```
                    *****                                                                      *****
                    *****                                                                      *****
                    ***********************************************************************************
                    ***********************************************************************************
                    ***********************************************************************************
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         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 33.

          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 "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:  ft33f001
0               8/28/1996    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                    7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                light elements         page    1
0                                                   nuclide concentrations, grams
                                                    basis =single reactor assembly
               initial  1E-18 d
     na 23   1.73E+05  1.73E+05
     al 27   1.35E+06  1.35E+06
   total     1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                     actinides         page    2
0                                                   nuclide concentrations, grams
                                                    basis =single reactor assembly
               initial  1E-18 d
      u234   2.12E+03  2.12E+03
      u235   1.72E+05  1.72E+05
      u236   4.12E+04  4.12E+04
      u238   8.66E+06  8.66E+06
     np237   9.99E+03  9.99E+03
   total     8.88E+06  8.88E+06
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                         page    3
         power=    .00mw, burnup=    146.mwd, flux= 3.00E+08n/cm**2-sec
0                                                  basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                      initial        9131.3 d       18262.5 d       27393.8 d       36525.0 d       36525.1 d
     productions    1.023114E+06   1.023298E+06   1.023481E+06   1.023664E+06   1.023847E+06   1.023847E+06
     absorptions    8.461686E+05   8.464511E+05   8.467263E+05   8.469958E+05   8.472601E+05   8.472601E+05
     k infinity     1.209113E+00   1.208927E+00   1.208751E+00   1.208582E+00   1.208421E+00   1.208421E+00
0                      initial        9131.3 d       18262.5 d       27393.8 d       36525.0 d       36525.1 d
     actinide
     absorptions    8.424028E+05   8.425110E+05   8.426190E+05   8.427266E+05   8.428336E+05   8.428336E+05
     non-actinide
     abs. fracs.    4.450440E-03   4.654825E-03   4.850745E-03   5.040407E-03   5.224466E-03   5.224407E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2               fission products         page    4
0                                         fraction of total absorption rate
         power=    .00mw, burnup=    146.mwd, flux= 3.00E+08n/cm**2-sec
0                 initial  9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

     sm149       .00E+00  1.79E-04  3.52E-04  5.20E-04  6.81E-04  6.81E-04
     sm151       .00E+00  6.99E-06  1.27E-05  1.75E-05  2.13E-05  2.13E-05
     nd143       .00E+00  3.65E-06  7.30E-06  1.09E-05  1.46E-05  1.46E-05
     gd155       .00E+00  1.80E-06  4.20E-06  6.58E-06  8.93E-06  8.93E-06
     rh103       .00E+00  1.72E-06  3.45E-06  5.18E-06  6.91E-06  6.91E-06
     eu151       .00E+00  5.14E-07  1.93E-06  4.09E-06  6.84E-06  6.84E-06
     gd157       .00E+00  1.83E-06  3.56E-06  5.22E-06  6.79E-06  6.79E-06
     cd113       .00E+00  1.58E-06  3.12E-06  4.64E-06  6.13E-06  6.13E-06
     xe131       .00E+00  1.18E-06  2.37E-06  3.55E-06  4.73E-06  4.73E-06
     cs133       .00E+00  9.18E-07  1.84E-06  2.76E-06  3.67E-06  3.67E-06
     tc 99       .00E+00  6.79E-07  1.36E-06  2.04E-06  2.71E-06  2.71E-06
     sm147       .00E+00  5.79E-07  1.26E-06  1.95E-06  2.63E-06  2.63E-06
     xe135       .00E+00  2.28E-06  2.28E-06  2.28E-06  2.28E-06  2.24E-06
```

nd145	.00E+00	5.21E-07	1.04E-06	1.56E-06	2.08E-06	2.08E-06
mo 95	.00E+00	3.57E-07	7.19E-07	1.08E-06	1.44E-06	1.44E-06
sm152	.00E+00	2.78E-07	5.57E-07	8.37E-07	1.12E-06	1.12E-06
kr 83	.00E+00	2.23E-07	4.45E-07	6.67E-07	8.89E-07	8.89E-07
cs135	.00E+00	2.06E-07	4.12E-07	6.18E-07	8.24E-07	8.24E-07
ru101	.00E+00	1.62E-07	3.25E-07	4.87E-07	6.49E-07	6.49E-07
pr141	.00E+00	1.51E-07	3.03E-07	4.55E-07	6.07E-07	6.07E-07
eu153	.00E+00	1.39E-07	2.79E-07	4.18E-07	5.57E-07	5.57E-07
la139	.00E+00	1.24E-07	2.48E-07	3.72E-07	4.96E-07	4.96E-07
pm147	.00E+00	2.74E-07	2.75E-07	2.74E-07	2.74E-07	2.74E-07
pd105	.00E+00	5.33E-08	1.07E-07	1.60E-07	2.13E-07	2.13E-07
zr 93	.00E+00	5.14E-08	1.03E-07	1.54E-07	2.05E-07	2.05E-07
eu155	.00E+00	1.55E-07	1.59E-07	1.60E-07	1.60E-07	1.60E-07
i129	.00E+00	3.83E-08	7.66E-08	1.15E-07	1.53E-07	1.53E-07
nd144	.00E+00	3.54E-08	7.25E-08	1.10E-07	1.47E-07	1.47E-07
ba137	.00E+00	1.42E-08	4.80E-08	9.28E-08	1.44E-07	1.44E-07
mo 97	.00E+00	2.82E-08	5.64E-08	8.46E-08	1.13E-07	1.13E-07
ag109	.00E+00	2.03E-08	4.08E-08	6.17E-08	8.29E-08	8.29E-08
sm150	.00E+00	4.77E-09	1.88E-08	4.19E-08	7.36E-08	7.36E-08
zr 91	.00E+00	1.32E-08	2.64E-08	3.97E-08	5.29E-08	5.29E-08
y 89	.00E+00	1.26E-08	2.53E-08	3.80E-08	5.06E-08	5.06E-08
ru102	.00E+00	1.14E-08	2.29E-08	3.43E-08	4.57E-08	4.57E-08
ce142	.00E+00	1.03E-08	2.05E-08	3.08E-08	4.10E-08	4.10E-08
nd148	.00E+00	9.97E-09	1.99E-08	2.99E-08	3.98E-08	3.98E-08
nd146	.00E+00	8.31E-09	1.66E-08	2.49E-08	3.32E-08	3.32E-08
ba138	.00E+00	7.07E-09	1.41E-08	2.12E-08	2.83E-08	2.83E-08
pd108	.00E+00	6.90E-09	1.39E-08	2.09E-08	2.79E-08	2.79E-08
in115	.00E+00	6.91E-09	1.38E-08	2.07E-08	2.77E-08	2.77E-08
ce140	.00E+00	6.61E-09	1.32E-08	1.98E-08	2.65E-08	2.65E-08
xe132	.00E+00	6.04E-09	1.21E-08	1.81E-08	2.42E-08	2.42E-08
mo 98	.00E+00	4.23E-09	8.46E-09	1.27E-08	1.69E-08	1.69E-08
mo100	.00E+00	4.04E-09	8.09E-09	1.21E-08	1.62E-08	1.62E-08
pd107	.00E+00	3.99E-09	8.01E-09	1.20E-08	1.61E-08	1.61E-08
xe134	.00E+00	3.92E-09	7.84E-09	1.18E-08	1.57E-08	1.57E-08
sr 90	.00E+00	7.80E-09	1.20E-08	1.43E-08	1.55E-08	1.55E-08
zr 92	.00E+00	3.19E-09	6.38E-09	9.56E-09	1.27E-08	1.27E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

i127	.00E+00	2.61E-09	5.23E-09	7.86E-09	1.05E-08	1.05E-08
zr 96	.00E+00	2.60E-09	5.21E-09	7.81E-09	1.04E-08	1.04E-08
ru104	.00E+00	2.48E-09	4.96E-09	7.45E-09	9.93E-09	9.93E-09
nd150	.00E+00	2.22E-09	4.44E-09	6.66E-09	8.87E-09	8.87E-09
xe136	.00E+00	2.12E-09	4.24E-09	6.36E-09	8.48E-09	8.48E-09
rh105	.00E+00	8.28E-09	8.29E-09	8.30E-09	8.31E-09	8.28E-09
br 81	.00E+00	1.61E-09	3.23E-09	4.84E-09	6.45E-09	6.45E-09
rb 85	.00E+00	1.41E-09	2.95E-09	4.51E-09	6.08E-09	6.08E-09
zr 94	.00E+00	1.38E-09	2.75E-09	4.13E-09	5.50E-09	5.50E-09
cd111	.00E+00	1.03E-09	2.06E-09	3.10E-09	4.14E-09	4.14E-09
te130	.00E+00	9.61E-10	1.92E-09	2.88E-09	3.84E-09	3.84E-09
sm154	.00E+00	9.38E-10	1.88E-09	2.81E-09	3.75E-09	3.75E-09
rb 87	.00E+00	9.12E-10	1.82E-09	2.73E-09	3.64E-09	3.64E-09
cs137	.00E+00	1.66E-09	2.59E-09	3.11E-09	3.41E-09	3.41E-09
zr 90	.00E+00	3.18E-10	1.07E-09	2.05E-09	3.15E-09	3.15E-09
pr143	.00E+00	2.66E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09
se 77	.00E+00	6.36E-10	1.27E-09	1.91E-09	2.54E-09	2.54E-09
xe133	.00E+00	1.99E-09	1.99E-09	1.99E-09	1.99E-09	1.99E-09
pd106	.00E+00	4.38E-10	9.04E-10	1.37E-09	1.84E-09	1.84E-09

kr 84	.00E+00	4.35E-10	8.69E-10	1.30E-09	1.74E-09	1.74E-09
ce141	.00E+00	1.58E-09	1.58E-09	1.57E-09	1.57E-09	1.57E-09
se 79	.00E+00	3.26E-10	6.52E-10	9.77E-10	1.30E-09	1.30E-09
eu152	.00E+00	4.41E-11	2.61E-10	6.77E-10	1.27E-09	1.27E-09
sb121	.00E+00	3.16E-10	6.32E-10	9.48E-10	1.27E-09	1.27E-09
sb123	.00E+00	2.57E-10	5.15E-10	7.73E-10	1.03E-09	1.03E-09
pm149	.00E+00	9.62E-10	9.62E-10	9.61E-10	9.61E-10	9.55E-10
kr 86	.00E+00	2.37E-10	4.73E-10	7.09E-10	9.45E-10	9.45E-10
nd147	.00E+00	9.44E-10	9.44E-10	9.43E-10	9.43E-10	9.39E-10
te128	.00E+00	2.13E-10	4.26E-10	6.40E-10	8.53E-10	8.53E-10
gd156	.00E+00	1.67E-10	3.41E-10	5.19E-10	7.04E-10	7.04E-10
se 80	.00E+00	1.52E-10	3.05E-10	4.57E-10	6.09E-10	6.09E-10
ce144	.00E+00	6.00E-10	5.99E-10	5.99E-10	5.99E-10	5.99E-10
kr 85	.00E+00	4.56E-10	5.46E-10	5.64E-10	5.67E-10	5.67E-10
dy161	.00E+00	1.33E-10	2.68E-10	4.05E-10	5.43E-10	5.43E-10
te125	.00E+00	1.14E-10	2.49E-10	3.84E-10	5.19E-10	5.19E-10
tb159	.00E+00	9.14E-11	1.83E-10	2.76E-10	3.68E-10	3.68E-10
ru103	.00E+00	3.56E-10	3.56E-10	3.56E-10	3.56E-10	3.56E-10
cd112	.00E+00	8.70E-11	1.74E-10	2.61E-10	3.49E-10	3.49E-10
li 6	.00E+00	8.64E-11	1.73E-10	2.59E-10	3.45E-10	3.45E-10
sn117	.00E+00	6.89E-11	1.38E-10	2.07E-10	2.76E-10	2.76E-10
eu154	.00E+00	4.64E-11	1.14E-10	1.85E-10	2.56E-10	2.56E-10
gd152	.00E+00	3.47E-12	2.91E-11	9.94E-11	2.34E-10	2.34E-10
sn119	.00E+00	5.64E-11	1.13E-10	1.69E-10	2.26E-10	2.26E-10
sn115	.00E+00	5.15E-11	1.03E-10	1.55E-10	2.06E-10	2.06E-10
sr 88	.00E+00	4.36E-11	8.71E-11	1.31E-10	1.74E-10	1.74E-10
zr 95	.00E+00	1.68E-10	1.68E-10	1.68E-10	1.68E-10	1.67E-10
nb 95	.00E+00	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	.00E+00	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
gd158	.00E+00	3.01E-11	6.33E-11	9.95E-11	1.39E-10	1.39E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

cd114	.00E+00	3.12E-11	6.30E-11	9.55E-11	1.29E-10	1.29E-10
pd110	.00E+00	3.17E-11	6.35E-11	9.55E-11	1.28E-10	1.28E-10
se 82	.00E+00	2.95E-11	5.90E-11	8.85E-11	1.18E-10	1.18E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.05E-10
sn126	.00E+00	2.35E-11	4.71E-11	7.07E-11	9.43E-11	9.43E-11
se 78	.00E+00	2.26E-11	4.51E-11	6.77E-11	9.02E-11	9.02E-11
ru 99	.00E+00	7.79E-12	2.43E-11	4.94E-11	8.32E-11	8.32E-11
sn124	.00E+00	1.84E-11	3.69E-11	5.53E-11	7.37E-11	7.37E-11
dy162	.00E+00	1.76E-11	3.57E-11	5.42E-11	7.32E-11	7.32E-11
dy164	.00E+00	1.59E-11	3.23E-11	4.92E-11	6.67E-11	6.67E-11
as 75	.00E+00	1.35E-11	2.69E-11	4.04E-11	5.38E-11	5.38E-11
ba140	.00E+00	4.72E-11	4.71E-11	4.71E-11	4.71E-11	4.69E-11
sm153	.00E+00	3.80E-11	3.80E-11	3.80E-11	3.80E-11	3.71E-11
eu156	.00E+00	3.39E-11	3.40E-11	3.41E-11	3.41E-11	3.41E-11
in113	.00E+00	4.30E-12	1.27E-11	2.24E-11	3.24E-11	3.24E-11
gd154	.00E+00	1.27E-12	6.56E-12	1.65E-11	3.11E-11	3.11E-11
sr 89	.00E+00	3.04E-11	3.03E-11	3.03E-11	3.03E-11	3.03E-11
sn118	.00E+00	7.57E-12	1.51E-11	2.27E-11	3.03E-11	3.03E-11
ba136	.00E+00	7.22E-12	1.45E-11	2.20E-11	2.95E-11	2.95E-11
cs134	.00E+00	7.33E-12	1.42E-11	2.11E-11	2.79E-11	2.79E-11
ru106	.00E+00	2.59E-11	2.59E-11	2.60E-11	2.61E-11	2.61E-11
cd116	.00E+00	6.38E-12	1.28E-11	1.91E-11	2.55E-11	2.55E-11
sn122	.00E+00	6.23E-12	1.25E-11	1.87E-11	2.49E-11	2.49E-11
sn120	.00E+00	4.69E-12	9.38E-12	1.41E-11	1.88E-11	1.88E-11
ce143	.00E+00	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.68E-11

kr 82	.00E+00	3.95E-12	7.99E-12	1.21E-11	1.64E-11	1.64E-11
dy163	.00E+00	3.89E-12	7.90E-12	1.20E-11	1.63E-11	1.63E-11
la140	.00E+00	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11
sb125	.00E+00	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
y 90	.00E+00	7.40E-12	1.14E-11	1.36E-11	1.47E-11	1.47E-11
ge 73	.00E+00	3.64E-12	7.28E-12	1.09E-11	1.46E-11	1.46E-11
ru100	.00E+00	1.08E-12	3.69E-12	7.80E-12	1.34E-11	1.34E-11
mo 99	.00E+00	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
xe130	.00E+00	2.43E-12	4.97E-12	7.62E-12	1.04E-11	1.04E-11
pm148m	.00E+00	9.61E-12	9.62E-12	9.62E-12	9.61E-12	9.60E-12
mo 96	.00E+00	1.82E-12	3.88E-12	6.16E-12	8.69E-12	8.69E-12
sm148	.00E+00	6.76E-13	2.34E-12	4.95E-12	8.51E-12	8.51E-12
nd142	.00E+00	5.22E-13	2.09E-12	4.69E-12	8.34E-12	8.34E-12
kr 87	.00E+00	2.26E-11	2.26E-11	2.26E-11	2.26E-11	8.33E-12
ba134	.00E+00	5.15E-13	2.07E-12	4.66E-12	8.28E-12	8.28E-12
te127m	.00E+00	7.36E-12	7.37E-12	7.38E-12	7.38E-12	7.38E-12
i131	.00E+00	6.77E-12	6.76E-12	6.76E-12	6.76E-12	6.74E-12
ba135	.00E+00	4.30E-13	1.69E-12	3.77E-12	6.67E-12	6.67E-12
pd104	.00E+00	3.55E-13	1.42E-12	3.21E-12	5.70E-12	5.70E-12
ge 76	.00E+00	1.33E-12	2.66E-12	3.99E-12	5.32E-12	5.32E-12
gd160	.00E+00	8.47E-13	1.70E-12	2.56E-12	3.43E-12	3.43E-12
te126	.00E+00	6.57E-13	1.34E-12	2.04E-12	2.77E-12	2.77E-12
te129m	.00E+00	1.78E-12	1.78E-12	1.78E-12	1.78E-12	1.78E-12
ho165	.00E+00	2.67E-13	5.43E-13	8.28E-13	1.12E-12	1.12E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

cd110	.00E+00	5.15E-14	1.96E-13	4.36E-13	7.71E-13	7.71E-13
nb 93	.00E+00	1.88E-14	1.21E-13	3.39E-13	6.85E-13	6.85E-13
te124	.00E+00	1.52E-13	3.07E-13	4.63E-13	6.19E-13	6.19E-13
sr 87	.00E+00	1.52E-13	3.04E-13	4.56E-13	6.08E-13	6.08E-13
br 79	.00E+00	3.38E-14	1.35E-13	3.03E-13	5.38E-13	5.38E-13
pm148	.00E+00	3.84E-13	3.84E-13	3.84E-13	3.84E-13	3.81E-13
nb 94	.00E+00	8.77E-14	1.75E-13	2.63E-13	3.51E-13	3.51E-13
ag111	.00E+00	3.22E-13	3.23E-13	3.24E-13	3.26E-13	3.24E-13
xe129	.00E+00	1.91E-14	7.62E-14	1.71E-13	3.05E-13	3.05E-13
ge 74	.00E+00	7.33E-14	1.46E-13	2.20E-13	2.93E-13	2.93E-13
ag107	.00E+00	1.77E-14	7.10E-14	1.60E-13	2.85E-13	2.85E-13
eu157	.00E+00	2.96E-13	2.97E-13	2.98E-13	2.99E-13	2.77E-13
cd115m	.00E+00	2.36E-13	2.36E-13	2.36E-13	2.36E-13	2.36E-13
ge 72	.00E+00	4.91E-14	9.83E-14	1.48E-13	1.97E-13	1.97E-13
sr 86	.00E+00	4.35E-14	8.89E-14	1.36E-13	1.85E-13	1.85E-13
se 76	.00E+00	2.86E-14	5.77E-14	8.72E-14	1.17E-13	1.17E-13
dy160	.00E+00	8.02E-15	2.10E-14	3.90E-14	6.20E-14	6.20E-14
cs136	.00E+00	5.66E-14	5.73E-14	5.80E-14	5.87E-14	5.85E-14
xe128	.00E+00	8.66E-15	2.10E-14	3.71E-14	5.69E-14	5.69E-14
er166	.00E+00	7.11E-15	1.48E-14	2.31E-14	3.20E-14	3.20E-14
sn125	.00E+00	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.93E-14
ru105	.00E+00	3.01E-14	3.01E-14	3.01E-14	3.02E-14	2.33E-14
sn116	.00E+00	8.29E-16	3.16E-15	7.01E-15	1.24E-14	1.24E-14
sn123	.00E+00	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
te132	.00E+00	9.49E-15	9.49E-15	9.49E-15	9.48E-15	9.33E-15
rb 88	.00E+00	1.27E-14	1.27E-14	1.27E-14	1.27E-14	8.83E-15
kr 80	.00E+00	2.07E-15	4.15E-15	6.24E-15	8.35E-15	8.35E-15
i135	.00E+00	1.00E-14	1.00E-14	1.00E-14	1.00E-14	8.23E-15
te122	.00E+00	5.79E-16	1.78E-15	3.59E-15	6.03E-15	6.03E-15
sb126	.00E+00	3.03E-15	3.07E-15	3.11E-15	3.16E-15	3.14E-15
sb124	.00E+00	2.11E-15	2.13E-15	2.14E-15	2.15E-15	2.15E-15

in117m	.00E+00	2.07E-15	2.07E-15	2.07E-15	2.07E-15	1.84E-15
tb160	.00E+00	5.53E-16	8.12E-16	1.07E-15	1.33E-15	1.33E-15
te134	.00E+00	5.77E-15	5.77E-15	5.77E-15	5.76E-15	9.16E-16
i130	.00E+00	7.42E-16	7.74E-16	8.06E-16	8.38E-16	7.58E-16
be 9	.00E+00	1.71E-16	3.42E-16	5.12E-16	6.83E-16	6.83E-16
pr142	.00E+00	1.73E-16	3.46E-16	5.19E-16	6.92E-16	6.47E-16
te123	.00E+00	1.47E-16	3.00E-16	4.56E-16	6.15E-16	6.15E-16
in117	.00E+00	6.08E-16	6.08E-16	6.09E-16	6.10E-16	5.46E-16
rb 86	.00E+00	2.48E-16	2.59E-16	2.69E-16	2.79E-16	2.78E-16
li 7	.00E+00	6.66E-17	1.33E-16	2.00E-16	2.66E-16	2.66E-16
er167	.00E+00	3.10E-17	7.07E-17	1.20E-16	1.78E-16	1.78E-16
dy165	.00E+00	2.15E-16	2.22E-16	2.29E-16	2.35E-16	1.39E-16
ge 75	.00E+00	8.51E-17	8.51E-17	8.50E-17	8.50E-17	3.45E-17
cd118	.00E+00	1.19E-16	1.19E-16	1.19E-16	1.19E-16	2.59E-17
cd108	.00E+00	1.44E-18	3.07E-18	4.91E-18	6.96E-18	6.96E-18
cs134m	.00E+00	1.28E-18	2.56E-18	3.84E-18	5.12E-18	3.30E-18
sn114	.00E+00	7.65E-20	3.92E-19	1.03E-18	2.02E-18	2.02E-18
in119m	.00E+00	2.97E-17	2.97E-17	2.97E-17	2.97E-17	4.89E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 3.00E+08n/cm**2-sec
0 initial 9131.3 d 18262.5 d 27393.8 d 36525.0 d 36525.1 d

cd109	.00E+00	2.26E-19	2.69E-19	3.12E-19	3.59E-19	3.59E-19
in119	.00E+00	2.32E-18	2.32E-18	2.33E-18	2.33E-18	3.32E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 3.00E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	18262.5 d	27393.8 d	36525.0 d	36525.1 d
h 1	.00E+00	2.20E-06	4.41E-06	6.61E-06	8.81E-06	8.81E-06
h 2	.00E+00	6.53E-09	1.31E-08	1.96E-08	2.61E-08	2.61E-08
h 3	.00E+00	2.57E-11	3.21E-11	3.37E-11	3.41E-11	3.41E-11
h 4	.00E+00	1.04E-34	1.30E-34	1.36E-34	1.38E-34	.00E+00
he 3	.00E+00	2.22E-11	6.37E-11	1.10E-10	1.58E-10	1.58E-10
he 4	.00E+00	3.64E-07	7.28E-07	1.09E-06	1.46E-06	1.46E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	4.37E-08	8.75E-08	1.31E-07	1.75E-07	1.75E-07
ne 21	.00E+00	3.95E-14	1.58E-13	3.55E-13	6.32E-13	6.32E-13
ne 22	.00E+00	2.42E-10	5.27E-10	8.12E-10	1.10E-09	1.10E-09
ne 23	.00E+00	7.29E-15	7.29E-15	7.29E-15	7.29E-15	7.29E-30
na 22	.00E+00	4.27E-11	4.28E-11	4.28E-11	4.28E-11	4.28E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.64E-08	3.64E-08	3.64E-08	3.64E-08	3.34E-08
na 24m	.00E+00	5.99E-15	5.99E-15	5.99E-15	5.99E-15	5.99E-30
na 25	.00E+00	1.56E-27	3.34E-27	5.35E-27	7.58E-27	7.59E-42
mg 24	.00E+00	3.78E-04	7.55E-04	1.13E-03	1.51E-03	1.51E-03
mg 25	.00E+00	5.17E-11	1.11E-10	1.78E-10	2.52E-10	2.52E-10
mg 26	.00E+00	6.53E-09	1.31E-08	1.96E-08	2.61E-08	2.61E-08
mg 27	.00E+00	2.18E-12	2.18E-12	2.18E-12	2.18E-12	6.43E-16
mg 28	.00E+00	4.42E-24	4.41E-24	4.41E-24	4.41E-24	4.15E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	2.70E-10	2.70E-10	2.70E-10	2.70E-10	6.11E-25
al 29	.00E+00	9.50E-27	3.80E-26	8.55E-26	1.52E-25	1.25E-30
al 30	.00E+00	4.37E-39	3.49E-38	1.18E-37	2.79E-37	.00E+00
si 28	.00E+00	1.10E-03	2.20E-03	3.30E-03	4.40E-03	4.40E-03
si 29	.00E+00	3.53E-11	1.41E-10	3.17E-10	5.64E-10	5.64E-10
si 30	.00E+00	1.21E-18	9.70E-18	3.27E-17	7.76E-17	7.76E-17
si 31	.00E+00	8.68E-31	6.95E-30	2.34E-29	5.55E-29	3.41E-29

si 32	.00E+00	3.76E-38	5.90E-37	2.93E-36	9.08E-36	9.08E-36
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		3.00E+08	3.00E+08	3.00E+08	3.00E+08	3.00E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	18262.5 d	27393.8 d	36525.0 d	36525.1 d
he 4	.00E+00	1.75E-03	4.36E-03	7.69E-03	1.16E-02	1.16E-02
pb206	.00E+00	4.36E-11	6.13E-10	2.75E-09	7.80E-09	7.80E-09
pb207	.00E+00	1.04E-09	7.07E-09	2.06E-08	4.27E-08	4.27E-08
pb208	.00E+00	5.82E-10	2.86E-09	6.86E-09	1.25E-08	1.25E-08
pb209	.00E+00	8.70E-16	3.48E-15	7.84E-15	1.39E-14	1.40E-14
pb210	.00E+00	2.20E-10	1.49E-09	4.32E-09	8.96E-09	8.96E-09
pb211	.00E+00	1.17E-14	3.77E-14	7.01E-14	1.05E-13	1.05E-13
pb212	.00E+00	1.04E-13	2.27E-13	3.47E-13	4.63E-13	4.63E-13
pb214	.00E+00	2.33E-15	9.28E-15	2.08E-14	3.68E-14	3.57E-14
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	1.35E-11	1.08E-10	3.66E-10	8.67E-10	8.67E-10
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	.00E+00	1.35E-13	9.16E-13	2.66E-12	5.51E-12	5.51E-12
bi211	.00E+00	6.93E-16	2.23E-15	4.15E-15	6.25E-15	6.29E-15
bi212	.00E+00	9.86E-15	2.15E-14	3.29E-14	4.40E-14	4.40E-14
bi213	.00E+00	2.03E-16	8.14E-16	1.83E-15	3.25E-15	3.16E-15
bi214	.00E+00	1.73E-15	6.89E-15	1.54E-14	2.74E-14	2.69E-14
po210	.00E+00	3.73E-12	2.53E-11	7.35E-11	1.52E-10	1.52E-10
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	.00E+00	7.66E-21	2.47E-20	4.59E-20	6.91E-20	6.95E-20
po212	.00E+00	5.18E-25	1.13E-24	1.73E-24	2.31E-24	2.31E-24
po213	.00E+00	3.06E-25	1.22E-24	2.75E-24	4.89E-24	4.75E-24
po214	.00E+00	2.38E-22	9.48E-22	2.13E-21	3.76E-21	3.71E-21
po215	.00E+00	9.61E-21	3.10E-20	5.76E-20	8.66E-20	8.66E-20
po216	.00E+00	3.94E-19	8.59E-19	1.31E-18	1.75E-18	1.76E-18
po218	.00E+00	2.69E-16	1.07E-15	2.41E-15	4.26E-15	4.27E-15
ra222	.00E+00	1.72E-27	3.73E-27	5.67E-27	7.56E-27	7.56E-27
ra223	.00E+00	5.33E-12	1.72E-11	3.20E-11	4.81E-11	4.81E-11
ra224	.00E+00	8.58E-13	1.87E-12	2.86E-12	3.83E-12	3.83E-12
ra225	.00E+00	9.50E-14	3.81E-13	8.56E-13	1.52E-12	1.52E-12
ra226	.00E+00	7.31E-08	2.91E-07	6.53E-07	1.16E-06	1.16E-06
ra228	.00E+00	3.62E-14	8.81E-14	1.41E-13	1.94E-13	1.94E-13
ac225	.00E+00	6.42E-14	2.57E-13	5.79E-13	1.03E-12	1.03E-12
ac227	.00E+00	3.71E-09	1.19E-08	2.22E-08	3.34E-08	3.34E-08
ac228	.00E+00	4.41E-18	1.08E-17	1.72E-17	2.36E-17	2.36E-17
th226	.00E+00	8.41E-26	1.82E-25	2.77E-25	3.69E-25	3.68E-25
th227	.00E+00	8.61E-12	2.77E-11	5.16E-11	7.76E-11	7.76E-11
th228	.00E+00	1.64E-10	3.58E-10	5.46E-10	7.31E-10	7.31E-10
th229	.00E+00	1.85E-08	7.40E-08	1.67E-07	2.96E-07	2.96E-07
th230	.00E+00	6.39E-04	1.28E-03	1.92E-03	2.55E-03	2.55E-03
th231	.00E+00	3.02E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09
th232	.00E+00	1.29E-04	2.58E-04	3.87E-04	5.16E-04	5.16E-04
th233	.00E+00	1.20E-15	2.39E-15	3.59E-15	4.78E-15	1.52E-16
th234	.00E+00	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	.00E+00	1.80E-05	3.60E-05	5.40E-05	7.19E-05	7.19E-05
pa232	.00E+00	3.09E-13	6.18E-13	9.27E-13	1.24E-12	1.19E-12
pa233	.00E+00	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	.00E+00	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 11
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 3.00E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	18262.5 d	27393.8 d	36525.0 d	36525.1 d
u230	.00E+00	8.16E-23	1.76E-22	2.68E-22	3.58E-22	3.57E-22
u231	.00E+00	2.72E-19	5.45E-19	8.17E-19	1.09E-18	1.08E-18
u232	.00E+00	5.98E-09	1.29E-08	1.96E-08	2.62E-08	2.62E-08
u233	.00E+00	3.40E-04	6.81E-04	1.02E-03	1.36E-03	1.36E-03
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.06E+00
u235	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02	7.30E+02
u236	1.74E+02	1.74E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	.00E+00	3.24E-06	3.24E-06	3.24E-06	3.24E-06	3.21E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.29E-07	1.24E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	9.08E-12	9.08E-12	9.08E-12	9.08E-12	9.08E-12
np236m	.00E+00	2.16E-12	2.16E-12	2.16E-12	2.16E-12	2.04E-12
np236	.00E+00	5.12E-09	1.02E-08	1.54E-08	2.05E-08	2.05E-08
np237	4.22E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	.00E+00	1.58E-06	1.58E-06	1.58E-06	1.58E-06	1.54E-06
np239	.00E+00	4.75E-05	4.75E-05	4.75E-05	4.75E-05	4.67E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	9.74E-15	9.74E-15	9.74E-15	9.73E-15	2.81E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	1.17E-09	1.17E-09	1.17E-09	1.17E-09	1.17E-09
pu237	.00E+00	4.46E-14	8.15E-14	1.12E-13	1.37E-13	1.37E-13
pu238	.00E+00	4.28E-03	7.80E-03	1.07E-02	1.30E-02	1.30E-02
pu239	.00E+00	1.28E-01	2.55E-01	3.82E-01	5.09E-01	5.09E-01
pu240	.00E+00	1.57E-05	6.26E-05	1.41E-04	2.50E-04	2.50E-04
pu241	.00E+00	2.04E-09	1.29E-08	3.57E-08	7.14E-08	7.14E-08
pu242	.00E+00	1.13E-13	1.59E-12	7.29E-12	2.12E-11	2.12E-11
pu243	.00E+00	2.47E-22	3.50E-21	1.60E-20	4.65E-20	3.59E-20
pu244	.00E+00	.00E+00	.00E+00	2.80E-45	5.75E-44	5.75E-44
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	1.85E-25	2.42E-24	1.03E-23	2.78E-23	2.49E-23
am240	.00E+00	8.49E-23	1.11E-21	4.71E-21	1.27E-20	1.24E-20
am241	.00E+00	6.44E-10	8.43E-09	3.57E-08	9.66E-08	9.66E-08
am242m	.00E+00	8.43E-15	2.22E-13	1.41E-12	5.08E-12	5.08E-12
am242	.00E+00	2.27E-17	2.99E-16	1.27E-15	3.46E-15	3.20E-15
am243	.00E+00	2.54E-18	9.78E-17	8.28E-16	3.74E-15	3.74E-15
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	2.00E-26	7.70E-25	6.52E-24	2.94E-23	2.59E-23
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		3.00E+08	3.00E+08	3.00E+08	3.00E+08	3.00E-07

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 2 of library on unit 33.

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 "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:  ft33f001
0                  8/28/1996    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                       7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   12
          power=    .00mw, burnup=    292.mwd, flux= 2.81E+08n/cm**2-sec
0                                      basis =
0     (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      45656.3 d      54787.6 d      63918.8 d      73050.1 d      73050.2 d
      productions  1.091229E+06   1.091412E+06   1.091594E+06   1.091776E+06   1.091958E+06   1.091958E+06
      absorptions  8.948173E+05   8.950878E+05   8.953530E+05   8.956128E+05   8.958677E+05   8.958677E+05
      k infinity   1.219499E+00   1.219335E+00   1.219177E+00   1.219027E+00   1.218883E+00   1.218883E+00
0                    initial      45656.3 d      54787.6 d      63918.8 d      73050.1 d      73050.2 d
      actinide
      absorptions  8.907244E+05   8.908325E+05   8.909400E+05   8.910474E+05   8.911544E+05   8.911544E+05
      non-actinide
      abs. fracs.  4.573882E-03   4.754007E-03   4.928768E-03   5.097508E-03   5.261123E-03   5.261123E-03
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2             fission products        page   13
0                                  fraction of total absorption rate
          power=    .00mw, burnup=    292.mwd, flux= 2.81E+08n/cm**2-sec
0               initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d
```

sm149	6.90E-04	8.48E-04	1.00E-03	1.15E-03	1.29E-03	1.29E-03
sm151	2.16E-05	2.48E-05	2.75E-05	2.97E-05	3.14E-05	3.14E-05
nd143	1.47E-05	1.84E-05	2.21E-05	2.58E-05	2.95E-05	2.95E-05
eu151	6.92E-06	1.02E-05	1.39E-05	1.79E-05	2.22E-05	2.22E-05
gd155	9.06E-06	1.14E-05	1.37E-05	1.60E-05	1.83E-05	1.83E-05
rh103	6.89E-06	8.61E-06	1.03E-05	1.21E-05	1.38E-05	1.38E-05
gd157	6.88E-06	8.39E-06	9.82E-06	1.12E-05	1.25E-05	1.25E-05
cd113	6.21E-06	7.69E-06	9.15E-06	1.06E-05	1.20E-05	1.20E-05
xe131	4.70E-06	5.87E-06	7.04E-06	8.21E-06	9.38E-06	9.38E-06
cs133	3.64E-06	4.55E-06	5.46E-06	6.37E-06	7.28E-06	7.28E-06
tc 99	2.69E-06	3.36E-06	4.03E-06	4.70E-06	5.36E-06	5.36E-06
sm147	2.61E-06	3.28E-06	3.96E-06	4.63E-06	5.31E-06	5.31E-06
nd145	2.08E-06	2.59E-06	3.11E-06	3.63E-06	4.15E-06	4.15E-06
mo 95	1.44E-06	1.80E-06	2.15E-06	2.51E-06	2.87E-06	2.87E-06
xe135	2.27E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.27E-06
sm152	1.11E-06	1.39E-06	1.67E-06	1.95E-06	2.23E-06	2.23E-06
kr 83	8.97E-07	1.12E-06	1.34E-06	1.57E-06	1.79E-06	1.79E-06
cs135	8.20E-07	1.03E-06	1.23E-06	1.43E-06	1.64E-06	1.64E-06
ru101	6.39E-07	7.99E-07	9.58E-07	1.12E-06	1.28E-06	1.28E-06
pr141	6.10E-07	7.63E-07	9.15E-07	1.07E-06	1.22E-06	1.22E-06
eu153	5.56E-07	6.95E-07	8.34E-07	9.73E-07	1.11E-06	1.11E-06
la139	4.99E-07	6.24E-07	7.49E-07	8.73E-07	9.98E-07	9.98E-07
pd105	2.13E-07	2.66E-07	3.19E-07	3.72E-07	4.26E-07	4.26E-07
zr 93	2.04E-07	2.54E-07	3.05E-07	3.56E-07	4.07E-07	4.07E-07
ba137	1.45E-07	2.01E-07	2.58E-07	3.16E-07	3.74E-07	3.74E-07
i129	1.55E-07	1.94E-07	2.32E-07	2.71E-07	3.10E-07	3.10E-07
nd144	1.48E-07	1.86E-07	2.23E-07	2.60E-07	2.98E-07	2.98E-07
sm150	7.38E-08	1.14E-07	1.63E-07	2.19E-07	2.83E-07	2.83E-07
pm147	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07	2.72E-07
mo 97	1.13E-07	1.42E-07	1.70E-07	1.98E-07	2.26E-07	2.26E-07
ag109	8.21E-08	1.03E-07	1.25E-07	1.46E-07	1.69E-07	1.69E-07
eu155	1.59E-07	1.59E-07	1.59E-07	1.60E-07	1.60E-07	1.60E-07
zr 91	5.33E-08	6.66E-08	7.99E-08	9.32E-08	1.07E-07	1.07E-07
y 89	5.11E-08	6.38E-08	7.66E-08	8.94E-08	1.02E-07	1.02E-07
ru102	4.61E-08	5.76E-08	6.91E-08	8.07E-08	9.22E-08	9.22E-08
ce142	4.15E-08	5.18E-08	6.22E-08	7.25E-08	8.29E-08	8.29E-08
nd148	4.00E-08	5.00E-08	6.00E-08	6.99E-08	7.99E-08	7.99E-08
nd146	3.35E-08	4.19E-08	5.02E-08	5.86E-08	6.69E-08	6.69E-08
ba138	2.86E-08	3.57E-08	4.29E-08	5.00E-08	5.71E-08	5.71E-08
pd108	2.76E-08	3.46E-08	4.17E-08	4.88E-08	5.60E-08	5.60E-08
in115	2.77E-08	3.46E-08	4.15E-08	4.84E-08	5.54E-08	5.54E-08
ce140	2.68E-08	3.35E-08	4.01E-08	4.68E-08	5.35E-08	5.35E-08
xe132	2.41E-08	3.01E-08	3.62E-08	4.22E-08	4.82E-08	4.82E-08
mo 98	1.67E-08	2.09E-08	2.50E-08	2.92E-08	3.34E-08	3.34E-08
pd107	1.62E-08	2.03E-08	2.44E-08	2.85E-08	3.27E-08	3.27E-08
mo100	1.61E-08	2.01E-08	2.42E-08	2.82E-08	3.22E-08	3.22E-08
xe134	1.58E-08	1.98E-08	2.37E-08	2.77E-08	3.16E-08	3.16E-08
zr 92	1.28E-08	1.61E-08	1.93E-08	2.25E-08	2.57E-08	2.57E-08
i127	1.04E-08	1.31E-08	1.57E-08	1.83E-08	2.09E-08	2.09E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 14
0 fraction of total absorption rate
power= .00mw, burnup= 292.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d

zr 96	1.02E-08	1.27E-08	1.53E-08	1.78E-08	2.04E-08	2.04E-08
ru104	9.92E-09	1.24E-08	1.49E-08	1.74E-08	1.98E-08	1.98E-08
nd150	8.88E-09	1.11E-08	1.33E-08	1.55E-08	1.77E-08	1.77E-08
xe136	8.55E-09	1.07E-08	1.28E-08	1.50E-08	1.71E-08	1.71E-08
sr 90	1.57E-08	1.63E-08	1.67E-08	1.69E-08	1.70E-08	1.70E-08

br 81	6.44E-09	8.04E-09	9.65E-09	1.13E-08	1.29E-08	1.29E-08
rb 85	6.08E-09	7.65E-09	9.22E-09	1.08E-08	1.24E-08	1.24E-08
zr 94	5.46E-09	6.83E-09	8.19E-09	9.55E-09	1.09E-08	1.09E-08
cd111	4.18E-09	5.24E-09	6.29E-09	7.36E-09	8.42E-09	8.42E-09
rh105	8.35E-09	8.38E-09	8.38E-09	8.39E-09	8.40E-09	8.37E-09
zr 90	3.17E-09	4.35E-09	5.57E-09	6.81E-09	8.05E-09	8.05E-09
te130	3.88E-09	4.85E-09	5.82E-09	6.79E-09	7.76E-09	7.76E-09
sm154	3.78E-09	4.72E-09	5.66E-09	6.61E-09	7.55E-09	7.55E-09
rb 87	3.64E-09	4.54E-09	5.45E-09	6.36E-09	7.26E-09	7.26E-09
se 77	2.57E-09	3.21E-09	3.86E-09	4.50E-09	5.14E-09	5.14E-09
eu152	1.29E-09	2.04E-09	2.92E-09	3.91E-09	4.98E-09	4.98E-09
cs137	3.40E-09	3.56E-09	3.66E-09	3.71E-09	3.74E-09	3.74E-09
pd106	1.83E-09	2.29E-09	2.76E-09	3.22E-09	3.69E-09	3.69E-09
kr 84	1.72E-09	2.15E-09	2.58E-09	3.01E-09	3.44E-09	3.44E-09
pr143	2.67E-09	2.67E-09	2.67E-09	2.66E-09	2.66E-09	2.66E-09
se 79	1.32E-09	1.65E-09	1.98E-09	2.31E-09	2.63E-09	2.63E-09
sb121	1.26E-09	1.57E-09	1.89E-09	2.20E-09	2.52E-09	2.52E-09
sb123	1.03E-09	1.28E-09	1.54E-09	1.79E-09	2.05E-09	2.05E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
kr 86	9.54E-10	1.19E-09	1.43E-09	1.67E-09	1.90E-09	1.90E-09
gd152	2.37E-10	4.57E-10	7.73E-10	1.20E-09	1.74E-09	1.74E-09
te128	8.53E-10	1.07E-09	1.28E-09	1.49E-09	1.70E-09	1.70E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
gd156	6.94E-10	8.81E-10	1.07E-09	1.27E-09	1.47E-09	1.47E-09
se 80	6.15E-10	7.68E-10	9.22E-10	1.08E-09	1.23E-09	1.23E-09
dy161	5.49E-10	6.89E-10	8.31E-10	9.75E-10	1.12E-09	1.12E-09
te125	5.19E-10	6.54E-10	7.89E-10	9.24E-10	1.06E-09	1.06E-09
pm149	9.66E-10	9.73E-10	9.72E-10	9.72E-10	9.72E-10	9.65E-10
nd147	9.31E-10	9.35E-10	9.35E-10	9.34E-10	9.34E-10	9.30E-10
tb159	3.68E-10	4.61E-10	5.54E-10	6.48E-10	7.42E-10	7.42E-10
cd112	3.51E-10	4.39E-10	5.27E-10	6.15E-10	7.03E-10	7.03E-10
li 6	3.49E-10	4.37E-10	5.24E-10	6.11E-10	6.98E-10	6.98E-10
ce144	6.01E-10	6.01E-10	6.01E-10	6.01E-10	6.01E-10	6.00E-10
kr 85	5.72E-10	5.72E-10	5.72E-10	5.72E-10	5.72E-10	5.72E-10
sn117	2.78E-10	3.47E-10	4.16E-10	4.86E-10	5.55E-10	5.55E-10
eu154	2.59E-10	3.28E-10	3.99E-10	4.70E-10	5.41E-10	5.41E-10
sn119	2.28E-10	2.85E-10	3.42E-10	3.99E-10	4.56E-10	4.56E-10
sn115	2.09E-10	2.61E-10	3.13E-10	3.65E-10	4.17E-10	4.17E-10
ru103	3.57E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.57E-10
sr 88	1.75E-10	2.19E-10	2.63E-10	3.07E-10	3.50E-10	3.50E-10
gd158	1.38E-10	1.80E-10	2.24E-10	2.70E-10	3.19E-10	3.19E-10
ru 99	8.29E-11	1.25E-10	1.76E-10	2.36E-10	3.04E-10	3.04E-10
cd114	1.27E-10	1.60E-10	1.94E-10	2.29E-10	2.64E-10	2.64E-10
pd110	1.27E-10	1.59E-10	1.91E-10	2.23E-10	2.56E-10	2.56E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15
0 fraction of total absorption rate
power= .00mw, burnup= 292.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d

se 82	1.19E-10	1.49E-10	1.78E-10	2.08E-10	2.38E-10	2.38E-10
sn126	9.54E-11	1.19E-10	1.43E-10	1.67E-10	1.91E-10	1.91E-10
se 78	9.04E-11	1.13E-10	1.36E-10	1.58E-10	1.81E-10	1.81E-10
zr 95	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10	1.66E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
dy162	7.34E-11	9.26E-11	1.12E-10	1.32E-10	1.53E-10	1.53E-10
sn124	7.29E-11	9.12E-11	1.09E-10	1.28E-10	1.46E-10	1.46E-10
dy164	6.75E-11	8.56E-11	1.04E-10	1.23E-10	1.43E-10	1.43E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
gd154	3.14E-11	5.07E-11	7.48E-11	1.03E-10	1.37E-10	1.37E-10
as 75	5.39E-11	6.73E-11	8.08E-11	9.42E-11	1.08E-10	1.08E-10

pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
in113	3.23E-11	4.24E-11	5.25E-11	6.26E-11	7.28E-11	7.28E-11
ba136	2.94E-11	3.70E-11	4.46E-11	5.24E-11	6.02E-11	6.02E-11
sn118	2.98E-11	3.73E-11	4.47E-11	5.22E-11	5.97E-11	5.97E-11
cs134	2.81E-11	3.45E-11	4.12E-11	4.80E-11	5.48E-11	5.48E-11
ru100	1.36E-11	2.07E-11	2.93E-11	3.94E-11	5.09E-11	5.09E-11
cd116	2.53E-11	3.16E-11	3.79E-11	4.42E-11	5.05E-11	5.05E-11
sn122	2.51E-11	3.13E-11	3.76E-11	4.39E-11	5.01E-11	5.01E-11
ba140	4.71E-11	4.73E-11	4.73E-11	4.73E-11	4.73E-11	4.71E-11
sn120	1.88E-11	2.35E-11	2.82E-11	3.29E-11	3.76E-11	3.76E-11
sm153	3.73E-11	3.82E-11	3.82E-11	3.82E-11	3.83E-11	3.73E-11
eu156	3.45E-11	3.44E-11	3.45E-11	3.46E-11	3.46E-11	3.46E-11
kr 82	1.65E-11	2.08E-11	2.53E-11	2.98E-11	3.45E-11	3.45E-11
dy163	1.63E-11	2.07E-11	2.51E-11	2.97E-11	3.43E-11	3.43E-11
nd142	8.44E-12	1.32E-11	1.89E-11	2.58E-11	3.36E-11	3.36E-11
ba134	8.30E-12	1.29E-11	1.85E-11	2.51E-11	3.27E-11	3.27E-11
sm148	8.53E-12	1.30E-11	1.83E-11	2.46E-11	3.19E-11	3.19E-11
sr 89	3.06E-11	3.06E-11	3.06E-11	3.06E-11	3.06E-11	3.06E-11
ge 73	1.47E-11	1.83E-11	2.20E-11	2.57E-11	2.93E-11	2.93E-11
ba135	6.67E-12	1.04E-11	1.49E-11	2.03E-11	2.65E-11	2.65E-11
ru106	2.58E-11	2.57E-11	2.58E-11	2.59E-11	2.59E-11	2.59E-11
xe130	1.05E-11	1.34E-11	1.64E-11	1.95E-11	2.28E-11	2.28E-11
pd104	5.64E-12	8.78E-12	1.26E-11	1.71E-11	2.24E-11	2.24E-11
mo 96	8.66E-12	1.14E-11	1.44E-11	1.76E-11	2.10E-11	2.10E-11
ce143	1.69E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.69E-11
y 90	1.49E-11	1.55E-11	1.58E-11	1.60E-11	1.61E-11	1.61E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sb125	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.29E-11
ge 76	5.33E-12	6.66E-12	8.00E-12	9.33E-12	1.07E-11	1.07E-11
pm148m	9.71E-12	9.56E-12	9.56E-12	9.56E-12	9.56E-12	9.55E-12
kr 87	8.44E-12	2.29E-11	2.29E-11	2.29E-11	2.29E-11	8.43E-12
te127m	7.44E-12	7.45E-12	7.45E-12	7.46E-12	7.46E-12	7.46E-12
gd160	3.43E-12	4.30E-12	5.17E-12	6.05E-12	6.94E-12	6.94E-12
i131	6.75E-12	6.77E-12	6.77E-12	6.77E-12	6.77E-12	6.75E-12
te126	2.77E-12	3.52E-12	4.30E-12	5.09E-12	5.91E-12	5.91E-12
nb 93	6.88E-13	1.17E-12	1.78E-12	2.52E-12	3.40E-12	3.40E-12
cd110	7.78E-13	1.21E-12	1.73E-12	2.36E-12	3.08E-12	3.08E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 16
0 fraction of total absorption rate
power= .00mw, burnup= 292.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d

ho165	1.12E-12	1.42E-12	1.73E-12	2.05E-12	2.37E-12	2.37E-12
br 79	5.40E-13	8.43E-13	1.21E-12	1.65E-12	2.16E-12	2.16E-12
te129m	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12
te124	6.26E-13	7.85E-13	9.45E-13	1.11E-12	1.27E-12	1.27E-12
sr 87	6.12E-13	7.65E-13	9.19E-13	1.07E-12	1.23E-12	1.23E-12
xe129	3.05E-13	4.77E-13	6.87E-13	9.35E-13	1.22E-12	1.22E-12
ag107	2.88E-13	4.50E-13	6.49E-13	8.85E-13	1.16E-12	1.16E-12
nb 94	3.49E-13	4.36E-13	5.24E-13	6.11E-13	6.98E-13	6.98E-13
ge 74	2.96E-13	3.70E-13	4.44E-13	5.18E-13	5.92E-13	5.92E-13
sr 86	1.87E-13	2.38E-13	2.91E-13	3.46E-13	4.03E-13	4.03E-13
ge 72	1.99E-13	2.49E-13	2.99E-13	3.48E-13	3.98E-13	3.98E-13
pm148	3.76E-13	3.74E-13	3.74E-13	3.73E-13	3.73E-13	3.70E-13
ag111	3.22E-13	3.24E-13	3.25E-13	3.27E-13	3.28E-13	3.26E-13
eu157	2.79E-13	3.01E-13	3.01E-13	3.02E-13	3.03E-13	2.81E-13
se 76	1.19E-13	1.49E-13	1.80E-13	2.12E-13	2.44E-13	2.44E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13
dy160	6.18E-14	8.95E-14	1.22E-13	1.60E-13	2.02E-13	2.02E-13

xe128	5.74E-14	8.09E-14	1.08E-13	1.39E-13	1.74E-13	1.74E-13
er166	3.23E-14	4.19E-14	5.20E-14	6.27E-14	7.41E-14	7.41E-14
cs136	5.81E-14	5.91E-14	5.98E-14	6.05E-14	6.11E-14	6.09E-14
sn116	1.22E-14	1.89E-14	2.70E-14	3.66E-14	4.77E-14	4.77E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.92E-14
ru105	2.31E-14	2.98E-14	2.99E-14	2.99E-14	2.99E-14	2.31E-14
te122	6.00E-15	9.01E-15	1.26E-14	1.68E-14	2.17E-14	2.17E-14
kr 80	8.41E-15	1.06E-14	1.27E-14	1.49E-14	1.71E-14	1.71E-14
sn123	1.02E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14
te132	9.40E-15	9.55E-15	9.55E-15	9.54E-15	9.54E-15	9.39E-15
rb 88	8.94E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	8.93E-15
i135	8.33E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.32E-15
sb126	3.16E-15	3.22E-15	3.26E-15	3.30E-15	3.35E-15	3.33E-15
tb160	1.35E-15	1.60E-15	1.86E-15	2.12E-15	2.39E-15	2.38E-15
sb124	2.15E-15	2.17E-15	2.18E-15	2.19E-15	2.21E-15	2.20E-15
in117m	1.86E-15	2.10E-15	2.10E-15	2.10E-15	2.11E-15	1.87E-15
be 9	6.71E-16	8.39E-16	1.01E-15	1.17E-15	1.34E-15	1.34E-15
pr142	6.51E-16	8.67E-16	1.04E-15	1.21E-15	1.39E-15	1.30E-15
te123	6.17E-16	7.80E-16	9.46E-16	1.12E-15	1.29E-15	1.29E-15
te134	9.28E-16	5.84E-15	5.83E-15	5.83E-15	5.83E-15	9.26E-16
i130	7.60E-16	8.74E-16	9.05E-16	9.37E-16	9.69E-16	8.77E-16
in117	5.53E-16	6.17E-16	6.18E-16	6.19E-16	6.19E-16	5.55E-16
li 7	2.69E-16	3.37E-16	4.04E-16	4.71E-16	5.38E-16	5.38E-16
er167	1.79E-16	2.47E-16	3.25E-16	4.13E-16	5.12E-16	5.12E-16
rb 86	2.80E-16	2.91E-16	3.02E-16	3.12E-16	3.22E-16	3.21E-16
dy165	1.41E-16	2.43E-16	2.50E-16	2.57E-16	2.64E-16	1.56E-16
ge 75	3.50E-17	8.62E-17	8.62E-17	8.61E-17	8.61E-17	3.50E-17
cd118	2.62E-17	1.20E-16	1.21E-16	1.21E-16	1.21E-16	2.62E-17
cd108	7.01E-18	9.31E-18	1.19E-17	1.47E-17	1.78E-17	1.78E-17
sn114	2.05E-18	3.40E-18	5.12E-18	7.19E-18	9.62E-18	9.62E-18
cs134m	3.34E-18	6.38E-18	7.65E-18	8.92E-18	1.02E-17	6.56E-18
cd109	3.62E-19	4.06E-19	4.49E-19	4.93E-19	5.36E-19	5.36E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 17
0 fraction of total absorption rate
power= .00mw, burnup= 292.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 45656.3 d 54787.6 d 63918.8 d 73050.1 d 73050.2 d

in119m	4.96E-19	3.01E-17	3.01E-17	3.01E-17	3.01E-17	4.96E-19
in119	3.35E-21	2.36E-18	2.36E-18	2.36E-18	2.36E-18	3.35E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 18
power= 4.000E-03mw, burnup=2.9220E+02mwd, flux= 2.81E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	45656.3 d	54787.6 d	63918.8 d	73050.1 d	73050.2 d
h 1	8.81E-06	1.10E-05	1.31E-05	1.53E-05	1.74E-05	1.74E-05
h 2	2.61E-08	3.25E-08	3.89E-08	4.53E-08	5.16E-08	5.16E-08
h 3	3.41E-11	3.37E-11	3.36E-11	3.37E-11	3.37E-11	3.37E-11
h 4	.00E+00	1.37E-34	1.36E-34	1.37E-34	1.37E-34	.00E+00
he 3	1.58E-10	2.05E-10	2.52E-10	2.98E-10	3.45E-10	3.45E-10
he 4	1.46E-06	1.81E-06	2.17E-06	2.52E-06	2.88E-06	2.88E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.75E-07	2.18E-07	2.60E-07	3.03E-07	3.46E-07	3.46E-07
ne 21	6.32E-13	9.70E-13	1.37E-12	1.84E-12	2.37E-12	2.37E-12
ne 22	1.10E-09	1.38E-09	1.65E-09	1.93E-09	2.21E-09	2.21E-09
ne 23	7.29E-30	7.11E-15	7.11E-15	7.11E-15	7.11E-15	7.11E-30
na 22	4.28E-11	4.18E-11	4.18E-11	4.18E-11	4.18E-11	4.18E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.34E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	2.82E-08
na 24m	5.99E-30	5.05E-15	5.05E-15	5.05E-15	5.05E-15	5.05E-30

	na 25	7.59E-42	9.69E-27	1.22E-26	1.49E-26	1.78E-26	1.78E-41
	mg 24	1.51E-03	1.83E-03	2.15E-03	2.47E-03	2.78E-03	2.78E-03
	mg 25	2.52E-10	3.32E-10	4.19E-10	5.12E-10	6.12E-10	6.12E-10
	mg 26	2.61E-08	3.25E-08	3.89E-08	4.53E-08	5.16E-08	5.16E-08
	mg 27	6.43E-16	2.12E-12	2.12E-12	2.12E-12	2.12E-12	6.27E-16
	mg 28	4.15E-24	4.32E-24	4.32E-24	4.32E-24	4.32E-24	4.06E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	6.11E-25	2.28E-10	2.28E-10	2.28E-10	2.28E-10	5.16E-25
	al 29	1.25E-30	2.29E-25	3.26E-25	4.38E-25	5.66E-25	4.65E-30
	al 30	.00E+00	5.28E-37	9.10E-37	1.44E-36	2.13E-36	.00E+00
	si 28	4.40E-03	5.32E-03	6.25E-03	7.18E-03	8.10E-03	8.10E-03
	si 29	5.64E-10	8.77E-10	1.25E-09	1.68E-09	2.17E-09	2.17E-09
	si 30	7.76E-17	1.52E-16	2.61E-16	4.12E-16	6.11E-16	6.11E-16
	si 31	3.41E-29	1.09E-28	1.87E-28	2.96E-28	4.38E-28	2.69E-28
	si 32	9.08E-36	2.18E-35	4.45E-35	8.06E-35	1.35E-34	1.35E-34
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.81E+08	2.81E+08	2.81E+08	2.81E+08	2.81E-07
1							

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 19
power= 4.000E-03mw, burnup=2.9220E+02mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 45656.3 d	54787.6 d	63918.8 d	73050.1 d	73050.2 d	
he 4	1.16E-02	1.61E-02	2.10E-02	2.62E-02	3.18E-02	3.18E-02
pb206	7.80E-09	1.72E-08	3.24E-08	5.50E-08	8.64E-08	8.64E-08
pb207	4.27E-08	7.39E-08	1.15E-07	1.65E-07	2.24E-07	2.24E-07
pb208	1.25E-08	1.98E-08	2.87E-08	3.91E-08	5.11E-08	5.11E-08
pb209	1.40E-14	2.18E-14	3.13E-14	4.26E-14	5.56E-14	5.59E-14
pb210	8.96E-09	1.55E-08	2.39E-08	3.43E-08	4.65E-08	4.65E-08
pb211	1.05E-13	1.42E-13	1.79E-13	2.17E-13	2.54E-13	2.54E-13
pb212	4.63E-13	5.75E-13	6.86E-13	7.95E-13	9.04E-13	9.04E-13
pb214	3.57E-14	5.74E-14	8.23E-14	1.12E-13	1.45E-13	1.41E-13
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.67E-10	1.69E-09	2.92E-09	4.64E-09	6.92E-09	6.92E-09
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	5.51E-12	9.52E-12	1.47E-11	2.11E-11	2.86E-11	2.86E-11
bi211	6.29E-15	8.42E-15	1.06E-14	1.29E-14	1.51E-14	1.52E-14
bi212	4.40E-14	5.46E-14	6.50E-14	7.54E-14	8.57E-14	8.58E-14
bi213	3.16E-15	5.08E-15	7.31E-15	9.94E-15	1.30E-14	1.26E-14
bi214	2.69E-14	4.26E-14	6.11E-14	8.29E-14	1.08E-13	1.06E-13
po210	1.52E-10	2.63E-10	4.06E-10	5.83E-10	7.91E-10	7.91E-10
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	6.95E-20	9.31E-20	1.17E-19	1.42E-19	1.67E-19	1.68E-19
po212	2.31E-24	2.87E-24	3.42E-24	3.96E-24	4.51E-24	4.51E-24
po213	4.75E-24	7.64E-24	1.10E-23	1.49E-23	1.95E-23	1.89E-23
po214	3.71E-21	5.86E-21	8.41E-21	1.14E-20	1.48E-20	1.46E-20
po215	8.66E-20	1.17E-19	1.47E-19	1.78E-19	2.09E-19	2.09E-19
po216	1.76E-18	2.18E-18	2.60E-18	3.01E-18	3.42E-18	3.42E-18
po218	4.27E-15	6.64E-15	9.52E-15	1.29E-14	1.68E-14	1.68E-14
ra222	7.56E-27	9.09E-27	1.08E-26	1.25E-26	1.42E-26	1.42E-26
ra223	4.81E-11	6.48E-11	8.18E-11	9.89E-11	1.16E-10	1.16E-10
ra224	3.83E-12	4.75E-12	5.66E-12	6.56E-12	7.46E-12	7.46E-12
ra225	1.52E-12	2.38E-12	3.42E-12	4.65E-12	6.07E-12	6.07E-12
ra226	1.16E-06	1.80E-06	2.58E-06	3.51E-06	4.56E-06	4.56E-06
ra228	1.94E-13	2.47E-13	2.99E-13	3.52E-13	4.05E-13	4.05E-13
ac225	1.03E-12	1.61E-12	2.31E-12	3.14E-12	4.10E-12	4.10E-12
ac227	3.34E-08	4.50E-08	5.68E-08	6.87E-08	8.06E-08	8.06E-08
ac228	2.36E-17	3.01E-17	3.65E-17	4.30E-17	4.95E-17	4.95E-17
th226	3.68E-25	4.43E-25	5.28E-25	6.12E-25	6.95E-25	6.94E-25
th227	7.76E-11	1.05E-10	1.32E-10	1.60E-10	1.87E-10	1.87E-10

th228	7.31E-10	9.07E-10	1.08E-09	1.25E-09	1.42E-09	1.42E-09
th229	2.96E-07	4.62E-07	6.65E-07	9.04E-07	1.18E-06	1.18E-06
th230	2.55E-03	3.19E-03	3.83E-03	4.47E-03	5.11E-03	5.11E-03
th231	3.03E-09	3.03E-09	3.03E-09	3.04E-09	3.04E-09	3.04E-09
th232	5.16E-04	6.46E-04	7.75E-04	9.04E-04	1.03E-03	1.03E-03
th233	1.52E-16	5.94E-15	7.13E-15	8.32E-15	9.50E-15	3.02E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.19E-05	8.99E-05	1.08E-04	1.26E-04	1.44E-04	1.44E-04
pa232	1.19E-12	1.55E-12	1.85E-12	2.16E-12	2.47E-12	2.37E-12
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 20
power= 4.000E-03mw, burnup=2.9220E+02mwd, flux= 2.81E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 45656.3 d	54787.6 d	63918.8 d	73050.1 d	73050.2 d	
u230	3.57E-22	4.30E-22	5.12E-22	5.93E-22	6.74E-22	6.72E-22
u231	1.08E-18	1.32E-18	1.58E-18	1.85E-18	2.11E-18	2.08E-18
u232	2.62E-08	3.25E-08	3.87E-08	4.49E-08	5.10E-08	5.10E-08
u233	1.36E-03	1.70E-03	2.04E-03	2.38E-03	2.73E-03	2.73E-03
u234	9.06E+00	9.06E+00	9.06E+00	9.06E+00	9.07E+00	9.07E+00
u235	7.30E+02	7.29E+02	7.29E+02	7.29E+02	7.29E+02	7.29E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.21E-06	3.15E-06	3.15E-06	3.15E-06	3.15E-06	3.13E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.24E-08	3.22E-07	3.22E-07	3.22E-07	3.22E-07	1.21E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	9.08E-12	8.80E-12	8.80E-12	8.80E-12	8.80E-12	8.80E-12
np236m	2.04E-12	2.09E-12	2.09E-12	2.09E-12	2.09E-12	1.98E-12
np236	2.05E-08	2.54E-08	3.04E-08	3.54E-08	4.03E-08	4.03E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.54E-06	1.56E-06	1.56E-06	1.56E-06	1.56E-06	1.52E-06
np239	4.67E-05	4.65E-05	4.65E-05	4.65E-05	4.65E-05	4.58E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.81E-15	9.48E-15	9.48E-15	9.48E-15	9.48E-15	2.74E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.17E-09	1.14E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	1.37E-13	1.53E-13	1.69E-13	1.83E-13	1.94E-13	1.94E-13
pu238	1.30E-02	1.49E-02	1.65E-02	1.78E-02	1.88E-02	1.88E-02
pu239	5.09E-01	6.33E-01	7.57E-01	8.81E-01	1.00E+00	1.00E+00
pu240	2.50E-04	3.89E-04	5.58E-04	7.56E-04	9.85E-04	9.85E-04
pu241	7.14E-08	1.18E-07	1.78E-07	2.50E-07	3.35E-07	3.35E-07
pu242	2.12E-11	4.79E-11	9.30E-11	1.63E-10	2.64E-10	2.64E-10
pu243	3.59E-20	1.03E-19	1.99E-19	3.48E-19	5.66E-19	4.37E-19
pu244	5.75E-44	6.57E-43	4.73E-42	2.49E-41	1.05E-40	1.05E-40
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.49E-23	5.68E-23	1.03E-22	1.69E-22	2.59E-22	2.32E-22
am240	1.24E-20	2.60E-20	4.72E-20	7.75E-20	1.18E-19	1.16E-19
am241	9.66E-08	2.04E-07	3.69E-07	6.07E-07	9.28E-07	9.28E-07
am242m	5.08E-12	1.33E-11	2.87E-11	5.43E-11	9.37E-11	9.37E-11
am242	3.20E-15	7.27E-15	1.32E-14	2.19E-14	3.36E-14	3.11E-14
am243	3.74E-15	1.18E-14	3.01E-14	6.59E-14	1.29E-13	1.29E-13
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.59E-23	9.12E-23	2.32E-22	5.07E-22	9.93E-22	8.75E-22
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.81E+08  2.81E+08  2.81E+08  2.81E+08  2.81E-07
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  3 of library on unit 33.

          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 "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:  ft33f001
0                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page   21
        power=    .00mw, burnup=    438.mwd, flux= 2.73E+08n/cm**2-sec
0                                    basis =
```

