-02					

INFORMATION ONLY

INFORMATION ONLY

16	2.43181E-01	1.60059E-01	2.68841E-02
17	2.44910E-01	1.61817E-01	2.74610E-02
18	2.47773E-01	1.64867E-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	2.60884E-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	3.25726E-03	1.12142E-02	9.98836E-01
2	.00000E+00	1.95360E-01	2.35212E-03	1.67378E-01	6.46508E-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	1.29897E-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	1.34857E-01	6.53829E-01	5.43823E-02	6.94352E-03	2.50985E-01	1.00003E+00
7	.00000E+00	8.77626E-02	9.84879E-02	7.44822E-01	3.63561E-02	7.47750E-03	1.42637E-01	1.00001E+00
8	.00000E+00	1.35239E-02	4.25805E-02	6.30766E-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	2.29346E-02	-2.09042E-02	9.99991E-01
10	.00000E+00	7.25039E-05	2.07114E-02	4.61417E-01	1.07068E-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	5.80308E-02	-5.54615E-02	1.00001E+00
12	.00000E+00	4.02975E-07	8.15335E-03	2.39571E-01	9.37888E-03	6.40570E-02	-6.52571E-02	9.99960E-01
13	.00000E+00	6.39792E-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	6.15280E-03	1.52000E-01	7.39436E-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	1.00577E+00
16	.00000E+00	4.20738E-10	9.08061E-03	4.25418E-02	9.35262E-03	5.38054E-03	-5.95372E-03	1.00252E+00
17	.00000E+00	1.35498E-10	7.65731E-03	1.44200E-02	7.34023E-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	-2.28660E-02	1.00013E+00
19	.00000E+00	1.37155E-10	6.48623E-03	2.36316E-02	8.66922E-03	1.01044E-02	-1.23063E-02	1.00101E+00
20	.00000E+00	2.23025E-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	8.02540E-03	2.43286E-02	-2.35258E-02	1.00044E+00
22	.00000E+00	3.78747E-11	1.17446E-02	4.05430E-02	9.13390E-03	7.02846E-02	-6.77078E-02	1.00043E+00
23	.00000E+00	3.62124E-11	1.41527E-02	1.62653E-01	1.78592E-02	1.21836E-01	-1.25665E-01	1.00075E+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	1.86887E-02	4.27495E-02	1.41086E-02	6.19250E-02	-5.75764E-02	1.00042E+00
26	.00000E+00	2.02329E-12	9.19215E-03	2.97282E-02	6.35813E-03	5.56420E-02	-5.28068E-02	1.00030E+00
27	.00000E+00	4.82144E-13	1.98517E-03	4.44083E-03	1.08145E-03	1.55400E-02	-1.46389E-02	1.00016E+00
28	.00000E+00	1.00000E+00	6.22843E-01	5.41485E+00	6.22843E-01	9.41190E-01	6.05264E-02	1.00000E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rtn rate	fiss rate	flux*adj**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-03	1.18597E-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	2.50985E-01	3.03003E+00	.00000E+00	.00000E+00	1.54155E-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	1.42950E+00
9	1.59966E+00	-2.09042E-02	1.56788E+00	.00000E+00	.00000E+00	2.00510E-03	.00000E+00	1.09653E+00
10	1.46086E+00	-2.55057E-02	1.44731E+00	.00000E+00	.00000E+00	4.27114E-03	.00000E+00	1.00029E+00
11	1.33536E+00	-5.54615E-02	1.30683E+00	.00000E+00	.00000E+00	9.09944E-03	.00000E+00	9.08834E-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	3.75518E-01	-8.39745E-03	3.69026E-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	-2.28660E-02	3.69061E-02	.00000E+00	.00000E+00	1.28586E-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

INFORMATION ONLY

20	4.36233E-01	-2.57754E-02	4.23240E-01	.00000E+00	.00000E+00	1.55009E-02	.00000E+00	2.95135E-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	6.69572E-01	.00000E+00	.00000E+00	7.53704E-02	.00000E+00	4.78204E-01
24	5.50114E-01	-1.13917E-01	4.92030E-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	4.07535E-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	9.35079E-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	r#n rate	fiss rate	flux*adj**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	1.15420E-01	1.28154E+00	1.15420E-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	1.00434E+00	8.76483E-02	.00000E+00	.00000E+00	.00000E+00	3.18294E-02
5	1.51286E+00	1.33256E-01	1.51667E+00	1.33256E-01	.00000E+00	.00000E+00	.00000E+00	4.80696E-02
6	2.90770E+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	2.85742E+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	1.46106E+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	1.33638E+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	1.99744E-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	2.05002E-01	-5.95372E-03	.00000E+00	.00000E+00	.00000E+00	6.53952E-03
17	8.62144E-02	-7.34180E-03	8.40092E-02	-7.34180E-03	.00000E+00	.00000E+00	.00000E+00	2.73258E-03
18	5.12922E-02	-2.28660E-02	5.05278E-02	-2.28660E-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	4.36233E-01	-2.57754E-02	.00000E+00	.00000E+00	.00000E+00	1.38534E-02

21	1.19355E-01	-2.35239E-02	1.18705E-01	-2.35238E-02	.00000E+00	.00000E+00	.00000E+00	3.77798E-05
22	2.15431E-01	-6.77078E-02	2.13547E-01	-6.77078E-02	.00000E+00	.00000E+00	.00000E+00	6.80775E-05
23	7.34946E-01	-1.25645E-01	7.31605E-01	-1.25645E-01	.00000E+00	.00000E+00	.00000E+00	2.32732E-02
24	5.53097E-01	-1.13917E-01	5.50114E-01	-1.13917E-01	.00000E+00	.00000E+00	.00000E+00	1.75078E-02
25	2.35709E-01	-5.75766E-02	2.34210E-01	-5.75766E-02	.00000E+00	.00000E+00	.00000E+00	7.45766E-05
26	1.53530E-01	-5.28068E-02	1.52187E-01	-5.28068E-02	.00000E+00	.00000E+00	.00000E+00	4.85195E-05
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	3.82808E-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	-1.33630E-02	9.99998E-01
4	.00000E+00	.00000E+00	5.14870E-03	4.21368E-02	5.46581E-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	7.63482E-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	8.78609E-04	8.56440E-02	8.49737E-04	8.36365E-04	-8.07460E-04	9.99995E-01
11	.00000E+00	.00000E+00	8.49789E-04	7.71430E-02	8.71214E-04	1.33855E-03	-1.36004E-03	1.00000E+00
12	.00000E+00	.00000E+00	8.71222E-04	4.68572E-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	6.74662E-04	9.53558E-05	3.57777E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.18410E-04	2.05627E-02	8.41568E-04	8.25774E-05	-2.04280E-04	9.99976E-01
16	.00000E+00	.00000E+00	9.39685E-04	1.08649E-02	9.41247E-04	5.11980E-05	-5.25129E-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	4.17414E-05	-2.02259E-04	9.99975E-01
20	.00000E+00	.00000E+00	1.13347E-03	2.40599E-02	1.02287E-03	1.78997E-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	9.99971E-01
22	.00000E+00	.00000E+00	1.68609E-03	1.11405E-02	1.48897E-03	1.29808E-04	6.77556E-05	9.99995E-01
23	.00000E+00	.00000E+00	2.20558E-03	3.96499E-02	2.91026E-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	2.80892E-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	1.49258E-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*vol**2	total flux
1	1.72044E-01	8.43219E-03	1.73686E-01	1.12142E-02	1.02529E-04	.00000E+00	.00000E+00	3.74298E-02
2	1.29886E+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	8.72381E-02	1.00167E+00	8.76485E-02	.00000E+00	.00000E+00	.00000E+00	2.15423E-01
5	1.48980E+00	1.39033E-01	1.51285E+00	1.33256E-01	.00000E+00	.00000E+00	.00000E+00	3.25314E-01
6	2.86408E+00	2.68972E-01	2.90970E+00	2.50985E-01	.00000E+00	.00000E+00	.00000E+00	6.25598E-01
7	2.80740E+00	1.55229E-01	2.85366E+00	1.42437E-01	.00000E+00	.00000E+00	.00000E+00	6.11259E-01
8	2.06536E+00	1.50015E-02	2.06842E+00	2.07712E-02	.00000E+00	.00000E+00	.00000E+00	4.47877E-01
9	1.60352E+00	-1.52209E-02	1.60041E+00	-2.09041E-02	.00000E+00	.00000E+00	.00000E+00	3.47254E-01
10	1.46539E+00	-2.63132E-02	1.46108E+00	-2.55057E-02	.00000E+00	.00000E+00	.00000E+00	3.17128E-01
11	1.34606E+00	-5.68215E-02	1.33687E+00	-5.54615E-02	.00000E+00	.00000E+00	.00000E+00	2.90767E-01
12	8.42834E-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	6.46024E-01	-8.47449E-02	6.31199E-01	-8.47807E-02	.00000E+00	.00000E+00	.00000E+00	1.38377E-01
15	3.75258E-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	5.12502E-02	-2.28560E-02	.00000E+00	.00000E+00	.00000E+00	1.15461E-02
19	1.30398E-01	-1.25086E-02	1.28398E-01	-1.23068E-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	1.29088E-01	-2.36539E-02	1.19855E-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	-1.26951E-01	7.34946E-01	-1.25665E-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	2.35702E-01	-5.73766E-02	.00000E+00	.00000E+00	.00000E+00	5.20130E-02
26	1.60397E-01	-5.27419E-02	1.53630E-01	-5.28068E-02	.00000E+00	.00000E+00	.00000E+00	3.40977E-02
27	2.69670E-02	-1.44443E-02	2.51471E-02	-1.46389E-02	.00000E+00	.00000E+00	.00000E+00	5.67289E-03
28	2.32499E+01	5.31614E-02	2.32750E+01	6.05267E-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	9.99946E-01
2	.00000E+00	.00000E+00	4.59365E-03	7.66524E-02	1.00719E-01	1.07903E-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	7.04015E-02	4.58799E-02	1.57639E-01	3.25281E-06	-8.72381E-02	9.99987E-01
5	.00000E+00	.00000E+00	1.30066E-01	1.48636E-01	2.69100E-01	3.77609E-06	-1.39033E-01	9.99991E-01
6	.00000E+00	.00000E+00	2.75159E-01	4.55294E-01	5.41121E-01	1.14771E-05	-2.69972E-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	7.35668E-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	9.59507E-05	1.52209E-02	9.99860E-01
10	.00000E+00	.00000E+00	7.22315E-01	8.68882E-01	6.95865E-01	2.11574E-04	2.63131E-02	9.99866E-01
11	.00000E+00	.00000E+00	7.00804E-01	8.06109E-01	6.43666E-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	6.52690E-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	3.21634E-01	3.84098E-01	1.45517E-03	8.47442E-02	9.99989E-01
15	.00000E+00	.00000E+00	2.50802E-01	1.28604E-01	2.40928E-01	1.28159E-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	2.95690E-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	3.00286E-01	2.40025E-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	4.85259E-01	1.06098E-02	1.26946E-01	1.00008E+00
24	.00000E+00	.00000E+00	6.30606E-01	6.52794E-01	5.08897E-01	1.18346E-02	1.14856E-01	1.00008E+00
25	.00000E+00	.00000E+00	4.06751E-01	2.66566E-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	5.92556E-02	9.02696E-02	2.25470E-03	1.44447E-02	1.00001E+00
28	.00000E+00	.00000E+00	8.99408E+00	8.91332E+00	8.99408E+00	5.34710E-02	-5.33086E-02	9.99782E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux**2	total flux
1	1.71265E-01	3.02770E-09	1.72044E-01	8.43219E-03	4.42751E-10	.00000E+00	.00000E+00	1.95992E-01
2	1.24852E+00	-2.98830E-08	1.25986E+00	9.72008E-02	.00000E+00	.00000E+00	.00000E+00	1.42906E+00
3	1.57563E+00	3.10709E-09	1.59127E+00	1.31910E-01	.00000E+00	.00000E+00	.00000E+00	1.80228E+00
4	9.73505E-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	2.69972E-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	3.62843E-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	9.76605E-01
13	7.19851E-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	-3.19554E-08	3.75256E-01	-8.60843E-03	.00000E+00	.00000E+00	.00000E+00	4.30535E-01
16	2.07880E-01	-2.18879E-08	2.07151E-01	-6.00604E-03	.00000E+00	.00000E+00	.00000E+00	2.37950E-01
17	8.86460E-02	-1.18636E-08	8.74088E-02	-7.34282E-03	.00000E+00	.00000E+00	.00000E+00	1.01057E-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-08	1.30388E-01	-1.25086E-02	.00000E+00	.00000E+00	.00000E+00	1.51435E-01
20	4.44997E-01	-4.53686E-08	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-08	2.26061E-01	-6.76401E-02	.00000E+00	.00000E+00	.00000E+00	2.71507E-01

INFORMATION ONLY

23	7.80016E-01	-1.69719E-06	7.53847E-01	-1.26951E-01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	8.89738E-01
24	5.97130E-01	-3.49528E-06	5.69481E-01	-1.14859E-01	.00000E+00	.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	.00000E+00	2.93856E-01
26	1.77148E-01	1.18289E-06	1.60397E-01	-5.27419E-02	.00000E+00	.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	.00000E+00	3.62675E-02
28	2.32882E+01	-1.47938E-04	2.32495E+01	5.31614E-02	4.42751E-10	.00000E+00	.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-06	3.67865E-05	3.02770E-09	9.98831E-01
2	.00000E+00	1.93360E-01	7.44695E-05	2.70040E-01	1.86048E-01	1.47727E-02	-2.98830E-08	1.00000E+00
3	.00000E+00	2.15768E-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	1.95451E-01	2.30981E-01	7.51277E-05	1.03098E-08	1.00000E+00
5	.00000E+00	1.64367E-01	2.09224E-01	4.89905E-01	3.69028E-01	4.56756E-05	-3.42338E-08	9.99989E-01
6	.00000E+00	1.77483E-01	4.28515E-01	1.34418E+00	5.98714E-01	7.27507E-05	1.26755E-07	1.00001E+00
7	.00000E+00	8.77626E-02	6.63681E-01	1.77525E+00	7.43604E-01	7.84762E-05	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	9.81534E-04	7.70848E-01	1.55708E+00	7.47182E-01	2.41308E-02	3.62845E-09	9.99828E-01
10	.00000E+00	7.29035E-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	6.52597E-01	5.98144E-02	3.56062E-08	9.99942E-01
12	.00000E+00	4.02915E-07	5.69244E-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	2.98071E-09	9.99971E-01
14	.00000E+00	1.26790E-08	4.77250E-01	5.09542E-01	3.92155E-01	8.50995E-02	3.16814E-08	9.99983E-01
15	.00000E+00	1.43286E-09	2.58992E-01	2.33648E-01	2.50638E-01	8.30465E-03	-3.19854E-05	1.00051E+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	-1.18636E-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	1.30506E-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	3.65208E-01	2.81966E-01	2.92979E-02	-4.53686E-05	1.00033E+00
21	.00000E+00	3.26442E-11	1.50877E-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	3.62134E-11	6.37196E-01	9.38025E-01	5.04029E-01	1.33046E-01	-1.69719E-06	1.00019E+00
24	.00000E+00	9.85666E-12	6.55978E-01	7.98984E-01	5.23614E-01	1.26271E-01	-3.49528E-06	1.00015E+00
25	.00000E+00	2.88536E-12	4.28284E-01	3.20211E-01	3.59861E-01	6.90569E-02	-1.14040E-06	1.00000E+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	1.57842E+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*adj**2	total flux
1	1.71235E-01	3.02770E-09	1.79086E-01	.00000E+00	2.38106E-05	2.65102E-05	.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-05	.00000E+00	2.08998E+00
5	1.46740E+00	-3.42338E-08	1.57388E+00	.00000E+00	.00000E+00	1.80747E-05	.00000E+00	3.12809E+00
6	2.82012E+00	1.26755E-07	3.03008E+00	.00000E+00	.00000E+00	1.54159E-05	.00000E+00	6.00311E+00
7	2.78208E+00	5.12217E-08	2.90495E+00	.00000E+00	.00000E+00	1.49129E-05	.00000E+00	5.85752E+00
8	2.05641E+00	3.82657E-08	2.08110E+00	.00000E+00	.00000E+00	1.50530E-05	.00000E+00	4.30604E+00
9	1.60661E+00	3.62845E-09	1.58788E+00	.00000E+00	.00000E+00	2.00510E-05	.00000E+00	3.33211E+00
10	1.47006E+00	-6.61256E-08	1.44731E+00	.00000E+00	.00000E+00	4.27114E-05	.00000E+00	3.06586E+00
11	1.36408E+00	3.56062E-08	1.30883E+00	.00000E+00	.00000E+00	9.09949E-05	.00000E+00	2.79048E+00
12	8.54012E-01	5.04672E-08	7.96477E-01	.00000E+00	.00000E+00	1.19534E-02	.00000E+00	1.74276E+00
13	7.19861E-01	2.98071E-09	6.71003E-01	.00000E+00	.00000E+00	1.31836E-02	.00000E+00	1.46901E+00
14	6.59269E-01	3.15814E-08	5.84819E-01	.00000E+00	.00000E+00	8.23093E-05	.00000E+00	1.32734E+00
15	3.75799E-01	-3.19654E-05	3.69026E-01	.00000E+00	.00000E+00	1.98409E-05	.00000E+00	7.78715E-01
16	2.07880E-01	-2.18879E-05	2.03057E-01	.00000E+00	.00000E+00	1.38096E-05	.00000E+00	4.29911E-01
17	8.86460E-02	-1.18536E-05	8.23378E-02	.00000E+00	.00000E+00	1.66006E-05	.00000E+00	1.80651E-01
18	5.90139E-02	2.66675E-06	3.69361E-02	.00000E+00	.00000E+00	1.26589E-05	.00000E+00	1.09625E-01
19	1.32632E-01	-1.74388E-05	1.21697E-01	.00000E+00	.00000E+00	2.62594E-05	.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	1.49508E-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	7.80016E-01	-1.69719E-06	6.67572E-01	.00000E+00	.00000E+00	7.53704E-02	.00000E+00	1.55269E+00

INFORMATION ONLY

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	3.28259E-02	-1.16969E-07	1.62895E-02	.00000E+00	.00000E+00	1.04056E-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	1.09263E-02	1.74049E-02	3.32598E-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	1.45288E-02	1.25219E-02	1.87644E-02	1.89988E-03	1.33253E-03
2	7.02718E-03	8.57400E-03	1.85440E-02	2.19866E-02	1.88993E-02	2.84999E-02	2.82255E-03	2.00188E-03
3	5.63652E-03	8.04784E-03	1.76385E-02	2.02830E-02	1.74684E-02	2.63576E-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	3.27092E-03	4.66002E-03	1.00944E-02	1.17300E-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	5.78883E-03	5.15258E-03	1.46018E-02	2.77568E-02	2.50837E-02
2	2.46775E-03	7.68379E-03	4.13637E-03	8.66534E-03	7.90828E-03	2.27590E-02	4.22397E-02	3.82970E-02
3	2.28112E-03	7.06078E-03	3.85468E-03	8.01800E-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	8.42024E-03	1.61109E-02	1.45536E-02
5	1.31844E-03	3.95566E-03	2.24870E-03	4.68831E-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	1.13655E-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	6.54629E-03	1.65665E-03	2.18613E-01
5	1.02609E-02	9.34362E-03	2.45286E-03	3.13192E-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	1.65779E+00	1.02683E+00	1.55150E+00	2.98244E+00	2.87629E+00	2.07613E+00
2	1.73806E-01	1.27944E+00	1.61673E+00	1.00297E+00	1.51471E+00	2.91301E+00	2.81354E+00	2.00897E+00
3	1.72705E-01	1.26744E+00	1.60169E+00	9.93999E-01	1.50105E+00	2.88661E+00	2.82043E+00	2.06658E+00
4	1.71261E-01	1.24877E+00	1.57468E+00	9.76900E-01	1.46923E+00	2.82369E+00	2.78378E+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	7.00668E-01	6.30037E-01	3.73597E-01	2.06056E-01
3	1.60225E+00	1.46328E+00	1.34165E+00	8.37793E-01	7.06280E-01	6.38494E-01	3.74480E-01	2.06668E-01
4	1.60549E+00	1.46971E+00	1.35537E+00	8.53277E-01	7.19577E-01	6.58617E-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	3.74125E-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	4.36525E-01	1.19047E-01	2.14498E-01	7.33356E-01	5.51684E-01
3	8.68337E-02	5.32758E-02	1.29422E-01	4.39034E-01	1.21339E-01	2.21076E-01	7.45052E-01	5.61948E-01
4	8.85567E-02	5.87135E-02	1.32511E-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	4.38758E-01	1.21225E-01	2.20837E-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	2.40080E-01	1.57333E-01	2.61755E-02
4	2.56746E-01	1.74590E-01	3.16872E-02
5	2.41478E-01	1.59643E-01	2.70539E-02

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

INFORMATION ONLY

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	1.03408E+00	1.03409E+00	1.02883E+00	1.00856E+00
2	1.00293E+00	1.00564E+00	1.00704E+00	1.00852E+00	1.00951E+00	1.01002E+00	1.00588E+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	9.98934E-01
4	9.87616E-01	9.81520E-01	9.80651E-01	9.80300E-01	9.79194E-01	9.79051E-01	9.87507E-01	9.98052E-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	9.94961E-01	9.92855E-01	9.83125E-01	9.68390E-01	9.68044E-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	1.00336E+00	1.01025E+00	1.01910E+00	1.01928E+00	1.03269E+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	9.66350E-01	8.07006E-01	9.61893E-01	9.77068E-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	9.82051E-01	9.73501E-01	9.83094E-01	9.77871E-01
3	1.00048E+00	1.01155E+00	1.00059E+00	1.00070E+00	1.00092E+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	5.56579E-02	3.16978E-02	4.64092E-03
2	3.76976E-03	3.88027E-02	4.88315E-02	2.94639E-02	4.47958E-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	1.05963E-02	1.70474E-02	3.32594E-02	1.92586E-02	2.05083E-03
5	1.75210E-03	1.89768E-02	2.47479E-02	1.55911E-02	2.42886E-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	4.67877E-03	5.71553E-03	1.23953E-02	1.45285E-02	1.25215E-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	2.85255E-03	2.00118E-03
3	5.63652E-03	8.04734E-03	1.74389E-02	2.02830E-02	1.74684E-02	2.65376E-02	2.64021E-03	1.85765E-03
4	1.87183E-03	3.27522E-03	7.08272E-03	8.14566E-03	7.05052E-03	1.05898E-02	1.15375E-03	7.76181E-04
5	3.27072E-03	4.66008E-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	5.76885E-03	5.16288E-03	1.46018E-02	2.77568E-02	2.50357E-02
2	2.46775E-03	7.68379E-03	4.13687E-03	8.65324E-03	7.90868E-03	2.27590E-02	4.22387E-02	3.85970E-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	3.28885E-03	2.94274E-03	8.42034E-03	1.61109E-02	1.45536E-02
5	1.31844E-03	3.95566E-03	2.24870E-03	4.68531E-03	4.20601E-03	1.19959E-02	2.27694E-02	2.05671E-02
Ozone	grp. 25	grp. 26	grp. 27					
1	1.25471E-02	1.13865E-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	2.45289E-03					

Ozone	volume	vol. fraction
1	6.88643E-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 panrfsalt8,skipcellwt,skipshipdata

INFORMATION ONLY

INFORMATION ONLY

```
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
```

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:  10:02:06                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
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
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere          2
0ize--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
```

Dissopt-dancoff factor option 0
Dconvergence criterion 1.00000E-05
Dgeometry 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.
Dmixing table

Dentry	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	38089	3.37449E-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	7.62185E-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	5.58160E-06	200036
37	1	56136	4.34868E-08	200037
38	1	57139	5.53655E-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

INFORMATION ONLY

47	1	62147	3.37152E-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	5.61449E-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-05	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	5.37025E-06	200064
65	1	94241	2.67558E-06	200065
66	1	94242	2.39572E-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 diversion	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	3.54862E+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**bondi will copy from logical 12 to logical 1

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

INFORMATION ONLY

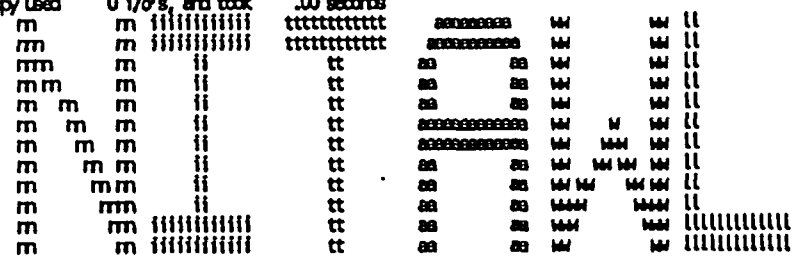
```
0copy   44106  ru-106        from log 12 to log  1   bondarenko trigger 0
0copy   45103  rh-103        from log 12 to log  1   bondarenko trigger 0
0copy   45105  rh-105        from log 12 to log  1   bondarenko trigger 0
0copy   46105  pd-105        from log 12 to log  1   bondarenko trigger 0
0copy   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 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          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/thnm1002   updated 10/13/89      id     202
        hydrogen      endf/b-iv mat 1269/thnm1002   updated 10/13/89      id   200057
       b-10 1273 218ngp 042375 p-3 293k                                   id     203
```

INFORMATION ONLY

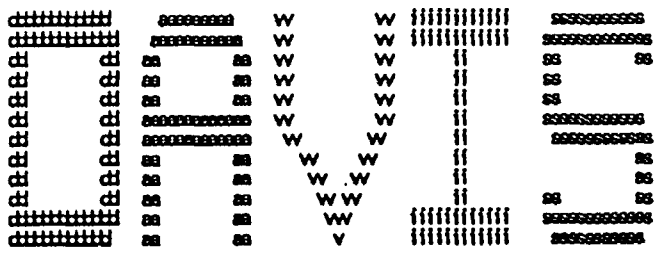
b-10 1273 218ngp 042375 p-3 293k			id	200058
boron-11	endf/b-iv mat 1160	updated 10/13/89	id	204
boron-11	endf/b-iv mat 1160	updated 10/13/89	id	200059
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	id	201
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	id	200010
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	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 newxlacs 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 newxlacs 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 newxlacs p-3 293k f-1/e-m(1.+5)			id	200062
plutonium-239	endf/b-iv mat 1264	updated 10/13/89	id	200063

INFORMATION ONLY

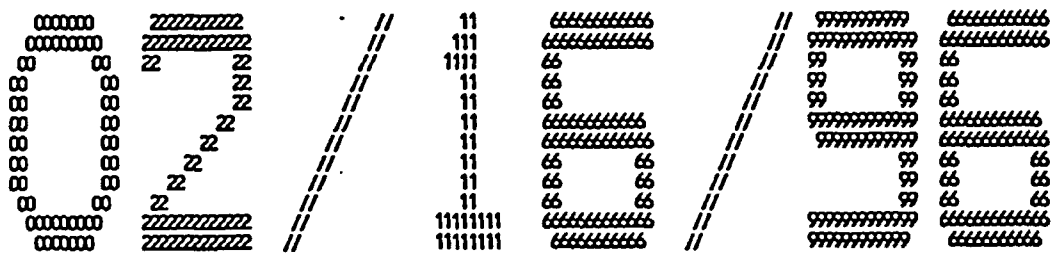
```
. plutonium-240  endf/b-iv mat 1265          updated 10/13/89          id   200064
  plutonium-241  endf/b-iv mat 1266          updated 10/13/89          id   200065
  plutonium-242  endf/b-iv mat 1161          updated 10/13/89          id   200066
 am-241 1056 sigp=5+4 newklacs 218ngp p-3 293k                         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
```



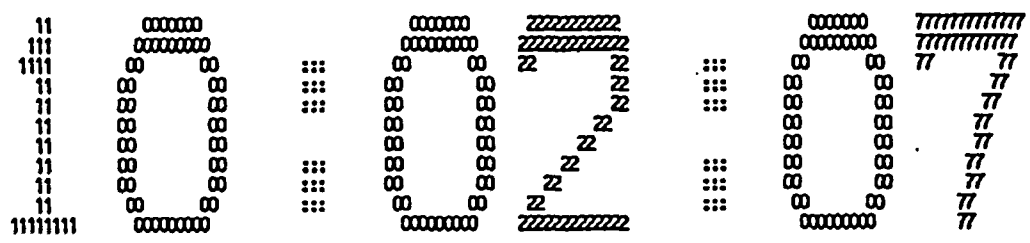
0



0



0



INFORMATION ONLY

```
     11111111      0000000                  0000000     2222222222222                  0000000        77
1
0                                 ssssssssss    cccccccccc    aaaaaaaaa    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:  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:  10:02:07                                  *****
*****                                                                   *****
*****                                                                   *****
*****************************************************************************
*****************************************************************************
*****************************************************************************
```

```
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 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--  720 d, sas2h: babcock wilcox 15x15,
  3.00w/o, 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 218grp 0.2375 p-3 293k                                       205
     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 218grp 0.2375 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        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
```

INFORMATION ONLY

```
   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 sigz=5+4 nreslacs p-3 293k f-1/e-s(1.+5)             92234
   59    uranium-235     endf/b-iv mat 1261          updated 10/13/89    92235
   60    u-236 1163 sigz=5+4 nreslacs p-3 293k f-1/e-s(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 sigz=5+4 nreslacs p-3 293k f-1/e-s(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 sigz=5+4 nreslacs 218ngp p-3 293k                   95241
   69    am-243 1057 218 gp wt f-1/e-s 0.0576 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 0.4375 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   -7.806083E-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
```

INFORMATION ONLY

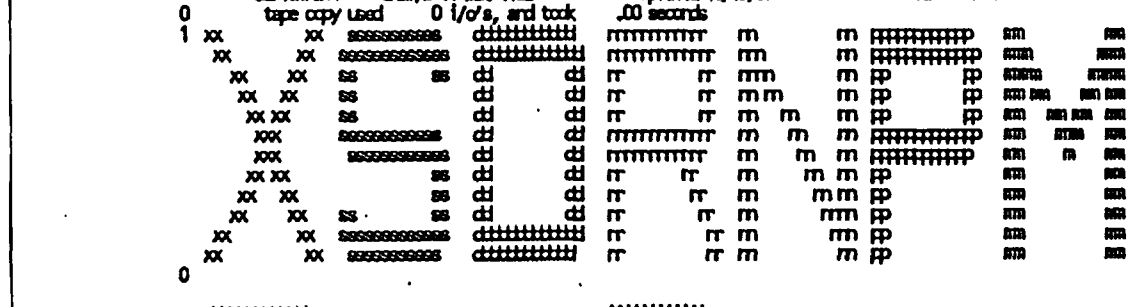
Absorption 2.9240E-01
fission .0000E+00
- elapsed time .00 min.
- elapsed time .02 min.
1 this xsdrn working tape was created 02/16/96 at 10:02:07
the title of the parent case is as follows
xsdrn weighted tape-parent case entitled-- 720 d, sea2h: babcock wilcox 15x15,
3.00wt%, 20gwd/mtu burn high temp

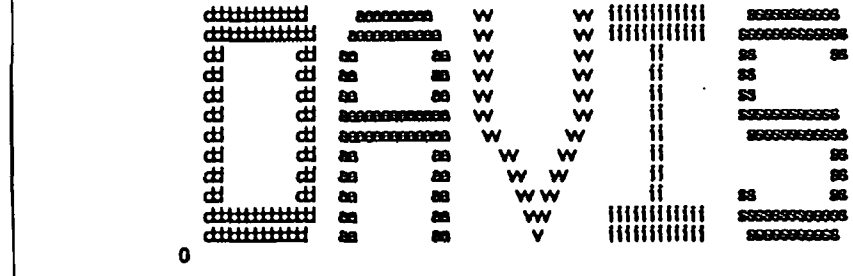
tape id	8670	number of nuclides	70
number of neutron groups	27	number of gamma groups	0
first thermal group	15	logical unit	4

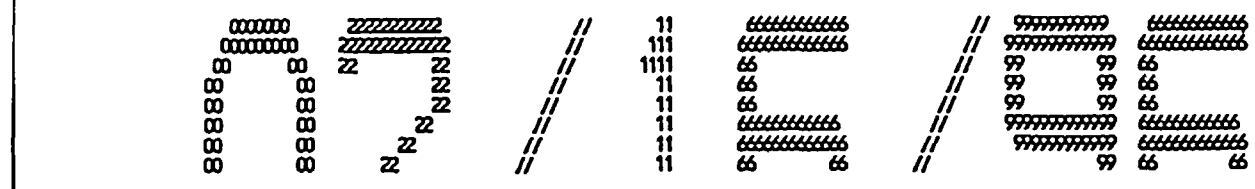
table of contents

hydrogen	endf/b-iv mat 1269/thrml002	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/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	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

INFORMATION ONLY

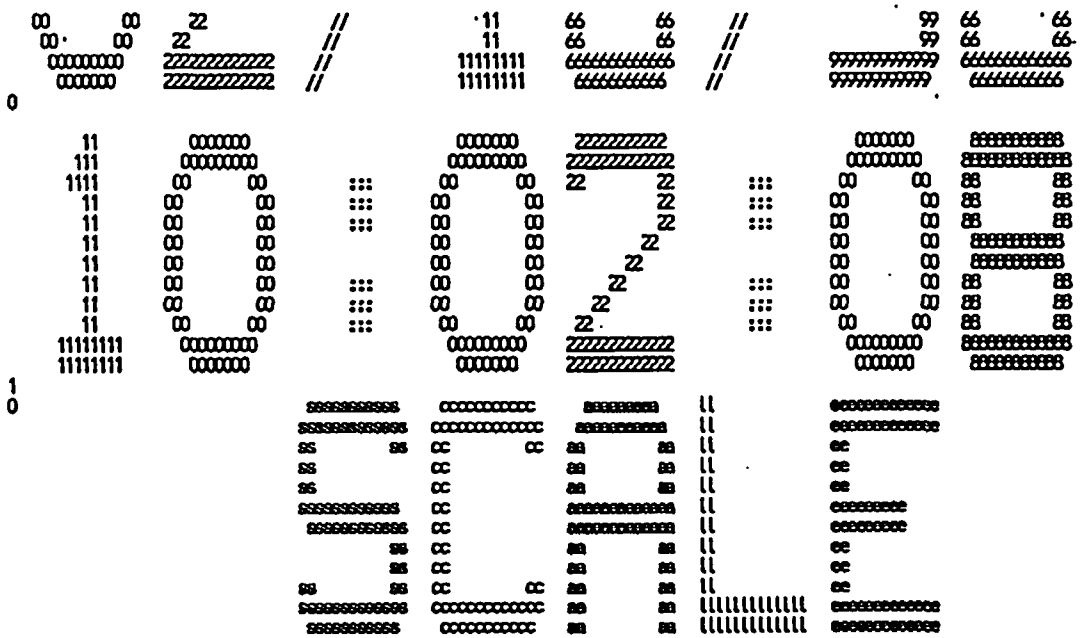






```
      pm-148          mt= 102                                          id    61148
      sm-147          endf/b-v fission product     updated 10/13/89    id    62147
      sm-149          mt=102,103,107               updated 10/13/89    id    62149
      sm-150          mt=102                       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 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 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  ssssssssss  dddddddddd  rrrrrrrrrr  rn       rn  pppppppppp  mm       mm
  xx       xx  ssssssssssss dddddddddd  rrrrrrrrrr  rm       rn  pppppppppp  mmm      mmm
    xx    xx   ss       ss  dd       dd  rr       rr  rmm      rn  pp       pp  mmmm    mmmm
     xx  xx    ss           dd       dd  rr       rr  rn rn     rn  pp       pp  mm mm   mm mm
      xx xx    ss           dd       dd  rr       rr  rn  rn    rn  pp       pp  mm  mm mm  mm
       xxx     ssssssssssss dd       dd  rrrrrrrrrr  rn   rn   rn  pppppppppp  mm   mmm   mm
       xxx      ssssssssssss dd       dd  rrrrrrrrrr  rn    rn  rn  pppppppppp  mm    m    mm
      xx xx             ss  dd       dd  rr      rr  rn     rn rn  pp          mm         mm
     xx  xx             ss  dd       dd  rr       rr  rn      rn rn  pp          mm         mm
    xx    xx   ss       ss  dd       dd  rr       rr  rn       rnn  pp          mm         mm
  xx       xx  ssssssssssss dddddddddd  rr       rr  rn        rn  pp          mm         mm
 xx        xx  ssssssssssss dddddddddd  rr       rr  rn        rn  pp          mm         mm
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        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
 dddddddddd   aa       aa       ww    iiiiiiiiiiii   ssssssssssss
 dddddddddd   aa       aa        v    iiiiiiiiiiii    ssssssssss
0

   0000000     2222222222          //      11     666666666666          //  99999999999   666666666666
  000000000    2222222222222       //     111     6666666666666         //  9999999999999  6666666666666
 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     6666666666666         //   999999999999  6666666666666
00       00     22               //      11     66       66           //           99   66       66
```

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

Feb 16 10:06 1996 File Name: s3020ucf.out BBA000000-01717-0200-00012 REV 01 ATTACHMENT 1 - Page 496

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 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      icm  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
 rng  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=wgted 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
```

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.)

	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	36083	4.00409E-07	
13	36085		1	36085	1.92753E-07	
14	38090		1	38090	4.36538E-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	5.24057E-06	
22	43099		1	45103	2.81460E-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	1.75688E-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	5.53955E-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	2.98755E-07	

INFORMATION ONLY

54	63153	1	63154	5.42034E-08
55	63154	1	63155	3.27959E-08
56	63155	1	40802	4.42681E-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	5.74632E-06
61	92238	1	93237	9.31925E-07
62	93237	1	94238	1.07908E-07
63	94238	1	94239	3.19267E-05
64	94239	1	94240	5.37083E-06
65	94240	1	94241	2.67568E-06
66	94241	1	94242	2.39572E-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 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	-6.95147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40869E-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	6.07567E+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	1.01084E+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	1.52545E+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	1.70844E+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	4.86983E+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	2.71892E+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 ses2h 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

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	15	-4.29668E-02
11			5.22844E-02	-6.01588E-01	14	-3.14557E-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	3.14557E-02
15			5.22844E-02	8.21784E-01	10	4.29668E-02
16			0	-9.83032E-01	24	0
17			4.53366E-02	-9.64143E-01	24	-4.37099E-02
18			4.53366E-02	-8.17361E-01	23	-3.70666E-02
19			4.53366E-02	-5.46143E-01	22	-2.47597E-02
20			4.53366E-02	-1.91780E-01	21	-8.69444E-03
21			4.53366E-02	1.91780E-01	20	8.69444E-03
22			4.53366E-02	5.46143E-01	19	2.47597E-02
23			4.53366E-02	8.17361E-01	18	3.70666E-02
24			4.53366E-02	9.64143E-01	17	4.37099E-02

Coonstants for p(3) scattering

Oangl	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	-4.86855E-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	-9.83032E-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	3.20862E-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	9.76834E-02	4.17234E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76834E-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	1.18588E-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	3.16250E-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	5.92951E-01	6.12696E-01	1	3.72550E+00	1.52173E-01
11	6.32460E-01	6.42620E-01	2	3.97586E+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	7.20057E-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	1.72589E+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.

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	-7.88857E-03	-2.81310E-03	.00000E+00	.0000
3	364	1.01005E-05	1.06448E+00	-1.99820E-04	-1.06861E-03	-6.40909E-04	.00000E+00	.0167
4	409	-8.38561E-06	1.06480E+00	-4.26851E-05	-2.45785E-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	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	17	1.13146E-06	28	1.00000E+00	1
2	1	17	1.35454E-06	28	1.00000E+00	1
3	1	17	1.24975E-06	28	1.00000E+00	1
4	1	17	1.20728E-06	28	1.00000E+00	1
5	1	17	1.22270E-06	28	1.00000E+00	1
6	1	17	8.15168E-07	28	1.00000E+00	1
7	1	17	5.15490E-07	28	1.00000E+00	2
8	1	16	1.01462E-07	28	1.00000E+00	2
9	1	27	8.55716E-06	28	9.99992E-01	3
10	1	26	3.16370E-06	28	9.99997E-01	3
11	1	26	2.76400E-06	28	9.99997E-01	3
12	1	25	9.50851E-07	28	9.99999E-01	3
13	1	26	2.33163E-06	28	1.00000E+00	3
14	1	25	3.07850E-07	28	1.00000E+00	3
15	1	2	3.05769E-05	28	9.99966E-01	2
16	1	2	3.76252E-05	28	9.99969E-01	2
17	1	2	4.32990E-05	28	9.99989E-01	3
18	1	2	5.08065E-05	28	9.99962E-01	3
19	1	2	4.31020E-05	28	9.99976E-01	3
20	1	2	3.33726E-05	28	9.99956E-01	3
21	1	2	5.14854E-05	28	9.99954E-01	3
22	1	23	2.32014E-05	28	9.99978E-01	3
23	1	27	1.81769E-05	28	9.99978E-01	4
24	1	1	1.87144E-05	9	1.00001E+00	4
25	1	1	2.12591E-05	8	1.00001E+00	5
26	1	1	1.56697E-05	6	1.00001E+00	6
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 radius int. midpoint area volume prod density

1	1	.00000E+00	1.97644E-02	.00000E+00	4.90881E-03	.00000E+00
2	1	3.95289E-02	5.92931E-02	2.48566E-01	1.47264E-02	.00000E+00
3	1	7.90579E-02	1.18586E-01	4.96733E-01	5.89057E-02	.00000E+00
4	1	1.58115E-01	1.97644E-01	9.93466E-01	9.81763E-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	3.47715E+00	1.42355E-01	.00000E+00
10	1	5.92951E-01	6.12698E-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	6.96883E-01	4.22921E+00	2.05562E-01	.00000E+00
14	3	7.20067E-01	7.43850E-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	9.60388E-01	5.72769E+00	5.88871E-01	2.64366E-02
18	4	1.00918E+00	1.10577E+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	1.72567E+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

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.28271E-02	9.05083E-02	1.12336E-01	6.88395E-02	1.02675E-01	1.92730E-01	1.95043E-01	1.46974E-01
2	1.28219E-02	9.03597E-02	1.12271E-01	6.88013E-02	1.02623E-01	1.92643E-01	1.95005E-01	1.46948E-01
3	1.28225E-02	9.04126E-02	1.12293E-01	6.88152E-02	1.02657E-01	1.92713E-01	1.95052E-01	1.46979E-01
4	1.28259E-02	9.04930E-02	1.12403E-01	6.88978E-02	1.02787E-01	1.92956E-01	1.95218E-01	1.47088E-01
5	1.28314E-02	9.05344E-02	1.12601E-01	6.91305E-02	1.03003E-01	1.93355E-01	1.95466E-01	1.47052E-01
6	1.28380E-02	9.05869E-02	1.12869E-01	6.93138E-02	1.03301E-01	1.93903E-01	1.95805E-01	1.47108E-01
7	1.28389E-02	9.10778E-02	1.13215E-01	6.93517E-02	1.03689E-01	1.94620E-01	1.96264E-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	1.14337E-01	7.03889E-02	1.05033E-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	1.97886E-01	1.98264E-01	1.47423E-01
12	1.29654E-02	9.21865E-02	1.14825E-01	7.07056E-02	1.05606E-01	1.98225E-01	1.98466E-01	1.47467E-01
13	1.29781E-02	9.24275E-02	1.15095E-01	7.08430E-02	1.05794E-01	1.98563E-01	1.98658E-01	1.47536E-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	2.02134E-01	1.98758E-01	1.47898E-01
17	1.32300E-02	9.48836E-02	1.18204E-01	7.27777E-02	1.08812E-01	2.04029E-01	1.99901E-01	1.48075E-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	1.20042E-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	1.11295E-01	2.08849E-01	2.02956E-01	1.48782E-01
22	1.34002E-02	9.67914E-02	1.20736E-01	7.44250E-02	1.11516E-01	2.09314E-01	2.03283E-01	1.48869E-01
23	1.34077E-02	9.68834E-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	1.20988E-01	7.45895E-02	1.11799E-01	2.09937E-01	2.03716E-01	1.48994E-01

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	6.54266E-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	1.60842E-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	2.89405E-02	1.60328E-02
8	1.15874E-01	1.06890E-01	1.00339E-01	6.47814E-02	5.52861E-02	5.24076E-02	2.88915E-02	1.60047E-02
9	1.15864E-01	1.06815E-01	1.00177E-01	6.45882E-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	1.59360E-02
12	1.15865E-01	1.06570E-01	9.98657E-02	6.42238E-02	5.47736E-02	5.16450E-02	2.87557E-02	1.59275E-02
13	1.15820E-01	1.06643E-01	9.97825E-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	6.27604E-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	1.57178E-02
19	1.15354E-01	1.05852E-01	9.79841E-02	6.19998E-02	5.27759E-02	4.86278E-02	2.83259E-02	1.56664E-02
20	1.15329E-01	1.05768E-01	9.77835E-02	6.17629E-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	1.05600E-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	5.21052E-02	4.76713E-02	2.80954E-02	1.55437E-02
28	1.15298E-01	1.05613E-01	9.74094E-02	6.13214E-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	7.06002E-03	5.39608E-03	1.07464E-02	3.56724E-02	1.13976E-02	2.25840E-02	7.73947E-02	6.34270E-02
2	7.06071E-03	5.39747E-03	1.07478E-02	3.56950E-02	1.11406E-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	1.07083E-02	3.55790E-02	1.10678E-02	2.27061E-02	7.66337E-02	6.26077E-02
6	7.02486E-03	5.30532E-03	1.06807E-02	3.55133E-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	7.46885E-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	3.51298E-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	5.00367E-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	7.23956E-02	5.82280E-02
14	6.88040E-03	4.90665E-03	1.04199E-02	3.49036E-02	1.05265E-02	2.10516E-02	7.17802E-02	5.75665E-02
15	6.84694E-03	4.80164E-03	1.03639E-02	3.47827E-02	1.04088E-02	2.06855E-02	7.08810E-02	5.66155E-02
16	6.79183E-03	4.62038E-03	1.02709E-02	3.45778E-02	1.02166E-02	2.00563E-02	6.94980E-02	5.52061E-02
17	6.73651E-03	4.44198E-03	1.01746E-02	3.43628E-02	1.00266E-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	6.64342E-03	4.18892E-03	1.00017E-02	3.39583E-02	9.71700E-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	9.90801E-03	3.37128E-02	9.55300E-03	1.80116E-02	6.37119E-02	4.94092E-02
22	6.57739E-03	4.04711E-03	9.87305E-03	3.36352E-02	9.50442E-03	1.78634E-02	6.31451E-02	4.88629E-02
23	6.56650E-03	4.02679E-03	9.85142E-03	3.35784E-02	9.46948E-03	1.77565E-02	6.27552E-02	4.84536E-02
24	6.55914E-03	4.01321E-03	9.83668E-03	3.35390E-02	9.44511E-03	1.76818E-02	6.24550E-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	6.55508E-03	4.00200E-03	9.82702E-03	3.35137E-02	9.42554E-03	1.76135E-02	6.21592E-02	4.78268E-02