(note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

	initial	82181. d	91313. d	100444. d	109575. d	109575. d
productions	1.123503E+06	1.123684E+06	1.123866E+06	1.124046E+06	1.124226E+06	1.124226E+06
absorptions	9.183541E+05	9.186095E+05	9.188597E+05	9.191057E+05	9.193471E+05	9.193471E+05
k infinity	1.223387E+00	1.223245E+00	1.223109E+00	1.222978E+00	1.222853E+00	1.222853E+00

	initial	82181. d	91313. d	100444. d	109575. d	109575. d
actinide absorptions	9.137518E+05	9.138591E+05	9.139662E+05	9.140729E+05	9.141796E+05	9.141796E+05
non-actinide abs. fracs.	5.011499E-03	5.171359E-03	5.325615E-03	5.475700E-03	5.620897E-03	5.620897E-03

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 22

fraction of total absorption rate

power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec

	initial	82181. d	91313. d	100444. d	109575. d	109575. d
sm149	1.30E-03	1.44E-03	1.57E-03	1.70E-03	1.82E-03	1.82E-03
nd143	2.96E-05	3.33E-05	3.70E-05	4.07E-05	4.43E-05	4.43E-05
eu151	2.23E-05	2.69E-05	3.16E-05	3.64E-05	4.14E-05	4.14E-05
sm151	3.16E-05	3.31E-05	3.43E-05	3.53E-05	3.61E-05	3.61E-05
gd155	1.84E-05	2.06E-05	2.28E-05	2.50E-05	2.71E-05	2.71E-05
rh103	1.38E-05	1.55E-05	1.72E-05	1.89E-05	2.06E-05	2.06E-05
cd113	1.20E-05	1.34E-05	1.48E-05	1.61E-05	1.74E-05	1.74E-05
gd157	1.26E-05	1.38E-05	1.50E-05	1.61E-05	1.72E-05	1.72E-05
xe131	9.36E-06	1.05E-05	1.17E-05	1.29E-05	1.40E-05	1.40E-05
cs133	7.26E-06	8.16E-06	9.07E-06	9.97E-06	1.09E-05	1.09E-05
tc 99	5.34E-06	6.01E-06	6.67E-06	7.34E-06	8.00E-06	8.00E-06
sm147	5.29E-06	5.96E-06	6.63E-06	7.30E-06	7.98E-06	7.98E-06
nd145	4.15E-06	4.66E-06	5.18E-06	5.69E-06	6.21E-06	6.21E-06
mo 95	2.87E-06	3.23E-06	3.58E-06	3.94E-06	4.30E-06	4.30E-06
sm152	2.23E-06	2.51E-06	2.79E-06	3.07E-06	3.36E-06	3.36E-06
kr 83	1.80E-06	2.02E-06	2.25E-06	2.47E-06	2.69E-06	2.69E-06
cs135	1.64E-06	1.84E-06	2.04E-06	2.25E-06	2.45E-06	2.45E-06
xe135	2.29E-06	2.32E-06	2.32E-06	2.32E-06	2.32E-06	2.29E-06
ru101	1.27E-06	1.43E-06	1.59E-06	1.74E-06	1.90E-06	1.90E-06
pr141	1.22E-06	1.38E-06	1.53E-06	1.68E-06	1.83E-06	1.83E-06
eu153	1.11E-06	1.25E-06	1.39E-06	1.53E-06	1.67E-06	1.67E-06
la139	1.00E-06	1.13E-06	1.25E-06	1.37E-06	1.50E-06	1.50E-06
pd105	4.25E-07	4.78E-07	5.31E-07	5.85E-07	6.38E-07	6.38E-07
ba137	3.76E-07	4.35E-07	4.95E-07	5.54E-07	6.14E-07	6.14E-07
sm150	2.83E-07	3.54E-07	4.33E-07	5.18E-07	6.10E-07	6.10E-07
zr 93	4.05E-07	4.56E-07	5.06E-07	5.57E-07	6.07E-07	6.07E-07
i129	3.11E-07	3.50E-07	3.89E-07	4.27E-07	4.66E-07	4.66E-07
nd144	2.99E-07	3.36E-07	3.74E-07	4.11E-07	4.49E-07	4.49E-07
mo 97	2.27E-07	2.55E-07	2.83E-07	3.12E-07	3.40E-07	3.40E-07
pm147	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
ag109	1.68E-07	1.90E-07	2.13E-07	2.35E-07	2.58E-07	2.58E-07
eu155	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.60E-07
zr 91	1.07E-07	1.20E-07	1.33E-07	1.47E-07	1.60E-07	1.60E-07
y 89	1.02E-07	1.15E-07	1.28E-07	1.41E-07	1.54E-07	1.54E-07
ru102	9.25E-08	1.04E-07	1.16E-07	1.27E-07	1.39E-07	1.39E-07
ce142	8.33E-08	9.37E-08	1.04E-07	1.14E-07	1.25E-07	1.25E-07
nd148	8.00E-08	9.00E-08	1.00E-07	1.10E-07	1.20E-07	1.20E-07
nd146	6.72E-08	7.55E-08	8.39E-08	9.23E-08	1.01E-07	1.01E-07
ba138	5.74E-08	6.45E-08	7.17E-08	7.89E-08	8.60E-08	8.60E-08
pd108	5.57E-08	6.28E-08	7.01E-08	7.74E-08	8.47E-08	8.47E-08
in115	5.54E-08	6.23E-08	6.92E-08	7.61E-08	8.30E-08	8.30E-08
ce140	5.37E-08	6.04E-08	6.71E-08	7.38E-08	8.05E-08	8.05E-08
xe132	4.82E-08	5.42E-08	6.02E-08	6.62E-08	7.22E-08	7.22E-08
mo 98	3.32E-08	3.74E-08	4.15E-08	4.56E-08	4.98E-08	4.98E-08
pd107	3.27E-08	3.69E-08	4.11E-08	4.53E-08	4.96E-08	4.96E-08

mo100	3.21E-08	3.62E-08	4.02E-08	4.42E-08	4.82E-08	4.82E-08
xe134	3.17E-08	3.57E-08	3.96E-08	4.36E-08	4.75E-08	4.75E-08
zr 92	2.57E-08	2.90E-08	3.22E-08	3.54E-08	3.86E-08	3.86E-08
i127	2.09E-08	2.35E-08	2.61E-08	2.87E-08	3.14E-08	3.14E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 23
0 fraction of total absorption rate

power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec

0

	initial	82181. d	91313. d	100444. d	109575. d	109575. d
zr 96	2.02E-08	2.27E-08	2.52E-08	2.77E-08	3.03E-08	3.03E-08
ru104	1.98E-08	2.23E-08	2.48E-08	2.73E-08	2.97E-08	2.97E-08
nd150	1.77E-08	1.99E-08	2.22E-08	2.44E-08	2.66E-08	2.66E-08
xe136	1.71E-08	1.93E-08	2.14E-08	2.36E-08	2.57E-08	2.57E-08
br 81	1.28E-08	1.45E-08	1.61E-08	1.77E-08	1.93E-08	1.93E-08
rb 85	1.23E-08	1.39E-08	1.55E-08	1.70E-08	1.86E-08	1.86E-08
sr 90	1.70E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08
zr 94	1.09E-08	1.22E-08	1.36E-08	1.49E-08	1.63E-08	1.63E-08
zr 90	8.07E-09	9.33E-09	1.06E-08	1.18E-08	1.31E-08	1.31E-08
cd111	8.46E-09	9.53E-09	1.06E-08	1.17E-08	1.28E-08	1.28E-08
te130	7.79E-09	8.76E-09	9.74E-09	1.07E-08	1.17E-08	1.17E-08
sm154	7.57E-09	8.52E-09	9.46E-09	1.04E-08	1.14E-08	1.14E-08
rb 87	7.26E-09	8.16E-09	9.07E-09	9.97E-09	1.09E-08	1.09E-08
eu152	5.00E-09	6.14E-09	7.34E-09	8.58E-09	9.85E-09	9.85E-09
rh105	8.40E-09	8.43E-09	8.44E-09	8.45E-09	8.46E-09	8.44E-09
se 77	5.16E-09	5.81E-09	6.45E-09	7.09E-09	7.74E-09	7.74E-09
pd106	3.68E-09	4.14E-09	4.61E-09	5.08E-09	5.55E-09	5.55E-09
gd152	1.75E-09	2.42E-09	3.22E-09	4.16E-09	5.24E-09	5.24E-09
kr 84	3.42E-09	3.85E-09	4.28E-09	4.70E-09	5.13E-09	5.13E-09
se 79	2.65E-09	2.98E-09	3.31E-09	3.64E-09	3.97E-09	3.97E-09
sb121	2.51E-09	2.83E-09	3.14E-09	3.46E-09	3.77E-09	3.77E-09
cs137	3.73E-09	3.75E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09
sb123	2.05E-09	2.30E-09	2.56E-09	2.81E-09	3.07E-09	3.07E-09
kr 86	1.91E-09	2.15E-09	2.39E-09	2.63E-09	2.86E-09	2.86E-09
pr143	2.67E-09	2.67E-09	2.67E-09	2.67E-09	2.67E-09	2.67E-09
te128	1.70E-09	1.92E-09	2.13E-09	2.34E-09	2.56E-09	2.56E-09
gd156	1.47E-09	1.67E-09	1.88E-09	2.10E-09	2.32E-09	2.32E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09
se 80	1.23E-09	1.39E-09	1.54E-09	1.69E-09	1.85E-09	1.85E-09
dy161	1.12E-09	1.27E-09	1.42E-09	1.57E-09	1.72E-09	1.72E-09
te125	1.06E-09	1.19E-09	1.33E-09	1.46E-09	1.60E-09	1.60E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
tb159	7.42E-10	8.36E-10	9.31E-10	1.03E-09	1.12E-09	1.12E-09
cd112	7.05E-10	7.93E-10	8.82E-10	9.71E-10	1.06E-09	1.06E-09
li 6	7.01E-10	7.89E-10	8.76E-10	9.63E-10	1.05E-09	1.05E-09
pm149	9.70E-10	9.76E-10	9.76E-10	9.76E-10	9.76E-10	9.70E-10
nd147	9.27E-10	9.30E-10	9.30E-10	9.30E-10	9.30E-10	9.26E-10
sn117	5.57E-10	6.26E-10	6.96E-10	7.66E-10	8.36E-10	8.36E-10
eu154	5.43E-10	6.12E-10	6.82E-10	7.53E-10	8.24E-10	8.24E-10
sn119	4.58E-10	5.15E-10	5.72E-10	6.29E-10	6.87E-10	6.87E-10
ru 99	3.03E-10	3.80E-10	4.65E-10	5.59E-10	6.61E-10	6.61E-10
sn115	4.19E-10	4.71E-10	5.24E-10	5.76E-10	6.29E-10	6.29E-10
ce144	6.01E-10	6.01E-10	6.01E-10	6.01E-10	6.01E-10	6.01E-10
kr 85	5.74E-10	5.74E-10	5.73E-10	5.73E-10	5.73E-10	5.73E-10
gd158	3.19E-10	3.70E-10	4.23E-10	4.78E-10	5.35E-10	5.35E-10
sr 88	3.51E-10	3.95E-10	4.39E-10	4.83E-10	5.26E-10	5.26E-10
cd114	2.63E-10	2.98E-10	3.34E-10	3.71E-10	4.08E-10	4.08E-10
pd110	2.55E-10	2.87E-10	3.20E-10	3.53E-10	3.86E-10	3.86E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 24
0 fraction of total absorption rate

power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec

0	initial	82181. d	91313. d	100444. d	109575. d	109575. d
se 82	2.38E-10	2.68E-10	2.98E-10	3.28E-10	3.57E-10	3.57E-10
gd154	1.37E-10	1.76E-10	2.18E-10	2.66E-10	3.18E-10	3.18E-10
sn126	1.92E-10	2.16E-10	2.40E-10	2.65E-10	2.89E-10	2.89E-10
se 78	1.81E-10	2.03E-10	2.26E-10	2.48E-10	2.71E-10	2.71E-10
dy162	1.53E-10	1.74E-10	1.95E-10	2.17E-10	2.39E-10	2.39E-10
dy164	1.44E-10	1.64E-10	1.85E-10	2.06E-10	2.28E-10	2.28E-10
sn124	1.45E-10	1.63E-10	1.82E-10	2.00E-10	2.18E-10	2.18E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10
as 75	1.08E-10	1.21E-10	1.35E-10	1.48E-10	1.61E-10	1.61E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
in113	7.27E-11	8.28E-11	9.30E-11	1.03E-10	1.13E-10	1.13E-10
ru100	5.12E-11	6.42E-11	7.87E-11	9.47E-11	1.12E-10	1.12E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
ba136	6.02E-11	6.81E-11	7.61E-11	8.42E-11	9.24E-11	9.24E-11
sn118	5.93E-11	6.67E-11	7.41E-11	8.15E-11	8.89E-11	8.89E-11
cs134	5.49E-11	6.13E-11	6.81E-11	7.48E-11	8.15E-11	8.15E-11
nd142	3.38E-11	4.27E-11	5.27E-11	6.38E-11	7.58E-11	7.58E-11
cd116	5.03E-11	5.66E-11	6.29E-11	6.92E-11	7.55E-11	7.55E-11
sn122	5.03E-11	5.66E-11	6.29E-11	6.91E-11	7.54E-11	7.54E-11
ba134	3.27E-11	4.13E-11	5.09E-11	6.15E-11	7.31E-11	7.31E-11
sm148	3.19E-11	4.00E-11	4.90E-11	5.89E-11	6.98E-11	6.98E-11
ba135	2.65E-11	3.35E-11	4.13E-11	5.00E-11	5.95E-11	5.95E-11
sn120	3.76E-11	4.23E-11	4.70E-11	5.17E-11	5.64E-11	5.64E-11
dy163	3.44E-11	3.91E-11	4.40E-11	4.90E-11	5.41E-11	5.41E-11
kr 82	3.46E-11	3.93E-11	4.41E-11	4.91E-11	5.41E-11	5.41E-11
pd104	2.23E-11	2.81E-11	3.47E-11	4.19E-11	4.98E-11	4.98E-11
ba140	4.72E-11	4.73E-11	4.73E-11	4.73E-11	4.73E-11	4.71E-11
ge 73	2.94E-11	3.31E-11	3.68E-11	4.04E-11	4.41E-11	4.41E-11
sm153	3.74E-11	3.83E-11	3.84E-11	3.84E-11	3.84E-11	3.75E-11
xe130	2.29E-11	2.62E-11	2.97E-11	3.33E-11	3.70E-11	3.70E-11
mo 96	2.10E-11	2.46E-11	2.85E-11	3.25E-11	3.69E-11	3.69E-11
eu156	3.48E-11	3.48E-11	3.49E-11	3.50E-11	3.50E-11	3.50E-11
sr 89	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11
ru106	2.58E-11	2.58E-11	2.59E-11	2.60E-11	2.60E-11	2.60E-11
ce143	1.69E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.70E-11
y 90	1.62E-11	1.62E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11
ge 76	1.07E-11	1.20E-11	1.33E-11	1.47E-11	1.60E-11	1.60E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sb125	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.29E-11
gd160	6.94E-12	7.83E-12	8.73E-12	9.63E-12	1.05E-11	1.05E-11
pm148m	9.59E-12	9.54E-12	9.54E-12	9.54E-12	9.53E-12	9.52E-12
te126	5.92E-12	6.76E-12	7.63E-12	8.51E-12	9.42E-12	9.42E-12
kr 87	8.47E-12	2.30E-11	2.30E-11	2.29E-11	2.29E-11	9.14E-12
nb 93	3.41E-12	4.42E-12	5.57E-12	6.85E-12	8.26E-12	8.26E-12
te127m	7.48E-12	7.49E-12	7.50E-12	7.50E-12	7.51E-12	7.51E-12
cd110	3.09E-12	3.91E-12	4.83E-12	5.86E-12	6.99E-12	6.99E-12
i131	6.75E-12	6.77E-12	6.77E-12	6.77E-12	6.77E-12	6.75E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate

power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec

0	initial	82181. d	91313. d	100444. d	109575. d	109575. d
br 79	2.16E-12	2.73E-12	3.37E-12	4.07E-12	4.85E-12	4.85E-12
ho165	2.38E-12	2.71E-12	3.05E-12	3.40E-12	3.76E-12	3.76E-12
xe129	1.22E-12	1.55E-12	1.91E-12	2.31E-12	2.75E-12	2.75E-12

ag107	1.16E-12	1.47E-12	1.82E-12	2.21E-12	2.63E-12	2.63E-12
te124	1.27E-12	1.44E-12	1.60E-12	1.77E-12	1.93E-12	1.93E-12
sr 87	1.23E-12	1.38E-12	1.54E-12	1.69E-12	1.84E-12	1.84E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
nb 94	6.97E-13	7.84E-13	8.71E-13	9.59E-13	1.05E-12	1.05E-12
ge 74	5.94E-13	6.68E-13	7.42E-13	8.17E-13	8.91E-13	8.91E-13
sr 86	4.05E-13	4.64E-13	5.24E-13	5.87E-13	6.51E-13	6.51E-13
ge 72	4.00E-13	4.50E-13	5.00E-13	5.50E-13	6.01E-13	6.01E-13
dy160	2.02E-13	2.49E-13	3.01E-13	3.58E-13	4.20E-13	4.20E-13
se 76	2.45E-13	2.78E-13	3.11E-13	3.44E-13	3.78E-13	3.78E-13
pm148	3.68E-13	3.69E-13	3.69E-13	3.69E-13	3.69E-13	3.65E-13
xe128	1.74E-13	2.13E-13	2.55E-13	3.00E-13	3.49E-13	3.49E-13
ag111	3.25E-13	3.28E-13	3.29E-13	3.31E-13	3.32E-13	3.30E-13
eu157	2.82E-13	3.04E-13	3.05E-13	3.06E-13	3.07E-13	2.87E-13
cd115m	2.38E-13	2.38E-13	2.38E-13	2.38E-13	2.38E-13	2.38E-13
er166	7.43E-14	8.63E-14	9.88E-14	1.12E-13	1.26E-13	1.26E-13
sn116	4.74E-14	5.99E-14	7.38E-14	8.91E-14	1.06E-13	1.06E-13
cs136	6.07E-14	6.17E-14	6.24E-14	6.30E-14	6.37E-14	6.35E-14
te122	2.16E-14	2.70E-14	3.30E-14	3.96E-14	4.68E-14	4.68E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.92E-14
kr 80	1.71E-14	1.94E-14	2.16E-14	2.38E-14	2.61E-14	2.61E-14
ru105	2.30E-14	2.98E-14	2.99E-14	2.99E-14	2.99E-14	2.36E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.42E-15	9.57E-15	9.56E-15	9.56E-15	9.56E-15	9.42E-15
rb 88	8.98E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	9.27E-15
i135	8.36E-15	1.02E-14	1.02E-14	1.02E-14	1.01E-14	8.48E-15
sb126	3.34E-15	3.40E-15	3.44E-15	3.48E-15	3.53E-15	3.51E-15
tb160	2.39E-15	2.65E-15	2.92E-15	3.18E-15	3.45E-15	3.45E-15
sb124	2.20E-15	2.22E-15	2.23E-15	2.24E-15	2.26E-15	2.25E-15
te123	1.29E-15	1.47E-15	1.65E-15	1.84E-15	2.03E-15	2.03E-15
be 9	1.33E-15	1.50E-15	1.66E-15	1.83E-15	2.00E-15	2.00E-15
pr142	1.30E-15	1.56E-15	1.73E-15	1.91E-15	2.08E-15	1.95E-15
in117m	1.88E-15	2.12E-15	2.12E-15	2.12E-15	2.12E-15	1.91E-15
te134	9.31E-16	5.86E-15	5.86E-15	5.85E-15	5.85E-15	1.07E-15
er167	5.13E-16	6.23E-16	7.43E-16	8.74E-16	1.02E-15	1.02E-15
i130	8.78E-16	1.00E-15	1.03E-15	1.07E-15	1.10E-15	1.00E-15
li 7	5.41E-16	6.08E-16	6.76E-16	7.43E-16	8.10E-16	8.10E-16
in117	5.57E-16	6.23E-16	6.23E-16	6.24E-16	6.25E-16	5.68E-16
rb 86	3.22E-16	3.33E-16	3.43E-16	3.53E-16	3.64E-16	3.63E-16
dy165	1.57E-16	2.71E-16	2.78E-16	2.84E-16	2.91E-16	1.80E-16
ge 75	3.52E-17	8.66E-17	8.66E-17	8.65E-17	8.65E-17	3.77E-17
cd108	1.78E-17	2.13E-17	2.50E-17	2.91E-17	3.35E-17	3.35E-17
cd118	2.63E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16	2.96E-17
sn114	9.67E-18	1.25E-17	1.56E-17	1.91E-17	2.30E-17	2.30E-17
cs134m	6.60E-18	1.14E-17	1.27E-17	1.40E-17	1.52E-17	1.02E-17
cd109	5.38E-19	5.82E-19	6.22E-19	6.66E-19	7.09E-19	7.09E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26
0 fraction of total absorption rate
power= .00mw, burnup= 438.mwd, flux= 2.73E+08n/cm**2-sec
0 initial 82181. d 91313. d 100444. d 109575. d 109575. d

in119m	4.98E-19	3.03E-17	3.03E-17	3.03E-17	3.03E-17	6.92E-19
in119	3.36E-21	2.37E-18	2.37E-18	2.38E-18	2.38E-18	3.36E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 27
power= 4.000E-03mw, burnup=4.3830E+02mwd, flux= 2.73E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	82181. d	91313. d	100444. d	109575. d	109575. d	
h 1	1.74E-05	1.95E-05	2.17E-05	2.38E-05	2.60E-05	2.60E-05

	h 2	5.16E-08	5.80E-08	6.43E-08	7.06E-08	7.70E-08	7.70E-08
	h 3	3.37E-11	3.36E-11	3.36E-11	3.37E-11	3.38E-11	3.38E-11
	h 4	.00E+00	1.37E-34	1.37E-34	1.37E-34	1.37E-34	.00E+00
	he 3	3.45E-10	3.92E-10	4.38E-10	4.84E-10	5.31E-10	5.31E-10
	he 4	2.88E-06	3.23E-06	3.58E-06	3.94E-06	4.29E-06	4.29E-06
	he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	ne 20	3.46E-07	3.88E-07	4.30E-07	4.73E-07	5.15E-07	5.15E-07
	ne 21	2.37E-12	2.96E-12	3.60E-12	4.31E-12	5.07E-12	5.07E-12
	ne 22	2.21E-09	2.49E-09	2.76E-09	3.04E-09	3.32E-09	3.32E-09
	ne 23	7.11E-30	7.06E-15	7.06E-15	7.06E-15	7.06E-15	7.06E-30
	na 22	4.18E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11
	na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
	na 24	2.82E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08	2.63E-08
	na 24m	5.05E-30	4.69E-15	4.69E-15	4.69E-15	4.69E-15	4.69E-30
	na 25	1.78E-41	2.06E-26	2.38E-26	2.72E-26	3.07E-26	3.07E-41
	mg 24	2.78E-03	3.08E-03	3.38E-03	3.67E-03	3.97E-03	3.97E-03
	mg 25	6.12E-10	7.17E-10	8.28E-10	9.46E-10	1.07E-09	1.07E-09
	mg 26	5.16E-08	5.80E-08	6.43E-08	7.06E-08	7.70E-08	7.70E-08
	mg 27	6.27E-16	2.11E-12	2.11E-12	2.11E-12	2.11E-12	1.16E-15
	mg 28	4.06E-24	4.30E-24	4.30E-24	4.30E-24	4.29E-24	4.06E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	5.16E-25	2.11E-10	2.11E-10	2.11E-10	2.11E-10	3.88E-24
	al 29	4.65E-30	7.00E-25	8.56E-25	1.03E-24	1.21E-24	2.45E-29
	al 30	.00E+00	2.97E-36	4.05E-36	5.35E-36	6.89E-36	.00E+00
	si 28	8.10E-03	8.96E-03	9.82E-03	1.07E-02	1.15E-02	1.15E-02
	si 29	2.17E-09	2.72E-09	3.33E-09	3.99E-09	4.70E-09	4.70E-09
	si 30	6.11E-16	8.64E-16	1.18E-15	1.56E-15	2.00E-15	2.00E-15
	si 31	2.69E-28	6.20E-28	8.45E-28	1.12E-27	1.44E-27	9.16E-28
	si 32	1.35E-34	2.11E-34	3.14E-34	4.49E-34	6.22E-34	6.22E-34
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.73E+08	2.73E+08	2.73E+08	2.73E+08	2.73E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 28
power= 4.000E-03mw, burnup=4.3830E+02mwd, flux= 2.73E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	82181. d	91313. d	100444. d	109575. d	109575. d
he 4	3.18E-02	3.76E-02	4.37E-02	5.00E-02	5.65E-02	5.65E-02
pb206	8.64E-08	1.28E-07	1.82E-07	2.48E-07	3.30E-07	3.30E-07
pb207	2.24E-07	2.93E-07	3.72E-07	4.60E-07	5.57E-07	5.57E-07
pb208	5.11E-08	6.46E-08	7.96E-08	9.61E-08	1.14E-07	1.14E-07
pb209	5.59E-14	7.03E-14	8.67E-14	1.05E-13	1.25E-13	1.25E-13
pb210	4.65E-08	6.07E-08	7.67E-08	9.46E-08	1.14E-07	1.14E-07
pb211	2.54E-13	2.92E-13	3.30E-13	3.68E-13	4.05E-13	4.05E-13
pb212	9.04E-13	1.01E-12	1.12E-12	1.22E-12	1.33E-12	1.33E-12
pb214	1.41E-13	1.83E-13	2.25E-13	2.72E-13	3.22E-13	3.12E-13
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.92E-09	9.85E-09	1.35E-08	1.80E-08	2.33E-08	2.33E-08
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.86E-11	3.74E-11	4.72E-11	5.83E-11	7.04E-11	7.04E-11
bi211	1.52E-14	1.73E-14	1.96E-14	2.18E-14	2.40E-14	2.42E-14
bi212	8.58E-14	9.59E-14	1.06E-13	1.16E-13	1.26E-13	1.26E-13
bi213	1.26E-14	1.64E-14	2.02E-14	2.45E-14	2.91E-14	2.83E-14
bi214	1.06E-13	1.36E-13	1.67E-13	2.02E-13	2.39E-13	2.36E-13
po210	7.91E-10	1.03E-09	1.30E-09	1.61E-09	1.94E-09	1.94E-09
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.68E-19	1.91E-19	2.16E-19	2.41E-19	2.66E-19	2.68E-19
po212	4.51E-24	5.04E-24	5.57E-24	6.11E-24	6.64E-24	6.64E-24
po213	1.89E-23	2.47E-23	3.04E-23	3.68E-23	4.38E-23	4.25E-23
po214	1.46E-20	1.87E-20	2.30E-20	2.78E-20	3.29E-20	3.25E-20

po215	2.09E-19	2.40E-19	2.71E-19	3.02E-19	3.33E-19	3.33E-19
po216	3.42E-18	3.83E-18	4.23E-18	4.64E-18	5.04E-18	5.04E-18
po218	1.68E-14	2.12E-14	2.61E-14	3.14E-14	3.73E-14	3.73E-14
rn218	1.31E-29	1.45E-29	1.60E-29	1.75E-29	1.91E-29	1.91E-29
rn219	4.65E-16	5.34E-16	6.03E-16	6.72E-16	7.41E-16	7.41E-16
rn220	1.31E-15	1.47E-15	1.62E-15	1.78E-15	1.93E-15	1.93E-15
rn222	2.99E-11	3.77E-11	4.63E-11	5.58E-11	6.62E-11	6.62E-11
ra222	1.42E-26	1.57E-26	1.74E-26	1.90E-26	2.07E-26	2.07E-26
ra223	1.16E-10	1.33E-10	1.50E-10	1.68E-10	1.85E-10	1.85E-10
ra224	7.46E-12	8.35E-12	9.23E-12	1.01E-11	1.10E-11	1.10E-11
ra225	6.07E-12	7.68E-12	9.47E-12	1.14E-11	1.36E-11	1.36E-11
ra226	4.56E-06	5.75E-06	7.08E-06	8.53E-06	1.01E-05	1.01E-05
ra228	4.05E-13	4.58E-13	5.11E-13	5.64E-13	6.17E-13	6.17E-13
ac225	4.10E-12	5.18E-12	6.40E-12	7.73E-12	9.19E-12	9.19E-12
ac227	8.06E-08	9.26E-08	1.05E-07	1.16E-07	1.28E-07	1.28E-07
ac228	4.95E-17	5.59E-17	6.24E-17	6.88E-17	7.53E-17	7.53E-17
th226	6.94E-25	7.67E-25	8.48E-25	9.28E-25	1.01E-24	1.01E-24
th227	1.87E-10	2.15E-10	2.43E-10	2.71E-10	2.98E-10	2.98E-10
th228	1.42E-09	1.59E-09	1.76E-09	1.93E-09	2.10E-09	2.10E-09
th229	1.18E-06	1.49E-06	1.84E-06	2.23E-06	2.65E-06	2.65E-06
th230	5.11E-03	5.74E-03	6.38E-03	7.02E-03	7.66E-03	7.66E-03
th231	3.04E-09	3.04E-09	3.04E-09	3.04E-09	3.05E-09	3.05E-09
th232	1.03E-03	1.16E-03	1.29E-03	1.42E-03	1.55E-03	1.55E-03
th233	3.02E-16	1.07E-14	1.18E-14	1.30E-14	1.42E-14	5.89E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.44E-04	1.62E-04	1.80E-04	1.98E-04	2.16E-04	2.16E-04
pa232	2.37E-12	2.78E-12	3.09E-12	3.40E-12	3.71E-12	3.57E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 29
power= 4.000E-03mw, burnup=4.3830E+02mwd, flux= 2.73E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	82181. d	91313. d	100444. d	109575. d	109575. d
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.72E-22	7.43E-22	8.22E-22	9.00E-22	9.78E-22	9.76E-22
u231	2.08E-18	2.34E-18	2.60E-18	2.86E-18	3.12E-18	3.08E-18
u232	5.10E-08	5.70E-08	6.30E-08	6.91E-08	7.51E-08	7.51E-08
u233	2.73E-03	3.07E-03	3.41E-03	3.75E-03	4.09E-03	4.09E-03
u234	9.07E+00	9.07E+00	9.07E+00	9.07E+00	9.08E+00	9.08E+00
u235	7.29E+02	7.29E+02	7.29E+02	7.28E+02	7.28E+02	7.28E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.13E-06	3.12E-06	3.12E-06	3.12E-06	3.12E-06	3.10E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.21E-08	3.19E-07	3.19E-07	3.19E-07	3.19E-07	1.55E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.80E-12	8.69E-12	8.68E-12	8.68E-12	8.68E-12	8.68E-12
np236m	1.98E-12	2.07E-12	2.07E-12	2.06E-12	2.06E-12	1.96E-12
np236	4.03E-08	4.52E-08	5.01E-08	5.50E-08	5.99E-08	5.99E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.52E-06	1.56E-06	1.56E-06	1.56E-06	1.56E-06	1.52E-06
np239	4.58E-05	4.61E-05	4.61E-05	4.61E-05	4.61E-05	4.54E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.74E-15	9.37E-15	9.37E-15	9.37E-15	9.37E-15	2.98E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.12E-09	1.12E-09	1.12E-09	1.12E-09	1.12E-09
pu237	1.94E-13	2.01E-13	2.09E-13	2.15E-13	2.21E-13	2.21E-13

```
     pu238   1.88E-02  1.97E-02  2.04E-02  2.09E-02  2.14E-02  2.14E-02
     pu239   1.00E+00  1.13E+00  1.25E+00  1.37E+00  1.49E+00  1.49E+00
     pu240   9.85E-04  1.24E-03  1.53E-03  1.84E-03  2.19E-03  2.19E-03
     pu241   3.35E-07  4.29E-07  5.36E-07  6.56E-07  7.88E-07  7.88E-07
     pu242   2.64E-10  4.05E-10  5.94E-10  8.39E-10  1.15E-09  1.15E-09
     pu243   4.37E-19  8.58E-19  1.26E-18  1.78E-18  2.43E-18  1.92E-18
     pu244   1.05E-40  3.68E-40  1.13E-39  3.08E-39  7.71E-39  7.71E-39
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   2.32E-22  3.70E-22  5.12E-22  6.86E-22  8.94E-22  8.09E-22
     am240   1.16E-19  1.69E-19  2.34E-19  3.14E-19  4.09E-19  4.00E-19
     am241   9.28E-07  1.34E-06  1.86E-06  2.49E-06  3.25E-06  3.25E-06
     am242m  9.37E-11  1.50E-10  2.28E-10  3.31E-10  4.63E-10  4.63E-10
     am242   3.11E-14  4.86E-14  6.76E-14  9.08E-14  1.19E-13  1.11E-13
     am243   1.29E-13  2.32E-13  3.91E-13  6.25E-13  9.56E-13  9.56E-13
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   8.75E-22  1.77E-21  2.99E-21  4.77E-21  7.29E-21  6.49E-21
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.73E+08  2.73E+08  2.73E+08  2.73E+08  2.73E-07
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  4 of library on unit 33.

          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 "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:  ft33f001
0               8/28/1996    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                    7993    number of nonzero off-diagonal matrix elements
0
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page   30
        power=    .00mw, burnup=    584.mwd, flux= 2.70E+08n/cm**2-sec
0                                    basis =
0   (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      118706. d      127838. d      136969. d      146100. d      146100. d
    productions  1.136002E+06  1.136182E+06  1.136361E+06  1.136540E+06  1.136719E+06  1.136719E+06
    absorptions  9.278001E+05  9.280391E+05  9.282740E+05  9.285046E+05  9.287318E+05  9.287318E+05
    k infinity   1.224404E+00  1.224282E+00  1.224166E+00  1.224054E+00  1.223947E+00  1.223947E+00
0                  initial      118706. d      127838. d      136969. d      146100. d      146100. d
    actinide
    absorptions  9.226709E+05  9.227775E+05  9.228838E+05  9.229898E+05  9.230958E+05  9.230958E+05
    non-actinide
    abs. fracs.  5.528271E-03  5.669594E-03  5.806684E-03  5.939364E-03  6.068587E-03  6.068587E-03
1   sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2          fission products         page   31
0                              fraction of total absorption rate
        power=    .00mw, burnup=    584.mwd, flux= 2.70E+08n/cm**2-sec
0             initial 118706. d 127838. d 136969. d 146100. d 146100. d

    sm149     1.83E-03  1.95E-03  2.06E-03  2.17E-03  2.28E-03  2.28E-03
    eu151     4.15E-05  4.65E-05  5.17E-05  5.69E-05  6.21E-05  6.21E-05
    nd143     4.44E-05  4.81E-05  5.18E-05  5.55E-05  5.91E-05  5.91E-05
    sm151     3.62E-05  3.68E-05  3.74E-05  3.79E-05  3.82E-05  3.82E-05
    gd155     2.72E-05  2.93E-05  3.14E-05  3.35E-05  3.55E-05  3.55E-05
    rh103     2.06E-05  2.23E-05  2.41E-05  2.58E-05  2.75E-05  2.75E-05
    cd113     1.74E-05  1.87E-05  2.00E-05  2.12E-05  2.25E-05  2.25E-05
    gd157     1.72E-05  1.82E-05  1.92E-05  2.02E-05  2.11E-05  2.11E-05
    xe131     1.40E-05  1.52E-05  1.63E-05  1.75E-05  1.87E-05  1.87E-05
    cs133     1.09E-05  1.18E-05  1.27E-05  1.36E-05  1.45E-05  1.45E-05
    tc 99     7.99E-06  8.66E-06  9.32E-06  9.98E-06  1.06E-05  1.06E-05
    sm147     7.97E-06  8.64E-06  9.31E-06  9.97E-06  1.06E-05  1.06E-05
    nd145     6.21E-06  6.72E-06  7.24E-06  7.76E-06  8.27E-06  8.27E-06
    mo 95     4.30E-06  4.65E-06  5.01E-06  5.37E-06  5.72E-06  5.72E-06
    sm152     3.35E-06  3.64E-06  3.92E-06  4.21E-06  4.49E-06  4.49E-06
    kr 83     2.70E-06  2.92E-06  3.14E-06  3.37E-06  3.59E-06  3.59E-06
    cs135     2.45E-06  2.65E-06  2.86E-06  3.06E-06  3.27E-06  3.27E-06
    ru101     1.90E-06  2.05E-06  2.21E-06  2.37E-06  2.53E-06  2.53E-06
    pr141     1.83E-06  1.99E-06  2.14E-06  2.29E-06  2.44E-06  2.44E-06
    xe135     2.29E-06  2.32E-06  2.32E-06  2.32E-06  2.32E-06  2.28E-06
    eu153     1.67E-06  1.81E-06  1.94E-06  2.08E-06  2.22E-06  2.22E-06
    la139     1.50E-06  1.63E-06  1.75E-06  1.87E-06  2.00E-06  2.00E-06
    sm150     6.10E-07  7.08E-07  8.13E-07  9.23E-07  1.04E-06  1.04E-06
    ba137     6.15E-07  6.75E-07  7.34E-07  7.94E-07  8.53E-07  8.53E-07
    pd105     6.38E-07  6.91E-07  7.44E-07  7.98E-07  8.51E-07  8.51E-07
    zr 93     6.06E-07  6.57E-07  7.07E-07  7.57E-07  8.07E-07  8.07E-07
     i129     4.67E-07  5.06E-07  5.45E-07  5.83E-07  6.22E-07  6.22E-07
```

cd112	1.06E-09	1.15E-09	1.24E-09	1.33E-09	1.42E-09	1.42E-09
li 6	1.05E-09	1.14E-09	1.23E-09	1.31E-09	1.40E-09	1.40E-09
ru 99	6.61E-10	7.72E-10	8.91E-10	1.02E-09	1.16E-09	1.16E-09
sn117	8.36E-10	9.06E-10	9.76E-10	1.05E-09	1.12E-09	1.12E-09
eu154	8.25E-10	8.95E-10	9.66E-10	1.04E-09	1.11E-09	1.11E-09
pm149	9.72E-10	9.77E-10	9.77E-10	9.77E-10	9.76E-10	9.69E-10
nd147	9.25E-10	9.28E-10	9.28E-10	9.28E-10	9.27E-10	9.23E-10
sn119	6.88E-10	7.45E-10	8.02E-10	8.59E-10	9.17E-10	9.17E-10
sn115	6.30E-10	6.82E-10	7.35E-10	7.87E-10	8.40E-10	8.40E-10
gd158	5.35E-10	5.94E-10	6.54E-10	7.17E-10	7.80E-10	7.80E-10
sr 88	5.27E-10	5.71E-10	6.14E-10	6.58E-10	7.02E-10	7.02E-10
ce144	6.01E-10	6.01E-10	6.01E-10	6.00E-10	6.00E-10	6.00E-10
gd154	3.18E-10	3.75E-10	4.37E-10	5.03E-10	5.74E-10	5.74E-10
kr 85	5.74E-10	5.73E-10	5.73E-10	5.73E-10	5.73E-10	5.73E-10
cd114	4.07E-10	4.45E-10	4.83E-10	5.22E-10	5.61E-10	5.61E-10
pd110	3.86E-10	4.19E-10	4.52E-10	4.86E-10	5.19E-10	5.19E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 33
0 fraction of total absorption rate
power= .00mw, burnup= 584.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 118706. d 127838. d 136969. d 146100. d 146100. d

se 82	3.58E-10	3.87E-10	4.17E-10	4.47E-10	4.76E-10	4.76E-10
sn126	2.89E-10	3.14E-10	3.38E-10	3.62E-10	3.87E-10	3.87E-10
se 78	2.71E-10	2.94E-10	3.16E-10	3.39E-10	3.61E-10	3.61E-10
ru103	3.58E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.58E-10
dy162	2.39E-10	2.61E-10	2.84E-10	3.07E-10	3.31E-10	3.31E-10
dy164	2.29E-10	2.51E-10	2.74E-10	2.97E-10	3.21E-10	3.21E-10
sn124	2.18E-10	2.36E-10	2.54E-10	2.72E-10	2.90E-10	2.90E-10
as 75	1.61E-10	1.75E-10	1.88E-10	2.02E-10	2.15E-10	2.15E-10
ru100	1.12E-10	1.31E-10	1.52E-10	1.74E-10	1.97E-10	1.97E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.64E-10
in113	1.13E-10	1.23E-10	1.33E-10	1.44E-10	1.54E-10	1.54E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.52E-10	1.52E-10	1.52E-10
y 91	1.44E-10	1.44E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
nd142	7.60E-11	8.91E-11	1.03E-10	1.19E-10	1.35E-10	1.35E-10
ba134	7.31E-11	8.57E-11	9.93E-11	1.14E-10	1.29E-10	1.29E-10
ba136	9.23E-11	1.01E-10	1.09E-10	1.17E-10	1.26E-10	1.26E-10
sm148	6.98E-11	8.16E-11	9.43E-11	1.08E-10	1.22E-10	1.22E-10
sn118	8.88E-11	9.61E-11	1.04E-10	1.11E-10	1.18E-10	1.18E-10
cs134	8.16E-11	8.81E-11	9.48E-11	1.02E-10	1.08E-10	1.08E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
ba135	5.95E-11	6.98E-11	8.09E-11	9.28E-11	1.06E-10	1.06E-10
sn122	7.55E-11	8.18E-11	8.81E-11	9.44E-11	1.01E-10	1.01E-10
cd116	7.54E-11	8.17E-11	8.80E-11	9.43E-11	1.01E-10	1.01E-10
pd104	4.98E-11	5.84E-11	6.76E-11	7.76E-11	8.82E-11	8.82E-11
dy163	5.41E-11	5.94E-11	6.47E-11	7.01E-11	7.57E-11	7.57E-11
kr 82	5.41E-11	5.93E-11	6.45E-11	6.98E-11	7.52E-11	7.52E-11
sn120	5.64E-11	6.11E-11	6.58E-11	7.05E-11	7.52E-11	7.52E-11
ge 73	4.42E-11	4.78E-11	5.15E-11	5.52E-11	5.89E-11	5.89E-11
mo 96	3.69E-11	4.14E-11	4.62E-11	5.11E-11	5.63E-11	5.63E-11
xe130	3.70E-11	4.08E-11	4.47E-11	4.88E-11	5.29E-11	5.29E-11
ba140	4.71E-11	4.73E-11	4.73E-11	4.73E-11	4.73E-11	4.71E-11
sm153	3.75E-11	3.84E-11	3.85E-11	3.85E-11	3.85E-11	3.74E-11
eu156	3.51E-11	3.51E-11	3.52E-11	3.53E-11	3.54E-11	3.53E-11
sr 89	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.06E-11
ru106	2.60E-11	2.60E-11	2.61E-11	2.62E-11	2.62E-11	2.62E-11
ge 76	1.60E-11	1.73E-11	1.86E-11	2.00E-11	2.13E-11	2.13E-11
ce143	1.70E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.69E-11
y 90	1.63E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11

nb 93	8.26E-12	9.81E-12	1.15E-11	1.33E-11	1.52E-11	1.52E-11
sb125	1.50E-11	1.50E-11	1.51E-11	1.51E-11	1.51E-11	1.51E-11
gd160	1.05E-11	1.15E-11	1.24E-11	1.33E-11	1.42E-11	1.42E-11
te126	9.43E-12	1.04E-11	1.13E-11	1.23E-11	1.33E-11	1.33E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.28E-11
cd110	7.00E-12	8.23E-12	9.57E-12	1.10E-11	1.26E-11	1.26E-11
pm148m	9.54E-12	9.53E-12	9.53E-12	9.52E-12	9.52E-12	9.51E-12
br 79	4.85E-12	5.69E-12	6.60E-12	7.57E-12	8.61E-12	8.61E-12
kr 87	9.16E-12	2.30E-11	2.30E-11	2.29E-11	2.29E-11	7.83E-12
te127m	7.51E-12	7.52E-12	7.53E-12	7.53E-12	7.54E-12	7.54E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 34
0 fraction of total absorption rate
power= .00mw, burnup= 584.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 118706. d 127838. d 136969. d 146100. d 146100. d

i131	6.75E-12	6.77E-12	6.77E-12	6.77E-12	6.77E-12	6.75E-12
ho165	3.76E-12	4.12E-12	4.50E-12	4.88E-12	5.27E-12	5.27E-12
xe129	2.75E-12	3.22E-12	3.74E-12	4.29E-12	4.88E-12	4.88E-12
ag107	2.63E-12	3.09E-12	3.59E-12	4.13E-12	4.71E-12	4.71E-12
te124	1.94E-12	2.10E-12	2.27E-12	2.44E-12	2.61E-12	2.61E-12
sr 87	1.85E-12	2.00E-12	2.15E-12	2.31E-12	2.46E-12	2.46E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
nb 94	1.05E-12	1.13E-12	1.22E-12	1.31E-12	1.39E-12	1.39E-12
ge 74	8.92E-13	9.66E-13	1.04E-12	1.11E-12	1.19E-12	1.19E-12
sr 86	6.52E-13	7.18E-13	7.86E-13	8.56E-13	9.27E-13	9.27E-13
ge 72	6.02E-13	6.52E-13	7.02E-13	7.52E-13	8.03E-13	8.03E-13
dy160	4.20E-13	4.87E-13	5.59E-13	6.36E-13	7.18E-13	7.18E-13
xe128	3.50E-13	4.03E-13	4.60E-13	5.20E-13	5.84E-13	5.84E-13
se 76	3.79E-13	4.13E-13	4.48E-13	4.84E-13	5.19E-13	5.19E-13
pm148	3.65E-13	3.67E-13	3.67E-13	3.67E-13	3.67E-13	3.63E-13
ag111	3.30E-13	3.33E-13	3.34E-13	3.35E-13	3.37E-13	3.35E-13
eu157	2.87E-13	3.08E-13	3.09E-13	3.10E-13	3.11E-13	2.86E-13
cd115m	2.38E-13	2.39E-13	2.39E-13	2.39E-13	2.39E-13	2.39E-13
sn116	1.06E-13	1.24E-13	1.43E-13	1.65E-13	1.87E-13	1.87E-13
er166	1.26E-13	1.40E-13	1.55E-13	1.70E-13	1.86E-13	1.86E-13
te122	4.68E-14	5.45E-14	6.29E-14	7.19E-14	8.15E-14	8.15E-14
cs136	6.34E-14	6.43E-14	6.50E-14	6.57E-14	6.64E-14	6.61E-14
kr 80	2.61E-14	2.84E-14	3.07E-14	3.30E-14	3.54E-14	3.54E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.91E-14
ru105	2.36E-14	2.99E-14	2.99E-14	3.00E-14	3.00E-14	2.27E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.43E-15	9.57E-15	9.57E-15	9.56E-15	9.56E-15	9.40E-15
rb 88	9.29E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	8.66E-15
i135	8.49E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14	8.23E-15
tb160	3.45E-15	3.72E-15	3.98E-15	4.25E-15	4.52E-15	4.52E-15
sb126	3.52E-15	3.57E-15	3.62E-15	3.66E-15	3.70E-15	3.69E-15
te123	2.03E-15	2.23E-15	2.43E-15	2.63E-15	2.84E-15	2.84E-15
be 9	1.99E-15	2.16E-15	2.32E-15	2.49E-15	2.65E-15	2.65E-15
pr142	1.96E-15	2.25E-15	2.42E-15	2.60E-15	2.77E-15	2.58E-15
sb124	2.25E-15	2.27E-15	2.28E-15	2.29E-15	2.31E-15	2.31E-15
in117m	1.91E-15	2.13E-15	2.13E-15	2.13E-15	2.14E-15	1.86E-15
er167	1.02E-15	1.17E-15	1.34E-15	1.52E-15	1.71E-15	1.71E-15
i130	1.00E-15	1.13E-15	1.16E-15	1.19E-15	1.22E-15	1.10E-15
li 7	8.12E-16	8.79E-16	9.47E-16	1.01E-15	1.08E-15	1.08E-15
te134	1.07E-15	5.86E-15	5.86E-15	5.85E-15	5.85E-15	8.07E-16
in117	5.69E-16	6.26E-16	6.27E-16	6.28E-16	6.28E-16	5.54E-16
rb 86	3.63E-16	3.74E-16	3.84E-16	3.94E-16	4.04E-16	4.03E-16
dy165	1.80E-16	2.98E-16	3.05E-16	3.11E-16	3.18E-16	1.80E-16
cd108	3.35E-17	3.83E-17	4.35E-17	4.91E-17	5.51E-17	5.51E-17
sn114	2.31E-17	2.73E-17	3.19E-17	3.69E-17	4.22E-17	4.22E-17

	ge 75	3.78E-17	8.67E-17	8.66E-17	8.66E-17	8.66E-17	3.28E-17
	cd118	2.97E-17	1.22E-16	1.22E-16	1.22E-16	1.22E-16	2.35E-17
	cs134m	1.02E-17	1.65E-17	1.78E-17	1.90E-17	2.03E-17	1.26E-17
	cd109	7.10E-19	7.54E-19	7.94E-19	8.38E-19	8.81E-19	8.81E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35
0 fraction of total absorption rate
power= .00mw, burnup= 584.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 118706. d 127838. d 136969. d 146100. d 146100. d

in119m	6.93E-19	3.04E-17	3.04E-17	3.04E-17	3.04E-17	3.60E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 36
power= 4.000E-03mw, burnup=5.8440E+02mwd, flux= 2.70E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	118706. d	127838. d	136969. d	146100. d	146100. d
h 1	2.60E-05	2.81E-05	3.02E-05	3.24E-05	3.45E-05	3.45E-05
h 2	7.70E-08	8.33E-08	8.96E-08	9.60E-08	1.02E-07	1.02E-07
h 3	3.38E-11	3.38E-11	3.39E-11	3.39E-11	3.40E-11	3.40E-11
h 4	.00E+00	1.37E-34	1.38E-34	1.38E-34	1.38E-34	.00E+00
he 3	5.31E-10	5.77E-10	6.24E-10	6.70E-10	7.16E-10	7.16E-10
he 4	4.29E-06	4.64E-06	4.99E-06	5.35E-06	5.70E-06	5.70E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	5.15E-07	5.58E-07	6.00E-07	6.42E-07	6.85E-07	6.85E-07
ne 21	5.07E-12	5.89E-12	6.77E-12	7.70E-12	8.69E-12	8.69E-12
ne 22	3.32E-09	3.59E-09	3.87E-09	4.15E-09	4.42E-09	4.42E-09
ne 23	7.06E-30	7.06E-15	7.05E-15	7.05E-15	7.05E-15	7.05E-30
na 22	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.63E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.52E-08
na 24m	4.69E-30	4.55E-15	4.55E-15	4.55E-15	4.55E-15	4.55E-30
na 25	3.07E-41	3.43E-26	3.81E-26	4.21E-26	4.63E-26	4.63E-41
mg 24	3.97E-03	4.25E-03	4.54E-03	4.83E-03	5.12E-03	5.12E-03
mg 25	1.07E-09	1.20E-09	1.33E-09	1.47E-09	1.62E-09	1.62E-09
mg 26	7.70E-08	8.33E-08	8.96E-08	9.60E-08	1.02E-07	1.02E-07
mg 27	1.16E-15	2.11E-12	2.11E-12	2.11E-12	2.11E-12	3.33E-16
mg 28	4.06E-24	4.30E-24	4.29E-24	4.29E-24	4.29E-24	4.02E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	3.88E-24	2.05E-10	2.05E-10	2.05E-10	2.05E-10	2.31E-25
al 29	2.45E-29	1.40E-24	1.61E-24	1.84E-24	2.07E-24	6.92E-30
al 30	.00E+00	8.66E-36	1.07E-35	1.31E-35	1.58E-35	.00E+00
si 28	1.15E-02	1.24E-02	1.32E-02	1.41E-02	1.49E-02	1.49E-02
si 29	4.70E-09	5.47E-09	6.30E-09	7.17E-09	8.10E-09	8.10E-09
si 30	2.00E-15	2.53E-15	3.14E-15	3.84E-15	4.63E-15	4.63E-15
si 31	9.16E-28	1.82E-27	2.25E-27	2.75E-27	3.32E-27	1.96E-27
si 32	6.22E-34	8.37E-34	1.10E-33	1.42E-33	1.79E-33	1.79E-33
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.70E+08	2.70E+08	2.70E+08	2.70E+08	2.70E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 37
power= 4.000E-03mw, burnup=5.8440E+02mwd, flux= 2.70E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	118706. d	127838. d	136969. d	146100. d	146100. d
he 4	5.65E-02	6.32E-02	7.00E-02	7.69E-02	8.40E-02	8.40E-02
pb206	3.30E-07	4.28E-07	5.43E-07	6.77E-07	8.32E-07	8.32E-07
pb207	5.57E-07	6.64E-07	7.81E-07	9.07E-07	1.04E-06	1.04E-06
pb208	1.14E-07	1.34E-07	1.55E-07	1.77E-07	2.01E-07	2.01E-07
pb209	1.25E-13	1.46E-13	1.69E-13	1.94E-13	2.21E-13	2.22E-13
pb210	1.14E-07	1.36E-07	1.59E-07	1.84E-07	2.11E-07	2.11E-07

pb211	4.05E-13	4.43E-13	4.81E-13	5.19E-13	5.56E-13	5.56E-13
pb212	1.33E-12	1.44E-12	1.54E-12	1.65E-12	1.76E-12	1.76E-12
pb214	3.12E-13	3.77E-13	4.36E-13	4.98E-13	5.65E-13	5.48E-13
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.33E-08	2.96E-08	3.70E-08	4.55E-08	5.52E-08	5.52E-08
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.04E-11	8.37E-11	9.81E-11	1.14E-10	1.30E-10	1.30E-10
bi211	2.42E-14	2.63E-14	2.85E-14	3.07E-14	3.30E-14	3.32E-14
bi212	1.26E-13	1.36E-13	1.47E-13	1.57E-13	1.67E-13	1.67E-13
bi213	2.83E-14	3.41E-14	3.95E-14	4.54E-14	5.16E-14	5.00E-14
bi214	2.36E-13	2.80E-13	3.23E-13	3.70E-13	4.19E-13	4.12E-13
po210	1.94E-09	2.31E-09	2.71E-09	3.14E-09	3.59E-09	3.59E-09
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.68E-19	2.90E-19	3.15E-19	3.40E-19	3.64E-19	3.67E-19
po212	6.64E-24	7.17E-24	7.70E-24	8.23E-24	8.76E-24	8.76E-24
po213	4.25E-23	5.13E-23	5.95E-23	6.82E-23	7.75E-23	7.52E-23
po214	3.25E-20	3.85E-20	4.45E-20	5.09E-20	5.77E-20	5.67E-20
po215	3.33E-19	3.64E-19	3.95E-19	4.26E-19	4.57E-19	4.57E-19
po216	5.04E-18	5.44E-18	5.85E-18	6.25E-18	6.65E-18	6.65E-18
po218	3.73E-14	4.36E-14	5.04E-14	5.76E-14	6.53E-14	6.54E-14
rn218	1.91E-29	2.05E-29	2.20E-29	2.35E-29	2.50E-29	2.50E-29
rn219	7.41E-16	8.10E-16	8.79E-16	9.48E-16	1.02E-15	1.02E-15
rn220	1.93E-15	2.09E-15	2.24E-15	2.40E-15	2.55E-15	2.55E-15
rn222	6.62E-11	7.74E-11	8.95E-11	1.02E-10	1.16E-10	1.16E-10
ra222	2.07E-26	2.22E-26	2.39E-26	2.55E-26	2.72E-26	2.71E-26
ra223	1.85E-10	2.02E-10	2.19E-10	2.37E-10	2.54E-10	2.54E-10
ra224	1.10E-11	1.19E-11	1.28E-11	1.36E-11	1.45E-11	1.45E-11
ra225	1.36E-11	1.60E-11	1.85E-11	2.12E-11	2.41E-11	2.41E-11
ra226	1.01E-05	1.18E-05	1.37E-05	1.56E-05	1.77E-05	1.77E-05
ra228	6.17E-13	6.70E-13	7.23E-13	7.75E-13	8.28E-13	8.28E-13
ac225	9.19E-12	1.08E-11	1.25E-11	1.43E-11	1.63E-11	1.63E-11
ac227	1.28E-07	1.40E-07	1.52E-07	1.64E-07	1.76E-07	1.76E-07
ac228	7.53E-17	8.17E-17	8.82E-17	9.46E-17	1.01E-16	1.01E-16
th226	1.01E-24	1.08E-24	1.16E-24	1.24E-24	1.33E-24	1.32E-24
th227	2.98E-10	3.26E-10	3.54E-10	3.82E-10	4.10E-10	4.10E-10
th228	2.10E-09	2.27E-09	2.43E-09	2.60E-09	2.77E-09	2.77E-09
th229	2.65E-06	3.10E-06	3.60E-06	4.12E-06	4.69E-06	4.69E-06
th230	7.66E-03	8.30E-03	8.93E-03	9.57E-03	1.02E-02	1.02E-02
th231	3.05E-09	3.05E-09	3.05E-09	3.05E-09	3.06E-09	3.05E-09
th232	1.55E-03	1.68E-03	1.81E-03	1.94E-03	2.07E-03	2.07E-03
th233	5.89E-16	1.54E-14	1.66E-14	1.78E-14	1.89E-14	4.62E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.16E-04	2.34E-04	2.52E-04	2.70E-04	2.88E-04	2.88E-04
pa232	3.57E-12	4.02E-12	4.32E-12	4.63E-12	4.94E-12	4.73E-12

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 38
power= 4.000E-03mw, burnup=5.8440E+02mwd, flux= 2.70E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 118706. d	127838. d	136969. d	146100. d	146100. d	
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	9.76E-22	1.05E-21	1.13E-21	1.21E-21	1.28E-21	1.28E-21
u231	3.08E-18	3.36E-18	3.62E-18	3.88E-18	4.14E-18	4.08E-18
u232	7.51E-08	8.11E-08	8.70E-08	9.30E-08	9.90E-08	9.90E-08
u233	4.09E-03	4.42E-03	4.76E-03	5.10E-03	5.44E-03	5.44E-03
u234	9.08E+00	9.08E+00	9.08E+00	9.09E+00	9.09E+00	9.09E+00
u235	7.28E+02	7.28E+02	7.28E+02	7.28E+02	7.27E+02	7.27E+02

u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.10E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.08E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.55E-08	3.18E-07	3.18E-07	3.18E-07	3.18E-07	9.32E-09
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.68E-12	8.65E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12
np236m	1.96E-12	2.06E-12	2.06E-12	2.06E-12	2.05E-12	1.93E-12
np236	5.99E-08	6.47E-08	6.96E-08	7.45E-08	7.93E-08	7.93E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.52E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.54E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.51E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.98E-15	9.33E-15	9.33E-15	9.33E-15	9.32E-15	2.45E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.12E-09	1.12E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.21E-13	2.25E-13	2.29E-13	2.32E-13	2.35E-13	2.35E-13
pu238	2.14E-02	2.18E-02	2.21E-02	2.23E-02	2.25E-02	2.25E-02
pu239	1.49E+00	1.61E+00	1.74E+00	1.86E+00	1.98E+00	1.98E+00
pu240	2.19E-03	2.56E-03	2.96E-03	3.39E-03	3.85E-03	3.85E-03
pu241	7.88E-07	9.30E-07	1.08E-06	1.25E-06	1.43E-06	1.43E-06
pu242	1.15E-09	1.54E-09	2.01E-09	2.59E-09	3.27E-09	3.27E-09
pu243	1.92E-18	3.24E-18	4.24E-18	5.45E-18	6.89E-18	5.22E-18
pu244	7.71E-39	1.79E-38	3.87E-38	7.94E-38	1.55E-37	1.55E-37
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	8.09E-22	1.13E-21	1.41E-21	1.74E-21	2.10E-21	1.87E-21
am240	4.00E-19	5.19E-19	6.48E-19	7.96E-19	9.63E-19	9.37E-19
am241	3.25E-06	4.13E-06	5.16E-06	6.34E-06	7.67E-06	7.67E-06
am242m	4.63E-10	6.28E-10	8.31E-10	1.08E-09	1.37E-09	1.37E-09
am242	1.11E-13	1.52E-13	1.90E-13	2.34E-13	2.84E-13	2.62E-13
am243	9.56E-13	1.41E-12	2.01E-12	2.80E-12	3.81E-12	3.81E-12
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	6.49E-21	1.07E-20	1.53E-20	2.13E-20	2.90E-20	2.53E-20
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	6.93E-24	8.82E-24	1.10E-23	1.36E-23	1.65E-23	1.65E-23
cm242	2.40E-11	3.06E-11	3.83E-11	4.72E-11	5.73E-11	5.73E-11
cm243	5.99E-18	7.98E-18	1.04E-17	1.32E-17	1.65E-17	1.65E-17
cm244	7.88E-17	1.19E-16	1.74E-16	2.48E-16	3.43E-16	3.43E-16

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 39
power= 4.000E-03mw, burnup=5.8440E+02mwd, flux= 2.70E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 118706. d	127838. d	136969. d	146100. d	146100. d	
cm245	3.99E-21	6.57E-21	1.04E-20	1.59E-20	2.37E-20	2.37E-20
cm246	9.35E-25	1.68E-24	2.88E-24	4.75E-24	7.57E-24	7.57E-24
cm247	3.62E-30	7.07E-30	1.31E-29	2.33E-29	3.97E-29	3.97E-29
cm248	1.44E-34	3.07E-34	6.17E-34	1.18E-33	2.15E-33	2.15E-33
cm249	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.70E+08	2.70E+08	2.70E+08	2.70E+08	2.70E-07

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  5 of library on unit 33.