INFORMATION ONLY

INFORMATION ONLY

28	6.5573E-03	4.0053E-03	9.8521E-03	3.3527E-02	9.4319E-03	1.7629E-02	6.2208E-02	4.7860E-02

0 int. grp. 25 grp. 26 grp. 27

1	2.8683E-02	2.0692E-02	3.9506E-03
2	2.8572E-02	2.0680E-02	3.9276E-03
3	2.8609E-02	2.0620E-02	3.9154E-03
4	2.8588E-02	2.0495E-02	3.8829E-03
5	2.8043E-02	2.0305E-02	3.8500E-03
6	2.7957E-02	2.0051E-02	3.7961E-03
7	2.7592E-02	1.9726E-02	3.7256E-03
8	2.7137E-02	1.9516E-02	3.6347E-03
9	2.6732E-02	1.8951E-02	3.5524E-03
10	2.6390E-02	1.8639E-02	3.4816E-03
11	2.6160E-02	1.8438E-02	3.4388E-03
12	2.6111E-02	1.8408E-02	3.4360E-03
13	2.5948E-02	1.8258E-02	3.3957E-03
14	2.5576E-02	1.7901E-02	3.2984E-03
15	2.5058E-02	1.7397E-02	3.1537E-03
16	2.4308E-02	1.6676E-02	2.9421E-03
17	2.3571E-02	1.5995E-02	2.7601E-03
18	2.2871E-02	1.5383E-02	2.6232E-03
19	2.2171E-02	1.4791E-02	2.5000E-03
20	2.1678E-02	1.4391E-02	2.4254E-03
21	2.1313E-02	1.4106E-02	2.3752E-03
22	2.1040E-02	1.3900E-02	2.3406E-03
23	2.0837E-02	1.3750E-02	2.3160E-03
24	2.0690E-02	1.3644E-02	2.2990E-03
25	2.0592E-02	1.3573E-02	2.2876E-03
26	2.0536E-02	1.3532E-02	2.2811E-03
27	2.0520E-02	1.3517E-02	2.2787E-03
28	2.0531E-02	1.3520E-02	2.2785E-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	.0000E+00	.0000E+00	.0000E+00	4.9961E-04	6.6127E-04	5.5061E-05	-7.1630E-04	9.9995E-01
2	.0000E+00	.0000E+00	3.7942E-04	6.1403E-05	8.0708E-03	1.7546E-04	-7.8660E-03	9.9993E-01
3	.0000E+00	.0000E+00	3.8325E-05	5.4564E-05	1.4196E-02	9.2640E-05	-1.0356E-02	9.9997E-01
4	.0000E+00	.0000E+00	5.5785E-05	3.5973E-05	1.2560E-02	4.1980E-05	-6.8239E-03	9.9998E-01
5	.0000E+00	.0000E+00	1.0522E-02	1.1522E-02	2.0875E-02	4.9655E-05	-1.0572E-02	9.9991E-01
6	.0000E+00	.0000E+00	2.1488E-02	3.4473E-02	4.0995E-02	8.4285E-05	-1.9591E-02	9.9992E-01
7	.0000E+00	.0000E+00	4.2226E-02	6.0966E-02	5.4133E-02	6.1217E-05	-1.1967E-02	9.9988E-01
8	.0000E+00	.0000E+00	5.6356E-02	7.8347E-02	5.8746E-02	3.6403E-05	-2.4223E-03	9.9991E-01
9	.0000E+00	.0000E+00	5.7789E-02	7.2618E-02	5.7506E-02	2.9278E-05	2.5620E-04	9.9989E-01
10	.0000E+00	.0000E+00	5.7085E-02	6.9181E-02	5.5597E-02	3.6057E-05	1.4579E-03	9.9989E-01
11	.0000E+00	.0000E+00	5.5878E-02	6.5610E-02	5.2581E-02	5.5171E-05	3.4457E-03	9.9993E-01
12	.0000E+00	.0000E+00	4.5418E-02	3.5105E-02	4.1306E-02	6.0464E-05	4.0529E-03	9.9997E-01
13	.0000E+00	.0000E+00	4.0575E-02	2.8577E-02	3.6648E-02	8.4656E-05	3.8413E-03	9.9998E-01
14	.0000E+00	.0000E+00	3.9476E-02	2.8215E-02	3.3705E-02	1.3616E-04	5.6853E-03	9.9988E-01
15	.0000E+00	.0000E+00	2.1679E-02	1.0865E-02	2.0865E-02	1.1273E-04	1.2117E-03	9.9999E-01
16	.0000E+00	.0000E+00	1.4252E-02	4.5825E-03	1.3500E-02	7.6421E-05	6.5532E-04	9.9998E-01
17	.0000E+00	.0000E+00	7.3098E-03	1.2976E-03	6.7517E-03	3.7147E-05	5.2008E-04	1.0001E+00
18	.0000E+00	.0000E+00	6.4821E-03	9.4652E-04	5.1719E-03	2.9617E-05	1.2805E-03	9.9999E-01
19	.0000E+00	.0000E+00	1.0727E-02	2.9348E-03	9.7071E-03	6.5506E-05	9.5474E-04	1.0001E+00
20	.0000E+00	.0000E+00	2.6283E-02	2.0976E-02	2.3716E-02	2.7557E-04	2.2941E-03	1.0001E+00
21	.0000E+00	.0000E+00	1.2612E-02	4.1889E-03	1.0897E-02	1.0505E-04	1.6097E-03	9.9997E-01
22	.0000E+00	.0000E+00	2.4976E-02	1.2615E-02	1.9999E-02	2.4684E-04	4.7525E-03	1.0001E+00
23	.0000E+00	.0000E+00	6.4780E-02	7.8288E-02	5.1410E-02	1.1364E-03	1.2253E-02	1.0000E+00
24	.0000E+00	.0000E+00	6.9226E-02	7.3925E-02	5.7064E-02	1.3442E-03	1.0816E-02	1.0000E+00
25	.0000E+00	.0000E+00	4.6104E-02	3.1360E-02	4.0345E-02	7.9706E-04	4.9611E-03	1.0001E+00
26	.0000E+00	.0000E+00	3.6831E-02	3.5056E-02	3.2577E-02	8.1074E-04	3.6410E-03	1.0001E+00
27	.0000E+00	.0000E+00	1.2496E-02	7.6095E-03	1.1598E-02	2.8964E-04	6.1278E-04	1.0000E+00

INFORMATION ONLY

28	.00000E+00	.00000E+00	7.90077E-01	7.85207E-01	7.90076E-01	6.32425E-05	-6.30270E-05	9.99973E-01
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r4n rate	fiss rate	flux*dv**2	total flux
1	1.29470E-02	-7.16304E-04	1.28313E-02	.00000E+00	3.65704E-11	.00000E+00	1.98189E-05	1.61886E-02
2	9.19859E-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	-1.99713E-02	1.92813E-01	.00000E+00	.00000E+00	.00000E+00	8.34119E-05	2.44865E-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	2.56309E-04	1.15921E-01	.00000E+00	.00000E+00	.00000E+00	2.16756E-05	1.45631E-01
10	1.06705E-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	1.00690E-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	5.48576E-02	3.84136E-03	5.58766E-02	.00000E+00	.00000E+00	.00000E+00	8.74761E-06	6.96586E-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	1.21176E-03	2.90620E-02	.00000E+00	.00000E+00	.00000E+00	4.47623E-06	3.63571E-02
16	1.59433E-02	6.55321E-04	1.60943E-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	5.39344E-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	1.60770E-03	1.11366E-02	.00000E+00	.00000E+00	.00000E+00	1.25948E-06	1.37361E-02
22	2.14681E-02	4.75257E-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	2.85785E-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	8.68529E-07	2.46928E-02
27	3.44191E-03	6.12786E-04	3.98083E-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	1.66108E-04	2.48438E-06	-1.62188E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.89251E-05	1.45512E-03	1.04412E-03	1.40152E-05	-1.02902E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.49180E-04	2.78675E-03	8.74817E-04	2.03460E-05	-7.45098E-04	9.99936E-01
4	.00000E+00	.00000E+00	2.86528E-04	2.30855E-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	1.68505E-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	5.82036E-04	1.00000E+00
8	.00000E+00	.00000E+00	1.17359E-04	9.20787E-03	4.43573E-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	4.98971E-03	4.94887E-05	5.93510E-05	-5.57626E-05	9.99997E-01
11	.00000E+00	.00000E+00	4.95020E-05	4.45642E-03	5.05887E-05	9.00528E-05	-9.08754E-05	9.99999E-01
12	.00000E+00	.00000E+00	5.05290E-05	2.76262E-03	5.13976E-05	5.69578E-05	-6.74604E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.13977E-05	2.35725E-03	4.80858E-05	6.31612E-05	-3.00306E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80858E-05	2.22876E-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	-1.13925E-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	1.66419E-04	5.37339E-05	1.38547E-06	7.96770E-06	9.99994E-01
19	.00000E+00	.00000E+00	5.54506E-05	4.01230E-04	5.91995E-05	3.11345E-06	-6.86586E-06	9.99986E-01
20	.00000E+00	.00000E+00	7.23071E-05	1.47688E-03	6.27873E-05	1.25972E-05	-3.12808E-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	8.29575E-04	1.10963E-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-06	1.00000E+00
24	.00000E+00	.00000E+00	2.81397E-04	2.26338E-03	3.10615E-04	5.55681E-05	-8.48109E-06	1.00000E+00
25	.00000E+00	.00000E+00	2.87525E-04	9.13261E-04	2.35061E-04	3.23191E-05	2.01525E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.22513E-04	7.14961E-04	9.44859E-05	3.20961E-05	-4.27354E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.73967E-05	1.50956E-04	7.77779E-08	1.11926E-05	1.61172E-05	1.00000E+00
28	.00000E+00	.00000E+00	5.03364E-03	8.08963E-02	5.05353E-03	6.13620E-04	-6.07608E-04	9.99999E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*dv**2	total flux
1	1.29734E-02	-8.78485E-04	1.29470E-02	-7.16304E-04	5.91701E-06	.00000E+00	1.69570E-06	2.16007E-03
2	9.22544E-02	-8.89530E-03	9.19895E-02	-7.86608E-03	.00000E+00	.00000E+00	1.11244E-05	1.53654E-02
3	1.14903E-01	-1.12015E-02	1.14556E-01	-1.05664E-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	1.05662E-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	-1.99913E-02	.00000E+00	.00000E+00	1.01748E-05	3.30135E-02
7	1.98531E-01	-1.13954E-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	1.05705E-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	4.78619E-06	1.66467E-02
12	6.42072E-02	4.04619E-03	6.43144E-02	4.05294E-03	.00000E+00	.00000E+00	3.21614E-06	1.07096E-02
13	5.47558E-02	3.83835E-03	5.48592E-02	3.84136E-03	.00000E+00	.00000E+00	2.75718E-06	9.13409E-03
14	5.16213E-02	5.65397E-03	5.17717E-02	5.63639E-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	1.59364E-02	6.51443E-04	1.59433E-02	6.55321E-04	.00000E+00	.00000E+00	7.82479E-07	2.65567E-03
17	6.90835E-03	5.19925E-04	6.92511E-03	5.20908E-04	.00000E+00	.00000E+00	3.39443E-07	1.15260E-03
18	4.99768E-03	1.28854E-03	5.02978E-03	1.28057E-03	.00000E+00	.00000E+00	2.45880E-07	8.35162E-04
19	1.04487E-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	3.50788E-02	2.29415E-03	.00000E+00	.00000E+00	1.71668E-06	5.84088E-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	4.73237E-03	.00000E+00	.00000E+00	1.04510E-06	3.56688E-03
23	7.26320E-02	1.21367E-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	2.61992E-02	4.96113E-03	.00000E+00	.00000E+00	1.25672E-06	4.35650E-03
26	1.84031E-02	3.63680E-03	1.84639E-02	3.64106E-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	1.58636E-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	-5.58510E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.98111E-03	1.92928E-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	4.51810E-05	-1.05112E-02	9.99997E-01
7	.00000E+00	.00000E+00	2.26511E-02	3.29888E-02	2.89598E-02	3.25228E-05	-6.14025E-03	9.99991E-01
8	.00000E+00	.00000E+00	2.99914E-02	4.11648E-02	3.08662E-02	1.91268E-05	-8.91168E-04	9.99820E-01
9	.00000E+00	.00000E+00	3.04342E-02	3.79925E-02	3.00864E-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	3.40869E-02	2.72001E-02	2.86488E-05	1.95682E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.36104E-02	1.81009E-02	2.12976E-02	3.11771E-05	2.28181E-03	9.99981E-01
13	.00000E+00	.00000E+00	2.09746E-02	1.47187E-02	1.88758E-02	4.36015E-05	2.05686E-03	9.99974E-01
14	.00000E+00	.00000E+00	2.08686E-02	1.43900E-02	1.71809E-02	6.94463E-05	3.09950E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.10983E-02	5.64759E-03	1.05800E-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	2.82692E-04	9.99999E-01
17	.00000E+00	.00000E+00	3.77570E-03	6.67649E-04	3.47375E-03	1.91123E-05	2.80816E-04	1.00001E+00
18	.00000E+00	.00000E+00	3.34508E-03	4.62940E-04	2.52668E-03	1.44859E-05	8.00941E-04	1.00000E+00
19	.00000E+00	.00000E+00	5.48601E-03	1.49991E-03	4.97809E-03	3.35935E-05	4.86511E-04	1.00001E+00
20	.00000E+00	.00000E+00	1.34706E-02	1.08274E-02	1.22618E-02	1.61211E-04	1.08756E-03	1.00001E+00
21	.00000E+00	.00000E+00	6.44486E-03	2.10937E-03	5.48744E-03	5.28997E-05	9.04186E-04	9.99999E-01
22	.00000E+00	.00000E+00	1.26543E-02	6.33776E-03	9.86258E-03	1.21731E-04	2.66954E-03	1.00000E+00
23	.00000E+00	.00000E+00	3.20758E-02	3.90129E-02	2.56187E-02	5.66332E-04	5.91010E-03	1.00001E+00
24	.00000E+00	.00000E+00	3.40384E-02	3.63268E-02	2.80408E-02	6.60869E-04	5.33604E-03	1.00001E+00
25	.00000E+00	.00000E+00	2.25139E-02	1.52520E-02	1.95955E-02	3.87132E-04	2.53061E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.79080E-02	1.66668E-02	1.53940E-02	3.85440E-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	rdn rate	fiss rate	flux*dv**2	total flux

INFORMATION ONLY

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	-1.06088E-02	7.07456E-02	-6.84818E-03	.00000E+00	.00000E+00	2.23398E-05	4.68392E-02
5	1.07123E-01	-1.60891E-02	1.05665E-01	-1.03524E-02	.00000E+00	.00000E+00	2.64698E-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	1.15653E-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	1.40214E-03	.00000E+00	.00000E+00	1.00022E-05	7.01464E-02
11	9.98633E-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	4.20782E-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	8.75347E-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	2.33668E-06	1.88979E-02
16	1.58653E-02	9.34335E-04	1.59364E-02	6.51443E-04	.00000E+00	.00000E+00	1.16507E-06	1.04636E-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	2.08048E-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	6.85336E-03
20	3.47106E-02	3.37868E-03	3.50177E-02	2.29102E-03	.00000E+00	.00000E+00	2.69176E-06	2.29656E-02
21	1.03885E-02	2.50235E-03	1.05276E-02	1.59785E-03	.00000E+00	.00000E+00	6.34228E-07	6.91659E-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	7.08589E-02	1.80458E-02	7.26520E-02	1.21357E-02	.00000E+00	.00000E+00	3.80354E-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	1.67916E-02
26	1.71088E-02	5.76528E-03	1.84031E-02	3.63680E-03	.00000E+00	.00000E+00	4.10540E-07	1.17395E-02
27	3.08564E-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 gp.	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	2.50889E-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	1.69943E-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	1.60830E-02	9.99990E-01
6	.00000E+00	1.78975E-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	9.99971E-01
8	.00000E+00	1.34688E-02	6.80451E-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	6.25082E-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	5.84052E-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	-5.85850E-03	9.99969E-01
14	.00000E+00	1.26257E-08	4.31160E-01	4.69287E-01	3.61314E-01	7.85815E-02	-8.73236E-03	9.99909E-01
15	.00000E+00	1.42884E-09	2.30979E-01	2.15271E-01	2.30924E-01	7.76238E-03	-1.66382E-03	1.00034E+00
16	.00000E+00	4.18970E-10	1.61924E-01	9.98824E-02	1.56853E-01	5.89710E-03	-9.37013E-04	1.00024E+00
17	.00000E+00	1.34929E-10	8.67034E-02	3.09666E-02	7.99813E-02	7.50783E-03	-8.08888E-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	1.42263E-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	-1.80545E-02	1.00018E+00
24	.00000E+00	9.81512E-12	6.82119E-01	8.44858E-01	5.63620E-01	1.34479E-01	-1.60685E-02	1.00013E+00
25	.00000E+00	2.87922E-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	9.92051E-01	9.99158E-03	1.00000E+00

0 gp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux^cb**2	total flux
1	1.34078E-02	-5.92210E-09	1.31088E-02	-1.25825E-03	2.24864E-03	2.50851E-03	2.95798E-04	3.40816E-01

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	1.20858E-01	-6.99422E-08	1.16535E-01	-1.67924E-02	.00000E+00	1.33342E-02	1.82959E-03	3.06825E+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	2.05583E-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	2.95644E+00
10	1.05618E-01	-2.08661E-06	1.05412E-01	2.26743E-03	.00000E+00	3.77407E-03	4.28686E-04	2.69138E+00
11	9.74201E-02	-1.68307E-06	9.92633E-02	5.31169E-03	.00000E+00	8.09327E-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	5.21388E-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	8.73247E-03	.00000E+00	7.58312E-03	1.74426E-04	1.22295E+00
15	2.81121E-02	-3.94108E-06	2.86542E-02	1.65988E-03	.00000E+00	1.82802E-03	1.10911E-04	7.17467E-01
16	1.56520E-02	-2.67725E-06	1.58653E-02	9.34336E-04	.00000E+00	1.27483E-03	5.74435E-05	3.96873E-01
17	6.59979E-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	4.78226E-03	2.08948E-03	.00000E+00	1.21734E-03	9.67004E-06	1.03783E-01
19	9.85632E-03	-3.91489E-06	1.05308E-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	6.22472E-02	-8.76875E-06	7.08588E-02	1.80458E-02	.00000E+00	7.83475E-02	1.66818E-04	1.61401E+00
24	4.78878E-02	-5.42101E-07	5.60669E-02	1.60678E-02	.00000E+00	7.50265E-02	1.01047E-04	1.26988E+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	-1.08958E-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	2.23848E-02	2.14956E-02	3.85643E-03	-5.92210E-09	9.98902E-01
2	.00000E+00	1.94222E-01	7.64210E-03	2.61782E-01	1.86276E-01	1.56003E-02	-6.22403E-08	1.00003E+00
3	.00000E+00	2.15915E-01	7.74376E-02	2.68782E-01	2.78657E-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	7.82725E-03	-6.03651E-08	9.99999E-01
5	.00000E+00	1.64063E-01	2.08408E-01	4.66856E-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	8.74403E-02	6.58942E-01	1.67003E+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	1.32631E-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	7.14265E-01	1.26711E+00	6.60490E-01	5.38036E-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	6.37103E-08	5.10120E-01	5.50101E-01	4.54992E-01	5.51430E-02	7.11566E-07	9.99969E-01
14	.00000E+00	1.26257E-08	4.91063E-01	5.14121E-01	4.12253E-01	7.80956E-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	1.06850E-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	7.56790E-03	-3.14314E-06	1.00019E+00
18	.00000E+00	9.66050E-11	8.71263E-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	2.34343E-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	1.00005E+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	r0n rate	fiss rate	flux*dv**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

INFORMATION ONLY

INFORMATION ONLY

3	1.20892E-01	-6.99422E-03	1.12592E-01	.00000E+00	.00000E+00	1.33342E-02	1.98418E-03	3.30655E+00
4	7.45277E-02	-6.03651E-03	6.89736E-02	.00000E+00	.00000E+00	5.72025E-03	9.55975E-04	2.05768E+00
5	1.11698E-01	-7.40120E-03	1.02726E-01	.00000E+00	.00000E+00	1.64010E-03	1.11659E-03	3.05188E+00
6	2.09742E-01	-1.39578E-07	1.92813E-01	.00000E+00	.00000E+00	1.36601E-03	1.86978E-03	5.72852E+00
7	2.08582E-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-08	1.46981E-01	.00000E+00	.00000E+00	1.32553E-03	7.53344E-04	4.09601E+00
9	1.15297E-01	-5.32790E-06	1.16921E-01	.00000E+00	.00000E+00	1.76700E-03	5.08901E-04	3.17757E+00
10	1.05618E-01	-2.08661E-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	5.21388E-02	7.11566E-07	5.58766E-02	.00000E+00	.00000E+00	1.19638E-02	2.10774E-04	1.44786E+00
14	4.77156E-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	6.55970E-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	-3.91485E-06	1.07443E-02	.00000E+00	.00000E+00	2.45687E-03	3.57731E-05	2.73829E-01
20	3.35383E-02	-7.54179E-06	3.56685E-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	2.88638E-05	2.65252E-01
22	1.78411E-02	-2.47474E-06	2.23257E-02	.00000E+00	.00000E+00	4.25972E-02	5.05705E-05	5.02683E-01
23	6.22472E-02	-8.76875E-06	7.75747E-02	.00000E+00	.00000E+00	7.83473E-02	1.82056E-04	1.76790E+00
24	4.78876E-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	2.86788E-02	.00000E+00	.00000E+00	4.30511E-02	3.82568E-05	5.94378E-01
26	1.35346E-02	-1.20504E-07	2.06902E-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

0zone	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	5.79308E-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	1.83406E-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	4.36808E-03	4.98276E-03	2.41431E-03	2.87888E-03	4.89230E-03	3.37566E-03	1.79860E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11316E-03	1.01461E-03	1.02416E-03	8.74330E-04	7.94958E-04	1.04358E-03	3.18348E-04	1.64116E-04
2	1.79112E-03	1.95416E-03	2.04357E-03	1.60250E-03	1.42482E-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

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.96719E-05	2.09565E-04	1.77897E-04	4.51411E-04	2.74797E-04	7.98823E-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	3.27681E-03	2.85287E-03
3	1.47352E-04	3.58329E-04	2.62986E-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	1.08556E-03	8.42508E-04
5	7.52672E-05	9.27709E-05	1.26505E-04	3.98576E-04	1.52594E-04	3.90992E-04	1.17929E-03	9.49309E-04

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	8.38179E-04	5.92747E-04	9.03010E-05	4.21229E-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	4.08427E-04	2.54216E-04	3.40798E-05	3.56342E-02

1broad group parameters

grp	upper energy	mid energy	velocity	fiss spec
1	2.0000E+07	2.4557E+06	1.9685E+09	7.2102E-01
2	9.0000E+05	1.5134E+05	9.9806E+06	2.7894E-01
3	4.0000E-01	1.2564E-01	3.4564E+05	1.2147E-10
4	1.0000E-05			

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

INFORMATION ONLY

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	1.13956E+00	1.77459E-01
5	4.14437E-01	1.13914E+00	1.80381E-01

0flux disadvantage 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	9.98679E-01	1.14864E+00
4	1.00408E+00	1.00019E+00	9.84022E-01
5	1.00000E+00	1.00000E+00	1.00000E+00

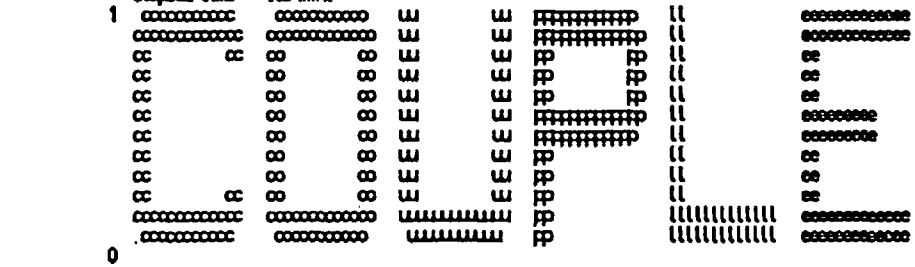
0cell averaged currents

0zone	grp. 1	grp. 2	grp. 3
1	1.79108E-02	1.83575E-02	6.56768E-03
2	1.92278E-02	2.58234E-02	1.02221E-02
3	1.98123E-02	2.23937E-02	1.03451E-02
4	1.52678E-02	1.62963E-02	2.98020E-03
5	1.54761E-02	1.65943E-02	3.36371E-03

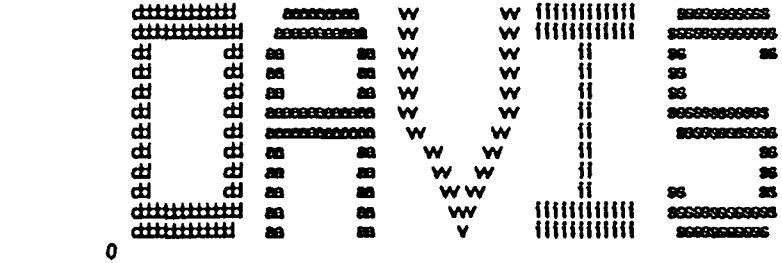
0zone	volume	vol. fraction
1	1.25668E+00	4.56236E-02
2	1.66687E-01	6.05165E-03
3	6.58265E-01	2.38987E-02
4	2.54632E+01	9.24429E-01
5	2.75440E+01	1.00000E+00

- elapsed time .03 min.

1

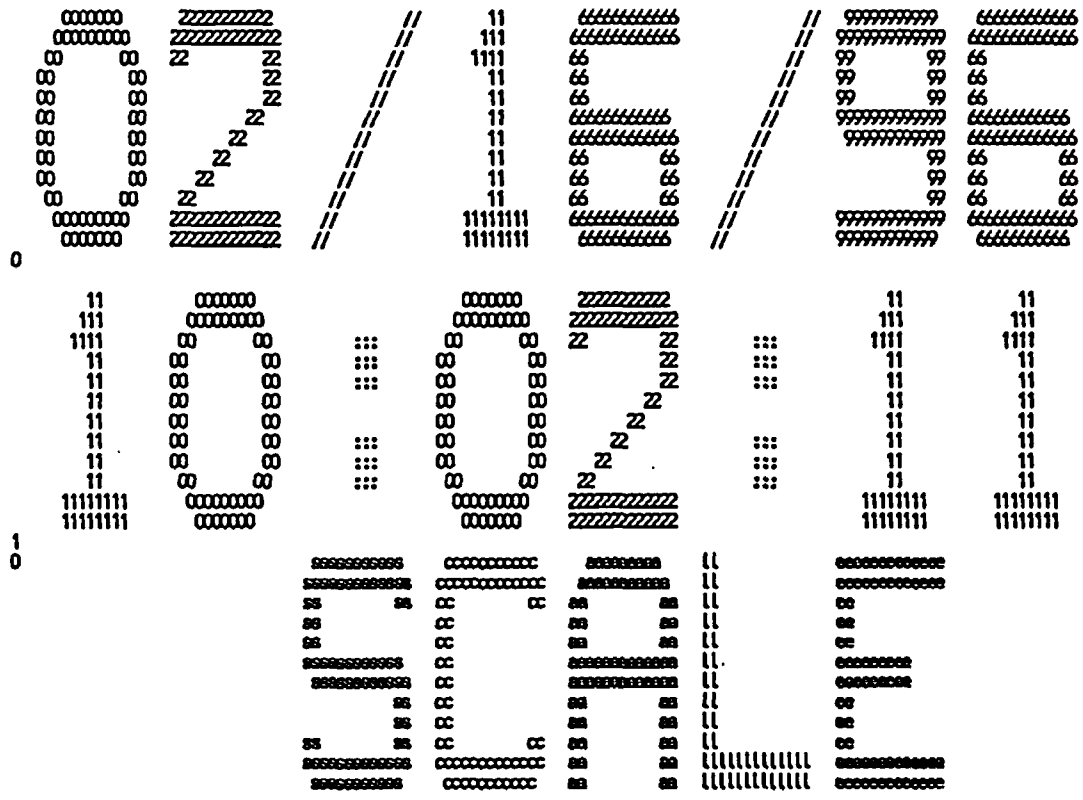


0



0

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:  10:02:11                                *****
*****                                                               *****
*****                                                               *****
*******************************************************************
*******************************************************************
*******************************************************************
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 jacb) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from ampx (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  30030  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
```

INFORMATION ONLY

80160	to 20040	2.55664E-02
80160	to 80161	4.01377E-03
80160	tot-cap	2.58263E-02
360890	to 360820	2.07788E-02
360890	to 360810	2.19572E-09
360890	to 360840	1.53668E+02
360890	to 350890	8.52333E-04
360890	to 10010	8.52333E-04
360890	to 350820	6.86267E-06
360890	to 10020	6.86267E-06
360890	to 350810	2.39863E-06
360890	to 10030	2.39863E-06
360890	to 340810	3.88199E-08
360890	to 20030	3.88199E-08
360890	to 340800	4.55954E-05
360890	to 20040	4.55954E-05
360890	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
400280	to 400940	1.32457E+01
400280	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 430880	6.30459E-03
430990	to 431000	8.84781E+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
461060	to 461060	3.34766E+01
461060	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

INFORMATION ONLY

541310 to 541290	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 531290	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	1.04006E-02
541320 to 541300	2.20687E-05
541320 to 541330	9.16433E-01
541320 to 531320	7.98439E-06
541320 to 10010	7.98439E-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 521290	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-08
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-08
591410 to 591390	1.71528E-06
591410 to 571370	2.56518E-06
591410 to 20040	5.29664E-05

INFORMATION ONLY

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 9.13534E-02
601430 to 601410 9.32257E-06
601430 to 581390 2.01613E-05
601430 to 20040 5.64097E-04
601430 to 591420 3.90841E-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 2.10592E-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 2.79163E-05
611470 to 611480 5.75790E+02
611470 to 601470 2.48862E-05
611470 to 10020 9.22962E-06
611470 to 601450 3.48478E-06
611470 to 10030 3.48478E-06
611470 to 591450 5.23943E-09
611470 to 20030 5.23943E-09
611470 to 591440 7.33690E-05
611470 tot-cap 5.75823E+02

INFORMATION ONLY

611480 to 611490	1.20170E+04
611480 tot-cap	1.20170E+04
621470 to 621460	8.36673E-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	1.35654E-04
621470 to 10050	1.35654E-04
621470 to 601450	6.23710E-06
621470 to 20050	6.23710E-06
621470 to 601440	1.18279E-03
621470 to 621471	1.64121E+00
621470 tot-cap	2.30178E+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	1.57778E-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 10050	1.36803E-06
621510 to 601490	1.40986E-09
621510 to 20050	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	8.19598E-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 10050	1.42901E-07
621520 to 601500	4.33072E-10
621520 to 20050	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

INFORMATION ONLY

631530	to 611490	4.3403E-05
631530	to 20040	6.2948?E-04
631530	to 621520	7.6861?E-06
631530	to 10010	6.4695?E-05
631530	to 631540	6.1343?E+02
631530	to 621530	6.2069?E-05
631530	to 10020	5.0523?E-06
631530	to 621510	1.1345?E-06
631530	to 10030	1.1345?E-06
631530	to 611510	2.5286?E-08
631530	to 20030	2.5286?E-08
631530	to 611500	5.8608?E-04
631530	tot-cap	6.1345?E+02
631540	to 631530	2.9579?E-02
631540	to 631520	1.0553?E-05
631540	to 611500	1.0281?E-10
631540	to 20040	7.5563?E-04
631540	to 621530	2.3100?E-06
631540	to 10010	1.2301?E-05
631540	to 631550	1.0666?E+05
631540	to 621540	1.2301?E-05
631540	to 10020	2.3067?E-06
631540	to 621520	3.9107?E-06
631540	to 10030	3.9107?E-06
631540	to 611520	1.6581?E-08
631540	to 20030	1.6581?E-08
631540	to 611510	7.5563?E-04
631540	tot-cap	1.0666?E+05
631550	to 631540	2.4121?E-02
631550	to 631530	6.7545?E-05
631550	to 611510	1.8179?E-06
631550	to 20040	8.9471?E-06
631550	to 621540	3.6831?E-06
631550	to 10010	7.7299?E-06
631550	to 631560	2.5512?E+05
631550	to 621550	5.9578?E-06
631550	to 10020	1.8910?E-06
631550	to 621530	6.2600?E-07
631550	to 10030	6.2600?E-07
631550	to 611530	1.4188?E-10
631550	to 20030	1.4188?E-10
631550	to 611520	7.1291?E-06
631550	tot-cap	2.5512?E+05
641550	to 641560	1.6960?E+04
641550	tot-cap	1.6960?E+04
922340	to 922330	6.3195?E-05
922340	fission	4.3869?E+00
922340	nu-sigf	1.1532?E+01
922340	to 922320	9.1629?E-05
922340	to 922350	1.8413?E+02
922340	to 922341	2.9418?E+00
922340	tot-cap	1.8853?E+02
922350	to 922340	2.8843?E-02
922350	fission	3.6047?E+02
922350	nu-sigf	8.7289?E+02
922350	to 922330	2.7601?E-05
922350	to 922360	8.5399?E+01
922350	to 922351	8.3673?E-02
922350	tot-cap	4.4590?E+02
922360	to 922350	3.2192?E-02

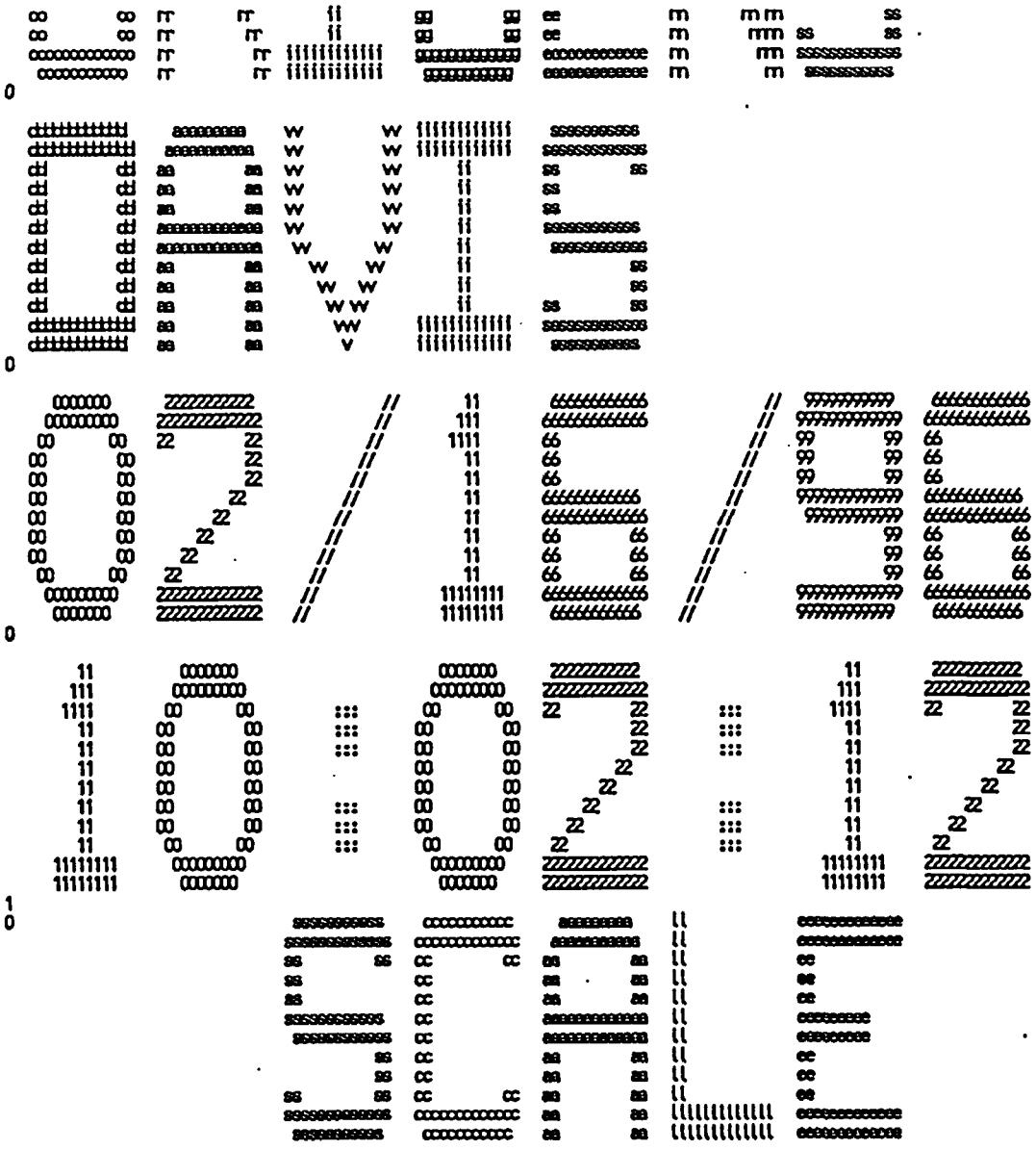
INFORMATION ONLY

922360	fission	1.88166E+00
922360	nu-sigf	5.16557E+00
922360	to 922340	4.29024E-04
922360	to 922370	7.19069E+01
922360	to 922361	3.21865E+00
922360	tot-cap	7.39226E+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	5.60749E-05
932370	to 932380	2.97598E+02
932370	to 932371	7.54344E-01
932370	tot-cap	3.02695E+02
942380	to 942370	2.35699E-03
942380	fission	2.20643E+01
942380	nu-sigf	6.25659E+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	5.85746E-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	2.98008E+02
942410	tot-cap	1.18848E+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	3.33088E+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

INFORMATION ONLY

```
                    962440 fission    1.51799E+01
                    962440 nu-sigf    5.08679E+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  932370 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  932370 to 932371 was not used, because  932371 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
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  952430 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   rrrrrrrrrrrr   iiiiiiiiiiii   gggggggggg   eeeeeeeeeeeee   rrr        rrr   sssssssssss
   ooooooooooooo  rrrrrrrrrrrrr  iiiiiiiiiiii   gggggggggggg  eeeeeeeeeeeee   rrrr       rrr  ssssssssssssss
   oo        oo   rr        rr       ii       gg        gg  ee            rrrrr      rrr  ss        ss
   oo        oo   rr        rr       ii       gg            ee            rrr rrr    rrr  ss
   oo        oo   rr        rr       ii       gg            ee            rrr   rrr  rrr  ss
   oo        oo   rrrrrrrrrrrrr       ii       gg   gggggg   eeeeeeeee     rrr    rrr rrr  ssssssssssss
   oo        oo   rrrrrrrrrrrrr       ii       gg   gggggg   eeeeeeeee     rrr     rrr rrr  ssssssssssss
   oo        oo   rr      rr         ii       gg        gg  ee            rrr      rrr rrr          ss
```

INFORMATION ONLY



INFORMATION ONLY

INFORMATION 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:  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, qmn =    9.1188E-04
0             half-norm of matrix used, amn =    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  5
         pass  1
         pass  0
         *scale-system control module ses2 library*
         used a time-dependent neutron spectrum, for each of the above passes
```

INFORMATION ONLY

```
  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 "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                  1497    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 7.90E-21 7.90E-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 3.86E-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 6.47E-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
```

INFORMATION ONLY

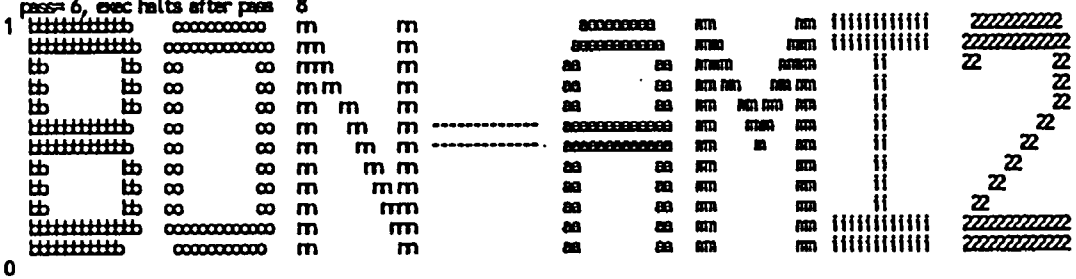
```
    np236m 4.59E-14 5.28E-14 5.73E-14 6.19E-14 6.66E-14 6.50E-14 7.14E-14 7.63E-14
    np236  3.15E-12 3.68E-12 4.25E-12 4.86E-12 5.53E-12 5.53E-12 6.25E-12 7.01E-12
    np237  2.39E-06 2.60E-06 2.82E-06 3.04E-06 3.27E-06 3.27E-06 3.50E-06 3.73E-06
    np238  2.94E-09 3.26E-09 3.54E-09 3.82E-09 4.11E-09 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 1.06E-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 7.96E-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 1.06E-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 1.55E-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 5.66E-18
    am240  9.75E-16 1.20E-15 1.41E-15 1.64E-15 1.89E-15 1.87E-15 2.16E-15 2.45E-15
    am241  1.42E-07 1.66E-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 6.66E-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 4.95E-14 7.22E-14
1
    sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp                    actinides      page  2
      power= 8.46E-05mw, burnup=2.0318E-03mwd, 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 4.90E-22 1.36E-21 2.35E-21 3.95E-21 6.39E-21 3.88E-21 1.01E-20 1.56E-20
    cm250 8.84E-26 1.70E-25 3.13E-25 5.58E-25 9.60E-25 9.60E-25 1.61E-24 2.62E-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

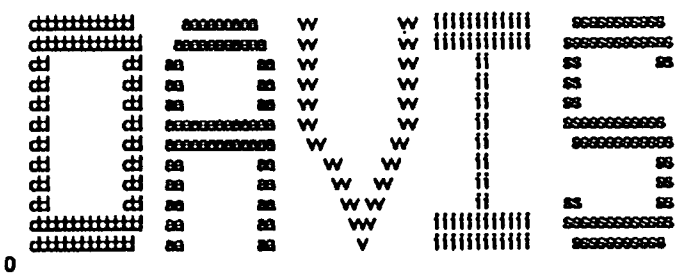
```
0ndset          33
          15          4          1         27          6          0          0          0          0          0
           0          0          0          0          0          0         -1       1698        690        130
         880       7935          0          5         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 4.317639E-01 3.331461E+00 1.000000E-31
0non            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
0mzero          4
           0        689        129        879
0pow            3
   .000000E+00  .000000E+00  .000000E+00
0 linp          9
           6          0         51         26          2       3000       1000       1697         94
 n-gamma, fission and total mev/fission =          6.6274E+00   1.9620E+02   2.0283E+02
 start of interval flux =        1.59777E+13
 n-gamma, fission and total mev/fission =          6.7144E+00   1.9629E+02   2.0300E+02
 start of interval flux =        1.59963E+13
 n-gamma, fission and total mev/fission =          6.8126E+00   1.9637E+02   2.0319E+02
 start of interval flux =        1.60171E+13
 n-gamma, fission and total mev/fission =          6.9104E+00   1.9646E+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   1.9654E+02   2.0356E+02
 start of interval flux =        1.60681E+13
 n-gamma, fission and total mev/fission =          7.1041E+00   1.9662E+02   2.0372E+02
 start of interval flux =        1.61008E+13
```

INFORMATION ONLY

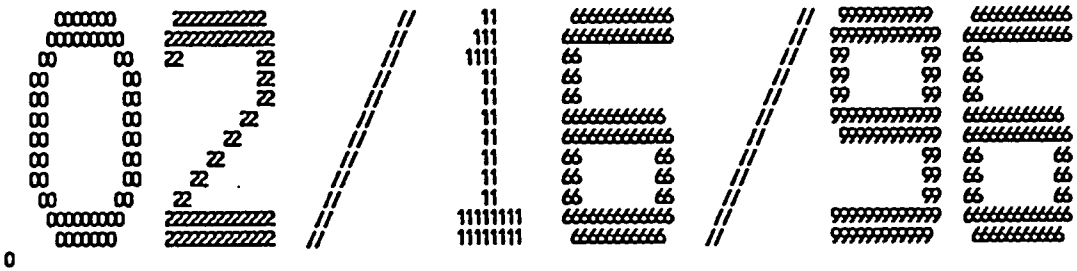
```
0 case or subcase    1  ses2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has     20 entries.
0requested parm=halt8,skipoellist,skipshipdata
  pass= 6, exec halts after pass  8
```



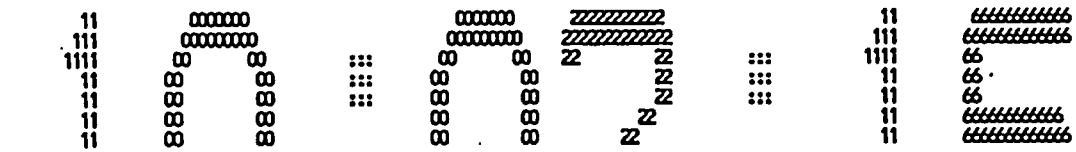
0



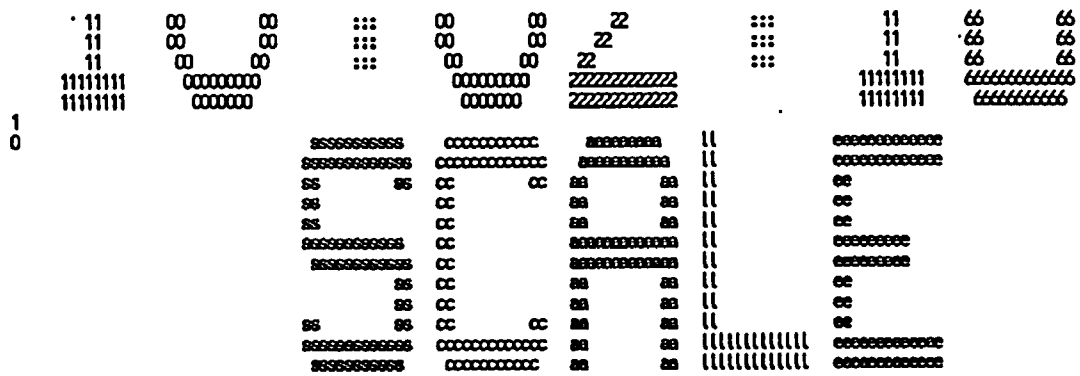
0

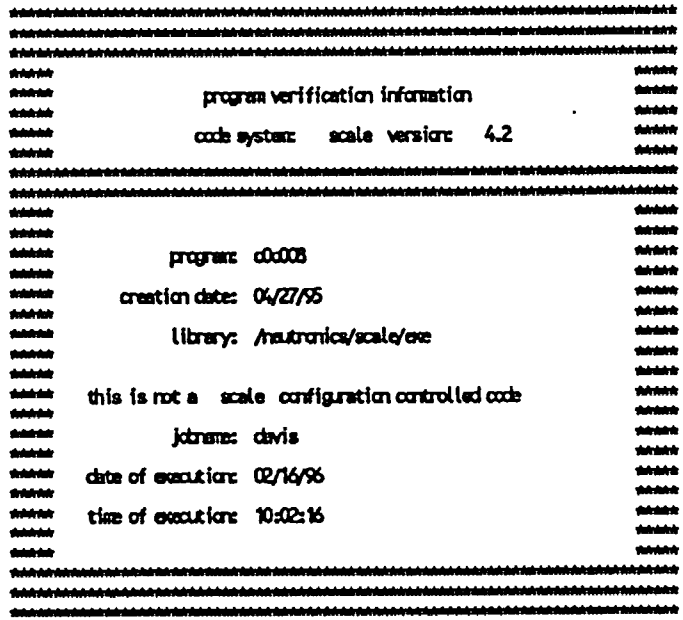


0



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
```