          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 "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:  ft33f001
0                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                                page   40
        power=    .00mw, burnup=    730.mwd, flux= 2.69E+08n/cm**2-sec
0                                      basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      155232. d      164363. d      173494. d      182625. d      182625. d
     productions   1.140054E+06   1.140232E+06   1.140410E+06   1.140588E+06   1.140765E+06   1.140765E+06
     absorptions   9.312772E+05   9.315008E+05   9.317208E+05   9.319371E+05   9.321501E+05   9.321501E+05
     k infinity    1.224183E+00   1.224081E+00   1.223983E+00   1.223889E+00   1.223799E+00   1.223799E+00
0                    initial      155232. d      164363. d      173494. d      182625. d      182625. d
     actinide
     absorptions   9.256458E+05   9.257515E+05   9.258570E+05   9.259623E+05   9.260674E+05   9.260674E+05
```

non-actinide
abs. fracs. 6.047010E-03 6.172001E-03 6.293535E-03 6.411195E-03 6.525517E-03 6.525457E-03

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 41
0 fraction of total absorption rate
power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

sm149	2.28E-03	2.39E-03	2.49E-03	2.59E-03	2.68E-03	2.68E-03
eu151	6.21E-05	6.74E-05	7.27E-05	7.80E-05	8.34E-05	8.34E-05
nd143	5.91E-05	6.28E-05	6.65E-05	7.02E-05	7.38E-05	7.38E-05
gd155	3.55E-05	3.75E-05	3.95E-05	4.15E-05	4.34E-05	4.34E-05
sm151	3.82E-05	3.86E-05	3.88E-05	3.90E-05	3.92E-05	3.92E-05
rh103	2.75E-05	2.92E-05	3.09E-05	3.26E-05	3.44E-05	3.44E-05
cd113	2.25E-05	2.37E-05	2.48E-05	2.60E-05	2.71E-05	2.71E-05
gd157	2.11E-05	2.19E-05	2.27E-05	2.35E-05	2.42E-05	2.42E-05
xe131	1.87E-05	1.98E-05	2.10E-05	2.21E-05	2.33E-05	2.33E-05
cs133	1.45E-05	1.54E-05	1.63E-05	1.72E-05	1.81E-05	1.81E-05
sm147	1.06E-05	1.13E-05	1.20E-05	1.26E-05	1.33E-05	1.33E-05
tc 99	1.06E-05	1.13E-05	1.20E-05	1.26E-05	1.33E-05	1.33E-05
nd145	8.27E-06	8.78E-06	9.30E-06	9.81E-06	1.03E-05	1.03E-05
mo 95	5.72E-06	6.08E-06	6.43E-06	6.79E-06	7.15E-06	7.15E-06
sm152	4.49E-06	4.78E-06	5.06E-06	5.35E-06	5.64E-06	5.64E-06
kr 83	3.59E-06	3.82E-06	4.04E-06	4.26E-06	4.48E-06	4.48E-06
cs135	3.27E-06	3.47E-06	3.67E-06	3.87E-06	4.08E-06	4.08E-06
ru101	2.53E-06	2.68E-06	2.84E-06	3.00E-06	3.16E-06	3.16E-06
pr141	2.44E-06	2.60E-06	2.75E-06	2.90E-06	3.05E-06	3.05E-06
eu153	2.22E-06	2.36E-06	2.50E-06	2.64E-06	2.78E-06	2.78E-06
la139	2.00E-06	2.12E-06	2.25E-06	2.37E-06	2.50E-06	2.50E-06
xe135	2.28E-06	2.32E-06	2.32E-06	2.32E-06	2.32E-06	2.29E-06
sm150	1.04E-06	1.16E-06	1.29E-06	1.42E-06	1.56E-06	1.56E-06
ba137	8.54E-07	9.13E-07	9.73E-07	1.03E-06	1.09E-06	1.09E-06
pd105	8.51E-07	9.05E-07	9.58E-07	1.01E-06	1.07E-06	1.07E-06
zr 93	8.07E-07	8.58E-07	9.08E-07	9.58E-07	1.01E-06	1.01E-06
i129	6.22E-07	6.61E-07	7.00E-07	7.39E-07	7.78E-07	7.78E-07
nd144	6.00E-07	6.37E-07	6.74E-07	7.12E-07	7.49E-07	7.49E-07
mo 97	4.53E-07	4.81E-07	5.09E-07	5.38E-07	5.66E-07	5.66E-07
ag109	3.53E-07	3.77E-07	4.02E-07	4.27E-07	4.52E-07	4.52E-07
pm147	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
zr 91	2.13E-07	2.27E-07	2.40E-07	2.53E-07	2.66E-07	2.66E-07
y 89	2.05E-07	2.18E-07	2.30E-07	2.43E-07	2.56E-07	2.56E-07
ru102	1.85E-07	1.96E-07	2.08E-07	2.19E-07	2.31E-07	2.31E-07
ce142	1.67E-07	1.77E-07	1.87E-07	1.98E-07	2.08E-07	2.08E-07
nd148	1.60E-07	1.70E-07	1.80E-07	1.90E-07	2.00E-07	2.00E-07
nd146	1.34E-07	1.43E-07	1.51E-07	1.59E-07	1.68E-07	1.68E-07
eu155	1.61E-07	1.61E-07	1.61E-07	1.61E-07	1.61E-07	1.61E-07
pd108	1.14E-07	1.22E-07	1.30E-07	1.37E-07	1.45E-07	1.45E-07
ba138	1.15E-07	1.22E-07	1.29E-07	1.36E-07	1.43E-07	1.43E-07
in115	1.11E-07	1.18E-07	1.25E-07	1.32E-07	1.38E-07	1.38E-07
ce140	1.07E-07	1.14E-07	1.21E-07	1.28E-07	1.34E-07	1.34E-07
xe132	9.62E-08	1.02E-07	1.08E-07	1.14E-07	1.20E-07	1.20E-07
pd107	6.68E-08	7.12E-08	7.56E-08	8.00E-08	8.44E-08	8.44E-08
mo 98	6.62E-08	7.03E-08	7.44E-08	7.86E-08	8.27E-08	8.27E-08
mo100	6.41E-08	6.81E-08	7.21E-08	7.61E-08	8.01E-08	8.01E-08
xe134	6.34E-08	6.73E-08	7.13E-08	7.52E-08	7.91E-08	7.91E-08
zr 92	5.14E-08	5.46E-08	5.78E-08	6.10E-08	6.42E-08	6.42E-08
i127	4.18E-08	4.45E-08	4.71E-08	4.97E-08	5.23E-08	5.23E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 42
0 fraction of total absorption rate
power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

zr 96	4.02E-08	4.27E-08	4.52E-08	4.77E-08	5.02E-08	5.02E-08
ru104	3.96E-08	4.21E-08	4.46E-08	4.71E-08	4.96E-08	4.96E-08
nd150	3.54E-08	3.76E-08	3.98E-08	4.20E-08	4.42E-08	4.42E-08
xe136	3.43E-08	3.64E-08	3.85E-08	4.07E-08	4.28E-08	4.28E-08
br 81	2.56E-08	2.72E-08	2.88E-08	3.04E-08	3.20E-08	3.20E-08
rb 85	2.48E-08	2.64E-08	2.80E-08	2.95E-08	3.11E-08	3.11E-08
zr 94	2.17E-08	2.30E-08	2.44E-08	2.57E-08	2.71E-08	2.71E-08
zr 90	1.81E-08	1.94E-08	2.07E-08	2.19E-08	2.32E-08	2.32E-08
cd111	1.72E-08	1.83E-08	1.94E-08	2.05E-08	2.16E-08	2.16E-08
eu152	1.52E-08	1.66E-08	1.80E-08	1.94E-08	2.08E-08	2.08E-08
te130	1.56E-08	1.66E-08	1.75E-08	1.85E-08	1.95E-08	1.95E-08
gd152	1.10E-08	1.29E-08	1.48E-08	1.70E-08	1.92E-08	1.92E-08
sm154	1.52E-08	1.61E-08	1.71E-08	1.80E-08	1.90E-08	1.90E-08
rb 87	1.45E-08	1.54E-08	1.63E-08	1.72E-08	1.81E-08	1.81E-08
sr 90	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08
se 77	1.03E-08	1.10E-08	1.16E-08	1.23E-08	1.29E-08	1.29E-08
pd106	7.43E-09	7.90E-09	8.38E-09	8.85E-09	9.33E-09	9.33E-09
rh105	8.47E-09	8.52E-09	8.53E-09	8.54E-09	8.55E-09	8.52E-09
kr 84	6.82E-09	7.24E-09	7.66E-09	8.09E-09	8.51E-09	8.51E-09
se 79	5.29E-09	5.62E-09	5.95E-09	6.28E-09	6.61E-09	6.61E-09
sb121	5.03E-09	5.34E-09	5.66E-09	5.97E-09	6.29E-09	6.29E-09
sb123	4.09E-09	4.34E-09	4.60E-09	4.86E-09	5.11E-09	5.11E-09
kr 86	3.82E-09	4.06E-09	4.29E-09	4.53E-09	4.77E-09	4.77E-09
gd156	3.25E-09	3.50E-09	3.75E-09	4.00E-09	4.26E-09	4.26E-09
te128	3.41E-09	3.62E-09	3.83E-09	4.05E-09	4.26E-09	4.26E-09
cs137	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09
se 80	2.47E-09	2.62E-09	2.77E-09	2.93E-09	3.08E-09	3.08E-09
dy161	2.35E-09	2.51E-09	2.67E-09	2.84E-09	3.00E-09	3.00E-09
te125	2.14E-09	2.28E-09	2.41E-09	2.55E-09	2.69E-09	2.69E-09
pr143	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.01E-09
tb159	1.51E-09	1.61E-09	1.70E-09	1.80E-09	1.90E-09	1.90E-09
ru 99	1.16E-09	1.30E-09	1.45E-09	1.62E-09	1.79E-09	1.79E-09
cd112	1.42E-09	1.51E-09	1.60E-09	1.69E-09	1.78E-09	1.78E-09
li 6	1.40E-09	1.49E-09	1.57E-09	1.66E-09	1.75E-09	1.75E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
sn117	1.12E-09	1.19E-09	1.26E-09	1.33E-09	1.40E-09	1.40E-09
eu154	1.11E-09	1.18E-09	1.25E-09	1.32E-09	1.39E-09	1.39E-09
sn119	9.17E-10	9.74E-10	1.03E-09	1.09E-09	1.15E-09	1.15E-09
gd158	7.80E-10	8.46E-10	9.13E-10	9.81E-10	1.05E-09	1.05E-09
sn115	8.40E-10	8.92E-10	9.45E-10	9.97E-10	1.05E-09	1.05E-09
pm149	9.69E-10	9.76E-10	9.76E-10	9.76E-10	9.76E-10	9.70E-10
nd147	9.23E-10	9.27E-10	9.27E-10	9.26E-10	9.26E-10	9.23E-10
gd154	5.74E-10	6.50E-10	7.30E-10	8.15E-10	9.04E-10	9.04E-10
sr 88	7.02E-10	7.45E-10	7.89E-10	8.32E-10	8.76E-10	8.76E-10
cd114	5.61E-10	6.01E-10	6.41E-10	6.82E-10	7.23E-10	7.23E-10
pd110	5.19E-10	5.53E-10	5.87E-10	6.21E-10	6.55E-10	6.55E-10
ce144	6.00E-10	6.00E-10	6.00E-10	6.00E-10	5.99E-10	5.99E-10
se 82	4.77E-10	5.06E-10	5.36E-10	5.65E-10	5.95E-10	5.95E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 43
0 fraction of total absorption rate
power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

kr 85	5.73E-10	5.72E-10	5.72E-10	5.72E-10	5.72E-10	5.72E-10
sn126	3.87E-10	4.11E-10	4.35E-10	4.60E-10	4.84E-10	4.84E-10
se 78	3.61E-10	3.84E-10	4.06E-10	4.29E-10	4.51E-10	4.51E-10
dy162	3.31E-10	3.55E-10	3.80E-10	4.04E-10	4.30E-10	4.30E-10
dy164	3.21E-10	3.46E-10	3.71E-10	3.96E-10	4.22E-10	4.22E-10

sn124	2.90E-10	3.09E-10	3.27E-10	3.45E-10	3.63E-10	3.63E-10
ru103	3.58E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10
ru100	1.97E-10	2.22E-10	2.48E-10	2.76E-10	3.05E-10	3.05E-10
as 75	2.15E-10	2.28E-10	2.42E-10	2.55E-10	2.69E-10	2.69E-10
nd142	1.35E-10	1.52E-10	1.70E-10	1.90E-10	2.10E-10	2.10E-10
ba134	1.29E-10	1.46E-10	1.63E-10	1.82E-10	2.02E-10	2.02E-10
in113	1.54E-10	1.64E-10	1.74E-10	1.84E-10	1.94E-10	1.94E-10
sm148	1.22E-10	1.38E-10	1.54E-10	1.71E-10	1.89E-10	1.89E-10
ba135	1.06E-10	1.19E-10	1.33E-10	1.49E-10	1.65E-10	1.65E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
ba136	1.26E-10	1.34E-10	1.43E-10	1.52E-10	1.61E-10	1.61E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10
sn118	1.18E-10	1.26E-10	1.33E-10	1.41E-10	1.48E-10	1.48E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
pd104	8.82E-11	9.95E-11	1.12E-10	1.24E-10	1.38E-10	1.38E-10
cs134	1.08E-10	1.15E-10	1.22E-10	1.28E-10	1.35E-10	1.35E-10
sn122	1.01E-10	1.07E-10	1.13E-10	1.20E-10	1.26E-10	1.26E-10
cd116	1.01E-10	1.07E-10	1.13E-10	1.19E-10	1.26E-10	1.26E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.07E-10
dy163	7.57E-11	8.13E-11	8.71E-11	9.29E-11	9.89E-11	9.89E-11
kr 82	7.52E-11	8.07E-11	8.62E-11	9.19E-11	9.77E-11	9.77E-11
sn120	7.52E-11	7.99E-11	8.46E-11	8.93E-11	9.40E-11	9.40E-11
mo 96	5.63E-11	6.18E-11	6.74E-11	7.33E-11	7.94E-11	7.94E-11
ge 73	5.89E-11	6.25E-11	6.62E-11	6.99E-11	7.36E-11	7.36E-11
xe130	5.29E-11	5.71E-11	6.15E-11	6.59E-11	7.05E-11	7.05E-11
ba140	4.71E-11	4.73E-11	4.72E-11	4.72E-11	4.72E-11	4.70E-11
sm153	3.75E-11	3.85E-11	3.85E-11	3.86E-11	3.86E-11	3.77E-11
eu156	3.53E-11	3.54E-11	3.55E-11	3.56E-11	3.56E-11	3.56E-11
sr 89	3.06E-11	3.07E-11	3.06E-11	3.06E-11	3.06E-11	3.06E-11
ge 76	2.13E-11	2.26E-11	2.40E-11	2.53E-11	2.66E-11	2.66E-11
ru106	2.62E-11	2.63E-11	2.63E-11	2.64E-11	2.65E-11	2.65E-11
nb 93	1.52E-11	1.73E-11	1.95E-11	2.19E-11	2.44E-11	2.44E-11
cd110	1.26E-11	1.42E-11	1.60E-11	1.79E-11	1.99E-11	1.99E-11
gd160	1.42E-11	1.52E-11	1.61E-11	1.71E-11	1.80E-11	1.80E-11
te126	1.33E-11	1.43E-11	1.54E-11	1.64E-11	1.75E-11	1.75E-11
ce143	1.69E-11	1.75E-11	1.75E-11	1.74E-11	1.74E-11	1.69E-11
y 90	1.63E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11
la140	1.53E-11	1.53E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
sb125	1.51E-11	1.51E-11	1.51E-11	1.51E-11	1.51E-11	1.51E-11
br 79	8.61E-12	9.72E-12	1.09E-11	1.21E-11	1.34E-11	1.34E-11
mo 99	1.28E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.29E-11
pm148m	9.51E-12	9.52E-12	9.52E-12	9.52E-12	9.52E-12	9.51E-12
kr 87	7.83E-12	2.29E-11	2.29E-11	2.29E-11	2.29E-11	9.13E-12
xe129	4.88E-12	5.51E-12	6.18E-12	6.88E-12	7.62E-12	7.62E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 44
0 fraction of total absorption rate
power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

te127m	7.54E-12	7.54E-12	7.55E-12	7.55E-12	7.56E-12	7.56E-12
ag107	4.71E-12	5.32E-12	5.98E-12	6.67E-12	7.40E-12	7.40E-12
ho165	5.27E-12	5.67E-12	6.08E-12	6.49E-12	6.91E-12	6.91E-12
i131	6.75E-12	6.76E-12	6.76E-12	6.76E-12	6.76E-12	6.75E-12
te124	2.61E-12	2.78E-12	2.96E-12	3.13E-12	3.30E-12	3.30E-12
sr 87	2.46E-12	2.62E-12	2.77E-12	2.93E-12	3.08E-12	3.08E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
nb 94	1.39E-12	1.48E-12	1.57E-12	1.66E-12	1.74E-12	1.74E-12
ge 74	1.19E-12	1.26E-12	1.34E-12	1.41E-12	1.49E-12	1.49E-12
sr 86	9.28E-13	1.00E-12	1.08E-12	1.15E-12	1.23E-12	1.23E-12
dy160	7.18E-13	8.04E-13	8.96E-13	9.93E-13	1.10E-12	1.10E-12

ge 72	8.03E-13	8.53E-13	9.04E-13	9.54E-13	1.00E-12	1.00E-12
xe128	5.84E-13	6.52E-13	7.23E-13	7.98E-13	8.77E-13	8.77E-13
se 76	5.19E-13	5.56E-13	5.92E-13	6.29E-13	6.67E-13	6.67E-13
pm148	3.63E-13	3.67E-13	3.66E-13	3.66E-13	3.66E-13	3.63E-13
ag111	3.35E-13	3.38E-13	3.39E-13	3.40E-13	3.42E-13	3.40E-13
eu157	2.86E-13	3.11E-13	3.12E-13	3.13E-13	3.14E-13	2.93E-13
sn116	1.87E-13	2.11E-13	2.36E-13	2.63E-13	2.91E-13	2.91E-13
er166	1.86E-13	2.03E-13	2.20E-13	2.37E-13	2.56E-13	2.56E-13
cd115m	2.39E-13	2.39E-13	2.39E-13	2.39E-13	2.39E-13	2.39E-13
te122	8.15E-14	9.16E-14	1.02E-13	1.14E-13	1.26E-13	1.26E-13
cs136	6.61E-14	6.70E-14	6.77E-14	6.84E-14	6.90E-14	6.88E-14
kr 80	3.54E-14	3.78E-14	4.01E-14	4.25E-14	4.50E-14	4.50E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.94E-14	2.94E-14	2.92E-14
ru105	2.27E-14	3.00E-14	3.01E-14	3.01E-14	3.01E-14	2.38E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.40E-15	9.56E-15	9.56E-15	9.56E-15	9.56E-15	9.42E-15
rb 88	8.66E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	9.26E-15
i135	8.24E-15	1.02E-14	1.02E-14	1.01E-14	1.01E-14	8.48E-15
tb160	4.52E-15	4.79E-15	5.06E-15	5.34E-15	5.61E-15	5.61E-15
sb126	3.69E-15	3.74E-15	3.79E-15	3.83E-15	3.87E-15	3.86E-15
te123	2.84E-15	3.05E-15	3.27E-15	3.50E-15	3.73E-15	3.73E-15
be 9	2.65E-15	2.82E-15	2.98E-15	3.15E-15	3.31E-15	3.31E-15
pr142	2.58E-15	2.94E-15	3.11E-15	3.28E-15	3.46E-15	3.25E-15
er167	1.71E-15	1.91E-15	2.13E-15	2.36E-15	2.60E-15	2.60E-15
sb124	2.31E-15	2.32E-15	2.33E-15	2.35E-15	2.36E-15	2.36E-15
in117m	1.86E-15	2.14E-15	2.14E-15	2.14E-15	2.14E-15	1.93E-15
li 7	1.08E-15	1.15E-15	1.22E-15	1.28E-15	1.35E-15	1.35E-15
i130	1.10E-15	1.26E-15	1.29E-15	1.32E-15	1.35E-15	1.23E-15
te134	8.08E-16	5.85E-15	5.85E-15	5.85E-15	5.85E-15	1.07E-15
in117	5.54E-16	6.29E-16	6.30E-16	6.31E-16	6.31E-16	5.74E-16
rb 86	4.03E-16	4.15E-16	4.25E-16	4.35E-16	4.45E-16	4.44E-16
dy165	1.80E-16	3.25E-16	3.31E-16	3.38E-16	3.45E-16	2.13E-16
cd108	5.51E-17	6.15E-17	6.84E-17	7.58E-17	8.36E-17	8.36E-17
sn114	4.22E-17	4.79E-17	5.39E-17	6.03E-17	6.71E-17	6.71E-17
ge 75	3.28E-17	8.66E-17	8.66E-17	8.66E-17	8.65E-17	3.78E-17
cd118	2.35E-17	1.22E-16	1.22E-16	1.22E-16	1.22E-16	2.98E-17
cs134m	1.26E-17	2.15E-17	2.28E-17	2.41E-17	2.53E-17	1.69E-17
cd109	8.78E-19	9.22E-19	9.65E-19	1.01E-18	1.05E-18	1.05E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 45

0 fraction of total absorption rate

power= .00mw, burnup= 730.mwd, flux= 2.69E+08n/cm**2-sec

0 initial 155232. d 164363. d 173494. d 182625. d 182625. d

in119m	3.60E-19	3.04E-17	3.04E-17	3.04E-17	3.04E-17	6.96E-19
in119	.00E+00	2.39E-18	2.39E-18	2.39E-18	2.39E-18	3.36E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 46

power= 4.000E-03mw, burnup=7.3050E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	155232. d	164363. d	173494. d	182625. d	182625. d
h 1	3.45E-05	3.66E-05	3.88E-05	4.09E-05	4.30E-05	4.30E-05
h 2	1.02E-07	1.09E-07	1.15E-07	1.21E-07	1.28E-07	1.28E-07
h 3	3.40E-11	3.41E-11	3.42E-11	3.43E-11	3.43E-11	3.43E-11
h 4	.00E+00	1.39E-34	1.39E-34	1.39E-34	1.39E-34	.00E+00
he 3	7.16E-10	7.63E-10	8.09E-10	8.55E-10	9.02E-10	9.02E-10
he 4	5.70E-06	6.05E-06	6.41E-06	6.76E-06	7.11E-06	7.11E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.85E-07	7.27E-07	7.70E-07	8.12E-07	8.54E-07	8.54E-07
ne 21	8.69E-12	9.74E-12	1.08E-11	1.20E-11	1.32E-11	1.32E-11

	ne 22	4.42E-09	4.70E-09	4.97E-09	5.25E-09	5.53E-09	5.53E-09
	ne 23	7.05E-30	7.06E-15	7.06E-15	7.06E-15	7.06E-15	7.06E-30
	na 22	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11	4.15E-11
	na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
	na 24	2.52E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.54E-08
	na 24m	4.55E-30	4.52E-15	4.52E-15	4.52E-15	4.52E-15	4.52E-30
	na 25	4.63E-41	5.06E-26	5.51E-26	5.98E-26	6.46E-26	6.46E-41
	mg 24	5.12E-03	5.40E-03	5.69E-03	5.97E-03	6.26E-03	6.26E-03
	mg 25	1.62E-09	1.77E-09	1.93E-09	2.09E-09	2.26E-09	2.26E-09
	mg 26	1.02E-07	1.09E-07	1.15E-07	1.21E-07	1.28E-07	1.28E-07
	mg 27	3.33E-16	2.11E-12	2.11E-12	2.11E-12	2.11E-12	1.16E-15
	mg 28	4.02E-24	4.30E-24	4.30E-24	4.30E-24	4.30E-24	4.06E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	2.31E-25	2.04E-10	2.04E-10	2.04E-10	2.04E-10	3.74E-24
	al 29	6.92E-30	2.33E-24	2.59E-24	2.87E-24	3.16E-24	6.39E-29
	al 30	.00E+00	1.89E-35	2.23E-35	2.60E-35	3.02E-35	.00E+00
	si 28	1.49E-02	1.57E-02	1.65E-02	1.74E-02	1.82E-02	1.82E-02
	si 29	8.10E-09	9.09E-09	1.01E-08	1.12E-08	1.24E-08	1.24E-08
	si 30	4.63E-15	5.52E-15	6.51E-15	7.62E-15	8.84E-15	8.84E-15
	si 31	1.96E-27	3.96E-27	4.67E-27	5.46E-27	6.34E-27	4.04E-27
	si 32	1.79E-33	2.24E-33	2.75E-33	3.34E-33	4.02E-33	4.02E-33
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.70E+08	2.69E+08	2.69E+08	2.69E+08	2.69E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 47
power= 4.000E-03mw, burnup=7.3050E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 155232. d	164363. d	173494. d	182625. d	182625. d	
he 4	8.40E-02	9.13E-02	9.86E-02	1.06E-01	1.14E-01	1.14E-01
pb206	8.32E-07	1.01E-06	1.21E-06	1.43E-06	1.68E-06	1.68E-06
pb207	1.04E-06	1.19E-06	1.34E-06	1.51E-06	1.68E-06	1.68E-06
pb208	2.01E-07	2.27E-07	2.54E-07	2.83E-07	3.13E-07	3.13E-07
pb209	2.22E-13	2.49E-13	2.79E-13	3.11E-13	3.44E-13	3.46E-13
pb210	2.11E-07	2.40E-07	2.70E-07	3.02E-07	3.36E-07	3.36E-07
pb211	5.56E-13	5.94E-13	6.32E-13	6.70E-13	7.07E-13	7.07E-13
pb212	1.76E-12	1.86E-12	1.97E-12	2.08E-12	2.18E-12	2.18E-12
pb214	5.48E-13	6.35E-13	7.10E-13	7.88E-13	8.70E-13	8.43E-13
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.52E-08	6.61E-08	7.84E-08	9.22E-08	1.07E-07	1.07E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.30E-10	1.48E-10	1.66E-10	1.86E-10	2.07E-10	2.07E-10
bi211	3.32E-14	3.52E-14	3.75E-14	3.97E-14	4.19E-14	4.23E-14
bi212	1.67E-13	1.77E-13	1.87E-13	1.97E-13	2.07E-13	2.07E-13
bi213	5.00E-14	5.82E-14	6.52E-14	7.25E-14	8.03E-14	7.80E-14
bi214	4.12E-13	4.72E-13	5.27E-13	5.85E-13	6.46E-13	6.38E-13
po210	3.59E-09	4.08E-09	4.60E-09	5.14E-09	5.72E-09	5.72E-09
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.67E-19	3.89E-19	4.14E-19	4.39E-19	4.63E-19	4.67E-19
po212	8.76E-24	9.29E-24	9.82E-24	1.04E-23	1.09E-23	1.09E-23
po213	7.52E-23	8.74E-23	9.79E-23	1.09E-22	1.21E-22	1.17E-22
po214	5.67E-20	6.49E-20	7.25E-20	8.05E-20	8.89E-20	8.77E-20
po215	4.57E-19	4.88E-19	5.19E-19	5.50E-19	5.81E-19	5.81E-19
po216	6.65E-18	7.06E-18	7.46E-18	7.86E-18	8.27E-18	8.27E-18
po218	6.54E-14	7.35E-14	8.21E-14	9.12E-14	1.01E-13	1.01E-13
rn218	2.50E-29	2.65E-29	2.80E-29	2.95E-29	3.10E-29	3.11E-29
rn219	1.02E-15	1.09E-15	1.16E-15	1.22E-15	1.29E-15	1.29E-15
rn220	2.55E-15	2.71E-15	2.86E-15	3.02E-15	3.17E-15	3.17E-15
rn222	1.16E-10	1.31E-10	1.46E-10	1.62E-10	1.79E-10	1.79E-10
ra222	2.71E-26	2.88E-26	3.04E-26	3.21E-26	3.37E-26	3.37E-26

ra223	2.54E-10	2.71E-10	2.88E-10	3.05E-10	3.23E-10	3.23E-10
ra224	1.45E-11	1.54E-11	1.63E-11	1.71E-11	1.80E-11	1.80E-11
ra225	2.41E-11	2.72E-11	3.05E-11	3.39E-11	3.76E-11	3.76E-11
ra226	1.77E-05	2.00E-05	2.23E-05	2.48E-05	2.73E-05	2.73E-05
ra228	8.28E-13	8.81E-13	9.34E-13	9.87E-13	1.04E-12	1.04E-12
ac225	1.63E-11	1.84E-11	2.06E-11	2.29E-11	2.54E-11	2.54E-11
ac227	1.76E-07	1.88E-07	2.00E-07	2.12E-07	2.24E-07	2.24E-07
ac228	1.01E-16	1.08E-16	1.14E-16	1.20E-16	1.27E-16	1.27E-16
th226	1.32E-24	1.40E-24	1.48E-24	1.56E-24	1.64E-24	1.64E-24
th227	4.10E-10	4.37E-10	4.65E-10	4.93E-10	5.21E-10	5.21E-10
th228	2.77E-09	2.94E-09	3.11E-09	3.27E-09	3.44E-09	3.44E-09
th229	4.69E-06	5.29E-06	5.92E-06	6.60E-06	7.30E-06	7.30E-06
th230	1.02E-02	1.09E-02	1.15E-02	1.21E-02	1.28E-02	1.28E-02
th231	3.05E-09	3.06E-09	3.06E-09	3.06E-09	3.06E-09	3.06E-09
th232	2.07E-03	2.20E-03	2.33E-03	2.46E-03	2.59E-03	2.59E-03
th233	4.62E-16	2.01E-14	2.13E-14	2.25E-14	2.37E-14	9.81E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.88E-04	3.06E-04	3.24E-04	3.42E-04	3.60E-04	3.60E-04
pa232	4.73E-12	5.25E-12	5.56E-12	5.87E-12	6.18E-12	5.95E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 48
power= 4.000E-03mw, burnup=7.3050E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 155232. d	164363. d	173494. d	182625. d	182625. d	
pa233	1.46E-06	1.46E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.28E-21	1.36E-21	1.44E-21	1.52E-21	1.59E-21	1.59E-21
u231	4.08E-18	4.39E-18	4.65E-18	4.90E-18	5.16E-18	5.10E-18
u232	9.90E-08	1.05E-07	1.11E-07	1.17E-07	1.23E-07	1.23E-07
u233	5.44E-03	5.78E-03	6.12E-03	6.46E-03	6.80E-03	6.80E-03
u234	9.09E+00	9.09E+00	9.10E+00	9.10E+00	9.10E+00	9.10E+00
u235	7.27E+02	7.27E+02	7.27E+02	7.27E+02	7.27E+02	7.27E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.08E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.08E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	9.32E-09	3.18E-07	3.18E-07	3.18E-07	3.18E-07	1.54E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.64E-12	8.64E-12	8.64E-12	8.63E-12	8.63E-12	8.63E-12
np236m	1.93E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.95E-12
np236	7.93E-08	8.42E-08	8.91E-08	9.39E-08	9.88E-08	9.88E-08
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.51E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.52E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.45E-15	9.32E-15	9.32E-15	9.31E-15	9.31E-15	2.96E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.35E-13	2.38E-13	2.40E-13	2.42E-13	2.44E-13	2.44E-13
pu238	2.25E-02	2.27E-02	2.28E-02	2.29E-02	2.30E-02	2.30E-02
pu239	1.98E+00	2.10E+00	2.22E+00	2.34E+00	2.46E+00	2.46E+00
pu240	3.85E-03	4.33E-03	4.84E-03	5.38E-03	5.95E-03	5.95E-03
pu241	1.43E-06	1.62E-06	1.82E-06	2.03E-06	2.25E-06	2.25E-06
pu242	3.27E-09	4.08E-09	5.02E-09	6.11E-09	7.36E-09	7.36E-09
pu243	5.22E-18	8.59E-18	1.06E-17	1.29E-17	1.55E-17	1.22E-17
pu244	1.55E-37	2.90E-37	5.23E-37	9.12E-37	1.54E-36	1.54E-36
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

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     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   1.87E-21  2.51E-21  2.97E-21  3.48E-21  4.03E-21  3.65E-21
     am240   9.37E-19  1.15E-18  1.36E-18  1.59E-18  1.85E-18  1.80E-18
     am241   7.67E-06  9.17E-06  1.08E-05  1.27E-05  1.47E-05  1.47E-05
     am242m  1.37E-09  1.71E-09  2.10E-09  2.55E-09  3.07E-09  3.07E-09
     am242   2.62E-13  3.40E-13  4.03E-13  4.73E-13  5.50E-13  5.14E-13
     am243   3.81E-12  5.08E-12  6.66E-12  8.58E-12  1.09E-11  1.09E-11
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   2.53E-20  3.86E-20  5.06E-20  6.52E-20  8.28E-20  7.37E-20
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.65E-23  1.98E-23  2.34E-23  2.75E-23  3.20E-23  3.19E-23
     cm242   5.73E-11  6.87E-11  8.14E-11  9.55E-11  1.11E-10  1.11E-10
     cm243   1.65E-17  2.02E-17  2.45E-17  2.94E-17  3.48E-17  3.48E-17
     cm244   3.43E-16  4.65E-16  6.17E-16  8.06E-16  1.04E-15  1.04E-15
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page   49
       power= 4.000E-03mw, burnup=7.3050E+02mwd, flux= 2.69E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
            charge 155232. d 164363. d 173494. d 182625. d 182625. d
     cm245   2.37E-20  3.43E-20  4.84E-20  6.71E-20  9.12E-20  9.12E-20
     cm246   7.57E-24  1.17E-23  1.76E-23  2.58E-23  3.70E-23  3.70E-23
     cm247   3.97E-29  6.53E-29  1.04E-28  1.62E-28  2.46E-28  2.46E-28
     cm248   2.15E-33  3.77E-33  6.40E-33  1.05E-32  1.69E-32  1.69E-32
     cm249    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.70E+08  2.69E+08  2.69E+08  2.69E+08  2.69E-07
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  6 of library on unit 33.

          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 "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:  ft33f001
0                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                 page   50
         power=    .00mw, burnup=    877.mwd, flux= 2.69E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial       191757. d       200888. d       210019. d       219150. d       219150. d
     productions   1.141551E+06   1.141728E+06   1.141904E+06   1.142080E+06   1.142256E+06   1.142256E+06
     absorptions   9.329141E+05   9.331241E+05   9.333314E+05   9.335349E+05   9.337361E+05   9.337361E+05
     k infinity    1.223640E+00   1.223554E+00   1.223472E+00   1.223393E+00   1.223318E+00   1.223318E+00
0                  initial       191757. d       200888. d       210019. d       219150. d       219150. d
     actinide
     absorptions   9.268260E+05   9.269309E+05   9.270358E+05   9.271403E+05   9.272448E+05   9.272448E+05
     non-actinide
     abs. fracs.   6.525874E-03   6.637037E-03   6.745279E-03   6.849885E-03   6.951988E-03   6.951988E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2               fission products     page   51
0                                    fraction of total absorption rate
         power=    .00mw, burnup=    877.mwd, flux= 2.69E+08n/cm**2-sec
0               initial 191757. d 200888. d 210019. d 219150. d 219150. d

     sm149      2.68E-03  2.77E-03  2.86E-03  2.95E-03  3.03E-03  3.03E-03
     eu151      8.34E-05  8.87E-05  9.40E-05  9.94E-05  1.05E-04  1.05E-04
     nd143      7.38E-05  7.75E-05  8.12E-05  8.48E-05  8.85E-05  8.85E-05
     gd155      4.34E-05  4.53E-05  4.72E-05  4.91E-05  5.09E-05  5.09E-05
     rh103      3.44E-05  3.61E-05  3.78E-05  3.95E-05  4.12E-05  4.12E-05
     sm151      3.92E-05  3.93E-05  3.95E-05  3.95E-05  3.96E-05  3.96E-05
     cd113      2.71E-05  2.82E-05  2.93E-05  3.04E-05  3.15E-05  3.15E-05
     xe131      2.33E-05  2.45E-05  2.56E-05  2.68E-05  2.79E-05  2.79E-05
     gd157      2.42E-05  2.49E-05  2.56E-05  2.63E-05  2.69E-05  2.69E-05
     cs133      1.81E-05  1.90E-05  1.99E-05  2.08E-05  2.17E-05  2.17E-05
     sm147      1.33E-05  1.40E-05  1.46E-05  1.53E-05  1.60E-05  1.60E-05
     tc 99      1.33E-05  1.39E-05  1.46E-05  1.53E-05  1.59E-05  1.59E-05
     nd145      1.03E-05  1.08E-05  1.14E-05  1.19E-05  1.24E-05  1.24E-05
     mo 95      7.15E-06  7.50E-06  7.86E-06  8.21E-06  8.57E-06  8.57E-06
     sm152      5.64E-06  5.93E-06  6.22E-06  6.51E-06  6.80E-06  6.80E-06
     kr 83      4.48E-06  4.71E-06  4.93E-06  5.15E-06  5.37E-06  5.37E-06
     cs135      4.08E-06  4.28E-06  4.48E-06  4.69E-06  4.89E-06  4.89E-06
     ru101      3.16E-06  3.31E-06  3.47E-06  3.63E-06  3.78E-06  3.78E-06
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pr141	3.05E-06	3.20E-06	3.36E-06	3.51E-06	3.66E-06	3.66E-06
eu153	2.78E-06	2.92E-06	3.06E-06	3.20E-06	3.34E-06	3.34E-06
la139	2.50E-06	2.62E-06	2.74E-06	2.87E-06	2.99E-06	2.99E-06
xe135	2.29E-06	2.32E-06	2.32E-06	2.32E-06	2.32E-06	2.29E-06
sm150	1.56E-06	1.70E-06	1.84E-06	2.00E-06	2.15E-06	2.15E-06
ba137	1.09E-06	1.15E-06	1.21E-06	1.27E-06	1.33E-06	1.33E-06
pd105	1.07E-06	1.12E-06	1.17E-06	1.23E-06	1.28E-06	1.28E-06
zr 93	1.01E-06	1.06E-06	1.11E-06	1.16E-06	1.21E-06	1.21E-06
i129	7.78E-07	8.17E-07	8.55E-07	8.94E-07	9.33E-07	9.33E-07
nd144	7.49E-07	7.87E-07	8.24E-07	8.61E-07	8.99E-07	8.99E-07
mo 97	5.66E-07	5.94E-07	6.22E-07	6.50E-07	6.78E-07	6.78E-07
ag109	4.52E-07	4.78E-07	5.04E-07	5.30E-07	5.56E-07	5.56E-07
zr 91	2.66E-07	2.80E-07	2.93E-07	3.06E-07	3.19E-07	3.19E-07
y 89	2.56E-07	2.68E-07	2.81E-07	2.94E-07	3.06E-07	3.06E-07
ru102	2.31E-07	2.42E-07	2.54E-07	2.65E-07	2.77E-07	2.77E-07
pm147	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
ce142	2.08E-07	2.18E-07	2.29E-07	2.39E-07	2.49E-07	2.49E-07
nd148	2.00E-07	2.10E-07	2.19E-07	2.29E-07	2.39E-07	2.39E-07
nd146	1.68E-07	1.76E-07	1.84E-07	1.93E-07	2.01E-07	2.01E-07
pd108	1.45E-07	1.53E-07	1.61E-07	1.69E-07	1.76E-07	1.76E-07
ba138	1.43E-07	1.50E-07	1.58E-07	1.65E-07	1.72E-07	1.72E-07
in115	1.38E-07	1.45E-07	1.52E-07	1.59E-07	1.66E-07	1.66E-07
eu155	1.61E-07	1.61E-07	1.62E-07	1.62E-07	1.62E-07	1.62E-07
ce140	1.34E-07	1.41E-07	1.48E-07	1.54E-07	1.61E-07	1.61E-07
xe132	1.20E-07	1.26E-07	1.32E-07	1.38E-07	1.44E-07	1.44E-07
pd107	8.44E-08	8.88E-08	9.33E-08	9.78E-08	1.02E-07	1.02E-07
mo 98	8.27E-08	8.68E-08	9.09E-08	9.50E-08	9.91E-08	9.91E-08
mo100	8.01E-08	8.41E-08	8.81E-08	9.21E-08	9.61E-08	9.61E-08
xe134	7.91E-08	8.31E-08	8.70E-08	9.09E-08	9.49E-08	9.49E-08
zr 92	6.42E-08	6.74E-08	7.06E-08	7.38E-08	7.69E-08	7.69E-08
i127	5.23E-08	5.50E-08	5.76E-08	6.02E-08	6.29E-08	6.29E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 52
0 fraction of total absorption rate
power= .00mw, burnup= 877.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 191757. d 200888. d 210019. d 219150. d 219150. d

zr 96	5.02E-08	5.27E-08	5.52E-08	5.77E-08	6.02E-08	6.02E-08
ru104	4.96E-08	5.21E-08	5.45E-08	5.70E-08	5.95E-08	5.95E-08
nd150	4.42E-08	4.64E-08	4.86E-08	5.08E-08	5.30E-08	5.30E-08
xe136	4.28E-08	4.49E-08	4.70E-08	4.92E-08	5.13E-08	5.13E-08
br 81	3.20E-08	3.36E-08	3.52E-08	3.68E-08	3.84E-08	3.84E-08
rb 85	3.11E-08	3.26E-08	3.42E-08	3.57E-08	3.73E-08	3.73E-08
zr 94	2.71E-08	2.84E-08	2.98E-08	3.11E-08	3.25E-08	3.25E-08
gd152	1.92E-08	2.17E-08	2.42E-08	2.70E-08	2.99E-08	2.99E-08
zr 90	2.32E-08	2.44E-08	2.57E-08	2.69E-08	2.82E-08	2.82E-08
eu152	2.08E-08	2.21E-08	2.35E-08	2.49E-08	2.63E-08	2.63E-08
cd111	2.16E-08	2.28E-08	2.39E-08	2.50E-08	2.62E-08	2.62E-08
te130	1.95E-08	2.04E-08	2.14E-08	2.24E-08	2.33E-08	2.33E-08
sm154	1.90E-08	1.99E-08	2.09E-08	2.18E-08	2.28E-08	2.28E-08
rb 87	1.81E-08	1.90E-08	1.99E-08	2.08E-08	2.17E-08	2.17E-08
sr 90	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08
se 77	1.29E-08	1.35E-08	1.42E-08	1.48E-08	1.55E-08	1.55E-08
pd106	9.33E-09	9.81E-09	1.03E-08	1.08E-08	1.13E-08	1.13E-08
kr 84	8.51E-09	8.94E-09	9.36E-09	9.78E-09	1.02E-08	1.02E-08
rh105	8.52E-09	8.56E-09	8.57E-09	8.57E-09	8.58E-09	8.56E-09
se 79	6.61E-09	6.94E-09	7.27E-09	7.59E-09	7.92E-09	7.92E-09
sb121	6.29E-09	6.60E-09	6.92E-09	7.23E-09	7.55E-09	7.55E-09
sb123	5.11E-09	5.37E-09	5.62E-09	5.88E-09	6.13E-09	6.13E-09
kr 86	4.77E-09	5.00E-09	5.24E-09	5.48E-09	5.71E-09	5.71E-09
gd156	4.26E-09	4.53E-09	4.79E-09	5.07E-09	5.34E-09	5.34E-09

te128	4.26E-09	4.47E-09	4.68E-09	4.90E-09	5.11E-09	5.11E-09
cs137	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09
se 80	3.08E-09	3.23E-09	3.39E-09	3.54E-09	3.69E-09	3.69E-09
dy161	3.00E-09	3.17E-09	3.34E-09	3.51E-09	3.68E-09	3.68E-09
te125	2.69E-09	2.82E-09	2.96E-09	3.09E-09	3.23E-09	3.23E-09
pr143	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09	2.66E-09
ru 99	1.79E-09	1.97E-09	2.15E-09	2.35E-09	2.55E-09	2.55E-09
tb159	1.90E-09	2.00E-09	2.10E-09	2.20E-09	2.30E-09	2.30E-09
cd112	1.78E-09	1.87E-09	1.96E-09	2.05E-09	2.14E-09	2.14E-09
li 6	1.75E-09	1.83E-09	1.92E-09	2.01E-09	2.09E-09	2.09E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
sn117	1.40E-09	1.47E-09	1.54E-09	1.61E-09	1.68E-09	1.68E-09
eu154	1.39E-09	1.46E-09	1.53E-09	1.60E-09	1.67E-09	1.67E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.59E-09	1.59E-09	1.59E-09
sn119	1.15E-09	1.20E-09	1.26E-09	1.32E-09	1.38E-09	1.38E-09
gd158	1.05E-09	1.12E-09	1.19E-09	1.27E-09	1.34E-09	1.34E-09
gd154	9.04E-10	9.98E-10	1.10E-09	1.20E-09	1.31E-09	1.31E-09
sn115	1.05E-09	1.10E-09	1.15E-09	1.21E-09	1.26E-09	1.26E-09
sr 88	8.76E-10	9.19E-10	9.63E-10	1.01E-09	1.05E-09	1.05E-09
pm149	9.70E-10	9.76E-10	9.75E-10	9.75E-10	9.75E-10	9.69E-10
nd147	9.23E-10	9.26E-10	9.26E-10	9.26E-10	9.25E-10	9.22E-10
cd114	7.23E-10	7.65E-10	8.07E-10	8.50E-10	8.93E-10	8.93E-10
pd110	6.55E-10	6.90E-10	7.24E-10	7.59E-10	7.94E-10	7.94E-10
se 82	5.95E-10	6.24E-10	6.54E-10	6.84E-10	7.13E-10	7.13E-10
ce144	5.99E-10	5.99E-10	5.99E-10	5.99E-10	5.99E-10	5.98E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 53
0 fraction of total absorption rate
power= .00mw, burnup= 877.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 191757. d 200888. d 210019. d 219150. d 219150. d

sn126	4.84E-10	5.09E-10	5.33E-10	5.58E-10	5.82E-10	5.82E-10
kr 85	5.72E-10	5.71E-10	5.71E-10	5.71E-10	5.71E-10	5.71E-10
se 78	4.51E-10	4.74E-10	4.96E-10	5.19E-10	5.41E-10	5.41E-10
dy162	4.30E-10	4.55E-10	4.82E-10	5.08E-10	5.35E-10	5.35E-10
dy164	4.22E-10	4.49E-10	4.76E-10	5.03E-10	5.31E-10	5.31E-10
ru100	3.05E-10	3.36E-10	3.68E-10	4.02E-10	4.37E-10	4.37E-10
sn124	3.63E-10	3.81E-10	4.00E-10	4.18E-10	4.36E-10	4.36E-10
ru103	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.59E-10
as 75	2.69E-10	2.82E-10	2.95E-10	3.09E-10	3.22E-10	3.22E-10
nd142	2.10E-10	2.32E-10	2.54E-10	2.78E-10	3.02E-10	3.02E-10
ba134	2.02E-10	2.22E-10	2.44E-10	2.66E-10	2.90E-10	2.90E-10
sm148	1.89E-10	2.09E-10	2.28E-10	2.49E-10	2.71E-10	2.71E-10
ba135	1.65E-10	1.82E-10	1.99E-10	2.18E-10	2.37E-10	2.37E-10
in113	1.94E-10	2.05E-10	2.15E-10	2.25E-10	2.35E-10	2.35E-10
pd104	1.38E-10	1.52E-10	1.66E-10	1.82E-10	1.98E-10	1.98E-10
ba136	1.61E-10	1.70E-10	1.79E-10	1.88E-10	1.97E-10	1.97E-10
sn118	1.48E-10	1.55E-10	1.63E-10	1.70E-10	1.78E-10	1.78E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
cs134	1.35E-10	1.42E-10	1.48E-10	1.55E-10	1.62E-10	1.62E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10
sn122	1.26E-10	1.32E-10	1.39E-10	1.45E-10	1.51E-10	1.51E-10
cd116	1.26E-10	1.32E-10	1.38E-10	1.45E-10	1.51E-10	1.51E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
dy163	9.89E-11	1.05E-10	1.11E-10	1.17E-10	1.24E-10	1.24E-10
kr 82	9.77E-11	1.04E-10	1.09E-10	1.15E-10	1.22E-10	1.22E-10
sn120	9.40E-11	9.87E-11	1.03E-10	1.08E-10	1.13E-10	1.13E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.07E-10
mo 96	7.94E-11	8.58E-11	9.23E-11	9.91E-11	1.06E-10	1.06E-10
xe130	7.05E-11	7.52E-11	7.99E-11	8.48E-11	8.98E-11	8.98E-11
ge 73	7.36E-11	7.72E-11	8.09E-11	8.46E-11	8.83E-11	8.83E-11

ba140	4.70E-11	4.72E-11	4.72E-11	4.72E-11	4.72E-11	4.70E-11
sm153	3.77E-11	3.86E-11	3.86E-11	3.86E-11	3.86E-11	3.78E-11
eu156	3.56E-11	3.57E-11	3.58E-11	3.59E-11	3.59E-11	3.59E-11
nb 93	2.44E-11	2.70E-11	2.97E-11	3.26E-11	3.56E-11	3.56E-11
ge 76	2.66E-11	2.79E-11	2.92E-11	3.06E-11	3.19E-11	3.19E-11
sr 89	3.06E-11	3.06E-11	3.06E-11	3.06E-11	3.06E-11	3.05E-11
cd110	1.99E-11	2.20E-11	2.43E-11	2.66E-11	2.91E-11	2.91E-11
ru106	2.65E-11	2.65E-11	2.66E-11	2.67E-11	2.67E-11	2.67E-11
te126	1.75E-11	1.87E-11	1.98E-11	2.10E-11	2.21E-11	2.21E-11
gd160	1.80E-11	1.90E-11	2.00E-11	2.09E-11	2.19E-11	2.19E-11
br 79	1.34E-11	1.48E-11	1.63E-11	1.78E-11	1.93E-11	1.93E-11
ce143	1.69E-11	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.69E-11
y 90	1.63E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
sb125	1.51E-11	1.51E-11	1.51E-11	1.51E-11	1.52E-11	1.52E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.28E-11
xe129	7.62E-12	8.40E-12	9.22E-12	1.01E-11	1.10E-11	1.10E-11
ag107	7.40E-12	8.18E-12	8.99E-12	9.84E-12	1.07E-11	1.07E-11
pm148m	9.51E-12	9.52E-12	9.52E-12	9.52E-12	9.52E-12	9.51E-12

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 54
0 fraction of total absorption rate
power= .00mw, burnup= 877.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 191757. d 200888. d 210019. d 219150. d 219150. d

kr 87	9.12E-12	2.29E-11	2.29E-11	2.29E-11	2.29E-11	9.11E-12
ho165	6.91E-12	7.35E-12	7.79E-12	8.23E-12	8.69E-12	8.69E-12
te127m	7.56E-12	7.56E-12	7.57E-12	7.58E-12	7.58E-12	7.58E-12
i131	6.75E-12	6.76E-12	6.76E-12	6.76E-12	6.76E-12	6.74E-12
te124	3.30E-12	3.48E-12	3.65E-12	3.83E-12	4.01E-12	4.01E-12
sr 87	3.08E-12	3.23E-12	3.39E-12	3.54E-12	3.70E-12	3.70E-12
nb 94	1.74E-12	1.83E-12	1.92E-12	2.01E-12	2.10E-12	2.10E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ge 74	1.49E-12	1.56E-12	1.63E-12	1.71E-12	1.78E-12	1.78E-12
sr 86	1.23E-12	1.31E-12	1.39E-12	1.48E-12	1.56E-12	1.56E-12
dy160	1.10E-12	1.20E-12	1.32E-12	1.43E-12	1.56E-12	1.56E-12
xe128	8.77E-13	9.60E-13	1.05E-12	1.14E-12	1.23E-12	1.23E-12
ge 72	1.00E-12	1.06E-12	1.11E-12	1.16E-12	1.21E-12	1.21E-12
se 76	6.67E-13	7.04E-13	7.43E-13	7.81E-13	8.21E-13	8.21E-13
sn116	2.91E-13	3.21E-13	3.52E-13	3.85E-13	4.19E-13	4.19E-13
pm148	3.63E-13	3.66E-13	3.66E-13	3.66E-13	3.66E-13	3.63E-13
ag111	3.40E-13	3.43E-13	3.44E-13	3.46E-13	3.47E-13	3.45E-13
er166	2.56E-13	2.74E-13	2.94E-13	3.14E-13	3.34E-13	3.34E-13
eu157	2.93E-13	3.15E-13	3.16E-13	3.17E-13	3.18E-13	2.96E-13
cd115m	2.39E-13	2.40E-13	2.40E-13	2.40E-13	2.40E-13	2.40E-13
te122	1.26E-13	1.38E-13	1.51E-13	1.65E-13	1.80E-13	1.80E-13
cs136	6.88E-14	6.97E-14	7.04E-14	7.11E-14	7.17E-14	7.15E-14
kr 80	4.50E-14	4.74E-14	4.99E-14	5.24E-14	5.49E-14	5.49E-14
sn125	2.92E-14	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.93E-14
ru105	2.38E-14	3.02E-14	3.02E-14	3.02E-14	3.03E-14	2.39E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.42E-15	9.55E-15	9.55E-15	9.55E-15	9.55E-15	9.41E-15
rb 88	9.26E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	9.24E-15
i135	8.48E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.47E-15
tb160	5.60E-15	5.88E-15	6.16E-15	6.43E-15	6.71E-15	6.70E-15
te123	3.73E-15	3.96E-15	4.20E-15	4.45E-15	4.70E-15	4.70E-15
sb126	3.86E-15	3.92E-15	3.96E-15	4.00E-15	4.04E-15	4.03E-15
be 9	3.31E-15	3.48E-15	3.64E-15	3.81E-15	3.97E-15	3.97E-15
pr142	3.25E-15	3.63E-15	3.80E-15	3.97E-15	4.14E-15	3.89E-15
er167	2.60E-15	2.86E-15	3.13E-15	3.41E-15	3.71E-15	3.71E-15
sb124	2.36E-15	2.37E-15	2.38E-15	2.40E-15	2.41E-15	2.41E-15

in117m	1.93E-15	2.15E-15	2.15E-15	2.15E-15	2.15E-15	1.94E-15
li 7	1.35E-15	1.42E-15	1.48E-15	1.55E-15	1.62E-15	1.62E-15
i130	1.23E-15	1.38E-15	1.41E-15	1.44E-15	1.48E-15	1.35E-15
te134	1.07E-15	5.84E-15	5.84E-15	5.84E-15	5.84E-15	1.07E-15
in117	5.73E-16	6.32E-16	6.33E-16	6.33E-16	6.34E-16	5.76E-16
rb 86	4.44E-16	4.55E-16	4.65E-16	4.75E-16	4.85E-16	4.84E-16
dy165	2.13E-16	3.52E-16	3.58E-16	3.65E-16	3.72E-16	2.29E-16
cd108	8.36E-17	9.20E-17	1.01E-16	1.10E-16	1.20E-16	1.20E-16
sn114	6.71E-17	7.42E-17	8.17E-17	8.96E-17	9.78E-17	9.78E-17
ge 75	3.77E-17	8.65E-17	8.65E-17	8.65E-17	8.65E-17	3.77E-17
cd118	2.98E-17	1.22E-16	1.22E-16	1.22E-16	1.22E-16	2.99E-17
cs134m	1.69E-17	2.66E-17	2.78E-17	2.91E-17	3.03E-17	2.02E-17
cd109	1.05E-18	1.09E-18	1.13E-18	1.17E-18	1.22E-18	1.21E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 55
0 fraction of total absorption rate
power= .00mw, burnup= 877.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 191757. d 200888. d 210019. d 219150. d 219150. d

in119m	6.96E-19	3.04E-17	3.05E-17	3.05E-17	3.05E-17	6.95E-19
in119	3.36E-21	2.39E-18	2.39E-18	2.40E-18	2.40E-18	3.36E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 56
power= 4.000E-03mw, burnup=8.7659E+02mwd, flux= 2.69E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly
charge 191757. d 200888. d 210019. d 219150. d 219150. d

h 1	4.30E-05	4.52E-05	4.73E-05	4.94E-05	5.16E-05	5.16E-05
h 2	1.28E-07	1.34E-07	1.40E-07	1.47E-07	1.53E-07	1.53E-07
h 3	3.43E-11	3.44E-11	3.45E-11	3.46E-11	3.46E-11	3.46E-11
h 4	.00E+00	1.40E-34	1.40E-34	1.40E-34	1.41E-34	.00E+00
he 3	9.02E-10	9.48E-10	9.95E-10	1.04E-09	1.09E-09	1.09E-09
he 4	7.11E-06	7.47E-06	7.82E-06	8.17E-06	8.53E-06	8.53E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	8.54E-07	8.97E-07	9.39E-07	9.82E-07	1.02E-06	1.02E-06
ne 21	1.32E-11	1.45E-11	1.58E-11	1.72E-11	1.86E-11	1.86E-11
ne 22	5.53E-09	5.80E-09	6.08E-09	6.36E-09	6.64E-09	6.64E-09
ne 23	7.06E-30	7.07E-15	7.07E-15	7.07E-15	7.07E-15	7.07E-30
na 22	4.15E-11	4.16E-11	4.16E-11	4.16E-11	4.16E-11	4.16E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.54E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.54E-08
na 24m	4.52E-30	4.52E-15	4.52E-15	4.52E-15	4.52E-15	4.52E-30
na 25	6.46E-41	6.96E-26	7.48E-26	8.01E-26	8.56E-26	8.55E-41
mg 24	6.26E-03	6.54E-03	6.83E-03	7.11E-03	7.40E-03	7.40E-03
mg 25	2.26E-09	2.44E-09	2.62E-09	2.80E-09	3.00E-09	3.00E-09
mg 26	1.28E-07	1.34E-07	1.40E-07	1.47E-07	1.53E-07	1.53E-07
mg 27	1.16E-15	2.11E-12	2.11E-12	2.11E-12	2.11E-12	1.17E-15
mg 28	4.06E-24	4.30E-24	4.30E-24	4.30E-24	4.30E-24	4.06E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	3.74E-24	2.04E-10	2.04E-10	2.04E-10	2.04E-10	3.74E-24
al 29	6.39E-29	3.47E-24	3.79E-24	4.12E-24	4.47E-24	9.03E-29
al 30	.00E+00	3.48E-35	3.98E-35	4.53E-35	5.12E-35	.00E+00
si 28	1.82E-02	1.90E-02	1.99E-02	2.07E-02	2.15E-02	2.15E-02
si 29	1.24E-08	1.36E-08	1.48E-08	1.61E-08	1.75E-08	1.75E-08
si 30	8.84E-15	1.02E-14	1.16E-14	1.32E-14	1.50E-14	1.50E-14
si 31	4.04E-27	7.30E-27	8.35E-27	9.50E-27	1.07E-26	6.84E-27
si 32	4.02E-33	4.79E-33	5.65E-33	6.61E-33	7.69E-33	7.69E-33
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.69E+08	2.69E+08	2.69E+08	2.69E+08	2.69E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 57

power= 4.000E-03mw, burnup=8.7659E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 191757. d	200888. d	210019. d	219150. d	219150. d	
he 4	1.14E-01	1.21E-01	1.29E-01	1.37E-01	1.45E-01	1.45E-01
pb206	1.68E-06	1.96E-06	2.26E-06	2.60E-06	2.96E-06	2.96E-06
pb207	1.68E-06	1.87E-06	2.06E-06	2.26E-06	2.47E-06	2.47E-06
pb208	3.13E-07	3.44E-07	3.77E-07	4.12E-07	4.48E-07	4.48E-07
pb209	3.46E-13	3.79E-13	4.15E-13	4.54E-13	4.93E-13	4.97E-13
pb210	3.36E-07	3.72E-07	4.09E-07	4.47E-07	4.88E-07	4.88E-07
pb211	7.07E-13	7.45E-13	7.83E-13	8.21E-13	8.59E-13	8.58E-13
pb212	2.18E-12	2.29E-12	2.40E-12	2.50E-12	2.61E-12	2.61E-12
pb214	8.43E-13	9.56E-13	1.05E-12	1.14E-12	1.24E-12	1.20E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.07E-07	1.24E-07	1.43E-07	1.63E-07	1.85E-07	1.85E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.07E-10	2.29E-10	2.52E-10	2.75E-10	3.00E-10	3.00E-10
bi211	4.23E-14	4.42E-14	4.64E-14	4.87E-14	5.09E-14	5.13E-14
bi212	2.07E-13	2.17E-13	2.27E-13	2.37E-13	2.48E-13	2.48E-13
bi213	7.80E-14	8.85E-14	9.70E-14	1.06E-13	1.15E-13	1.12E-13
bi214	6.38E-13	7.10E-13	7.77E-13	8.46E-13	9.18E-13	9.06E-13
po210	5.72E-09	6.32E-09	6.95E-09	7.61E-09	8.29E-09	8.29E-09
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.67E-19	4.88E-19	5.13E-19	5.38E-19	5.62E-19	5.67E-19
po212	1.09E-23	1.14E-23	1.19E-23	1.25E-23	1.30E-23	1.30E-23
po213	1.17E-22	1.33E-22	1.46E-22	1.59E-22	1.73E-22	1.68E-22
po214	8.77E-20	9.77E-20	1.07E-19	1.16E-19	1.26E-19	1.25E-19
po215	5.81E-19	6.12E-19	6.43E-19	6.75E-19	7.06E-19	7.06E-19
po216	8.27E-18	8.67E-18	9.07E-18	9.48E-18	9.88E-18	9.88E-18
po218	1.01E-13	1.11E-13	1.21E-13	1.32E-13	1.43E-13	1.43E-13
rn218	3.11E-29	3.26E-29	3.41E-29	3.56E-29	3.71E-29	3.71E-29
rn219	1.29E-15	1.36E-15	1.43E-15	1.50E-15	1.57E-15	1.57E-15
rn220	3.17E-15	3.32E-15	3.48E-15	3.63E-15	3.79E-15	3.79E-15
rn222	1.79E-10	1.97E-10	2.15E-10	2.34E-10	2.54E-10	2.54E-10
ra222	3.37E-26	3.54E-26	3.70E-26	3.86E-26	4.03E-26	4.03E-26
ra223	3.23E-10	3.40E-10	3.57E-10	3.74E-10	3.92E-10	3.92E-10
ra224	1.80E-11	1.89E-11	1.98E-11	2.07E-11	2.15E-11	2.15E-11
ra225	3.76E-11	4.14E-11	4.54E-11	4.95E-11	5.39E-11	5.39E-11
ra226	2.73E-05	3.00E-05	3.28E-05	3.58E-05	3.88E-05	3.88E-05
ra228	1.04E-12	1.09E-12	1.15E-12	1.20E-12	1.25E-12	1.25E-12
ac225	2.54E-11	2.79E-11	3.06E-11	3.35E-11	3.64E-11	3.64E-11
ac227	2.24E-07	2.36E-07	2.48E-07	2.60E-07	2.72E-07	2.72E-07
ac228	1.27E-16	1.33E-16	1.40E-16	1.46E-16	1.53E-16	1.53E-16
th226	1.64E-24	1.73E-24	1.81E-24	1.89E-24	1.96E-24	1.96E-24
th227	5.21E-10	5.49E-10	5.76E-10	6.04E-10	6.32E-10	6.32E-10
th228	3.44E-09	3.61E-09	3.78E-09	3.95E-09	4.11E-09	4.11E-09
th229	7.30E-06	8.04E-06	8.82E-06	9.63E-06	1.05E-05	1.05E-05
th230	1.28E-02	1.34E-02	1.40E-02	1.47E-02	1.53E-02	1.53E-02
th231	3.06E-09	3.07E-09	3.07E-09	3.07E-09	3.07E-09	3.07E-09
th232	2.59E-03	2.71E-03	2.84E-03	2.97E-03	3.10E-03	3.10E-03
th233	9.81E-16	2.48E-14	2.60E-14	2.72E-14	2.84E-14	1.18E-15
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	3.60E-04	3.78E-04	3.96E-04	4.14E-04	4.32E-04	4.32E-04
pa232	5.95E-12	6.48E-12	6.79E-12	7.10E-12	7.41E-12	7.13E-12

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 58

power= 4.000E-03mw, burnup=8.7659E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge 191757. d 200888. d 210019. d 219150. d 219150. d

pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.59E-21	1.67E-21	1.75E-21	1.83E-21	1.90E-21	1.90E-21
u231	5.10E-18	5.42E-18	5.68E-18	5.93E-18	6.19E-18	6.12E-18
u232	1.23E-07	1.29E-07	1.35E-07	1.41E-07	1.47E-07	1.47E-07
u233	6.80E-03	7.14E-03	7.48E-03	7.81E-03	8.15E-03	8.15E-03
u234	9.10E+00	9.11E+00	9.11E+00	9.11E+00	9.12E+00	9.12E+00
u235	7.27E+02	7.26E+02	7.26E+02	7.26E+02	7.26E+02	7.26E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.08E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.54E-08	3.18E-07	3.18E-07	3.18E-07	3.17E-07	1.54E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.63E-12	8.64E-12	8.64E-12	8.64E-12	8.63E-12	8.63E-12
np236m	1.95E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.95E-12
np236	9.88E-08	1.04E-07	1.08E-07	1.13E-07	1.18E-07	1.18E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.52E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.52E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.96E-15	9.31E-15	9.31E-15	9.31E-15	9.31E-15	2.96E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.44E-13	2.46E-13	2.47E-13	2.49E-13	2.50E-13	2.50E-13
pu238	2.30E-02	2.31E-02	2.32E-02	2.32E-02	2.33E-02	2.33E-02
pu239	2.46E+00	2.58E+00	2.70E+00	2.82E+00	2.94E+00	2.94E+00
pu240	5.95E-03	6.54E-03	7.17E-03	7.82E-03	8.49E-03	8.49E-03
pu241	2.25E-06	2.49E-06	2.74E-06	2.99E-06	3.26E-06	3.26E-06
pu242	7.36E-09	8.79E-09	1.04E-08	1.22E-08	1.43E-08	1.43E-08
pu243	1.22E-17	1.85E-17	2.19E-17	2.58E-17	3.01E-17	2.37E-17
pu244	1.54E-36	2.54E-36	4.08E-36	6.41E-36	9.87E-36	9.87E-36
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.65E-21	4.64E-21	5.31E-21	6.03E-21	6.80E-21	6.16E-21
am240	1.80E-18	2.13E-18	2.43E-18	2.76E-18	3.11E-18	3.04E-18
am241	1.47E-05	1.69E-05	1.94E-05	2.20E-05	2.48E-05	2.48E-05
am242m	3.07E-09	3.65E-09	4.30E-09	5.02E-09	5.82E-09	5.82E-09
am242	5.14E-13	6.35E-13	7.27E-13	8.27E-13	9.35E-13	8.74E-13
am243	1.09E-11	1.37E-11	1.70E-11	2.08E-11	2.53E-11	2.53E-11
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	7.37E-20	1.04E-19	1.29E-19	1.58E-19	1.92E-19	1.71E-19
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	3.19E-23	3.69E-23	4.23E-23	4.81E-23	5.44E-23	5.43E-23
cm242	1.11E-10	1.28E-10	1.47E-10	1.67E-10	1.89E-10	1.89E-10
cm243	3.48E-17	4.08E-17	4.74E-17	5.47E-17	6.26E-17	6.26E-17
cm244	1.04E-15	1.31E-15	1.65E-15	2.04E-15	2.50E-15	2.50E-15

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 59
power= 4.000E-03mw, burnup=8.7659E+02mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 191757. d 200888. d 210019. d 219150. d 219150. d				
cm245	9.12E-20	1.22E-19	1.61E-19	2.09E-19	2.68E-19	2.68E-19
cm246	3.70E-23	5.22E-23	7.23E-23	9.86E-23	1.33E-22	1.33E-22
cm247	2.46E-28	3.66E-28	5.33E-28	7.62E-28	1.07E-27	1.07E-27
cm248	1.69E-32	2.64E-32	4.04E-32	6.06E-32	8.91E-32	8.91E-32

```
     cm249    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.69E+08  2.69E+08  2.69E+08  2.69E+08  2.69E-07
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  7 of library on unit 33.