INFORMATION ONLY

```
0master library   12
 working library   0
 scratch file     18
 new library       1
0problem description
0igm--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
0isscpt--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    4.08695E-04           92235
    2        1    92234    4.44803E-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    1.23855E-05           39089
   11        1    42095    1.65579E-05           42095
   12        1    40098    1.24636E-05           40098
   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    8.77803E-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    3.71186E-07           59143
   36        1    58144    6.70662E-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-08	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	3.81519E-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	1.12995E-08	96244
65	1	999	1.00000E-20	999
66	4	999	1.00000E-20	66

Geometry and material description

Zone	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

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

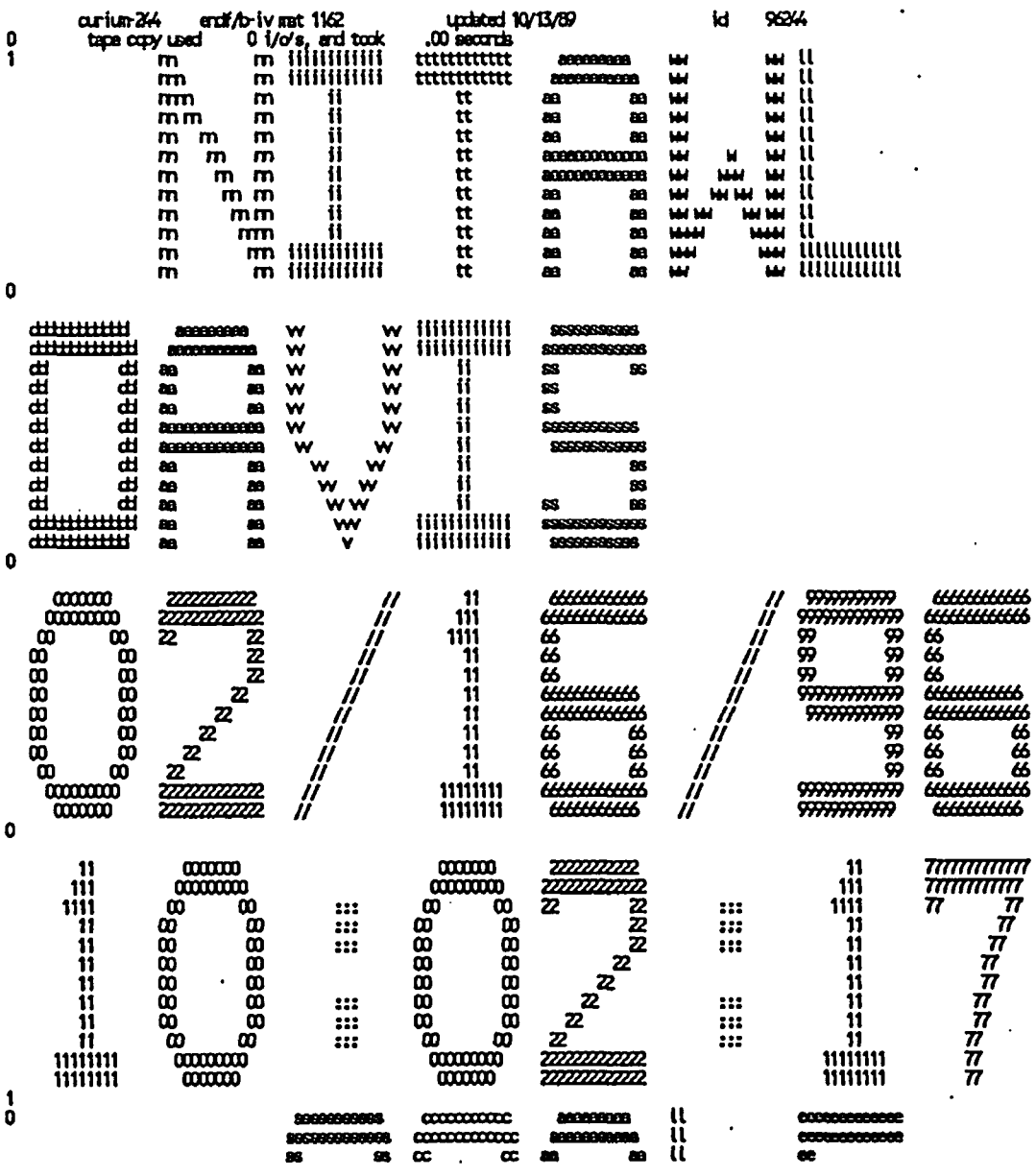
Copy	999	1/v cross sectio	from leg	12	to leg	18 bondarenko trigger 0
Copy	999	1/v cross sectio	from leg	18	to leg	1 bondarenko trigger 0
Copy	999	1/v cross sectio	from leg	18	to leg	1 bondarenko trigger 0
Copy	1001	hydrogen	from leg	12	to leg	1 bondarenko trigger 0
Copy	5010	b-10 1273 218grp	from leg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

INFORMATION ONLY

```
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 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/thnml002   updated 10/13/89     id   1001
       b-10 1273 218ngp 042375 p-3 298k                                   id   5010
        boron-11       endf/b-iv mat 1160            updated 10/13/89     id   5011
```

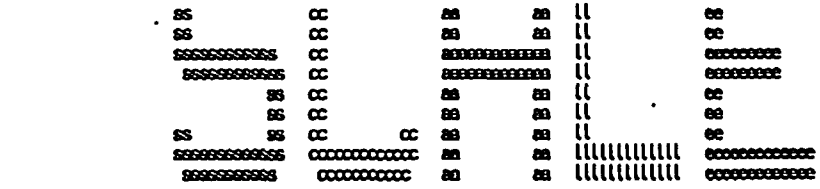
```
oxygen-16       endf/b-iv mat 1276          updated 10/13/89          id    8016
oxygen-16       endf/b-iv mat 1276          updated 10/13/89          id       6
kr-83           mt=102,103,103,105,106,107  updated 10/13/89          id   36083
kr-85             mt= 102                                             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 sigp=5+4 newlacs 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 sigp=5+4 newlacs 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 sigp=5+4 newlacs 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 sigp=5+4 newlacs 218mgp p-3 293k                          id   95241
am-243 1057 218 gp wt f-1/e-s 09576 p3 293k                           id   95243
```

INFORMATION ONLY



INFORMATION ONLY

```
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 eeeeeeeeeeeee
 ssssssssss   cccccccccc  aa      aa  llllllllllll eeeeeeeeeeeee
```



```
*****************************************************************
*****************************************************************
*****************************************************************
*****                                                       *****
*****              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:  10:02:17                         *****
*****                                                       *****
*****                                                       *****
*****************************************************************
*****************************************************************
*****************************************************************
```

```
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 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 sigo=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 sigo=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 sigo=5+4 newklacs 218ngp 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/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   = 1.4271768E-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)= 1.1964859E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 1.3349052E+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   -2.665985E-03
  12      2.165458E-02    .000000E+00    9.892334E-03
  13     -4.670784E-01    .000000E+00   -1.406421E-01
  14      4.782960E-05    .000000E+00   -1.722996E-05
0excess resonance integrals
0                resolved
0absorption      1.44735E+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   = 1.2388544E-05
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.
```

INFORMATION ONLY

```
Omass of moderator-1    =    15.995              sigma(per absorber atom)= 1.3783677E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953              sigma(per absorber atom)= 1.5378286E+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      -3.386356E-06     .000000E+00   -2.525315E-04
  10      -7.546894E-05     .000000E+00   -2.128284E-04
Oexcess resonance integrals
0                  resolved
Oabsorption       1.46396E-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
Oresonance data for this nuclide
Omass number (a)          =    93.100          temperature(kelvin)      =   975.000
Opotential scatter sigma  =     3.779          lumped nuclear density   = 1.9587926E-05
Ospin factor (g)          =   180.853          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)= 8.7175996E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953              sigma(per absorber atom)= 9.7261230E+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
   8      -1.205871E-06     .000000E+00   -1.136245E-03
   9      -3.808849E-05     .000000E+00   -3.369180E-03
Oexcess resonance integrals
0                  resolved
Oabsorption       3.43696E-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
Oresonance data for this nuclide
Omass number (a)          =    90.436          temperature(kelvin)      =   650.000
Opotential scatter sigma  =     6.385          lumped nuclear density   = 4.2515602E-02
Ospin factor (g)          =     1.079          lump dimension (a-bar)   = 5.4610002E-01
Oinner radius             = 4.7878999E-01      dancoff correction (c)   = 5.0364637E-01
Othe absorber 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
   8      -1.780596E-03     .000000E+00   -1.286907E+00
   9      -5.893373E-02     .000000E+00   -2.695297E+00
  10      -6.959985E-02     .000000E+00   -1.601321E+00
  11      -1.883937E-01     .000000E+00   -7.920912E-01
Oexcess resonance integrals
0                  resolved
Oabsorption       2.28539E-01
 fission           .00000E+00
- elapsed time     .02 min.
0 rb-94          mt=102                    updated 10/13/89     41094     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =    93.101          temperature(kelvin)      =   975.000
Opotential scatter sigma  =     3.779          lumped nuclear density   = 9.7096506E-12
```

INFORMATION ONLY

```
Ospin factor (g)          = 43808.801          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)= 1.7586594E+10
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 1.9621155E+10
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
  13      1.043254E-02    .000000E+00    9.253223E-04
  14      9.836713E-03    .000000E+00   -4.064832E-04
Oexcess resonance integrals
O                resolved
Oabsorption      9.15001E+01
 fission          .00000E+00
- elapsed time    .02 min.
O mo-95          mt=102                  updated 10/13/89          42095     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =    94.091          temperature(kelvin)       =   975.000
Opotential scatter sigma  =     3.806          lumped nuclear density    = 1.6557906E-05
Ospin factor (g)          =   607.724          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)= 1.0312880E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 1.1505958E+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     -3.530957E-03    .000000E+00   -2.099522E-02
  11     -6.524231E-03    .000000E+00   -1.080905E-02
  12     -4.589763E+00    .000000E+00   -5.280679E+00
  13      1.575622E-04    .000000E+00   -2.129488E-05
Oexcess resonance integrals
O                resolved
Oabsorption      9.75400E+01
 fission          .00000E+00
- elapsed time    .02 min.
O tc-99          mt=102                  updated 10/13/89          43099     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =    98.150          temperature(kelvin)       =   975.000
Opotential scatter sigma  =     6.000          lumped nuclear density    = 1.9160281E-05
Ospin factor (g)          =  4527.940          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)= 8.9121709E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 9.9432041E+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
  11     -2.469531E-02    .000000E+00   -1.163742E-02
  12     -6.508102E-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   -5.387696E-04
  16      4.836025E-03    .000000E+00   -2.802101E-04
```

INFORMATION ONLY

```
 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    = 1.7388691E-05
0spin factor (g)          =  8785.290          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)= 9.8201582E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.983          sigma(per absorber atom)= 1.0956234E+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   -3.547577E-02
  13      -4.671092E-01     .000000E+00   -1.257778E-02
  14       2.371029E-04     .000000E+00   -4.152284E-05
0excess resonance integrals
0                 resolved
0absorption       7.92385E+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    = 1.0508389E-05
0spin factor (g)          =      .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)= 1.6249846E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.983          sigma(per absorber atom)= 1.8129760E+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    3.244998E-03
  16       3.156197E+01     .000000E+00   -7.005092E-02
  17      -1.862040E+02     .000000E+00   -1.642171E-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      -9.879320E-02     .000000E+00    1.798871E-03
0excess resonance integrals
```

```
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   = 6.8604922E-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)= 2.4890299E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          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   -1.650568E-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)= 8.8685180E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          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    3.531506E-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       2.11967E+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
```

INFORMATION ONLY

INFORMATION ONLY

```
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.933              sigma(per absorber atom)= 1.415702E+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      1.38652E+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  = 8.776082E-06
0spin factor (g)        =  266.825          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)= 1.945739E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.933          sigma(per absorber atom)= 2.170838E+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     -2.848403E-06    .000000E+00   -2.640883E-05
  10     -1.938772E-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      1.061624E-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  = 1.649470E-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)= 1.055293E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  257.933          sigma(per absorber atom)= 1.155004E+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   -9.905657E-02
  11      3.338821E-08    .000000E+00   -9.229524E-07
0excess resonance integrals
```

```
0                 resolved
0absorption       9.71131E-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   = 2.1020622E-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)= 8.1234365E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  238.051            sigma(per absorber atom)= 8.7134512E+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      -2.895950E-03    .000000E+00   -5.542378E-03
 11      -1.080677E-01    .000000E+00   -1.890162E-01
 12      -1.675589E-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       2.777836E-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)          =  134.737          temperature(kelvin)      =  975.000
0potential scatter sigma  =    4.835          lumped nuclear density   = 1.9312503E-07
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)= 8.8419250E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.983            sigma(per absorber atom)= 9.8648313E+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       1.38471E+00
 fission           .00000E+00
- elapsed time     .10 min.
```

INFORMATION ONLY

```
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   = 2.0324025E-05
0spin factor (g)          =   145.855              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)= 8.4018643E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 9.3738604E+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   = 1.7598717E-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)= 9.7029629E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 1.0825481E+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   -2.337946E-01
 11      -1.126897E-01    .000000E+00   -1.498327E+00
 12      -2.585426E-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   = 1.5915050E-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)= 1.0729448E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 1.1970719E+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
```

INFORMATION ONLY

INFORMATION ONLY

```
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 rd-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    = 1.1734181E-05
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)= 1.4552332E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 1.6235865E+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      -7.203245E-02    .000000E+00   -2.180945E-01
  12      -1.733671E+00    .000000E+00   -1.090933E+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 rd-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    = 4.0223504E-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)= 4.2452715E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 4.7363992E+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      -2.019935E-01    .000000E+00   -6.472971E-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
```

```
  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   -2.295034E+00
  14     -4.358768E-01     .000000E+00   -5.141891E-03
  15      3.113323E-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   -4.628077E-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-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)= 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      8.546590E-03     .000000E+00    3.071159E-02
  12     -5.533298E-02     .000000E+00   -1.820874E-01
  13      2.289289E-02     .000000E+00    2.796631E-03
  14      2.746277E-03     .000000E+00   -7.985149E-03
0excess resonance integrals
0                 resolved
0absorption       8.04332E+02
 fission           .00000E+00
```

INFORMATION ONLY

```
- 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    =   237.933          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      -3.151565E-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       2.86649E+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    =   237.933          sigma(per absorber atom)= 4.7403309E+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      -2.313706E-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    3.867666E-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       2.05616E+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
```

INFORMATION ONLY

```
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       -1.368911E+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)     = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.4165956E+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    -5.761086E-02
 13       -1.746831E-01      .000000E+00    -6.441064E-03
 14       -9.135323E-01      .000000E+00    -1.894943E-03
 15        1.268074E+00      .000000E+00    -4.252725E-02
 16       -3.300676E+00      .000000E+00     8.155595E-03
 17        1.505586E-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       1.35389E+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)     = 3.4269261E-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
```

INFORMATION ONLY

```
Ogroup        res abs        res fiss        res scat
  12      -3.936354E-01    .000000E+00   -6.141107E-02
  13      -3.243814E-01    .000000E+00   -2.535959E-02
  14       3.137239E-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
Oexcess resonance integrals
0                  resolved
Oabsorption       2.13626E+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
Oresonance data for this nuclide
Omass number (a)          =   153.592          temperature(kelvin)       =   975.000
Opotential scatter sigma  =     5.277          lumped nuclear density    = 2.1827047E-09
Ospin factor (g)          = 12700.100          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)= 7.8233072E+07
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 8.7283712E+07
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
  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       6.295298E-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
Oexcess resonance integrals
0                  resolved
Oabsorption       3.97032E+04
 fission           .00000E+00
- elapsed time     .18 min.
Ou-234 1043 sigo=5+4 newdacs p-3 293k f-1/e-m(1.+5)                         92234     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   232.029          temperature(kelvin)       =   975.000
Opotential scatter sigma  =    10.021          lumped nuclear density    = 4.4680287E-06
Ospin factor (g)          = 6948.450           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)= 3.8218129E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.985          sigma(per absorber atom)= 4.2626461E+04
```

INFORMATION ONLY

INFORMATION ONLY

```
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      -2.13594E-02     .000000E+00    -6.23042E-02
  12      -1.74236?E-01     .000000E+00    -7.25540E-02
  13       7.76088E-04     .000000E+00    -6.47277?E-04
  14      -1.71284?E+01     .000000E+00    -2.80524?E+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)= 4.2404468E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.049             sigma(per absorber atom)= 4.5507092E+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      -1.70083?E+00    -1.059861E+00    -3.98543?E-02
  13      -6.01643?E+00    -2.99695?E+00    -1.30338?E-01
  14      -4.83951?E+00    -2.97720?E+00    -3.30926?E-02
0excess resonance integrals
0                resolved
0absorption      2.13451E+02
 fission         1.27087E+02
- elapsed time    .22 min.
0u-236 1163 sigo=5+4 nwa=lacs p-3 293k 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  = 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)= 3.0982900E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  237.954             sigma(per absorber atom)= 3.4561225E+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      -2.65587?E-01     .000000E+00    -6.67273?E-01
  12      -1.43591?E+00     .000000E+00    -9.74992?E-01
  13      -6.72954?E-02     .000000E+00    -3.51190?E-03
  14      -4.63832?E+01     .000000E+00    -4.05790?E+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
```

```
Omass number (a)          =  236.006          temperature(kelvin)      =  975.000
Opotential scatter sigma  =   10.599          lumped nuclear density   = 2.1827353E-02
Ospin factor (g)          =  656.527          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)= 7.8231969E+00
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  235.041          sigma(per absorber atom)= 3.3684471E-01
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      -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
Oexcess resonance integrals
O                 resolved
Oabsorption       1.80464E+01
 fission          5.04065E-04
- elapsed time    .23 min.
O neptunium-237  endf/b-iv mat 1263          updated 10/13/89          93237    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =  235.012          temperature(kelvin)      =  975.000
Opotential scatter sigma  =   10.500          lumped nuclear density   = 3.7305724E-06
Ospin factor (g)          = 10100.800         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)= 4.5773051E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  238.051          sigma(per absorber atom)= 4.9097598E+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
 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
Oexcess resonance integrals
O                 resolved
Oabsorption       2.92956E+02
 fission          1.38539E-01
- elapsed time    .27 min.
Opu-238 1050 sigo=5+4 newxlacs p-3 298k f-1/e-m(1.+5)                      94238    temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =  236.167          temperature(kelvin)      =  975.000
Opotential scatter sigma  =   10.890          lumped nuclear density   = 5.3452993E-07
Ospin factor (g)          = 13130.600         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)= 3.1945766E+05
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  238.051          sigma(per absorber atom)= 3.4266022E+05
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
```

INFORMATION ONLY

```
  11      -3.282632E-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   -6.996343E-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          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    = 1.0774087E-04
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)= 1.5849110E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.7000249E+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   -1.103918E+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          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    = 2.0973024E-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)= 8.1418721E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 8.7332256E+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   -3.095440E-04   -2.286355E-02
  11      -1.592344E-01   -9.211631E-04   -2.116978E-01
  12      -2.199039E+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    3.839495E+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
```

INFORMATION ONLY

```
0absorption      4.49037E+03
 fission         1.86623E+00
- elapsed time    .30 min.
0 plutonium-241  endf/b-iv mat 1266          updated 10/13/89          94241     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   = 1.1380800E-05
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)= 1.5004189E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.6098961E+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   -1.796299E-03
  15       1.786078E-02    1.600555E-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          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   = 1.2795216E-06
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)= 1.3345588E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.4314892E+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      -3.405954E-03    .000000E+00   -9.323526E-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   -2.064759E+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=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   = 3.4056694E-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.
```

INFORMATION ONLY

```
Omass of moderator-1    =    15.995              sigma(per absorber atom)= 5.0139828E+05
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   238.051              sigma(per absorber atom)= 5.3781538E+05
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
  13      4.867330E-01    1.209541E-02    4.627123E-03
  14     -4.587215E-01   -1.130258E-02   -5.073899E-03
Oexcess resonance integrals
0                  resolved
Oabsorption       1.93433E+02
 fission          1.07581E+00
- elapsed time    .32 min.
Oam-243 1057 218 gp wt f-1/e-m 090376 p3 295k                          95243     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   240.940          temperature(kelvin)      =   975.000
Opotential scatter sigma  =     9.511          lumped nuclear density   = 1.1812765E-07
Ospin factor (g)          = 82052.602          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)= 1.4455521E+06
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   238.051              sigma(per absorber atom)= 1.5505443E+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
  13     -7.920427E-03    .000000E+00    4.008657E-04
  14      1.597974E-02    .000000E+00    1.415215E-04
Oexcess resonance integrals
0                  resolved
Oabsorption       1.60142E+02
 fission          .00000E+00
- elapsed time    .32 min.
O curium-244     endf/b-iv mat 1162          updated 10/13/89          96244     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   242.133          temperature(kelvin)      =   975.000
Opotential scatter sigma  =    10.320          lumped nuclear density   = 1.1299950E-08
Ospin factor (g)          =  5251.150          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)= 1.5111569E+07
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   238.051              sigma(per absorber atom)= 1.6209140E+07
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
  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
Oexcess resonance integrals
0                  resolved
Oabsorption       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
```

INFORMATION ONLY

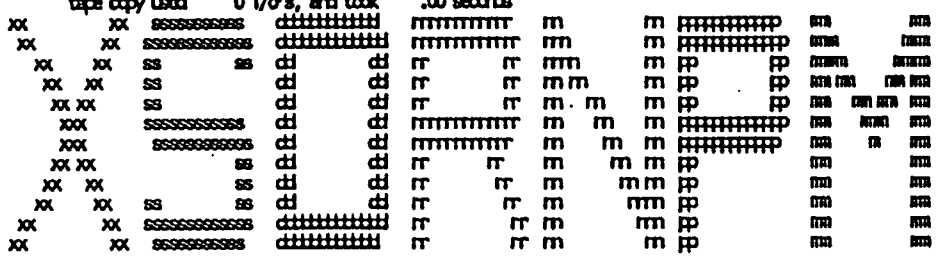
the title of the parent case is as follows
scale 4.2 - 27 group neutron burnup library
based on endf-b version 4 data with endf-b version 5 fission products
compiled for nrc 1/27/89

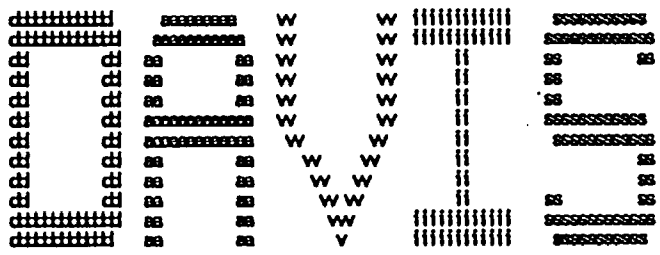
tape id	4321	number of nuclides	65
number of neutron groups	27	number of gamma groups	0
first thermal group	15	logical unit	4

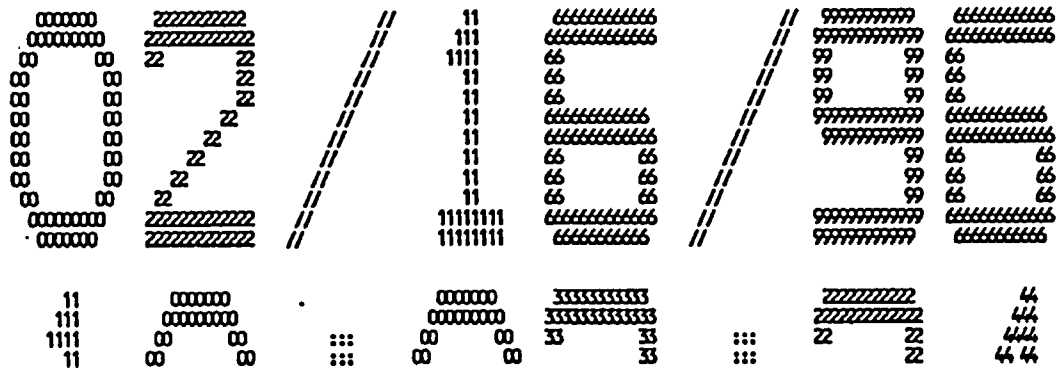
table of contents

1/v cross sections normalized to 1.0 at 0.0253 ev			id	999
hydrogen	endf/b-iv mat 1269/thrml002	updated 10/13/89	id	1001
b-10 1273 218grp 042395 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	40502
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

INFORMATION ONLY

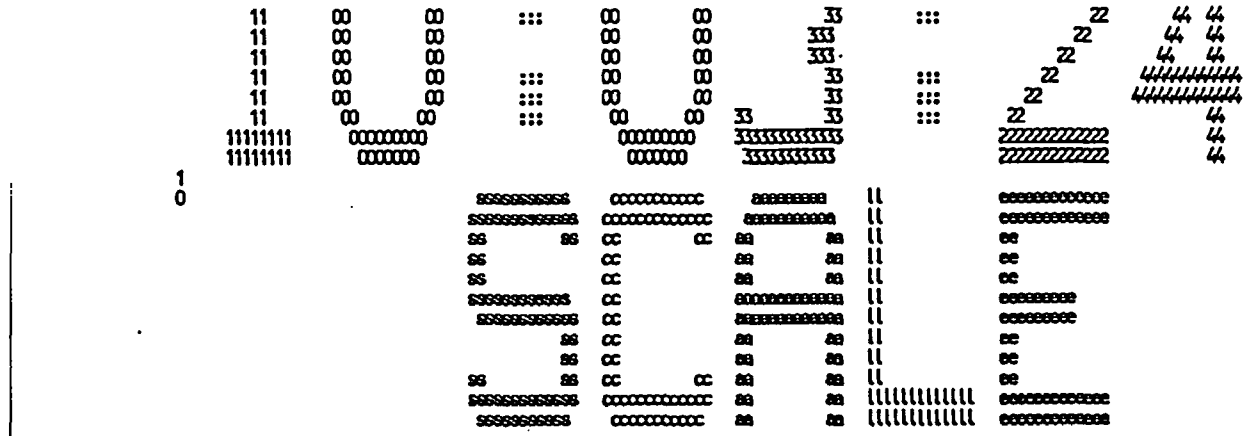


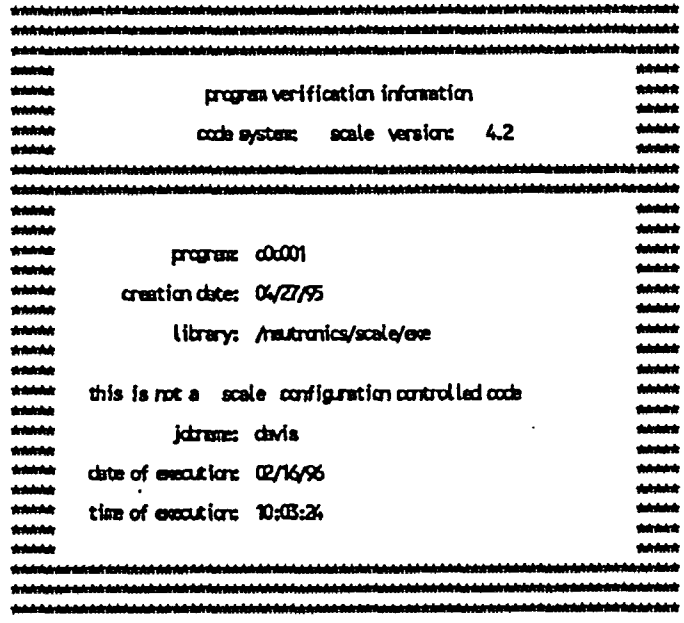




```
u-234 1043 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                    id    92234
 uranium-235    endf/b-iv mat 1261          updated 10/13/89           id    92235
u-236 1163 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                    id    92236
 uranium-238    endf/b-iv mat 1262          updated 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 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  sssssssssss  ddddddddddd  rrrrrrrrrrr  rm        rm  pppppppppp  mm        mm
  xx       xx  sssssssssssss  ddddddddddd  rrrrrrrrrrr  rrm       rm  pppppppppp  mmm       mmm
   xx     xx   ss        ss  dd        dd  rr        rr  rrm       rm  pp       pp  mmmm     mmmm
    xx   xx    ss            dd        dd  rr        rr  rm rm     rm  pp       pp  mm mm   mm mm
     xx xx     ss            dd        dd  rr        rr  rm  rm    rm  pp       pp  mm  mm mm  mm
      xxx      sssssssssss   dd        dd  rrrrrrrrrrr  rm   rm   rm  pppppppppp  mm   mmm   mm
      xxx       sssssssssss  dd        dd  rrrrrrrrrrr  rm    rm  rm  pppppppppp  mm    m    mm
     xx xx              ss  dd        dd  rr       rr  rm     rm rm  pp          mm         mm
    xx   xx             ss  dd        dd  rr        rr  rm      rm rm  pp          mm         mm
   xx     xx   ss        ss  dd        dd  rr        rr  rm       rrm  pp          mm         mm
  xx       xx  sssssssssssss  ddddddddddd  rr        rr  rm        rm  pp          mm         mm
 xx        xx  sssssssssss   ddddddddddd  rr        rr  rm        rm  pp          mm         mm
0

 ddddddddddd    aaaaaaaaa   w        w  iiiiiiiiiiii   sssssssssss
 ddddddddddd   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
 ddddddddddd   aa        aa       ww     iiiiiiiiiiii   sssssssssssss
 ddddddddddd   aa        aa        v     iiiiiiiiiiii   sssssssssss
0

   0000000     2222222222          //      11      666666666666          //  9999999999   666666666666
  000000000    2222222222         //      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
 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
   000000000  2222222222   //           11111111  666666666666   //        999999999999  666666666666
    0000000   2222222222  //            11111111   66666666666  //          999999999999   66666666666
0

     11        0000000                  0000000   33333333333                2222222222        44
    111       000000000                000000000  333333333333               2222222222       444
   1111      00       00      :::     00       00  33        33     :::     22        22     4444
     11      00       00      :::     00       00            33     :::                22    44 44
```

INFORMATION ONLY





1
0 880 d, sac2h: babcock wilcox 15x15, 3.00wt%, 20gd/htu burn high temp
-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, 3.00w%, 20g-d/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 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 ugtd)             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
 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
 iqm  volumetric sources (0/n=no/yes)    0      idfm 0/1 = none/density factors 38*    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
 idb1 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      rlnd band rebalm parameter             0
 jkkl 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 ssx order         4
 ipp  -2/-1/0/n=gated 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
 pc   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      epl  ev change eps for search   1.00000E-05
 bf   buckling factor=1.420892 1.42089E+00      xnpm new param mod for search  7.50000E-01
     this case will require      2535 locations for mixing
     this case has been allocated 20000 locations
1                    880 d, sas2h: babcock wilcox 15x15, 3.00w%, 20g-d/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	1.66579E-05
12	40094	1	40093	1.24625E-05
13	40095	1	40094	1.95879E-05
14	40802	1	40095	1.99661E-05
15	41094	1	41094	9.70965E-12
16	42095	1	43099	1.91608E-05
17	43099	1	45103	1.05084E-05
18	44101	1	45105	2.23564E-08
19	44106	1	44101	1.73887E-05
20	45103	1	44106	2.62773E-05
21	45105	1	46105	6.86049E-06
22	46105	1	46108	1.92544E-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	3.30814E-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	3.71188E-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	1.29914E-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	4.25154E-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

INFORMATION ONLY

INFORMATION ONLY

```
   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 -6.93147E-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 1.50030E+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 1.76098E+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     matl no.    reaction     weights   directions   refl direc   wt x cos
    1      1          3                                  0        -2.79004E-01    3          0
    2      1          3                                5.06143E-02 -1.97286E-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   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
```

INFORMATION ONLY

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	-6.16916E-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	6.26863E-01	-1.98456E-01	-4.86636E-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	5.00703E-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	4.17234E-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	6.24438E-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	2.59102E-02	4.33405E-02	1	1.62798E-01	9.44518E-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	4.55169E-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	4.99387E-01	3	3.06323E+00	7.82768E-02	1.00000E+00		
15	5.12445E-01	5.24935E-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	5.70100E-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	7.48593E-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	9.89114E-02	1.00000E+00		
24	7.99141E-01	8.06654E-01	4	5.02115E+00	7.51357E-02	1.00000E+00		

INFORMATION ONLY

25 8.13968E-01 5.11431E+00
- elapsed time .00 min.

outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	124	-4.56957E-06	1.08027E+00	-3.30817E-02	1.00000E+00	-1.13682E-02	.00000E+00	.0000
2	190	1.53568E-05	1.08327E+00	-8.04118E-04	-3.40286E-03	-1.82550E-03	.00000E+00	.0000
3	243	-1.66574E-05	1.08412E+00	-1.36843E-04	-5.07636E-04	-4.35670E-04	.00000E+00	.0000
4	282	1.94148E-05	1.08385E+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	7.38285E-08	24	1.00000E+00	1
2	1	1	8.32965E-08	24	1.00000E+00	1
3	1	1	7.61077E-08	24	1.00000E+00	1
4	1	1	7.19577E-08	24	1.00000E+00	1
5	1	1	6.73921E-08	24	1.00000E+00	1
6	1	1	4.05286E-08	24	1.00000E+00	1
7	1	1	2.43421E-08	24	1.00000E+00	1
8	1	1	5.59101E-09	24	1.00000E+00	1
9	1	2	5.01341E-09	24	1.00000E+00	1
10	1	2	4.61203E-09	24	1.00000E+00	1
11	1	24	5.02188E-09	24	1.00000E+00	1
12	1	24	1.19703E-08	24	1.00000E+00	1
13	1	24	1.49805E-08	24	1.00000E+00	1
14	1	24	1.43680E-08	24	1.00000E+00	1
15	1	19	2.97082E-05	24	9.99879E-01	1
16	1	19	3.59392E-05	24	9.99880E-01	1
17	1	20	5.24040E-05	24	9.99896E-01	1
18	1	20	7.00924E-05	24	9.99904E-01	1
19	1	20	5.16881E-05	24	9.99885E-01	1
20	1	19	3.65304E-05	24	9.99851E-01	1
21	1	19	7.03520E-05	24	9.99868E-01	1
22	1	19	3.63693E-05	24	9.99913E-01	1
23	1	24	7.99269E-06	24	1.00000E+00	1
24	1	24	3.68089E-05	24	1.00002E+00	1
25	1	24	3.99912E-05	24	1.00002E+00	1
26	1	21	4.11259E-05	24	9.99979E-01	2
27	1	24	2.27592E-05	19	1.00001E+00	2

5 309 -1.45963E-05 1.08425E+00 -7.58119E-06 -2.82615E-05 -2.13481E-05 .00000E+00 .0167
final monitor
lambda 1.08409E+00 production/absorption 1.08409E+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-05
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	1.14245E-01	1.74155E-01	7.17848E-01	1.31104E-01	1.89916E-01
5	1	2.34061E-01	2.93567E-01	1.47065E+00	2.21259E-01	3.28455E-01
6	1	3.53873E-01	3.80612E-01	2.22345E+00	1.27850E-01	1.94941E-01
7	1	4.07351E-01	4.24781E-01	2.55946E+00	9.30425E-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	4.68814E-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	2.65266E-02	.00000E+00
14	3	4.87528E-01	4.99380E-01	3.06323E+00	7.82768E-02	.00000E+00
15	3	5.12345E-01	5.24003E-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

INFORMATION ONLY

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	7.63895E-01	4.70854E+00	1.46875E-01	.00000E+00
23	4	7.79193E-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/o, 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	2.90695E+00	2.08175E+00
2	1.80908E-01	1.33908E+00	1.68694E+00	1.04407E+00	1.57788E+00	3.03296E+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	1.04029E+00	1.57188E+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	1.74081E-01	1.26990E+00	1.60016E+00	9.92581E-01	1.49780E+00	2.87924E+00	2.81652E+00	2.06650E+00
16	1.73757E-01	1.26534E+00	1.59513E+00	9.89090E-01	1.49208E+00	2.86770E+00	2.80961E+00	2.06578E+00
17	1.73596E-01	1.26333E+00	1.59201E+00	9.86778E-01	1.48810E+00	2.85975E+00	2.80495E+00	2.06584E+00
18	1.73411E-01	1.26089E+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	1.25362E+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	1.46526E+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	1.46597E+00	2.81627E+00	2.77974E+00	2.06553E+00
24	1.72820E-01	1.25245E+00	1.57554E+00	9.74378E-01	1.46757E+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	1.58851E+00	1.44832E+00	1.30795E+00	7.96783E-01	6.70388E-01	5.81440E-01	3.67597E-01	2.01547E-01
2	1.58814E+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	1.44863E+00	1.30821E+00	7.97100E-01	6.70644E-01	5.82072E-01	3.67645E-01	2.01572E-01
4	1.58865E+00	1.44864E+00	1.31083E+00	8.00192E-01	6.73259E-01	5.86083E-01	3.68092E-01	2.01869E-01
5	1.59021E+00	1.45259E+00	1.31729E+00	8.07825E-01	6.79853E-01	5.96038E-01	3.69177E-01	2.02592E-01
6	1.59307E+00	1.45582E+00	1.32634E+00	8.16225E-01	6.87061E-01	6.07065E-01	3.70333E-01	2.03389E-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	7.00863E-01	6.28377E-01	3.72457E-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	3.73084E-01	2.05298E-01
15	1.60555E+00	1.46503E+00	1.34453E+00	8.40347E-01	7.07842E-01	6.38978E-01	3.73591E-01	2.05683E-01
16	1.60408E+00	1.46606E+00	1.34674E+00	8.42853E-01	7.10022E-01	6.42285E-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	2.06078E-01
18	1.60479E+00	1.46788E+00	1.35064E+00	8.47215E-01	7.13719E-01	6.47940E-01	3.74387E-01	2.06308E-01
19	1.60533E+00	1.46903E+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	1.35648E+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	1.47178E+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	8.55980E-01	7.21008E-01	6.59263E-01	3.74892E-01	2.06944E-01
24	1.60628E+00	1.47118E+00	1.35770E+00	8.55146E-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	8.0242E-02	3.1353E-02	1.1749E-01	4.1606E-01	1.0345E-01	1.8589E-01	6.4705E-01	4.8109E-01
2	8.0211E-02	3.1356E-02	1.1744E-01	4.1595E-01	1.0257E-01	1.8578E-01	6.4664E-01	4.8076E-01
3	8.0275E-02	3.1615E-02	1.1756E-01	4.1616E-01	1.0258E-01	1.8643E-01	6.4767E-01	4.8168E-01
4	8.0566E-02	3.2784E-02	1.1822E-01	4.1793E-01	1.0369E-01	1.8968E-01	6.5340E-01	4.8670E-01
5	8.1567E-02	3.5821E-02	1.1983E-01	4.2040E-01	1.0647E-01	1.7788E-01	6.6762E-01	4.9203E-01
6	8.2586E-02	3.9436E-02	1.2158E-01	4.2369E-01	1.0959E-01	1.8722E-01	6.8537E-01	5.1309E-01
7	8.3357E-02	4.2403E-02	1.2286E-01	4.2614E-01	1.1194E-01	1.9434E-01	6.9512E-01	5.2508E-01
8	8.4044E-02	4.5369E-02	1.2408E-01	4.2853E-01	1.1414E-01	2.0128E-01	7.0598E-01	5.3317E-01
9	8.4114E-02	4.6662E-02	1.2462E-01	4.2952E-01	1.1529E-01	2.0487E-01	7.1140E-01	5.3820E-01
10	8.4710E-02	4.7152E-02	1.2472E-01	4.2964E-01	1.1547E-01	2.0538E-01	7.1246E-01	5.3855E-01
11	8.4562E-02	4.7426E-02	1.2488E-01	4.2991E-01	1.1572E-01	2.0610E-01	7.1370E-01	5.4013E-01
12	8.4611E-02	4.7804E-02	1.2494E-01	4.3008E-01	1.1588E-01	2.0566E-01	7.1449E-01	5.4072E-01
13	8.4729E-02	4.7965E-02	1.2512E-01	4.3042E-01	1.1620E-01	2.0751E-01	7.1612E-01	5.4214E-01
14	8.5079E-02	4.9074E-02	1.2570E-01	4.3159E-01	1.1725E-01	2.1045E-01	7.2118E-01	5.4650E-01
15	8.5597E-02	5.0568E-02	1.2651E-01	4.3309E-01	1.1865E-01	2.1442E-01	7.2805E-01	5.5233E-01
16	8.5870E-02	5.1506E-02	1.2705E-01	4.3407E-01	1.1953E-01	2.1696E-01	7.3239E-01	5.5592E-01
17	8.6083E-02	5.2210E-02	1.2742E-01	4.3476E-01	1.2022E-01	2.1892E-01	7.3561E-01	5.5934E-01
18	8.6411E-02	5.3189E-02	1.2794E-01	4.3568E-01	1.2119E-01	2.2172E-01	7.4127E-01	5.6449E-01
19	8.6772E-02	5.4315E-02	1.2853E-01	4.3676E-01	1.2232E-01	2.2497E-01	7.4761E-01	5.7073E-01
20	8.7232E-02	5.5743E-02	1.2928E-01	4.3814E-01	1.2376E-01	2.2916E-01	7.5634E-01	5.7923E-01
21	8.7597E-02	5.6763E-02	1.2982E-01	4.3908E-01	1.2480E-01	2.3219E-01	7.6239E-01	5.8584E-01
22	8.7587E-02	5.6864E-02	1.2988E-01	4.3911E-01	1.2494E-01	2.3252E-01	7.6332E-01	5.8710E-01
23	8.7529E-02	5.6615E-02	1.2970E-01	4.3897E-01	1.2466E-01	2.3180E-01	7.6204E-01	5.8605E-01
24	8.7398E-02	5.6303E-02	1.2952E-01	4.3863E-01	1.2434E-01	2.3088E-01	7.6034E-01	5.8455E-01

0 int.	grp. 25	grp. 26	grp. 27
1	2.0150E-01	1.2219E-01	1.6135E-02
2	2.0136E-01	1.2211E-01	1.6134E-02
3	2.0184E-01	1.2257E-01	1.6278E-02
4	2.0338E-01	1.2490E-01	1.6907E-02
5	2.0971E-01	1.3071E-01	1.8578E-02
6	2.1677E-01	1.3728E-01	2.0500E-02
7	2.2210E-01	1.4230E-01	2.2043E-02
8	2.2708E-01	1.4705E-01	2.3572E-02
9	2.2988E-01	1.4954E-01	2.4388E-02
10	2.3006E-01	1.4988E-01	2.4483E-02
11	2.3039E-01	1.5036E-01	2.4618E-02
12	2.3094E-01	1.5067E-01	2.4706E-02
13	2.3165E-01	1.5130E-01	2.4882E-02
14	2.3379E-01	1.5320E-01	2.5435E-02
15	2.3668E-01	1.5563E-01	2.6068E-02
16	2.3825E-01	1.5706E-01	2.6403E-02
17	2.3992E-01	1.5876E-01	2.6868E-02
18	2.4269E-01	1.6173E-01	2.7930E-02
19	2.4608E-01	1.6535E-01	2.9189E-02
20	2.5071E-01	1.7028E-01	3.0766E-02
21	2.5440E-01	1.7430E-01	3.2063E-02
22	2.5521E-01	1.7533E-01	3.2449E-02
23	2.5473E-01	1.7488E-01	3.2403E-02
24	2.5399E-01	1.7433E-01	3.2260E-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	.0000E+00	2.2994E-02	.0000E+00	1.2895E-02	1.0738E-02	3.2608E-03	1.1320E-02	9.9838E-01
2	.0000E+00	1.9999E-01	2.3799E-03	1.6786IE-01	6.6884E-02	1.3662E-02	1.1580E-01	1.0000E+00
3	.0000E+00	2.1587E-01	2.6468E-02	1.6147E-01	8.1423E-02	1.5528E-02	1.4538E-01	1.0000E+00
4	.0000E+00	1.2381E-01	3.9131E-02	1.0555E-01	6.7914E-02	7.3924E-03	8.7614E-02	1.0000E+00
5	.0000E+00	1.6614E-01	6.8167E-02	2.5785E-01	9.4759E-02	4.3942E-03	1.3516E-01	9.9998E-01
6	.0000E+00	1.7711E-01	1.3493E-01	6.5383E-01	5.4373E-02	6.8955IE-03	2.5077E-01	1.0003E+00
7	.0000E+00	8.7526E-02	9.8513E-02	7.4461E-01	3.6335E-02	7.4047E-03	1.4258E-01	1.0001E+00

8	.00000E+00	1.34833E-02	4.25831E-02	6.30533E-01	2.15122E-02	1.37327E-02	2.08185E-02	1.00003E+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	1.07219E-02	4.24562E-01	8.16514E-03	5.78533E-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	1.42863E-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	5.84705E-03	-6.39505E-03	1.00342E+00
17	.00000E+00	1.35078E-10	7.57841E-03	1.41545E-02	7.21125E-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	2.82585E-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	2.22538E-10	9.52579E-03	9.95866E-02	9.40806E-03	2.61904E-02	-2.61542E-02	1.00023E+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	3.61002E-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	1.38670E-02	5.99759E-02	-5.56695E-02	1.00053E+00
26	.00000E+00	2.01696E-12	9.02276E-03	2.92122E-02	6.23720E-03	5.38592E-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	6.19888E-01	5.40388E+00	6.19888E-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*adj**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	9.08972E-01
3	1.62188E+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	6.24659E-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	1.98057E+00
8	2.06975E+00	2.08185E-02	2.08166E+00	.00000E+00	.00000E+00	1.42990E-03	.00000E+00	1.42968E+00
9	1.60853E+00	-2.07976E-02	1.58851E+00	.00000E+00	.00000E+00	1.88842E-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	6.99728E-01	-5.66145E-02	6.70649E-01	.00000E+00	.00000E+00	1.29779E-02	.00000E+00	4.70180E-01
14	6.26886E-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	1.88092E-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	1.05259E-03	.00000E+00	2.58629E-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	2.90898E-01
21	1.15284E-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	4.34857E-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	-5.56695E-02	2.00695E-01	.00000E+00	.00000E+00	3.80092E-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

INFORMATION ONLY

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	-7.63685E-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	7.35763E-08	9.99998E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r&h 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	3.18575E-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	2.83401E+00	1.42258E-01	2.85777E+00	1.42258E-01	.00000E+00	.00000E+00	.00000E+00	8.99758E-02
8	2.06903E+00	2.08188E-02	2.06979E+00	2.08188E-02	.00000E+00	.00000E+00	.00000E+00	6.56730E-02
9	1.60108E+00	-2.09975E-02	1.60183E+00	-2.09976E-02	.00000E+00	.00000E+00	.00000E+00	5.07985E-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	-5.52916E-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	6.26686E-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	6.50109E-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	1.24979E-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	6.52916E-03
23	7.14671E-01	-1.24958E-01	7.11347E-01	-1.24958E-01	.00000E+00	.00000E+00	.00000E+00	2.26258E-02
24	5.40872E-01	-1.10830E-01	5.37977E-01	-1.10830E-01	.00000E+00	.00000E+00	.00000E+00	1.71205E-02
25	2.31021E-01	-5.55659E-02	2.29571E-01	-5.55659E-02	.00000E+00	.00000E+00	.00000E+00	7.30950E-03
26	1.50774E-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	2.43625E-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-05	2.89697E-03	1.48455E-05	-2.80862E-03	1.00001E+00
2	.00000E+00	.00000E+00	5.05989E-04	2.61268E-02	1.87473E-02	5.19052E-05	-1.85955E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.67471E-03	5.02989E-02	1.57040E-02	1.37571E-04	-1.35668E-02	9.99993E-01
4	.00000E+00	.00000E+00	5.16500E-03	4.21770E-02	5.46101E-03	1.03540E-04	-3.99187E-04	9.99996E-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	2.35000E-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	8.77693E-04	1.11034E-03	5.68445E-03	9.99925E-01

INFORMATION ONLY

INFORMATION ONLY

10	.00000E+00	.00000E+00	8.78875E-04	8.57028E-02	8.50321E-04	8.36940E-04	-8.08248E-04	9.99995E-01
11	.00000E+00	.00000E+00	8.50382E-04	7.72166E-02	8.72047E-04	1.33983E-03	-1.36139E-03	9.99997E-01
12	.00000E+00	.00000E+00	8.72053E-04	4.68747E-02	8.72088E-04	4.17339E-05	-4.18350E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.72090E-04	3.94980E-02	8.05731E-04	5.99695E-05	6.38142E-06	1.00000E+00
14	.00000E+00	.00000E+00	8.05732E-04	3.56886E-02	6.72555E-04	9.50579E-05	3.81470E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.16055E-04	2.04992E-02	8.38667E-04	8.23225E-05	-2.04809E-04	9.99956E-01
16	.00000E+00	.00000E+00	9.35383E-04	1.08036E-02	9.39584E-04	5.09090E-05	-5.12346E-05	9.99988E-01
17	.00000E+00	.00000E+00	9.90854E-04	3.91159E-03	9.62848E-04	2.36308E-05	4.47780E-06	9.99989E-01
18	.00000E+00	.00000E+00	1.00839E-03	2.15224E-03	6.94950E-04	1.47384E-05	2.98787E-04	9.99997E-01
19	.00000E+00	.00000E+00	7.46270E-04	6.27850E-03	9.26395E-04	4.05785E-05	-2.20582E-04	9.99985E-01
20	.00000E+00	.00000E+00	1.10380E-03	2.36919E-02	1.00723E-03	1.76151E-04	-7.88798E-05	9.99774E-01
21	.00000E+00	.00000E+00	1.23914E-03	5.43926E-03	1.29324E-03	5.99240E-05	-1.19807E-04	9.99991E-01
22	.00000E+00	.00000E+00	1.63948E-03	1.07086E-02	1.43119E-03	1.24773E-04	8.37594E-05	9.99997E-01
23	.00000E+00	.00000E+00	2.13846E-03	3.85675E-02	2.83150E-03	5.84069E-04	-1.27713E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.50208E-03	2.76051E-02	3.78858E-03	6.43060E-04	-9.29751E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.42011E-03	1.06857E-02	2.75055E-03	3.63448E-04	3.05137E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.43137E-03	7.79184E-03	1.02971E-03	3.40235E-04	6.12065E-05	1.00000E+00
27	.00000E+00	.00000E+00	2.98582E-04	1.46871E-03	7.56732E-07	1.07423E-04	1.90880E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.36576E-02	1.35801E+00	8.36576E-02	7.51517E-03	-7.40926E-03	9.99986E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rfln rate	flss rate	flux*db**2	total flux
1	1.73579E-01	8.51234E-03	1.75337E-01	1.1320E-02	1.0850E-04	.00000E+00	.00000E+00	3.77851E-02
2	1.26455E+00	9.75369E-02	1.28222E+00	1.15830E-01	.00000E+00	.00000E+00	.00000E+00	2.75709E-01
3	1.59390E+00	1.32023E-01	1.61703E+00	1.45388E-01	.00000E+00	.00000E+00	.00000E+00	3.47698E-01
4	9.89999E-01	8.72422E-02	1.00262E+00	8.76414E-02	.00000E+00	.00000E+00	.00000E+00	2.15625E-01
5	1.49053E+00	1.38966E-01	1.51357E+00	1.33160E-01	.00000E+00	.00000E+00	.00000E+00	3.25472E-01
6	2.86455E+00	2.65802E-01	2.91015E+00	2.50774E-01	.00000E+00	.00000E+00	.00000E+00	6.25698E-01
7	2.80777E+00	1.53110E-01	2.85401E+00	1.42298E-01	.00000E+00	.00000E+00	.00000E+00	6.11338E-01
8	2.05589E+00	1.50492E-02	2.05903E+00	2.08185E-02	.00000E+00	.00000E+00	.00000E+00	4.47995E-01
9	1.60418E+00	-1.51131E-02	1.60108E+00	-2.07975E-02	.00000E+00	.00000E+00	.00000E+00	3.47998E-01
10	1.46654E+00	-2.61250E-02	1.46208E+00	-2.53168E-02	.00000E+00	.00000E+00	.00000E+00	3.17344E-01
11	1.34752E+00	-5.66532E-02	1.33816E+00	-5.52915E-02	.00000E+00	.00000E+00	.00000E+00	2.91044E-01
12	8.43501E-01	-6.53775E-02	8.32656E-01	-6.53356E-02	.00000E+00	.00000E+00	.00000E+00	1.81716E-01
13	7.10885E-01	-5.66082E-02	7.01323E-01	-5.66145E-02	.00000E+00	.00000E+00	.00000E+00	1.53052E-01
14	6.43118E-01	-8.59004E-02	6.29104E-01	-8.59886E-02	.00000E+00	.00000E+00	.00000E+00	1.37945E-01
15	3.74092E-01	-8.88269E-03	3.72566E-01	-8.69178E-03	.00000E+00	.00000E+00	.00000E+00	8.09083E-02
16	2.06013E-01	-6.44628E-03	2.04960E-01	-6.39508E-03	.00000E+00	.00000E+00	.00000E+00	4.45361E-02
17	8.59563E-02	-8.17719E-03	8.46313E-02	-8.18167E-03	.00000E+00	.00000E+00	.00000E+00	1.84920E-02
18	5.17481E-02	-2.47997E-02	4.78618E-02	-2.50986E-02	.00000E+00	.00000E+00	.00000E+00	1.08013E-02
19	1.27194E-01	-1.37643E-02	1.24979E-01	-1.36437E-02	.00000E+00	.00000E+00	.00000E+00	2.73345E-02
20	4.34379E-01	-2.62531E-02	4.30180E-01	-2.61542E-02	.00000E+00	.00000E+00	.00000E+00	9.37004E-02
21	1.19775E-01	-2.43377E-02	1.15833E-01	-2.42179E-02	.00000E+00	.00000E+00	.00000E+00	2.56637E-02
22	2.17614E-01	-6.94237E-02	2.06894E-01	-6.95074E-02	.00000E+00	.00000E+00	.00000E+00	4.60538E-02
23	7.33468E-01	-1.26235E-01	7.14671E-01	-1.24958E-01	.00000E+00	.00000E+00	.00000E+00	1.57063E-01
24	5.56812E-01	-1.11760E-01	5.40872E-01	-1.10830E-01	.00000E+00	.00000E+00	.00000E+00	1.19084E-01
25	2.38642E-01	-5.52597E-02	2.31021E-01	-5.56657E-02	.00000E+00	.00000E+00	.00000E+00	5.09735E-02
26	1.57392E-01	-5.10579E-02	1.50749E-01	-5.10991E-02	.00000E+00	.00000E+00	.00000E+00	3.34673E-02
27	2.64306E-02	-1.40052E-02	2.47264E-02	-1.41956E-02	.00000E+00	.00000E+00	.00000E+00	5.57467E-03
28	2.31925E+01	5.20886E-02	2.32182E+01	5.94983E-02	1.0850E-04	.00000E+00	.00000E+00	5.02938E+00

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

0 grp.	fix source	flss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	6.10617E-03	8.08202E-03	4.30736E-04	-8.51234E-03	9.99951E-01
2	.00000E+00	.00000E+00	4.65731E-03	7.69188E-02	1.01092E-01	1.08315E-03	-9.75370E-02	9.99862E-01
3	.00000E+00	.00000E+00	4.79783E-02	6.91827E-02	1.80000E-01	5.43767E-06	-1.32023E-01	9.99977E-01
4	.00000E+00	.00000E+00	7.05502E-02	4.59342E-02	1.57791E-01	3.23592E-06	-8.72422E-02	9.99987E-01
5	.00000E+00	.00000E+00	1.30270E-01	1.48600E-01	2.69295E-01	3.77797E-06	-1.38966E-01	9.99930E-01
6	.00000E+00	.00000E+00	2.75423E-01	4.55374E-01	5.41215E-01	1.14791E-05	-2.65801E-01	9.99988E-01
7	.00000E+00	.00000E+00	5.53092E-01	7.95321E-01	7.06188E-01	2.53562E-05	-1.53111E-01	9.99288E-01
8	.00000E+00	.00000E+00	7.35700E-01	1.00127E+00	7.50768E-01	4.70281E-05	-1.50491E-02	9.99911E-01
9	.00000E+00	.00000E+00	7.41080E-01	9.16651E-01	7.25902E-01	9.59687E-05	1.51130E-02	9.99869E-01
10	.00000E+00	.00000E+00	7.22582E-01	8.66449E-01	6.96320E-01	2.11712E-04	2.61250E-02	9.99866E-01

INFORMATION ONLY

11	.00000E+00	.00000E+00	7.01225E-01	8.06847E-01	6.44155E-01	4.58187E-04	5.46533E-02	9.99340E-01
12	.00000E+00	.00000E+00	5.60698E-01	4.20470E-01	4.94739E-01	5.98275E-04	6.53774E-02	9.99379E-01
13	.00000E+00	.00000E+00	4.90687E-01	3.37795E-01	4.33197E-01	8.97254E-04	5.66081E-02	9.99369E-01
14	.00000E+00	.00000E+00	4.70437E-01	3.20692E-01	3.83091E-01	1.45136E-03	8.59003E-02	9.99389E-01
15	.00000E+00	.00000E+00	2.50836E-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	1.58689E-01	8.71922E-04	6.42820E-03	1.00008E+00
17	.00000E+00	.00000E+00	8.52575E-02	1.47325E-02	7.66513E-02	4.11503E-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	2.98557E-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	6.94052E-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	1.00008E+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	2.56854E-01	6.42634E-03	5.10285E-02	1.00008E+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	r0n 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	-7.85005E-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	1.11659E+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	2.06592E+00	2.50965E-08	2.06588E+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	8.43601E-01	-6.53775E-02	.00000E+00	.00000E+00	.00000E+00	9.77399E-01
13	7.19884E-01	-1.49502E-08	7.10666E-01	-5.66082E-02	.00000E+00	.00000E+00	.00000E+00	8.25377E-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	-8.21988E-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	6.38785E-02
19	1.29439E-01	-1.19514E-05	1.27194E-01	-1.37643E-02	.00000E+00	.00000E+00	.00000E+00	1.48038E-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-05	7.33468E-01	-1.26235E-01	.00000E+00	.00000E+00	.00000E+00	8.66199E-01
24	5.83718E-01	-3.49994E-05	5.56812E-01	-1.11760E-01	.00000E+00	.00000E+00	.00000E+00	6.64155E-01
25	2.53578E-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	1.57592E-01	-5.10579E-02	.00000E+00	.00000E+00	.00000E+00	1.95874E-01
27	3.21713E-02	-1.21619E-07	2.64804E-02	-1.40052E-02	.00000E+00	.00000E+00	.00000E+00	3.55586E-02
28	2.32310E-01	-1.55436E-04	2.31926E-01	5.20886E-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	1.93959E-01	7.51923E-03	2.70906E-01	1.86727E-01	1.47973E-02	-7.85005E-08	1.00008E+00
3	.00000E+00	2.15874E-01	7.71209E-02	2.80897E-01	2.77327E-01	1.56716E-02	4.51767E-08	9.99886E-01
4	.00000E+00	1.23819E-01	1.14847E-01	1.98654E-01	2.31166E-01	7.49917E-03	4.47741E-08	1.00000E+00
5	.00000E+00	1.66144E-01	2.09563E-01	4.90174E-01	3.69161E-01	4.55042E-03	3.21072E-08	9.99889E-01
6	.00000E+00	1.77110E-01	4.28926E-01	1.34308E+00	5.98800E-01	7.22711E-03	1.48563E-07	1.00001E+00
7	.00000E+00	8.75260E-02	6.63925E-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	9.99700E-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

INFORMATION ONLY

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	5.56768E-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	8.62852E-02	-1.79083E-08	9.99969E-01
15	.00000E+00	1.42863E-09	2.98652E-01	2.33875E-01	2.49904E-01	8.58145E-03	-2.59454E-06	1.00036E+00
16	.00000E+00	4.19435E-10	1.75952E-01	1.06918E-01	1.69114E-01	6.76988E-03	-1.80713E-06	1.00038E+00
17	.00000E+00	1.35078E-10	9.38092E-02	3.27984E-02	8.48255E-02	8.96264E-03	-8.21982E-06	1.00029E+00
18	.00000E+00	9.67122E-11	8.32293E-02	1.98613E-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	1.14883E-01	1.19157E-02	-1.19514E-05	1.00004E+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	-1.51266E-05	1.00022E+00
22	.00000E+00	3.77574E-11	2.72300E-01	1.66982E-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	1.32033E-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	3.24787E-01	3.15000E-01	2.64114E-01	6.06235E-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	rtn 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	-7.86508E-08	1.33782E+00	.00000E+00	1.69692E-03	1.18841E-02	.00000E+00	2.66803E+00
3	1.57625E+00	4.51767E-08	1.68525E+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	2.07195E+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	2.78847E+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	1.42950E-03	.00000E+00	4.30715E+00
9	1.60625E+00	-3.31722E-08	1.58861E+00	.00000E+00	.00000E+00	1.88864E-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	1.35752E+00	3.41650E-08	1.30830E+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	6.70640E-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	8.05307E-03	.00000E+00	1.32513E+00
15	3.74697E-01	-2.59454E-06	3.67673E-01	.00000E+00	.00000E+00	1.88026E-03	.00000E+00	7.76300E-01
16	2.06820E-01	-1.80713E-06	2.01597E-01	.00000E+00	.00000E+00	1.32236E-03	.00000E+00	4.27481E-01
17	8.73500E-02	-8.21982E-06	8.02656E-02	.00000E+00	.00000E+00	1.51080E-03	.00000E+00	1.77497E-01
18	5.61431E-02	-6.76165E-06	5.14057E-02	.00000E+00	.00000E+00	1.05237E-03	.00000E+00	1.02050E-01
19	1.29439E-01	-1.19514E-05	1.17572E-01	.00000E+00	.00000E+00	2.39214E-03	.00000E+00	2.62807E-01
20	4.38295E-01	-3.56484E-05	4.16236E-01	.00000E+00	.00000E+00	1.49909E-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	4.40525E-01
23	7.59424E-01	-1.40479E-06	6.47548E-01	.00000E+00	.00000E+00	7.35685E-02	.00000E+00	1.51029E+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	3.80095E-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	5.55279E-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	4.66054E-03
2	3.80559E-03	3.89576E-02	4.88739E-02	2.94615E-02	4.47620E-02	8.43008E-02	4.78344E-02	6.99834E-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	2.65576E-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	1.98888E-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	5.80218E-03	7.98864E-03	1.73880E-02	2.08074E-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

INFORMATION ONLY

5	3.2514E-03	4.6260E-03	1.0064E-02	1.1748E-02	1.0195E-02	1.5416E-02	1.6337E-03	1.1703E-03

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.8125E-03	5.1115E-03	3.0694E-03	5.8653E-03	5.2949E-03	1.4957E-02	2.7994E-02	2.4359E-02
2	2.7501E-03	8.4365E-03	4.5624E-03	8.7907E-03	8.1402E-03	2.3364E-02	4.2007E-02	3.7258E-02
3	2.5413E-03	7.7519E-03	4.2420E-03	8.1395E-03	7.5419E-03	2.1582E-02	3.9021E-02	3.4578E-02
4	1.0201E-03	3.0594E-03	1.7335E-03	3.3419E-03	3.0296E-03	8.6409E-03	1.6019E-02	1.4165E-02
5	1.4670E-03	4.3087E-03	2.4729E-03	4.7557E-03	4.3266E-03	1.2295E-02	2.2638E-02	2.0045E-02

Ozone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.2156E-02	1.1025E-02	2.9263E-03	3.8538E-01
2	1.8679E-02	1.7178E-02	4.7721E-03	5.8994E-01
3	1.7220E-02	1.5868E-02	4.3823E-03	5.4370E-01
4	6.9861E-03	6.3373E-03	1.6062E-03	2.1880E-01
5	9.9400E-03	9.0456E-03	2.3802E-03	3.1338E-01

1 880 d, sas2h: babcock wilcox 15x15, 3.00w/o, 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	1.7883E-01	1.3174E+00	1.6598E+00	1.0277E+00	1.5521E+00	2.9827E+00	2.8765E+00	2.0766E+00
2	1.7555E-01	1.2842E+00	1.6199E+00	1.0092E+00	1.5154E+00	2.9134E+00	2.8358E+00	2.0694E+00
3	1.7434E-01	1.2721E+00	1.6043E+00	9.9494E-01	1.5017E+00	2.8857E+00	2.8080E+00	2.0671E+00
4	1.7286E-01	1.2534E+00	1.5773E+00	9.7583E-01	1.4699E+00	2.8241E+00	2.7841E+00	2.0652E+00
5	1.7508E-01	1.2770E+00	1.6080E+00	9.9543E-01	1.5011E+00	2.8855E+00	2.8193E+00	2.0693E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.5834E+00	1.4539E+00	1.3205E+00	8.1145E-01	6.8296E-01	6.0082E-01	3.6965E-01	2.0293E-01
2	1.6007E+00	1.4617E+00	1.3374E+00	8.3196E-01	7.0054E-01	6.2792E-01	3.7241E-01	2.0485E-01
3	1.6029E+00	1.4642E+00	1.3429E+00	8.3867E-01	7.0620E-01	6.3477E-01	3.7332E-01	2.0547E-01
4	1.6061E+00	1.4706E+00	1.3566E+00	8.5396E-01	7.1939E-01	6.5669E-01	3.7485E-01	2.0655E-01
5	1.6015E+00	1.4643E+00	1.3428E+00	8.3795E-01	7.0568E-01	6.3567E-01	3.7263E-01	2.0537E-01

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.2010E-02	3.7576E-02	1.2057E-01	4.2181E-01	1.0756E-01	1.8211E-01	6.7448E-01	5.0528E-01
2	8.4513E-02	4.7289E-02	1.2478E-01	4.2977E-01	1.1559E-01	2.0573E-01	7.1308E-01	5.3942E-01
3	8.5325E-02	4.9839E-02	1.2612E-01	4.3254E-01	1.1765E-01	2.1250E-01	7.2471E-01	5.4947E-01
4	8.7251E-02	5.5811E-02	1.2951E-01	4.3815E-01	1.2384E-01	2.2940E-01	7.5681E-01	5.8028E-01
5	8.5275E-02	4.9028E-02	1.2602E-01	4.3201E-01	1.1781E-01	2.1164E-01	7.2557E-01	5.5164E-01

Ozone	grp. 25	grp. 26	grp. 27
1	2.1298E-01	1.3660E-01	1.9486E-02
2	2.3092E-01	1.5012E-01	2.4650E-02
3	2.3520E-01	1.5443E-01	2.5722E-02
4	2.5139E-01	1.7113E-01	3.1068E-02
5	2.3663E-01	1.5668E-01	2.6885E-02

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

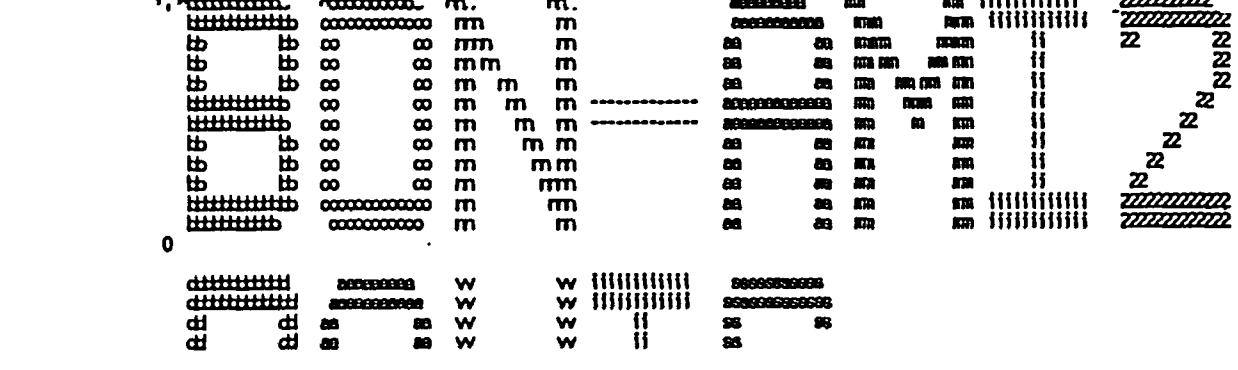
Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.0216E+00	1.0314E+00	1.0322E+00	1.0254E+00	1.0359E+00	1.0340E+00	1.0205E+00	1.0056E+00
2	1.0029E+00	1.0056E+00	1.0070E+00	1.0052E+00	1.0095E+00	1.0100E+00	1.0058E+00	1.0004E+00
3	9.9605E-01	9.9620E-01	9.9768E-01	9.9553E-01	1.0006E+00	1.0008E+00	1.0053E+00	9.9857E-01
4	9.8761E-01	9.8152E-01	9.8086E-01	9.8032E-01	9.7921E-01	9.7907E-01	9.8752E-01	9.9857E-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	9.9497E-01	9.9291E-01	9.8519E-01	9.6857E-01	9.6779E-01	9.4519E-01	9.9113E-01	9.8810E-01
2	9.9948E-01	9.9822E-01	9.9592E-01	9.9284E-01	9.9271E-01	9.8780E-01	9.9852E-01	9.9745E-01
3	1.0008E+00	9.9958E-01	1.0008E+00	1.0006E+00	1.0007E+00	1.0012E+00	1.0009E+00	1.0006E+00
4	1.0028E+00	1.0043E+00	1.0102E+00	1.0191E+00	1.0193E+00	1.0330E+00	1.0051E+00	1.0071E+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

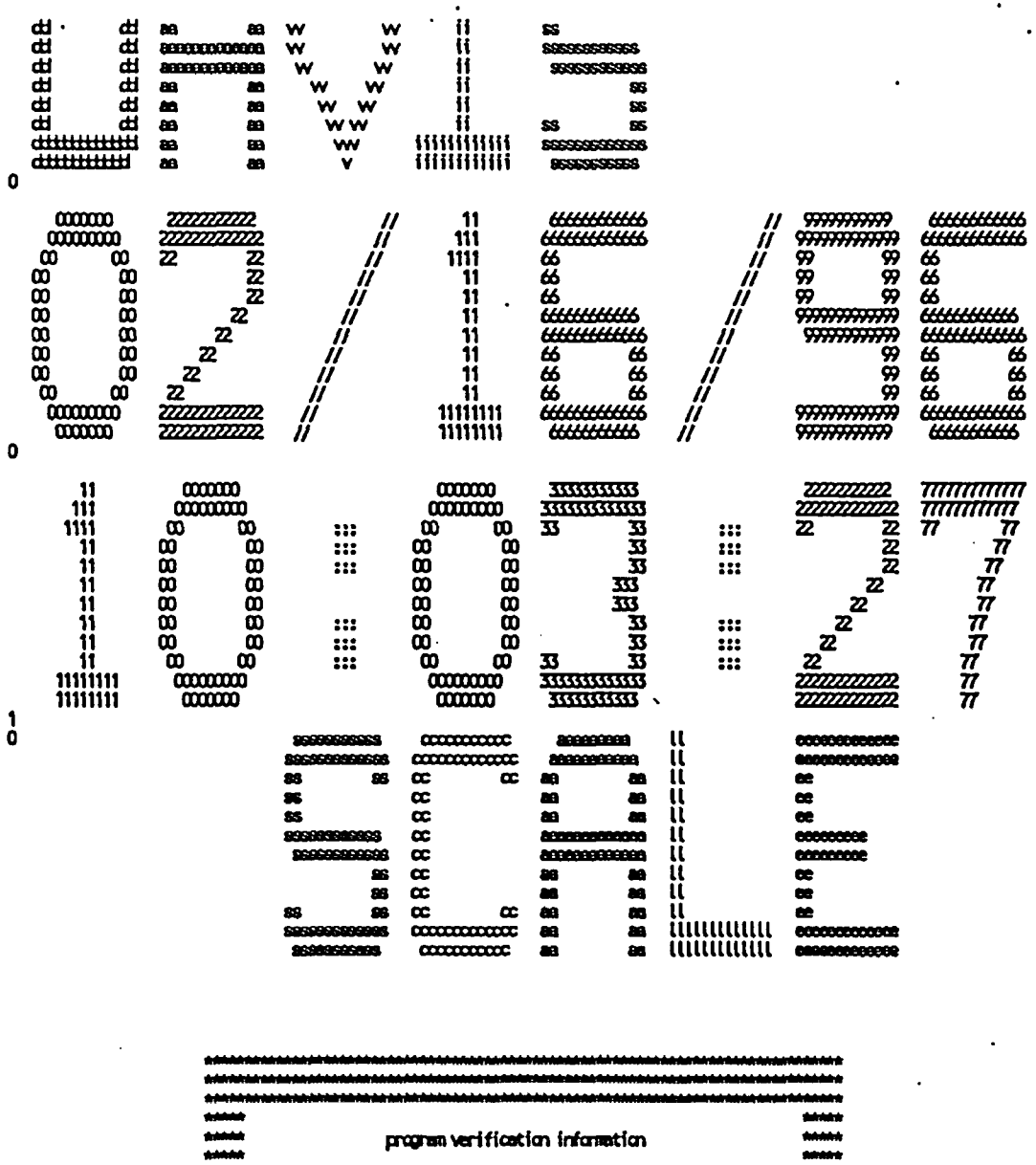
Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.6171E-01	7.6642E-01	9.5678E-01	9.7688E-01	9.1546E-01	8.6048E-01	9.2989E-01	9.1980E-01
2	9.9106E-01	9.6525E-01	9.9021E-01	9.9481E-01	9.8115E-01	9.7210E-01	9.8278E-01	9.7798E-01
3	1.0006E+00	1.0165E+00	1.0008E+00	1.0007E+00	1.0011E+00	1.0040E+00	9.9881E-01	9.9605E-01
4	1.0231E+00	1.1380E+00	1.0261E+00	1.0142E+00	1.0511E+00	1.0839E+00	1.0308E+00	1.0519E+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

INFORMATION ONLY

```
Ozone  grp. 25     grp. 26     grp. 27
    1 8.9940E-01 8.5307E-01 7.3309E-01
    2 9.7335E-01 9.5815E-01 9.2360E-01
    3 9.9394E-01 9.8559E-01 9.6768E-01
    4 1.0624E+00 1.0922E+00 1.1687E+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 2.4223E-03 2.4884E-02 3.1536E-02 1.9053E-02 2.9089E-02 5.5607E-02 3.1662E-02 4.6605E-03
    2 3.8059E-03 3.8957E-02 4.8873E-02 2.9461E-02 4.4763E-02 8.4300E-02 4.7834E-02 6.9983E-03
    3 3.0922E-03 3.3218E-02 4.3149E-02 2.7177E-02 4.2255E-02 8.0198E-02 4.5854E-02 5.5965E-03
    4 1.0574E-03 1.2223E-02 1.6539E-02 1.0928E-02 1.7396E-02 3.3278E-02 1.9033E-02 2.0108E-03
    5 1.7681E-03 1.9057E-02 2.4763E-02 1.5587E-02 2.4269E-02 4.6327E-02 2.6557E-02 3.3333E-03
Ozone  grp. 9     grp. 10    grp. 11    grp. 12    grp. 13    grp. 14    grp. 15    grp. 16
    1 4.6548E-03 5.6752E-03 1.2557E-02 1.4545E-02 1.2608E-02 1.5015E-02 1.9688E-03 1.4306E-03
    2 6.9915E-03 8.5104E-03 1.8586E-02 2.1963E-02 1.9031E-02 2.8887E-02 2.9215E-03 2.1495E-03
    3 5.6021E-03 7.9886E-03 1.7386E-02 2.0807E-02 1.7590E-02 2.6697E-02 2.7317E-03 1.9946E-03
    4 1.8583E-03 3.2517E-03 7.0616E-03 8.1552E-03 7.0990E-03 1.0753E-02 1.1904E-03 8.3049E-04
    5 3.2514E-03 4.6260E-03 1.0064E-02 1.1748E-02 1.0195E-02 1.5411E-02 1.6537E-03 1.1703E-03
Ozone  grp. 17    grp. 18    grp. 19    grp. 20    grp. 21    grp. 22    grp. 23    grp. 24
    1 1.8125E-03 5.1115E-03 3.0494E-03 5.8653E-03 5.2949E-03 1.4857E-02 2.7593E-02 2.4359E-02
    2 2.7501E-03 8.4365E-03 4.5524E-03 8.7909E-03 8.1402E-03 2.3363E-02 4.2007E-02 3.7258E-02
    3 2.5413E-03 7.7519E-03 4.2420E-03 8.1395E-03 7.5419E-03 2.1582E-02 3.9021E-02 3.4578E-02
    4 1.0201E-03 3.0594E-03 1.7356E-03 3.3419E-03 3.0256E-03 8.6409E-03 1.6019E-02 1.4165E-02
    5 1.4670E-03 4.3087E-03 2.4729E-03 4.7557E-03 4.3266E-03 1.2295E-02 2.2638E-02 2.0014E-02
Ozone  grp. 25    grp. 26    grp. 27
    1 1.2156E-02 1.1025E-02 2.9654E-03
    2 1.8579E-02 1.7178E-02 4.7724E-03
    3 1.7220E-02 1.5868E-02 4.3823E-03
    4 6.9861E-03 6.3373E-03 1.6062E-03
    5 9.9400E-03 9.0568E-03 2.3802E-03
Ozone      volume      vol. fraction

    1    6.8843E-01    3.3075E-01
    2    3.1735E-02    1.5246E-02
    3    2.1672E-01    1.0412E-01
    4    1.1454E+00    5.4987E-01
    5    2.0814E+00    1.0000E+00
 - elapsed time    .02 min.
Orequested parameters 8,skipcellut,skipshipdata
  pass= 6, exec halts after pass  8
```



```
 0
```



INFORMATION ONLY

```
*****                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:  10:03:27                                     *****
*****                                                                      *****
*****                                                                      *****
*****************************************************************************
*****************************************************************************
*****************************************************************************
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
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
```

INFORMATION ONLY

INFORMATION ONLY

6	1	92235	1.33192E-04	200006
7	1	92234	1.47781E-06	200007
8	1	92236	1.82592E-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	6.47870E-06	200018
19	1	40095	6.60385E-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	6.36851E-07	200027
28	1	47109	4.45100E-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-08	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-05	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	6.93689E-06	200064
65	1	94241	3.76423E-06	200065

INFORMATION ONLY

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	3.54852E+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

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

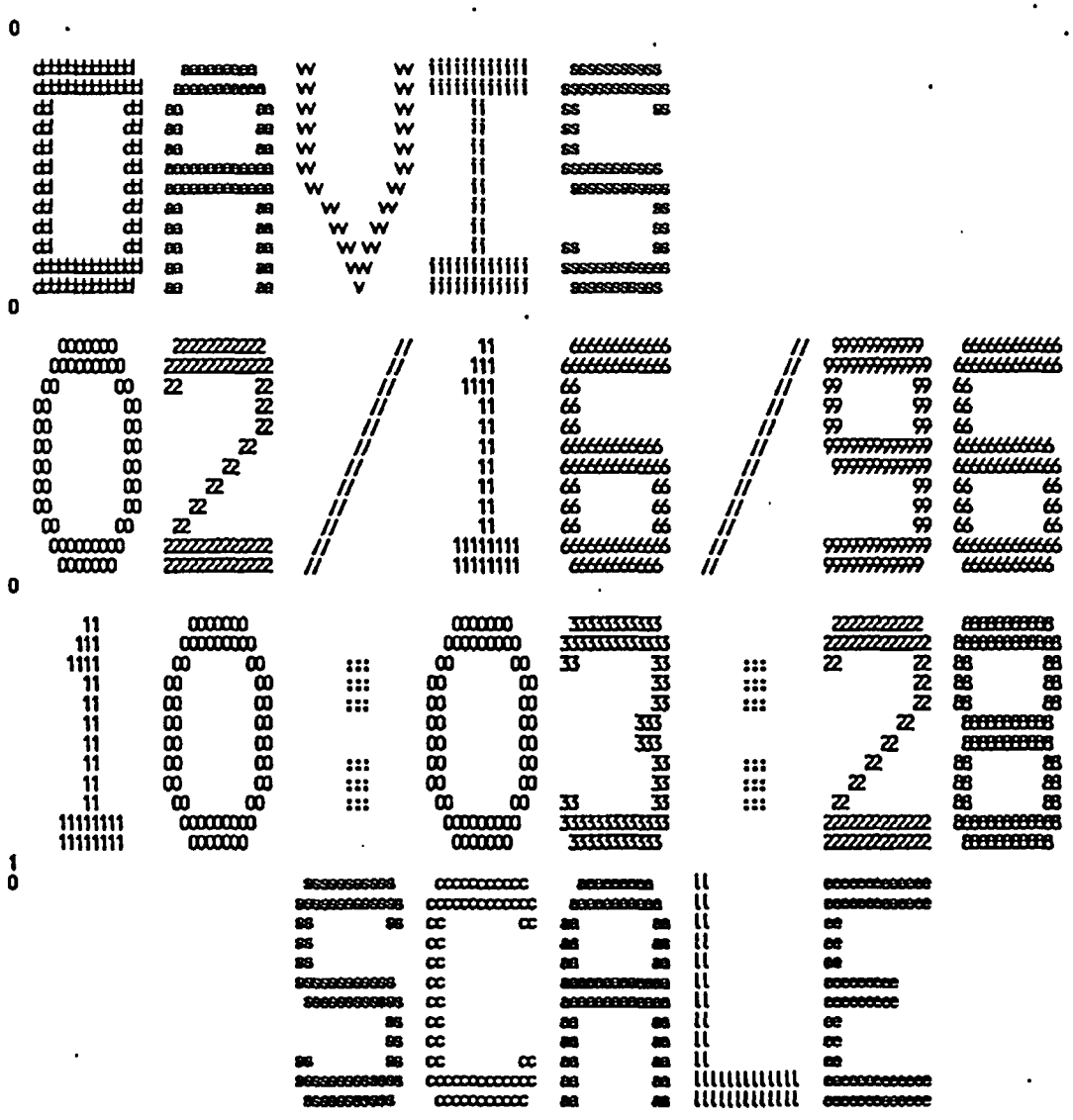
Copy	999	1/v cross sectio	from lag	12	to lag	1 bondarenko trigger 0
Copy	1001	hydrogen	from lag	12	to lag	18 bondarenko trigger 0
Copy	1001	hydrogen	from lag	18	to lag	1 bondarenko trigger 0
Copy	1001	hydrogen	from lag	18	to lag	1 bondarenko trigger 0
Copy	5010	b-10 1273 218gp	from lag	12	to lag	18 bondarenko trigger 0
Copy	5010	b-10 1273 218gp	from lag	18	to lag	1 bondarenko trigger 0
Copy	5010	b-10 1273 218gp	from lag	18	to lag	1 bondarenko trigger 0
Copy	5011	boron-11	from lag	12	to lag	18 bondarenko trigger 0
Copy	5011	boron-11	from lag	18	to lag	1 bondarenko trigger 0
Copy	5011	boron-11	from lag	18	to lag	1 bondarenko trigger 0
Copy	8016	oxygen-16	from lag	12	to lag	18 bondarenko trigger 0
Copy	8016	oxygen-16	from lag	18	to lag	1 bondarenko trigger 0
Copy	8016	oxygen-16	from lag	18	to lag	1 bondarenko trigger 0
Copy	8016	oxygen-16	from lag	18	to lag	1 bondarenko trigger 0
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	18 bondarenko trigger 0
Copy	40302	zircalloy	from lag	18	to lag	1 bondarenko trigger 0
Copy	40302	zircalloy	from lag	18	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

INFORMATION ONLY

```
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 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 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/thrm1002   updated 10/13/89       id      202
      hydrogen      endf/b-iv mat 1269/thrm1002   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
      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 newklacs p-3 298k 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 newklacs p-3 298k 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 newklacs p-3 298k 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 newklacs 218ngp p-3 298k                           id   200067
     am-243 1057 218 gp wt f-1/e-m 090876 p3 298k                            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    aaaaaaaaa    ww        ww  ll
              mm       m iiiiiiiiiiii   tttttttttttt    aaaaaaaaaa   ww        ww  ll
              mmm      m      ii            tt        aa        aa  ww        ww  ll
              mmm      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      m m      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



INFORMATION ONLY

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 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
```

INFORMATION ONLY

xsdrn weighted tape--parent case entitled-- 880 d, sas2h: babcock wilcox 15x15, 3.00w/o, 20gwd/mtu burn high temp

0 nuclides from xsdrn tape

1	hydrogen	endf/b-iv mat 1269/thrml002	updated 10/13/89	202
2	b-10 1273 218rgp 04235 p-3 295k			205
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/thrml002	updated 10/13/89	1001
8	b-10 1273 218rgp 04235 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=102,103,105,105,106,107	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	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

INFORMATION ONLY

```
   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 newklacs 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 newklacs 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 newklacs 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 sigo=5+4 newklacs 218ngp p-3 293k                          95241
   69   am-243 1057 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/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   -7.806033E-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 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 218gp 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
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 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

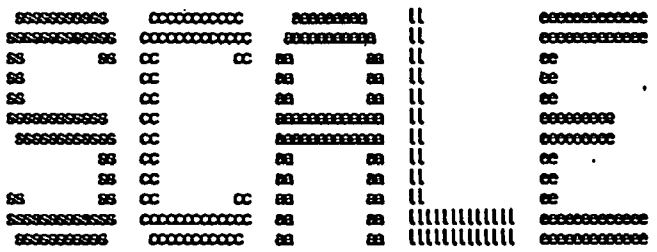
INFORMATION ONLY

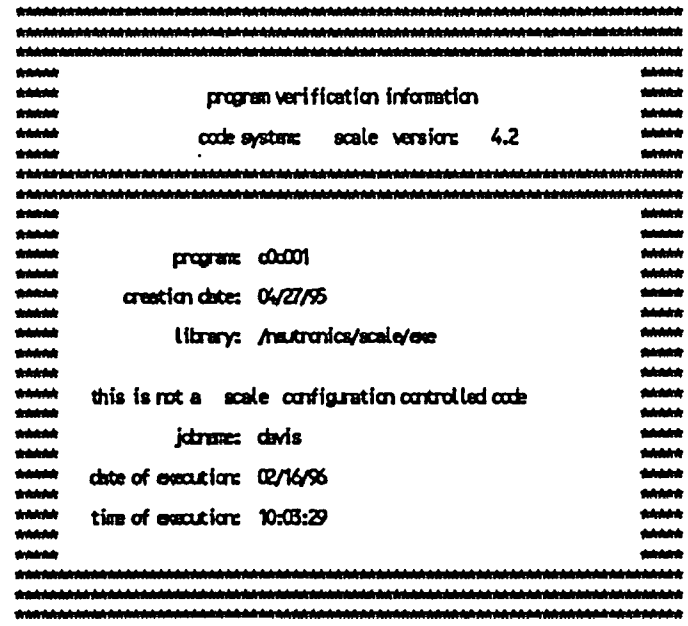
INFORMATION ONLY

```
      plutonium-242  endf/b-iv mat 1161          updated 10/13/89          id   9242
      am-241 1056 sigp-5+4 newdacs 218grp p-3 295k                         id   9241
      am-243 1057 218 gp wt f-1/e-n 090576 p3 295k                         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
1 xx        xx  sssssssss   ddddddddd   rrrrrrrrr   m       m  ppppppppp   mm       mm
   xx      xx  sssssssssss  ddddddddddd  rrrrrrrrrr  mm      m  ppppppppp  mmm     mmm
    xx    xx   ss       ss  dd      dd  rr      rr  mmm     m  pp      pp  mmmm   mmmm
     xx  xx    ss           dd      dd  rr      rr  mmmm    m  pp      pp  mm mm mm mm
      xxxx     sssssssss    dd      dd  rr      rr  m m m   m  pp      pp  mm  mmm  mm
      xxxx      sssssssss   dd      dd  rrrrrrrrrr  m  m m  m  ppppppppp   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
   xx     xx   ss      ss  dd      dd  rr     rr   m     mm  pp          mm       mm
  xx       xx  sssssssssss  ddddddddddd  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  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   aaaaaaaaa  w       w      ii      sssssssss
 dd      dd   aaaaaaaaa   w     w       ii       sssssssss
 dd      dd   aa     aa    w   w        ii            ss
 dd      dd   aa     aa     w w         ii      ss    ss
 ddddddddddd  aa     aa      ww     iiiiiiiiiii  sssssssss
 ddddddddd    aa     aa      v      iiiiiiiiiii   sssssss
0

  000000    2222222222        //     11     666666666      //     999999999   666666666
 00000000   2222222222       //     111     666666666     //     999999999   666666666
00      00  22       22     //     1111     66            //     99      99  66
00      00  22       22    //       11     66            //     99      99  66
00      00  22       22   //        11     66            //     99      99  66
00      00  2222222222   //         11     6666666666    //     999999999   6666666666
00      00  2222222222  //          11     6666666666    //     999999999   6666666666
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   2222222222//          11111111 6666666666  //     999999999   6666666666
   000000    2222222222//          11111111  66666666   //     999999999    66666666
0

     11      000000                000000    3333333333                2222222222  999999999
    111     00000000              00000000  3333333333333             2222222222  999999999
   1111    00      00     :::    00      00 33       333     :::    22       22  99      99
     11    00      00     :::    00      00         333      :::           22   99      99
     11    00      00     :::    00      00        333       :::          22   99      99
     11    00      00            00      00       333                   22   999999999
     11    00      00            00      00      333                   22   999999999
     11    00      00     :::    00      00         333     :::      22        99
     11    00      00     :::    00      00          333    :::    22          99
     11    00      00     :::    00      00 33       333    :::   22           99
 11111111  00000000              00000000  3333333333333           2222222222  999999999
 11111111   000000                000000    3333333333             2222222222  999999999
1
```

INFORMATION ONLY

0





1
880 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.
1 880 d, second part of sas2h pass to make library
0general problem description data block

INFORMATION ONLY

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
mx	number of mixtures	3	iclc	-1/0/n=flat res/sry/cpt	0
ms	mixing table length	70	ith	0/1 = forward/adjoint	0
ige	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
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
iqm	volumetric sources (0/n=no/yes)	0	idfm	0/1 = none/density factors 38*	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=gtad xsect print	-2	nsou	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	xpm	rel 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.)