          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 "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:  ft33f001
0                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
0
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   60
```

power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 basis =
0 (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

	initial	228282. d	237413. d	246544. d	255675. d	255676. d
productions	1.142991E+06	1.143166E+06	1.143341E+06	1.143515E+06	1.143689E+06	1.143689E+06
absorptions	9.344589E+05	9.346578E+05	9.348529E+05	9.350456E+05	9.352355E+05	9.352354E+05
k infinity	1.223158E+00	1.223085E+00	1.223017E+00	1.222951E+00	1.222888E+00	1.222889E+00

0

	initial	228282. d	237413. d	246544. d	255675. d	255676. d
actinide absorptions	9.279626E+05	9.280671E+05	9.281709E+05	9.282748E+05	9.283785E+05	9.283785E+05
non-actinide abs. fracs.	6.951928E-03	7.051468E-03	7.147670E-03	7.241130E-03	7.331848E-03	7.331789E-03

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 61
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0

	initial 228282. d	237413. d	246544. d	255675. d	255676. d
sm149	3.03E-03	3.11E-03	3.18E-03	3.26E-03	3.33E-03	3.33E-03
eu151	1.05E-04	1.10E-04	1.15E-04	1.21E-04	1.26E-04	1.26E-04
nd143	8.85E-05	9.21E-05	9.58E-05	9.94E-05	1.03E-04	1.03E-04
gd155	5.09E-05	5.27E-05	5.45E-05	5.63E-05	5.80E-05	5.80E-05
rh103	4.12E-05	4.29E-05	4.46E-05	4.64E-05	4.81E-05	4.81E-05
sm151	3.96E-05	3.97E-05	3.98E-05	3.98E-05	3.98E-05	3.98E-05
cd113	3.14E-05	3.25E-05	3.35E-05	3.45E-05	3.55E-05	3.55E-05
xe131	2.79E-05	2.91E-05	3.03E-05	3.14E-05	3.26E-05	3.26E-05
gd157	2.69E-05	2.75E-05	2.80E-05	2.86E-05	2.91E-05	2.91E-05
cs133	2.17E-05	2.26E-05	2.35E-05	2.44E-05	2.53E-05	2.53E-05
sm147	1.60E-05	1.66E-05	1.73E-05	1.80E-05	1.86E-05	1.86E-05
tc 99	1.59E-05	1.66E-05	1.73E-05	1.79E-05	1.86E-05	1.86E-05
nd145	1.24E-05	1.29E-05	1.34E-05	1.39E-05	1.44E-05	1.44E-05
mo 95	8.57E-06	8.92E-06	9.28E-06	9.63E-06	9.99E-06	9.99E-06
sm152	6.80E-06	7.09E-06	7.38E-06	7.67E-06	7.97E-06	7.97E-06
kr 83	5.37E-06	5.59E-06	5.82E-06	6.04E-06	6.26E-06	6.26E-06
cs135	4.89E-06	5.09E-06	5.30E-06	5.50E-06	5.70E-06	5.70E-06
ru101	3.79E-06	3.94E-06	4.10E-06	4.26E-06	4.41E-06	4.41E-06
pr141	3.66E-06	3.81E-06	3.96E-06	4.11E-06	4.27E-06	4.27E-06
eu153	3.34E-06	3.47E-06	3.61E-06	3.75E-06	3.89E-06	3.89E-06
la139	2.99E-06	3.12E-06	3.24E-06	3.36E-06	3.49E-06	3.49E-06
sm150	2.15E-06	2.31E-06	2.47E-06	2.64E-06	2.81E-06	2.81E-06
xe135	2.29E-06	2.32E-06	2.32E-06	2.32E-06	2.32E-06	2.29E-06
ba137	1.33E-06	1.39E-06	1.45E-06	1.51E-06	1.57E-06	1.57E-06
pd105	1.28E-06	1.33E-06	1.39E-06	1.44E-06	1.50E-06	1.50E-06
zr 93	1.21E-06	1.26E-06	1.31E-06	1.36E-06	1.41E-06	1.41E-06
i129	9.33E-07	9.72E-07	1.01E-06	1.05E-06	1.09E-06	1.09E-06
nd144	8.98E-07	9.36E-07	9.73E-07	1.01E-06	1.05E-06	1.05E-06
mo 97	6.78E-07	7.06E-07	7.34E-07	7.63E-07	7.91E-07	7.91E-07
ag109	5.56E-07	5.83E-07	6.10E-07	6.37E-07	6.65E-07	6.65E-07
zr 91	3.19E-07	3.32E-07	3.46E-07	3.59E-07	3.72E-07	3.72E-07
y 89	3.06E-07	3.19E-07	3.32E-07	3.44E-07	3.57E-07	3.57E-07
ru102	2.77E-07	2.88E-07	3.00E-07	3.11E-07	3.23E-07	3.23E-07
ce142	2.49E-07	2.59E-07	2.70E-07	2.80E-07	2.90E-07	2.90E-07
nd148	2.39E-07	2.49E-07	2.59E-07	2.69E-07	2.79E-07	2.79E-07
pm147	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.69E-07	2.69E-07
nd146	2.01E-07	2.09E-07	2.18E-07	2.26E-07	2.34E-07	2.34E-07
pd108	1.77E-07	1.85E-07	1.93E-07	2.01E-07	2.09E-07	2.09E-07
ba138	1.72E-07	1.79E-07	1.86E-07	1.93E-07	2.00E-07	2.00E-07
in115	1.66E-07	1.73E-07	1.80E-07	1.87E-07	1.94E-07	1.94E-07
ce140	1.61E-07	1.67E-07	1.74E-07	1.81E-07	1.87E-07	1.87E-07
xe132	1.44E-07	1.50E-07	1.56E-07	1.62E-07	1.68E-07	1.68E-07
eu155	1.62E-07	1.62E-07	1.62E-07	1.62E-07	1.63E-07	1.63E-07

pd107	1.02E-07	1.07E-07	1.11E-07	1.16E-07	1.21E-07	1.21E-07
mo 98	9.91E-08	1.03E-07	1.07E-07	1.11E-07	1.16E-07	1.16E-07
mo100	9.61E-08	1.00E-07	1.04E-07	1.08E-07	1.12E-07	1.12E-07
xe134	9.49E-08	9.88E-08	1.03E-07	1.07E-07	1.11E-07	1.11E-07
zr 92	7.69E-08	8.01E-08	8.33E-08	8.65E-08	8.96E-08	8.96E-08
i127	6.29E-08	6.55E-08	6.82E-08	7.08E-08	7.34E-08	7.34E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 62
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 228282. d 237413. d 246544. d 255675. d 255676. d

zr 96	6.02E-08	6.27E-08	6.52E-08	6.76E-08	7.01E-08	7.01E-08
ru104	5.95E-08	6.20E-08	6.45E-08	6.70E-08	6.95E-08	6.95E-08
nd150	5.30E-08	5.52E-08	5.74E-08	5.96E-08	6.18E-08	6.18E-08
xe136	5.13E-08	5.34E-08	5.55E-08	5.77E-08	5.98E-08	5.98E-08
br 81	3.84E-08	4.00E-08	4.16E-08	4.32E-08	4.47E-08	4.47E-08
rb 85	3.73E-08	3.88E-08	4.04E-08	4.19E-08	4.35E-08	4.35E-08
gd152	2.99E-08	3.29E-08	3.61E-08	3.95E-08	4.30E-08	4.30E-08
zr 94	3.25E-08	3.38E-08	3.52E-08	3.65E-08	3.78E-08	3.78E-08
zr 90	2.82E-08	2.94E-08	3.07E-08	3.19E-08	3.32E-08	3.32E-08
eu152	2.63E-08	2.77E-08	2.91E-08	3.05E-08	3.19E-08	3.19E-08
cd111	2.62E-08	2.73E-08	2.84E-08	2.96E-08	3.07E-08	3.07E-08
te130	2.33E-08	2.43E-08	2.53E-08	2.62E-08	2.72E-08	2.72E-08
sm154	2.28E-08	2.37E-08	2.47E-08	2.56E-08	2.66E-08	2.66E-08
rb 87	2.17E-08	2.25E-08	2.34E-08	2.43E-08	2.52E-08	2.52E-08
se 77	1.55E-08	1.61E-08	1.67E-08	1.74E-08	1.80E-08	1.80E-08
sr 90	1.71E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08
pd106	1.13E-08	1.17E-08	1.22E-08	1.27E-08	1.32E-08	1.32E-08
kr 84	1.02E-08	1.06E-08	1.10E-08	1.15E-08	1.19E-08	1.19E-08
se 79	7.92E-09	8.25E-09	8.58E-09	8.91E-09	9.23E-09	9.23E-09
sb121	7.55E-09	7.86E-09	8.18E-09	8.49E-09	8.81E-09	8.81E-09
rh105	8.56E-09	8.59E-09	8.60E-09	8.61E-09	8.62E-09	8.59E-09
sb123	6.13E-09	6.39E-09	6.65E-09	6.90E-09	7.16E-09	7.16E-09
kr 86	5.71E-09	5.95E-09	6.19E-09	6.42E-09	6.66E-09	6.66E-09
gd156	5.34E-09	5.63E-09	5.91E-09	6.20E-09	6.49E-09	6.49E-09
te128	5.11E-09	5.32E-09	5.53E-09	5.75E-09	5.96E-09	5.96E-09
dy161	3.68E-09	3.85E-09	4.03E-09	4.20E-09	4.38E-09	4.38E-09
se 80	3.69E-09	3.84E-09	4.00E-09	4.15E-09	4.30E-09	4.30E-09
te125	3.23E-09	3.37E-09	3.50E-09	3.64E-09	3.78E-09	3.78E-09
cs137	3.76E-09	3.76E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09
ru 99	2.55E-09	2.77E-09	2.99E-09	3.22E-09	3.46E-09	3.46E-09
tb159	2.30E-09	2.40E-09	2.51E-09	2.61E-09	2.71E-09	2.71E-09
pr143	2.66E-09	2.66E-09	2.66E-09	2.65E-09	2.65E-09	2.65E-09
cd112	2.14E-09	2.23E-09	2.33E-09	2.42E-09	2.51E-09	2.51E-09
li 6	2.09E-09	2.18E-09	2.27E-09	2.35E-09	2.44E-09	2.44E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
sn117	1.68E-09	1.75E-09	1.82E-09	1.89E-09	1.96E-09	1.96E-09
eu154	1.67E-09	1.75E-09	1.82E-09	1.89E-09	1.96E-09	1.96E-09
gd154	1.31E-09	1.42E-09	1.54E-09	1.66E-09	1.79E-09	1.79E-09
gd158	1.34E-09	1.42E-09	1.49E-09	1.57E-09	1.65E-09	1.65E-09
sn119	1.38E-09	1.43E-09	1.49E-09	1.55E-09	1.61E-09	1.61E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
sn115	1.26E-09	1.31E-09	1.37E-09	1.42E-09	1.47E-09	1.47E-09
sr 88	1.05E-09	1.09E-09	1.14E-09	1.18E-09	1.22E-09	1.22E-09
cd114	8.93E-10	9.37E-10	9.81E-10	1.03E-09	1.07E-09	1.07E-09
pm149	9.69E-10	9.75E-10	9.74E-10	9.74E-10	9.74E-10	9.69E-10
pd110	7.94E-10	8.29E-10	8.64E-10	9.00E-10	9.35E-10	9.35E-10
nd147	9.22E-10	9.25E-10	9.25E-10	9.25E-10	9.24E-10	9.21E-10
se 82	7.13E-10	7.42E-10	7.72E-10	8.01E-10	8.31E-10	8.31E-10
sn126	5.82E-10	6.07E-10	6.31E-10	6.56E-10	6.81E-10	6.81E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 63
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 228282. d 237413. d 246544. d 255675. d 255676. d

dy164	5.31E-10	5.60E-10	5.89E-10	6.19E-10	6.49E-10	6.49E-10
dy162	5.35E-10	5.62E-10	5.90E-10	6.18E-10	6.47E-10	6.47E-10
se 78	5.41E-10	5.63E-10	5.86E-10	6.08E-10	6.31E-10	6.31E-10
ce144	5.98E-10	5.98E-10	5.98E-10	5.98E-10	5.98E-10	5.98E-10
ru100	4.37E-10	4.74E-10	5.12E-10	5.51E-10	5.92E-10	5.92E-10
kr 85	5.71E-10	5.70E-10	5.70E-10	5.70E-10	5.70E-10	5.70E-10
sn124	4.36E-10	4.54E-10	4.73E-10	4.91E-10	5.09E-10	5.09E-10
nd142	3.02E-10	3.28E-10	3.55E-10	3.82E-10	4.11E-10	4.11E-10
ba134	2.90E-10	3.14E-10	3.40E-10	3.66E-10	3.94E-10	3.94E-10
as 75	3.22E-10	3.35E-10	3.49E-10	3.62E-10	3.75E-10	3.75E-10
sm148	2.71E-10	2.94E-10	3.17E-10	3.42E-10	3.67E-10	3.67E-10
ru103	3.59E-10	3.59E-10	3.59E-10	3.59E-10	3.60E-10	3.59E-10
ba135	2.37E-10	2.57E-10	2.78E-10	3.00E-10	3.22E-10	3.22E-10
in113	2.35E-10	2.45E-10	2.56E-10	2.66E-10	2.76E-10	2.76E-10
pd104	1.98E-10	2.15E-10	2.32E-10	2.50E-10	2.69E-10	2.69E-10
ba136	1.97E-10	2.06E-10	2.16E-10	2.25E-10	2.35E-10	2.35E-10
sn118	1.78E-10	1.85E-10	1.92E-10	2.00E-10	2.07E-10	2.07E-10
cs134	1.62E-10	1.68E-10	1.75E-10	1.82E-10	1.88E-10	1.88E-10
sn122	1.51E-10	1.57E-10	1.64E-10	1.70E-10	1.76E-10	1.76E-10
cd116	1.51E-10	1.57E-10	1.64E-10	1.70E-10	1.76E-10	1.76E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10
dy163	1.24E-10	1.30E-10	1.37E-10	1.44E-10	1.51E-10	1.51E-10
kr 82	1.22E-10	1.28E-10	1.34E-10	1.40E-10	1.47E-10	1.47E-10
y 91	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
mo 96	1.06E-10	1.13E-10	1.21E-10	1.28E-10	1.36E-10	1.36E-10
sn120	1.13E-10	1.18E-10	1.22E-10	1.27E-10	1.32E-10	1.32E-10
xe130	8.98E-11	9.49E-11	1.00E-10	1.05E-10	1.11E-10	1.11E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.07E-10
ge 73	8.83E-11	9.19E-11	9.56E-11	9.93E-11	1.03E-10	1.03E-10
nb 93	3.56E-11	3.87E-11	4.20E-11	4.54E-11	4.89E-11	4.89E-11
ba140	4.70E-11	4.71E-11	4.71E-11	4.71E-11	4.71E-11	4.69E-11
cd110	2.91E-11	3.17E-11	3.44E-11	3.72E-11	4.02E-11	4.02E-11
sm153	3.78E-11	3.87E-11	3.87E-11	3.87E-11	3.87E-11	3.78E-11
ge 76	3.19E-11	3.32E-11	3.45E-11	3.58E-11	3.72E-11	3.72E-11
eu156	3.59E-11	3.60E-11	3.61E-11	3.61E-11	3.62E-11	3.62E-11
sr 89	3.05E-11	3.05E-11	3.05E-11	3.05E-11	3.05E-11	3.05E-11
te126	2.21E-11	2.34E-11	2.46E-11	2.58E-11	2.71E-11	2.71E-11
ru106	2.67E-11	2.68E-11	2.69E-11	2.69E-11	2.70E-11	2.70E-11
br 79	1.93E-11	2.10E-11	2.27E-11	2.45E-11	2.63E-11	2.63E-11
gd160	2.19E-11	2.29E-11	2.39E-11	2.49E-11	2.59E-11	2.59E-11
ce143	1.69E-11	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.69E-11
y 90	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
sb125	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
xe129	1.10E-11	1.19E-11	1.29E-11	1.39E-11	1.49E-11	1.49E-11
ag107	1.07E-11	1.17E-11	1.26E-11	1.36E-11	1.47E-11	1.47E-11
mo 99	1.28E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.28E-11
ho165	8.69E-12	9.15E-12	9.63E-12	1.01E-11	1.06E-11	1.06E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 64
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 228282. d 237413. d 246544. d 255675. d 255676. d

pm148m	9.50E-12	9.52E-12	9.52E-12	9.52E-12	9.52E-12	9.50E-12

kr 87	9.11E-12	2.28E-11	2.28E-11	2.28E-11	2.28E-11	9.09E-12
te127m	7.58E-12	7.59E-12	7.59E-12	7.60E-12	7.60E-12	7.60E-12
i131	6.74E-12	6.76E-12	6.76E-12	6.76E-12	6.75E-12	6.74E-12
te124	4.00E-12	4.18E-12	4.36E-12	4.54E-12	4.72E-12	4.72E-12
sr 87	3.70E-12	3.85E-12	4.01E-12	4.16E-12	4.32E-12	4.32E-12
nb 94	2.10E-12	2.18E-12	2.27E-12	2.36E-12	2.45E-12	2.45E-12
dy160	1.56E-12	1.68E-12	1.82E-12	1.95E-12	2.10E-12	2.10E-12
ge 74	1.78E-12	1.86E-12	1.93E-12	2.00E-12	2.08E-12	2.08E-12
sr 86	1.56E-12	1.65E-12	1.74E-12	1.83E-12	1.93E-12	1.93E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
xe128	1.23E-12	1.33E-12	1.43E-12	1.53E-12	1.64E-12	1.64E-12
ge 72	1.21E-12	1.26E-12	1.31E-12	1.36E-12	1.41E-12	1.41E-12
se 76	8.20E-13	8.60E-13	9.00E-13	9.41E-13	9.81E-13	9.81E-13
sn116	4.19E-13	4.54E-13	4.91E-13	5.30E-13	5.70E-13	5.70E-13
er166	3.34E-13	3.55E-13	3.77E-13	3.99E-13	4.22E-13	4.22E-13
pm148	3.63E-13	3.66E-13	3.66E-13	3.66E-13	3.66E-13	3.63E-13
ag111	3.45E-13	3.48E-13	3.50E-13	3.51E-13	3.52E-13	3.51E-13
eu157	2.96E-13	3.18E-13	3.19E-13	3.20E-13	3.21E-13	3.00E-13
te122	1.80E-13	1.95E-13	2.10E-13	2.26E-13	2.43E-13	2.43E-13
cd115m	2.40E-13	2.40E-13	2.40E-13	2.40E-13	2.40E-13	2.40E-13
cs136	7.15E-14	7.24E-14	7.31E-14	7.37E-14	7.44E-14	7.41E-14
kr 80	5.49E-14	5.74E-14	5.99E-14	6.25E-14	6.51E-14	6.51E-14
sn125	2.93E-14	2.94E-14	2.94E-14	2.94E-14	2.94E-14	2.93E-14
ru105	2.39E-14	3.03E-14	3.03E-14	3.04E-14	3.04E-14	2.40E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.41E-15	9.55E-15	9.55E-15	9.54E-15	9.54E-15	9.40E-15
rb 88	9.24E-15	1.28E-14	1.28E-14	1.28E-14	1.28E-14	9.22E-15
i135	8.47E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.46E-15
tb160	6.70E-15	6.99E-15	7.26E-15	7.54E-15	7.82E-15	7.82E-15
te123	4.70E-15	4.96E-15	5.22E-15	5.49E-15	5.77E-15	5.77E-15
er167	3.71E-15	4.03E-15	4.35E-15	4.70E-15	5.06E-15	5.06E-15
be 9	3.97E-15	4.14E-15	4.30E-15	4.47E-15	4.63E-15	4.63E-15
pr142	3.89E-15	4.31E-15	4.48E-15	4.65E-15	4.82E-15	4.53E-15
sb126	4.03E-15	4.09E-15	4.13E-15	4.17E-15	4.22E-15	4.20E-15
sb124	2.41E-15	2.42E-15	2.43E-15	2.45E-15	2.46E-15	2.46E-15
in117m	1.94E-15	2.15E-15	2.16E-15	2.16E-15	2.16E-15	1.94E-15
li 7	1.62E-15	1.69E-15	1.75E-15	1.82E-15	1.89E-15	1.89E-15
i130	1.35E-15	1.51E-15	1.54E-15	1.57E-15	1.60E-15	1.46E-15
te134	1.07E-15	5.83E-15	5.83E-15	5.83E-15	5.83E-15	1.07E-15
in117	5.76E-16	6.35E-16	6.35E-16	6.36E-16	6.37E-16	5.78E-16
rb 86	4.84E-16	4.95E-16	5.05E-16	5.16E-16	5.26E-16	5.24E-16
dy165	2.29E-16	3.78E-16	3.85E-16	3.92E-16	3.98E-16	2.46E-16
cd108	1.20E-16	1.31E-16	1.42E-16	1.54E-16	1.66E-16	1.66E-16
sn114	9.77E-17	1.06E-16	1.15E-16	1.25E-16	1.34E-16	1.34E-16
ge 75	3.77E-17	8.64E-17	8.64E-17	8.64E-17	8.64E-17	3.77E-17
cd118	2.99E-17	1.22E-16	1.22E-16	1.22E-16	1.22E-16	2.99E-17
cs134m	2.02E-17	3.16E-17	3.28E-17	3.41E-17	3.53E-17	2.35E-17
cd109	1.21E-18	1.26E-18	1.30E-18	1.34E-18	1.38E-18	1.38E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 65
0 fraction of total absorption rate
power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 228282. d 237413. d 246544. d 255675. d 255676. d

in119m	6.96E-19	3.05E-17	3.05E-17	3.05E-17	3.05E-17	6.95E-19
in119	3.36E-21	2.40E-18	2.40E-18	2.40E-18	2.40E-18	3.36E-21

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 66
power= 4.000E-03mw, burnup=1.0227E+03mwd, flux= 2.69E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	228282. d	237413. d	246544. d	255675. d	255676. d
h	1	5.16E-05	5.37E-05	5.59E-05	5.80E-05	6.01E-05	6.01E-05
h	2	1.53E-07	1.59E-07	1.66E-07	1.72E-07	1.79E-07	1.79E-07
h	3	3.46E-11	3.48E-11	3.48E-11	3.49E-11	3.50E-11	3.50E-11
h	4	.00E+00	1.41E-34	1.41E-34	1.41E-34	1.42E-34	.00E+00
he	3	1.09E-09	1.13E-09	1.18E-09	1.23E-09	1.27E-09	1.27E-09
he	4	8.53E-06	8.88E-06	9.24E-06	9.59E-06	9.94E-06	9.94E-06
he	6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne	20	1.02E-06	1.07E-06	1.11E-06	1.15E-06	1.19E-06	1.19E-06
ne	21	1.86E-11	2.01E-11	2.17E-11	2.33E-11	2.50E-11	2.50E-11
ne	22	6.64E-09	6.91E-09	7.19E-09	7.47E-09	7.75E-09	7.75E-09
ne	23	7.07E-30	7.08E-15	7.08E-15	7.08E-15	7.08E-15	7.08E-30
na	22	4.16E-11	4.17E-11	4.17E-11	4.17E-11	4.16E-11	4.16E-11
na	23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na	24	2.54E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.54E-08
na	24m	4.52E-30	4.52E-15	4.52E-15	4.52E-15	4.52E-15	4.52E-30
na	25	8.55E-41	9.13E-26	9.71E-26	1.03E-25	1.09E-25	1.09E-40
mg	24	7.40E-03	7.68E-03	7.97E-03	8.25E-03	8.54E-03	8.54E-03
mg	25	3.00E-09	3.19E-09	3.40E-09	3.61E-09	3.82E-09	3.82E-09
mg	26	1.53E-07	1.59E-07	1.66E-07	1.72E-07	1.78E-07	1.78E-07
mg	27	1.17E-15	2.12E-12	2.12E-12	2.11E-12	2.11E-12	1.17E-15
mg	28	4.06E-24	4.31E-24	4.30E-24	4.30E-24	4.30E-24	4.07E-24
al	27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al	28	3.74E-24	2.04E-10	2.04E-10	2.04E-10	2.04E-10	3.74E-24
al	29	9.03E-29	4.83E-24	5.21E-24	5.59E-24	5.99E-24	1.21E-28
al	30	.00E+00	5.77E-35	6.46E-35	7.21E-35	8.01E-35	.00E+00
si	28	2.15E-02	2.24E-02	2.32E-02	2.40E-02	2.48E-02	2.48E-02
si	29	1.75E-08	1.89E-08	2.03E-08	2.19E-08	2.34E-08	2.34E-08
si	30	1.50E-14	1.69E-14	1.89E-14	2.11E-14	2.34E-14	2.34E-14
si	31	6.84E-27	1.21E-26	1.35E-26	1.51E-26	1.68E-26	1.07E-26
si	32	7.69E-33	8.88E-33	1.02E-32	1.16E-32	1.32E-32	1.32E-32
totals		5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux			2.69E+08	2.69E+08	2.69E+08	2.69E+08	2.69E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 67
power= 4.000E-03mw, burnup=1.0227E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	228282. d	237413. d	246544. d	255675. d	255676. d
he	4	1.45E-01	1.53E-01	1.61E-01	1.69E-01	1.78E-01	1.78E-01
pb206		2.96E-06	3.36E-06	3.79E-06	4.26E-06	4.76E-06	4.76E-06
pb207		2.47E-06	2.69E-06	2.93E-06	3.17E-06	3.42E-06	3.42E-06
pb208		4.48E-07	4.86E-07	5.25E-07	5.65E-07	6.08E-07	6.08E-07
pb209		4.97E-13	5.35E-13	5.78E-13	6.23E-13	6.69E-13	6.74E-13
pb210		4.88E-07	5.30E-07	5.73E-07	6.18E-07	6.65E-07	6.65E-07
pb211		8.58E-13	8.96E-13	9.34E-13	9.72E-13	1.01E-12	1.01E-12
pb212		2.61E-12	2.72E-12	2.82E-12	2.93E-12	3.04E-12	3.04E-12
pb214		1.20E-12	1.34E-12	1.44E-12	1.55E-12	1.66E-12	1.61E-12
bi208		.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209		1.85E-07	2.09E-07	2.35E-07	2.63E-07	2.93E-07	2.93E-07
bi210m		.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210		3.00E-10	3.26E-10	3.53E-10	3.81E-10	4.09E-10	4.09E-10
bi211		5.13E-14	5.31E-14	5.54E-14	5.76E-14	5.99E-14	6.04E-14
bi212		2.48E-13	2.58E-13	2.68E-13	2.78E-13	2.88E-13	2.88E-13
bi213		1.12E-13	1.25E-13	1.35E-13	1.45E-13	1.56E-13	1.52E-13
bi214		9.06E-13	9.93E-13	1.07E-12	1.15E-12	1.23E-12	1.22E-12
po210		8.29E-09	9.01E-09	9.75E-09	1.05E-08	1.13E-08	1.13E-08
po211m		.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211		5.67E-19	5.87E-19	6.12E-19	6.37E-19	6.62E-19	6.67E-19
po212		1.30E-23	1.35E-23	1.41E-23	1.46E-23	1.51E-23	1.51E-23

po213	1.68E-22	1.88E-22	2.03E-22	2.19E-22	2.35E-22	2.28E-22
po214	1.25E-19	1.37E-19	1.47E-19	1.58E-19	1.70E-19	1.67E-19
po215	7.06E-19	7.37E-19	7.68E-19	7.99E-19	8.30E-19	8.30E-19
po216	9.88E-18	1.03E-17	1.07E-17	1.11E-17	1.15E-17	1.15E-17
po218	1.43E-13	1.55E-13	1.67E-13	1.79E-13	1.92E-13	1.92E-13
rn218	3.71E-29	3.86E-29	4.01E-29	4.16E-29	4.32E-29	4.32E-29
rn219	1.57E-15	1.64E-15	1.71E-15	1.78E-15	1.85E-15	1.85E-15
rn220	3.79E-15	3.94E-15	4.10E-15	4.25E-15	4.41E-15	4.41E-15
rn222	2.54E-10	2.75E-10	2.96E-10	3.18E-10	3.41E-10	3.41E-10
ra222	4.03E-26	4.19E-26	4.36E-26	4.52E-26	4.69E-26	4.69E-26
ra223	3.92E-10	4.09E-10	4.26E-10	4.43E-10	4.61E-10	4.61E-10
ra224	2.15E-11	2.24E-11	2.33E-11	2.42E-11	2.51E-11	2.51E-11
ra225	5.39E-11	5.84E-11	6.31E-11	6.80E-11	7.31E-11	7.31E-11
ra226	3.88E-05	4.20E-05	4.52E-05	4.86E-05	5.21E-05	5.21E-05
ra228	1.25E-12	1.31E-12	1.36E-12	1.41E-12	1.46E-12	1.46E-12
ac225	3.64E-11	3.95E-11	4.27E-11	4.60E-11	4.94E-11	4.94E-11
ac227	2.72E-07	2.84E-07	2.96E-07	3.08E-07	3.20E-07	3.20E-07
ac228	1.53E-16	1.59E-16	1.66E-16	1.72E-16	1.79E-16	1.79E-16
th226	1.96E-24	2.05E-24	2.13E-24	2.21E-24	2.29E-24	2.28E-24
th227	6.32E-10	6.60E-10	6.88E-10	7.16E-10	7.43E-10	7.43E-10
th228	4.11E-09	4.28E-09	4.45E-09	4.62E-09	4.79E-09	4.79E-09
th229	1.05E-05	1.14E-05	1.23E-05	1.32E-05	1.42E-05	1.42E-05
th230	1.53E-02	1.60E-02	1.66E-02	1.72E-02	1.79E-02	1.79E-02
th231	3.07E-09	3.07E-09	3.08E-09	3.08E-09	3.08E-09	3.08E-09
th232	3.10E-03	3.23E-03	3.36E-03	3.49E-03	3.62E-03	3.62E-03
th233	1.18E-15	2.96E-14	3.08E-14	3.19E-14	3.31E-14	1.37E-15
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	4.32E-04	4.50E-04	4.68E-04	4.86E-04	5.04E-04	5.04E-04
pa232	7.13E-12	7.72E-12	8.02E-12	8.33E-12	8.64E-12	8.32E-12

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 68
power= 4.000E-03mw, burnup=1.0227E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	228282. d	237413. d	246544. d	255675. d	255676. d
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.90E-21	1.98E-21	2.06E-21	2.14E-21	2.22E-21	2.21E-21
u231	6.12E-18	6.45E-18	6.70E-18	6.96E-18	7.22E-18	7.13E-18
u232	1.47E-07	1.53E-07	1.59E-07	1.65E-07	1.71E-07	1.71E-07
u233	8.15E-03	8.49E-03	8.83E-03	9.17E-03	9.51E-03	9.51E-03
u234	9.12E+00	9.12E+00	9.13E+00	9.13E+00	9.13E+00	9.13E+00
u235	7.26E+02	7.26E+02	7.26E+02	7.25E+02	7.25E+02	7.25E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.09E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.09E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.54E-08	3.18E-07	3.18E-07	3.17E-07	3.17E-07	1.54E-08
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.63E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12
np236m	1.95E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.95E-12
np236	1.18E-07	1.23E-07	1.28E-07	1.33E-07	1.38E-07	1.38E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.51E-06
np239	4.52E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.52E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.96E-15	9.31E-15	9.31E-15	9.30E-15	9.30E-15	2.96E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
     pu236   1.11E-09  1.11E-09  1.11E-09  1.11E-09  1.11E-09  1.11E-09
     pu237   2.50E-13  2.52E-13  2.53E-13  2.54E-13  2.55E-13  2.55E-13
     pu238   2.33E-02  2.33E-02  2.33E-02  2.33E-02  2.33E-02  2.33E-02
     pu239   2.94E+00  3.05E+00  3.17E+00  3.29E+00  3.41E+00  3.41E+00
     pu240   8.49E-03  9.19E-03  9.92E-03  1.07E-02  1.15E-02  1.15E-02
     pu241   3.26E-06  3.54E-06  3.83E-06  4.13E-06  4.45E-06  4.45E-06
     pu242   1.43E-08  1.66E-08  1.91E-08  2.19E-08  2.50E-08  2.50E-08
     pu243   2.37E-17  3.49E-17  4.03E-17  4.62E-17  5.27E-17  4.15E-17
     pu244   9.87E-36  1.49E-35  2.22E-35  3.24E-35  4.67E-35  4.67E-35
     pu245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   6.16E-21  7.64E-21  8.53E-21  9.48E-21  1.05E-20  9.50E-21
     am240   3.04E-18  3.50E-18  3.91E-18  4.34E-18  4.81E-18  4.70E-18
     am241   2.48E-05  2.79E-05  3.11E-05  3.46E-05  3.83E-05  3.83E-05
     am242m  5.82E-09  6.70E-09  7.66E-09  8.71E-09  9.84E-09  9.84E-09
     am242   8.74E-13  1.05E-12  1.18E-12  1.31E-12  1.45E-12  1.36E-12
     am243   2.53E-11  3.05E-11  3.64E-11  4.32E-11  5.09E-11  5.09E-11
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   1.71E-19  2.32E-19  2.77E-19  3.28E-19  3.87E-19  3.44E-19
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   5.43E-23  6.12E-23  6.85E-23  7.63E-23  8.46E-23  8.45E-23
     cm242   1.89E-10  2.12E-10  2.38E-10  2.65E-10  2.94E-10  2.94E-10
     cm243   6.26E-17  7.12E-17  8.05E-17  9.06E-17  1.01E-16  1.01E-16
     cm244   2.50E-15  3.04E-15  3.66E-15  4.37E-15  5.18E-15  5.18E-15
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides         page   69
       power= 4.000E-03mw, burnup=1.0227E+03mwd, flux= 2.69E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
              charge 228282. d 237413. d 246544. d 255675. d 255676. d
     cm245   2.68E-19  3.41E-19  4.28E-19  5.33E-19  6.58E-19  6.58E-19
     cm246   1.33E-22  1.76E-22  2.31E-22  2.99E-22  3.83E-22  3.83E-22
     cm247   1.07E-27  1.49E-27  2.03E-27  2.74E-27  3.66E-27  3.66E-27
     cm248   8.91E-32  1.29E-31  1.84E-31  2.59E-31  3.59E-31  3.59E-31
     cm249    .00E+00  7.78E-42  7.78E-42  7.78E-42  7.78E-42  2.57E-42
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.69E+08  2.69E+08  2.69E+08  2.69E+08  2.69E-07
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  8 of library on unit 33.

          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 "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:  ft33f001
0                8/28/1996    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                     7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                      page   70
         power=     .00mw, burnup=    1169.mwd, flux= 2.69E+08n/cm**2-sec
0                                          basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial        264807. d      273938. d      283069. d      292201. d      292201. d
     productions    1.144583E+06   1.144756E+06   1.144929E+06   1.145102E+06   1.145274E+06   1.145274E+06
     absorptions    9.360666E+05   9.362543E+05   9.364396E+05   9.366226E+05   9.368034E+05   9.368033E+05
     k infinity     1.222758E+00   1.222698E+00   1.222641E+00   1.222586E+00   1.222534E+00   1.222534E+00
0                   initial        264807. d      273938. d      283069. d      292201. d      292201. d
     actinide
     absorptions    9.292053E+05   9.293088E+05   9.294123E+05   9.295153E+05   9.296181E+05   9.296181E+05
     non-actinide
     abs. fracs.    7.329941E-03   7.418394E-03   7.504284E-03   7.588327E-03   7.670045E-03   7.669985E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products          page   71
0                                   fraction of total absorption rate
         power=     .00mw, burnup=    1169.mwd, flux= 2.69E+08n/cm**2-sec
0                initial 264807. d 273938. d 283069. d 292201. d 292201. d

     sm149      3.33E-03  3.40E-03  3.46E-03  3.53E-03  3.59E-03  3.59E-03
     eu151      1.26E-04  1.31E-04  1.37E-04  1.42E-04  1.47E-04  1.47E-04
     nd143      1.03E-04  1.07E-04  1.10E-04  1.14E-04  1.18E-04  1.18E-04
     gd155      5.80E-05  5.98E-05  6.15E-05  6.31E-05  6.48E-05  6.48E-05
     rh103      4.81E-05  4.98E-05  5.15E-05  5.32E-05  5.49E-05  5.49E-05
     sm151      3.98E-05  3.99E-05  3.99E-05  3.99E-05  3.99E-05  3.99E-05
     cd113      3.55E-05  3.65E-05  3.74E-05  3.83E-05  3.93E-05  3.93E-05
     xe131      3.26E-05  3.37E-05  3.49E-05  3.60E-05  3.72E-05  3.72E-05
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gd157	2.91E-05	2.96E-05	3.01E-05	3.06E-05	3.10E-05	3.10E-05
cs133	2.53E-05	2.62E-05	2.71E-05	2.80E-05	2.89E-05	2.89E-05
sm147	1.86E-05	1.93E-05	2.00E-05	2.06E-05	2.13E-05	2.13E-05
tc 99	1.86E-05	1.92E-05	1.99E-05	2.05E-05	2.12E-05	2.12E-05
nd145	1.44E-05	1.49E-05	1.54E-05	1.60E-05	1.65E-05	1.65E-05
mo 95	9.99E-06	1.03E-05	1.07E-05	1.11E-05	1.14E-05	1.14E-05
sm152	7.97E-06	8.26E-06	8.55E-06	8.85E-06	9.14E-06	9.14E-06
kr 83	6.26E-06	6.48E-06	6.70E-06	6.92E-06	7.14E-06	7.14E-06
cs135	5.70E-06	5.90E-06	6.11E-06	6.31E-06	6.51E-06	6.51E-06
ru101	4.41E-06	4.57E-06	4.73E-06	4.88E-06	5.04E-06	5.04E-06
pr141	4.27E-06	4.42E-06	4.57E-06	4.72E-06	4.87E-06	4.87E-06
eu153	3.89E-06	4.03E-06	4.17E-06	4.31E-06	4.45E-06	4.45E-06
la139	3.49E-06	3.61E-06	3.74E-06	3.86E-06	3.98E-06	3.98E-06
sm150	2.81E-06	2.99E-06	3.16E-06	3.35E-06	3.53E-06	3.53E-06
xe135	2.28E-06	2.32E-06	2.32E-06	2.31E-06	2.31E-06	2.26E-06
ba137	1.57E-06	1.63E-06	1.69E-06	1.74E-06	1.80E-06	1.80E-06
pd105	1.50E-06	1.55E-06	1.61E-06	1.66E-06	1.71E-06	1.71E-06
zr 93	1.41E-06	1.46E-06	1.51E-06	1.56E-06	1.61E-06	1.61E-06
i129	1.09E-06	1.13E-06	1.17E-06	1.20E-06	1.24E-06	1.24E-06
nd144	1.05E-06	1.08E-06	1.12E-06	1.16E-06	1.20E-06	1.20E-06
mo 97	7.91E-07	8.19E-07	8.47E-07	8.75E-07	9.03E-07	9.03E-07
ag109	6.65E-07	6.93E-07	7.21E-07	7.49E-07	7.78E-07	7.78E-07
zr 91	3.72E-07	3.85E-07	3.98E-07	4.11E-07	4.25E-07	4.25E-07
y 89	3.57E-07	3.70E-07	3.82E-07	3.95E-07	4.07E-07	4.07E-07
ru102	3.23E-07	3.34E-07	3.46E-07	3.57E-07	3.69E-07	3.69E-07
ce142	2.90E-07	3.01E-07	3.11E-07	3.21E-07	3.32E-07	3.32E-07
nd148	2.79E-07	2.89E-07	2.99E-07	3.09E-07	3.18E-07	3.18E-07
pm147	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07
nd146	2.34E-07	2.42E-07	2.51E-07	2.59E-07	2.67E-07	2.67E-07
pd108	2.09E-07	2.17E-07	2.25E-07	2.34E-07	2.42E-07	2.42E-07
ba138	2.00E-07	2.07E-07	2.14E-07	2.21E-07	2.29E-07	2.29E-07
in115	1.94E-07	2.01E-07	2.08E-07	2.15E-07	2.22E-07	2.22E-07
ce140	1.87E-07	1.94E-07	2.01E-07	2.07E-07	2.14E-07	2.14E-07
xe132	1.68E-07	1.74E-07	1.80E-07	1.86E-07	1.92E-07	1.92E-07
eu155	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07	1.63E-07
pd107	1.21E-07	1.25E-07	1.30E-07	1.35E-07	1.39E-07	1.39E-07
mo 98	1.16E-07	1.20E-07	1.24E-07	1.28E-07	1.32E-07	1.32E-07
mo100	1.12E-07	1.16E-07	1.20E-07	1.24E-07	1.28E-07	1.28E-07
xe134	1.11E-07	1.14E-07	1.18E-07	1.22E-07	1.26E-07	1.26E-07
zr 92	8.96E-08	9.28E-08	9.60E-08	9.92E-08	1.02E-07	1.02E-07
i127	7.35E-08	7.61E-08	7.87E-08	8.14E-08	8.40E-08	8.40E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 72
0 fraction of total absorption rate
power= .00mw, burnup= 1169.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 264807. d 273938. d 283069. d 292201. d 292201. d

zr 96	7.02E-08	7.26E-08	7.51E-08	7.76E-08	8.01E-08	8.01E-08
ru104	6.95E-08	7.20E-08	7.44E-08	7.69E-08	7.94E-08	7.94E-08
nd150	6.18E-08	6.40E-08	6.62E-08	6.84E-08	7.06E-08	7.06E-08
xe136	5.98E-08	6.19E-08	6.40E-08	6.62E-08	6.83E-08	6.83E-08
gd152	4.30E-08	4.66E-08	5.04E-08	5.44E-08	5.85E-08	5.85E-08
br 81	4.47E-08	4.63E-08	4.79E-08	4.95E-08	5.11E-08	5.11E-08
rb 85	4.35E-08	4.50E-08	4.66E-08	4.81E-08	4.97E-08	4.97E-08
zr 94	3.78E-08	3.92E-08	4.05E-08	4.19E-08	4.32E-08	4.32E-08
zr 90	3.32E-08	3.44E-08	3.56E-08	3.69E-08	3.81E-08	3.81E-08
eu152	3.19E-08	3.33E-08	3.46E-08	3.60E-08	3.74E-08	3.74E-08
cd111	3.07E-08	3.19E-08	3.30E-08	3.42E-08	3.54E-08	3.54E-08
te130	2.72E-08	2.82E-08	2.91E-08	3.01E-08	3.11E-08	3.11E-08
sm154	2.66E-08	2.75E-08	2.85E-08	2.95E-08	3.04E-08	3.04E-08
rb 87	2.52E-08	2.61E-08	2.70E-08	2.79E-08	2.88E-08	2.88E-08

se 77	1.80E-08	1.86E-08	1.93E-08	1.99E-08	2.06E-08	2.06E-08
sr 90	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08
pd106	1.32E-08	1.37E-08	1.42E-08	1.47E-08	1.51E-08	1.51E-08
kr 84	1.19E-08	1.23E-08	1.27E-08	1.32E-08	1.36E-08	1.36E-08
se 79	9.23E-09	9.56E-09	9.89E-09	1.02E-08	1.05E-08	1.05E-08
sb121	8.81E-09	9.12E-09	9.44E-09	9.75E-09	1.01E-08	1.01E-08
rh105	8.59E-09	8.63E-09	8.64E-09	8.65E-09	8.66E-09	8.61E-09
sb123	7.16E-09	7.42E-09	7.67E-09	7.93E-09	8.18E-09	8.18E-09
gd156	6.49E-09	6.79E-09	7.09E-09	7.40E-09	7.71E-09	7.71E-09
kr 86	6.66E-09	6.89E-09	7.13E-09	7.36E-09	7.60E-09	7.60E-09
te128	5.96E-09	6.17E-09	6.39E-09	6.60E-09	6.81E-09	6.81E-09
dy161	4.38E-09	4.56E-09	4.74E-09	4.93E-09	5.11E-09	5.11E-09
se 80	4.30E-09	4.45E-09	4.61E-09	4.76E-09	4.91E-09	4.91E-09
ru 99	3.46E-09	3.70E-09	3.96E-09	4.22E-09	4.49E-09	4.49E-09
te125	3.78E-09	3.91E-09	4.05E-09	4.18E-09	4.32E-09	4.32E-09
cs137	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09
tb159	2.71E-09	2.81E-09	2.92E-09	3.02E-09	3.13E-09	3.13E-09
cd112	2.51E-09	2.60E-09	2.69E-09	2.78E-09	2.88E-09	2.88E-09
li 6	2.44E-09	2.52E-09	2.61E-09	2.70E-09	2.78E-09	2.78E-09
pr143	2.65E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09
gd154	1.79E-09	1.92E-09	2.06E-09	2.20E-09	2.34E-09	2.34E-09
sn117	1.96E-09	2.03E-09	2.10E-09	2.18E-09	2.25E-09	2.25E-09
eu154	1.96E-09	2.03E-09	2.10E-09	2.17E-09	2.24E-09	2.24E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
gd158	1.65E-09	1.73E-09	1.81E-09	1.89E-09	1.97E-09	1.97E-09
sn119	1.61E-09	1.66E-09	1.72E-09	1.78E-09	1.84E-09	1.84E-09
sn115	1.47E-09	1.52E-09	1.58E-09	1.63E-09	1.68E-09	1.68E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
sr 88	1.22E-09	1.27E-09	1.31E-09	1.35E-09	1.40E-09	1.40E-09
cd114	1.07E-09	1.12E-09	1.16E-09	1.21E-09	1.25E-09	1.25E-09
pd110	9.35E-10	9.71E-10	1.01E-09	1.04E-09	1.08E-09	1.08E-09
pm149	9.68E-10	9.74E-10	9.74E-10	9.74E-10	9.73E-10	9.64E-10
se 82	8.31E-10	8.60E-10	8.90E-10	9.19E-10	9.48E-10	9.48E-10
nd147	9.21E-10	9.24E-10	9.24E-10	9.24E-10	9.24E-10	9.19E-10
sn126	6.80E-10	7.05E-10	7.30E-10	7.54E-10	7.79E-10	7.79E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 73
0 fraction of total absorption rate
power= .00mw, burnup= 1169.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 264807. d 273938. d 283069. d 292201. d 292201. d

dy164	6.48E-10	6.79E-10	7.10E-10	7.42E-10	7.74E-10	7.74E-10
ru100	5.92E-10	6.35E-10	6.79E-10	7.24E-10	7.71E-10	7.71E-10
dy162	6.47E-10	6.76E-10	7.05E-10	7.35E-10	7.65E-10	7.65E-10
se 78	6.31E-10	6.53E-10	6.76E-10	6.98E-10	7.20E-10	7.20E-10
ce144	5.98E-10	5.97E-10	5.97E-10	5.97E-10	5.97E-10	5.97E-10
sn124	5.09E-10	5.28E-10	5.46E-10	5.64E-10	5.82E-10	5.82E-10
kr 85	5.70E-10	5.69E-10	5.69E-10	5.69E-10	5.69E-10	5.69E-10
nd142	4.11E-10	4.41E-10	4.71E-10	5.03E-10	5.36E-10	5.36E-10
ba134	3.94E-10	4.22E-10	4.51E-10	4.82E-10	5.13E-10	5.13E-10
sm148	3.67E-10	3.94E-10	4.21E-10	4.49E-10	4.78E-10	4.78E-10
as 75	3.75E-10	3.89E-10	4.02E-10	4.15E-10	4.29E-10	4.29E-10
ba135	3.22E-10	3.45E-10	3.70E-10	3.95E-10	4.20E-10	4.20E-10
ru103	3.59E-10	3.60E-10	3.60E-10	3.60E-10	3.60E-10	3.59E-10
pd104	2.69E-10	2.89E-10	3.09E-10	3.30E-10	3.51E-10	3.51E-10
in113	2.76E-10	2.86E-10	2.96E-10	3.07E-10	3.17E-10	3.17E-10
ba136	2.35E-10	2.44E-10	2.54E-10	2.64E-10	2.74E-10	2.74E-10
sn118	2.07E-10	2.15E-10	2.22E-10	2.30E-10	2.37E-10	2.37E-10
cs134	1.88E-10	1.95E-10	2.02E-10	2.08E-10	2.15E-10	2.15E-10
sn122	1.76E-10	1.83E-10	1.89E-10	1.95E-10	2.02E-10	2.02E-10
cd116	1.76E-10	1.82E-10	1.89E-10	1.95E-10	2.01E-10	2.01E-10

dy163	1.51E-10	1.58E-10	1.65E-10	1.72E-10	1.79E-10	1.79E-10
kr 82	1.47E-10	1.53E-10	1.60E-10	1.67E-10	1.74E-10	1.74E-10
mo 96	1.36E-10	1.44E-10	1.53E-10	1.61E-10	1.70E-10	1.70E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.52E-10
sn120	1.32E-10	1.36E-10	1.41E-10	1.46E-10	1.51E-10	1.51E-10
y 91	1.43E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
xe130	1.11E-10	1.16E-10	1.22E-10	1.28E-10	1.34E-10	1.34E-10
ge 73	1.03E-10	1.07E-10	1.10E-10	1.14E-10	1.18E-10	1.18E-10
pm151	1.07E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.05E-10
nb 93	4.89E-11	5.26E-11	5.64E-11	6.03E-11	6.44E-11	6.44E-11
cd110	4.02E-11	4.33E-11	4.65E-11	4.98E-11	5.33E-11	5.33E-11
ba140	4.69E-11	4.71E-11	4.71E-11	4.71E-11	4.71E-11	4.68E-11
ge 76	3.72E-11	3.85E-11	3.98E-11	4.11E-11	4.24E-11	4.24E-11
sm153	3.78E-11	3.87E-11	3.88E-11	3.88E-11	3.88E-11	3.76E-11
eu156	3.62E-11	3.63E-11	3.64E-11	3.64E-11	3.65E-11	3.65E-11
br 79	2.63E-11	2.82E-11	3.02E-11	3.22E-11	3.43E-11	3.43E-11
te126	2.71E-11	2.84E-11	2.97E-11	3.11E-11	3.25E-11	3.25E-11
sr 89	3.05E-11	3.05E-11	3.05E-11	3.05E-11	3.04E-11	3.04E-11
gd160	2.59E-11	2.69E-11	2.79E-11	2.90E-11	3.00E-11	3.00E-11
ru106	2.70E-11	2.71E-11	2.71E-11	2.72E-11	2.72E-11	2.72E-11
xe129	1.49E-11	1.60E-11	1.71E-11	1.83E-11	1.95E-11	1.95E-11
ag107	1.47E-11	1.58E-11	1.69E-11	1.81E-11	1.93E-11	1.93E-11
ce143	1.69E-11	1.74E-11	1.74E-11	1.74E-11	1.74E-11	1.67E-11
y 90	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11	1.62E-11
sb125	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
mo 99	1.28E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11	1.27E-11
ho165	1.06E-11	1.11E-11	1.16E-11	1.21E-11	1.26E-11	1.26E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 74
0 fraction of total absorption rate
power= .00mw, burnup= 1169.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 264807. d 273938. d 283069. d 292201. d 292201. d

pm148m	9.50E-12	9.52E-12	9.52E-12	9.51E-12	9.51E-12	9.50E-12
te127m	7.60E-12	7.61E-12	7.61E-12	7.62E-12	7.62E-12	7.62E-12
i131	6.74E-12	6.75E-12	6.75E-12	6.75E-12	6.75E-12	6.73E-12
kr 87	9.09E-12	2.28E-11	2.28E-11	2.28E-11	2.28E-11	6.65E-12
te124	4.72E-12	4.90E-12	5.09E-12	5.27E-12	5.45E-12	5.45E-12
sr 87	4.32E-12	4.47E-12	4.63E-12	4.78E-12	4.94E-12	4.94E-12
nb 94	2.45E-12	2.54E-12	2.62E-12	2.71E-12	2.80E-12	2.80E-12
dy160	2.10E-12	2.25E-12	2.40E-12	2.56E-12	2.72E-12	2.72E-12
ge 74	2.08E-12	2.15E-12	2.23E-12	2.30E-12	2.37E-12	2.37E-12
sr 86	1.93E-12	2.02E-12	2.12E-12	2.22E-12	2.32E-12	2.32E-12
xe128	1.64E-12	1.75E-12	1.87E-12	1.99E-12	2.11E-12	2.11E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ge 72	1.41E-12	1.46E-12	1.51E-12	1.56E-12	1.61E-12	1.61E-12
se 76	9.81E-13	1.02E-12	1.06E-12	1.11E-12	1.15E-12	1.15E-12
sn116	5.70E-13	6.11E-13	6.54E-13	6.98E-13	7.43E-13	7.43E-13
er166	4.22E-13	4.45E-13	4.69E-13	4.93E-13	5.18E-13	5.18E-13
pm148	3.63E-13	3.66E-13	3.66E-13	3.66E-13	3.66E-13	3.61E-13
ag111	3.51E-13	3.53E-13	3.55E-13	3.56E-13	3.57E-13	3.55E-13
te122	2.43E-13	2.60E-13	2.78E-13	2.97E-13	3.16E-13	3.16E-13
eu157	3.00E-13	3.22E-13	3.23E-13	3.23E-13	3.24E-13	2.95E-13
cd115m	2.40E-13	2.41E-13	2.41E-13	2.41E-13	2.41E-13	2.41E-13
cs136	7.41E-14	7.51E-14	7.57E-14	7.64E-14	7.71E-14	7.67E-14
kr 80	6.51E-14	6.77E-14	7.04E-14	7.30E-14	7.57E-14	7.57E-14
sn125	2.93E-14	2.95E-14	2.95E-14	2.95E-14	2.95E-14	2.93E-14
ru105	2.40E-14	3.05E-14	3.05E-14	3.05E-14	3.06E-14	2.21E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14

te132	9.40E-15	9.54E-15	9.54E-15	9.54E-15	9.54E-15	9.35E-15
tb160	7.82E-15	8.10E-15	8.39E-15	8.67E-15	8.95E-15	8.94E-15
rb 88	9.22E-15	1.28E-14	1.28E-14	1.28E-14	1.28E-14	8.02E-15
i135	8.46E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	7.96E-15
te123	5.77E-15	6.05E-15	6.34E-15	6.64E-15	6.94E-15	6.94E-15
er167	5.06E-15	5.43E-15	5.82E-15	6.23E-15	6.65E-15	6.65E-15
be 9	4.63E-15	4.80E-15	4.96E-15	5.12E-15	5.29E-15	5.29E-15
pr142	4.53E-15	4.99E-15	5.17E-15	5.34E-15	5.51E-15	5.07E-15
sb126	4.20E-15	4.26E-15	4.30E-15	4.34E-15	4.39E-15	4.37E-15
sb124	2.46E-15	2.47E-15	2.48E-15	2.50E-15	2.51E-15	2.51E-15
li 7	1.89E-15	1.95E-15	2.02E-15	2.09E-15	2.15E-15	2.15E-15
in117m	1.94E-15	2.16E-15	2.16E-15	2.17E-15	2.17E-15	1.82E-15
i130	1.46E-15	1.63E-15	1.66E-15	1.70E-15	1.73E-15	1.53E-15
te134	1.07E-15	5.82E-15	5.82E-15	5.82E-15	5.82E-15	6.05E-16
rb 86	5.24E-16	5.36E-16	5.46E-16	5.56E-16	5.66E-16	5.64E-16
in117	5.78E-16	6.37E-16	6.38E-16	6.39E-16	6.39E-16	5.45E-16
cd108	1.66E-16	1.80E-16	1.93E-16	2.08E-16	2.23E-16	2.23E-16
dy165	2.46E-16	4.05E-16	4.12E-16	4.18E-16	4.25E-16	2.21E-16
sn114	1.34E-16	1.44E-16	1.55E-16	1.65E-16	1.76E-16	1.76E-16
ge 75	3.77E-17	8.63E-17	8.63E-17	8.63E-17	8.63E-17	2.83E-17
cs134m	2.35E-17	3.66E-17	3.78E-17	3.91E-17	4.03E-17	2.35E-17
cd118	2.99E-17	1.23E-16	1.23E-16	1.23E-16	1.23E-16	1.87E-17
cd109	1.38E-18	1.42E-18	1.46E-18	1.50E-18	1.54E-18	1.54E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 75
0 fraction of total absorption rate
power= .00mw, burnup= 1169.mwd, flux= 2.69E+08n/cm**2-sec
0 initial 264807. d 273938. d 283069. d 292201. d 292201. d

in119m	6.95E-19	3.05E-17	3.05E-17	3.05E-17	3.06E-17	1.88E-19

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 76
power= 4.000E-03mw, burnup=1.1688E+03mwd, flux= 2.69E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	264807. d	273938. d	283069. d	292201. d	292201. d
h 1	6.01E-05	6.23E-05	6.44E-05	6.66E-05	6.87E-05	6.87E-05
h 2	1.79E-07	1.85E-07	1.91E-07	1.98E-07	2.04E-07	2.04E-07
h 3	3.50E-11	3.51E-11	3.51E-11	3.52E-11	3.53E-11	3.53E-11
h 4	.00E+00	1.42E-34	1.42E-34	1.43E-34	1.43E-34	.00E+00
he 3	1.27E-09	1.32E-09	1.37E-09	1.41E-09	1.46E-09	1.46E-09
he 4	9.94E-06	1.03E-05	1.07E-05	1.10E-05	1.14E-05	1.14E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.19E-06	1.24E-06	1.28E-06	1.32E-06	1.36E-06	1.36E-06
ne 21	2.50E-11	2.67E-11	2.85E-11	3.03E-11	3.22E-11	3.22E-11
ne 22	7.75E-09	8.02E-09	8.30E-09	8.58E-09	8.86E-09	8.86E-09
ne 23	7.08E-30	7.09E-15	7.09E-15	7.09E-15	7.09E-15	7.09E-30
na 22	4.16E-11	4.17E-11	4.17E-11	4.17E-11	4.17E-11	4.17E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.54E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.47E-08
na 24m	4.52E-30	4.52E-15	4.51E-15	4.51E-15	4.51E-15	4.51E-30
na 25	1.09E-40	1.15E-25	1.22E-25	1.29E-25	1.35E-25	1.35E-40
mg 24	8.54E-03	8.82E-03	9.10E-03	9.39E-03	9.67E-03	9.67E-03
mg 25	3.82E-09	4.04E-09	4.27E-09	4.50E-09	4.74E-09	4.74E-09
mg 26	1.78E-07	1.85E-07	1.91E-07	1.98E-07	2.04E-07	2.04E-07
mg 27	1.17E-15	2.12E-12	2.12E-12	2.12E-12	2.12E-12	9.59E-17
mg 28	4.07E-24	4.31E-24	4.31E-24	4.31E-24	4.30E-24	3.99E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	3.74E-24	2.04E-10	2.04E-10	2.04E-10	2.04E-10	2.11E-25
al 29	1.21E-28	6.41E-24	6.84E-24	7.28E-24	7.73E-24	4.26E-30
al 30	.00E+00	8.86E-35	9.78E-35	1.08E-34	1.18E-34	.00E+00

si 28	2.48E-02	2.57E-02	2.65E-02	2.73E-02	2.82E-02	2.82E-02
si 29	2.34E-08	2.51E-08	2.67E-08	2.85E-08	3.02E-08	3.02E-08
si 30	2.34E-14	2.59E-14	2.86E-14	3.15E-14	3.45E-14	3.45E-14
si 31	1.07E-26	1.86E-26	2.05E-26	2.25E-26	2.47E-26	1.35E-26
si 32	1.32E-32	1.49E-32	1.68E-32	1.88E-32	2.10E-32	2.10E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.69E+08	2.69E+08	2.69E+08	2.69E+08	2.68E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 77
power= 4.000E-03mw, burnup=1.1688E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge 264807. d	273938. d	283069. d	292201. d	292201. d	
he 4	1.78E-01	1.86E-01	1.95E-01	2.03E-01	2.12E-01	2.12E-01
pb206	4.76E-06	5.30E-06	5.88E-06	6.49E-06	7.15E-06	7.15E-06
pb207	3.42E-06	3.68E-06	3.95E-06	4.23E-06	4.51E-06	4.51E-06
pb208	6.08E-07	6.51E-07	6.96E-07	7.43E-07	7.91E-07	7.91E-07
pb209	6.74E-13	7.17E-13	7.67E-13	8.18E-13	8.71E-13	8.76E-13
pb210	6.65E-07	7.13E-07	7.63E-07	8.14E-07	8.67E-07	8.67E-07
pb211	1.01E-12	1.05E-12	1.09E-12	1.12E-12	1.16E-12	1.16E-12
pb212	3.04E-12	3.14E-12	3.25E-12	3.36E-12	3.46E-12	3.46E-12
pb214	1.61E-12	1.77E-12	1.89E-12	2.01E-12	2.14E-12	2.08E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.93E-07	3.26E-07	3.60E-07	3.97E-07	4.37E-07	4.37E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	4.09E-10	4.39E-10	4.70E-10	5.01E-10	5.34E-10	5.34E-10
bi211	6.04E-14	6.21E-14	6.43E-14	6.66E-14	6.88E-14	6.91E-14
bi212	2.88E-13	2.98E-13	3.08E-13	3.18E-13	3.28E-13	3.29E-13
bi213	1.52E-13	1.68E-13	1.79E-13	1.91E-13	2.03E-13	1.97E-13
bi214	1.22E-12	1.32E-12	1.41E-12	1.50E-12	1.59E-12	1.56E-12
po210	1.13E-08	1.21E-08	1.30E-08	1.38E-08	1.47E-08	1.47E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	6.67E-19	6.86E-19	7.11E-19	7.36E-19	7.61E-19	7.64E-19
po212	1.51E-23	1.57E-23	1.62E-23	1.67E-23	1.73E-23	1.73E-23
po213	2.28E-22	2.52E-22	2.69E-22	2.87E-22	3.06E-22	2.97E-22
po214	1.67E-19	1.81E-19	1.93E-19	2.06E-19	2.18E-19	2.14E-19
po215	8.30E-19	8.61E-19	8.92E-19	9.23E-19	9.54E-19	9.54E-19
po216	1.15E-17	1.19E-17	1.23E-17	1.27E-17	1.31E-17	1.31E-17
po218	1.92E-13	2.05E-13	2.19E-13	2.33E-13	2.47E-13	2.48E-13
rn218	4.32E-29	4.47E-29	4.62E-29	4.77E-29	4.92E-29	4.91E-29
rn219	1.85E-15	1.92E-15	1.98E-15	2.05E-15	2.12E-15	2.12E-15
rn220	4.41E-15	4.56E-15	4.72E-15	4.87E-15	5.03E-15	5.03E-15
rn222	3.41E-10	3.65E-10	3.89E-10	4.14E-10	4.39E-10	4.39E-10
ra222	4.69E-26	4.85E-26	5.01E-26	5.18E-26	5.34E-26	5.34E-26
ra223	4.61E-10	4.78E-10	4.95E-10	5.12E-10	5.30E-10	5.30E-10
ra224	2.51E-11	2.59E-11	2.68E-11	2.77E-11	2.86E-11	2.86E-11
ra225	7.31E-11	7.84E-11	8.38E-11	8.94E-11	9.52E-11	9.52E-11
ra226	5.21E-05	5.57E-05	5.94E-05	6.32E-05	6.72E-05	6.72E-05
ra228	1.46E-12	1.52E-12	1.57E-12	1.62E-12	1.68E-12	1.68E-12
ac225	4.94E-11	5.29E-11	5.66E-11	6.04E-11	6.43E-11	6.43E-11
ac227	3.20E-07	3.32E-07	3.44E-07	3.56E-07	3.68E-07	3.68E-07
ac228	1.79E-16	1.85E-16	1.92E-16	1.98E-16	2.05E-16	2.05E-16
th226	2.28E-24	2.37E-24	2.45E-24	2.53E-24	2.61E-24	2.60E-24
th227	7.43E-10	7.71E-10	7.99E-10	8.27E-10	8.55E-10	8.55E-10
th228	4.79E-09	4.95E-09	5.12E-09	5.29E-09	5.46E-09	5.46E-09
th229	1.42E-05	1.52E-05	1.63E-05	1.74E-05	1.85E-05	1.85E-05
th230	1.79E-02	1.85E-02	1.92E-02	1.98E-02	2.04E-02	2.04E-02
th231	3.08E-09	3.08E-09	3.08E-09	3.09E-09	3.09E-09	3.08E-09
th232	3.62E-03	3.75E-03	3.88E-03	4.01E-03	4.14E-03	4.14E-03
th233	1.37E-15	3.43E-14	3.55E-14	3.67E-14	3.79E-14	5.43E-16

th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	5.04E-04	5.22E-04	5.40E-04	5.58E-04	5.76E-04	5.76E-04
pa232	8.32E-12	8.95E-12	9.26E-12	9.56E-12	9.87E-12	9.39E-12

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 78
power= 4.000E-03mw, burnup=1.1688E+03mwd, flux= 2.69E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 264807. d	273938. d	283069. d	292201. d	292201. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.21E-21	2.29E-21	2.37E-21	2.45E-21	2.53E-21	2.52E-21
u231	7.13E-18	7.47E-18	7.73E-18	7.99E-18	8.24E-18	8.11E-18
u232	1.71E-07	1.77E-07	1.83E-07	1.89E-07	1.95E-07	1.95E-07
u233	9.51E-03	9.84E-03	1.02E-02	1.05E-02	1.09E-02	1.09E-02
u234	9.13E+00	9.14E+00	9.14E+00	9.14E+00	9.15E+00	9.15E+00
u235	7.25E+02	7.25E+02	7.25E+02	7.25E+02	7.24E+02	7.24E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.09E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.08E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.54E-08	3.17E-07	3.17E-07	3.17E-07	3.17E-07	5.63E-09
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12
np236m	1.95E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.91E-12
np236	1.38E-07	1.42E-07	1.47E-07	1.52E-07	1.57E-07	1.57E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.51E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.50E-06
np239	4.52E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.49E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.96E-15	9.30E-15	9.30E-15	9.30E-15	9.30E-15	2.02E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.55E-13	2.57E-13	2.58E-13	2.59E-13	2.60E-13	2.59E-13
pu238	2.33E-02	2.34E-02	2.34E-02	2.34E-02	2.34E-02	2.34E-02
pu239	3.41E+00	3.53E+00	3.65E+00	3.77E+00	3.88E+00	3.88E+00
pu240	1.15E-02	1.23E-02	1.31E-02	1.40E-02	1.49E-02	1.49E-02
pu241	4.45E-06	4.77E-06	5.10E-06	5.45E-06	5.80E-06	5.80E-06
pu242	2.50E-08	2.84E-08	3.22E-08	3.62E-08	4.06E-08	4.06E-08
pu243	4.15E-17	5.99E-17	6.77E-17	7.63E-17	8.55E-17	6.22E-17
pu244	4.67E-35	6.65E-35	9.33E-35	1.29E-34	1.78E-34	1.78E-34
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	9.50E-21	1.16E-20	1.27E-20	1.39E-20	1.52E-20	1.33E-20
am240	4.70E-18	5.30E-18	5.83E-18	6.38E-18	6.96E-18	6.75E-18
am241	3.83E-05	4.22E-05	4.64E-05	5.08E-05	5.55E-05	5.55E-05
am242m	9.84E-09	1.11E-08	1.24E-08	1.38E-08	1.53E-08	1.53E-08
am242	1.36E-12	1.61E-12	1.77E-12	1.94E-12	2.12E-12	1.94E-12
am243	5.09E-11	5.97E-11	6.94E-11	8.04E-11	9.26E-11	9.26E-11
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	3.44E-19	4.53E-19	5.27E-19	6.11E-19	7.03E-19	6.01E-19
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	8.45E-23	9.35E-23	1.03E-22	1.13E-22	1.23E-22	1.23E-22
cm242	2.94E-10	3.24E-10	3.57E-10	3.91E-10	4.28E-10	4.28E-10
cm243	1.01E-16	1.13E-16	1.25E-16	1.38E-16	1.52E-16	1.52E-16
cm244	5.18E-15	6.10E-15	7.14E-15	8.30E-15	9.61E-15	9.61E-15

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0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
          charge 264807. d 273938. d 283069. d 292201. d 292201. d
     cm245   6.58E-19  8.05E-19  9.78E-19  1.18E-18  1.41E-18  1.41E-18
     cm246   3.83E-22  4.87E-22  6.14E-22  7.67E-22  9.50E-22  9.50E-22
     cm247   3.66E-27  4.83E-27  6.31E-27  8.17E-27  1.05E-26  1.05E-26
     cm248   3.59E-31  4.91E-31  6.65E-31  8.92E-31  1.18E-30  1.18E-30
     cm249   2.57E-42  1.56E-41  2.33E-41  3.11E-41  3.89E-41  8.90E-42
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.69E+08  2.69E+08  2.69E+08  2.69E+08  2.68E-07
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  9 of library on unit 33.

          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 "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: ft33f001
0 8/28/1996 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 7993 number of nonzero off-diagonal matrix elements
0 **********

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 page 80
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec
0 basis =
0 (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

0	initial	301332. d	310463. d	319594. d	328726. d	328726. d
productions	1.145846E+06	1.146018E+06	1.146189E+06	1.146360E+06	1.146531E+06	1.146531E+06
absorptions	9.373998E+05	9.375783E+05	9.377546E+05	9.379288E+05	9.381009E+05	9.381009E+05
k infinity	1.222366E+00	1.222317E+00	1.222270E+00	1.222225E+00	1.222183E+00	1.222183E+00
0	initial	301332. d	310463. d	319594. d	328726. d	328726. d
actinide						
absorptions	9.302094E+05	9.303122E+05	9.304148E+05	9.305171E+05	9.306193E+05	9.306193E+05
non-actinide						
abs. fracs.	7.670581E-03	7.749796E-03	7.826984E-03	7.902205E-03	7.975280E-03	7.975221E-03

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 81
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec

0	initial 301332. d	310463. d	319594. d	328726. d	328726. d
sm149	3.59E-03	3.65E-03	3.71E-03	3.76E-03	3.82E-03	3.82E-03
eu151	1.47E-04	1.52E-04	1.58E-04	1.63E-04	1.68E-04	1.68E-04
nd143	1.18E-04	1.21E-04	1.25E-04	1.29E-04	1.32E-04	1.32E-04
gd155	6.48E-05	6.64E-05	6.81E-05	6.97E-05	7.12E-05	7.12E-05
rh103	5.49E-05	5.67E-05	5.84E-05	6.01E-05	6.18E-05	6.18E-05
cd113	3.92E-05	4.01E-05	4.10E-05	4.19E-05	4.28E-05	4.28E-05
xe131	3.72E-05	3.84E-05	3.95E-05	4.07E-05	4.18E-05	4.18E-05
sm151	3.99E-05	4.00E-05	4.00E-05	4.00E-05	4.00E-05	4.00E-05
gd157	3.10E-05	3.14E-05	3.18E-05	3.22E-05	3.26E-05	3.26E-05
cs133	2.89E-05	2.97E-05	3.06E-05	3.15E-05	3.24E-05	3.24E-05
sm147	2.13E-05	2.20E-05	2.26E-05	2.33E-05	2.40E-05	2.40E-05
tc 99	2.12E-05	2.19E-05	2.25E-05	2.32E-05	2.38E-05	2.38E-05
nd145	1.65E-05	1.70E-05	1.75E-05	1.80E-05	1.85E-05	1.85E-05
mo 95	1.14E-05	1.18E-05	1.21E-05	1.25E-05	1.28E-05	1.28E-05
sm152	9.14E-06	9.44E-06	9.74E-06	1.00E-05	1.03E-05	1.03E-05
kr 83	7.14E-06	7.36E-06	7.58E-06	7.81E-06	8.03E-06	8.03E-06
cs135	6.51E-06	6.71E-06	6.92E-06	7.12E-06	7.32E-06	7.32E-06
ru101	5.04E-06	5.20E-06	5.36E-06	5.51E-06	5.67E-06	5.67E-06
pr141	4.87E-06	5.02E-06	5.17E-06	5.32E-06	5.47E-06	5.47E-06
eu153	4.45E-06	4.59E-06	4.73E-06	4.87E-06	5.01E-06	5.01E-06
la139	3.98E-06	4.11E-06	4.23E-06	4.35E-06	4.48E-06	4.48E-06
sm150	3.53E-06	3.72E-06	3.91E-06	4.10E-06	4.30E-06	4.30E-06
xe135	2.26E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06	2.26E-06
ba137	1.80E-06	1.86E-06	1.92E-06	1.98E-06	2.04E-06	2.04E-06
pd105	1.71E-06	1.77E-06	1.82E-06	1.88E-06	1.93E-06	1.93E-06
zr 93	1.61E-06	1.66E-06	1.71E-06	1.76E-06	1.81E-06	1.81E-06
i129	1.24E-06	1.28E-06	1.32E-06	1.36E-06	1.40E-06	1.40E-06
nd144	1.20E-06	1.23E-06	1.27E-06	1.31E-06	1.35E-06	1.35E-06
mo 97	9.03E-07	9.31E-07	9.59E-07	9.87E-07	1.01E-06	1.01E-06
ag109	7.78E-07	8.07E-07	8.36E-07	8.65E-07	8.95E-07	8.95E-07
zr 91	4.25E-07	4.38E-07	4.51E-07	4.64E-07	4.77E-07	4.77E-07
y 89	4.07E-07	4.20E-07	4.33E-07	4.45E-07	4.58E-07	4.58E-07
ru102	3.69E-07	3.80E-07	3.92E-07	4.03E-07	4.15E-07	4.15E-07
ce142	3.32E-07	3.42E-07	3.52E-07	3.62E-07	3.73E-07	3.73E-07

nd148	3.18E-07	3.28E-07	3.38E-07	3.48E-07	3.58E-07	3.58E-07
nd146	2.67E-07	2.76E-07	2.84E-07	2.92E-07	3.00E-07	3.00E-07
pd108	2.42E-07	2.51E-07	2.59E-07	2.68E-07	2.76E-07	2.76E-07
pm147	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07
ba138	2.29E-07	2.36E-07	2.43E-07	2.50E-07	2.57E-07	2.57E-07
in115	2.22E-07	2.29E-07	2.36E-07	2.42E-07	2.49E-07	2.49E-07
ce140	2.14E-07	2.21E-07	2.27E-07	2.34E-07	2.41E-07	2.41E-07
xe132	1.92E-07	1.98E-07	2.04E-07	2.10E-07	2.16E-07	2.16E-07
eu155	1.63E-07	1.63E-07	1.64E-07	1.64E-07	1.64E-07	1.64E-07
pd107	1.39E-07	1.44E-07	1.49E-07	1.53E-07	1.58E-07	1.58E-07
mo 98	1.32E-07	1.36E-07	1.40E-07	1.44E-07	1.48E-07	1.48E-07
mo100	1.28E-07	1.32E-07	1.36E-07	1.40E-07	1.44E-07	1.44E-07
xe134	1.26E-07	1.30E-07	1.34E-07	1.38E-07	1.42E-07	1.42E-07
zr 92	1.02E-07	1.05E-07	1.09E-07	1.12E-07	1.15E-07	1.15E-07
i127	8.40E-08	8.67E-08	8.93E-08	9.20E-08	9.47E-08	9.47E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 82
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 301332. d 310463. d 319594. d 328726. d 328726. d

zr 96	8.01E-08	8.26E-08	8.51E-08	8.76E-08	9.01E-08	9.01E-08
ru104	7.94E-08	8.19E-08	8.44E-08	8.69E-08	8.94E-08	8.94E-08
nd150	7.06E-08	7.28E-08	7.50E-08	7.72E-08	7.94E-08	7.94E-08
xe136	6.83E-08	7.04E-08	7.25E-08	7.46E-08	7.67E-08	7.67E-08
gd152	5.85E-08	6.27E-08	6.71E-08	7.17E-08	7.64E-08	7.64E-08
br 81	5.11E-08	5.27E-08	5.43E-08	5.58E-08	5.74E-08	5.74E-08
rb 85	4.97E-08	5.12E-08	5.27E-08	5.43E-08	5.58E-08	5.58E-08
zr 94	4.32E-08	4.46E-08	4.59E-08	4.72E-08	4.86E-08	4.86E-08
zr 90	3.81E-08	3.94E-08	4.06E-08	4.19E-08	4.31E-08	4.31E-08
eu152	3.74E-08	3.88E-08	4.01E-08	4.15E-08	4.29E-08	4.29E-08
cd111	3.54E-08	3.65E-08	3.77E-08	3.89E-08	4.01E-08	4.01E-08
te130	3.11E-08	3.20E-08	3.30E-08	3.40E-08	3.49E-08	3.49E-08
sm154	3.04E-08	3.14E-08	3.23E-08	3.33E-08	3.42E-08	3.42E-08
rb 87	2.88E-08	2.97E-08	3.06E-08	3.15E-08	3.24E-08	3.24E-08
se 77	2.06E-08	2.12E-08	2.18E-08	2.25E-08	2.31E-08	2.31E-08
pd106	1.51E-08	1.56E-08	1.61E-08	1.66E-08	1.71E-08	1.71E-08
sr 90	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08	1.70E-08
kr 84	1.36E-08	1.40E-08	1.44E-08	1.48E-08	1.53E-08	1.53E-08
se 79	1.05E-08	1.09E-08	1.12E-08	1.15E-08	1.18E-08	1.18E-08
sb121	1.01E-08	1.04E-08	1.07E-08	1.10E-08	1.13E-08	1.13E-08
sb123	8.18E-09	8.44E-09	8.70E-09	8.95E-09	9.21E-09	9.21E-09
gd156	7.71E-09	8.02E-09	8.34E-09	8.66E-09	8.98E-09	8.98E-09
rh105	8.61E-09	8.67E-09	8.68E-09	8.69E-09	8.70E-09	8.65E-09
kr 86	7.60E-09	7.83E-09	8.07E-09	8.30E-09	8.54E-09	8.54E-09
te128	6.81E-09	7.02E-09	7.24E-09	7.45E-09	7.66E-09	7.66E-09
dy161	5.11E-09	5.30E-09	5.48E-09	5.67E-09	5.87E-09	5.87E-09
ru 99	4.49E-09	4.78E-09	5.06E-09	5.36E-09	5.67E-09	5.67E-09
se 80	4.91E-09	5.06E-09	5.22E-09	5.37E-09	5.52E-09	5.52E-09
te125	4.32E-09	4.46E-09	4.60E-09	4.73E-09	4.87E-09	4.87E-09
cs137	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09
tb159	3.13E-09	3.23E-09	3.34E-09	3.44E-09	3.55E-09	3.55E-09
cd112	2.88E-09	2.97E-09	3.06E-09	3.15E-09	3.25E-09	3.25E-09
li 6	2.78E-09	2.87E-09	2.95E-09	3.04E-09	3.12E-09	3.12E-09
gd154	2.34E-09	2.49E-09	2.65E-09	2.81E-09	2.97E-09	2.97E-09
pr143	2.65E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09	2.65E-09
sn117	2.25E-09	2.32E-09	2.39E-09	2.46E-09	2.53E-09	2.53E-09
eu154	2.24E-09	2.31E-09	2.38E-09	2.45E-09	2.53E-09	2.53E-09
gd158	1.97E-09	2.06E-09	2.14E-09	2.23E-09	2.31E-09	2.31E-09
sn119	1.84E-09	1.89E-09	1.95E-09	2.01E-09	2.07E-09	2.07E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09

sn115	1.68E-09	1.73E-09	1.79E-09	1.84E-09	1.89E-09	1.89E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
sr 88	1.40E-09	1.44E-09	1.48E-09	1.53E-09	1.57E-09	1.57E-09
cd114	1.25E-09	1.30E-09	1.35E-09	1.39E-09	1.44E-09	1.44E-09
pd110	1.08E-09	1.12E-09	1.15E-09	1.19E-09	1.23E-09	1.23E-09
se 82	9.48E-10	9.78E-10	1.01E-09	1.04E-09	1.07E-09	1.07E-09
ru100	7.71E-10	8.19E-10	8.69E-10	9.20E-10	9.73E-10	9.73E-10
pm149	9.64E-10	9.73E-10	9.73E-10	9.73E-10	9.73E-10	9.63E-10
nd147	9.19E-10	9.24E-10	9.23E-10	9.23E-10	9.23E-10	9.18E-10

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 83
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 301332. d 310463. d 319594. d 328726. d 328726. d

dy164	7.74E-10	8.06E-10	8.39E-10	8.73E-10	9.07E-10	9.07E-10
dy162	7.65E-10	7.95E-10	8.26E-10	8.58E-10	8.89E-10	8.89E-10
sn126	7.79E-10	8.04E-10	8.29E-10	8.53E-10	8.78E-10	8.78E-10
se 78	7.20E-10	7.43E-10	7.65E-10	7.88E-10	8.10E-10	8.10E-10
nd142	5.36E-10	5.70E-10	6.05E-10	6.41E-10	6.78E-10	6.78E-10
sn124	5.83E-10	6.01E-10	6.19E-10	6.38E-10	6.56E-10	6.56E-10
ba134	5.13E-10	5.46E-10	5.79E-10	6.13E-10	6.49E-10	6.49E-10
sm148	4.78E-10	5.08E-10	5.39E-10	5.70E-10	6.03E-10	6.03E-10
ce144	5.97E-10	5.97E-10	5.97E-10	5.96E-10	5.96E-10	5.96E-10
kr 85	5.69E-10	5.68E-10	5.68E-10	5.68E-10	5.68E-10	5.68E-10
ba135	4.20E-10	4.47E-10	4.74E-10	5.03E-10	5.32E-10	5.32E-10
as 75	4.29E-10	4.42E-10	4.55E-10	4.69E-10	4.82E-10	4.82E-10
pd104	3.51E-10	3.73E-10	3.96E-10	4.20E-10	4.44E-10	4.44E-10
ru103	3.59E-10	3.60E-10	3.60E-10	3.60E-10	3.60E-10	3.59E-10
in113	3.17E-10	3.27E-10	3.37E-10	3.48E-10	3.58E-10	3.58E-10
ba136	2.74E-10	2.84E-10	2.94E-10	3.04E-10	3.14E-10	3.14E-10
sn118	2.37E-10	2.45E-10	2.52E-10	2.60E-10	2.67E-10	2.67E-10
cs134	2.15E-10	2.22E-10	2.28E-10	2.35E-10	2.42E-10	2.41E-10
sn122	2.02E-10	2.08E-10	2.14E-10	2.21E-10	2.27E-10	2.27E-10
cd116	2.01E-10	2.08E-10	2.14E-10	2.20E-10	2.27E-10	2.27E-10
dy163	1.79E-10	1.86E-10	1.94E-10	2.02E-10	2.09E-10	2.09E-10
mo 96	1.70E-10	1.79E-10	1.88E-10	1.98E-10	2.08E-10	2.08E-10
kr 82	1.74E-10	1.81E-10	1.88E-10	1.95E-10	2.02E-10	2.02E-10
sn120	1.51E-10	1.55E-10	1.60E-10	1.65E-10	1.69E-10	1.69E-10
zr 95	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.63E-10
xe130	1.34E-10	1.40E-10	1.46E-10	1.52E-10	1.58E-10	1.58E-10
nb 95	1.52E-10	1.52E-10	1.52E-10	1.52E-10	1.51E-10	1.51E-10
y 91	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
ge 73	1.18E-10	1.21E-10	1.25E-10	1.29E-10	1.32E-10	1.32E-10
pm151	1.05E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.05E-10
nb 93	6.44E-11	6.85E-11	7.29E-11	7.73E-11	8.19E-11	8.19E-11
cd110	5.33E-11	5.69E-11	6.06E-11	6.45E-11	6.85E-11	6.85E-11
ge 76	4.24E-11	4.37E-11	4.51E-11	4.64E-11	4.77E-11	4.77E-11
ba140	4.68E-11	4.70E-11	4.70E-11	4.70E-11	4.70E-11	4.68E-11
br 79	3.43E-11	3.65E-11	3.87E-11	4.10E-11	4.34E-11	4.34E-11
te126	3.25E-11	3.38E-11	3.53E-11	3.67E-11	3.82E-11	3.82E-11
sm153	3.76E-11	3.88E-11	3.88E-11	3.89E-11	3.89E-11	3.77E-11
eu156	3.65E-11	3.66E-11	3.66E-11	3.67E-11	3.68E-11	3.68E-11
gd160	3.00E-11	3.10E-11	3.21E-11	3.31E-11	3.42E-11	3.42E-11
sr 89	3.04E-11	3.04E-11	3.04E-11	3.04E-11	3.04E-11	3.04E-11
ru106	2.72E-11	2.73E-11	2.74E-11	2.74E-11	2.75E-11	2.75E-11
xe129	1.95E-11	2.07E-11	2.20E-11	2.33E-11	2.47E-11	2.47E-11
ag107	1.93E-11	2.06E-11	2.19E-11	2.32E-11	2.46E-11	2.46E-11
ce143	1.67E-11	1.74E-11	1.74E-11	1.74E-11	1.73E-11	1.67E-11
y 90	1.62E-11	1.61E-11	1.61E-11	1.61E-11	1.61E-11	1.61E-11
sb125	1.52E-11	1.52E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11

la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11
ho165	1.26E-11	1.32E-11	1.37E-11	1.43E-11	1.48E-11	1.48E-11
mo 99	1.27E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.27E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 84
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 301332. d 310463. d 319594. d 328726. d 328726. d

pm148m	9.50E-12	9.51E-12	9.51E-12	9.51E-12	9.51E-12	9.50E-12
te127m	7.62E-12	7.63E-12	7.63E-12	7.64E-12	7.65E-12	7.65E-12
i131	6.73E-12	6.75E-12	6.75E-12	6.75E-12	6.75E-12	6.72E-12
kr 87	6.65E-12	2.28E-11	2.27E-11	2.27E-11	2.27E-11	6.64E-12
te124	5.45E-12	5.64E-12	5.83E-12	6.01E-12	6.20E-12	6.20E-12
sr 87	4.93E-12	5.09E-12	5.24E-12	5.40E-12	5.55E-12	5.55E-12
dy160	2.72E-12	2.89E-12	3.07E-12	3.25E-12	3.43E-12	3.43E-12
nb 94	2.80E-12	2.89E-12	2.98E-12	3.06E-12	3.15E-12	3.15E-12
sr 86	2.32E-12	2.42E-12	2.52E-12	2.63E-12	2.73E-12	2.73E-12
ge 74	2.37E-12	2.45E-12	2.52E-12	2.60E-12	2.67E-12	2.67E-12
xe128	2.11E-12	2.24E-12	2.37E-12	2.50E-12	2.64E-12	2.64E-12
ge 72	1.61E-12	1.66E-12	1.71E-12	1.76E-12	1.81E-12	1.81E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
se 76	1.15E-12	1.19E-12	1.24E-12	1.28E-12	1.32E-12	1.32E-12
sn116	7.44E-13	7.91E-13	8.39E-13	8.89E-13	9.40E-13	9.40E-13
er166	5.18E-13	5.43E-13	5.69E-13	5.96E-13	6.23E-13	6.23E-13
te122	3.16E-13	3.36E-13	3.56E-13	3.77E-13	3.99E-13	3.99E-13
pm148	3.61E-13	3.66E-13	3.66E-13	3.66E-13	3.65E-13	3.61E-13
ag111	3.55E-13	3.59E-13	3.60E-13	3.61E-13	3.62E-13	3.60E-13
eu157	2.95E-13	3.25E-13	3.26E-13	3.27E-13	3.28E-13	2.98E-13
cd115m	2.41E-13	2.41E-13	2.41E-13	2.41E-13	2.41E-13	2.41E-13
kr 80	7.57E-14	7.84E-14	8.12E-14	8.40E-14	8.68E-14	8.68E-14
cs136	7.67E-14	7.78E-14	7.84E-14	7.91E-14	7.97E-14	7.93E-14
sn125	2.93E-14	2.95E-14	2.95E-14	2.95E-14	2.95E-14	2.93E-14
ru105	2.21E-14	3.06E-14	3.06E-14	3.07E-14	3.07E-14	2.22E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
tb160	8.94E-15	9.23E-15	9.52E-15	9.81E-15	1.01E-14	1.01E-14
te132	9.35E-15	9.53E-15	9.53E-15	9.53E-15	9.53E-15	9.34E-15
er167	6.65E-15	7.09E-15	7.55E-15	8.03E-15	8.52E-15	8.52E-15
te123	6.94E-15	7.25E-15	7.57E-15	7.90E-15	8.23E-15	8.23E-15
rb 88	8.02E-15	1.28E-14	1.28E-14	1.28E-14	1.28E-14	8.01E-15
i135	7.96E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	7.95E-15
be 9	5.29E-15	5.45E-15	5.62E-15	5.78E-15	5.95E-15	5.95E-15
pr142	5.07E-15	5.68E-15	5.85E-15	6.02E-15	6.19E-15	5.70E-15
sb126	4.37E-15	4.43E-15	4.47E-15	4.51E-15	4.56E-15	4.54E-15
sb124	2.51E-15	2.52E-15	2.54E-15	2.55E-15	2.56E-15	2.56E-15
li 7	2.15E-15	2.22E-15	2.29E-15	2.35E-15	2.42E-15	2.42E-15
in117m	1.82E-15	2.17E-15	2.17E-15	2.17E-15	2.18E-15	1.83E-15
i130	1.53E-15	1.76E-15	1.79E-15	1.82E-15	1.85E-15	1.64E-15
te134	6.05E-16	5.82E-15	5.81E-15	5.81E-15	5.81E-15	6.04E-16
rb 86	5.64E-16	5.76E-16	5.86E-16	5.96E-16	6.06E-16	6.04E-16
in117	5.45E-16	6.40E-16	6.41E-16	6.41E-16	6.42E-16	5.47E-16
cd108	2.23E-16	2.39E-16	2.56E-16	2.73E-16	2.91E-16	2.91E-16
dy165	2.21E-16	4.32E-16	4.39E-16	4.45E-16	4.52E-16	2.35E-16
sn114	1.76E-16	1.88E-16	2.00E-16	2.12E-16	2.24E-16	2.24E-16
ge 75	2.83E-17	8.62E-17	8.62E-17	8.62E-17	8.62E-17	2.83E-17
cs134m	2.35E-17	4.16E-17	4.28E-17	4.41E-17	4.53E-17	2.64E-17
cd118	1.87E-17	1.23E-16	1.23E-16	1.23E-16	1.23E-16	1.88E-17
cd109	1.54E-18	1.58E-18	1.63E-18	1.67E-18	1.71E-18	1.71E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 85
0 fraction of total absorption rate
power= .00mw, burnup= 1315.mwd, flux= 2.68E+08n/cm**2-sec

0 initial 301332. d 310463. d 319594. d 328726. d 328726. d

in119m 1.88E-19 3.06E-17 3.06E-17 3.06E-17 3.06E-17 1.88E-19

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 86
power= 4.000E-03mw, burnup=1.3149E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	301332. d	310463. d	319594. d	328726. d	328726. d
h 1	6.87E-05	7.09E-05	7.30E-05	7.52E-05	7.73E-05	7.73E-05
h 2	2.04E-07	2.10E-07	2.17E-07	2.23E-07	2.29E-07	2.29E-07
h 3	3.53E-11	3.54E-11	3.54E-11	3.55E-11	3.56E-11	3.56E-11
h 4	.00E+00	1.43E-34	1.44E-34	1.44E-34	1.44E-34	.00E+00
he 3	1.46E-09	1.51E-09	1.55E-09	1.60E-09	1.65E-09	1.65E-09
he 4	1.14E-05	1.17E-05	1.21E-05	1.24E-05	1.28E-05	1.28E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.36E-06	1.41E-06	1.45E-06	1.49E-06	1.54E-06	1.54E-06
ne 21	3.22E-11	3.42E-11	3.62E-11	3.83E-11	4.04E-11	4.04E-11
ne 22	8.86E-09	9.13E-09	9.41E-09	9.69E-09	9.97E-09	9.97E-09
ne 23	7.09E-30	7.10E-15	7.09E-15	7.09E-15	7.09E-15	7.09E-30
na 22	4.17E-11	4.17E-11	4.17E-11	4.17E-11	4.17E-11	4.17E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.47E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08	2.47E-08
na 24m	4.51E-30	4.52E-15	4.52E-15	4.51E-15	4.51E-15	4.51E-30
na 25	1.35E-40	1.42E-25	1.49E-25	1.57E-25	1.64E-25	1.64E-40
mg 24	9.67E-03	9.96E-03	1.02E-02	1.05E-02	1.08E-02	1.08E-02
mg 25	4.74E-09	4.98E-09	5.23E-09	5.49E-09	5.75E-09	5.75E-09
mg 26	2.04E-07	2.10E-07	2.17E-07	2.23E-07	2.29E-07	2.29E-07
mg 27	9.59E-17	2.12E-12	2.12E-12	2.12E-12	2.12E-12	9.60E-17
mg 28	3.99E-24	4.31E-24	4.31E-24	4.31E-24	4.31E-24	3.99E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.11E-25	2.04E-10	2.04E-10	2.04E-10	2.04E-10	2.11E-25
al 29	4.26E-30	8.21E-24	8.69E-24	9.19E-24	9.69E-24	5.34E-30
al 30	.00E+00	1.29E-34	1.41E-34	1.53E-34	1.66E-34	.00E+00
si 28	2.82E-02	2.90E-02	2.98E-02	3.06E-02	3.15E-02	3.15E-02
si 29	3.02E-08	3.21E-08	3.40E-08	3.59E-08	3.79E-08	3.79E-08
si 30	3.45E-14	3.77E-14	4.11E-14	4.47E-14	4.86E-14	4.86E-14
si 31	1.35E-26	2.70E-26	2.94E-26	3.20E-26	3.47E-26	1.90E-26
si 32	2.10E-32	2.33E-32	2.59E-32	2.86E-32	3.15E-32	3.15E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.68E+08	2.68E+08	2.68E+08	2.68E+08	2.68E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 87
power= 4.000E-03mw, burnup=1.3149E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	301332. d	310463. d	319594. d	328726. d	328726. d
he 4	2.12E-01	2.21E-01	2.30E-01	2.38E-01	2.48E-01	2.48E-01
pb206	7.15E-06	7.85E-06	8.59E-06	9.38E-06	1.02E-05	1.02E-05
pb207	4.51E-06	4.81E-06	5.12E-06	5.44E-06	5.76E-06	5.76E-06
pb208	7.91E-07	8.41E-07	8.92E-07	9.45E-07	9.99E-07	9.99E-07
pb209	8.76E-13	9.26E-13	9.82E-13	1.04E-12	1.10E-12	1.11E-12
pb210	8.67E-07	9.21E-07	9.76E-07	1.03E-06	1.09E-06	1.09E-06
pb211	1.16E-12	1.20E-12	1.24E-12	1.27E-12	1.31E-12	1.31E-12
pb212	3.46E-12	3.57E-12	3.68E-12	3.78E-12	3.89E-12	3.89E-12
pb214	2.08E-12	2.27E-12	2.40E-12	2.53E-12	2.67E-12	2.60E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	4.37E-07	4.79E-07	5.23E-07	5.71E-07	6.20E-07	6.20E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	5.34E-10	5.67E-10	6.01E-10	6.36E-10	6.72E-10	6.72E-10

bi211	6.91E-14	7.11E-14	7.33E-14	7.55E-14	7.78E-14	7.81E-14
bi212	3.29E-13	3.39E-13	3.49E-13	3.59E-13	3.69E-13	3.69E-13
bi213	1.97E-13	2.16E-13	2.29E-13	2.43E-13	2.57E-13	2.49E-13
bi214	1.56E-12	1.68E-12	1.78E-12	1.88E-12	1.98E-12	1.94E-12
po210	1.47E-08	1.57E-08	1.66E-08	1.76E-08	1.86E-08	1.86E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	7.64E-19	7.85E-19	8.10E-19	8.35E-19	8.60E-19	8.63E-19
po212	1.73E-23	1.78E-23	1.83E-23	1.88E-23	1.94E-23	1.94E-23
po213	2.97E-22	3.25E-22	3.45E-22	3.65E-22	3.86E-22	3.74E-22
po214	2.14E-19	2.32E-19	2.45E-19	2.59E-19	2.73E-19	2.68E-19
po215	9.54E-19	9.85E-19	1.02E-18	1.05E-18	1.08E-18	1.08E-18
po216	1.31E-17	1.35E-17	1.39E-17	1.43E-17	1.47E-17	1.47E-17
po218	2.48E-13	2.62E-13	2.77E-13	2.93E-13	3.09E-13	3.09E-13
rn218	4.91E-29	5.07E-29	5.22E-29	5.38E-29	5.53E-29	5.52E-29
rn219	2.12E-15	2.19E-15	2.26E-15	2.33E-15	2.40E-15	2.40E-15
rn220	5.03E-15	5.18E-15	5.34E-15	5.49E-15	5.64E-15	5.65E-15
rn222	4.39E-10	4.66E-10	4.93E-10	5.20E-10	5.49E-10	5.49E-10
ra222	5.34E-26	5.51E-26	5.67E-26	5.84E-26	6.00E-26	5.99E-26
ra223	5.30E-10	5.47E-10	5.64E-10	5.81E-10	5.99E-10	5.99E-10
ra224	2.86E-11	2.95E-11	3.03E-11	3.12E-11	3.21E-11	3.21E-11
ra225	9.52E-11	1.01E-10	1.07E-10	1.14E-10	1.20E-10	1.20E-10
ra226	6.72E-05	7.12E-05	7.53E-05	7.95E-05	8.39E-05	8.39E-05
ra228	1.68E-12	1.73E-12	1.78E-12	1.84E-12	1.89E-12	1.89E-12
ac225	6.43E-11	6.83E-11	7.24E-11	7.67E-11	8.11E-11	8.11E-11
ac227	3.68E-07	3.80E-07	3.92E-07	4.04E-07	4.16E-07	4.16E-07
ac228	2.05E-16	2.11E-16	2.18E-16	2.24E-16	2.31E-16	2.31E-16
th226	2.60E-24	2.69E-24	2.77E-24	2.85E-24	2.93E-24	2.92E-24
th227	8.55E-10	8.83E-10	9.10E-10	9.38E-10	9.66E-10	9.66E-10
th228	5.46E-09	5.63E-09	5.79E-09	5.96E-09	6.13E-09	6.13E-09
th229	1.85E-05	1.97E-05	2.09E-05	2.21E-05	2.33E-05	2.33E-05
th230	2.04E-02	2.11E-02	2.17E-02	2.24E-02	2.30E-02	2.30E-02
th231	3.08E-09	3.09E-09	3.09E-09	3.10E-09	3.10E-09	3.09E-09
th232	4.14E-03	4.27E-03	4.40E-03	4.53E-03	4.66E-03	4.66E-03
th233	5.43E-16	3.90E-14	4.02E-14	4.14E-14	4.26E-14	6.11E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	5.76E-04	5.94E-04	6.12E-04	6.30E-04	6.48E-04	6.48E-04
pa232	9.39E-12	1.02E-11	1.05E-11	1.08E-11	1.11E-11	1.06E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 88
power= 4.000E-03mw, burnup=1.3149E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 301332. d	310463. d	319594. d	328726. d	328726. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.52E-21	2.60E-21	2.68E-21	2.76E-21	2.84E-21	2.83E-21
u231	8.11E-18	8.50E-18	8.76E-18	9.01E-18	9.26E-18	9.12E-18
u232	1.95E-07	2.01E-07	2.07E-07	2.13E-07	2.19E-07	2.19E-07
u233	1.09E-02	1.12E-02	1.15E-02	1.19E-02	1.22E-02	1.22E-02
u234	9.15E+00	9.15E+00	9.15E+00	9.16E+00	9.16E+00	9.16E+00
u235	7.24E+02	7.24E+02	7.24E+02	7.24E+02	7.24E+02	7.24E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.08E-06	3.11E-06	3.11E-06	3.11E-06	3.11E-06	3.08E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	5.63E-09	3.17E-07	3.17E-07	3.17E-07	3.17E-07	5.62E-09
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	1.40E-45
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12

np236m	1.91E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12	1.91E-12
np236	1.57E-07	1.62E-07	1.67E-07	1.72E-07	1.76E-07	1.76E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.50E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06	1.50E-06
np239	4.49E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05	4.49E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.02E-15	9.30E-15	9.30E-15	9.29E-15	9.29E-15	2.01E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.59E-13	2.61E-13	2.62E-13	2.63E-13	2.64E-13	2.64E-13
pu238	2.34E-02	2.34E-02	2.34E-02	2.34E-02	2.34E-02	2.34E-02
pu239	3.88E+00	4.00E+00	4.12E+00	4.24E+00	4.35E+00	4.35E+00
pu240	1.49E-02	1.58E-02	1.67E-02	1.77E-02	1.87E-02	1.87E-02
pu241	5.80E-06	6.17E-06	6.55E-06	6.93E-06	7.33E-06	7.33E-06
pu242	4.06E-08	4.54E-08	5.06E-08	5.62E-08	6.22E-08	6.22E-08
pu243	6.22E-17	9.56E-17	1.07E-16	1.18E-16	1.31E-16	9.52E-17
pu244	1.78E-34	2.41E-34	3.25E-34	4.33E-34	5.72E-34	5.72E-34
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.33E-20	1.66E-20	1.80E-20	1.94E-20	2.10E-20	1.84E-20
am240	6.75E-18	7.58E-18	8.22E-18	8.90E-18	9.61E-18	9.31E-18
am241	5.55E-05	6.03E-05	6.55E-05	7.09E-05	7.65E-05	7.65E-05
am242m	1.53E-08	1.70E-08	1.87E-08	2.05E-08	2.25E-08	2.25E-08
am242	1.94E-12	2.31E-12	2.51E-12	2.72E-12	2.94E-12	2.69E-12
am243	9.26E-11	1.06E-10	1.21E-10	1.38E-10	1.56E-10	1.56E-10
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	6.01E-19	8.06E-19	9.19E-19	1.04E-18	1.18E-18	1.01E-18
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	1.40E-45
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	1.23E-22	1.34E-22	1.46E-22	1.58E-22	1.71E-22	1.71E-22
cm242	4.28E-10	4.66E-10	5.06E-10	5.49E-10	5.93E-10	5.93E-10
cm243	1.52E-16	1.67E-16	1.83E-16	1.99E-16	2.16E-16	2.16E-16
cm244	9.61E-15	1.11E-14	1.27E-14	1.45E-14	1.64E-14	1.64E-14

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 89
power= 4.000E-03mw, burnup=1.3149E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge 301332. d 310463. d 319594. d 328726. d 328726. d

cm245	1.41E-18	1.68E-18	1.99E-18	2.35E-18	2.75E-18	2.75E-18
cm246	9.50E-22	1.17E-21	1.43E-21	1.74E-21	2.10E-21	2.10E-21
cm247	1.05E-26	1.33E-26	1.68E-26	2.11E-26	2.63E-26	2.63E-26
cm248	1.18E-30	1.56E-30	2.03E-30	2.62E-30	3.36E-30	3.36E-30
cm249	8.90E-42	4.67E-41	6.22E-41	8.56E-41	1.09E-40	2.49E-41
cm250	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.68E+08	2.68E+08	2.68E+08	2.68E+08	2.68E-07

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 10
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 "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                8/28/1996    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                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   90
         power=    .00mw, burnup=   1461.mwd, flux= 2.68E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      337857. d      346988. d      356120. d      365251. d
     productions  1.147285E+06  1.147456E+06  1.147625E+06  1.147795E+06  1.147964E+06
     absorptions  9.388229E+05  9.389935E+05  9.391619E+05  9.393289E+05  9.394933E+05
     k infinity   1.222046E+00  1.222006E+00  1.221968E+00  1.221931E+00  1.221897E+00
0                  initial      337857. d      346988. d      356120. d      365251. d
     actinide
     absorptions  9.313372E+05  9.314392E+05  9.315411E+05  9.316427E+05  9.317441E+05
     non-actinide
     abs. fracs.  7.973492E-03  8.045137E-03  8.114398E-03  8.182645E-03  8.248210E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2          fission products        page   91
0                              fraction of total absorption rate
         power=    .00mw, burnup=   1461.mwd, flux= 2.68E+08n/cm**2-sec
0              initial 337857. d 346988. d 356120. d 365251. d
```