	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	1.33192E-04	
7	1001		1	92234	1.47781E-06	
8	5010		1	92236	1.82258E-05	
9	5011		1	92238	7.21944E-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	6.60886E-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	6.36851E-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	3.47362E-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	2.21760E-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	3.85552E-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	1.39277E-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	3.98692E-07
54	63153		1	63154	8.34053E-08
55	63154		1	63155	4.31432E-08
56	63155		1	40302	4.42681E-08
57	64155		1	1001	2.30630E-02
58	99234		1	5010	2.09787E-06
59	99235		1	5011	8.51675E-06
60	99236		1	55133	6.95263E-06
61	99238		1	99237	1.23390E-06
62	99237		1	94238	1.76799E-07
63	94238		1	94239	3.56356E-05
64	94239		1	94240	6.98680E-06
65	94240		1	94241	3.76423E-06
66	94241		1	94242	4.23205E-07
67	94242		1	95241	1.12663E-07
68	95241		1	95243	3.90711E-08
69	95243		1	95244	3.73748E-09
70	95244		1	999	3.30753E-21

- elapsed time .00 min.
0 24259 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 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	6.37719E+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	1.58657E+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	4.86253E+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 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	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					5.59553E-02	-5.58410E-01	8	-3.10450E-02
6					5.59553E-02	-2.31301E-01	7	-1.28928E-02
7					5.59553E-02	2.31301E-01	6	1.28928E-02
8					5.59553E-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	-2.20194E-01	13	-1.15128E-02
13					5.22834E-02	2.20194E-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					4.53356E-02	-9.64143E-01	24	-4.37099E-02
18					4.53356E-02	-8.17361E-01	23	-3.70656E-02
19					4.53356E-02	-5.46143E-01	22	-2.47597E-02

INFORMATION ONLY

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

Constants for p(3) scattering

angl	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	1.61276E-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	-1.98656E-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	5.00703E-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	3.20862E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20862E-01	2.78178E-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	-3.20862E-01	-2.78178E-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	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	2.48566E-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	1.98698E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48566E+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	1.42356E-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	8.46406E-02			
13	6.73100E-01	6.96683E-01	3	4.22921E+00	2.05662E-01			
14	7.20057E-01	7.43550E-01	3	4.52431E+00	2.19422E-01			
15	7.67083E-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	9.60886E-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	1.30125E+00	4	7.56724E+00	1.59667E+00			
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.85603E+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	2.79348E+00			
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.05285E+00			
26	2.57064E+00	2.66825E+00	4	1.61518E+01	3.27221E+00			
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72567E+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 1.05791E+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  nfd    max. flux   nsf   max. scale coarse
                                                                                           iters  int.  difference  int.    factor   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 7.98609E-08  20 1.00000E+00    2
                                                                                   9     9     1   27 1.50382E-05  28 9.99986E-01    3
                                                                                  10    10     1   28 9.85594E-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 1.00003E+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 3.11988E-05   6 1.00003E+00    6
                                                                                  27    27     1    1 2.80956E-05   5 1.00003E+00    8
   5   395 1.90825E-06 1.04280E+00 -8.50857E-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 5.92851E-02 2.48366E-01 1.47264E-02 .00000E+00
     3      1       7.90575E-02 1.18588E-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 1.42358E-01 .00000E+00
    10      1       5.92931E-01 6.12459E-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       6.52580E-01 6.62640E-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 4.52631E+00 2.19422E-01 .00000E+00
    15      3       7.67035E-01 7.90517E-01 4.81941E+00 2.33288E-01 .00000E+00
    16      4       8.14000E-01 8.62795E-01 5.11451E+00 5.29051E-01 2.38059E-02
    17      4       9.11591E-01 9.60386E-01 5.72760E+00 5.88691E-01 2.59056E-02
```

INFORMATION ONLY

18	4	1.00918E+00	1.10577E+00	6.34088E+00	1.35731E+00	5.84708E-02
19	4	1.20436E+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	2.86341E+00	1.73781E+01	1.72587E+00	6.93567E-02
28	4	2.86341E+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 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	1.25528E-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	1.46998E-01
3	1.29483E-02	9.07638E-02	1.12486E-01	6.89868E-02	1.02714E-01	1.92751E-01	1.98089E-01	1.47009E-01
4	1.29560E-02	9.08145E-02	1.12602E-01	6.90682E-02	1.02863E-01	1.92994E-01	1.98245E-01	1.47038E-01
5	1.29673E-02	9.08864E-02	1.12798E-01	6.92011E-02	1.03059E-01	1.93392E-01	1.98492E-01	1.47082E-01
6	1.29841E-02	9.11817E-02	1.13057E-01	6.93844E-02	1.03357E-01	1.93941E-01	1.98852E-01	1.47138E-01
7	1.30052E-02	9.14316E-02	1.13413E-01	6.96224E-02	1.03745E-01	1.94657E-01	1.99273E-01	1.47208E-01
8	1.30307E-02	9.17437E-02	1.13853E-01	6.99297E-02	1.04250E-01	1.95595E-01	1.99849E-01	1.47291E-01
9	1.30523E-02	9.20182E-02	1.14247E-01	7.02116E-02	1.04718E-01	1.96461E-01	1.99388E-01	1.47360E-01
10	1.30669E-02	9.22335E-02	1.14576E-01	7.04598E-02	1.05139E-01	1.97246E-01	1.99871E-01	1.47409E-01
11	1.30792E-02	9.24188E-02	1.14851E-01	7.06682E-02	1.05492E-01	1.97902E-01	1.96289E-01	1.47454E-01
12	1.30925E-02	9.25446E-02	1.15025E-01	7.07786E-02	1.05662E-01	1.98259E-01	1.98492E-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	1.47564E-01
14	1.31618E-02	9.31719E-02	1.15744E-01	7.11692E-02	1.06225E-01	1.99256E-01	1.97052E-01	1.47668E-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	1.07854E-01	2.02148E-01	1.98781E-01	1.47925E-01
17	1.33579E-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	2.00288E-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	9.71636E-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	9.73105E-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	2.03732E-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	9.73123E-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	5.59386E-02	5.32164E-02	2.85961E-02	1.60417E-02
2	1.15957E-01	1.07185E-01	1.00973E-01	6.54768E-02	5.59035E-02	5.32235E-02	2.85984E-02	1.60428E-02
3	1.15955E-01	1.07180E-01	1.00952E-01	6.54529E-02	5.58806E-02	5.31902E-02	2.85919E-02	1.60391E-02
4	1.15951E-01	1.07159E-01	1.00908E-01	6.53954E-02	5.58266E-02	5.31100E-02	2.85757E-02	1.60301E-02
5	1.15944E-01	1.07126E-01	1.00828E-01	6.53077E-02	5.57441E-02	5.29880E-02	2.85516E-02	1.60166E-02
6	1.15935E-01	1.07082E-01	1.00726E-01	6.51886E-02	5.56325E-02	5.28225E-02	2.85198E-02	1.59988E-02
7	1.15923E-01	1.07028E-01	1.00597E-01	6.50329E-02	5.54868E-02	5.26060E-02	2.84797E-02	1.59756E-02
8	1.15909E-01	1.06944E-01	1.00412E-01	6.48263E-02	5.52961E-02	5.23214E-02	2.84259E-02	1.59461E-02
9	1.15900E-01	1.06870E-01	1.00344E-01	6.46342E-02	5.51190E-02	5.20662E-02	2.83788E-02	1.59191E-02
10	1.15901E-01	1.06800E-01	1.00088E-01	6.44578E-02	5.49588E-02	5.18154E-02	2.83442E-02	1.58950E-02
11	1.15906E-01	1.06744E-01	9.99652E-02	6.43221E-02	5.48314E-02	5.16254E-02	2.83095E-02	1.58748E-02
12	1.15902E-01	1.06726E-01	9.99308E-02	6.42684E-02	5.47795E-02	5.15488E-02	2.82904E-02	1.58651E-02
13	1.15857E-01	1.06699E-01	9.98577E-02	6.41862E-02	5.47045E-02	5.14358E-02	2.82743E-02	1.58550E-02
14	1.15787E-01	1.06657E-01	9.97744E-02	6.40080E-02	5.45462E-02	5.11929E-02	2.82477E-02	1.58357E-02
15	1.15711E-01	1.06532E-01	9.94808E-02	6.37275E-02	5.42986E-02	5.08112E-02	2.82078E-02	1.58056E-02
16	1.15607E-01	1.06361E-01	9.90950E-02	6.32656E-02	5.38895E-02	5.01785E-02	2.81534E-02	1.57538E-02

17	1.1551E-01	1.0619E-01	9.8705E-02	6.2805E-02	5.3475E-02	4.9542E-02	2.8473E-02	1.5697E-02
18	1.1544E-01	1.0604E-01	9.8579E-02	6.2409E-02	5.3112E-02	4.8998E-02	2.8353E-02	1.5642E-02
19	1.1539E-01	1.0591E-01	9.8064E-02	6.2042E-02	5.2769E-02	4.8490E-02	2.8255E-02	1.5588E-02
20	1.1537E-01	1.0583E-01	9.7864E-02	6.1805E-02	5.2543E-02	4.8162E-02	2.8178E-02	1.5544E-02
21	1.1535E-01	1.0577E-01	9.7725E-02	6.1640E-02	5.2384E-02	4.7931E-02	2.8121E-02	1.5516E-02
22	1.1531E-01	1.0573E-01	9.7627E-02	6.1523E-02	5.2269E-02	4.7769E-02	2.8077E-02	1.5494E-02
23	1.1534E-01	1.0570E-01	9.7556E-02	6.1440E-02	5.2187E-02	4.7653E-02	2.8045E-02	1.5477E-02
24	1.1534E-01	1.0568E-01	9.7508E-02	6.1383E-02	5.2131E-02	4.7574E-02	2.8023E-02	1.5466E-02
25	1.1534E-01	1.0567E-01	9.7480E-02	6.1349E-02	5.2098E-02	4.7527E-02	2.8010E-02	1.5459E-02
26	1.1534E-01	1.0567E-01	9.7471E-02	6.1338E-02	5.2088E-02	4.7512E-02	2.8008E-02	1.5458E-02
27	1.1534E-01	1.0567E-01	9.7476E-02	6.1345E-02	5.2096E-02	4.7523E-02	2.8014E-02	1.5461E-02
28	1.1533E-01	1.0567E-01	9.7491E-02	6.1363E-02	5.2115E-02	4.7549E-02	2.8029E-02	1.5466E-02

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	6.9997E-03	5.2637E-03	1.0900E-02	3.5249E-02	1.0398E-02	2.2397E-02	7.5724E-02	6.2149E-02
2	7.0052E-03	5.2652E-03	1.0903E-02	3.5252E-02	1.0399E-02	2.2398E-02	7.5719E-02	6.2134E-02
3	6.9972E-03	5.2569E-03	1.0885E-02	3.5238E-02	1.0388E-02	2.2365E-02	7.5608E-02	6.2009E-02
4	6.9894E-03	5.2369E-03	1.0870E-02	3.5204E-02	1.0381E-02	2.2284E-02	7.5347E-02	6.1741E-02
5	6.9779E-03	5.2062E-03	1.0848E-02	3.5153E-02	1.0364E-02	2.2164E-02	7.4967E-02	6.1344E-02
6	6.9614E-03	5.1640E-03	1.0818E-02	3.5086E-02	1.0342E-02	2.2007E-02	7.4461E-02	6.0815E-02
7	6.9408E-03	5.1081E-03	1.0779E-02	3.4998E-02	1.0314E-02	2.1790E-02	7.3817E-02	6.0143E-02
8	6.9126E-03	5.0335E-03	1.0728E-02	3.4886E-02	1.0275E-02	2.1514E-02	7.3005E-02	5.9299E-02
9	6.8857E-03	4.9630E-03	1.0681E-02	3.4785E-02	1.0242E-02	2.1259E-02	7.2270E-02	5.8544E-02
10	6.8531E-03	4.8835E-03	1.0629E-02	3.4619E-02	1.0195E-02	2.1028E-02	7.1634E-02	5.7895E-02
11	6.8447E-03	4.8481E-03	1.0605E-02	3.4618E-02	1.0437E-02	2.0854E-02	7.1170E-02	5.7428E-02
12	6.8569E-03	4.8512E-03	1.0291E-02	3.4586E-02	1.0417E-02	2.0796E-02	7.1027E-02	5.7333E-02
13	6.8260E-03	4.7869E-03	1.0272E-02	3.4562E-02	1.0385E-02	2.0689E-02	7.0751E-02	5.7048E-02
14	6.8025E-03	4.7254E-03	1.0233E-02	3.4444E-02	1.0307E-02	2.0447E-02	7.0139E-02	5.6398E-02
15	6.7653E-03	4.6086E-03	1.0172E-02	3.4338E-02	1.0186E-02	2.0071E-02	6.9244E-02	5.5471E-02
16	6.7043E-03	4.4066E-03	1.0068E-02	3.4130E-02	9.9874E-03	1.9515E-02	6.7867E-02	5.4095E-02
17	6.6270E-03	4.2015E-03	9.9640E-03	3.3910E-02	9.7910E-03	1.8837E-02	6.6465E-02	5.2716E-02
18	6.5900E-03	4.0554E-03	9.8679E-03	3.3702E-02	9.6254E-03	1.8326E-02	6.5127E-02	5.1397E-02
19	6.5406E-03	3.9270E-03	9.7753E-03	3.3495E-02	9.4717E-03	1.7855E-02	6.3781E-02	5.0066E-02
20	6.5083E-03	3.8535E-03	9.7128E-03	3.3382E-02	9.3724E-03	1.7554E-02	6.2825E-02	4.9116E-02
21	6.4856E-03	3.8053E-03	9.6681E-03	3.3240E-02	9.3028E-03	1.7348E-02	6.2104E-02	4.8404E-02
22	6.4692E-03	3.7748E-03	9.6359E-03	3.3159E-02	9.2520E-03	1.7193E-02	6.1561E-02	4.7866E-02
23	6.4576E-03	3.7533E-03	9.6126E-03	3.3100E-02	9.2167E-03	1.7085E-02	6.1152E-02	4.7463E-02
24	6.4496E-03	3.7391E-03	9.5963E-03	3.3059E-02	9.1925E-03	1.7010E-02	6.0858E-02	4.7170E-02
25	6.4448E-03	3.7304E-03	9.5870E-03	3.3035E-02	9.1768E-03	1.6962E-02	6.0669E-02	4.6973E-02
26	6.4436E-03	3.7267E-03	9.5840E-03	3.3028E-02	9.1720E-03	1.6948E-02	6.0589E-02	4.6882E-02
27	6.4452E-03	3.7270E-03	9.5866E-03	3.3035E-02	9.1777E-03	1.6949E-02	6.0588E-02	4.6845E-02
28	6.4480E-03	3.7302E-03	9.5919E-03	3.3047E-02	9.1784E-03	1.6956E-02	6.0610E-02	4.6877E-02

0 int.	grp. 25	grp. 26	grp. 27
1	2.8121E-02	2.0283E-02	3.8548E-03
2	2.8111E-02	2.0281E-02	3.8521E-03
3	2.8044E-02	2.0222E-02	3.8401E-03
4	2.7902E-02	2.0093E-02	3.8146E-03
5	2.7692E-02	1.9915E-02	3.7762E-03
6	2.7411E-02	1.9667E-02	3.7235E-03
7	2.7055E-02	1.9349E-02	3.6547E-03
8	2.6609E-02	1.8949E-02	3.5693E-03
9	2.6214E-02	1.8593E-02	3.4856E-03
10	2.5879E-02	1.8288E-02	3.4146E-03
11	2.5665E-02	1.8098E-02	3.3742E-03
12	2.5607E-02	1.8053E-02	3.3721E-03
13	2.5448E-02	1.7916E-02	3.3528E-03
14	2.5065E-02	1.7569E-02	3.2980E-03
15	2.4560E-02	1.7078E-02	3.0972E-03
16	2.3850E-02	1.6378E-02	2.8916E-03
17	2.3132E-02	1.5716E-02	2.7146E-03
18	2.2449E-02	1.5119E-02	2.5810E-03

INFORMATION ONLY

INFORMATION ONLY

19	2.17641E-02	1.45404E-02	2.46055E-03
20	2.12802E-02	1.41490E-02	2.39726E-03
21	2.09215E-02	1.38691E-02	2.33791E-03
22	2.06531E-02	1.36661E-02	2.30157E-03
23	2.04536E-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	2.24314E-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	5.56076E-05	-7.23528E-04	9.99953E-01
2	.00000E+00	.00000E+00	3.83143E-04	6.16418E-03	8.10169E-03	1.76150E-04	-7.89438E-03	9.99963E-01
3	.00000E+00	.00000E+00	3.84799E-03	5.48596E-03	1.42214E-02	9.28018E-05	-1.04659E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.99085E-03	3.60098E-03	1.25726E-02	4.20252E-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	9.99995E-01
7	.00000E+00	.00000E+00	4.22446E-02	6.09765E-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	3.64106E-05	-2.42325E-03	9.99912E-01
9	.00000E+00	.00000E+00	5.77976E-02	7.26404E-02	5.75344E-02	2.98575E-05	2.50364E-04	9.99850E-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	6.56689E-02	5.24190E-02	5.52110E-05	3.43382E-03	9.99939E-01
12	.00000E+00	.00000E+00	4.54496E-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	1.39950E-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	1.26544E-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	1.06662E-02	2.85901E-03	9.55519E-03	6.44614E-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	1.65858E-03	9.99983E-01
22	.00000E+00	.00000E+00	2.45964E-02	1.25329E-02	1.95089E-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	1.21885E-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	4.51868E-02	3.07501E-02	3.95600E-02	7.81536E-04	4.84419E-03	1.00002E+00
26	.00000E+00	.00000E+00	3.61066E-02	3.43883E-02	3.17622E-02	7.95286E-04	3.54856E-03	1.00002E+00
27	.00000E+00	.00000E+00	1.22539E-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	r@n rate	fiss rate	flux*dv**2	total flux
1	1.30740E-02	-7.23528E-04	1.29571E-02	.00000E+00	3.69291E-11	.00000E+00	2.00152E-05	1.63473E-02
2	9.23472E-02	-7.89438E-03	9.03655E-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	9.25722E-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	1.97898E-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	2.44308E-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	2.50364E-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	6.54625E-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	5.32089E-02	.00000E+00	.00000E+00	.00000E+00	8.45942E-06	6.60231E-02
15	2.87206E-02	1.23565E-03	2.89915E-02	.00000E+00	.00000E+00	.00000E+00	4.46673E-06	3.62800E-02
16	1.58806E-02	6.82897E-04	1.60388E-02	.00000E+00	.00000E+00	.00000E+00	2.23451E-06	2.00681E-02
17	6.84927E-03	5.66708E-04	6.99815E-03	.00000E+00	.00000E+00	.00000E+00	8.91884E-07	8.71339E-03
18	4.86097E-03	1.40390E-03	5.26061E-03	.00000E+00	.00000E+00	.00000E+00	6.38581E-07	6.39540E-03

INFORMATION ONLY

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	2.36830E-03	3.52632E-02	.00000E+00	.00000E+00	.00000E+00	5.15148E-06	4.39514E-02
21	1.04515E-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	2.29888E-02	.00000E+00	.00000E+00	.00000E+00	2.49604E-06	2.73040E-02
23	7.12707E-02	1.21839E-02	7.57016E-02	.00000E+00	.00000E+00	.00000E+00	7.63495E-06	9.25676E-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	1.60526E-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	3.85506E-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	3.69297E-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	2.50575E-06	-1.63776E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.92068E-05	1.46077E-03	1.04817E-03	1.40696E-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	1.24052E-02	1.69508E-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	5.85230E-04	1.00000E+00
8	.00000E+00	.00000E+00	1.17530E-04	9.20975E-03	4.63464E-04	2.21164E-05	-3.48079E-04	1.00001E+00
9	.00000E+00	.00000E+00	4.45309E-04	6.36202E-03	5.30844E-05	7.67387E-05	3.15545E-04	9.99987E-01
10	.00000E+00	.00000E+00	5.30996E-05	4.99152E-03	4.95246E-05	5.98821E-05	-5.58123E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.95276E-05	4.45974E-03	5.03663E-05	9.01200E-05	-9.09623E-05	1.00000E+00
12	.00000E+00	.00000E+00	5.03665E-05	2.76454E-03	5.14333E-05	5.67973E-06	-6.76743E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.14334E-05	2.35753E-03	4.80820E-05	6.31695E-06	-2.97604E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80921E-05	2.22468E-03	4.19258E-05	8.49585E-06	-2.32784E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.45078E-05	1.21206E-03	4.96056E-05	6.27695E-06	-1.13790E-05	1.00000E+00
16	.00000E+00	.00000E+00	5.55508E-05	6.41699E-04	5.56914E-05	3.80825E-06	-3.84630E-06	1.00000E+00
17	.00000E+00	.00000E+00	6.03665E-05	2.41195E-04	5.98707E-05	1.79259E-06	-7.93196E-07	9.99994E-01
18	.00000E+00	.00000E+00	6.23425E-05	1.60750E-04	5.19055E-05	1.33852E-06	9.10077E-06	9.99995E-01
19	.00000E+00	.00000E+00	5.37854E-05	3.94315E-04	5.81776E-05	3.05978E-06	-7.46769E-06	9.99992E-01
20	.00000E+00	.00000E+00	7.09280E-05	1.45834E-03	6.19994E-05	1.25378E-05	-3.53763E-06	9.99997E-01
21	.00000E+00	.00000E+00	8.15144E-05	3.69810E-04	8.85341E-05	4.58403E-06	-1.13980E-05	9.99997E-01
22	.00000E+00	.00000E+00	1.16403E-04	8.07126E-04	1.07869E-04	1.04215E-05	-1.82679E-06	9.99988E-01
23	.00000E+00	.00000E+00	1.66569E-04	2.91000E-03	2.13645E-04	4.75308E-05	-9.46401E-05	1.00000E+00
24	.00000E+00	.00000E+00	2.75410E-04	2.21756E-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	2.68854E-05	1.48144E-04	7.63516E-06	1.09713E-05	1.58114E-05	1.00001E+00
28	.00000E+00	.00000E+00	5.01460E-03	8.07095E-02	5.01460E-03	6.09531E-04	-6.05612E-04	1.00001E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	nsn rate	fiss rate	flux*adj**2	total flux
1	1.31006E-02	-8.87104E-04	1.30740E-02	-7.25328E-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	1.11670E-05	1.54150E-02
3	1.15103E-01	-1.12117E-02	1.14755E-01	-1.04697E-02	.00000E+00	.00000E+00	1.27008E-05	1.91588E-02
4	7.08164E-02	-6.84780E-03	7.05999E-02	-6.82564E-03	.00000E+00	.00000E+00	7.44280E-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	1.97898E-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	5.66790E-04	1.15904E-01	2.50266E-04	.00000E+00	.00000E+00	4.58652E-06	1.95196E-02
10	1.06721E-01	1.39068E-03	1.05760E-01	1.44639E-03	.00000E+00	.00000E+00	4.91381E-06	1.77914E-02
11	9.99075E-02	3.34286E-03	9.99994E-02	3.43392E-03	.00000E+00	.00000E+00	4.76975E-06	1.66691E-02
12	6.42518E-02	4.04806E-03	6.43690E-02	4.05481E-03	.00000E+00	.00000E+00	3.21688E-06	1.07171E-02
13	5.47628E-02	3.85906E-03	5.48677E-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	6.80897E-04	.00000E+00	.00000E+00	7.79422E-07	2.64530E-03
17	6.85429E-03	5.69795E-04	6.84927E-03	5.69708E-04	.00000E+00	.00000E+00	3.35805E-07	1.14025E-03
18	4.82579E-03	1.41300E-03	4.86091E-03	1.40890E-03	.00000E+00	.00000E+00	2.39513E-07	8.09744E-04
19	1.02866E-02	1.02951E-03	1.03147E-02	1.03678E-03	.00000E+00	.00000E+00	5.05165E-07	1.71661E-03

INFORMATION ONLY

20	3.4574E-02	2.3995E-03	3.4637E-02	2.3930E-03	.0000E+00	.0000E+00	1.6949E-06	5.7578E-03
21	1.0410E-02	1.6471E-03	1.0515E-02	1.6888E-03	.0000E+00	.0000E+00	5.0991E-07	1.7380E-03
22	2.0779E-02	4.8495E-03	2.0896E-02	4.8513E-03	.0000E+00	.0000E+00	1.0170E-06	3.4711E-03
23	7.0983E-02	1.2089E-02	7.1270E-02	1.2183E-02	.0000E+00	.0000E+00	3.4601E-06	1.1851IE-02
24	5.7301E-02	1.0521E-02	5.7530E-02	1.0605E-02	.0000E+00	.0000E+00	2.7760E-06	9.5662E-03
25	2.5597E-02	4.8657E-03	2.5690E-02	4.8419E-03	.0000E+00	.0000E+00	1.2526E-06	4.2724E-03
26	1.8057E-02	3.5442E-03	1.8117E-02	3.5456E-03	.0000E+00	.0000E+00	8.6010E-07	3.0133E-03
27	3.3721E-03	6.1283E-04	3.3777E-03	5.9701E-04	.0000E+00	.0000E+00	1.5568E-07	5.6231E-04
28	1.7402E+00	-6.8066E-03	1.7396E+00	-6.2029E-03	5.9750E-06	.0000E+00	1.0317E-04	2.9003E-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	.0000E+00	.0000E+00	.0000E+00	2.6747E-04	3.5402E-04	2.9478E-05	-3.8548E-04	9.9988E-01
2	.0000E+00	.0000E+00	2.0815E-04	3.2903E-03	4.3265E-03	9.4028E-05	-4.2153E-03	9.9988E-01
3	.0000E+00	.0000E+00	2.0536E-03	2.9219E-03	7.6022E-03	4.9089E-05	-5.5980E-03	9.9999E-01
4	.0000E+00	.0000E+00	2.9876E-03	1.9278E-03	6.6235E-03	2.2477E-05	-3.6586E-03	9.9994E-01
5	.0000E+00	.0000E+00	5.4927E-03	6.1819E-03	1.1199E-02	2.6640E-05	-5.7335E-03	9.9998E-01
6	.0000E+00	.0000E+00	1.1522E-02	1.8943E-02	2.1980E-02	4.5189E-05	-1.0508E-02	1.0000E+00
7	.0000E+00	.0000E+00	2.2640E-02	3.2983E-02	2.8762E-02	3.2526E-05	-6.1459E-03	9.9999E-01
8	.0000E+00	.0000E+00	2.9996E-02	4.1173E-02	3.0872E-02	1.9130E-05	-8.9204E-04	9.9999E-01
9	.0000E+00	.0000E+00	3.0304E-02	3.8004E-02	3.0096E-02	1.5327E-05	3.2240E-04	9.9982E-01
10	.0000E+00	.0000E+00	2.9909E-02	3.6127E-02	2.9033E-02	1.8850E-05	8.5877E-04	9.9990E-01
11	.0000E+00	.0000E+00	2.9198E-02	3.4095E-02	2.7220E-02	2.8670E-05	1.9504E-03	9.9994E-01
12	.0000E+00	.0000E+00	2.3627E-02	1.8113E-02	2.1312E-02	3.1988E-05	2.2836E-03	9.9983E-01
13	.0000E+00	.0000E+00	2.0989E-02	1.4720IE-02	1.8877E-02	4.3605E-05	2.0884E-03	9.9997E-01
14	.0000E+00	.0000E+00	2.0364E-02	1.4361E-02	1.7156E-02	6.9509E-05	3.1398E-03	9.9999E-01
15	.0000E+00	.0000E+00	1.1084E-02	5.6346E-03	1.0556E-02	5.8461E-05	4.7119E-04	9.9992E-01
16	.0000E+00	.0000E+00	7.3252E-03	2.3710IE-03	6.9854E-03	3.9542E-05	2.9853E-04	9.9997E-01
17	.0000E+00	.0000E+00	3.7625E-03	6.6003E-04	3.4341E-03	1.8842E-05	3.0968E-04	9.9997E-01
18	.0000E+00	.0000E+00	3.3306E-03	4.4563E-04	2.4350E-03	1.3942E-05	8.8167E-04	9.9994E-01
19	.0000E+00	.0000E+00	5.4533E-03	1.4729E-03	4.8865E-03	3.2989E-05	5.3188IE-04	9.9997E-01
20	.0000E+00	.0000E+00	1.3336E-02	1.0690E-02	1.2084E-02	1.3942E-04	1.1105E-03	9.9988E-01
21	.0000E+00	.0000E+00	6.3560E-03	2.0652E-03	5.3726E-03	5.1788E-05	9.3173E-04	9.9988E-01
22	.0000E+00	.0000E+00	1.2448E-02	6.1608E-03	9.5878E-03	1.1833E-04	2.7422E-03	1.0001E+00
23	.0000E+00	.0000E+00	3.1473E-02	3.8119E-02	2.5052E-02	5.5336E-04	5.8868E-03	1.0008E+00
24	.0000E+00	.0000E+00	3.3339E-02	3.5591E-02	2.7473E-02	6.4751E-04	5.2175E-03	1.0008E+00
25	.0000E+00	.0000E+00	2.2065E-02	1.4285E-02	1.9220IE-02	3.7970IE-04	2.4629E-03	1.0000E+00
26	.0000E+00	.0000E+00	1.7554E-02	1.6358E-02	1.5109E-02	3.7831IE-04	2.0575E-03	1.0001E+00
27	.0000E+00	.0000E+00	5.9278IE-03	3.4607E-03	5.2720E-03	1.3172E-04	5.2982E-04	1.0000E+00
28	.0000E+00	.0000E+00	4.0287E-01	4.0006E-01	4.0287E-01	3.0900E-03	-3.0788E-03	9.9973E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.3259E-02	-1.2705E-03	1.3100E-02	-8.8710E-04	1.9578E-11	.0000E+00	1.0510E-05	8.6667E-03
2	9.3952IE-02	-1.3142IE-02	9.2612IE-02	-8.9274IE-03	.0000E+00	.0000E+00	4.7692IE-05	6.1368E-02
3	1.1673IE-01	-1.6809IE-02	1.1510IE-01	-1.1211IE-02	.0000E+00	.0000E+00	4.9579IE-05	7.6259E-02
4	7.1786E-02	-1.0506E-02	7.0816E-02	-6.8678E-03	.0000E+00	.0000E+00	2.2562IE-05	4.6886E-02
5	1.0717IE-01	-1.6078E-02	1.0571IE-01	-1.0345E-02	.0000E+00	.0000E+00	2.6483E-05	6.9865E-02
6	2.0097IE-01	-2.9253E-02	1.9836IE-01	-1.8749E-02	.0000E+00	.0000E+00	4.4722E-05	1.3127E-01
7	1.9806E-01	-1.7528IE-02	1.9556E-01	-1.1373E-02	.0000E+00	.0000E+00	3.1493E-05	1.2978E-01
8	1.4781E-01	-3.6635E-03	1.4752IE-01	-2.7713E-03	.0000E+00	.0000E+00	1.7196E-05	9.7202E-02
9	1.1567IE-01	8.8819E-04	1.1589E-01	5.6579IE-04	.0000E+00	.0000E+00	1.1343E-05	7.6215E-02
10	1.0646E-01	2.2485E-03	1.0672IE-01	1.3505E-03	.0000E+00	.0000E+00	1.0007E-05	7.0183E-02
11	9.9339E-02	5.2883E-03	9.9907E-02	3.3428E-03	.0000E+00	.0000E+00	9.3084E-06	6.5613E-02
12	6.3597E-02	6.3317E-03	6.4251E-02	4.0480E-03	.0000E+00	.0000E+00	5.4254E-06	4.2105E-02
13	5.4151IE-02	5.9277E-03	5.4762E-02	3.8590E-03	.0000E+00	.0000E+00	4.5057E-06	3.5880E-02
14	5.0685E-02	8.8411IE-03	5.1525E-02	5.7012E-03	.0000E+00	.0000E+00	4.3127E-06	3.3694E-02
15	2.8683E-02	1.6954E-03	2.8882E-02	1.2242E-03	.0000E+00	.0000E+00	2.3212E-06	1.8859E-02
16	1.5787E-02	9.7780E-04	1.5861E-02	6.7950E-04	.0000E+00	.0000E+00	1.1603E-06	1.0210E-02
17	6.7427E-03	8.7559E-04	6.8342E-03	5.6595E-04	.0000E+00	.0000E+00	4.5792E-07	4.4704E-03
18	4.5364E-03	2.2946E-03	4.8257E-03	1.4130E-03	.0000E+00	.0000E+00	3.0859E-07	3.0984E-03
19	1.0135IE-02	1.5611E-03	1.0286E-02	1.0293IE-03	.0000E+00	.0000E+00	7.0420E-07	6.7305E-03
20	3.4262E-02	3.4701E-03	3.4574E-02	2.3593E-03	.0000E+00	.0000E+00	2.6576IE-06	2.2674E-02

INFORMATION ONLY

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	1.22699E-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	5.73014E-02	1.05214E-02	.00000E+00	.00000E+00	2.27057E-06	3.70427E-02
25	2.42883E-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	3.54423E-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	2.19881E-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	1.78507E-01	1.53486E-02	1.31427E-02	1.00003E+00
3	.00000E+00	2.16031E-01	7.17083E-02	2.57985E-01	2.54706E-01	1.62264E-02	1.48097E-02	9.99989E-01
4	.00000E+00	1.23708E-01	1.05777E-01	1.76952E-01	2.11241E-01	7.73803E-03	1.05064E-02	1.00000E+00
5	.00000E+00	1.63830E-01	1.92574E-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	2.92528E-02	1.00001E+00
7	.00000E+00	8.71951E-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	6.89554E-01	1.57558E+00	6.86290E-01	1.30836E-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	9.99868E-01
11	.00000E+00	5.66290E-06	6.29467E-01	1.16466E+00	5.81327E-01	5.34754E-02	-5.28615E-03	9.99947E-01
12	.00000E+00	3.99716E-07	5.05309E-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	2.36496E-01	2.14619E-01	2.30314E-01	8.01925E-03	-1.69317E-03	1.00004E+00
16	.00000E+00	4.17609E-10	1.61569E-01	9.87491E-02	1.56194E-01	6.30966E-03	-9.76291E-04	1.00026E+00
17	.00000E+00	1.34490E-10	8.63537E-02	3.04912E-02	7.88560E-02	8.35307E-03	-8.71588E-04	1.00016E+00
18	.00000E+00	9.62907E-11	7.67666E-02	1.83988E-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	-3.44472E-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	2.66461E-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	1.37669E-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	9.60578E-02	1.86526E-02	-1.13682E-03	1.00004E+00
28	.00000E+00	1.00000E+00	8.97067E+00	1.43969E+01	8.97057E+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**2	total flux
1	1.35389E-02	-7.77195E-09	1.32575E-02	-1.27057E-05	2.26664E-03	2.52141E-03	2.98574E-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	1.88308E-03	3.07408E+00
4	7.45968E-02	-8.01678E-08	7.17864E-02	-1.05056E-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	2.85516E+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	8.54258E-07	1.98066E-01	-1.75281E-02	.00000E+00	1.25877E-03	1.22666E-03	5.17025E+00
8	1.48579E-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	2.24786E-03	.00000E+00	3.55418E-03	4.28857E-04	2.69300E+00
11	9.75028E-02	-2.80511E-06	9.95399E-02	5.29536E-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	1.03655E-02	2.27659E-04	1.56857E+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	4.75676E-02	-3.01591E-07	5.05852E-02	8.84118E-03	.00000E+00	7.40263E-03	1.75396E-04	1.21958E+00
15	2.80289E-02	2.29467E-06	2.85838E-02	1.69544E-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	2.10225E-05	1.65011E-01
18	3.75340E-03	7.91146E-07	4.53947E-03	2.29468E-03	.00000E+00	9.99567E-04	8.52702E-06	9.69296E-02
19	9.59426E-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	3.47019E-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	2.55299E-05	2.36449E-01

INFORMATION ONLY

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	1.57389E-02	.00000E+00	7.14206E-02	9.90671E-05	1.22618E+00
25	2.01603E-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	-9.92557E-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	9.98503E-01
2	.00000E+00	1.94883E-01	7.71857E-03	2.63641E-01	1.86981E-01	1.56328E-02	-6.45417E-08	1.00002E+00
3	.00000E+00	2.14031E-01	7.77606E-02	2.69148E-01	2.77406E-01	1.63891E-02	-9.77021E-08	9.99987E-01
4	.00000E+00	1.23708E-01	1.14663E-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	4.66869E-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	8.71951E-02	6.59203E-01	1.66997E+00	7.38207E-01	8.19725E-03	8.54258E-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	2.17535E-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	6.35030E-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	7.98888E-02	-3.01591E-07	9.99990E-01
15	.00000E+00	1.42220E-09	2.69486E-01	2.32308E-01	2.61231E-01	8.19648E-03	2.25467E-06	1.00020E+00
16	.00000E+00	4.17607E-10	1.83159E-01	1.06328E-01	1.76687E-01	6.42916E-03	1.51225E-06	1.00022E+00
17	.00000E+00	1.34450E-10	9.74680E-02	3.26779E-02	8.90402E-02	8.41055E-03	4.01001E-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	3.70875E-01	2.96888E-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	3.59423E-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	7.68834E-01	9.37620E-01	6.35671E-01	1.33057E-01	4.10178E-06	1.00015E+00
25	.00000E+00	2.86388E-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	3.97654E-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	-9.92557E-09	1.00003E+00
28	.00000E+00	1.00000E+00	1.01635E+01	1.56576E+01	1.01635E+01	1.00202E+00	2.12885E-05	1.00002E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r0n rate	fiss rate	flux*db**2	total flux
1	1.35389E-02	-7.77195E-09	1.29577E-02	.00000E+00	2.27261E-03	2.52141E-03	3.30946E-04	3.71348E-01
2	9.72642E-02	-6.45417E-08	9.08656E-02	.00000E+00	1.57678E-03	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	1.03455E-02	2.44826E-04	1.70315E+00
13	5.21291E-02	-1.63153E-06	5.58000E-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	2.80885E-02	2.25467E-06	2.89915E-02	.00000E+00	.00000E+00	1.73351E-03	1.18716E-04	7.75362E-01
16	1.54886E-02	1.51225E-06	1.60392E-02	.00000E+00	.00000E+00	1.22133E-03	6.11950E-05	4.27955E-01
17	6.44890E-03	4.01001E-06	6.99815E-03	.00000E+00	.00000E+00	1.40452E-03	2.27084E-05	1.76539E-01
18	3.75240E-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	2.78864E-05	2.58435E-01
22	1.69691E-02	-7.07403E-06	2.23888E-02	.00000E+00	.00000E+00	4.34662E-02	4.81072E-05	4.86545E-01

INFORMATION ONLY

23	6.0642E-02	1.4364E-05	7.5701E-02	.0000E+00	.0000E+00	7.6633E-02	1.7709E-04	1.7236E+00
24	4.6901E-02	4.1017E-06	6.2132E-02	.0000E+00	.0000E+00	7.1420E-02	1.0873E-04	1.3461E+00
25	2.0160E-02	2.6841E-06	2.8116E-02	.0000E+00	.0000E+00	4.0803E-02	3.7643E-05	5.8338E-01
26	1.3295E-02	-3.2381E-07	2.0291E-02	.0000E+00	.0000E+00	3.7526E-02	1.8930E-05	3.8948E-01
27	2.2425E-03	-9.9255E-09	3.8550E-03	.0000E+00	.0000E+00	1.0578E-02	2.0831E-06	6.6569E-02
28	1.7259E+00	2.1353E-05	1.7463E+00	.0000E+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	5.5243E-03	3.7162E-03	1.7440E-03
2	7.0637E-04	5.0101E-03	5.8021E-03	3.4472E-03	4.3000E-03	6.1507E-03	4.3312E-03	2.1490E-03
3	1.1887E-03	5.4886E-03	5.8078E-03	2.9176E-03	3.8520E-03	6.7767E-03	4.3754E-03	1.8244E-03
4	8.1634E-04	4.3179E-03	4.9457E-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	4.8897E-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	8.7477E-04	7.9777E-04	1.0533E-03	3.2085E-04	1.6703E-04
2	1.7916E-03	1.9546E-03	2.0437E-03	1.6034E-03	1.4285E-03	1.7178E-03	6.2892E-04	3.4788E-04
3	1.1219E-03	1.0534E-03	1.2959E-03	1.2251E-03	1.1288E-03	1.6001E-03	3.8669E-04	2.1015E-04
4	1.1961E-03	1.0954E-03	1.0807E-03	6.7806E-04	6.0193E-04	6.4376E-04	3.1135E-04	1.6137E-04
5	1.1942E-03	1.0959E-03	1.0459E-03	7.0565E-04	6.2847E-04	6.9180E-04	3.1651E-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	1.8065E-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	4.4997E-04	1.2482E-03	3.2562E-03	2.7968E-03
3	1.9789E-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	3.8672E-04	1.3829E-04	3.4305E-04	1.0551E-03	8.2854E-04
5	7.6671E-05	9.6538E-05	1.2957E-04	3.9987E-04	1.5425E-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	9.7076E-04	1.8126E-04	5.2116E-02
4	3.4544E-04	2.0965E-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	2.6974E+06	1.9694E+09	7.2174E-01
2	9.0000E+05	1.5150E+05	1.0068E+07	2.7826E-01
3	4.0000E-01	1.2516E-01	3.6498E+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	3.9776E-01	1.1365E+00	2.0270E-01
4	4.1665E-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)

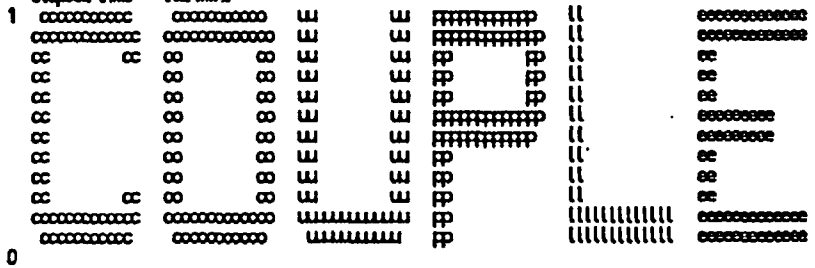
0zone	grp. 1	grp. 2	grp. 3
1	9.4289E-01	9.9751E-01	1.2260E+00
2	9.5556E-01	9.9851E-01	1.1740E+00
3	9.6269E-01	9.9870E-01	1.1506E+00
4	1.0040E+00	1.0001E+00	9.8580E-01
5	1.0000E+00	1.0000E+00	1.0000E+00

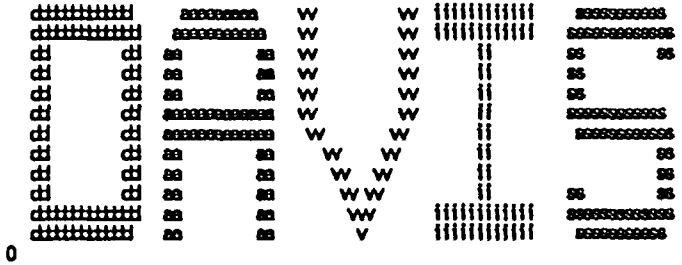
0cell averaged currents

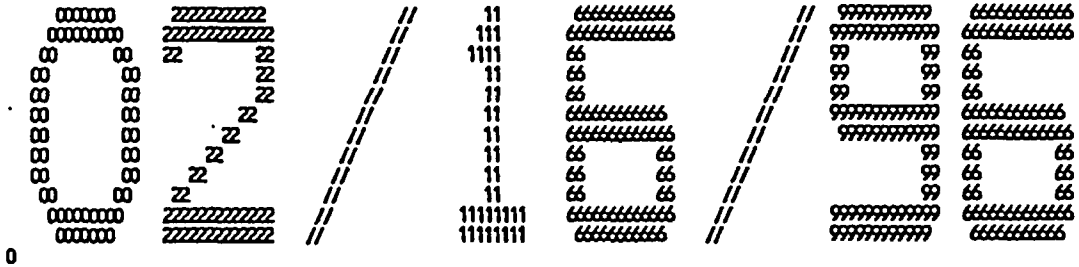
0zone	grp. 1	grp. 2	grp. 3
1	1.7252E-02	1.9434E-02	6.5122E-03

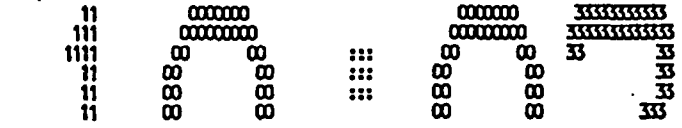
INFORMATION ONLY

```
    2 1.92659E-02 2.58942E-02 1.01178E-02
    3 1.98652E-02 2.25041E-02 1.02574E-02
    4 1.53024E-02 1.63041E-02 2.96220E-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    9.24142E-01
    5    2.75440E+01    1.00000E+00
 - elapsed time    .02 min.
```

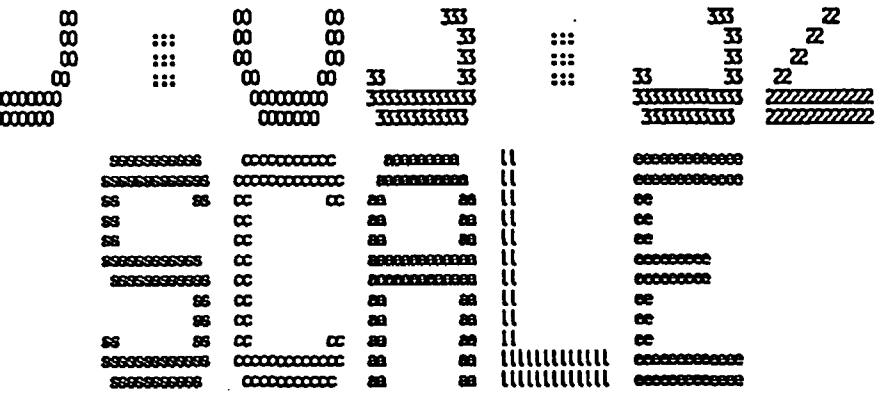


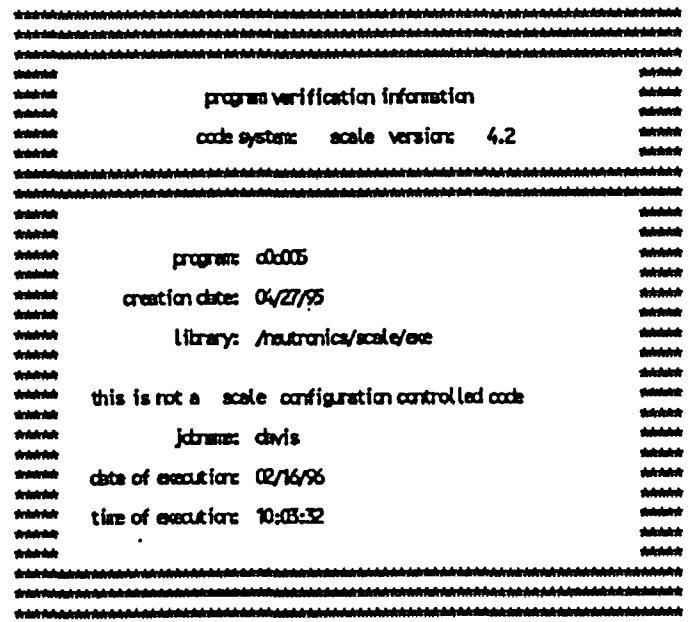






INFORMATION ONLY






```
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 -t$$ 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 xnpx (normalized to thermal flux), barns

                10010 to  10020 2.8440E-01
                10010 tot-cap   2.8440E-01
                50100 to  40100 2.4483E-02
                50100 to  10010 2.4483E-02
                50100 to  40090 3.7553E-03
                50100 to  10020 3.7553E-03
                50100 to  30070 3.2707E+03
                50100 to  20040 3.2709E+03
                50100 to  10030 9.1880E-02
                50100 tot-cap   3.2706E+03
                50110 to  50100 1.0815E-05
                50110 to  50120 4.3312E-03
                50110 to  40110 1.3801E-06
                50110 to  10010 1.3801E-06
                50110 to  40090 1.2316E-05
                50110 to  10030 1.2316E-05
                50110 to  30080 1.6078E-04
                50110 to  20040 1.6078E-04
                50110 tot-cap   4.5165E-03
                80160 to  80170 1.5195E-04
                80160 to  70160 9.4631E-05
                80160 to  10010 9.4631E-05
                80160 to  70150 1.7847E-05
                80160 to  10020 1.7847E-05
                80160 to  60130 2.6324E-02
                80160 to  20040 2.6324E-02
                80160 to  80161 4.1501E-05
                80160 tot-cap   2.6589E-02
               360850 to 360820 2.1484E-02
               360850 to 360810 2.2682E-09
               360850 to 360840 1.5488E+02
               360850 to 350850 8.7885E-04
               360850 to  10010 8.7885E-04
               360850 to 350820 7.0957E-06
               360850 to  10020 7.0957E-06
               360850 to 350810 2.4800E-06
               360850 to  10030 2.4800E-06
               360850 to 340810 4.0138E-08
               360850 to  20030 4.0138E-08
               360850 to 340800 4.7137E-05
               360850 to  20040 4.7137E-05
               360850 tot-cap   1.5490E+02
               360860 to 360860 1.4083E+00
               360860 tot-cap   1.4083E+00
               380900 to 380910 6.3195E-01
```

INFORMATION ONLY

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	1.87692E-01
400940	tot-cap	1.87692E-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	3.71695E+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	6.43386E-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	5.58234E-07
541310	to 10020	5.58234E-07
541310	to 531250	5.72615E-07
541310	to 10080	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 10080	4.66688E-08

INFORMATION ONLY

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	1.83943E-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	2.84834E-07
541360 to 20040	2.84834E-07
541360 tot-cap	1.42350E-01
551330 to 551320	8.61399E-05
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 591350	1.77353E-06
591410 to 571370	2.64952E-06
591410 to 20040	5.46942E-05
591410 to 581400	1.88144E-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 581350	1.64928E-06
591410 to 10030	1.64928E-06
591410 to 571350	1.59280E-08
591410 to 20030	1.59280E-08
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 581350	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

INFORMATION ONLY

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	1.74105E-08
601430 to 20030	1.74109E-08
601430 to 581400	5.59995E-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	8.48570E-05
611470 to 601460	1.29718E-05
611470 to 10010	2.88523E-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	5.41757E-09
611470 to 20030	5.41757E-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	8.66070E-02
621470 to 621450	7.78245E-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	2.34435E+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-06
621470 to 20030	6.44892E-06
621470 to 601440	1.21453E-03
621470 to 621471	1.68099E+00
621470 tot-cap	2.34539E+02
621490 to 621480	4.88892E-02
621490 to 621470	3.88270E-05

INFORMATION ONLY

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	2.00058E-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 10080	1.41451E-06
621510 to 601490	1.45722E-09
621510 to 20080	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	8.47630E-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 10080	1.47754E-07
621520 to 601500	4.47780E-10
621520 to 20080	4.47780E-10
621520 to 601490	9.31394E-06
621520 tot-cap	7.31215E+02
631530 to 631520	1.90020E-02
631530 to 631510	2.83759E-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 10080	1.17306E-06
631530 to 611510	2.68175E-08
631530 to 20080	2.68175E-08
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-05
631540 to 631550	1.07363E+03

INFORMATION ONLY

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-06
631550	to 611510	1.89941E-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	2.85398E-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	7.20578E+01
922360	to 922361	3.25586E+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	4.29652E-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	3.01064E+02
932370	to 932371	7.72498E-01
932370	tot-cap	3.06586E+02
942380	to 942370	2.43600E-03

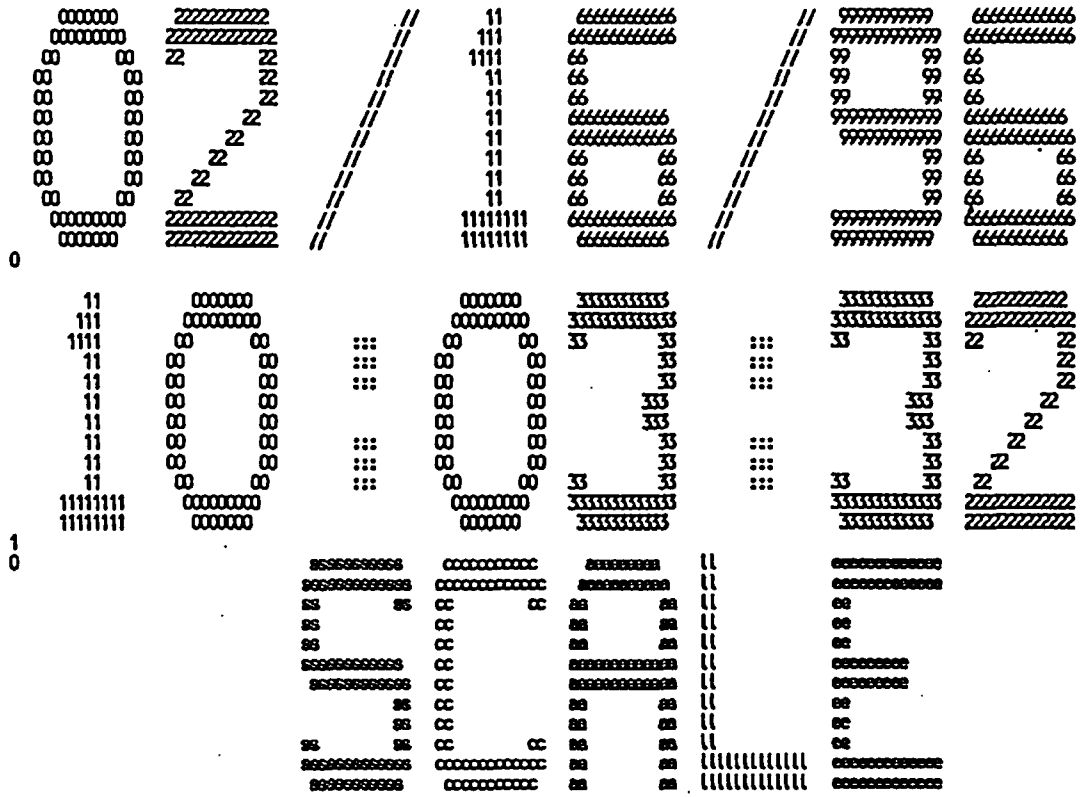
INFORMATION ONLY

```
                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-08
                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   1.85034E+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 2.98817E+02
                942410 tot-cap   1.18959E+03
                942420 to 942410 2.47306E-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   4.04052E+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
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
Use 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)
```

INFORMATION ONLY

```
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  932370 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  932370 to 932371 was not used, because  932371 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
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  952430 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   rrrrrrrrrrrr   iiiiiiiiiiii   gggggggggg   eeeeeeeeeeeee   mm        mm   ssssssssssss
    ooooooooooooo rrrrrrrrrrrrr  iiiiiiiiiiii   gggggggggggg  eeeeeeeeeeeee   mmm       mm   ssssssssssssss
    oo        oo  rr        rr       ii       gg        gg  ee            mmm       mm   ss        ss
    oo        oo  rr        rr       ii       gg            ee            mm mm     mm   ss
    oo        oo  rr        rr       ii       gg            ee            mm  mm    mm   ss
    oo        oo  rrrrrrrrrrrrr      ii       gg   gggggg   eeeeeeeee      mm   mm   mm   ssssssssssss
    oo        oo  rrrrrrrrrrrrr      ii       gg   gggggg   eeeeeeeee      mm    mm  mm   ssssssssssss
    oo        oo  rr      rr         ii       gg        gg  ee            mm     mm mm           ss
    oo        oo  rr       rr        ii       gg        gg  ee            mm      mm mm          ss
    oo        oo  rr        rr       ii       gg        gg  ee            mm       mmm  ss        ss
    ooooooooooooo rr         rr  iiiiiiiiiiii   gggggggggggg  eeeeeeeeeeeee   mm        mm   ssssssssssssss
     ooooooooooo  rr         rr  iiiiiiiiiiii    gggggggggg   eeeeeeeeeeeee   mm        mm   ssssssssssss
0

    dddddddddddd    aaaaaaaaa   w         w  iiiiiiiiiiii    ssssssssssss
    dddddddddddd   aaaaaaaaaaa  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  aaaaaaaaaaaaa w         w      ii        ssssssssssss
    dd        dd  aaaaaaaaaaaaa  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
```

INFORMATION ONLY



program verification information

code system: scale version: 4.2

program: d0c004

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:  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, qxn =    9.1188E-04
0            half-norm of matrix used, axn =    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 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-dependent 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 "preses2" 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 nuclids 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-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	7.98E-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	2.85E-19	3.21E-19
u232	2.10E-12	2.38E-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	3.95E-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	8.76E-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	4.45E-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	1.09E-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	8.03E-12	8.91E-12	9.84E-12	9.84E-12	1.08E-11	1.19E-11
pu237	2.62E-13	2.85E-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

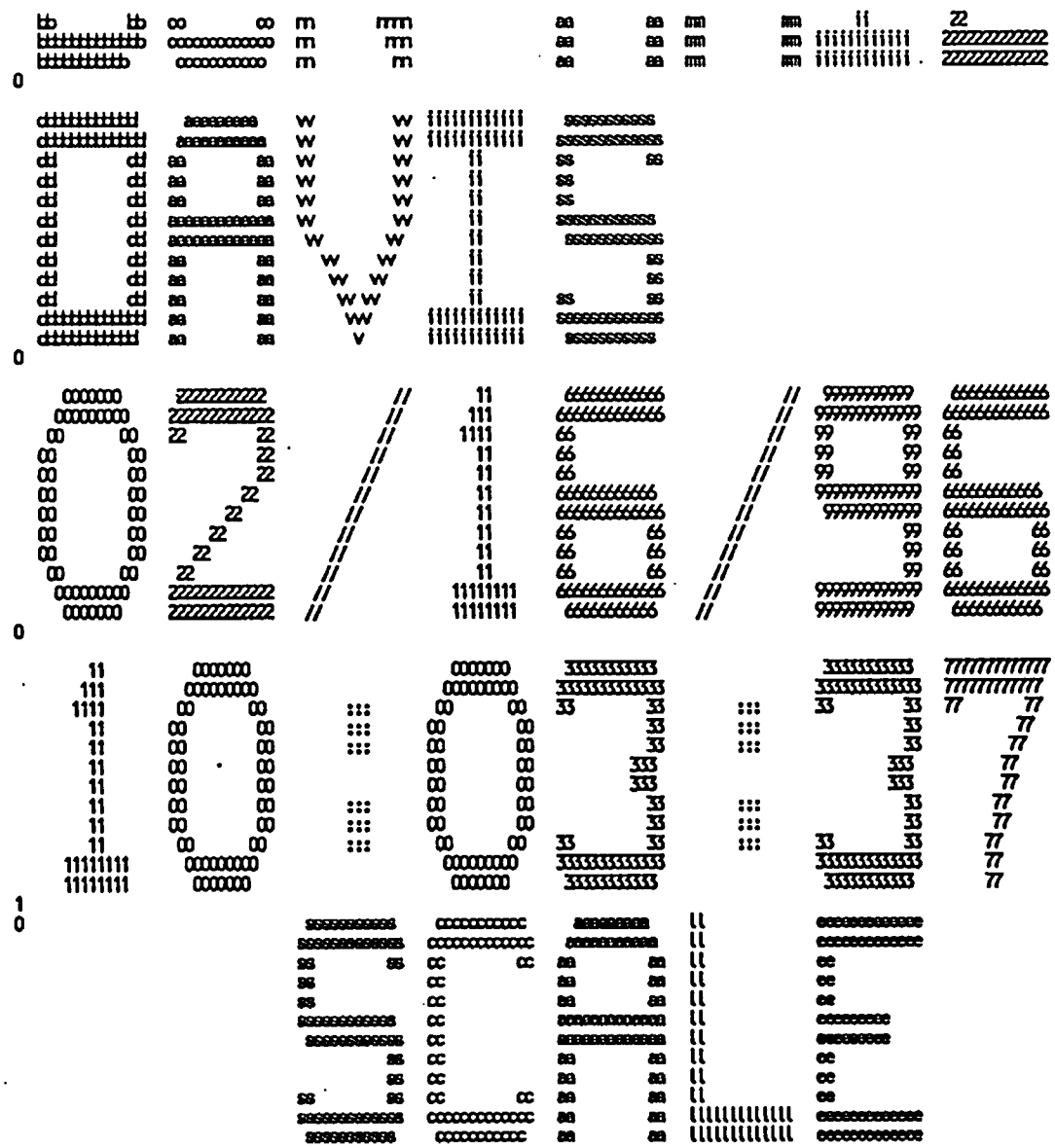
INFORMATION ONLY

```
    am240  1.87E-15 2.20E-15 2.44E-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  2.65E-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 8.65E-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 4.02E-10 4.02E-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, 3.00w%, 20gwd/mtu burn high temp                    actinides      page  2
      power= 8.46E-05mw, burnup=2.0318E-03mwd, flux= 1.61E+13y/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, 3.00w%, 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

Ordset          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 nuclide (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.
    l140  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
0non            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
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
 n-gamma, fission and total mev/fission =          7.0320E+00    1.9653E+02    2.0356E+02
 start of interval flux =        1.60012E+13
 n-gamma, fission and total mev/fission =          7.1140E+00    1.9661E+02    2.0372E+02
 start of interval flux =        1.60313E+13
 n-gamma, fission and total mev/fission =          7.2102E+00    1.9669E+02    2.0390E+02
 start of interval flux =        1.60621E+13
 n-gamma, fission and total mev/fission =          7.3057E+00    1.9677E+02    2.0407E+02
 start of interval flux =        1.60956E+13
 start of interval flux =         .00000E+00
 n-gamma, fission and total mev/fission =          7.4184E+00    1.9684E+02    2.0426E+02
 start of interval flux =        1.61296E+13
 n-gamma, fission and total mev/fission =          7.4947E+00    1.9692E+02    2.0441E+02
 start of interval flux =        1.61696E+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= 7, exec halts after pass   8
1 ttttttttttb    ooooooooooo  m        m                aaaaaaaaa   mm        mm iiiiiiiiiiii    zzzzzzzzzz
  ttttttttttttb  ooooooooooooo mm       m               aaaaaaaaaaa  mmm      mmm iiiiiiiiiiii    zzzzzzzzzzzz
  tb       tb  oo        oo  mmm      m               aa       aa  mmmm    mmmm     ii        22        22
  tb       tb  oo        oo  m m      m               aa       aa  mm mm   mm mm     ii                  22
  tb       tb  oo        oo  m  m    m               aa       aa  mm  mm mm  mm     ii                  22
  ttttttttttb  oo        oo  m   m   m  ------------  aaaaaaaaaaaa  mm   mmm   mm     ii                22
  ttttttttttb  oo        oo  m    m  m  ------------  aaaaaaaaaaaa  mm    m    mm     ii              22
  tb       tb  oo        oo  m     m m               aa       aa  mm         mm     ii            22
  tb       tb  oo        oo  m      mm               aa       aa  mm         mm     ii          22
```

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
0igr--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.
```

INFORMATION ONLY

0 10q array has 66 entries.
0 11q array has 4 entries.
0 m i x i n g t a b l e

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-06	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	1.44800E-05	40093
13	1	40094	2.28864E-05	40094
14	1	40095	1.98022E-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	5.01058E-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	40802	4.25156E-02	40802
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

INFORMATION ONLY

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	2.63619E-08	96244
65	1	999	1.00000E-20	999
66	4	999	1.00000E-20	66

Geometry and material description

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

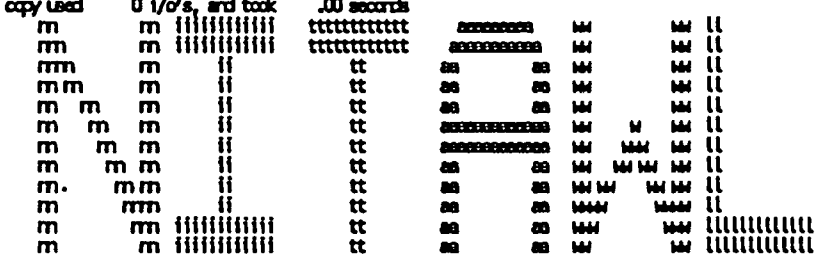
Copy	999	1/v cross sectio	from log	12	to log	18 bondarenko trigger 0
Copy	999	1/v cross sectio	from log	18	to log	1 bondarenko trigger 0
Copy	999	1/v cross sectio	from log	18	to log	1 bondarenko trigger 0
Copy	1001	hydrogen	from log	12	to log	1 bondarenko trigger 0
Copy	5010	b-10 1273 218ngp	from log	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

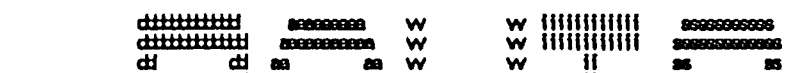
INFORMATION ONLY

```
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 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 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          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/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
```

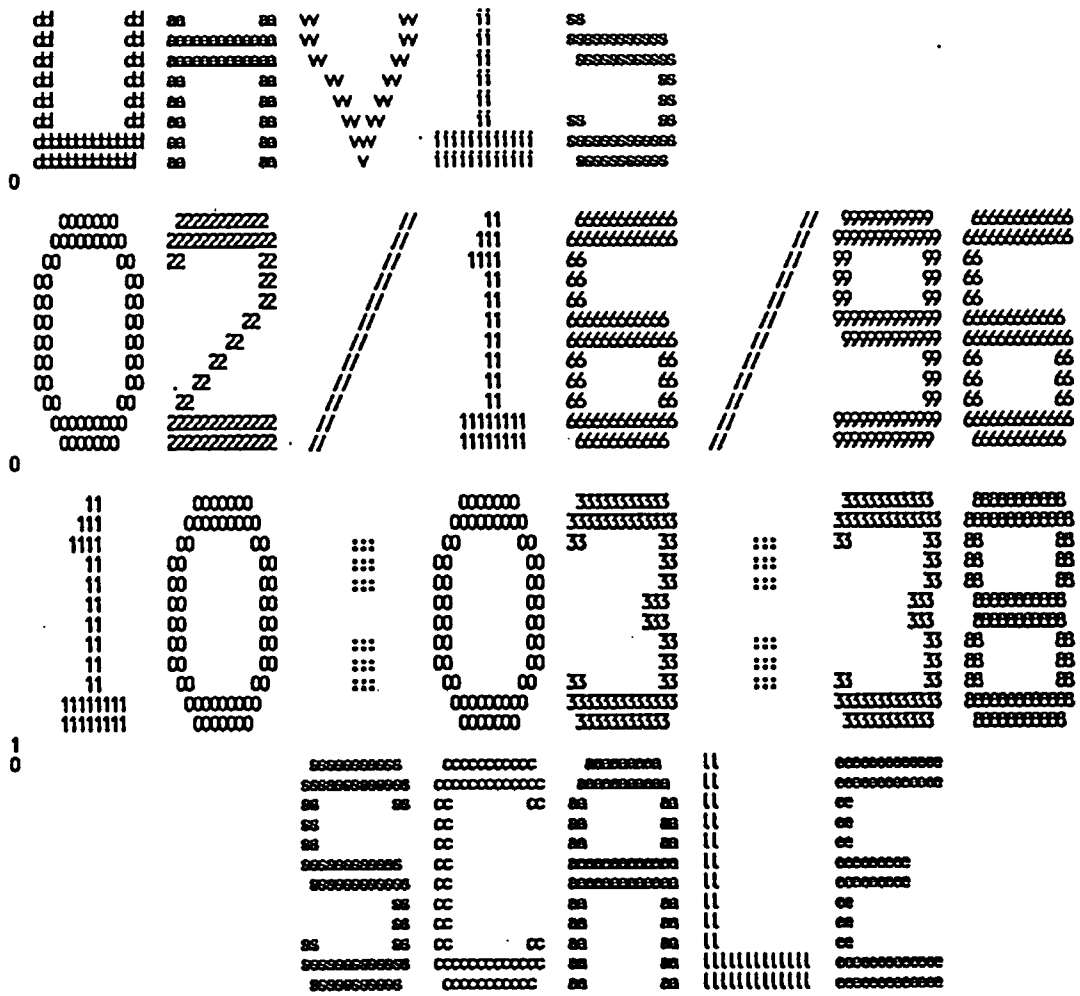
INFORMATION ONLY

```
      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 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 218rgp 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              rn         rn  iiiiiiiiiiii   tttttttttttt    aaaaaaaaa   ww         ww  ll
               rnn        rn  iiiiiiiiiiii   tttttttttttt    aaaaaaaaaa  ww         ww  ll
               rnnn       rn       ii            tt        aa        aa  ww         ww  ll
               rn rn      rn       ii            tt        aa        aa  ww         ww  ll
               rn  rn     rn       ii            tt        aa        aa  ww         ww  ll
               rn   rn    rn       ii            tt        aaaaaaaaaaaa  ww    w    ww  ll
               rn    rn   rn       ii            tt        aaaaaaaaaaaa  ww   www   ww  ll
               rn     rn  rn       ii            tt        aa        aa  ww  ww ww  ww  ll
               rn.     rn rn       ii            tt        aa        aa  ww ww   ww ww  ll
               rn       rnn        ii            tt        aa        aa  wwww     wwww  ll
               rn        rnn  iiiiiiiiiiii       tt        aa        aa  www       www  llllllllllll
               rn         rn  iiiiiiiiiiii       tt        aa        aa  ww         ww  llllllllllll
0

  dddddddddddd    aaaaaaaaa    w         w  iiiiiiiiiiii    ssssssssss
  dddddddddddd   aaaaaaaaaaa   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/eve       ******
                  ******                                                  ******
                  ******                                                  ******
                  ******    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/thrmal002   updated 10/13/89   1001
     3    b-10 1273 218grp 04295 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 sigo=5+4 newlacs 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 newlacs 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 newlacs 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 newlacs 218rgp 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

INFORMATION ONLY

```
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 218grp 042575 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   = 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)= 1.048957E+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    9.885995E-03
  13     -5.318041E-01    .000000E+00   -1.995370E-01
  14      4.783525E-05    .000000E+00   -1.723491E-05
0excess resonance integrals
0              resolved
0absorption    1.4466E+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   = 1.447150E-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    1.4637E-01
 fission       .0000E+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   = 2.288641E-05
0spin factor (g)          =  180.853          lump dimension (a-bar)   = 4.681220E-01
```

INFORMATION ONLY

```
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)= 7.4611826E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953              sigma(per absorber atom)= 8.3243535E+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
   8      -1.463173E-06    .000000E+00   -1.371799E-03
   9      -4.468161E-05    .000000E+00   -3.950986E-03
Oexcess resonance integrals
O                  resolved
Oabsorption       3.43578E-02
 fission           .00000E+00
- elapsed time    .00 min.
O zr-95          mt=102                    updated 10/13/89          40095     temperature=  975.00
O zircalloy      endf/b-iv mat 1284        updated 10/13/89          40302     temperature=  650.00
Oresonance data for this nuclide
Omass number (a)          =    90.436          temperature(kelvin)       =   650.000
Opotential scatter sigma  =     6.385          lumped nuclear density    = 4.2515602E-02
Ospin factor (g)          =     1.079          lump dimension (a-bar)    = 5.4610002E-01
Oinner radius             = 4.7878999E-01      dancoff correction (c)    = 5.0364637E-01
Othe absorber 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
   8      -1.780596E-03    .000000E+00   -1.286907E+00
   9      -5.895373E-02    .000000E+00   -2.695297E+00
  10      -6.959935E-02    .000000E+00   -1.601321E+00
  11      -1.883987E-01    .000000E+00   -7.920912E-01
Oexcess resonance integrals
O                  resolved
Oabsorption       2.28539E-01
 fission           .00000E+00
- elapsed time    .02 min.
O rb-94          mt=102                    updated 10/13/89          41094     temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =    93.101          temperature(kelvin)       =   975.000
Opotential scatter sigma  =     3.779          lumped nuclear density    = 1.1977532E-11
Ospin factor (g)          = 43808.801          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)= 1.4256668E+10
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953              sigma(per absorber atom)= 1.5905996E+10
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
  13       1.043531E-02    .000000E+00    9.253882E-04
  14       9.836712E-03    .000000E+00   -4.064814E-04
Oexcess resonance integrals
O                  resolved
Oabsorption       9.15001E+01
 fission           .00000E+00
- elapsed time    .02 min.
O mo-95          mt=102                    updated 10/13/89          42095     temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =    94.091          temperature(kelvin)       =   975.000
```

INFORMATION ONLY

```
Opotential scatter sigma =     3.806          lumped nuclear density    = 1.9850915E-05
Ospin factor (g)         =   607.724          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)= 8.6021064E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 9.5972686E+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      -4.213186E-03    .000000E+00   -2.519524E-02
  11      -7.851104E-03    .000000E+00   -1.294423E-02
  12      -5.421113E+00    .000000E+00   -6.236655E+00
  13       1.567912E-04    .000000E+00   -2.000911E-05
Oexcess resonance integrals
0                  resolved
Oabsorption       9.65135E+01
 fission           .00000E+00
- elapsed time     .02 min.
0 tc-99          mt=102                  updated 10/13/89          43099    temperature=   975.00
Oresonance data for this nuclide
Omass number (a)         =    98.150          temperature(kelvin)       =   975.000
Opotential scatter sigma =     6.000          lumped nuclear density    = 2.2395130E-05
Ospin factor (g)         =  4527.940          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)= 7.6248579E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 8.5069639E+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
  11      -2.889046E-02    .000000E+00   -1.360966E-02
  12      -7.652462E-03    .000000E+00   -2.696194E-04
  13      -4.684640E-01    .000000E+00   -2.465246E-02
  14      -9.945614E+00    .000000E+00   -3.170968E-01
  15       1.069754E-02    .000000E+00   -5.383165E-04
  16       4.835994E-03    .000000E+00   -2.802025E-04
  17       2.074365E-04    .000000E+00   -1.191927E-05
Oexcess resonance integrals
0                  resolved
Oabsorption       3.21540E+02
 fission           .00000E+00
- elapsed time     .03 min.
0 ru-101         mt=102                  updated 10/13/89          44101    temperature=   975.00
Oresonance data for this nuclide
Omass number (a)         =   100.089          temperature(kelvin)       =   975.000
Opotential scatter sigma =     3.965          lumped nuclear density    = 2.0537844E-05
Ospin factor (g)         =  8785.290          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)= 8.3143926E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.953          sigma(per absorber atom)= 9.2762695E+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
```

INFORMATION ONLY

```
  11      -3.670937E-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      7.90961E+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   = 1.2443061E-05
0spin factor (g)          =     .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)= 1.3725287E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          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   -1.707123E-01
  18       8.668073E+01     .000000E+00    2.604877E-01
  19       1.142152E+01     .000000E+00   -1.303896E-03
  20       1.081809E+00     .000000E+00   -2.425992E-03
  21       2.165767E-01     .000000E+00    1.925245E-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      1.13757E+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)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995          sigma(per absorber atom)= 1.9974063E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953          sigma(per absorber atom)= 2.2284826E+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
```

INFORMATION ONLY

```
  13     -5.664188E-02     .000000E+00   -1.451314E-03
  14      7.759710E-04     .000000E+00   -8.119541E-05
0excess resonance integrals
0                resolved
0absorption      6.118333E+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)          =   105.977          temperature(kelvin)     =   975.000
0potential scatter sigma  =     4.146          lumped nuclear density  = 2.520834E-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)= 6.775305E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 7.559128E+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      2.113095E+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  = 1.728545E-06
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)= 9.878809E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.102167E+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   -2.261462E-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      1.381134E+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
```

INFORMATION ONLY

```
Opotential scatter sigma =    4.301          lumped nuclear density   = 1.0167540E-05
Ospin factor (g)         =  246.825          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)= 1.6794592E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  237.983          sigma(per absorber atom)= 1.8737529E+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      -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      -7.980322E+01    .000000E+00   -1.870293E+02
 14       1.050233E-02    .000000E+00    1.471501E-02
Oexcess resonance integrals
O                  resolved
Oabsorption       7.47446E+02
 fission           .00000E+00
- elapsed time     .08 min.
O xe-132        mt=102,103,104,105,106        updated 10/13/89          54132     temperature=  975.00
Oresonance data for this nuclide
Omass number (a)         =  130.771          temperature(kelvin)      =  975.000
Opotential scatter sigma =    4.301          lumped nuclear density   = 1.9860965E-05
Ospin factor (g)         =  675.899          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)= 8.5977539E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  237.983          sigma(per absorber atom)= 9.5924121E+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
  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
Oexcess resonance integrals
O                  resolved
Oabsorption       9.68480E-01
 fission           .00000E+00
- elapsed time     .08 min.
O xenon-135     endf/b-iv mat 1294            updated 10/13/89          54135     temperature=  975.00
O xe-136          mt= 102, 103, 104, 105, 107                             54136     temperature=  975.00
O cesium-133    endf/b-iv mat 1141            updated 10/13/89          55133     temperature=  975.00
Oresonance data for this nuclide
Omass number (a)         =  131.764          temperature(kelvin)      =  975.000
Opotential scatter sigma =    7.100          lumped nuclear density   = 2.4571029E-05
Ospin factor (g)         =  374.437          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)= 6.9496348E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =  238.051          sigma(per absorber atom)= 7.4543945E+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
```

INFORMATION ONLY

```
  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      -1.956238E-01     .000000E+00   -2.720965E-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)   = 3.426926E-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    =   237.983          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   -2.197985E-05
0excess resonance integrals
0                 resolved
0absorption       1.38468E+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)          =   145.855          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)= 7.152544E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.983          sigma(per absorber atom)= 7.980009E+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
```

INFORMATION ONLY

```
0absorption    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
0resonance data for this nuclide
0mass number (a)        =  139.697          temperature(kelvin)     =  975.000
0potential scatter sigma =    4.953         lumped nuclear density  = 2.084564E-05
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)= 8.191623E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933          sigma(per absorber atom)= 9.139297E+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    -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
0excess resonance integrals
0              resolved
0absorption    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
0resonance data for this nuclide
0mass number (a)        =  141.682          temperature(kelvin)     =  975.000
0potential scatter sigma =    5.000         lumped nuclear density  = 1.828641E-05
0spin factor (g)        = 1984.860          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)= 9.338064E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933          sigma(per absorber atom)= 1.041836E+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    -1.801388E-04   .000000E+00   -1.069724E-04
  11    -4.224906E-01   .000000E+00   -4.906454E+00
  12    -2.802144E-01   .000000E+00   -1.378043E-01
0excess resonance integrals
0              resolved
0absorption    5.06298E+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  = 1.363306E-05
0spin factor (g)        = 1007.250          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)= 1.252514E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.933          sigma(per absorber atom)= 1.397456E+04
0moderator-2 will be treated by the nordheim integral method.
```

INFORMATION ONLY

```
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   -1.253801E+01
  13       9.566028E-05    .000000E+00    2.045997E-04
  14      -1.849842E+00    .000000E+00   -4.860699E-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   -1.063925E-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       2.05303E+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   = 4.3050986E-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)= 3.9664523E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 4.4253242E+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   -6.936160E-02
  13      -5.553136E-02    .000000E+00   -3.134629E-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    1.746689E-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       1.99739E+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   = 1.7999949E-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)= 9.4866766E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953          sigma(per absorber atom)= 1.0584173E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
```

INFORMATION ONLY

```
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  -7.173975E-03
  15     3.110962E-01   .000000E+00  -1.897057E-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  -4.626545E-05
0excess resonance integrals
0                resolved
0absorption      7.2079AE+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          6249    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)= 2.137883E+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     5.080254E-04   .000000E+00  -8.204340E-03
0excess resonance integrals
0                resolved
0absorption      8.0432BE+02
 fission         .0000E+00
- elapsed time    .15 min.
0 sm-150      mt=102                  updated 10/13/89          6250    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     -1.232569E-01  .000000E+00  -3.724080E-02
  13     -8.618197E+00  .000000E+00  -6.782185E+00
  14     1.064539E-04   .000000E+00  -6.370252E-05
```

INFORMATION ONLY

```
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)          =  7557.703          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)= 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     -2.49437E-01      .000000E+00     -2.30573E-02
  15      1.48391E+01      .000000E+00      7.50405E-02
  16     -2.18337E+01      .000000E+00     -6.20844E-02
  17      1.73499E+02      .000000E+00      8.26217E-01
  18     -3.20790E+02      .000000E+00     -1.78511E+00
  19      6.25334E+01      .000000E+00      3.86744E-01
  20      1.14109E+00      .000000E+00     -1.38752E-04
  21     -7.11762E-02      .000000E+00      1.24409E-02
  22      6.95259E-02      .000000E+00      3.83891E-03
  23     -1.09195E-02      .000000E+00      3.37408E-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)   = 3.4259261E-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      2.40262E-06      .000000E+00      1.15852E-04
  10     -1.91772E-03      .000000E+00     -2.96366E-02
  11     -2.75239E-02      .000000E+00     -1.04743E-01
  12     -1.84085E-01      .000000E+00     -5.83628E-01
  13      4.16582E-02      .000000E+00      1.01253E-01
  14     -1.59191E+02      .000000E+00     -3.07240E+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
```

INFORMATION ONLY

```
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    =   237.953          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       5.055436E-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    =   237.953          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   -2.584699E-02
  14       2.938449E-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
```

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)= 6.0226324E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.983                 sigma(per absorber atom)= 6.7193800E+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      -3.373435E-01     .000000E+00   -1.646314E-04
  16       1.477357E+00     .000000E+00   -4.148866E-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      -5.205795E+03     .000000E+00    1.961528E+00
  27      -1.660027E+03     .000000E+00    7.392855E-01
0excess resonance integrals
0                  resolved
0absorption       3.97015E+04
 fission           .00000E+00
- elapsed time    .20 min.
0u-234 1043 sigo=5+4 newxlacs 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    = 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    =   237.985                 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   -5.972941E-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       5.84496E+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.
```

INFORMATION ONLY

```
Omass of moderator-1    =    15.995              sigma(per absorber atom)= 4.6853799E+02
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   238.049              sigma(per absorber atom)= 5.0281970E+02
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
  12      -1.548013E+00   -9.642565E-01   -3.629514E-02
  13      -5.519265E+00   -2.750468E+00   -1.197143E-01
  14      -4.442442E+00   -2.737241E+00   -3.041829E-02
Oexcess resonance integrals
0                  resolved
Oabsorption       2.14703E+02
 fission          1.27737E+02
- elapsed time     .22 min.
Ou-236 1163 sigo=5+4 newklacs p-3 298k f-1/e-m(1.+5)                    92236    temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   234.017              temperature(kelvin)      =   975.000
Opotential scatter sigma  =    10.995              lumped nuclear density   = 6.1558632E-05
Ospin factor (g)          =  6328.490              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)= 2.7739358E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   237.934              sigma(per absorber atom)= 3.0943074E+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
  11      -2.948038E-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
Oexcess resonance integrals
0                  resolved
Oabsorption       2.68511E+02
 fission          .00000E+00
- elapsed time     .22 min.
O uranium-238    endf/b-iv mat 1262          updated 10/13/89          92238    temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   236.006              temperature(kelvin)      =   975.000
Opotential scatter sigma  =    10.599              lumped nuclear density   = 2.1780336E-02
Ospin factor (g)          =   656.527              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)= 7.8400850E+00
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2    =   235.041              sigma(per absorber atom)= 3.3757189E-01
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      -3.927211E-02    .000000E+00   -4.035209E-01
  10      -1.023942E+00   -1.742067E-05   -6.471693E+00
  11      -9.702673E+00    .000000E+00   -2.688686E+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
Oexcess resonance integrals
0                  resolved
```

INFORMATION ONLY

```
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    = 4.7003864E-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)= 3.6328859E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 3.8967465E+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  -3.659707E-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 sigo=5+4 newxlacs 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  =    10.890          lumped nuclear density    = 8.0928805E-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)= 2.1099988E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 2.2632503E+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      -5.186105E-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    = 1.1685169E-04
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)= 1.4613369E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 1.5674755E+03
0moderator-2 will be treated by the nordheim integral method.
```

INFORMATION ONLY

```
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      -2.43527E-01    -9.80585E-02    -7.43981E-02
  12      -2.14867E+00    -8.06733E-01    -2.82340E-01
  13      -7.01773E+00    -4.12811E+00    -1.07435E-01
  14      -2.23632E+00    -1.19044E+00    -1.97697E-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          9424.0    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  = 2.568078E-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      -6.71148E-05    -2.11305E-06    -3.29011E-04
  10      -6.13990E-03    -3.78259E-04    -2.80234E-02
  11      -1.94159E-01    -1.12352E-03    -2.58133E-01
  12      -2.66772E+00    -1.45668E-02    -2.55455E+00
  13      -3.32821E-01    -2.04075E-03    -2.42558E-02
  14       .000000E+00     .000000E+00     .000000E+00
  15       1.72611E-02     3.29436E-06     3.38540E-03
  16       2.70108E+00     5.15513E-04     3.33362E-01
  17       4.08942E+02     7.70954E-02     3.57886E+01
  18      -8.92469E+03    -1.70831E+00    -7.03217E+02
  19       5.11138E+02     9.75529E-02     4.12100E+01
  20      -9.41113E+01    -1.79615E-02     1.79825E+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          9241.0    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   238.978          temperature(kelvin)     =  975.000
0potential scatter sigma  =    10.989          lumped nuclear density  = 1.476239E-05
0spin factor (g)          = 1642.100           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      -8.92974E-03    -8.58634E-03     5.35062E-04
  13      -9.71259E-01    -7.42928E-01    -2.81855E-02
  14      -9.68524E-01    -6.85270E-01    -2.74136E-03
```

INFORMATION ONLY

```
  15      1.781677E-02   1.596397E-02   -4.623220E-04
0excess resonance integrals
0                  resolved
0absorption       5.06839E+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    = 2.0104515E-06
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)= 8.4935984E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 9.1104984E+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      -1.144884E-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       1.08606E+03
 fission          .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp=5+4 newxlacs 218ngp p-3 298k                          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    = 5.1591286E-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)= 3.3098553E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051          sigma(per absorber atom)= 3.5502538E+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    4.451496E-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 298k                           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    = 2.2520386E-07
0spin factor (g)          = 82052.602          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
```

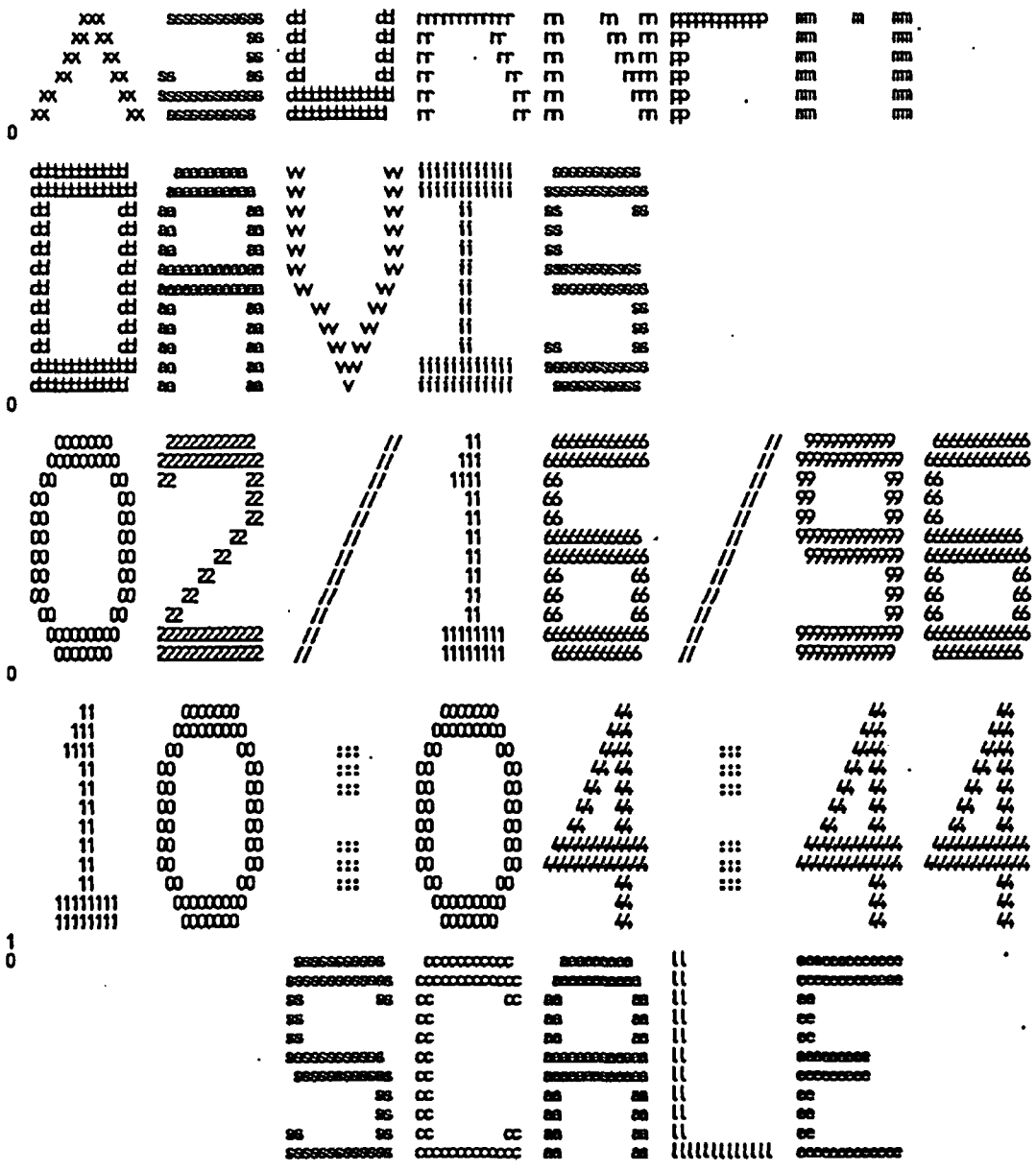
INFORMATION ONLY

```
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 7.5824494E+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-08
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)= 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 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/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
      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 218grp 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
1  xx        xx  sssssssssss  ddddddddddd   rrrrrrrrrrr   m         m  pppppppppppp   mm         mm
    xx      xx  sssssssssssss ddddddddddd  rrrrrrrrrrrr  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  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     sssssssssssss dd       dd  rrrrrrrrrrrr  m   m     m  pppppppppppp   mm   mmm   mm
```

INFORMATION ONLY

INFORMATION ONLY



INFORMATION ONLY

```
ssssssssss    cccccccccc    aa        aa    lllllllllllll    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:  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

 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       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      id1  0/1/2/3=no/prt nd/pch n/both     53
```