sm149	3.82E-03	3.87E-03	3.92E-03	3.97E-03	4.02E-03
eu151	1.68E-04	1.73E-04	1.78E-04	1.84E-04	1.89E-04
nd143	1.32E-04	1.36E-04	1.39E-04	1.43E-04	1.47E-04
gd155	7.12E-05	7.28E-05	7.43E-05	7.58E-05	7.73E-05
rh103	6.18E-05	6.35E-05	6.52E-05	6.69E-05	6.87E-05
xe131	4.18E-05	4.30E-05	4.41E-05	4.53E-05	4.64E-05
cd113	4.27E-05	4.36E-05	4.44E-05	4.52E-05	4.60E-05
sm151	4.00E-05	4.00E-05	4.00E-05	4.00E-05	4.00E-05
cs133	3.24E-05	3.33E-05	3.42E-05	3.51E-05	3.60E-05
gd157	3.26E-05	3.30E-05	3.33E-05	3.37E-05	3.40E-05
sm147	2.40E-05	2.46E-05	2.53E-05	2.60E-05	2.66E-05
tc 99	2.38E-05	2.45E-05	2.51E-05	2.58E-05	2.65E-05
nd145	1.85E-05	1.90E-05	1.95E-05	2.00E-05	2.05E-05
mo 95	1.28E-05	1.32E-05	1.35E-05	1.39E-05	1.42E-05
sm152	1.03E-05	1.06E-05	1.09E-05	1.12E-05	1.15E-05
kr 83	8.03E-06	8.25E-06	8.47E-06	8.69E-06	8.91E-06
cs135	7.32E-06	7.52E-06	7.73E-06	7.93E-06	8.13E-06
ru101	5.67E-06	5.83E-06	5.98E-06	6.14E-06	6.30E-06
pr141	5.47E-06	5.62E-06	5.78E-06	5.93E-06	6.08E-06
eu153	5.01E-06	5.15E-06	5.29E-06	5.43E-06	5.57E-06
sm150	4.30E-06	4.50E-06	4.70E-06	4.90E-06	5.11E-06
la139	4.48E-06	4.60E-06	4.72E-06	4.85E-06	4.97E-06
xe135	2.26E-06	2.31E-06	2.31E-06	2.31E-06	2.31E-06
ba137	2.04E-06	2.10E-06	2.16E-06	2.22E-06	2.28E-06
pd105	1.93E-06	1.99E-06	2.04E-06	2.10E-06	2.15E-06
zr 93	1.81E-06	1.86E-06	1.91E-06	1.96E-06	2.01E-06
i129	1.40E-06	1.44E-06	1.48E-06	1.51E-06	1.55E-06
nd144	1.34E-06	1.38E-06	1.42E-06	1.46E-06	1.49E-06
mo 97	1.01E-06	1.04E-06	1.07E-06	1.10E-06	1.13E-06
ag109	8.95E-07	9.25E-07	9.55E-07	9.86E-07	1.02E-06
zr 91	4.77E-07	4.90E-07	5.03E-07	5.16E-07	5.29E-07
y 89	4.58E-07	4.70E-07	4.83E-07	4.95E-07	5.08E-07
ru102	4.14E-07	4.26E-07	4.37E-07	4.49E-07	4.60E-07
ce142	3.73E-07	3.83E-07	3.93E-07	4.03E-07	4.14E-07
nd148	3.58E-07	3.68E-07	3.78E-07	3.88E-07	3.97E-07
nd146	3.00E-07	3.09E-07	3.17E-07	3.25E-07	3.34E-07
pd108	2.76E-07	2.85E-07	2.94E-07	3.02E-07	3.11E-07
ba138	2.57E-07	2.64E-07	2.71E-07	2.78E-07	2.85E-07
in115	2.49E-07	2.56E-07	2.63E-07	2.70E-07	2.77E-07
pm147	2.69E-07	2.69E-07	2.69E-07	2.69E-07	2.69E-07
ce140	2.41E-07	2.47E-07	2.54E-07	2.60E-07	2.67E-07
xe132	2.16E-07	2.22E-07	2.28E-07	2.34E-07	2.40E-07
pd107	1.58E-07	1.63E-07	1.68E-07	1.73E-07	1.78E-07
mo 98	1.48E-07	1.53E-07	1.57E-07	1.61E-07	1.65E-07
eu155	1.64E-07	1.64E-07	1.64E-07	1.64E-07	1.65E-07
mo100	1.44E-07	1.48E-07	1.52E-07	1.56E-07	1.60E-07
xe134	1.42E-07	1.46E-07	1.50E-07	1.54E-07	1.58E-07
zr 92	1.15E-07	1.18E-07	1.21E-07	1.24E-07	1.28E-07
i127	9.47E-08	9.73E-08	1.00E-07	1.03E-07	1.05E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 92
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 337857. d 346988. d 356120. d 365251. d

zr 96	9.01E-08	9.26E-08	9.50E-08	9.75E-08	1.00E-07
ru104	8.94E-08	9.19E-08	9.44E-08	9.69E-08	9.94E-08
gd152	7.64E-08	8.12E-08	8.62E-08	9.14E-08	9.67E-08
nd150	7.94E-08	8.16E-08	8.38E-08	8.60E-08	8.82E-08
xe136	7.67E-08	7.89E-08	8.10E-08	8.31E-08	8.52E-08

br 81	5.74E-08	5.90E-08	6.06E-08	6.22E-08	6.38E-08
rb 85	5.58E-08	5.74E-08	5.89E-08	6.04E-08	6.20E-08
zr 94	4.86E-08	4.99E-08	5.12E-08	5.26E-08	5.39E-08
eu152	4.29E-08	4.42E-08	4.56E-08	4.69E-08	4.83E-08
zr 90	4.31E-08	4.43E-08	4.56E-08	4.68E-08	4.81E-08
cd111	4.01E-08	4.13E-08	4.25E-08	4.37E-08	4.49E-08
te130	3.49E-08	3.59E-08	3.69E-08	3.78E-08	3.88E-08
sm154	3.42E-08	3.52E-08	3.62E-08	3.71E-08	3.81E-08
rb 87	3.24E-08	3.33E-08	3.41E-08	3.50E-08	3.59E-08
se 77	2.31E-08	2.37E-08	2.44E-08	2.50E-08	2.57E-08
pd106	1.71E-08	1.76E-08	1.81E-08	1.86E-08	1.91E-08
kr 84	1.53E-08	1.57E-08	1.61E-08	1.65E-08	1.69E-08
sr 90	1.70E-08	1.70E-08	1.69E-08	1.69E-08	1.69E-08
se 79	1.18E-08	1.22E-08	1.25E-08	1.28E-08	1.32E-08
sb121	1.13E-08	1.17E-08	1.20E-08	1.23E-08	1.26E-08
gd156	8.99E-09	9.31E-09	9.65E-09	9.98E-09	1.03E-08
sb123	9.21E-09	9.47E-09	9.72E-09	9.98E-09	1.02E-08
kr 86	8.54E-09	8.77E-09	9.00E-09	9.24E-09	9.47E-09
rh105	8.64E-09	8.70E-09	8.71E-09	8.72E-09	8.73E-09
te128	7.66E-09	7.87E-09	8.09E-09	8.30E-09	8.51E-09
ru 99	5.67E-09	5.98E-09	6.31E-09	6.64E-09	6.98E-09
dy161	5.86E-09	6.06E-09	6.25E-09	6.45E-09	6.64E-09
se 80	5.52E-09	5.67E-09	5.82E-09	5.98E-09	6.13E-09
te125	4.87E-09	5.01E-09	5.14E-09	5.28E-09	5.42E-09
tb159	3.55E-09	3.65E-09	3.76E-09	3.87E-09	3.98E-09
cs137	3.75E-09	3.75E-09	3.75E-09	3.75E-09	3.75E-09
gd154	2.97E-09	3.14E-09	3.31E-09	3.49E-09	3.68E-09
cd112	3.25E-09	3.34E-09	3.43E-09	3.53E-09	3.62E-09
li 6	3.12E-09	3.21E-09	3.30E-09	3.38E-09	3.47E-09
sn117	2.53E-09	2.60E-09	2.68E-09	2.75E-09	2.82E-09
eu154	2.52E-09	2.60E-09	2.67E-09	2.74E-09	2.81E-09
gd158	2.31E-09	2.40E-09	2.48E-09	2.57E-09	2.66E-09
pr143	2.65E-09	2.65E-09	2.65E-09	2.64E-09	2.64E-09
sn119	2.07E-09	2.12E-09	2.18E-09	2.24E-09	2.30E-09
sn115	1.89E-09	1.94E-09	2.00E-09	2.05E-09	2.10E-09
xe133	2.01E-09	2.01E-09	2.01E-09	2.01E-09	2.01E-09
sr 88	1.57E-09	1.61E-09	1.65E-09	1.70E-09	1.74E-09
cd114	1.44E-09	1.49E-09	1.54E-09	1.59E-09	1.64E-09
ce141	1.59E-09	1.59E-09	1.59E-09	1.59E-09	1.59E-09
pd110	1.23E-09	1.26E-09	1.30E-09	1.34E-09	1.38E-09
ru100	9.73E-10	1.03E-09	1.08E-09	1.14E-09	1.20E-09
se 82	1.07E-09	1.09E-09	1.12E-09	1.15E-09	1.18E-09
dy164	9.07E-10	9.41E-10	9.76E-10	1.01E-09	1.05E-09
dy162	8.89E-10	9.22E-10	9.54E-10	9.87E-10	1.02E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 93
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 337857. d 346988. d 356120. d 365251. d

sn126	8.78E-10	9.03E-10	9.28E-10	9.53E-10	9.78E-10
pm149	9.63E-10	9.72E-10	9.72E-10	9.72E-10	9.72E-10
nd147	9.18E-10	9.23E-10	9.23E-10	9.22E-10	9.22E-10
se 78	8.10E-10	8.32E-10	8.55E-10	8.77E-10	9.00E-10
nd142	6.78E-10	7.15E-10	7.54E-10	7.95E-10	8.36E-10
ba134	6.49E-10	6.85E-10	7.22E-10	7.61E-10	8.00E-10
sm148	6.03E-10	6.37E-10	6.71E-10	7.06E-10	7.43E-10
sn124	6.56E-10	6.74E-10	6.93E-10	7.11E-10	7.29E-10
ba135	5.32E-10	5.61E-10	5.92E-10	6.23E-10	6.56E-10
ce144	5.96E-10	5.96E-10	5.96E-10	5.96E-10	5.95E-10
kr 85	5.68E-10	5.67E-10	5.67E-10	5.67E-10	5.67E-10

pd104	4.44E-10	4.69E-10	4.95E-10	5.21E-10	5.48E-10
as 75	4.82E-10	4.95E-10	5.09E-10	5.22E-10	5.35E-10
in113	3.58E-10	3.68E-10	3.79E-10	3.89E-10	3.99E-10
ru103	3.59E-10	3.60E-10	3.60E-10	3.60E-10	3.60E-10
ba136	3.14E-10	3.25E-10	3.35E-10	3.45E-10	3.56E-10
sn118	2.67E-10	2.74E-10	2.82E-10	2.89E-10	2.97E-10
cs134	2.41E-10	2.48E-10	2.55E-10	2.61E-10	2.68E-10
sn122	2.27E-10	2.33E-10	2.40E-10	2.46E-10	2.52E-10
cd116	2.27E-10	2.33E-10	2.39E-10	2.46E-10	2.52E-10
mo 96	2.08E-10	2.17E-10	2.28E-10	2.38E-10	2.48E-10
dy163	2.09E-10	2.17E-10	2.25E-10	2.33E-10	2.41E-10
kr 82	2.02E-10	2.09E-10	2.17E-10	2.24E-10	2.32E-10
sn120	1.69E-10	1.74E-10	1.79E-10	1.84E-10	1.88E-10
xe130	1.58E-10	1.65E-10	1.71E-10	1.78E-10	1.84E-10
zr 95	1.63E-10	1.64E-10	1.64E-10	1.63E-10	1.63E-10
nb 95	1.51E-10	1.51E-10	1.51E-10	1.51E-10	1.51E-10
ge 73	1.32E-10	1.36E-10	1.40E-10	1.43E-10	1.47E-10
y 91	1.42E-10	1.42E-10	1.42E-10	1.42E-10	1.42E-10
pm151	1.05E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10
nb 93	8.19E-11	8.66E-11	9.14E-11	9.64E-11	1.02E-10
cd110	6.85E-11	7.26E-11	7.69E-11	8.13E-11	8.58E-11
br 79	4.34E-11	4.58E-11	4.83E-11	5.09E-11	5.35E-11
ge 76	4.77E-11	4.90E-11	5.03E-11	5.16E-11	5.29E-11
ba140	4.68E-11	4.70E-11	4.70E-11	4.70E-11	4.70E-11
te126	3.82E-11	3.96E-11	4.12E-11	4.27E-11	4.42E-11
sm153	3.77E-11	3.89E-11	3.89E-11	3.89E-11	3.90E-11
gd160	3.42E-11	3.52E-11	3.63E-11	3.74E-11	3.85E-11
eu156	3.68E-11	3.68E-11	3.69E-11	3.70E-11	3.71E-11
ag107	2.46E-11	2.60E-11	2.75E-11	2.90E-11	3.06E-11
xe129	2.47E-11	2.60E-11	2.75E-11	2.89E-11	3.04E-11
sr 89	3.03E-11	3.04E-11	3.04E-11	3.03E-11	3.03E-11
ru106	2.75E-11	2.76E-11	2.76E-11	2.77E-11	2.78E-11
kr 87	6.64E-12	2.27E-11	2.27E-11	2.27E-11	2.27E-11
ce143	1.67E-11	1.73E-11	1.73E-11	1.73E-11	1.73E-11
ho165	1.48E-11	1.54E-11	1.59E-11	1.65E-11	1.71E-11
y 90	1.61E-11	1.61E-11	1.61E-11	1.61E-11	1.61E-11
sb125	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.52E-11	1.52E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 94
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 337857. d 346988. d 356120. d 365251. d

mo 99	1.27E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11
pm148m	9.50E-12	9.51E-12	9.51E-12	9.51E-12	9.51E-12
te127m	7.64E-12	7.65E-12	7.66E-12	7.66E-12	7.67E-12
te124	6.20E-12	6.39E-12	6.58E-12	6.77E-12	6.96E-12
i131	6.72E-12	6.75E-12	6.75E-12	6.75E-12	6.75E-12
sr 87	5.55E-12	5.71E-12	5.86E-12	6.02E-12	6.17E-12
dy160	3.43E-12	3.62E-12	3.82E-12	4.02E-12	4.23E-12
nb 94	3.15E-12	3.24E-12	3.33E-12	3.42E-12	3.51E-12
xe128	2.64E-12	2.78E-12	2.93E-12	3.07E-12	3.23E-12
sr 86	2.73E-12	2.84E-12	2.95E-12	3.07E-12	3.18E-12
ge 74	2.67E-12	2.74E-12	2.82E-12	2.89E-12	2.97E-12
ge 72	1.81E-12	1.86E-12	1.92E-12	1.97E-12	2.02E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
se 76	1.32E-12	1.37E-12	1.41E-12	1.46E-12	1.50E-12
sn116	9.40E-13	9.93E-13	1.05E-12	1.10E-12	1.16E-12
er166	6.23E-13	6.51E-13	6.79E-13	7.08E-13	7.37E-13
te122	3.99E-13	4.21E-13	4.44E-13	4.67E-13	4.91E-13

ag111	3.60E-13	3.64E-13	3.65E-13	3.66E-13	3.67E-13
pm148	3.61E-13	3.66E-13	3.65E-13	3.65E-13	3.65E-13
eu157	2.98E-13	3.29E-13	3.29E-13	3.30E-13	3.31E-13
cd115m	2.41E-13	2.41E-13	2.42E-13	2.42E-13	2.42E-13
kr 80	8.67E-14	8.96E-14	9.24E-14	9.53E-14	9.82E-14
cs136	7.93E-14	8.04E-14	8.11E-14	8.17E-14	8.24E-14
ru105	2.22E-14	3.07E-14	3.08E-14	3.08E-14	3.08E-14
sn125	2.93E-14	2.95E-14	2.96E-14	2.96E-14	2.96E-14
rb 88	8.01E-15	1.28E-14	1.28E-14	1.28E-14	1.28E-14
tb160	1.01E-14	1.04E-14	1.07E-14	1.10E-14	1.12E-14
er167	8.52E-15	9.03E-15	9.55E-15	1.01E-14	1.07E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
i135	7.95E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te123	8.23E-15	8.57E-15	8.92E-15	9.27E-15	9.63E-15
te132	9.34E-15	9.53E-15	9.53E-15	9.53E-15	9.52E-15
pr142	5.70E-15	6.36E-15	6.53E-15	6.70E-15	6.87E-15
be 9	5.95E-15	6.11E-15	6.28E-15	6.44E-15	6.60E-15
te134	6.04E-16	5.81E-15	5.81E-15	5.80E-15	5.80E-15
sb126	4.54E-15	4.60E-15	4.64E-15	4.69E-15	4.73E-15
li 7	2.42E-15	2.49E-15	2.55E-15	2.62E-15	2.69E-15
sb124	2.56E-15	2.57E-15	2.59E-15	2.60E-15	2.61E-15
in117m	1.83E-15	2.18E-15	2.18E-15	2.18E-15	2.18E-15
i130	1.64E-15	1.88E-15	1.91E-15	1.94E-15	1.98E-15
rb 86	6.03E-16	6.16E-16	6.26E-16	6.36E-16	6.45E-16
in117	5.47E-16	6.42E-16	6.43E-16	6.44E-16	6.45E-16
dy165	2.35E-16	4.59E-16	4.65E-16	4.72E-16	4.79E-16
cd108	2.91E-16	3.10E-16	3.30E-16	3.51E-16	3.72E-16
sn114	2.24E-16	2.37E-16	2.51E-16	2.64E-16	2.78E-16
cd118	1.87E-17	1.23E-16	1.23E-16	1.23E-16	1.23E-16
ge 75	2.83E-17	8.62E-17	8.62E-17	8.61E-17	8.61E-17
cs134m	2.64E-17	4.66E-17	4.78E-17	4.91E-17	5.03E-17
in119m	1.88E-19	3.06E-17	3.06E-17	3.06E-17	3.06E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 95
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.68E+08n/cm**2-sec
0 initial 337857. d 346988. d 356120. d 365251. d

in119	7.22E-22	2.41E-18	2.42E-18	2.42E-18	2.42E-18
cd109	1.71E-18	1.75E-18	1.79E-18	1.83E-18	1.87E-18
ag110	6.76E-22	1.21E-18	1.25E-18	1.29E-18	1.33E-18
in120	.00E+00	4.06E-22	4.06E-22	4.06E-22	4.06E-22
in120m	.00E+00	4.76E-23	4.77E-23	4.78E-23	4.79E-23

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 96
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly
charge 337857. d 346988. d 356120. d 365251. d

h 1	7.73E-05	7.94E-05	8.16E-05	8.37E-05	8.59E-05
h 2	2.29E-07	2.36E-07	2.42E-07	2.49E-07	2.55E-07
h 3	3.56E-11	3.56E-11	3.57E-11	3.58E-11	3.58E-11
h 4	.00E+00	1.44E-34	1.45E-34	1.45E-34	1.45E-34
he 3	1.65E-09	1.69E-09	1.74E-09	1.79E-09	1.83E-09
he 4	1.28E-05	1.31E-05	1.35E-05	1.38E-05	1.42E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.54E-06	1.58E-06	1.62E-06	1.66E-06	1.71E-06
ne 21	4.04E-11	4.26E-11	4.48E-11	4.71E-11	4.95E-11
ne 22	9.97E-09	1.02E-08	1.05E-08	1.08E-08	1.11E-08
ne 23	7.09E-30	7.10E-15	7.10E-15	7.10E-15	7.10E-15
na 22	4.17E-11	4.18E-11	4.18E-11	4.18E-11	4.18E-11

na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.47E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08
na 24m	4.51E-30	4.51E-15	4.51E-15	4.51E-15	4.51E-15
na 25	1.64E-40	1.72E-25	1.80E-25	1.87E-25	1.96E-25
mg 24	1.08E-02	1.11E-02	1.14E-02	1.17E-02	1.20E-02
mg 25	5.75E-09	6.01E-09	6.28E-09	6.56E-09	6.85E-09
mg 26	2.29E-07	2.36E-07	2.42E-07	2.49E-07	2.55E-07
mg 27	9.60E-17	2.12E-12	2.12E-12	2.12E-12	2.12E-12
mg 28	3.99E-24	4.31E-24	4.31E-24	4.31E-24	4.31E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.11E-25	2.04E-10	2.04E-10	2.04E-10	2.04E-10
al 29	5.34E-30	1.02E-23	1.08E-23	1.13E-23	1.19E-23
al 30	.00E+00	1.80E-34	1.94E-34	2.09E-34	2.25E-34
si 28	3.15E-02	3.23E-02	3.31E-02	3.40E-02	3.48E-02
si 29	3.79E-08	3.99E-08	4.20E-08	4.42E-08	4.64E-08
si 30	4.86E-14	5.26E-14	5.68E-14	6.13E-14	6.59E-14
si 31	1.90E-26	3.76E-26	4.06E-26	4.38E-26	4.72E-26
si 32	3.15E-32	3.45E-32	3.78E-32	4.13E-32	4.50E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.68E+08	2.68E+08	2.68E+08	2.68E+08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 97
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge 337857. d 346988. d 356120. d 365251. d

he 4	2.48E-01	2.57E-01	2.66E-01	2.75E-01	2.85E-01
pb206	1.02E-05	1.11E-05	1.20E-05	1.30E-05	1.40E-05
pb207	5.76E-06	6.10E-06	6.45E-06	6.80E-06	7.17E-06
pb208	9.99E-07	1.05E-06	1.11E-06	1.17E-06	1.23E-06
pb209	1.11E-12	1.16E-12	1.22E-12	1.29E-12	1.35E-12
pb210	1.09E-06	1.15E-06	1.21E-06	1.28E-06	1.34E-06
pb211	1.31E-12	1.35E-12	1.39E-12	1.43E-12	1.46E-12
pb212	3.89E-12	3.99E-12	4.10E-12	4.21E-12	4.31E-12
pb214	2.60E-12	2.81E-12	2.96E-12	3.10E-12	3.25E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.20E-07	6.73E-07	7.29E-07	7.87E-07	8.49E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	6.72E-10	7.09E-10	7.47E-10	7.85E-10	8.25E-10
bi211	7.81E-14	8.00E-14	8.23E-14	8.45E-14	8.68E-14
bi212	3.69E-13	3.79E-13	3.89E-13	3.99E-13	4.09E-13
bi213	2.49E-13	2.71E-13	2.85E-13	3.00E-13	3.16E-13
bi214	1.94E-12	2.09E-12	2.19E-12	2.30E-12	2.42E-12
po210	1.86E-08	1.96E-08	2.06E-08	2.17E-08	2.28E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	8.63E-19	8.84E-19	9.09E-19	9.34E-19	9.59E-19
po212	1.94E-23	1.99E-23	2.04E-23	2.10E-23	2.15E-23
po213	3.74E-22	4.07E-22	4.29E-22	4.52E-22	4.75E-22
po214	2.68E-19	2.87E-19	3.02E-19	3.17E-19	3.32E-19
po215	1.08E-18	1.11E-18	1.14E-18	1.17E-18	1.20E-18
po216	1.47E-17	1.51E-17	1.55E-17	1.59E-17	1.63E-17
po218	3.09E-13	3.25E-13	3.42E-13	3.59E-13	3.76E-13
rn218	5.52E-29	5.68E-29	5.83E-29	5.98E-29	6.13E-29
rn219	2.40E-15	2.47E-15	2.54E-15	2.61E-15	2.68E-15
rn220	5.65E-15	5.80E-15	5.95E-15	6.11E-15	6.26E-15
rn222	5.49E-10	5.78E-10	6.07E-10	6.38E-10	6.69E-10
ra222	5.99E-26	6.17E-26	6.33E-26	6.49E-26	6.66E-26
ra223	5.99E-10	6.16E-10	6.33E-10	6.50E-10	6.68E-10
ra224	3.21E-11	3.30E-11	3.39E-11	3.47E-11	3.56E-11
ra225	1.20E-10	1.27E-10	1.34E-10	1.41E-10	1.48E-10

ra226	8.39E-05	8.83E-05	9.28E-05	9.74E-05	1.02E-04
ra228	1.89E-12	1.94E-12	1.99E-12	2.05E-12	2.10E-12
ac225	8.11E-11	8.56E-11	9.02E-11	9.49E-11	9.98E-11
ac227	4.16E-07	4.28E-07	4.40E-07	4.52E-07	4.64E-07
ac228	2.31E-16	2.37E-16	2.43E-16	2.50E-16	2.56E-16
th226	2.92E-24	3.01E-24	3.09E-24	3.17E-24	3.25E-24
th227	9.66E-10	9.94E-10	1.02E-09	1.05E-09	1.08E-09
th228	6.13E-09	6.30E-09	6.46E-09	6.63E-09	6.80E-09
th229	2.33E-05	2.46E-05	2.60E-05	2.73E-05	2.87E-05
th230	2.30E-02	2.36E-02	2.43E-02	2.49E-02	2.56E-02
th231	3.09E-09	3.10E-09	3.10E-09	3.10E-09	3.11E-09
th232	4.66E-03	4.79E-03	4.92E-03	5.05E-03	5.18E-03
th233	6.11E-16	4.38E-14	4.49E-14	4.61E-14	4.73E-14
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	6.48E-04	6.67E-04	6.85E-04	7.03E-04	7.21E-04
pa232	1.06E-11	1.14E-11	1.17E-11	1.20E-11	1.23E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 98
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 337857. d	346988. d	356120. d	365251. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.83E-21	2.92E-21	2.99E-21	3.07E-21	3.15E-21
u231	9.12E-18	9.52E-18	9.78E-18	1.00E-17	1.03E-17
u232	2.19E-07	2.25E-07	2.31E-07	2.37E-07	2.43E-07
u233	1.22E-02	1.25E-02	1.29E-02	1.32E-02	1.35E-02
u234	9.16E+00	9.16E+00	9.17E+00	9.17E+00	9.17E+00
u235	7.24E+02	7.24E+02	7.23E+02	7.23E+02	7.23E+02
u236	1.75E+02	1.75E+02	1.76E+02	1.76E+02	1.76E+02
u237	3.08E-06	3.12E-06	3.12E-06	3.12E-06	3.12E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	5.62E-09	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.40E-45	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.64E-12	8.64E-12	8.64E-12	8.64E-12	8.64E-12
np236m	1.91E-12	2.06E-12	2.05E-12	2.05E-12	2.05E-12
np236	1.76E-07	1.81E-07	1.86E-07	1.91E-07	1.96E-07
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	1.50E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06
np239	4.49E-05	4.59E-05	4.59E-05	4.59E-05	4.59E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	2.01E-15	9.29E-15	9.29E-15	9.29E-15	9.29E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.11E-09	1.11E-09	1.11E-09	1.11E-09	1.11E-09
pu237	2.64E-13	2.65E-13	2.66E-13	2.67E-13	2.68E-13
pu238	2.34E-02	2.34E-02	2.34E-02	2.34E-02	2.34E-02
pu239	4.35E+00	4.47E+00	4.59E+00	4.70E+00	4.82E+00
pu240	1.87E-02	1.97E-02	2.07E-02	2.18E-02	2.29E-02
pu241	7.33E-06	7.74E-06	8.16E-06	8.58E-06	9.02E-06
pu242	6.22E-08	6.86E-08	7.56E-08	8.30E-08	9.09E-08
pu243	9.52E-17	1.45E-16	1.59E-16	1.75E-16	1.91E-16
pu244	5.72E-34	7.50E-34	9.76E-34	1.26E-33	1.62E-33
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.84E-20	2.26E-20	2.43E-20	2.60E-20	2.79E-20
am240	9.31E-18	1.04E-17	1.11E-17	1.19E-17	1.28E-17

```
     am241   7.65E-05  8.24E-05  8.85E-05  9.49E-05  1.02E-04
     am242m  2.25E-08  2.45E-08  2.67E-08  2.90E-08  3.14E-08
     am242   2.69E-12  3.17E-12  3.41E-12  3.66E-12  3.92E-12
     am243   1.56E-10  1.75E-10  1.97E-10  2.21E-10  2.46E-10
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   1.01E-18  1.33E-18  1.50E-18  1.67E-18  1.87E-18
     am245   1.40E-45   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.71E-22  1.85E-22  1.99E-22  2.13E-22  2.28E-22
     cm242   5.93E-10  6.40E-10  6.88E-10  7.39E-10  7.91E-10
     cm243   2.16E-16  2.34E-16  2.53E-16  2.73E-16  2.94E-16
     cm244   1.64E-14  1.86E-14  2.09E-14  2.35E-14  2.63E-14
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides         page   99
       power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0                                      nuclide concentrations, gram atoms
                                       basis = single reactor assembly
            charge 337857. d 346988. d 356120. d 365251. d
     cm245   2.75E-18  3.20E-18  3.72E-18  4.29E-18  4.94E-18
     cm246   2.10E-21  2.52E-21  3.00E-21  3.57E-21  4.22E-21
     cm247   2.63E-26  3.25E-26  3.99E-26  4.88E-26  5.92E-26
     cm248   3.36E-30  4.28E-30  5.41E-30  6.80E-30  8.49E-30
     cm249   2.49E-41  1.32E-40  1.71E-40  2.10E-40  2.65E-40
     cm250    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.68E+08  2.68E+08  2.68E+08  2.68E+08
0  .results on logical unit no. 71, position  1, for time step  4, subcase11. (run position 1, case position 1)
   title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                     light elements         page  100
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0                                      nuclide concentrations, grams
                                       basis =single reactor assembly
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
      h  1  8.59E-05  8.59E-05  8.59E-05  8.59E-05  8.59E-05  8.59E-05  8.59E-05
      h  2  5.10E-07  5.10E-07  5.10E-07  5.10E-07  5.10E-07  5.10E-07  5.10E-07
     he  4  5.68E-05  5.68E-05  5.68E-05  5.68E-05  5.68E-05  5.68E-05  5.68E-05
     ne 20  3.41E-05  3.41E-05  3.41E-05  3.41E-05  3.41E-05  3.41E-05  3.41E-05
     na 23  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05  1.73E+05
     mg 24  2.87E-01  2.87E-01  2.87E-01  2.87E-01  2.87E-01  2.87E-01  2.87E-01
     mg 26  6.63E-06  6.63E-06  6.63E-06  6.63E-06  6.63E-06  6.63E-06  6.63E-06
     al 27  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06  1.35E+06
     si 28  9.74E-01  9.74E-01  9.74E-01  9.74E-01  9.74E-01  9.74E-01  9.74E-01
     si 29  1.35E-06  1.35E-06  1.35E-06  1.35E-06  1.35E-06  1.35E-06  1.35E-06
   total    1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                     light elements         page  101
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0                                      element radioactivity, curies
                                       basis =single reactor assembly
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
       h    1.04E-06  9.92E-07  9.47E-07  9.03E-07  8.62E-07  8.23E-07  7.85E-07
      na    8.40E+00  4.60E-06  3.68E-06  2.95E-06  2.36E-06  1.89E-06  1.52E-06
   totals   2.55E+01  5.59E-06  4.63E-06  3.85E-06  3.22E-06  2.71E-06  2.30E-06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                     light elements         page  102
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0                                      element thermal power, watts
                                       basis =single reactor assembly
```

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na	1.70E-01	6.51E-08	5.21E-08	4.17E-08	3.34E-08	2.68E-08	2.14E-08
totals	4.76E-01	6.51E-08	5.21E-08	4.18E-08	3.34E-08	2.68E-08	2.15E-08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 103
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na 22	7.46E-08	5.98E-08	4.79E-08	3.83E-08	3.07E-08	2.46E-08	1.97E-08
total	3.31E-01	5.98E-08	4.79E-08	3.83E-08	3.07E-08	2.46E-08	1.97E-08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 104
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	2.85E-01	2.85E-01	2.85E-01	2.86E-01	2.86E-01	2.86E-01	2.86E-01
pb206	1.40E-05	1.40E-05	1.41E-05	1.41E-05	1.42E-05	1.42E-05	1.42E-05
pb207	7.17E-06	7.18E-06	7.19E-06	7.20E-06	7.22E-06	7.23E-06	7.24E-06
pb208	1.23E-06	1.23E-06	1.24E-06	1.24E-06	1.24E-06	1.24E-06	1.24E-06
pb210	1.34E-06	1.34E-06	1.34E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06
bi209	8.49E-07	8.51E-07	8.53E-07	8.55E-07	8.57E-07	8.59E-07	8.62E-07
ra226	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
th229	2.87E-05	2.88E-05	2.88E-05	2.89E-05	2.89E-05	2.90E-05	2.90E-05
th230	2.56E-02	2.56E-02	2.56E-02	2.56E-02	2.56E-02	2.57E-02	2.57E-02
th232	5.18E-03	5.18E-03	5.19E-03	5.19E-03	5.20E-03	5.20E-03	5.20E-03
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.21E-04	7.21E-04	7.22E-04	7.22E-04	7.23E-04	7.24E-04	7.24E-04
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
u233	1.35E-02	1.36E-02	1.36E-02	1.36E-02	1.36E-02	1.36E-02	1.36E-02
u234	9.17E+00	9.17E+00	9.17E+00	9.18E+00	9.18E+00	9.18E+00	9.18E+00
u235	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02	7.23E+02
u236	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
np237	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
pu238	2.34E-02	2.32E-02	2.31E-02	2.29E-02	2.28E-02	2.26E-02	2.25E-02
pu239	4.82E+00	4.82E+00	4.82E+00	4.82E+00	4.82E+00	4.82E+00	4.82E+00
pu240	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02
pu241	9.02E-06	8.67E-06	8.32E-06	8.00E-06	7.68E-06	7.38E-06	7.09E-06
am241	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 105
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	2.85E-01	2.85E-01	2.85E-01	2.86E-01	2.86E-01	2.86E-01	2.86E-01
pb	2.37E-05	2.38E-05	2.39E-05	2.39E-05	2.40E-05	2.40E-05	2.41E-05
bi	8.50E-07	8.52E-07	8.54E-07	8.56E-07	8.58E-07	8.60E-07	8.62E-07
ra	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04	1.03E-04	1.03E-04
th	3.08E-02	3.08E-02	3.08E-02	3.08E-02	3.09E-02	3.09E-02	3.09E-02
pa	7.22E-04	7.23E-04	7.23E-04	7.24E-04	7.24E-04	7.25E-04	7.26E-04
u	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
np	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
pu	4.87E+00	4.87E+00	4.87E+00	4.87E+00	4.86E+00	4.86E+00	4.86E+00
am	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.02E-04	1.03E-04	1.03E-04
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 106
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.15E+00
pb206	2.89E-03	2.89E-03	2.90E-03	2.91E-03	2.92E-03	2.92E-03	2.93E-03
pb207	1.48E-03	1.49E-03	1.49E-03	1.49E-03	1.49E-03	1.50E-03	1.50E-03
pb208	2.56E-04	2.56E-04	2.57E-04	2.57E-04	2.58E-04	2.58E-04	2.59E-04
pb210	2.81E-04	2.82E-04	2.82E-04	2.83E-04	2.83E-04	2.84E-04	2.84E-04
bi209	1.77E-04	1.78E-04	1.78E-04	1.79E-04	1.79E-04	1.80E-04	1.80E-04
po210	4.78E-06	4.74E-06	4.73E-06	4.74E-06	4.75E-06	4.75E-06	4.76E-06
ra226	2.31E-02	2.31E-02	2.32E-02	2.32E-02	2.32E-02	2.33E-02	2.33E-02
ac227	1.05E-04	1.05E-04	1.05E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04
th228	1.55E-06	1.54E-06	1.53E-06	1.52E-06	1.51E-06	1.50E-06	1.49E-06
th229	6.58E-03	6.59E-03	6.60E-03	6.61E-03	6.62E-03	6.63E-03	6.64E-03
th230	5.88E+00	5.88E+00	5.89E+00	5.89E+00	5.90E+00	5.90E+00	5.91E+00
th231	7.18E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07	6.91E-07
th232	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.21E+00	1.21E+00	1.21E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	1.66E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01
pa233	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
u232	5.63E-05	5.59E-05	5.55E-05	5.51E-05	5.47E-05	5.42E-05	5.38E-05
u233	3.16E+00	3.16E+00	3.16E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
u234	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03	2.15E+03
u235	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05	1.70E+05
u236	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04	4.14E+04
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
np236	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05	4.62E-05
np237	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03
pu238	5.57E+00	5.53E+00	5.50E+00	5.46E+00	5.42E+00	5.39E+00	5.35E+00
pu239	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03
pu240	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00	5.49E+00
pu241	2.17E-03	2.09E-03	2.01E-03	1.93E-03	1.85E-03	1.78E-03	1.71E-03
pu242	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05	2.20E-05
am241	2.45E-02	2.45E-02	2.46E-02	2.46E-02	2.47E-02	2.47E-02	2.47E-02
am242m	7.60E-06	7.57E-06	7.53E-06	7.50E-06	7.47E-06	7.44E-06	7.41E-06
total	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 107
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 element concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.14E+00	1.15E+00
pb	4.91E-03	4.92E-03	4.93E-03	4.94E-03	4.95E-03	4.96E-03	4.97E-03
bi	1.78E-04	1.78E-04	1.78E-04	1.79E-04	1.79E-04	1.80E-04	1.80E-04
po	4.78E-06	4.74E-06	4.73E-06	4.74E-06	4.75E-06	4.75E-06	4.76E-06
ra	2.31E-02	2.31E-02	2.32E-02	2.32E-02	2.32E-02	2.33E-02	2.33E-02
ac	1.05E-04	1.05E-04	1.05E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04
th	7.09E+00	7.09E+00	7.10E+00	7.10E+00	7.11E+00	7.12E+00	7.12E+00
pa	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.67E-01	1.68E-01
u	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06
np	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03	9.97E+03
pu	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03	1.16E+03
am	2.45E-02	2.45E-02	2.46E-02	2.46E-02	2.47E-02	2.47E-02	2.48E-02
totals	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 108
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	7.61E-03	7.62E-03	7.63E-03	7.64E-03	7.64E-03	7.65E-03	7.66E-03
tl208	4.57E-04	4.56E-04	4.53E-04	4.49E-04	4.46E-04	4.43E-04	4.40E-04
tl209	2.74E-05	2.74E-05	2.75E-05	2.75E-05	2.75E-05	2.76E-05	2.76E-05
pb209	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
pb210	2.15E-02	2.15E-02	2.16E-02	2.16E-02	2.16E-02	2.17E-02	2.17E-02
pb211	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
pb212	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
pb214	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.30E-02
bi210	2.15E-02	2.15E-02	2.16E-02	2.16E-02	2.16E-02	2.17E-02	2.17E-02
bi211	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
bi212	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
bi213	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
bi214	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.30E-02
po210	2.15E-02	2.13E-02	2.13E-02	2.13E-02	2.13E-02	2.14E-02	2.14E-02
po211	2.10E-05	2.10E-05	2.10E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
po212	8.14E-04	8.12E-04	8.07E-04	8.01E-04	7.95E-04	7.90E-04	7.84E-04
po213	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.29E-03	1.29E-03
po214	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.30E-02
po215	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
po216	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
po218	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.31E-02
at217	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
rn219	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
rn220	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
rn222	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.31E-02
fr221	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
fr223	1.05E-04	1.05E-04	1.05E-04	1.05E-04	1.06E-04	1.06E-04	1.06E-04
ra223	7.63E-03	7.64E-03	7.65E-03	7.66E-03	7.66E-03	7.67E-03	7.68E-03
ra224	1.27E-03	1.27E-03	1.26E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
ra225	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
ra226	2.28E-02	2.29E-02	2.29E-02	2.29E-02	2.30E-02	2.30E-02	2.31E-02
ac225	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
ac227	7.62E-03	7.63E-03	7.63E-03	7.64E-03	7.65E-03	7.65E-03	7.66E-03
th227	7.52E-03	7.54E-03	7.54E-03	7.55E-03	7.56E-03	7.56E-03	7.57E-03
th228	1.27E-03	1.26E-03	1.25E-03	1.25E-03	1.24E-03	1.23E-03	1.22E-03
th229	1.30E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.31E-03	1.32E-03
th230	1.21E-01	1.21E-01	1.21E-01	1.22E-01	1.22E-01	1.22E-01	1.22E-01
th231	3.82E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	7.87E-03	7.87E-03	7.88E-03	7.89E-03	7.89E-03	7.90E-03	7.90E-03
pa233	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
u232	1.24E-03	1.24E-03	1.23E-03	1.22E-03	1.21E-03	1.20E-03	1.19E-03
u233	3.04E-02	3.05E-02	3.05E-02	3.05E-02	3.06E-02	3.06E-02	3.06E-02
u234	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
u235	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01	3.67E-01
u236	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00	2.68E+00
u237	6.03E+01	5.17E-06	4.97E-06	4.77E-06	4.58E-06	4.40E-06	4.23E-06
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np236	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07
np237	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00	7.03E+00

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 109
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu236	1.37E-04	1.13E-04	9.24E-05	7.57E-05	6.20E-05	5.08E-05	4.17E-05
pu238	9.54E+01	9.48E+01	9.41E+01	9.35E+01	9.29E+01	9.23E+01	9.17E+01
pu239	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01	7.15E+01
pu240	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00	1.25E+00
pu241	2.25E-01	2.16E-01	2.08E-01	1.99E-01	1.91E-01	1.84E-01	1.77E-01
am241	8.40E-02	8.42E-02	8.43E-02	8.45E-02	8.46E-02	8.48E-02	8.49E-02
am242m	7.96E-05	7.93E-05	7.90E-05	7.86E-05	7.83E-05	7.80E-05	7.77E-05
am242	7.67E-04	7.89E-05	7.86E-05	7.83E-05	7.80E-05	7.77E-05	7.73E-05
cm242	6.34E-04	2.22E-04	1.08E-04	7.66E-05	6.78E-05	6.52E-05	6.43E-05
total	5.45E+03	2.08E+02	2.07E+02	2.07E+02	2.06E+02	2.05E+02	2.05E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 110
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	3.36E-05	3.36E-05	3.35E-05	3.35E-05	3.34E-05	3.34E-05	3.33E-05
pb	1.06E-04	1.06E-04	1.06E-04	1.07E-04	1.07E-04	1.07E-04	1.07E-04
bi	6.74E-04	6.75E-04	6.75E-04	6.76E-04	6.77E-04	6.77E-04	6.78E-04
po	3.08E-03	3.07E-03	3.08E-03	3.08E-03	3.08E-03	3.09E-03	3.09E-03
at	5.56E-05	5.57E-05	5.58E-05	5.59E-05	5.60E-05	5.61E-05	5.62E-05
rn	1.12E-03	1.12E-03	1.12E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03
fr	5.06E-05	5.06E-05	5.07E-05	5.08E-05	5.09E-05	5.10E-05	5.11E-05
ra	9.75E-04	9.77E-04	9.78E-04	9.79E-04	9.80E-04	9.81E-04	9.82E-04
ac	4.92E-05	4.93E-05	4.93E-05	4.94E-05	4.95E-05	4.96E-05	4.97E-05
th	5.40E-03	5.39E-03	5.39E-03	5.39E-03	5.40E-03	5.40E-03	5.40E-03
pa	3.24E-02	3.24E-02	3.24E-02	3.24E-02	3.24E-02	3.24E-02	3.24E-02
u	7.56E+00	5.42E-01	5.42E-01	5.42E-01	5.42E-01	5.42E-01	5.42E-01
np	7.11E+00	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01
pu	5.42E+00	5.40E+00	5.38E+00	5.36E+00	5.34E+00	5.32E+00	5.30E+00
am	2.80E-03	2.81E-03	2.81E-03	2.82E-03	2.82E-03	2.83E-03	2.83E-03
cm	2.31E-05	8.09E-06	3.94E-06	2.79E-06	2.47E-06	2.38E-06	2.35E-06
totals	2.01E+01	6.19E+00	6.17E+00	6.15E+00	6.13E+00	6.11E+00	6.09E+00

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 111
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	9.92E-08	9.94E-08	9.95E-08	9.96E-08	9.97E-08	9.97E-08	9.98E-08
tl208	9.10E-06	9.08E-06	9.02E-06	8.95E-06	8.89E-06	8.82E-06	8.76E-06
tl209	3.44E-07	3.45E-07	3.45E-07	3.46E-07	3.46E-07	3.47E-07	3.47E-07
pb210	6.42E-07	6.43E-07	6.44E-07	6.45E-07	6.46E-07	6.47E-07	6.48E-07
pb211	3.06E-06	3.06E-06	3.07E-06	3.07E-06	3.07E-06	3.07E-06	3.08E-06
pb212	1.09E-06	1.09E-06	1.08E-06	1.08E-06	1.07E-06	1.06E-06	1.05E-06
pb214	3.38E-05	3.39E-05	3.39E-05	3.40E-05	3.40E-05	3.41E-05	3.42E-05
bi211	2.12E-06	2.12E-06	2.12E-06	2.12E-06	2.13E-06	2.13E-06	2.13E-06
bi212	7.93E-07	7.91E-07	7.85E-07	7.80E-07	7.74E-07	7.69E-07	7.63E-07
bi213	9.75E-07	9.77E-07	9.79E-07	9.80E-07	9.82E-07	9.83E-07	9.85E-07
bi214	2.04E-04	2.04E-04	2.05E-04	2.05E-04	2.05E-04	2.06E-04	2.06E-04
po214	1.12E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08	1.13E-08
po215	7.93E-09	7.95E-09	7.96E-09	7.96E-09	7.97E-09	7.98E-09	7.99E-09
rn219	2.53E-06	2.54E-06	2.54E-06	2.54E-06	2.54E-06	2.55E-06	2.55E-06
rn222	5.27E-08	5.27E-08	5.28E-08	5.29E-08	5.30E-08	5.31E-08	5.32E-08
fr221	2.29E-07	2.29E-07	2.29E-07	2.30E-07	2.30E-07	2.31E-07	2.31E-07
fr223	3.58E-08	3.58E-08	3.58E-08	3.59E-08	3.59E-08	3.59E-08	3.60E-08
ra223	6.07E-06	6.09E-06	6.09E-06	6.10E-06	6.10E-06	6.11E-06	6.11E-06
ra224	7.59E-08	7.57E-08	7.52E-08	7.46E-08	7.41E-08	7.36E-08	7.30E-08
ra225	1.11E-07	1.11E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07

ra226	9.77E-07	9.79E-07	9.80E-07	9.82E-07	9.84E-07	9.85E-07	9.87E-07
ac225	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.31E-07	1.31E-07	1.31E-07
ac227	8.71E-09	8.72E-09	8.73E-09	8.74E-09	8.74E-09	8.75E-09	8.76E-09
th227	4.95E-06	4.96E-06	4.96E-06	4.97E-06	4.97E-06	4.98E-06	4.98E-06
th228	2.65E-08	2.64E-08	2.62E-08	2.60E-08	2.58E-08	2.56E-08	2.54E-08
th229	7.31E-07	7.32E-07	7.33E-07	7.34E-07	7.36E-07	7.37E-07	7.38E-07
th230	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
th231	7.01E-05	6.75E-05	6.75E-05	6.75E-05	6.75E-05	6.75E-05	6.75E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	1.87E-06	1.87E-06	1.87E-06	1.87E-06	1.87E-06	1.87E-06	1.87E-06
pa233	9.32E-03	9.32E-03	9.32E-03	9.32E-03	9.32E-03	9.32E-03	9.32E-03
pa234m	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
pa234	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05
u232	1.60E-08	1.59E-08	1.58E-08	1.56E-08	1.55E-08	1.54E-08	1.53E-08
u233	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.25E-07	2.25E-07	2.25E-07
u234	1.27E-04	1.27E-04	1.27E-04	1.27E-04	1.27E-04	1.27E-04	1.27E-04
u235	3.62E-04	3.62E-04	3.62E-04	3.62E-04	3.62E-04	3.62E-04	3.62E-04
u236	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05	2.70E-05
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np237	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03
pu238	1.07E-03	1.07E-03	1.06E-03	1.05E-03	1.05E-03	1.04E-03	1.03E-03
pu239	3.43E-04	3.43E-04	3.43E-04	3.43E-04	3.43E-04	3.43E-04	3.43E-04
pu240	1.22E-05	1.22E-05	1.22E-05	1.22E-05	1.22E-05	1.22E-05	1.22E-05
am241	1.42E-05	1.43E-05	1.43E-05	1.43E-05	1.44E-05	1.44E-05	1.44E-05
am242	8.83E-08	9.09E-09	9.05E-09	9.02E-09	8.98E-09	8.94E-09	8.91E-09
total	3.97E+00	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 112
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.84E-05	3.67E-05	3.50E-05	3.34E-05	3.19E-05	3.04E-05	2.90E-05
li 6	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05	1.95E-05
be 9	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07	8.85E-07
be 10	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06	5.90E-06
c 14	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06	1.12E-06
ga 71	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
ge 72	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04	1.28E-04
ge 73	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04	5.57E-04
ge 74	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04	4.86E-04
as 75	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03	5.65E-03
ge 76	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02	1.87E-02
se 76	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06	1.21E-06
se 77	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02	4.17E-02
se 78	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01	1.10E-01
se 79	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01	2.28E-01
br 79	2.39E-04	2.39E-04	2.40E-04	2.40E-04	2.41E-04	2.41E-04	2.41E-04
se 80	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01	6.78E-01
br 81	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.01E+00
se 82	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00	1.74E+00
kr 82	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04	4.78E-04
kr 83	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00	2.89E+00
kr 84	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
kr 85	2.24E-02	2.12E-02	2.01E-02	1.90E-02	1.80E-02	1.71E-02	1.62E-02
rb 85	6.73E+00	6.73E+00	6.74E+00	6.74E+00	6.74E+00	6.74E+00	6.74E+00
kr 86	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01	1.09E+01
sr 86	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05	8.20E-05
rb 87	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
sr 87	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05	2.48E-05

sr 88	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01	2.07E+01
y 89	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01	2.80E+01
sr 90	1.38E+00	1.35E+00	1.33E+00	1.30E+00	1.27E+00	1.25E+00	1.22E+00
y 90	3.59E-04	3.52E-04	3.44E-04	3.37E-04	3.31E-04	3.24E-04	3.17E-04
zr 90	3.28E+01	3.28E+01	3.28E+01	3.28E+01	3.29E+01	3.29E+01	3.29E+01
zr 91	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01	3.49E+01
zr 92	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01	3.56E+01
zr 93	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01	2.55E+01
nb 93	5.52E-03	5.53E-03	5.54E-03	5.55E-03	5.56E-03	5.57E-03	5.58E-03
nb 93m	2.63E-04	2.63E-04	2.63E-04	2.63E-04	2.63E-04	2.64E-04	2.64E-04
zr 94	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
nb 94	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05
mo 95	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01	4.01E+01
zr 96	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01	3.93E+01
mo 96	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02
mo 97	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01	3.57E+01
mo 98	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01	3.72E+01
tc 98	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06
tc 99	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01	3.95E+01
ru 99	6.62E-02	6.63E-02	6.64E-02	6.65E-02	6.66E-02	6.67E-02	6.68E-02
mo100	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01	4.10E+01
ru100	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02	1.77E-02
ru101	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01	3.39E+01
ru102	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01	2.88E+01

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 113
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
rh103	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01	2.13E+01
ru104	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01	1.34E+01
pd104	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02	4.68E-02
pd105	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00	7.53E+00
ru106	5.31E-03	3.01E-03	1.71E-03	9.67E-04	5.48E-04	3.11E-04	1.76E-04
pd106	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00	3.44E+00
pd107	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00	1.39E+00
ag107	7.17E-05	7.18E-05	7.20E-05	7.21E-05	7.22E-05	7.23E-05	7.25E-05
pd108	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01	6.96E-01
ag109	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01	3.89E-01
pd110	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01	2.71E-01
cd110	6.84E-04	6.84E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04	6.85E-04
cd111	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01
cd112	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01	1.35E-01
cd113	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02	9.15E-02
cd113m	4.47E-05	4.29E-05	4.12E-05	3.95E-05	3.80E-05	3.64E-05	3.50E-05
in113	2.11E-03	2.11E-03	2.12E-03	2.12E-03	2.12E-03	2.12E-03	2.12E-03
cd114	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01	1.52E-01
in115	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02	8.63E-02
sn115	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03	4.35E-03
cd116	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
sn116	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04	2.14E-04
sn117	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02	9.16E-02
sn118	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02	9.29E-02
sn119	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn120	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01	1.02E-01
sn121m	5.73E-05	5.67E-05	5.61E-05	5.55E-05	5.49E-05	5.43E-05	5.38E-05
sb121	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01	1.12E-01
sn122	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01	1.30E-01
te122	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05	1.02E-05

sb123	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01
sn124	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
te124	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
sb125	1.01E-03	8.17E-04	6.61E-04	5.35E-04	4.33E-04	3.50E-04	2.84E-04
te125	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.51E-01	2.52E-01
te125m	1.35E-05	1.16E-05	9.39E-06	7.60E-06	6.15E-06	4.98E-06	4.03E-06
sn126	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01
te126	3.53E-03	3.53E-03	3.53E-03	3.53E-03	3.53E-03	3.54E-03	3.54E-03
i127	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
te128	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00	3.01E+00
xe128	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05	9.55E-05
i129	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00	6.46E+00
xe129	1.42E-04	1.43E-04	1.43E-04	1.43E-04	1.43E-04	1.44E-04	1.44E-04
te130	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01
xe130	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
xe131	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01	2.49E+01
xe132	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01	3.75E+01
cs133	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01	5.84E+01
xe134	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01	6.87E+01
cs134	1.90E-04	1.44E-04	1.09E-04	8.20E-05	6.20E-05	4.68E-05	3.54E-05
ba134	3.19E-02	3.20E-02	3.20E-02	3.21E-02	3.21E-02	3.21E-02	3.21E-02
cs135	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01	5.79E+01