INFORMATION ONLY

```
 ifg number of first thermal group      15      ipot -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 (0/1=no/yes)    0       idfm 0/1 = none/density factors 39*    1
 ipm  boundary sources (0/1=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
 tmx  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 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/-1/0/1=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       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       xmm  new param mod for search  7.50000E-01
     this case will require      2535 locations for mixing
     this case has been allocated 20000 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    6.15585E-06
      4    5011                                        1      92238    2.17803E-02
      5    8016                                        1       8016    4.55399E-02
      6       6                                        3          6    2.09710E-02
      7   36083                                        1      36083    1.62790E-06
      8   36085                                        1      36085    7.85545E-07
      9   38090                                        1      38090    1.79089E-05
     10   39089                                        1      39089    1.44715E-05
     11   42098                                        1      42095    1.98509E-05
     12   42094                                        1      42098    1.44900E-05
     13   42095                                        1      42094    2.28864E-05
     14   42802                                        1      42095    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    2.38393E-08
     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	6.66395E-09
28	54135	1	54136	3.91142E-05
29	54136	1	55134	1.27988E-06
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	1.28368E-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	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	2.45710E-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	1.47634E-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	2.62619E-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/o, 20gd/btu 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	4.40489E-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	4.66517E+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	1.15125E+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	1.72620E+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	3.57866E+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	1.96347E+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%, 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			5.05143E-02	-1.97286E-01	3	-9.96548E-03
3	2	3			5.05143E-02	1.97286E-01	2	9.96548E-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	-1.28592E-02
7					5.55953E-02	2.31301E-01	6	1.28592E-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	-4.37059E-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	4.37059E-02

0constants for p(3) scattering

0arg	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.85236E-01	6.74143E-02	-6.16915E-01	-1.71701E-02
2	-1.97286E-01	8.85236E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.85236E-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	2.25713E-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	-8.57259E-02	6.26843E-01	-1.98456E-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	-9.83033E-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	4.17256E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01
22	5.46143E-01	-4.49528E-01	-3.20862E-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 fmt

int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10900E-03	1.00000E+00	0	
2	2.59100E-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	2.93567E-01	1	1.47065E+00	2.21259E-01	1.00000E+00		
6	3.53073E-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	7.63992E-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	-1.25636E-02	1.00000E+00	-4.22462E-03	.00000E+00	.0000
2	185	8.53298E-06	1.01259E+00	-3.16202E-04	-1.23238E-03	-8.13098E-04	.00000E+00	.0000
3	232	3.91928E-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	asf int.	max. scale factor	coarse mesh
1	1	1	5.78574E-08	2%	1.00000E+00	1
2	1	1	6.59902E-08	2%	1.00000E+00	1
3	1	1	5.81588E-08	2%	1.00000E+00	1
4	1	1	5.37730E-08	2%	1.00000E+00	1
5	1	1	4.50401E-08	2%	1.00000E+00	1
6	1	1	2.47275E-08	2%	1.00000E+00	1
7	1	1	1.00180E-08	2%	1.00000E+00	1
8	1	2%	1.38611E-08	2%	1.00000E+00	1
9	1	1	2.17652E-08	2%	1.00000E+00	1
10	1	1	1.85300E-08	2%	1.00000E+00	1

INFORMATION ONLY

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	2.29950E-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	1.67941E-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/o, 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	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	2.94045E-02	4.12845E-02
4	1	1.14247E-01	1.74155E-01	7.17848E-01	1.31104E-01	1.85931E-01
5	1	2.34061E-01	2.99967E-01	1.47065E+00	2.21259E-01	3.21681E-01
6	1	3.53873E-01	3.80612E-01	2.22545E+00	1.27850E-01	1.90999E-01
7	1	4.07351E-01	4.24781E-01	2.55944E+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	4.07944E-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	4.16025E-03	.00000E+00
13	3	4.78790E-01	4.83159E-01	3.00833E+00	2.65268E-02	.00000E+00
14	3	4.87528E-01	4.99387E-01	3.06325E+00	7.82768E-02	.00000E+00
15	3	5.12445E-01	5.24003E-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	4.89582E+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 1040 d, sas2h: babcock wilcox 15x15, 3.00w/o, 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	1.82381E-01	1.34291E+00	1.68857E+00	1.04435E+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	2.08276E+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	1.33966E+00	1.68321E+00	1.04117E+00	1.57248E+00	3.02121E+00	2.89756E+00	2.08111E+00
5	1.80950E-01	1.32767E+00	1.66940E+00	1.03280E+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	2.96693E+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

INFORMATION ONLY

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	2.83540E+00	2.06979E+00
12	1.76862E-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	1.27984E+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	1.60263E+00	9.93285E-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	1.47806E+00	2.83912E+00	2.79259E+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	1.57549E+00	9.73644E-01	1.46564E+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	6.69897E-01	5.78762E-01	3.66058E-01	2.00050E-01
3	1.58852E+00	1.44948E+00	1.30948E+00	7.97844E-01	6.70348E-01	5.79495E-01	3.66142E-01	2.00105E-01
4	1.59034E+00	1.45088E+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	8.23064E-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	6.24868E-01	3.70992E-01	2.03533E-01
10	1.60121E+00	1.46258E+00	1.33854E+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	8.34246E-01	7.01935E-01	6.28233E-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	2.04085E-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	8.43484E-01	7.09996E-01	6.40507E-01	3.72724E-01	2.04772E-01
17	1.60492E+00	1.46777E+00	1.34956E+00	8.45300E-01	7.11576E-01	6.42957E-01	3.72957E-01	2.04943E-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	1.60694E+00	1.47000E+00	1.35436E+00	8.50735E-01	7.16187E-01	6.50057E-01	3.73465E-01	2.05440E-01
20	1.60668E+00	1.47151E+00	1.35761E+00	8.54433E-01	7.19332E-01	6.54930E-01	3.75798E-01	2.05775E-01
21	1.60726E+00	1.47258E+00	1.35993E+00	8.57070E-01	7.21546E-01	6.58373E-01	3.75974E-01	2.05987E-01
22	1.60730E+00	1.47269E+00	1.36015E+00	8.57303E-01	7.21694E-01	6.58641E-01	3.75985E-01	2.05970E-01
23	1.60715E+00	1.47262E+00	1.35957E+00	8.56618E-01	7.21070E-01	6.57712E-01	3.75725E-01	2.05897E-01
24	1.60696E+00	1.47208E+00	1.35884E+00	8.55775E-01	7.20315E-01	6.56577E-01	3.75665E-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	2.72522E-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	1.03452E-01	1.70265E-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	5.04325E-01
7	8.17081E-02	3.89239E-02	1.19704E-01	4.20212E-01	1.09057E-01	1.87209E-01	6.79125E-01	5.14496E-01
8	8.24852E-02	4.22680E-02	1.20966E-01	4.22441E-01	1.11319E-01	1.94259E-01	6.89985E-01	5.23925E-01
9	8.28877E-02	4.40726E-02	1.21615E-01	4.23596E-01	1.12493E-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	1.21963E-01	4.24237E-01	1.13004E-01	1.99691E-01	6.98433E-01	5.31298E-01
13	8.32302E-02	4.51538E-02	1.22160E-01	4.24578E-01	1.13425E-01	2.00657E-01	7.00053E-01	5.32670E-01
14	8.36166E-02	4.63501E-02	1.22785E-01	4.25725E-01	1.14474E-01	2.03658E-01	7.05094E-01	5.36938E-01
15	8.41472E-02	4.79565E-02	1.23660E-01	4.27285E-01	1.15906E-01	2.07717E-01	7.11953E-01	5.42633E-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	4.97100E-02	1.24644E-01	4.28969E-01	1.17525E-01	2.12276E-01	7.19791E-01	5.48882E-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	5.60603E-01

INFORMATION ONLY

20	8.59855E-02	5.34785E-02	1.26653E-01	4.32570E-01	1.21128E-01	2.22687E-01	7.39738E-01	5.68903E-01
21	8.63460E-02	5.45636E-02	1.27238E-01	4.33319E-01	1.22187E-01	2.25765E-01	7.46050E-01	5.75376E-01
22	8.63782E-02	5.44656E-02	1.27277E-01	4.33332E-01	1.22296E-01	2.26085E-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	7.45695E-01	5.75577E-01
24	8.61717E-02	5.40651E-02	1.26918E-01	4.32637E-01	1.21716E-01	2.24222E-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	1.23585E-01	1.69403E-02
5	2.05762E-01	1.29239E-01	1.84460E-02
6	2.13926E-01	1.35609E-01	2.05164E-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	2.43125E-02
12	2.27388E-01	1.48600E-01	2.43969E-02
13	2.28079E-01	1.49212E-01	2.45886E-02
14	2.30159E-01	1.51057E-01	2.50764E-02
15	2.32871E-01	1.53420E-01	2.57046E-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	1.59853E-01	2.75966E-02
19	2.42120E-01	1.62871E-01	2.87646E-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	9.99982E-01
6	.00000E+00	1.76775E-01	1.35084E-01	6.53804E-01	5.43663E-02	6.84980E-03	2.50681E-01	1.00008E+00
7	.00000E+00	8.73119E-02	9.85315E-02	7.44390E-01	3.68357E-02	7.33403E-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	2.08503E-02	1.00005E+00
9	.00000E+00	9.75775E-04	2.17433E-02	5.35905E-01	2.07200E-02	2.26986E-02	-2.06997E-02	9.99989E-01
10	.00000E+00	7.24738E-05	2.07420E-02	4.63058E-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	7.32659E-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	-6.86555E-03	1.00884E+00
17	.00000E+00	1.34698E-10	7.50465E-03	1.39004E-02	7.09917E-03	9.38662E-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	2.23647E-02	8.17551E-03	1.21377E-02	-1.46440E-02	1.00124E+00
20	.00000E+00	2.21711E-10	9.23074E-03	9.78388E-02	9.27267E-03	2.63381E-02	-2.64888E-02	1.00349E+00
21	.00000E+00	3.24514E-11	8.61736E-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	3.59986E-11	1.32095E-02	1.53627E-01	1.69174E-02	1.20497E-01	-1.26354E-01	1.00107E+00
24	.00000E+00	9.79834E-12	2.07954E-02	1.08285E-01	2.09913E-02	1.09955E-01	-1.08266E-01	1.00087E+00
25	.00000E+00	2.86831E-12	1.79975E-02	4.12148E-02	1.36521E-02	5.83624E-02	-5.40644E-02	1.00066E+00
26	.00000E+00	2.01128E-12	8.89672E-03	2.88298E-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	-1.38526E-02	1.00029E+00

INFORMATION ONLY

28	.00000E+00	1.00000E+00	6.17724E-01	5.39535E+00	6.17724E-01	9.43006E-01	5.86340E-02	1.00043E+00
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rxn rate	fiss rate	flux*dv**2	total flux
1	1.77270E-01	1.14174E-02	1.82319E-01	.00000E+00	2.31152E-03	2.68492E-03	.00000E+00	1.24165E-01
2	1.29068E+00	1.16197E-01	1.34229E+00	.00000E+00	1.68905E-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	7.08148E-01
5	1.51810E+00	1.33075E-01	1.57705E+00	.00000E+00	.00000E+00	1.77908E-03	.00000E+00	1.08904E+00
6	2.91742E+00	2.50681E-01	3.03060E+00	.00000E+00	.00000E+00	1.46332E-03	.00000E+00	2.05374E+00
7	2.88813E+00	1.42170E-01	2.90547E+00	.00000E+00	.00000E+00	1.36952E-03	.00000E+00	1.98058E+00
8	2.07082E+00	2.08638E-02	2.08220E+00	.00000E+00	.00000E+00	1.36758E-03	.00000E+00	1.43005E+00
9	1.60097E+00	-2.06991E-02	1.58881E+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	6.70851E-01	.00000E+00	.00000E+00	1.27581E-02	.00000E+00	4.70036E-01
14	6.24730E-01	-8.70078E-02	5.79429E-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	2.08522E-01	-6.84555E-03	2.00115E-01	.00000E+00	.00000E+00	1.26621E-03	.00000E+00	1.39764E-01
17	8.28729E-02	-8.97564E-03	7.85296E-02	.00000E+00	.00000E+00	1.37635E-03	.00000E+00	5.52378E-02
18	4.40207E-02	-2.67613E-02	2.69833E-02	.00000E+00	.00000E+00	8.73139E-04	.00000E+00	2.31790E-02
19	1.21592E-01	-1.46440E-02	1.13940E-01	.00000E+00	.00000E+00	2.18628E-03	.00000E+00	8.06934E-02
20	4.23559E-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	1.53468E-02	.00000E+00	7.21953E-02
22	1.97834E-01	-7.07650E-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	5.28625E-01	-1.08266E-01	4.73507E-01	.00000E+00	.00000E+00	6.39583E-02	.00000E+00	3.41955E-01
25	2.26057E-01	-5.40546E-02	1.98004E-01	.00000E+00	.00000E+00	3.61556E-02	.00000E+00	1.44427E-01
26	1.47403E-01	-4.96861E-02	1.21120E-01	.00000E+00	.00000E+00	3.31700E-02	.00000E+00	9.05579E-02
27	2.40635E-02	-1.38326E-02	1.60978E-02	.00000E+00	.00000E+00	9.39699E-03	.00000E+00	1.33072E-02
28	2.31775E+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	3.35278E-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	2.32831E-08	9.99999E-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

INFORMATION ONLY

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*df**2	total flux
1	1.76855E-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	1.46256E+00	-2.51446E-02	.00000E+00	.00000E+00	.00000E+00	4.64192E-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	-9.07206E-03	.00000E+00	.00000E+00	.00000E+00	1.17772E-02
16	2.08716E-01	-6.86556E-03	2.08522E-01	-6.86555E-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	4.25559E-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	-1.24354E-01	6.95310E-01	-1.24354E-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	7.19716E-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	2.40688E-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	5.10257E-04	2.62155E-02	1.88102E-02	5.20813E-05	-1.85530E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.68771E-03	5.03761E-02	1.59284E-02	1.37782E-04	-1.33780E-02	9.99992E-01
4	.00000E+00	.00000E+00	5.17995E-03	4.22153E-02	5.46597E-03	1.03634E-04	-3.89203E-04	9.99995E-01
5	.00000E+00	.00000E+00	1.11564E-02	8.17470E-02	5.16888E-03	1.52298E-04	5.85394E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.85975E-02	2.35127E-01	3.21249E-03	3.20178E-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	2.16706E-03	1.58680E-01	7.64071E-03	2.95103E-04	-5.76884E-03	1.00003E+00
9	.00000E+00	.00000E+00	7.67421E-03	1.05330E-01	8.78040E-04	1.11068E-05	5.68567E-03	9.99992E-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	8.50581E-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	8.72715E-04	4.17641E-05	-4.17754E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.72720E-04	3.94552E-02	8.05695E-04	5.99651E-05	7.15254E-06	9.99999E-01
14	.00000E+00	.00000E+00	8.05678E-04	3.55857E-02	6.70617E-04	9.47841E-05	4.02625E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.13864E-04	2.04259E-02	8.36128E-04	8.20639E-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	9.99940E-01
17	.00000E+00	.00000E+00	9.80393E-04	3.86579E-03	9.46652E-04	2.32333E-05	1.05482E-05	9.99996E-01
18	.00000E+00	.00000E+00	9.90550E-04	2.03699E-03	6.57734E-04	1.39498E-05	3.18820E-04	1.00000E+00
19	.00000E+00	.00000E+00	7.12318E-04	6.13518E-03	9.05190E-04	3.97478E-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	1.60804E-03	1.03677E-02	1.38661E-03	1.20802E-04	9.59357E-05	9.99996E-01
23	.00000E+00	.00000E+00	2.08594E-03	3.77100E-02	2.76855E-03	5.71084E-04	-1.25364E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.43304E-03	2.71211E-02	3.72198E-03	6.31778E-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	7.46566E-07	1.06021E-04	1.85780E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.34214E-02	1.39080E+00	8.34216E-02	7.47136E-03	-7.36431E-03	9.99977E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*df**2	total flux

INFORMATION ONLY

1	1.7516E-01	8.5850E-05	1.7685E-01	1.1417E-02	1.0438E-04	.0000E+00	.0000E+00	3.8107E-02
2	1.2688E+00	9.7844E-02	1.2865E+00	1.1619E-01	.0000E+00	.0000E+00	.0000E+00	2.7664E-01
3	1.5983E+00	1.3213E-01	1.6195E+00	1.4551E-01	.0000E+00	.0000E+00	.0000E+00	3.4823E-01
4	9.8890E-01	8.7250E-02	1.0035E+00	8.7697E-02	.0000E+00	.0000E+00	.0000E+00	2.1582E-01
5	1.4912E+00	1.3890E-01	1.5142E+00	1.3307E-01	.0000E+00	.0000E+00	.0000E+00	3.2562E-01
6	2.8660E+00	2.6664E-01	2.9105E+00	2.5058E-01	.0000E+00	.0000E+00	.0000E+00	6.2579E-01
7	2.8081E+00	1.5300E-01	2.8538E+00	1.4217E-01	.0000E+00	.0000E+00	.0000E+00	6.1142E-01
8	2.0664E+00	1.5079E-02	2.0855E+00	2.0853E-02	.0000E+00	.0000E+00	.0000E+00	4.4810E-01
9	1.6048E+00	-1.5013E-02	1.6017E+00	-2.0699E-02	.0000E+00	.0000E+00	.0000E+00	3.4753E-01
10	1.4677E+00	-2.5953E-02	1.4630E+00	-2.5144E-02	.0000E+00	.0000E+00	.0000E+00	3.1755E-01
11	1.3484E+00	-5.6605E-02	1.3392E+00	-5.5142E-02	.0000E+00	.0000E+00	.0000E+00	2.9130E-01
12	8.4411E-01	-6.5458E-02	8.3365E-01	-6.5416E-02	.0000E+00	.0000E+00	.0000E+00	1.8184E-01
13	7.1062E-01	-5.6956E-02	7.0124E-01	-5.6964E-02	.0000E+00	.0000E+00	.0000E+00	1.5304E-01
14	6.4136E-01	-8.6967E-02	6.2717E-01	-8.7007E-02	.0000E+00	.0000E+00	.0000E+00	1.3754E-01
15	3.7283E-01	-9.2757E-03	3.7124E-01	-9.0720E-03	.0000E+00	.0000E+00	.0000E+00	8.0634E-02
16	2.0483E-01	-6.8953E-03	2.0371E-01	-6.8555E-03	.0000E+00	.0000E+00	.0000E+00	4.4278E-02
17	8.4578E-02	-8.9650E-03	8.3124E-02	-8.9756E-03	.0000E+00	.0000E+00	.0000E+00	1.8181E-02
18	4.9215E-02	-2.6443E-02	4.4853E-02	-2.6761E-02	.0000E+00	.0000E+00	.0000E+00	1.0222E-02
19	1.2438E-01	-1.4876E-02	1.2199E-01	-1.4644E-02	.0000E+00	.0000E+00	.0000E+00	2.6708E-02
20	4.2854E-01	-2.4557E-02	4.2429E-01	-2.4488E-02	.0000E+00	.0000E+00	.0000E+00	9.2439E-02
21	1.1706E-01	-2.4821E-02	1.1341E-01	-2.4709E-02	.0000E+00	.0000E+00	.0000E+00	2.4969E-02
22	2.1093E-01	-7.0669E-02	1.9981E-01	-7.0765E-02	.0000E+00	.0000E+00	.0000E+00	4.4588E-02
23	7.1753E-01	-1.2560E-01	6.9861E-01	-1.2435E-01	.0000E+00	.0000E+00	.0000E+00	1.5357E-01
24	5.4701E-01	-1.0918E-01	5.3145E-01	-1.0826E-01	.0000E+00	.0000E+00	.0000E+00	1.1699E-01
25	2.3488E-01	-5.3767E-02	2.2768E-01	-5.4044E-02	.0000E+00	.0000E+00	.0000E+00	5.0177E-02
26	1.5512E-01	-4.9627E-02	1.4857E-01	-4.9686E-02	.0000E+00	.0000E+00	.0000E+00	3.2994E-02
27	2.6134E-02	-1.3645E-02	2.4417E-02	-1.3838E-02	.0000E+00	.0000E+00	.0000E+00	5.5019E-03
28	2.3149E+01	5.1269E-02	2.3174E+01	5.8633E-02	1.0438E-04	.0000E+00	.0000E+00	5.0198E+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	.0000E+00	.0000E+00	.0000E+00	6.1583E-05	8.1510E-05	4.3441E-04	-8.5850E-05	9.9975E-01
2	.0000E+00	.0000E+00	4.6768E-03	7.7179E-02	1.0143E-01	1.0868E-03	-9.7844E-02	9.9996E-01
3	.0000E+00	.0000E+00	4.8147E-02	6.9289E-02	1.8027E-01	5.4460E-06	-1.3213E-01	9.9997E-01
4	.0000E+00	.0000E+00	7.0687E-02	4.5966E-02	1.5798E-01	3.2389E-06	-8.7250E-02	9.9988E-01
5	.0000E+00	.0000E+00	1.3065E-01	1.4868E-02	2.6956E-01	3.7982E-06	-1.3890E-01	9.9999E-01
6	.0000E+00	.0000E+00	2.7567E-01	4.5545E-01	5.4130E-01	1.1481E-05	-2.6664E-01	9.9998E-01
7	.0000E+00	.0000E+00	5.5330E-01	7.9543E-01	7.0628E-01	2.5398E-05	-1.5300E-01	9.9988E-01
8	.0000E+00	.0000E+00	7.3584E-01	1.0015E+00	7.5095E-01	4.7089E-05	-1.5035E-01	9.9991E-01
9	.0000E+00	.0000E+00	7.4120E-01	9.1699E-01	7.2617E-01	9.6005E-05	1.5013E-02	9.9988E-01
10	.0000E+00	.0000E+00	7.2288E-01	8.6908E-01	6.9574E-01	2.1184E-04	2.5953E-02	9.9989E-01
11	.0000E+00	.0000E+00	7.0162E-01	8.0752E-01	6.4470E-01	4.5857E-04	5.6605E-02	9.9990E-01
12	.0000E+00	.0000E+00	5.6114E-01	4.2078E-01	4.9509E-01	5.9871E-04	6.5458E-02	9.9977E-01
13	.0000E+00	.0000E+00	4.9105E-01	3.3780E-01	4.3321E-01	8.9729E-04	5.6956E-02	9.9997E-01
14	.0000E+00	.0000E+00	4.7057E-01	3.1991E-01	3.8216E-01	1.4478E-03	8.6967E-02	9.9988E-01
15	.0000E+00	.0000E+00	2.5002E-01	1.2782E-01	2.3947E-01	1.2734E-03	9.2523E-03	9.9999E-01
16	.0000E+00	.0000E+00	1.4662E-01	5.3692E-02	1.5765E-01	8.6736E-04	6.8952E-03	9.9999E-01
17	.0000E+00	.0000E+00	8.4088E-02	1.4522E-02	7.5586E-02	4.0564E-04	8.9078E-03	1.0000E+00
18	.0000E+00	.0000E+00	7.4827E-02	8.8142E-03	4.8162E-02	2.6968E-04	2.6434E-02	1.0000E+00
19	.0000E+00	.0000E+00	1.2084E-01	3.1734E-02	1.0532E-01	6.9558E-04	1.4870E-02	1.0000E+00
20	.0000E+00	.0000E+00	2.9533E-01	2.3331E-01	2.6379E-01	2.9848E-03	2.6563E-02	1.0000E+00
21	.0000E+00	.0000E+00	1.3592E-01	4.2306E-02	1.1005E-01	1.0425E-03	2.4813E-02	1.0000E+00
22	.0000E+00	.0000E+00	2.5516E-01	1.1717E-01	1.8225E-01	2.2618E-03	7.0570E-02	9.9999E-01
23	.0000E+00	.0000E+00	5.9057E-01	7.0101E-01	4.6033E-01	1.0104E-02	1.2560E-01	1.0001E+00
24	.0000E+00	.0000E+00	6.0457E-01	6.2676E-01	4.8580E-01	1.1362E-02	1.0919E-01	1.0000E+00
25	.0000E+00	.0000E+00	3.9058E-01	2.5673E-01	3.3030E-01	6.5119E-03	5.3766E-02	1.0001E+00
26	.0000E+00	.0000E+00	3.0856E-01	2.7381E-01	2.5290E-01	6.3255E-03	4.9636E-02	9.9981E-01
27	.0000E+00	.0000E+00	1.0298E-01	5.7215E-02	8.7161E-02	2.1770E-03	1.3465E-02	9.9999E-01
28	.0000E+00	.0000E+00	8.8908E+00	8.8145E+00	8.8908E+00	5.1582E-02	-5.1284E-02	9.9996E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*db**2	total flux
1	1.7434E-01	3.1876E-09	1.7516E-01	8.5850E-05	4.5077E-10	.0000E+00	.0000E+00	1.9954E-01

INFORMATION ONLY

2	1.25723E+00	-1.07280E-08	1.26884E+00	9.78441E-02	.00000E+00	.00000E+00	.00000E+00	1.43947E+00
3	1.57869E+00	-1.82101E-07	1.59635E+00	1.32132E-01	.00000E+00	.00000E+00	.00000E+00	1.80807E+00
4	9.75745E-01	-1.69666E-08	9.88902E-01	8.72503E-02	.00000E+00	.00000E+00	.00000E+00	1.11792E+00
5	1.46885E+00	-6.87630E-10	1.49125E+00	1.38905E-01	.00000E+00	.00000E+00	.00000E+00	1.68525E+00
6	2.82110E+00	1.04633E-07	2.86502E+00	2.65644E-01	.00000E+00	.00000E+00	.00000E+00	3.23295E+00
7	2.78287E+00	-5.72649E-08	2.80816E+00	1.53002E-01	.00000E+00	.00000E+00	.00000E+00	3.18702E+00
8	2.06644E+00	1.45577E-07	2.06641E+00	1.50935E-02	.00000E+00	.00000E+00	.00000E+00	2.36439E+00
9	1.60686E+00	-2.25194E-08	1.60480E+00	-1.50135E-02	.00000E+00	.00000E+00	.00000E+00	1.83998E+00
10	1.47191E+00	4.32910E-08	1.46727E+00	-2.95938E-02	.00000E+00	.00000E+00	.00000E+00	1.68428E+00
11	1.35846E+00	-1.14983E-08	1.34849E+00	-5.65051E-02	.00000E+00	.00000E+00	.00000E+00	1.55401E+00
12	8.56330E-01	1.09428E-08	8.44113E-01	-6.54586E-02	.00000E+00	.00000E+00	.00000E+00	9.78115E-01
13	7.19921E-01	-4.60423E-09	7.10562E-01	-5.69569E-02	.00000E+00	.00000E+00	.00000E+00	8.23415E-01
14	6.55984E-01	8.07822E-09	6.41366E-01	-8.69675E-02	.00000E+00	.00000E+00	.00000E+00	7.44779E-01
15	3.73488E-01	-5.27418E-07	3.72832E-01	-9.27578E-03	.00000E+00	.00000E+00	.00000E+00	4.27740E-01
16	2.05725E-01	-8.89998E-08	2.04843E-01	-6.89536E-03	.00000E+00	.00000E+00	.00000E+00	2.35497E-01
17	8.61152E-02	-4.30856E-06	8.45783E-02	-8.96803E-03	.00000E+00	.00000E+00	.00000E+00	9.84392E-02
18	5.38955E-02	-6.05269E-06	4.92158E-02	-2.64424E-02	.00000E+00	.00000E+00	.00000E+00	6.12859E-02
19	1.26821E-01	-6.40948E-06	1.24387E-01	-1.48766E-02	.00000E+00	.00000E+00	.00000E+00	1.44779E-01
20	4.32657E-01	-6.47404E-07	4.28547E-01	-2.65570E-02	.00000E+00	.00000E+00	.00000E+00	4.94870E-01
21	1.21553E-01	-8.18020E-06	1.17061E-01	-2.48216E-02	.00000E+00	.00000E+00	.00000E+00	1.39726E-01
22	2.29852E-01	1.60042E-06	2.10354E-01	-7.06690E-02	.00000E+00	.00000E+00	.00000E+00	2.55144E-01
23	7.43095E-01	-1.16484E-07	7.17324E-01	-1.25608E-01	.00000E+00	.00000E+00	.00000E+00	8.47536E-01
24	5.73308E-01	3.00804E-06	5.47018E-01	-1.09187E-01	.00000E+00	.00000E+00	.00000E+00	6.52316E-01
25	2.44426E-01	-1.13063E-06	2.34880E-01	-5.33672E-02	.00000E+00	.00000E+00	.00000E+00	2.88357E-01
26	1.71255E-01	7.89560E-06	1.55127E-01	-4.96277E-02	.00000E+00	.00000E+00	.00000E+00	1.98852E-01
27	3.16723E-02	3.10201E-07	2.61341E-02	-1.34450E-02	.00000E+00	.00000E+00	.00000E+00	3.50188E-02
28	2.31888E+01	-1.47289E-05	2.31498E+01	5.12697E-02	4.50774E-10	.00000E+00	.00000E+00	2.46287E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.31854E-02	.00000E+00	2.30478E-02	2.18999E-02	3.73111E-03	3.18745E-09	9.98834E-01
2	.00000E+00	1.94563E-01	7.58490E-03	2.71685E-01	1.87344E-01	1.48171E-02	-1.07280E-08	1.00002E+00
3	.00000E+00	2.15975E-01	7.74051E-02	2.81250E-01	2.77728E-01	1.56547E-02	-1.82101E-07	9.99987E-01
4	.00000E+00	1.23748E-01	1.15077E-01	1.99846E-01	2.31340E-01	7.48549E-03	-1.69666E-08	1.00000E+00
5	.00000E+00	1.63943E-01	2.09877E-01	4.90432E-01	3.69290E-01	4.53424E-03	-6.87630E-10	9.99989E-01
6	.00000E+00	1.76773E-01	4.29805E-01	1.34440E+00	5.98897E-01	7.18146E-03	1.04633E-07	1.00001E+00
7	.00000E+00	8.73119E-02	6.64191E-01	1.77500E+00	7.43805E-01	7.70525E-03	-5.72649E-08	9.99990E-01
8	.00000E+00	1.34466E-02	7.80592E-01	1.79067E+00	7.80114E-01	1.39882E-02	1.45577E-07	9.99920E-01
9	.00000E+00	9.75775E-04	7.70523E-01	1.55825E+00	7.47778E-01	2.39053E-02	-2.25194E-08	9.99808E-01
10	.00000E+00	7.24738E-05	7.44459E-01	1.41579E+00	7.08333E-01	3.62735E-02	4.32910E-08	9.99900E-01
11	.00000E+00	5.70172E-06	7.13208E-01	1.31049E+00	6.55374E-01	5.95061E-02	-1.14983E-08	9.99942E-01
12	.00000E+00	4.00535E-07	5.70197E-01	7.08725E-01	5.05364E-01	6.48427E-02	1.09428E-08	9.99974E-01
13	.00000E+00	6.36013E-08	5.01323E-01	5.57594E-01	4.40175E-01	6.11625E-02	-4.60423E-09	9.99971E-01
14	.00000E+00	1.26041E-08	4.77536E-01	5.05767E-01	3.90164E-01	8.73767E-02	8.07822E-09	9.99989E-01
15	.00000E+00	1.42440E-09	2.58149E-01	2.32004E-01	2.49112E-01	8.95289E-03	-5.27418E-07	1.00033E+00
16	.00000E+00	4.18253E-10	1.75509E-01	1.06276E-01	1.68214E-01	7.23219E-03	-8.89998E-08	1.00034E+00
17	.00000E+00	1.34698E-10	9.34131E-02	3.22685E-02	8.35744E-02	9.81550E-03	-4.30856E-06	1.00029E+00
18	.00000E+00	9.64398E-11	8.26971E-02	1.84055E-02	5.22340E-02	3.04586E-02	-6.05269E-06	1.00015E+00
19	.00000E+00	1.36345E-10	1.27300E-01	6.02263E-02	1.14404E-01	1.28730E-02	-6.40948E-06	1.00034E+00
20	.00000E+00	2.21711E-10	3.03643E-01	3.54578E-01	2.74056E-01	2.94967E-02	-6.47404E-07	1.00030E+00
21	.00000E+00	3.26514E-11	1.45756E-01	6.71435E-02	1.18852E-01	2.68012E-02	-8.18020E-06	1.00021E+00
22	.00000E+00	3.76510E-11	2.67869E-01	1.66314E-01	1.91959E-01	7.58710E-02	1.60042E-06	1.00014E+00
23	.00000E+00	3.59985E-11	6.11351E-01	8.92552E-01	4.80034E-01	1.31174E-01	-1.16484E-07	1.00025E+00
24	.00000E+00	9.79834E-12	6.28588E-01	7.62166E-01	5.08515E-01	1.19953E-01	3.00804E-06	1.00018E+00
25	.00000E+00	2.86851E-12	4.11941E-01	3.08477E-01	3.46660E-01	6.52321E-02	-1.13063E-06	1.00012E+00
26	.00000E+00	2.01128E-12	3.19162E-01	3.10522E-01	2.60080E-01	5.90505E-02	7.89560E-06	1.00007E+00
27	.00000E+00	4.79288E-13	1.05211E-01	6.30048E-02	8.82227E-02	1.69352E-02	3.10201E-07	1.00004E+00
28	.00000E+00	1.00000E+00	9.59196E+00	1.56004E+01	9.59196E+00	1.00206E+00	-1.46431E-05	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn rate	fiss rate	flux*db**2	total flux
1	1.74348E-01	3.18745E-09	1.82519E-01	.00000E+00	2.41571E-03	2.68495E-03	.00000E+00	3.67435E-01
2	1.25723E+00	-1.07280E-08	1.34225E+00	.00000E+00	1.68506E-05	1.18944E-02	.00000E+00	2.65704E+00

INFORMATION ONLY

3	1.5786E+00	-1.8210E-07	1.6877E+00	.0000E+00	.0000E+00	1.4486E-02	.0000E+00	3.3522E+00
4	9.7574E-01	-1.6966E-08	1.0439E+00	.0000E+00	.0000E+00	6.2333E-03	.0000E+00	2.0738E+00
5	1.4688E+00	-6.8763E-10	1.5770E+00	.0000E+00	.0000E+00	1.7790E-03	.0000E+00	3.1260E+00
6	2.8211E+00	1.0463E-07	3.0306E+00	.0000E+00	.0000E+00	1.4633E-03	.0000E+00	6.0049E+00
7	2.7828E+00	-5.7264E-08	2.9054E+00	.0000E+00	.0000E+00	1.3696E-03	.0000E+00	5.8690E+00
8	2.0664E+00	1.4557E-07	2.0822E+00	.0000E+00	.0000E+00	1.3575E-03	.0000E+00	4.3082E+00
9	1.6068E+00	-2.2519E-08	1.5883E+00	.0000E+00	.0000E+00	1.7809E-03	.0000E+00	3.3348E+00
10	1.4719E+00	4.3291E-08	1.4849E+00	.0000E+00	.0000E+00	3.7933E-03	.0000E+00	3.0699E+00
11	1.3584E+00	-1.1498E-08	1.3094E+00	.0000E+00	.0000E+00	8.2020E-03	.0000E+00	2.7976E+00
12	8.5533E-01	1.0942E-08	7.9761E-01	.0000E+00	.0000E+00	1.0657E-02	.0000E+00	1.7454E+00
13	7.1992E-01	-4.6042E-09	6.7055E-01	.0000E+00	.0000E+00	1.2758E-02	.0000E+00	1.4689E+00
14	6.5598E-01	8.0782E-09	5.7942E-01	.0000E+00	.0000E+00	7.8677E-03	.0000E+00	1.3192E+00
15	3.7349E-01	-5.2741E-07	3.6614E-01	.0000E+00	.0000E+00	1.7831E-03	.0000E+00	7.7366E-01
16	2.0572E-01	-8.8799E-08	2.0011E-01	.0000E+00	.0000E+00	1.2662E-03	.0000E+00	4.2500E-01
17	8.6115E-02	-4.3085E-06	7.8529E-02	.0000E+00	.0000E+00	1.3765E-03	.0000E+00	1.7449E-01
18	5.3895E-02	-6.0526E-06	2.6985E-02	.0000E+00	.0000E+00	8.7313E-04	.0000E+00	9.6099E-02
19	1.2682E-01	-6.4094E-06	1.1394E-01	.0000E+00	.0000E+00	2.1852E-03	.0000E+00	2.5626E-01
20	4.3265E-01	-6.4740E-07	4.1015E-01	.0000E+00	.0000E+00	1.4488E-02	.0000E+00	8.8705E-01
21	1.2155E-01	-8.1802E-06	9.9427E-02	.0000E+00	.0000E+00	1.5346E-02	.0000E+00	2.3947E-01
22	2.2398E-01	1.6004E-06	1.5821E-01	.0000E+00	.0000E+00	4.3966E-02	.0000E+00	4.2624E-01
23	7.4309E-01	-1.1648E-07	6.3172E-01	.0000E+00	.0000E+00	7.1986E-02	.0000E+00	1.4766E+00
24	5.7330E-01	3.0030E-06	4.7350E-01	.0000E+00	.0000E+00	6.3958E-02	.0000E+00	1.1280E+00
25	2.4426E-01	-1.1306E-06	1.9800E-01	.0000E+00	.0000E+00	3.6155E-02	.0000E+00	4.8435E-01
26	1.7125E-01	7.8956E-06	1.2112E-01	.0000E+00	.0000E+00	3.3170E-02	.0000E+00	3.2142E-01
27	3.1672E-02	3.1020E-07	1.6097E-02	.0000E+00	.0000E+00	9.3989E-03	.0000E+00	5.4597E-02
28	2.3186E+01	-1.4726E-05	2.3141E+01	.0000E+00	2.4326E-03	3.8248E-01	.0000E+00	4.8228E+01

- elapsed time .02 min.
Odirect 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	2.4414E-03	2.5056E-02	3.1547E-02	1.9044E-02	2.9069E-02	5.5653E-02	3.1628E-02	4.6977E-03
2	3.8580E-03	3.9068E-02	4.8914E-02	2.9461E-02	4.4734E-02	8.4265E-02	4.7780E-02	7.0139E-03
3	3.1186E-03	3.3234E-02	4.3185E-02	2.7172E-02	4.2253E-02	8.0144E-02	4.5817E-02	5.6104E-03
4	1.0765E-03	1.2261E-02	1.6535E-02	1.0329E-02	1.7869E-02	3.3588E-02	1.9230E-02	2.0163E-03
5	1.7827E-03	1.9093E-02	2.4779E-02	1.5585E-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	1.2524E-02	1.4563E-02	1.2685E-02	1.9246E-02	2.0511E-03	1.5310E-03
2	6.9582E-03	8.4526E-03	1.8536E-02	2.1990E-02	1.9146E-02	2.9048E-02	3.0496E-03	2.3018E-03
3	5.5743E-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	7.0429E-03	8.1650E-03	7.1429E-03	1.0866E-02	1.2856E-03	8.8430E-04
5	3.2336E-03	4.5951E-03	1.0057E-02	1.1759E-02	1.0257E-02	1.5601E-02	1.7011E-03	1.2501E-03

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.9866E-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	4.5800E-03	8.2578E-03	7.6289E-03	2.1973E-02	3.8829E-02	3.3780E-02
4	1.1167E-03	3.2619E-03	1.8718E-03	3.3839E-03	3.0957E-03	8.7957E-03	1.5938E-02	1.3848E-02
5	1.6071E-03	4.5574E-03	2.6749E-03	4.8148E-03	4.4112E-03	1.2501E-02	2.2543E-02	1.9555E-02

Ozone	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	5.9091E-01
3	1.6754E-02	1.5429E-02	4.2697E-03	5.4410E-01
4	6.7994E-03	6.1620E-03	1.5660E-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
Ocell averaged fluxes

Ozone	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	1.0045E+00	1.5161E+00	2.9139E+00	2.8061E+00	2.0692E+00
3	1.7585E-01	1.2764E+00	1.6068E+00	9.9285E-01	1.5024E+00	2.8875E+00	2.8211E+00	2.0678E+00

INFORMATION ONLY

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	9.9632E-01	1.5018E+00	2.8850E+00	2.8196E+00	2.0693E+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	1.3216E+00	8.1201E-01	6.8275E-01	5.9852E-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	8.3507E-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	3.7572E-01	2.0575E-01
5	1.6021E+00	1.4652E+00	1.3440E+00	8.3655E-01	7.0662E-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	6.5865E-01	4.9670E-01
2	8.2997E-02	4.4425E-02	1.2179E-01	4.2982E-01	1.1280E-01	1.9884E-01	6.9702E-01	5.3009E-01
3	8.3890E-02	4.7170E-02	1.2329E-01	4.2662E-01	1.1521E-01	2.0573E-01	7.0860E-01	5.3984E-01
4	8.6007E-02	5.3548E-02	1.2668E-01	4.3257E-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	7.0941E-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	2.4723E-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	1.0521E+00	1.0524E+00	1.0539E+00	1.0540E+00	1.0220E+00	1.0085E+00
2	1.0029E+00	1.0066E+00	1.0070E+00	1.0085E+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	9.7926E-01	9.7900E-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	9.4430E-01	9.9069E-01	9.8714E-01
2	9.9942E-01	9.9823E-01	9.9594E-01	9.9284E-01	9.9268E-01	9.8764E-01	9.9822E-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	8.5268E-01	9.2851OE-01	9.1647E-01
2	9.9006E-01	9.6222E-01	9.8922E-01	9.9472E-01	9.8046E-01	9.7100E-01	9.8553E-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	9.9605E-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	8.5204E-01	7.3690E-01
2	9.7361E-01	9.5860E-01	9.2635E-01
3	9.9958E-01	9.8566E-01	9.6783E-01
4	1.0616E+00	1.0090E+00	1.1664E+00
5	1.0000E+00	1.0000E+00	1.0000E+00

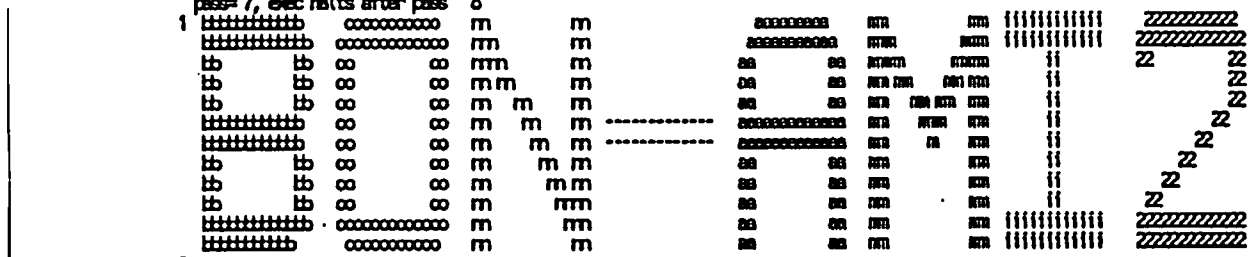
Ocell averaged currents

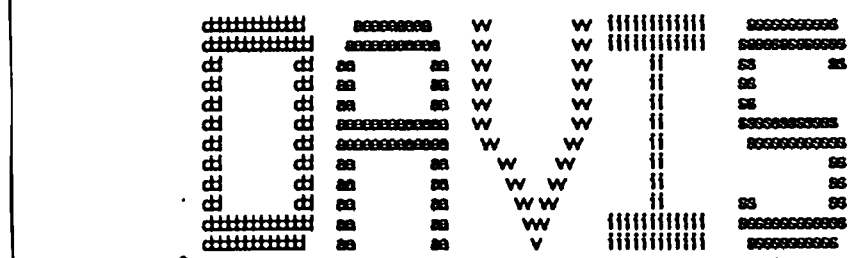
Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.4142E-03	2.5060E-02	3.1547E-02	1.9048E-02	2.9059E-02	5.5553OE-02	3.1628E-02	4.6977E-03
2	3.8380E-03	3.9608E-02	4.8914E-02	2.9461OE-02	4.4734E-02	8.4235E-02	4.7792OE-02	7.0133E-03
3	3.1186E-03	3.3234E-02	4.3185E-02	2.7172E-02	4.2234E-02	8.0144IE-02	4.5817E-02	5.6104IE-03
4	1.0765E-03	1.2261E-02	1.6633E-02	1.0325E-02	1.7389E-02	3.3268E-02	1.9230IE-02	2.0163E-03
5	1.7827OE-03	1.9035E-02	2.4779E-02	1.5565E-02	2.4253E-02	4.6291TE-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	1.2563E-02	1.8563TE-02	1.2685OE-02	1.9369E-02	2.0511OE-03	1.5310E-03
2	6.9582E-03	8.4526E-03	1.8536E-02	2.1990E-02	1.9149OE-02	2.9248E-02	3.0426IE-03	2.3011BE-03
3	5.5714E-03	7.9552E-03	1.7397E-02	2.0332E-02	1.7698E-02	2.7029OE-02	2.8499OE-03	2.1357E-03
4	1.8579E-03	3.2305TE-03	7.0429E-03	8.1650E-03	7.1423OE-03	1.0866OE-02	1.2566E-03	8.8630E-04
5	3.2536E-03	4.5951E-03	1.0387E-02	1.1759TE-02	1.0257E-02	1.5601E-02	1.7011E-03	1.2501IE-03

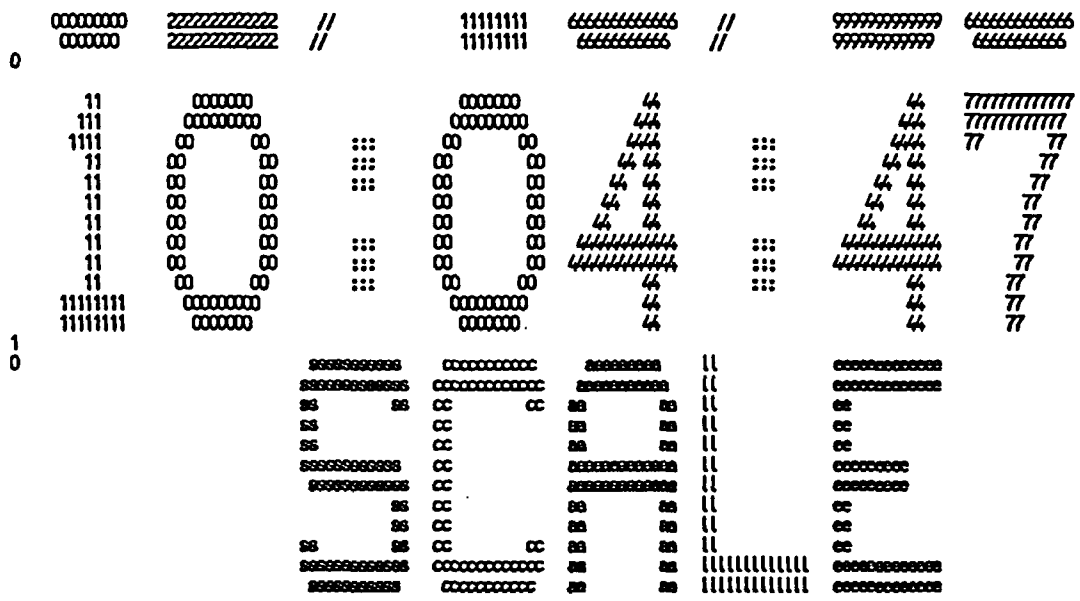
INFORMATION ONLY

```
Ozone  grp. 17      grp. 18      grp. 19      grp. 20      grp. 21      grp. 22      grp. 23      grp. 24
    1 1.9866E-03 5.3394E-03 3.2944E-03 5.9274E-03 5.3956E-03 1.5163E-02 2.7452E-02 2.3800E-02
    2 3.0174E-03 8.9956E-03 4.9225E-03 8.8974E-03 8.3059E-03 2.3788E-02 4.1803E-02 3.6395E-02
    3 2.7871E-03 8.2656E-03 4.5860E-03 8.2378E-03 7.6839E-03 2.1973E-02 3.8629E-02 3.3780E-02
    4 1.1469E-03 3.2619E-03 1.8718E-03 3.3839E-03 3.0865E-03 8.7857E-03 1.5933E-02 1.3841E-02
    5 1.6071E-03 4.5574E-03 2.6714E-03 4.8146E-03 4.4112E-03 1.2501E-02 2.2524E-02 1.9555E-02
Ozone  grp. 25      grp. 26      grp. 27
    1 1.1832E-02 1.0728E-02 2.8563E-03
    2 1.8174E-02 1.6703E-02 4.6500E-03
    3 1.6754E-02 1.5429E-02 4.2699E-03
    4 6.7994E-03 6.1620E-03 1.5650E-03
    5 9.6740E-03 8.7980E-03 2.3208E-03
Ozone      volume      vol. fraction

    1    6.8843E-01    3.3075E-01
    2    3.1735E-02    1.5246E-02
    3    2.1672E-01    1.0412E-01
    4    1.1445E+00    5.4987E-01
    5    2.0814E+00    1.0000E+00
 - elapsed time    .03 min.
Orequested parm=halt8,skipcellvt,skipshipdata
  pass= 7, exec halts after pass  8
```





INFORMATION ONLY



program verification information

code system: scale version: 4.2

program: c0c008

creation date: 04/27/95

library: /nutronics/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
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    1.20544E-04         200006
   7       1      92234    1.41715E-06         200007
   8       1      92236    2.03607E-05         200008
   9       1      92238    7.20391E-03         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    6.56575E-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    7.88511E-09         200023
  24       1      44101    6.79295E-06         200024
  25       1      44106    1.01922E-06         200025
```

INFORMATION ONLY

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	1.28871E-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	4.24549E-09	200045
46	1	60147	4.27517E-08	200046
47	1	62147	5.95353E-07	200047
48	1	62149	2.94714E-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-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	8.12694E-06	200060
61	1	93237	1.55467E-06	200061
62	1	94238	2.67674E-07	200062
63	1	94239	3.86490E-05	200063
64	1	94240	8.49859E-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

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
4	1	2.96100E+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

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

INFORMATION ONLY

```
Copy    5011  boron-11          from loc 12 to loc 18  boundaries trigger 0
Copy    5011  boron-11          from loc 18 to loc  1  boundaries trigger 0
Copy    5011  boron-11          from loc 18 to loc  1  boundaries trigger 0
Copy    8016  oxygen-16         from loc 12 to loc 18  boundaries trigger 0
Copy    8016  oxygen-16         from loc 18 to loc  1  boundaries trigger 0
Copy    8016  oxygen-16         from loc 18 to loc  1  boundaries trigger 0
Copy    8016  oxygen-16         from loc 18 to loc  1  boundaries trigger 0
Copy   36083  kr-83             from loc 12 to loc  1  boundaries trigger 0
Copy   36085  kr-85             from loc 12 to loc  1  boundaries trigger 0
Copy   38090  sr-90             from loc 12 to loc  1  boundaries trigger 0
Copy   39089   y-89             from loc 12 to loc  1  boundaries trigger 0
Copy   40093  zr-93             from loc 12 to loc  1  boundaries trigger 0
Copy   40094  zr-94             from loc 12 to loc  1  boundaries trigger 0
Copy   40095  zr-95             from loc 12 to loc  1  boundaries trigger 0
Copy   40302  zircalloy         from loc 12 to loc 18  boundaries trigger 0
Copy   40302  zircalloy         from loc 18 to loc  1  boundaries trigger 0
Copy   40302  zircalloy         from loc 18 to loc  1  boundaries trigger 0
Copy   41094  nb-94             from loc 12 to loc  1  boundaries trigger 0
Copy   42095  mo-95             from loc 12 to loc  1  boundaries trigger 0
Copy   43099  tc-99             from loc 12 to loc  1  boundaries trigger 0
Copy   44101  ru-101            from loc 12 to loc  1  boundaries trigger 0
Copy   44106  ru-106            from loc 12 to loc  1  boundaries trigger 0
Copy   45103  rh-103            from loc 12 to loc  1  boundaries trigger 0
Copy   45105  rh-105            from loc 12 to loc  1  boundaries trigger 0
Copy   46105  pd-105            from loc 12 to loc  1  boundaries trigger 0
Copy   46108  pd-108            from loc 12 to loc  1  boundaries trigger 0
Copy   47109  silver-109        from loc 12 to loc  1  boundaries trigger 0
Copy   51126  sb-126            from loc 12 to loc  1  boundaries trigger 0
Copy   54131  xe-131            from loc 12 to loc  1  boundaries trigger 0
Copy   54132  xe-132            from loc 12 to loc  1  boundaries trigger 0
Copy   54135  xenon-135         from loc 12 to loc  1  boundaries trigger 0
Copy   54136  xe-136            from loc 12 to loc  1  boundaries trigger 0
Copy   55133  cesium-133        from loc 12 to loc  1  boundaries trigger 0
Copy   55134  cs-134            from loc 12 to loc  1  boundaries trigger 0
Copy   55135  cs-135            from loc 12 to loc  1  boundaries trigger 0
Copy   55137  cs-137            from loc 12 to loc  1  boundaries trigger 0
Copy   56136  ba-136            from loc 12 to loc  1  boundaries trigger 0
Copy   57139  la-139            from loc 12 to loc  1  boundaries trigger 0
Copy   58144  ce-144            from loc 12 to loc  1  boundaries trigger 0
Copy   59141  pr-141            from loc 12 to loc  1  boundaries trigger 0
Copy   59143  pr-143            from loc 12 to loc  1  boundaries trigger 0
Copy   60143  nd-143            from loc 12 to loc  1  boundaries trigger 0
Copy   60145  nd-145            from loc 12 to loc  1  boundaries trigger 0
Copy   60147  nd-147            from loc 12 to loc  1  boundaries trigger 0
Copy   61147  pm-147            from loc 12 to loc  1  boundaries trigger 0
Copy   61148  pm-148            from loc 12 to loc  1  boundaries trigger 0
Copy   62147  sm-147            from loc 12 to loc  1  boundaries trigger 0
Copy   62149  sm-149            from loc 12 to loc  1  boundaries trigger 0
Copy   62150  sm-150            from loc 12 to loc  1  boundaries trigger 0
Copy   62151  sm-151            from loc 12 to loc  1  boundaries trigger 0
Copy   62152  sm-152            from loc 12 to loc  1  boundaries trigger 0
Copy   63153  eu-153            from loc 12 to loc  1  boundaries trigger 0
Copy   63154  eu-154            from loc 12 to loc  1  boundaries trigger 0
Copy   63155  eu-155            from loc 12 to loc  1  boundaries trigger 0
Copy   64155  gd-155            from loc 12 to loc  1  boundaries trigger 0
Copy   92234  u-234 1043 sigm   from loc 12 to loc  1  boundaries trigger 0
Copy   92235  uranium-235       from loc 12 to loc  1  boundaries trigger 0
Copy   92236  u-236 1163 sigm   from loc 12 to loc  1  boundaries trigger 0
Copy   92238  uranium-238       from loc 12 to loc  1  boundaries trigger 0
Copy   93237  neptunium-237     from loc 12 to loc  1  boundaries trigger 0
```

Feb 16 10:06 1996 File Name: s3020ucf.out BBA000000-01717-0200-00012 REV 01 ATTACHMENT I - Page 657

INFORMATION ONLY

```
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                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 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
        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

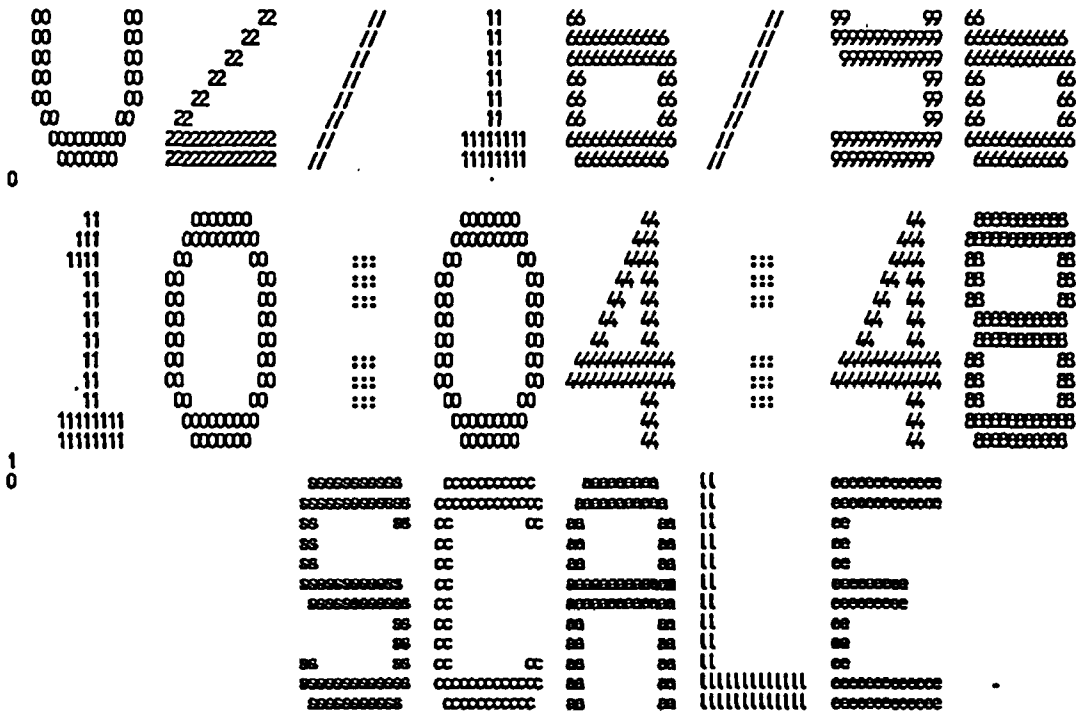
```
      nd-143        mt=102                        updated 10/13/89          id   200042
      nd-145        mt=102                        updated 10/13/89          id   200043
      nd-147        mt=102                        updated 10/13/89          id   200046
      pm-147        mt=102                        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 newklacs p-3 298k 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 newklacs p-3 298k 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 newklacs p-3 298k 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 newklacs 218ngp p-3 298k                          id   200067
     am-243 1057 218 gp wt f-1/e-m 090376 p3 298k                           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
```

```
0
```

```
0
```

INFORMATION ONLY



program verification information

code system: scale version: 4.2

program: c0c002

creation date: 04/27/95

library: /nutronics/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 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-- 1040 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
    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 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
```

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	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 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 newklacs p-3 298k 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 newklacs p-3 298k 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 newklacs p-3 298k 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 sigo=5+4 newklacs 218ngp p-3 298k			95241
69	am-243 1057 218 gp wt f-1/e-m 090876 p3 298k			95243
70	curium-244	endf/b-iv mat 1162	updated 10/13/89	96244

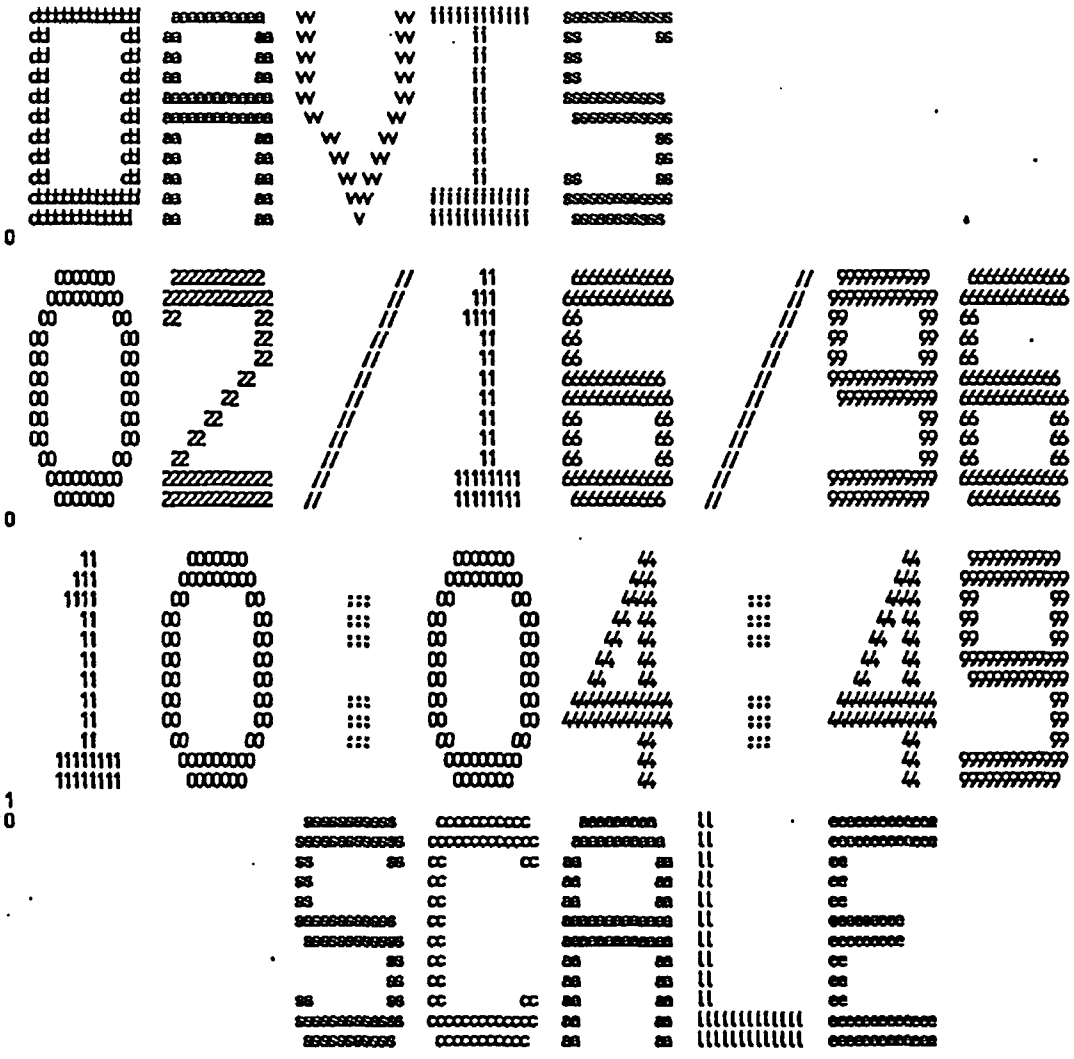
0 hydrogen endf/b-iv mat 1269/thrm1002 updated 10/13/89 202 temperature= 607.60
thermal scattering matrix number 2 at a temperature of 550.00 was selected.

```
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   -7.806083E-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 10:04:48
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled-- 1040 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   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
```

INFORMATION ONLY

```
      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 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 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  ssssssssss  dddddddddd  rrrrrrrrrr  rm        rm  pppppppppp  mm        mm
  xx        xx  ssssssssssss dddddddddd  rrrrrrrrrr  rm        rm  pppppppppp  mmm       mmm
    xx    xx  ss        ss  dd        dd  rr        rr  rmm       rm  pp        pp  mmmm     mmmm
     xx  xx   ss            dd        dd  rr        rr  rm rm     rm  pp        pp  mm mm   mm mm
      xx xx   ss            dd        dd  rr        rr  rm  rm    rm  pp        pp  mm  mm mm  mm
       xxx    ssssssssssss  dd        dd  rrrrrrrrrr  rm   rm   rm  pppppppppp  mm   mmm   mm
       xxx     ssssssssssss dd        dd  rrrrrrrrrr  rm    rm  rm  pppppppppp  mm    m    mm
      xx xx            ss  dd        dd  rr      rr  rm     rm rm  pp          mm         mm
     xx  xx            ss  dd        dd  rr       rr  rm      rm rm  pp          mm         mm
    xx    xx  ss        ss  dd        dd  rr        rr  rm       rmm  pp          mm         mm
  xx        xx  ssssssssssss dddddddddd  rr         rr  rm        rm  pp          mm         mm
 xx         xx  ssssssssssss dddddddddd  rr         rr  rm        rm  pp          mm         mm
0

 dddddddddd    ssssssssss    w        w  iiiiiiiiiii    ssssssssss
```

INFORMATION ONLY



INFORMATION ONLY

INFORMATION ONLY

```
                    ******                                                  ******
                    ******                                                  ******
                    ******              program verification information     ******
                    ******                                                  ******
                    ******              code system:  scale  version:  4.2  ******
                    ******                                                  ******
                    ************************************************************
                    ************************************************************
                    ******                                                  ******
                    ******                                                  ******
                    ******                 program:  c0c001                 ******
                    ******                                                  ******
                    ******           creation date:  04/27/95               ******
                    ******                                                  ******
                    ******                 library:  /nutronics/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
 inm  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      iin  inner iteration maximum     20
 ibr  right boundary condition           3      ion  outer iteration maximum     25
 mxx  number of mixtures                 3      iclc -1/0/n--flat res/sy/opt       0
 ms   mixing table length               70      ith  0/1 = forward/adjoint        0
 ign  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 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. param       0
 iqa  volumetric sources (0/n=no/yes)    0      idfa 0/1 = none/density factors 38* 0
 ips  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
```

INFORMATION ONLY

INFORMATION ONLY

INFORMATION ONLY

```
 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
 ignf 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/-1/0/1=gated xsect print       -2      nsca 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    xmsh 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   1.41716E-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   4.78640E-06
    16    40093                                   1       42095   6.56575E-06
    17    40094                                   1       40093   4.79260E-06
    18    40095                                   1       40094   7.56974E-06
    19    40802                                   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   6.79256E-06
    25    45103                                   1       44106   1.01922E-05
    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   1.27221E-10
    30    51124                                   1       54131   3.36254E-06
    31    54131                                   1       54132   6.56907E-06
    32    54132                                   1       54135   2.20413E-09
```

INFORMATION ONLY

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	7.98229E-06
37	55135	1	56136	8.81405E-08
38	55137	1	57139	7.89638E-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	1.42592E-06
45	60145	1	61148	4.26549E-09
46	60147	1	60147	4.27517E-08
47	61147	1	62147	5.95353E-07
48	61148	1	62149	2.94764E-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	9.37783E-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	4.42661E-08
57	64155	1	1001	2.30530E-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	95237	1.55467E-06
62	95237	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	6.64982E-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 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	4.40489E-01	2.85757E+09	1	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12207E+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	

INFORMATION ONLY

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	5.69599E+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	1.58557E+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	9.05898E+05	2	0	20	1.00000E+00
21	4.00000E-01	1.70544E+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	4.86955E+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 satl 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	15	0
10					5.22864E-02	-8.21784E-01	15	-4.29665E-02
11					5.22864E-02	-6.01588E-01	14	-3.14637E-02
12					5.22864E-02	-2.20198E-01	13	-1.15128E-02
13					5.22864E-02	2.20198E-01	12	1.15128E-02
14					5.22864E-02	6.01588E-01	11	3.14637E-02
15					5.22864E-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

Oorgl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.85235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.85235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.85235E-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	-4.86855E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91692E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44245E-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

INFORMATION ONLY

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	-9.83082E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51008E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20962E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20962E-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	-3.20962E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20962E-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	1.18586E-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	1.42356E-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	8.46408E-02		
13	6.73100E-01	6.96589E-01	3	4.22921E+00	2.05562E-01		
14	7.20067E-01	7.43550E-01	3	4.52431E+00	2.19422E-01		
15	7.67053E-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	1.20436E+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	2.86341E+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-05	.00000E+00	.0000
2	253	-3.84269E-07	1.02189E+00	-5.59663E-04	-2.64721E-03	-1.18196E-05	.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	1.02250E+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	4.42594E-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	1.70872E-06	28	9.99999E-01	3

INFORMATION ONLY

11	11	1	26	3.75121E-06	28	9.99996E-01	3
12	12	1	25	1.61100E-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	6.39405E-05	28	9.99929E-01	2
16	16	1	2	7.66618E-05	28	9.99938E-01	2
17	17	1	2	9.14770E-05	28	9.99868E-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 -1.54651E-05 .00000E+00 .0167

final monitor

lambda 1.02256E+00 production/absorption 1.03675E+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	2.48566E-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	2.48566E+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	6.12698E-01	3.72550E+00	1.52173E-01	.00000E+00
11	2	6.33460E-01	6.42522E-01	3.97385E+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	4.22821E+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	2.33282E-01	.00000E+00
16	4	8.14000E-01	8.62792E-01	5.11451E+00	5.29051E-01	2.33536E-02
17	4	9.11591E-01	9.60386E-01	5.72768E+00	5.88897E-01	2.54094E-02
18	4	1.00918E+00	1.10577E+00	6.34088E+00	1.35731E+00	5.73426E-02
19	4	1.20436E+00	1.30195E+00	7.56724E+00	1.59657E+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	1.01535E-01
24	4	2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.10567E-01
25	4	2.37545E+00	2.47305E+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	1.78577E+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	1.02788E-01	1.92805E-01	1.95104E-01	1.47033E-01
2	1.30578E-02	9.10512E-02	1.12645E-01	6.90372E-02	1.02753E-01	1.92719E-01	1.95065E-01	1.47028E-01
3	1.30686E-02	9.10743E-02	1.12667E-01	6.90552E-02	1.02767E-01	1.92782E-01	1.95117E-01	1.47035E-01
4	1.30653E-02	9.11553E-02	1.12780E-01	6.91335E-02	1.02897E-01	1.93031E-01	1.95273E-01	1.47056E-01
5	1.30777E-02	9.12577E-02	1.12975E-01	6.92665E-02	1.03113E-01	1.93430E-01	1.95521E-01	1.47112E-01

INFORMATION ONLY

6	1.30946E-02	9.14836E-02	1.13265E-01	6.94499E-02	1.03410E-01	1.93978E-01	1.98859E-01	1.47168E-01
7	1.31160E-02	9.17443E-02	1.13591E-01	6.96879E-02	1.03798E-01	1.94694E-01	1.99300E-01	1.47238E-01
8	1.31417E-02	9.20575E-02	1.14031E-01	6.99953E-02	1.04308E-01	1.95629E-01	1.99877E-01	1.47321E-01
9	1.31634E-02	9.23330E-02	1.14426E-01	7.02773E-02	1.04771E-01	1.96486E-01	2.00411E-01	1.47391E-01
10	1.31782E-02	9.25480E-02	1.14755E-01	7.05256E-02	1.05192E-01	1.97282E-01	2.00898E-01	1.47439E-01
11	1.31906E-02	9.27279E-02	1.15031E-01	7.07340E-02	1.05545E-01	1.97957E-01	2.01315E-01	1.47484E-01
12	1.32041E-02	9.28611E-02	1.15205E-01	7.08824E-02	1.05715E-01	1.98294E-01	2.01518E-01	1.47528E-01
13	1.32524E-02	9.31038E-02	1.15479E-01	7.09799E-02	1.05904E-01	1.98632E-01	2.01709E-01	1.47596E-01
14	1.32739E-02	9.34906E-02	1.15980E-01	7.12552E-02	1.06278E-01	1.99290E-01	2.01088E-01	1.47688E-01
15	1.33228E-02	9.39882E-02	1.16655E-01	7.16218E-02	1.06874E-01	2.00361E-01	2.01715E-01	1.47790E-01
16	1.33988E-02	9.47851E-02	1.17573E-01	7.22665E-02	1.07886E-01	2.02200E-01	2.02805E-01	1.47960E-01
17	1.34738E-02	9.55779E-02	1.18590E-01	7.29151E-02	1.08917E-01	2.04091E-01	2.03994E-01	1.48157E-01
18	1.35332E-02	9.62197E-02	1.19424E-01	7.34603E-02	1.09782E-01	2.05724E-01	2.04960E-01	1.48361E-01
19	1.35850E-02	9.67892E-02	1.20172E-01	7.39342E-02	1.10571E-01	2.07248E-01	2.05925E-01	1.48573E-01
20	1.36154E-02	9.71309E-02	1.20628E-01	7.42524E-02	1.11034E-01	2.08229E-01	2.06563E-01	1.48728E-01
21	1.36343E-02	9.73508E-02	1.20927E-01	7.44284E-02	1.11358E-01	2.08859E-01	2.06006E-01	1.48844E-01
22	1.36464E-02	9.74833E-02	1.21125E-01	7.45592E-02	1.11613E-01	2.09362E-01	2.07319E-01	1.48931E-01
23	1.36540E-02	9.75851E-02	1.21254E-01	7.46450E-02	1.11760E-01	2.09678E-01	2.06536E-01	1.48992E-01
24	1.36584E-02	9.76397E-02	1.21332E-01	7.46975E-02	1.11851E-01	2.09879E-01	2.06768E-01	1.49035E-01
25	1.36608E-02	9.76647E-02	1.21369E-01	7.47225E-02	1.11895E-01	2.09980E-01	2.06749E-01	1.49056E-01
26	1.36598E-02	9.76614E-02	1.21367E-01	7.47212E-02	1.11895E-01	2.09990E-01	2.06756E-01	1.49057E-01
27	1.36581E-02	9.76412E-02	1.21341E-01	7.47037E-02	1.11866E-01	2.09935E-01	2.06719E-01	1.49043E-01
28	1.36555E-02	9.76115E-02	1.21301E-01	7.46772E-02	1.11822E-01	2.09844E-01	2.06656E-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	1.07259E-01	1.01085E-01	6.55136E-02	5.59119E-02	5.31478E-02	2.89320E-02	1.59866E-02
2	1.15991E-01	1.07259E-01	1.01085E-01	6.55165E-02	5.59168E-02	5.31550E-02	2.89353E-02	1.59888E-02
3	1.15989E-01	1.07230E-01	1.01019E-01	6.54946E-02	5.58941E-02	5.31213E-02	2.89285E-02	1.59825E-02
4	1.15986E-01	1.07209E-01	1.00970E-01	6.54371E-02	5.58395E-02	5.30402E-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	6.52501E-02	5.56444E-02	5.27494E-02	2.88548E-02	1.59406E-02
7	1.15958E-01	1.07074E-01	1.00668E-01	6.50737E-02	5.54981E-02	5.25305E-02	2.88134E-02	1.59166E-02
8	1.15945E-01	1.06996E-01	1.00480E-01	6.48677E-02	5.53064E-02	5.22426E-02	2.87618E-02	1.58866E-02
9	1.15928E-01	1.06922E-01	1.00313E-01	6.46953E-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	5.48354E-02	5.15385E-02	2.86386E-02	1.58108E-02
12	1.15888E-01	1.06779E-01	9.99898E-02	6.43094E-02	5.47870E-02	5.14616E-02	2.86194E-02	1.58008E-02
13	1.15858E-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	2.85335E-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	1.56825E-02
17	1.15551E-01	1.06248E-01	9.87784E-02	6.28631E-02	5.34744E-02	4.94256E-02	2.83675E-02	1.56230E-02
18	1.15488E-01	1.06105E-01	9.84479E-02	6.24846E-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	1.54661E-02
21	1.15397E-01	1.05833E-01	9.78018E-02	6.16789E-02	5.23780E-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	1.53935E-02
24	1.15386E-01	1.05746E-01	9.75854E-02	6.14214E-02	5.21259E-02	4.74367E-02	2.79334E-02	1.53818E-02
25	1.15384E-01	1.05734E-01	9.75569E-02	6.13876E-02	5.20930E-02	4.73912E-02	2.79210E-02	1.53752E-02
26	1.15381E-01	1.05730E-01	9.75478E-02	6.13767E-02	5.20808E-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	1.53780E-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	3.48603E-02	1.07715E-02	2.19647E-02	7.43973E-02	6.11485E-02
2	6.94248E-03	5.15838E-03	1.04537E-02	3.48631E-02	1.07726E-02	2.19666E-02	7.43925E-02	6.11342E-02
3	6.93500E-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	3.48537E-02	1.07353E-02	2.18698E-02	7.40220E-02	6.07472E-02
5	6.91774E-03	5.09532E-03	1.04077E-02	3.47818E-02	1.06861E-02	2.17278E-02	7.36443E-02	6.03562E-02
6	6.90032E-03	5.05036E-03	1.03756E-02	3.47125E-02	1.06429E-02	2.15630E-02	7.31411E-02	5.98356E-02
7	6.87751E-03	4.99051E-03	1.03339E-02	3.46233E-02	1.05795E-02	2.13482E-02	7.24998E-02	5.91743E-02

INFORMATION ONLY

8	6.8474E-03	4.9106TE-03	1.0279SE-02	3.4508SE-02	1.0482E-02	2.1067E-02	7.1689E-02	5.8344IE-02
9	6.8192E-03	4.8353SE-03	1.0229IE-02	3.4403SE-02	1.0397IE-02	2.0807E-02	7.0960SE-02	5.7603E-02
10	6.7938E-03	4.7661SE-03	1.0183SE-02	3.4309SE-02	1.0319E-02	2.0572SE-02	7.0326SE-02	5.6966SE-02
11	6.7736IE-03	4.7132IE-03	1.0147IE-02	3.4234SE-02	1.0259SE-02	2.0395IE-02	6.9865SE-02	5.6525IE-02
12	6.7655TE-03	4.6944IE-03	1.0132IE-02	3.4200SE-02	1.0239SE-02	2.0336SE-02	6.9722SE-02	5.6410SE-02
13	6.7536SE-03	4.6993SE-03	1.0112SE-02	3.4161IE-02	1.0204TE-02	2.0227IE-02	6.9480E-02	5.6130SE-02
14	6.7279SE-03	4.5811SE-03	1.0069SE-02	3.4078SE-02	1.0126TE-02	1.9981SE-02	6.8839SE-02	5.5492SE-02
15	6.6871IE-03	4.6570SE-03	1.0003SE-02	3.3950TE-02	1.0002SE-02	1.9597IE-02	6.7947SE-02	5.4582SE-02
16	6.6199SE-03	4.2367SE-03	9.8926SE-03	3.3739SE-02	9.7997SE-03	1.8963SE-02	6.6575IE-02	5.3293SE-02
17	6.5529SE-03	4.0185SE-03	9.7783SE-03	3.3516SE-02	9.5986SE-03	1.8353SE-02	6.5178SE-02	5.1898SE-02
18	6.4957IE-03	3.8563SE-03	9.6750SE-03	3.3303SE-02	9.4291TE-03	1.7814ZE-02	6.3843SE-02	5.0581SE-02
19	6.4421SE-03	3.7194TE-03	9.5756ZE-03	3.3090IE-02	9.2719SE-03	1.7335SE-02	6.2504SE-02	4.9271SE-02
20	6.4074TE-03	3.6419SE-03	9.5089ZE-03	3.2898SE-02	9.1704IE-03	1.7003SE-02	6.1549SE-02	4.8335SE-02
21	6.3852IE-03	3.5926IE-03	9.4614TE-03	3.2828TE-02	9.0994IE-03	1.6817SE-02	6.0843SE-02	4.7632TE-02
22	6.3668SE-03	3.5598SE-03	9.4271OE-03	3.2745SE-02	9.0484ZE-03	1.6665TE-02	6.0292SE-02	4.7101IE-02
23	6.3534SE-03	3.5378SE-03	9.4034OE-03	3.2685IE-02	9.0117TE-03	1.6563SE-02	5.9886SE-02	4.6702SE-02
24	6.3451OE-03	3.5231IE-03	9.3854ZE-03	3.2642SE-02	8.9864ZE-03	1.6480OE-02	5.9586SE-02	4.6412SE-02
25	6.3402IE-03	3.5141IE-03	9.3755SE-03	3.2617SE-02	8.9705SE-03	1.6435SE-02	5.9400SE-02	4.6218IE-02
26	6.3388SE-03	3.5102IE-03	9.3721SE-03	3.2607ZE-02	8.9642SE-03	1.6409SE-02	5.9305SE-02	4.6114ZE-02
27	6.3396SE-03	3.5104IE-03	9.3743ZE-03	3.2615SE-02	8.9654SE-03	1.6409SE-02	5.9295SE-02	4.6090SE-02
28	6.3427IE-03	3.5135TE-03	9.3799ZE-03	3.2630IE-02	8.9720OE-03	1.6425SE-02	5.9345SE-02	4.6129SE-02

0 int.	grp. 25	grp. 26	grp. 27
1	2.7684IE-02	1.9882SE-02	3.7958TE-03
2	2.7673TE-02	1.9970TE-02	3.7930E-03
3	2.7608IE-02	1.9913SE-02	3.7812SE-03
4	2.7468TE-02	1.9792IE-02	3.7563E-03
5	2.7262ZE-02	1.9611ZE-02	3.7186IE-03
6	2.6988SE-02	1.9368ZE-02	3.6668SE-03
7	2.6637OE-02	1.9057IE-02	3.5994SE-03
8	2.6200OE-02	1.8665IE-02	3.5134TE-03
9	2.5812SE-02	1.8314OE-02	3.4338ZE-03
10	2.5484ZE-02	1.8018IE-02	3.3663SE-03
11	2.5265OE-02	1.7826ZE-02	3.3255OE-03
12	2.5217SE-02	1.7797SE-02	3.3227SE-03
13	2.5061SE-02	1.7654OE-02	3.2842SE-03
14	2.4706SE-02	1.7314ZE-02	3.1916IE-03
15	2.4213OE-02	1.6885OE-02	3.0540IE-03
16	2.3488TE-02	1.6151SE-02	2.8533OE-03
17	2.2795TE-02	1.5505IE-02	2.6804TE-03
18	2.2128SE-02	1.4920TE-02	2.5496OE-03
19	2.1454E-02	1.4352SE-02	2.4313IE-03
20	2.0778TE-02	1.3767SE-02	2.3591SE-03
21	2.0525ZE-02	1.3692IE-02	2.3104SE-03
22	2.0360SE-02	1.3491TE-02	2.2766SE-03
23	2.0163SE-02	1.3346IE-02	2.2526ZE-03
24	2.0021SE-02	1.3242SE-02	2.2359SE-03
25	1.9925IE-02	1.3173ZE-02	2.2248IE-03
26	1.9871SE-02	1.3133SE-02	2.2184ZE-03
27	1.9855IE-02	1.3119IE-02	2.2160IE-03
28	1.9866IE-02	1.3122IE-02	2.2159SE-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	5.0880TE-04	6.7344E-04	5.6075ZE-05	-7.2948E-04	9.9975ZE-01
2	.00000E+00	.00000E+00	3.8641IE-04	6.1852TE-05	8.1294OE-05	1.7675ZE-04	-7.9194ZE-03	9.9996IE-01
3	.00000E+00	.00000E+00	3.8616SE-03	5.4765SE-05	1.4263TE-02	9.2947TE-05	-1.0474TE-02	9.9997SE-01
4	.00000E+00	.00000E+00	5.6019OE-03	3.6043TE-05	1.2884ZE-02	4.2062TE-05	-6.8262TE-03	9.9998SE-01
5	.00000E+00	.00000E+00	1.0284IE-02	1.1534SE-02	2.0897ZE-02	4.9707ZE-05	-1.0662SE-02	9.9999IE-01
6	.00000E+00	.00000E+00	2.1530TE-02	3.4506ZE-02	4.1011IE-02	8.4313SE-05	-1.9564SE-02	9.9998SE-01
7	.00000E+00	.00000E+00	4.2261SE-02	6.0983IE-02	5.4148SE-02	6.1234E-05	-1.1947SE-02	9.9998SE-01

INFORMATION ONLY

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	2.92961E-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	5.59204E-02	6.57025E-02	5.26543E-02	5.52482E-05	3.42324E-03	9.99939E-01
12	.00000E+00	.00000E+00	4.54778E-02	3.51525E-02	4.13612E-02	6.05468E-05	4.05705E-03	9.99979E-01
13	.00000E+00	.00000E+00	4.06273E-02	2.85880E-02	3.66633E-02	8.46892E-05	3.88059E-03	9.99968E-01
14	.00000E+00	.00000E+00	3.95045E-02	2.81294E-02	3.36026E-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	7.27520E-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	6.35786E-05	-1.10845E-03	9.99990E-01
20	.00000E+00	.00000E+00	2.58651E-02	2.04986E-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	1.21408E-02	1.00002E+00
24	.00000E+00	.00000E+00	6.67371E-02	7.12660E-02	5.50100E-02	1.29652E-03	1.04259E-02	1.00002E+00
25	.00000E+00	.00000E+00	4.44466E-02	3.02755E-02	3.89493E-02	7.69478E-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	rctn rate	fiss rate	flux*dv**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	8.98529E-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	7.06567E-02	-6.82427E-03	6.91094E-02	.00000E+00	.00000E+00	.00000E+00	4.18087E-05	8.76592E-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	2.44988E-01
7	1.96177E-01	-1.19475E-02	1.85146E-01	.00000E+00	.00000E+00	.00000E+00	5.92502E-05	2.44337E-01
8	1.47646E-01	-2.42632E-03	1.47040E-01	.00000E+00	.00000E+00	.00000E+00	3.27367E-05	1.85039E-01
9	1.15285E-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	1.00065E-01	3.42524E-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	5.59081E-02	.00000E+00	.00000E+00	.00000E+00	8.75088E-06	6.98860E-02
14	5.15911E-02	5.76459E-03	5.31350E-02	.00000E+00	.00000E+00	.00000E+00	8.44713E-06	6.59272E-02
15	2.86524E-02	1.26324E-03	2.89506E-02	.00000E+00	.00000E+00	.00000E+00	4.46646E-06	3.61966E-02
16	1.58176E-02	7.10851E-04	1.59863E-02	.00000E+00	.00000E+00	.00000E+00	2.22619E-06	1.99334E-02
17	6.77923E-03	6.09795E-04	6.94042E-03	.00000E+00	.00000E+00	.00000E+00	8.83678E-07	8.63365E-03
18	4.72622E-03	1.49873E-03	5.15356E-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	2.04395E-02	4.95791E-03	2.19562E-02	.00000E+00	.00000E+00	.00000E+00	2.44508E-06	2.67485E-02
23	6.99668E-02	1.21408E-02	7.43764E-02	.00000E+00	.00000E+00	.00000E+00	7.48844E-06	9.09125E-02
24	5.66064E-02	1.04258E-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	3.32385E-03	5.84006E-04	3.79604E-03	.00000E+00	.00000E+00	.00000E+00	9.85253E-08	4.50026E-03
28	1.73609E+00	-6.12034E-03	1.74283E+00	.00000E+00	3.72434E-11	.00000E+00	5.88945E-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	2.24895E-04	1.68557E-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	-1.03664E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.51427E-04	2.77590E-03	8.77705E-04	2.03129E-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	3.25367E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.03631E-03	1.24084E-02	1.49533E-04	2.70951E-05	8.29713E-04	9.99999E-01
7	.00000E+00	.00000E+00	6.74516E-04	1.25778E-02	6.33222E-05	2.68222E-05	5.84320E-04	9.99999E-01
8	.00000E+00	.00000E+00	1.17649E-04	9.21166E-03	4.43556E-04	2.21210E-05	-3.48074E-04	1.00002E+00

9	.00000E+00	.00000E+00	4.45404E-04	6.36399E-03	5.30509E-05	7.67624E-05	3.15607E-04	9.99778E-01
10	.00000E+00	.00000E+00	5.31162E-05	4.99400E-03	4.95498E-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	-9.10290E-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	4.80888E-05	6.31783E-06	-2.94857E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80888E-05	2.22089E-03	4.18525E-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	5.53666E-05	3.78780E-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	9.90480E-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	-3.75640E-06	9.99963E-01
21	.00000E+00	.00000E+00	8.02968E-05	3.63602E-04	8.68274E-05	4.50589E-06	-1.10528E-05	9.99988E-01
22	.00000E+00	.00000E+00	1.14353E-04	7.85822E-04	1.05400E-04	1.01916E-05	-1.28842E-06	9.99992E-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	8.81992E-04	2.27013E-04	3.12126E-05	1.91191E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.18126E-04	6.91231E-04	9.13480E-05	3.10508E-05	-4.26173E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.64874E-05	1.45976E-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	9.99978E-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	-8.95588E-03	9.26530E-02	-7.91942E-03	.00000E+00	.00000E+00	1.12058E-05	1.54678E-02
3	1.15283E-01	-1.12212E-02	1.14985E-01	-1.04747E-02	.00000E+00	.00000E+00	1.27206E-05	1.91888E-02
4	7.08824E-02	-6.84788E-03	7.06657E-02	-6.82427E-03	.00000E+00	.00000E+00	7.44774E-06	1.17996E-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	-1.87348E-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	1.43695E-03	.00000E+00	.00000E+00	4.91625E-06	1.78002E-02
11	9.99771E-02	3.33223E-03	1.00069E-01	3.42526E-03	.00000E+00	.00000E+00	4.77306E-06	1.66707E-02
12	6.42927E-02	4.05025E-03	6.44000E-02	4.05706E-03	.00000E+00	.00000E+00	3.22043E-06	1.07259E-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	5.76659E-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	1.58177E-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	1.49879E-03	.00000E+00	.00000E+00	2.30829E-07	7.84039E-04
19	1.01277E-02	1.10057E-03	1.01572E-02	1.10845E-03	.00000E+00	.00000E+00	4.97368E-07	1.69012E-03
20	3.41552E-02	2.41728E-03	3.42582E-02	2.42108E-03	.00000E+00	.00000E+00	1.67613E-06	5.70867E-03
21	1.02328E-02	1.68411E-03	1.02744E-02	1.69514E-03	.00000E+00	.00000E+00	5.01216E-07	1.70840E-03
22	2.03196E-02	4.93662E-03	2.04379E-02	4.93791E-03	.00000E+00	.00000E+00	9.94652E-07	3.39463E-03
23	6.96812E-02	1.20478E-02	6.99668E-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	2.73136E-06	9.41220E-03
25	2.52068E-02	4.76627E-03	2.53000E-02	4.74715E-03	.00000E+00	.00000E+00	1.21369E-06	4.20734E-03
26	1.77922E-02	3.46782E-03	1.78604E-02	3.47208E-03	.00000E+00	.00000E+00	8.47439E-07	2.96896E-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	1.08054E-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	9.99988E-01
2	.00000E+00	.00000E+00	2.04862E-04	3.30162E-03	4.33987E-03	9.43482E-05	-4.22868E-03	9.99987E-01
3	.00000E+00	.00000E+00	2.06094E-03	2.98669E-03	7.61417E-03	4.98864E-05	-5.60274E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.98556E-03	1.92864E-03	6.63005E-03	2.25188E-05	-3.65804E-03	9.99994E-01
5	.00000E+00	.00000E+00	5.50080E-03	6.18498E-03	1.12053E-02	2.66537E-05	-5.73100E-03	9.99995E-01
6	.00000E+00	.00000E+00	1.15329E-02	1.84974E-02	2.99843E-02	4.51967E-05	-1.04966E-02	9.99999E-01
7	.00000E+00	.00000E+00	2.26490E-02	3.23973E-02	2.87664E-02	3.25300E-05	-6.14988E-03	9.99980E-01
8	.00000E+00	.00000E+00	3.00025E-02	4.11818E-02	3.05788E-02	1.91347E-05	-8.92988E-04	9.99979E-01
9	.00000E+00	.00000E+00	3.04364E-02	3.80164E-02	3.01055E-02	1.53275E-05	3.19259E-04	9.99888E-01

INFORMATION ONLY

INFORMATION ONLY

10	.00000E+00	.00000E+00	2.99168E-02	3.61453E-02	2.90481E-02	1.88458E-05	8.52902E-04	9.99900E-01
11	.00000E+00	.00000E+00	2.92117E-02	3.41197E-02	2.72359E-02	2.86907E-05	1.94490E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.36427E-02	1.81244E-02	2.13262E-02	3.12188E-05	2.28573E-03	9.99982E-01
13	.00000E+00	.00000E+00	2.10027E-02	1.47218E-02	1.88797E-02	4.36105E-05	2.08008E-03	9.99973E-01
14	.00000E+00	.00000E+00	2.05710E-02	1.43356E-02	1.71248E-02	6.91833E-05	3.17721E-03	9.99971E-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	6.52726E-04	3.39612E-03	1.88651E-05	3.36823E-04	1.00001E+00
18	.00000E+00	.00000E+00	3.31651E-03	4.31850E-04	2.39972E-03	1.35128E-05	9.43299E-04	9.99997E-01
19	.00000E+00	.00000E+00	5.41422E-03	1.44721E-03	4.80975E-03	3.26579E-05	5.72027E-04	9.99992E-01
20	.00000E+00	.00000E+00	1.32184E-02	1.05701E-02	1.19509E-02	1.37866E-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	1.22788E-02	6.01960E-03	9.36780E-03	1.15620E-04	2.79468E-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	1.85008E-02	3.73979E-04	2.40584E-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	5.85780E-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	-3.08835E-03	9.99971E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	nön rate	fiss rate	flux*adj**2	total flux
1	1.33503E-02	-1.28141E-05	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	1.16915E-01	-1.68240E-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	2.64984E-05	7.00213E-02
6	2.01008E-01	-2.92315E-02	1.98404E-01	-1.87340E-02	.00000E+00	.00000E+00	4.47304E-05	1.31301E-01
7	1.98091E-01	-1.75129E-02	1.96580E-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	9.72225E-02
9	1.15706E-01	8.79823E-04	1.15950E-01	5.60524E-04	.00000E+00	.00000E+00	1.13474E-05	7.62398E-02
10	1.06524E-01	2.23300E-03	1.05774E-01	1.38010E-03	.00000E+00	.00000E+00	1.00126E-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	4.50622E-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	1.25197E-03	.00000E+00	.00000E+00	2.31536E-06	1.88060E-02
16	1.57187E-02	1.02188E-03	1.57978E-02	7.07106E-04	.00000E+00	.00000E+00	1.16547E-06	1.03772E-02
17	6.66279E-03	9.46053E-04	6.76315E-03	6.02831E-04	.00000E+00	.00000E+00	4.52850E-07	4.42653E-03
18	4.38194E-03	2.45192E-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	3.38777E-02	3.54679E-03	3.41952E-02	2.41728E-03	.00000E+00	.00000E+00	2.62780E-06	2.24198E-02
21	9.92834E-03	2.63577E-03	1.02328E-02	1.68611E-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	6.96812E-02	1.20478E-02	.00000E+00	.00000E+00	3.73068E-06	4.52315E-02
24	5.40547E-02	1.54668E-02	5.68807E-02	1.08470E-02	.00000E+00	.00000E+00	2.23410E-06	3.64477E-02
25	2.39285E-02	7.17511E-03	2.52068E-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	3.97100E-07	1.13654E-02
27	2.97080E-03	1.11086E-03	3.32869E-03	5.95586E-04	.00000E+00	.00000E+00	4.56166E-08	2.08788E-03
28	1.73379E+00	-9.75886E-05	1.73691E+00	-6.72040E-03	1.97453E-11	.00000E+00	3.11764E-04	1.14246E+00

1fine group summry 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	2.52450E-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	1.62136E-02	1.69239E-02	9.99888E-01
4	.00000E+00	1.23637E-01	1.05988E-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	1.76243E-01	3.91730E-01	1.19120E+00	5.30639E-01	8.09428E-03	2.92314E-02	1.00001E+00
7	.00000E+00	8.69766E-02	5.98860E-01	1.56388E+00	6.55305E-01	8.01626E-03	1.75114E-02	9.99991E-01
8	.00000E+00	1.33825E-02	6.89695E-01	1.57564E+00	6.86432E-01	1.30071E-02	3.66520E-03	9.99921E-01
9	.00000E+00	9.71602E-04	6.78514E-01	1.37304E+00	6.58905E-01	2.15359E-02	-8.70875E-04	9.99896E-01
10	.00000E+00	7.21551E-05	6.55689E-01	1.25082E+00	6.25794E-01	3.24757E-02	-2.25398E-03	9.99902E-01

INFORMATION ONLY

11	.00000E+00	5.67662E-06	6.29784E-01	1.14619E+00	5.81763E-01	5.33410E-02	-5.27941E-03	9.99345E-01
12	.00000E+00	3.98772E-07	5.06664E-01	6.37355E-01	4.54473E-01	5.85405E-02	-6.33665E-03	9.99776E-01
13	.00000E+00	6.33213E-08	4.49134E-01	5.05960E-01	3.99414E-01	5.56927E-02	-5.95657E-03	9.99868E-01
14	.00000E+00	1.25486E-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	-1.76566E-03	1.00036E+00
16	.00000E+00	4.16412E-10	1.61205E-01	9.80015E-02	1.55434E-01	6.73931E-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	3.33726E-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	1.66582E-01	1.92272E-01	7.60864E-02	-7.73609E-03	1.00016E+00
23	.00000E+00	3.58401E-11	6.20191E-01	9.31170E-01	5.00905E-01	1.37085E-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	3.31629E-01	3.72678E-01	7.01614E-02	-7.17637E-03	1.00013E+00
26	.00000E+00	2.00342E-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	9.72600E-03	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r@n rate	fiss rate	flux**2	total flux
1	1.36540E-02	-4.06352E-09	1.33503E-02	-1.28141E-05	2.28188E-05	2.53618E-05	3.01195E-04	3.47079E-01
2	9.75980E-02	-3.14073E-08	9.42736E-02	-1.31865E-02	1.56948E-05	1.10523E-04	1.60436E-03	2.47821E+00
3	1.21277E-01	-5.16775E-08	1.16919E-01	-1.66940E-02	.00000E+00	1.33044E-04	1.88580E-03	3.07873E+00
4	7.46607E-02	-2.17850E-08	7.18507E-02	-1.05068E-02	.00000E+00	5.69588E-05	8.85991E-04	1.89459E+00
5	1.11794E-01	-5.68470E-08	1.07230E-01	-1.60705E-02	.00000E+00	1.61424E-05	1.05291E-03	2.83638E+00
6	2.09787E-01	-1.08295E-07	2.01003E-01	-2.92315E-02	.00000E+00	1.29666E-05	1.73187E-03	5.32064E+00
7	2.08614E-01	-1.49683E-06	1.98091E-01	-1.75129E-02	.00000E+00	1.20666E-05	1.22692E-03	5.17072E+00
8	1.49010E-01	-1.80777E-07	1.47844E-01	-3.66538E-03	.00000E+00	1.19455E-05	6.98720E-04	3.79087E+00
9	1.15376E-01	8.94787E-06	1.15705E-01	8.79825E-04	.00000E+00	1.56926E-05	4.71727E-04	2.93848E+00
10	1.05742E-01	-9.79025E-07	1.05524E-01	2.23300E-03	.00000E+00	3.35123E-05	4.23086E-04	2.69452E+00
11	9.75792E-02	-2.26843E-06	9.94111E-02	5.27714E-03	.00000E+00	7.29890E-05	3.87307E-04	2.48955E+00
12	6.14143E-02	-6.68124E-07	6.35998E-02	6.33602E-03	.00000E+00	9.76411E-05	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-05	1.78654E-04	1.21592E+00
15	2.79425E-02	-8.13965E-06	2.85100E-02	1.73741E-03	.00000E+00	1.66382E-05	1.10066E-04	7.13204E-01
16	1.53859E-02	-4.88588E-06	1.57187E-02	1.02188E-03	.00000E+00	1.17001E-05	5.65876E-05	3.92712E-01
17	6.34546E-03	-4.41698E-06	6.66279E-03	9.44053E-04	.00000E+00	1.28100E-05	2.04740E-05	1.62408E-01
18	3.51579E-03	4.10572E-07	4.38194E-03	2.45198E-03	.00000E+00	8.31515E-04	7.67634E-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	1.36168E-02	1.20840E-04	8.34871E-01
21	8.97824E-03	1.12638E-06	9.92844E-03	2.63577E-03	.00000E+00	1.48204E-02	2.47962E-05	2.31261E-01
22	1.64376E-02	-4.77990E-06	1.98697E-02	7.75131E-03	.00000E+00	4.40880E-02	4.15652E-05	4.26944E-01
23	5.98809E-02	2.26603E-06	6.76292E-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	1.20558E+00
25	1.98057E-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	1.65661E-02	5.48500E-03	.00000E+00	3.57222E-02	1.66405E-05	3.46220E-01
27	2.21405E-03	2.86444E-08	2.97080E-03	1.11086E-03	.00000E+00	1.00907E-02	1.71561E-06	5.86150E-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	2.18557E-02	3.91394E-05	-4.06352E-09	9.98606E-01
2	.00000E+00	1.95460E-01	7.78642E-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	1.84774E-01	2.30706E-01	7.80574E-03	-2.17850E-08	9.99928E-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	1.76263E-01	4.25820E-01	1.25661E+00	5.98804E-01	8.25152E-03	-1.08295E-07	1.00001E+00
7	.00000E+00	8.69766E-02	6.59435E-01	1.66986E+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	7.46608E-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	9.99744E-01

INFORMATION ONLY

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	1.12594E-06	9.99967E-01
14	.00000E+00	1.25488E-08	4.91286E-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	8.54016E-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	1.34108E-10	9.70999E-02	3.21978E-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	5.70624E-02	2.90572E-02	4.10572E-07	1.00005E+00
19	.00000E+00	1.35748E-10	1.33983E-01	6.12171E-02	1.21695E-01	1.22158E-02	1.79258E-07	1.00016E+00
20	.00000E+00	2.20736E-10	3.21513E-01	3.66239E-01	2.98130E-01	2.83001E-02	-1.47142E-05	1.00080E+00
21	.00000E+00	3.23088E-11	1.56825E-01	7.12781E-02	1.30746E-01	2.60641E-02	1.12438E-06	1.00012E+00
22	.00000E+00	3.74853E-11	2.97289E-01	1.83668E-01	2.20651E-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	1.35721E-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	1.00000E+00
27	.00000E+00	4.77188E-13	1.29773E-01	7.85514E-02	1.11113E-01	1.86553E-02	2.86444E-08	1.00004E+00
28	.00000E+00	1.00000E+00	1.01116E+01	1.55987E+01	1.01116E+01	1.00194E+00	-3.26679E-05	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	rdn 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	3.33745E-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	6.91094E-02	.00000E+00	.00000E+00	5.69588E-03	9.57632E-04	2.04139E+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	-1.08529E-07	1.92888E-01	.00000E+00	.00000E+00	1.29656E-03	1.87022E-03	5.72991E+00
7	2.05616E-01	-1.49683E-06	1.95146E-01	.00000E+00	.00000E+00	1.20666E-03	1.32600E-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	3.17976E+00
10	1.05742E-01	-9.79025E-07	1.07234E-01	.00000E+00	.00000E+00	3.35125E-03	4.63148E-04	2.91707E+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	9.78611E-03	2.46847E-04	1.70421E+00
13	5.21211E-02	1.12592E-06	5.59081E-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	1.32405E+00
15	2.79425E-02	-8.13845E-06	2.89305E-02	.00000E+00	.00000E+00	1.64382E-03	1.18843E-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	6.34546E-03	-4.41693E-06	6.94042E-03	.00000E+00	.00000E+00	1.28100E-03	2.21423E-05	1.76588E-01
18	3.51575E-03	4.10572E-07	5.15365E-03	.00000E+00	.00000E+00	8.31515E-04	8.83067E-06	1.05551E-01
19	9.38344E-03	1.79258E-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	9.06492E-01
21	8.97624E-03	1.12438E-06	1.07880E-02	.00000E+00	.00000E+00	1.48204E-02	2.71233E-05	2.52883E-01
22	1.66378E-02	-4.77990E-06	2.19563E-02	.00000E+00	.00000E+00	4.40380E-02	4.61988E-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	4.61480E-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	3.71589E-05	5.75033E-01
26	1.31258E-02	-1.31666E-07	1.99808E-02	.00000E+00	.00000E+00	3.57222E-02	1.87192E-05	3.84401E-01
27	2.21606E-03	2.86444E-08	3.79604E-03	.00000E+00	.00000E+00	1.00907E-02	2.01286E-06	6.57572E-02
28	1.72243E+00	-3.26864E-05	1.74283E+00	.00000E+00	2.30360E-03	3.86281E-01	1.29295E-02	4.75410E+01

- elapsed time .02 min.

Odirect 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	1.74388E-03
2	7.12394E-04	5.02709E-03	5.81052E-03	3.44971E-03	4.30069E-03	6.14865E-03	4.33008E-03	2.14950E-03
3	1.19887E-03	5.51743E-03	5.85958E-03	2.91935E-03	3.86183E-03	6.77437E-03	4.37378E-03	1.82498E-03
4	8.25241E-04	4.33250E-03	4.95393E-03	2.35850E-03	2.89036E-03	4.80185E-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	3.37580E-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	8.01304E-04	1.06259E-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	6.30977E-04	3.50116E-04
3	1.12212E-03	1.05307E-03	1.29135E-03	1.22526E-03	1.13412E-03	1.61669E-03	3.92363E-04	2.16376E-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

INFORMATION ONLY

```
   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 2.43536E-04 2.00417E-04 4.96986E-04 2.87952E-04 8.25432E-04 2.10826E-03 1.78616E-03
   2 1.97688E-04 3.77700E-04 3.32593E-04 8.83234E-04 4.56558E-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 9.90924E-05 1.32221E-04 3.99865E-04 1.55418E-04 3.95056E-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 1.27244E-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    2.6627E+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 1.84903E-02 6.46326E-03
   2 1.95002E-02 2.59569E-02 1.00284E-02
   3 1.98934E-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    1.25665E+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.
1  cccccccccc    cccccccccc   uu       uu  ppppppppp   ll          eeeeeeeeeeee
   cccccccccccc  cccccccccccc uu       uu  ppppppppp   ll          eeeeeeeeeeee
   cc        cc  cc        cc uu       uu  pp       pp  ll          ee
   cc            cc        cc uu       uu  pp       pp  ll          ee
   cc            cc        cc uu       uu  pp       pp  ll          ee
   cc            cc        cc uu       uu  ppppppppp   ll          eeeeeeeee
   cc            cc        cc uu       uu  ppppppppp   ll          eeeeeeeee
   cc            cc        cc uu       uu  pp          ll          ee
```