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 114
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0

nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ba135	8.74E-03	8.75E-03	8.77E-03	8.78E-03	8.80E-03	8.81E-03	8.83E-03
xe136	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01	5.63E+01
ba136	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02	5.96E-02
cs137	2.44E+00	2.39E+00	2.35E+00	2.30E+00	2.26E+00	2.22E+00	2.18E+00
ba137	5.40E+01	5.40E+01	5.41E+01	5.41E+01	5.41E+01	5.42E+01	5.42E+01
ba138	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01	6.03E+01
la138	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04	3.05E-04
la139	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
ce140	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01	5.77E+01
pr141	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01	5.34E+01
ce142	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01	5.43E+01
nd142	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03	5.71E-03
nd143	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01	5.50E+01
ce144	5.76E-02	2.75E-02	1.31E-02	6.25E-03	2.98E-03	1.42E-03	6.78E-04
nd144	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01	5.14E+01
nd145	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01	3.71E+01
nd146	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01	2.86E+01
sm146	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06	2.51E-06
pm147	8.22E-02	6.68E-02	5.36E-02	4.30E-02	3.45E-02	2.77E-02	2.22E-02
sm147	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01
nd148	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01	1.63E+01
sm148	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02	2.65E-02
sm149	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00	5.77E+00
nd150	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00	6.59E+00
sm150	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00	4.85E+00
sm151	5.49E-01	5.45E-01	5.42E-01	5.38E-01	5.35E-01	5.31E-01	5.28E-01
eu151	3.50E+00	3.50E+00	3.51E+00	3.51E+00	3.51E+00	3.52E+00	3.52E+00
sm152	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00	2.92E+00
eu152	4.61E-03	4.42E-03	4.23E-03	4.05E-03	3.88E-03	3.71E-03	3.56E-03
gd152	7.30E-02	7.30E-02	7.31E-02	7.31E-02	7.32E-02	7.32E-02	7.32E-02
eu153	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
sm154	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01	7.99E-01

eu154	1.39E-04	1.30E-04	1.21E-04	1.13E-04	1.06E-04	9.91E-05	9.27E-05
gd154	5.53E-03	5.54E-03	5.54E-03	5.55E-03	5.56E-03	5.57E-03	5.57E-03
eu155	2.53E-03	2.24E-03	1.98E-03	1.75E-03	1.55E-03	1.37E-03	1.21E-03
gd155	2.79E-01	2.79E-01	2.80E-01	2.80E-01	2.80E-01	2.80E-01	2.80E-01
gd156	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01	2.46E-01
gd157	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02	3.34E-02
gd158	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02	8.32E-02
tb159	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02	1.42E-02
gd160	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03	4.96E-03
dy160	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06	5.18E-06
dy161	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03	1.64E-03
dy162	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04	5.41E-04
dy163	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
dy164	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05	6.45E-05
ho165	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05	2.86E-05
er166	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06	2.82E-06
total	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03	1.52E+03

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 115

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0

nuclide radioactivity, curies

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.72E-01	3.55E-01	3.38E-01	3.23E-01	3.08E-01	2.94E-01	2.81E-01
c 14	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06
se 79	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03	3.12E-03
kr 85	8.79E+00	8.32E+00	7.89E+00	7.47E+00	7.08E+00	6.71E+00	6.36E+00
rb 87	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06	1.23E-06
sr 90	1.95E+02	1.91E+02	1.87E+02	1.83E+02	1.80E+02	1.76E+02	1.72E+02
y 90	1.95E+02	1.91E+02	1.87E+02	1.83E+02	1.80E+02	1.76E+02	1.72E+02
y 91	1.97E+02	5.39E+00	1.47E-01	3.98E-03	1.08E-04	2.94E-06	7.97E-08
zr 93	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02	6.41E-02
nb 93m	6.26E-02	6.27E-02	6.27E-02	6.28E-02	6.28E-02	6.29E-02	6.29E-02
nb 94	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06	1.92E-06
zr 95	2.17E+02	8.06E+00	2.98E-01	1.11E-02	4.09E-04	1.52E-05	5.62E-07
nb 95	2.17E+02	1.71E+01	6.56E-01	2.43E-02	9.02E-04	3.34E-05	1.24E-06
tc 99	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01	6.76E-01
rh102	8.66E-06	7.09E-06	5.81E-06	4.76E-06	3.90E-06	3.20E-06	2.62E-06
ru106	1.76E+01	9.98E+00	5.66E+00	3.21E+00	1.82E+00	1.03E+00	5.84E-01
rh106	1.76E+01	9.98E+00	5.66E+00	3.21E+00	1.82E+00	1.03E+00	5.84E-01
pd107	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04	7.17E-04
ag110m	2.81E-04	1.21E-04	5.19E-05	2.23E-05	9.58E-06	4.12E-06	1.77E-06
cd113m	1.00E-02	9.63E-03	9.25E-03	8.87E-03	8.52E-03	8.18E-03	7.85E-03
sn119m	1.58E-03	7.70E-04	3.75E-04	1.82E-04	8.88E-05	4.32E-05	2.10E-05
sn121	4.81E-01	2.36E-03	2.34E-03	2.31E-03	2.29E-03	2.27E-03	2.24E-03
sn121m	3.08E-03	3.04E-03	3.01E-03	2.98E-03	2.95E-03	2.92E-03	2.89E-03
sn123	5.88E-02	1.15E-02	2.24E-03	4.37E-04	8.54E-05	1.67E-05	3.26E-06
sb125	1.05E+00	8.56E-01	6.93E-01	5.61E-01	4.54E-01	3.67E-01	2.97E-01
te125m	2.43E-01	2.09E-01	1.69E-01	1.37E-01	1.11E-01	8.97E-02	7.26E-02
sn126	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02
sb126	6.09E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
sb126m	1.67E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02	1.03E-02
te127	4.36E+00	1.12E-01	1.62E-02	2.34E-03	3.38E-04	4.88E-05	7.04E-06
te127m	7.66E-01	1.15E-01	1.66E-02	2.39E-03	3.45E-04	4.98E-05	7.19E-06
i129	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
cs134	2.46E-01	1.86E-01	1.40E-01	1.06E-01	8.02E-02	6.06E-02	4.58E-02
cs135	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02	6.67E-02
cs137	2.12E+02	2.08E+02	2.04E+02	2.01E+02	1.97E+02	1.93E+02	1.89E+02
ba137m	2.01E+02	1.97E+02	1.93E+02	1.89E+02	1.86E+02	1.82E+02	1.79E+02
ce142	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06	1.30E-06

ce144	1.83E+02	8.74E+01	4.17E+01	1.99E+01	9.48E+00	4.52E+00	2.16E+00
pr144	1.83E+02	8.74E+01	4.17E+01	1.99E+01	9.48E+00	4.52E+00	2.16E+00
pr144m	2.57E+00	1.22E+00	5.84E-01	2.78E-01	1.33E-01	6.33E-02	3.02E-02
pm147	7.63E+01	6.19E+01	4.97E+01	3.99E+01	3.20E+01	2.57E+01	2.06E+01
sm151	1.44E+01	1.44E+01	1.43E+01	1.42E+01	1.41E+01	1.40E+01	1.39E+01
eu152	8.14E-01	7.80E-01	7.47E-01	7.15E-01	6.85E-01	6.56E-01	6.28E-01
gd153	6.58E-04	2.75E-04	1.15E-04	4.79E-05	2.00E-05	8.35E-06	3.49E-06
eu154	3.75E-02	3.51E-02	3.28E-02	3.07E-02	2.87E-02	2.68E-02	2.51E-02
eu155	1.25E+00	1.10E+00	9.76E-01	8.63E-01	7.63E-01	6.74E-01	5.96E-01
total	2.07E+04	1.11E+03	9.44E+02	8.68E+02	8.21E+02	7.88E+02	7.62E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 116
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.25E-05	1.20E-05	1.14E-05	1.09E-05	1.04E-05	9.92E-06	9.47E-06
se	3.30E+00	9.79E-07	9.79E-07	9.79E-07	9.79E-07	9.79E-07	9.79E-07
kr	1.28E+01	1.25E-02	1.18E-02	1.12E-02	1.06E-02	1.01E-02	9.54E-03
sr	2.00E+01	2.30E-01	2.17E-01	2.13E-01	2.09E-01	2.04E-01	2.00E-01
y	2.81E+01	1.08E+00	1.04E+00	1.02E+00	9.94E-01	9.74E-01	9.54E-01
zr	1.20E+01	4.06E-02	1.51E-03	6.29E-05	9.28E-06	7.30E-06	7.22E-06
nb	2.15E+01	8.22E-02	3.16E-03	1.28E-04	1.51E-05	1.10E-05	1.08E-05
tc	6.63E+00	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
ru	7.56E-01	2.26E-03	3.44E-04	1.91E-04	1.08E-04	6.13E-05	3.47E-05
rh	4.36E-01	9.58E-02	5.42E-02	3.07E-02	1.74E-02	9.88E-03	5.60E-03
pd	3.77E-02	3.95E-08	3.95E-08	3.95E-08	3.95E-08	3.95E-08	3.95E-08
ag	7.68E-02	2.03E-06	8.70E-07	3.74E-07	1.61E-07	6.91E-08	2.98E-08
cd	6.95E-02	1.10E-05	1.01E-05	9.65E-06	9.27E-06	8.89E-06	8.54E-06
sn	1.87E+00	5.47E-05	2.56E-05	1.99E-05	1.87E-05	1.84E-05	1.84E-05
sb	7.51E+00	2.87E-03	2.35E-03	1.93E-03	1.60E-03	1.32E-03	1.10E-03
te	9.26E+00	4.27E-04	1.73E-04	1.20E-04	9.39E-05	7.56E-05	6.11E-05
i	2.08E+01	5.34E-07	5.34E-07	5.34E-07	5.34E-07	5.34E-07	5.34E-07
cs	1.82E+01	2.34E-01	2.29E-01	2.24E-01	2.19E-01	2.15E-01	2.11E-01
ba	1.19E+01	7.73E-01	7.58E-01	7.44E-01	7.30E-01	7.16E-01	7.02E-01
ce	4.39E+00	5.76E-02	2.73E-02	1.30E-02	6.21E-03	2.96E-03	1.41E-03
pr	6.23E+00	6.42E-01	3.06E-01	1.46E-01	6.96E-02	3.32E-02	1.58E-02
pm	3.44E-01	2.27E-02	1.82E-02	1.46E-02	1.17E-02	9.42E-03	7.56E-03
sm	2.27E-02	1.69E-03	1.68E-03	1.67E-03	1.66E-03	1.64E-03	1.63E-03
eu	1.87E-02	7.13E-03	6.76E-03	6.41E-03	6.08E-03	5.77E-03	5.48E-03
gd	1.66E-04	2.41E-07	1.01E-07	4.21E-08	1.76E-08	7.34E-09	3.06E-09
totals	2.61E+02	3.28E+00	2.68E+00	2.42E+00	2.28E+00	2.18E+00	2.12E+00

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 117
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.16E-04	1.10E-04	1.04E-04	9.88E-05	9.36E-05	8.87E-05	8.40E-05
y 90	1.96E-06	1.92E-06	1.89E-06	1.85E-06	1.81E-06	1.77E-06	1.74E-06
nb 93m	6.98E-07	6.98E-07	6.99E-07	6.99E-07	7.00E-07	7.00E-07	7.01E-07
nb 94	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08	1.78E-08
zr 95	9.44E-01	3.50E-02	1.29E-03	4.80E-05	1.78E-06	6.58E-08	2.44E-09
nb 95	9.85E-01	7.75E-02	2.97E-03	1.10E-04	4.09E-06	1.51E-07	5.61E-09
rh102	1.11E-07	9.08E-08	7.44E-08	6.10E-08	5.00E-08	4.09E-08	3.35E-08
rh106	2.15E-02	1.22E-02	6.91E-03	3.92E-03	2.22E-03	1.26E-03	7.13E-04
ag110m	4.56E-06	1.96E-06	8.42E-07	3.62E-07	1.56E-07	6.68E-08	2.87E-08
sn121m	9.12E-08	9.02E-08	8.93E-08	8.83E-08	8.74E-08	8.65E-08	8.56E-08
sb125	2.71E-03	2.20E-03	1.78E-03	1.44E-03	1.17E-03	9.45E-04	7.65E-04
te125m	5.12E-05	4.40E-05	3.57E-05	2.89E-05	2.34E-05	1.89E-05	1.53E-05

sn126	8.01E-06	8.01E-06	8.01E-06	8.01E-06	8.01E-06	8.01E-06	8.01E-06
sb126	9.94E-05	2.36E-05	2.36E-05	2.36E-05	2.36E-05	2.36E-05	2.36E-05
sb126m	1.54E-04	9.53E-05	9.53E-05	9.53E-05	9.53E-05	9.53E-05	9.53E-05
i129	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cs134	2.27E-03	1.71E-03	1.29E-03	9.78E-04	7.39E-04	5.59E-04	4.22E-04
ba137m	7.12E-01	6.99E-01	6.85E-01	6.72E-01	6.60E-01	6.47E-01	6.35E-01
ce144	2.06E-02	9.85E-03	4.70E-03	2.24E-03	1.07E-03	5.09E-04	2.43E-04
pr144	3.14E-02	1.50E-02	7.14E-03	3.41E-03	1.63E-03	7.75E-04	3.70E-04
pr144m	1.90E-04	9.07E-05	4.33E-05	2.06E-05	9.84E-06	4.69E-06	2.24E-06
pm147	1.98E-06	1.61E-06	1.29E-06	1.03E-06	8.30E-07	6.66E-07	5.35E-07
sm151	1.22E-06	1.21E-06	1.20E-06	1.19E-06	1.18E-06	1.18E-06	1.17E-06
eu152	5.61E-03	5.37E-03	5.14E-03	4.92E-03	4.72E-03	4.52E-03	4.32E-03
gd153	4.20E-07	1.75E-07	7.32E-08	3.05E-08	1.28E-08	5.32E-09	2.22E-09
eu154	2.79E-04	2.61E-04	2.44E-04	2.28E-04	2.13E-04	1.99E-04	1.86E-04
eu155	4.79E-04	4.24E-04	3.74E-04	3.31E-04	2.93E-04	2.59E-04	2.29E-04
total	1.29E+02	8.60E-01	7.18E-01	6.90E-01	6.72E-01	6.56E-01	6.42E-01

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 118

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.74E+08n/cm**2-sec

0 element gamma power, watts

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.67E+00	1.10E-04	1.04E-04	9.88E-05	9.36E-05	8.87E-05	8.40E-05
y	9.75E+00	1.18E-04	5.03E-06	1.93E-06	1.81E-06	1.77E-06	1.74E-06
zr	4.79E+00	3.50E-02	1.29E-03	4.80E-05	1.78E-06	6.58E-08	2.44E-09
nb	9.14E+00	7.76E-02	2.97E-03	1.11E-04	4.81E-06	8.70E-07	7.24E-07
rh	1.24E-01	1.22E-02	6.91E-03	3.92E-03	2.22E-03	1.26E-03	7.13E-04
ag	3.16E-02	1.96E-06	8.43E-07	3.62E-07	1.56E-07	6.69E-08	2.88E-08
sn	1.22E+00	8.62E-06	8.21E-06	8.13E-06	8.10E-06	8.10E-06	8.09E-06
sb	5.15E+00	2.32E-03	1.90E-03	1.56E-03	1.29E-03	1.06E-03	8.84E-04
te	5.55E+00	5.89E-05	3.73E-05	2.91E-05	2.34E-05	1.89E-05	1.53E-05
i	1.36E+01	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07	1.66E-07
cs	8.72E+00	1.71E-03	1.29E-03	9.78E-04	7.39E-04	5.59E-04	4.22E-04
ba	5.39E+00	6.99E-01	6.85E-01	6.72E-01	6.60E-01	6.47E-01	6.35E-01
ce	2.08E+00	9.98E-03	4.70E-03	2.24E-03	1.07E-03	5.09E-04	2.43E-04
pr	1.80E+00	1.51E-02	7.19E-03	3.43E-03	1.64E-03	7.80E-04	3.72E-04
pm	8.73E-02	1.67E-06	1.29E-06	1.04E-06	8.30E-07	6.66E-07	5.35E-07
sm	4.73E-03	1.21E-06	1.20E-06	1.19E-06	1.18E-06	1.18E-06	1.17E-06
eu	1.28E-02	6.05E-03	5.76E-03	5.48E-03	5.22E-03	4.97E-03	4.74E-03
gd	4.27E-05	1.75E-07	7.32E-08	3.05E-08	1.28E-08	5.32E-09	2.22E-09
totals	1.29E+02	8.60E-01	7.18E-01	6.90E-01	6.72E-01	6.56E-01	6.42E-01

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photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

power= .00 mw, burnup= 1461.mwd, flux= 2.74E+08 n**2-sec

0 spectrum of photon release rates, photons/sec

basis = single reactor assembly

0

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	5.15E+11	5.60E+04	4.48E+04	3.59E+04	2.88E+04	2.30E+04	1.85E+04
3.00E-02	1.69E+11	1.78E+04	1.43E+04	1.14E+04	9.15E+03	7.33E+03	5.87E+03
5.50E-02	1.18E+11	1.20E+04	9.64E+03	7.72E+03	6.18E+03	4.95E+03	3.97E+03
8.50E-02	6.89E+10	6.77E+03	5.42E+03	4.34E+03	3.48E+03	2.79E+03	2.23E+03
1.20E-01	4.90E+10	4.63E+03	3.71E+03	2.97E+03	2.38E+03	1.90E+03	1.53E+03
1.70E-01	5.13E+10	4.55E+03	3.64E+03	2.92E+03	2.34E+03	1.87E+03	1.50E+03
3.00E-01	5.88E+10	4.52E+03	3.62E+03	2.90E+03	2.32E+03	1.86E+03	1.49E+03
6.50E-01	2.89E+10	2.42E+05	1.94E+05	1.55E+05	1.24E+05	9.94E+04	7.96E+04
1.13E+00	4.97E+09	1.93E+05	1.54E+05	1.24E+05	9.89E+04	7.92E+04	6.35E+04

	1.58E+00	9.04E+11	4.82E-01	3.86E-01	3.09E-01	2.48E-01	1.99E-01	1.59E-01
	2.00E+00	1.79E+08	4.29E-02	3.44E-02	2.75E-02	2.20E-02	1.77E-02	1.41E-02
	2.40E+00	3.63E+07	9.62E-03	7.70E-03	6.17E-03	4.94E-03	3.96E-03	3.17E-03
	2.80E+00	2.13E+11	1.51E-04	1.21E-04	9.66E-05	7.74E-05	6.20E-05	4.96E-05
	3.25E+00	1.37E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	3.75E+00	1.39E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.25E+00	1.82E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.75E+00	6.17E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	5.50E+00	1.01E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0	total	2.18E+12	5.41E+05	4.33E+05	3.47E+05	2.78E+05	2.22E+05	1.78E+05
0	mev/sec	2.10E+12	3.79E+05	3.03E+05	2.43E+05	1.95E+05	1.56E+05	1.25E+05

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	1.29E+06	1.40E-01	1.12E-01	8.98E-02	7.19E-02	5.76E-02	4.61E-02
	3.00E-02	1.27E+06	1.34E-01	1.07E-01	8.57E-02	6.86E-02	5.50E-02	4.40E-02
	5.50E-02	1.62E+06	1.65E-01	1.33E-01	1.06E-01	8.50E-02	6.81E-02	5.45E-02
	8.50E-02	1.46E+06	1.44E-01	1.15E-01	9.23E-02	7.39E-02	5.92E-02	4.74E-02
	1.20E-01	1.47E+06	1.39E-01	1.11E-01	8.91E-02	7.13E-02	5.71E-02	4.58E-02
	1.70E-01	2.18E+06	1.93E-01	1.55E-01	1.24E-01	9.93E-02	7.95E-02	6.37E-02
	3.00E-01	4.41E+06	3.39E-01	2.72E-01	2.18E-01	1.74E-01	1.40E-01	1.12E-01
	6.50E-01	4.70E+06	3.93E+01	3.15E+01	2.52E+01	2.02E+01	1.62E+01	1.29E+01
	1.13E+00	1.40E+06	5.42E+01	4.34E+01	3.47E+01	2.78E+01	2.23E+01	1.79E+01
	1.58E+00	3.56E+08	1.90E-04	1.52E-04	1.22E-04	9.76E-05	7.82E-05	6.26E-05
	2.00E+00	8.95E+04	2.14E-05	1.72E-05	1.38E-05	1.10E-05	8.83E-06	7.07E-06
	2.40E+00	2.18E+04	5.77E-06	4.62E-06	3.70E-06	2.96E-06	2.37E-06	1.90E-06
	2.80E+00	1.49E+08	1.05E-07	8.44E-08	6.76E-08	5.42E-08	4.34E-08	3.47E-08
	3.25E+00	1.11E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	3.75E+00	1.30E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.25E+00	1.93E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	4.75E+00	7.33E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	5.50E+00	1.39E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0	total	5.25E+08	9.47E+01	7.58E+01	6.07E+01	4.87E+01	3.90E+01	3.12E+01
0	gamma watts	3.37E-01	6.07E-08	4.86E-08	3.89E-08	3.12E-08	2.50E-08	2.00E-08

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photon spectrum as a function of time for fission products

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 1461.mwd, flux= 2.74E+08 n**2-sec

0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	2.60E+14	8.34E+12	6.69E+12	5.90E+12	5.46E+12	5.18E+12	5.00E+12
	3.00E-02	1.14E+14	3.62E+12	2.88E+12	2.52E+12	2.32E+12	2.20E+12	2.11E+12
	5.50E-02	6.06E+13	1.82E+12	1.43E+12	1.25E+12	1.14E+12	1.08E+12	1.04E+12
	8.50E-02	4.19E+13	1.07E+12	8.28E+11	7.08E+11	6.42E+11	6.04E+11	5.79E+11
	1.20E-01	3.43E+13	1.09E+12	7.35E+11	5.65E+11	4.79E+11	4.33E+11	4.07E+11
	1.70E-01	5.49E+13	6.90E+11	5.33E+11	4.59E+11	4.18E+11	3.94E+11	3.79E+11
	3.00E-01	1.10E+14	7.56E+11	5.80E+11	4.93E+11	4.47E+11	4.20E+11	4.02E+11
	6.50E-01	2.30E+14	8.28E+12	6.94E+12	6.69E+12	6.52E+12	6.37E+12	6.23E+12
	1.13E+00	7.79E+13	7.09E+10	5.19E+10	4.22E+10	3.69E+10	3.37E+10	3.17E+10
	1.58E+00	4.03E+13	2.54E+10	1.65E+10	1.20E+10	9.63E+09	8.34E+09	7.59E+09
	2.00E+00	1.22E+13	2.93E+10	1.41E+10	6.86E+09	3.37E+09	1.70E+09	8.95E+08
	2.40E+00	1.06E+13	6.53E+08	3.46E+08	1.85E+08	9.92E+07	5.37E+07	2.92E+07
	2.80E+00	4.22E+12	8.65E+07	4.71E+07	2.58E+07	1.42E+07	7.81E+06	4.33E+06
	3.25E+00	2.46E+12	1.11E+07	6.32E+06	3.58E+06	2.03E+06	1.15E+06	6.52E+05

	3.75E+00	1.25E+12	4.92E+03	2.79E+03	1.58E+03	8.95E+02	5.07E+02	2.88E+02
	4.25E+00	1.38E+12	2.01E-06	2.01E-06	2.02E-06	2.02E-06	2.02E-06	2.02E-06
	4.75E+00	4.04E+11	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06
	5.50E+00	3.01E+11	7.50E-07	7.50E-07	7.50E-07	7.50E-07	7.50E-07	7.50E-07
0	total	1.06E+15	2.58E+13	2.07E+13	1.86E+13	1.75E+13	1.67E+13	1.62E+13
0	mev/sec	4.44E+14	6.42E+12	5.28E+12	4.98E+12	4.80E+12	4.67E+12	4.56E+12

0 spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

0

	emean		time after discharge					
	(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	1.00E-02	6.51E+08	2.09E+07	1.67E+07	1.47E+07	1.36E+07	1.30E+07	1.25E+07
	3.00E-02	8.54E+08	2.71E+07	2.16E+07	1.89E+07	1.74E+07	1.65E+07	1.59E+07
	5.50E-02	8.34E+08	2.50E+07	1.97E+07	1.71E+07	1.57E+07	1.49E+07	1.43E+07
	8.50E-02	8.90E+08	2.28E+07	1.76E+07	1.50E+07	1.37E+07	1.28E+07	1.23E+07
	1.20E-01	1.03E+09	3.26E+07	2.20E+07	1.70E+07	1.44E+07	1.30E+07	1.22E+07
	1.70E-01	2.33E+09	2.93E+07	2.27E+07	1.95E+07	1.78E+07	1.68E+07	1.61E+07
	3.00E-01	8.25E+09	5.67E+07	4.35E+07	3.70E+07	3.35E+07	3.15E+07	3.02E+07
	6.50E-01	3.73E+10	1.35E+09	1.13E+09	1.09E+09	1.06E+09	1.04E+09	1.01E+09
	1.13E+00	2.19E+10	1.99E+07	1.46E+07	1.19E+07	1.04E+07	9.48E+06	8.90E+06
	1.58E+00	1.59E+10	1.00E+07	6.48E+06	4.71E+06	3.79E+06	3.29E+06	2.99E+06
	2.00E+00	6.12E+09	1.47E+07	7.06E+06	3.43E+06	1.69E+06	8.49E+05	4.47E+05
	2.40E+00	6.34E+09	3.92E+05	2.08E+05	1.11E+05	5.95E+04	3.22E+04	1.75E+04
	2.80E+00	2.95E+09	6.05E+04	3.30E+04	1.80E+04	9.91E+03	5.47E+03	3.03E+03
	3.25E+00	2.00E+09	9.06E+03	5.13E+03	2.91E+03	1.65E+03	9.35E+02	5.30E+02
	3.75E+00	1.17E+09	4.61E+00	2.61E+00	1.48E+00	8.39E-01	4.76E-01	2.70E-01
	4.25E+00	1.47E+09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09	2.14E-09
	4.75E+00	4.80E+08	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09	1.20E-09
	5.50E+00	4.14E+08	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09	1.03E-09
0	total	1.11E+11	1.61E+09	1.32E+09	1.25E+09	1.20E+09	1.17E+09	1.14E+09
0	gamma watts	7.11E+01	1.03E+00	8.46E-01	7.99E-01	7.70E-01	7.48E-01	7.30E-01

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0 principal photon sources in group 1, photons/sec
mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (5.18E+12) at 1521.9 d

nuclide			time after discharge				
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	4.64E+10	4.39E+10	4.16E+10	3.94E+10	3.74E+10	3.54E+10	3.36E+10
sr 90	7.94E+11	7.78E+11	7.62E+11	7.47E+11	7.32E+11	7.17E+11	7.02E+11
y 90	3.90E+12	3.82E+12	3.75E+12	3.67E+12	3.60E+12	3.52E+12	3.45E+12
rh106	5.24E+11	2.97E+11	1.68E+11	9.54E+10	5.41E+10	3.07E+10	1.74E+10
cs137	7.50E+11	7.35E+11	7.21E+11	7.08E+11	6.94E+11	6.81E+11	6.68E+11
ba137m	3.52E+10	3.45E+10	3.38E+10	3.32E+10	3.26E+10	3.19E+10	3.13E+10
ce144	3.53E+11	1.68E+11	8.03E+10	3.83E+10	1.83E+10	8.71E+09	4.15E+09
pr144	4.68E+12	2.23E+12	1.06E+12	5.07E+11	2.42E+11	1.15E+11	5.50E+10
pm147	8.86E+10	7.19E+10	5.77E+10	4.63E+10	3.72E+10	2.98E+10	2.39E+10

0 principal photon sources in group 2, photons/sec
mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (2.20E+12) at 1521.9 d

nuclide			time after discharge				
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.35E+10	1.28E+10	1.21E+10	1.15E+10	1.09E+10	1.03E+10	9.78E+09
sr 90	2.24E+11	2.20E+11	2.15E+11	2.11E+11	2.07E+11	2.03E+11	1.98E+11
y 90	1.27E+12	1.25E+12	1.22E+12	1.20E+12	1.17E+12	1.15E+12	1.12E+12
rh106	1.75E+11	9.92E+10	5.62E+10	3.19E+10	1.81E+10	1.02E+10	5.80E+09
sb125	1.94E+10	1.57E+10	1.27E+10	1.03E+10	8.33E+09	6.74E+09	5.45E+09
te125m	1.04E+10	8.93E+09	7.24E+09	5.86E+09	4.74E+09	3.84E+09	3.11E+09
cs137	2.09E+11	2.05E+11	2.01E+11	1.97E+11	1.93E+11	1.90E+11	1.86E+11
ba137m	6.04E+11	5.93E+11	5.81E+11	5.70E+11	5.59E+11	5.49E+11	5.38E+11
ce144	8.19E+11	3.91E+11	1.86E+11	8.89E+10	4.24E+10	2.02E+10	9.64E+09
pr144	1.55E+12	7.38E+11	3.52E+11	1.68E+11	8.00E+10	3.82E+10	1.82E+10
pm147	1.95E+10	1.58E+10	1.27E+10	1.02E+10	8.17E+09	6.56E+09	5.26E+09

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
eu152	1.19E+10	1.14E+10	1.09E+10	1.04E+10	1.00E+10	9.58E+09	9.17E+09

0 principal photon sources in group 3, photons/sec

mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (1.08E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	8.28E+09	7.85E+09	7.44E+09	7.05E+09	6.68E+09	6.33E+09	6.00E+09
sr 90	1.33E+11	1.30E+11	1.27E+11	1.25E+11	1.22E+11	1.20E+11	1.17E+11
y 90	8.79E+11	8.61E+11	8.44E+11	8.26E+11	8.10E+11	7.93E+11	7.77E+11
rh106	1.24E+11	7.03E+10	3.98E+10	2.26E+10	1.28E+10	7.25E+09	4.11E+09
cs137	1.22E+11	1.19E+11	1.17E+11	1.15E+11	1.13E+11	1.10E+11	1.08E+11
ce144	1.19E+11	5.65E+10	2.70E+10	1.29E+10	6.13E+09	2.93E+09	1.40E+09
pr144	1.09E+12	5.18E+11	2.47E+11	1.18E+11	5.62E+10	2.68E+10	1.28E+10
pm147	8.19E+09	6.65E+09	5.33E+09	4.28E+09	3.43E+09	2.75E+09	2.21E+09
eu152	1.03E+10	9.90E+09	9.48E+09	9.08E+09	8.69E+09	8.32E+09	7.97E+09
eu155	9.64E+09	8.52E+09	7.53E+09	6.65E+09	5.88E+09	5.20E+09	4.59E+09

1

0 principal photon sources in group 4, photons/sec

mean energy = .0850 mev. nuclides exceeding 1.0E-03 of total group release rate (6.04E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	4.15E+09	3.93E+09	3.72E+09	3.53E+09	3.34E+09	3.17E+09	3.00E+09
sr 90	6.32E+10	6.20E+10	6.07E+10	5.95E+10	5.83E+10	5.71E+10	5.59E+10
y 90	5.09E+11	4.98E+11	4.88E+11	4.78E+11	4.68E+11	4.59E+11	4.50E+11
rh106	7.37E+10	4.17E+10	2.37E+10	1.34E+10	7.60E+09	4.31E+09	2.44E+09
cs137	5.69E+10	5.58E+10	5.48E+10	5.37E+10	5.27E+10	5.17E+10	5.07E+10
ce144	1.67E+11	7.98E+10	3.81E+10	1.82E+10	8.66E+09	4.13E+09	1.97E+09
pr144	6.39E+11	3.05E+11	1.45E+11	6.93E+10	3.31E+10	1.58E+10	7.52E+09
pm147	2.33E+09	1.89E+09	1.52E+09	1.22E+09	9.77E+08	7.84E+08	6.29E+08
eu155	1.46E+10	1.29E+10	1.14E+10	1.01E+10	8.93E+09	7.89E+09	6.98E+09

0 principal photon sources in group 5, photons/sec

mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (4.33E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	2.50E+09	2.37E+09	2.24E+09	2.13E+09	2.02E+09	1.91E+09	1.81E+09
sr 90	3.60E+10	3.53E+10	3.46E+10	3.39E+10	3.32E+10	3.25E+10	3.18E+10
y 90	3.58E+11	3.51E+11	3.43E+11	3.36E+11	3.30E+11	3.23E+11	3.16E+11
rh106	5.32E+10	3.02E+10	1.71E+10	9.69E+09	5.49E+09	3.11E+09	1.76E+09
cs137	3.19E+10	3.13E+10	3.07E+10	3.01E+10	2.95E+10	2.90E+10	2.84E+10
ce144	8.21E+11	3.91E+11	1.87E+11	8.90E+10	4.25E+10	2.03E+10	9.66E+09
pr144	4.57E+11	2.18E+11	1.04E+11	4.96E+10	2.37E+10	1.13E+10	5.38E+09
eu152	8.71E+09	8.34E+09	7.98E+09	7.64E+09	7.32E+09	7.01E+09	6.71E+09
eu155	8.35E+09	7.38E+09	6.52E+09	5.77E+09	5.10E+09	4.51E+09	3.98E+09

0 principal photon sources in group 6, photons/sec

mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (3.94E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	1.99E+09	1.88E+09	1.78E+09	1.69E+09	1.60E+09	1.52E+09	1.44E+09
sr 90	2.57E+10	2.52E+10	2.46E+10	2.41E+10	2.37E+10	2.32E+10	2.27E+10
y 90	3.69E+11	3.61E+11	3.54E+11	3.47E+11	3.40E+11	3.33E+11	3.26E+11
rh106	5.70E+10	3.23E+10	1.83E+10	1.04E+10	5.89E+09	3.34E+09	1.89E+09
sb125	2.91E+09	2.36E+09	1.91E+09	1.55E+09	1.25E+09	1.01E+09	8.21E+08
cs137	2.25E+10	2.21E+10	2.17E+10	2.13E+10	2.09E+10	2.05E+10	2.01E+10
pr144	4.84E+11	2.31E+11	1.10E+11	5.25E+10	2.50E+10	1.19E+10	5.69E+09

0 principal photon sources in group 7, photons/sec

mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (4.20E+11) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	1.20E+09	1.14E+09	1.08E+09	1.02E+09	9.67E+08	9.16E+08	8.68E+08
sr 90	1.16E+10	1.14E+10	1.12E+10	1.09E+10	1.07E+10	1.05E+10	1.03E+10
y 90	4.10E+11	4.01E+11	3.93E+11	3.85E+11	3.77E+11	3.70E+11	3.62E+11

rh106	6.88E+10	3.90E+10	2.21E+10	1.25E+10	7.10E+09	4.03E+09	2.28E+09
cs137	1.14E+10	1.12E+10	1.10E+10	1.08E+10	1.06E+10	1.04E+10	1.02E+10
pr144	5.66E+11	2.70E+11	1.29E+11	6.14E+10	2.93E+10	1.40E+10	6.66E+09
eu152	1.21E+10	1.16E+10	1.11E+10	1.06E+10	1.02E+10	9.72E+09	9.31E+09

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0 principal photon sources in group 8, photons/sec

mean energy = .6500 mev. nuclides exceeding 1.0E-03 of total group release rate (6.37E+12) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
y 90	1.73E+11	1.70E+11	1.66E+11	1.63E+11	1.59E+11	1.56E+11	1.53E+11
rh106	2.12E+11	1.20E+11	6.83E+10	3.87E+10	2.19E+10	1.24E+10	7.05E+09
sb125	2.37E+10	1.92E+10	1.56E+10	1.26E+10	1.02E+10	8.25E+09	6.67E+09
ba137m	6.79E+12	6.66E+12	6.53E+12	6.41E+12	6.29E+12	6.17E+12	6.05E+12
pr144	3.86E+11	1.84E+11	8.79E+10	4.19E+10	2.00E+10	9.54E+09	4.55E+09
eu152	8.52E+09	8.16E+09	7.81E+09	7.48E+09	7.16E+09	6.86E+09	6.57E+09

0 principal photon sources in group 9, photons/sec

mean energy = 1.1250 mev. nuclides exceeding 1.0E-03 of total group release rate (3.37E+10) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
y 90	2.26E+10	2.21E+10	2.17E+10	2.12E+10	2.08E+10	2.04E+10	2.00E+10
rh106	1.98E+10	1.12E+10	6.36E+09	3.60E+09	2.04E+09	1.16E+09	6.56E+08
cs134	2.54E+08	1.92E+08	1.45E+08	1.10E+08	8.28E+07	6.26E+07	4.73E+07
pr144	4.94E+10	2.36E+10	1.12E+10	5.36E+09	2.56E+09	1.22E+09	5.82E+08
eu152	1.27E+10	1.21E+10	1.16E+10	1.11E+10	1.06E+10	1.02E+10	9.75E+09
eu154	9.34E+08	8.73E+08	8.16E+08	7.63E+08	7.14E+08	6.67E+08	6.24E+08

0 principal photon sources in group 10, photons/sec

mean energy = 1.5750 mev. nuclides exceeding 1.0E-03 of total group release rate (8.34E+09) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
y 90	2.88E+09	2.82E+09	2.77E+09	2.71E+09	2.66E+09	2.60E+09	2.55E+09
rh106	3.73E+09	2.12E+09	1.20E+09	6.80E+08	3.85E+08	2.18E+08	1.24E+08
cs134	2.40E+08	1.81E+08	1.37E+08	1.03E+08	7.82E+07	5.91E+07	4.46E+07
pr144	3.08E+10	1.47E+10	7.00E+09	3.34E+09	1.59E+09	7.59E+08	3.62E+08
eu152	5.81E+09	5.57E+09	5.33E+09	5.10E+09	4.89E+09	4.68E+09	4.48E+09
eu154	3.38E+07	3.16E+07	2.95E+07	2.76E+07	2.58E+07	2.41E+07	2.26E+07

0 principal photon sources in group 11, photons/sec

mean energy = 2.0000 mev. nuclides exceeding 1.0E-03 of total group release rate (1.70E+09) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
y 90	1.72E+08	1.69E+08	1.65E+08	1.62E+08	1.59E+08	1.56E+08	1.52E+08
rh106	1.21E+09	6.88E+08	3.90E+08	2.21E+08	1.25E+08	7.10E+07	4.02E+07
pr144	5.97E+10	2.85E+10	1.36E+10	6.47E+09	3.09E+09	1.47E+09	7.02E+08

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0 principal photon sources in group 12, photons/sec

mean energy = 2.4000 mev. nuclides exceeding 1.0E-03 of total group release rate (5.37E+07) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
y 90	1.01E+05	9.86E+04	9.66E+04	9.46E+04	9.27E+04	9.08E+04	8.90E+04
rh106	6.78E+08	3.84E+08	2.18E+08	1.23E+08	7.00E+07	3.97E+07	2.25E+07
pr144	5.64E+08	2.69E+08	1.28E+08	6.12E+07	2.92E+07	1.39E+07	6.63E+06

0 principal photon sources in group 13, photons/sec

mean energy = 2.8000 mev. nuclides exceeding 1.0E-03 of total group release rate (7.81E+06) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						
rh106	1.14E+08	6.48E+07	3.68E+07	2.08E+07	1.18E+07	6.69E+06	3.79E+06
pr144	4.54E+07	2.17E+07	1.03E+07	4.93E+06	2.35E+06	1.12E+06	5.34E+05

0 principal photon sources in group 14, photons/sec

mean energy = 3.2500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.15E+06) at 1521.9 d

nuclide	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
	time after discharge						

```
     rh106   1.97E+07  1.11E+07  6.32E+06  3.58E+06  2.03E+06  1.15E+06  6.52E+05
0                  principal photon sources in group 15, photons/sec
       mean energy = 3.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (5.07E+02) at  1521.9 d
    nuclide                                  time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     rh106   8.67E+03  4.92E+03  2.79E+03  1.58E+03  8.95E+02  5.07E+02  2.88E+02
0                  principal photon sources in group 16, photons/sec
       mean energy = 4.2500 mev.  nuclides exceeding  1.0E-03 of total group release rate (2.02E-06) at  1521.9 d
    nuclide                                  time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     ce142   1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06  1.46E-06
     sm147   5.56E-07  5.57E-07  5.57E-07  5.57E-07  5.57E-07  5.58E-07  5.58E-07
0                  principal photon sources in group 17, photons/sec
       mean energy = 4.7500 mev.  nuclides exceeding  1.0E-03 of total group release rate (1.01E-06) at  1521.9 d
    nuclide                                  time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     ce142   7.31E-07  7.31E-07  7.31E-07  7.31E-07  7.31E-07  7.31E-07  7.31E-07
     sm147   2.79E-07  2.79E-07  2.79E-07  2.79E-07  2.80E-07  2.80E-07  2.80E-07
1                                                                                                    page 125
0                  principal photon sources in group 18, photons/sec
       mean energy = 5.5000 mev.  nuclides exceeding  1.0E-03 of total group release rate (7.50E-07) at  1521.9 d
    nuclide                                  time after discharge
             initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
     ce142   5.42E-07  5.42E-07  5.42E-07  5.42E-07  5.42E-07  5.42E-07  5.42E-07
     sm147   2.07E-07  2.07E-07  2.07E-07  2.07E-07  2.07E-07  2.07E-07  2.07E-07
1                                                                                                    page 126
            photon spectrum as a function of time for heavy metals and their daughters

0                        sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
                              power=    .00 mw, burnup=   1461.mwd, flux= 2.74E+08 n**2-sec
0                                  actinide photon release rates, photons/sec
                                 basis = single reactor assembly
0
          emean                                  time after discharge
          (mev)     initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
        1.00E-02  1.34E+14  1.26E+12  1.25E+12  1.25E+12  1.25E+12  1.24E+12  1.24E+12
        3.00E-02  8.46E+12  4.66E+10  4.66E+10  4.66E+10  4.66E+10  4.66E+10  4.66E+10
        5.50E-02  1.09E+13  2.33E+10  2.33E+10  2.33E+10  2.33E+10  2.33E+10  2.33E+10
        8.50E-02  5.26E+13  1.51E+11  1.51E+11  1.51E+11  1.51E+11  1.51E+11  1.51E+11
        1.20E-01  5.43E+13  2.93E+10  2.93E+10  2.93E+10  2.93E+10  2.93E+10  2.93E+10
        1.70E-01  1.72E+12  1.91E+10  1.91E+10  1.91E+10  1.91E+10  1.91E+10  1.91E+10
        3.00E-01  2.87E+13  1.31E+11  1.31E+11  1.31E+11  1.31E+11  1.31E+11  1.31E+11
        6.50E-01  1.45E+12  6.89E+09  6.89E+09  6.89E+09  6.90E+09  6.90E+09  6.90E+09
        1.13E+00  1.85E+12  1.17E+09  1.17E+09  1.17E+09  1.18E+09  1.18E+09  1.18E+09
        1.58E+00  4.03E+08  4.03E+08  4.04E+08  4.04E+08  4.05E+08  4.05E+08  4.06E+08
        2.00E+00  9.82E+07  9.83E+07  9.84E+07  9.85E+07  9.86E+07  9.87E+07  9.88E+07
        2.40E+00  3.66E+07  3.66E+07  3.67E+07  3.67E+07  3.68E+07  3.68E+07  3.69E+07
        2.80E+00  1.69E+07  1.69E+07  1.68E+07  1.66E+07  1.65E+07  1.64E+07  1.63E+07
        3.25E+00  3.04E+05  3.04E+05  3.05E+05  3.05E+05  3.06E+05  3.06E+05  3.07E+05
        3.75E+00  7.19E+03  7.18E+03  7.18E+03  7.17E+03  7.16E+03  7.16E+03  7.15E+03
        4.25E+00  4.13E+03  4.13E+03  4.13E+03  4.12E+03  4.12E+03  4.12E+03  4.11E+03
        4.75E+00  2.38E+03  2.38E+03  2.38E+03  2.37E+03  2.37E+03  2.37E+03  2.37E+03
        5.50E+00  2.14E+03  2.13E+03  2.13E+03  2.13E+03  2.13E+03  2.13E+03  2.13E+03
0          total  2.94E+14  1.67E+12  1.66E+12  1.66E+12  1.66E+12  1.65E+12  1.65E+12
0        mev/sec  2.51E+13  8.10E+10  8.10E+10  8.09E+10  8.09E+10  8.09E+10  8.08E+10
0                                  actinide energy release rates, mev/watt-sec
                                 basis = single reactor assembly
0
          emean                                  time after discharge
          (mev)     initial  304.4 d   608.8 d   913.1 d  1217.5 d  1521.9 d  1826.3 d
```

	1.00E-02	3.35E+08	3.14E+06	3.14E+06	3.13E+06	3.12E+06	3.11E+06	3.10E+06
	3.00E-02	6.34E+07	3.50E+05	3.50E+05	3.50E+05	3.50E+05	3.50E+05	3.50E+05
	5.50E-02	1.50E+08	3.20E+05	3.20E+05	3.20E+05	3.20E+05	3.20E+05	3.20E+05
	8.50E-02	1.12E+09	3.21E+06	3.21E+06	3.21E+06	3.21E+06	3.21E+06	3.21E+06
	1.20E-01	1.63E+09	8.80E+05	8.80E+05	8.80E+05	8.80E+05	8.80E+05	8.80E+05
	1.70E-01	7.31E+07	8.10E+05	8.10E+05	8.10E+05	8.10E+05	8.10E+05	8.10E+05
	3.00E-01	2.15E+09	9.84E+06	9.84E+06	9.84E+06	9.84E+06	9.84E+06	9.84E+06
	6.50E-01	2.36E+08	1.12E+06	1.12E+06	1.12E+06	1.12E+06	1.12E+06	1.12E+06
	1.13E+00	5.22E+08	3.30E+05	3.30E+05	3.30E+05	3.30E+05	3.31E+05	3.31E+05
	1.58E+00	1.59E+05	1.59E+05	1.59E+05	1.59E+05	1.59E+05	1.60E+05	1.60E+05
	2.00E+00	4.91E+04	4.91E+04	4.92E+04	4.92E+04	4.93E+04	4.93E+04	4.94E+04
	2.40E+00	2.19E+04	2.20E+04	2.20E+04	2.20E+04	2.21E+04	2.21E+04	2.21E+04
	2.80E+00	1.18E+04	1.18E+04	1.17E+04	1.17E+04	1.16E+04	1.15E+04	1.14E+04
	3.25E+00	2.47E+02	2.47E+02	2.48E+02	2.48E+02	2.48E+02	2.49E+02	2.49E+02
	3.75E+00	6.74E+00	6.73E+00	6.73E+00	6.72E+00	6.72E+00	6.71E+00	6.71E+00
	4.25E+00	4.39E+00	4.39E+00	4.38E+00	4.38E+00	4.38E+00	4.37E+00	4.37E+00
	4.75E+00	2.83E+00	2.82E+00	2.82E+00	2.82E+00	2.82E+00	2.81E+00	2.81E+00
	5.50E+00	2.94E+00	2.93E+00	2.93E+00	2.93E+00	2.93E+00	2.93E+00	2.92E+00
0	total	6.28E+09	2.02E+07	2.02E+07	2.02E+07	2.02E+07	2.02E+07	2.02E+07
0	gamma watts	4.02E+00	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02

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neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pb210	5.20E-08	5.21E-08	5.22E-08	5.23E-08	5.23E-08	5.24E-08	5.25E-08
bi210	1.33E-05	1.33E-05	1.33E-05	1.33E-05	1.34E-05	1.34E-05	1.34E-05
bi211	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.22E+01	1.22E+01	1.22E+01
bi212	5.57E-01	5.56E-01	5.52E-01	5.48E-01	5.44E-01	5.40E-01	5.36E-01
bi213	3.02E-02	3.02E-02	3.03E-02	3.03E-02	3.04E-02	3.04E-02	3.05E-02
bi214	6.40E-03	6.41E-03	6.42E-03	6.43E-03	6.44E-03	6.45E-03	6.46E-03
po210	1.63E+01	1.62E+01	1.62E+01	1.62E+01	1.62E+01	1.62E+01	1.63E+01
po211	4.79E-02	4.80E-02	4.80E-02	4.81E-02	4.81E-02	4.82E-02	4.82E-02
po212	2.85E+00	2.85E+00	2.83E+00	2.81E+00	2.79E+00	2.77E+00	2.75E+00
po213	3.98E+00	3.99E+00	3.99E+00	4.00E+00	4.01E+00	4.01E+00	4.02E+00
po214	5.70E+01	5.71E+01	5.72E+01	5.73E+01	5.74E+01	5.74E+01	5.75E+01
po215	1.71E+01	1.71E+01	1.71E+01	1.72E+01	1.72E+01	1.72E+01	1.72E+01
po216	2.23E+00	2.22E+00	2.21E+00	2.19E+00	2.17E+00	2.16E+00	2.14E+00
po218	2.71E+01	2.72E+01	2.72E+01	2.72E+01	2.73E+01	2.73E+01	2.74E+01
at217	2.58E+00	2.58E+00	2.59E+00	2.59E+00	2.60E+00	2.60E+00	2.60E+00
rn218	4.01E-11	1.58E-15	6.20E-20	2.44E-24	.00E+00	.00E+00	.00E+00
rn219	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.37E+01	1.37E+01
rn220	1.76E+00	1.76E+00	1.75E+00	1.73E+00	1.72E+00	1.71E+00	1.70E+00
rn222	1.98E+01	1.98E+01	1.99E+01	1.99E+01	1.99E+01	2.00E+01	2.00E+01
fr221	1.88E+00	1.89E+00	1.89E+00	1.89E+00	1.89E+00	1.90E+00	1.90E+00
fr223	5.15E-06	5.15E-06	5.16E-06	5.16E-06	5.16E-06	5.17E-06	5.17E-06
ra222	3.10E-11	1.22E-15	4.80E-20	1.89E-24	7.16E-29	.00E+00	.00E+00
ra223	7.87E+00	7.89E+00	7.89E+00	7.90E+00	7.91E+00	7.91E+00	7.92E+00
ra224	1.25E+00	1.24E+00	1.24E+00	1.23E+00	1.22E+00	1.21E+00	1.20E+00
ra226	1.16E+01	1.16E+01	1.16E+01	1.16E+01	1.17E+01	1.17E+01	1.17E+01
ac225	1.35E+00	1.36E+00	1.36E+00	1.36E+00	1.36E+00	1.36E+00	1.37E+00
ac227	5.79E-02	5.80E-02	5.80E-02	5.81E-02	5.81E-02	5.82E-02	5.82E-02
ac228	2.28E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12	2.29E-12
th226	2.80E-11	1.10E-15	4.33E-20	1.70E-24	6.46E-29	.00E+00	.00E+00
th227	8.68E+00	8.70E+00	8.71E+00	8.72E+00	8.72E+00	8.73E+00	8.74E+00
th228	1.05E+00	1.04E+00	1.04E+00	1.03E+00	1.02E+00	1.02E+00	1.01E+00

th229	7.91E-01	7.92E-01	7.93E-01	7.94E-01	7.96E-01	7.97E-01	7.98E-01
th230	5.67E+01	5.68E+01	5.68E+01	5.69E+01	5.69E+01	5.70E+01	5.70E+01
th232	2.93E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.95E-05	2.95E-05
pa231	4.77E+00	4.78E+00	4.78E+00	4.78E+00	4.79E+00	4.79E+00	4.80E+00
u230	2.20E-11	8.67E-16	3.41E-20	1.34E-24	5.09E-29	.00E+00	.00E+00
u231	1.48E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	9.60E-01	9.53E-01	9.46E-01	9.39E-01	9.31E-01	9.24E-01	9.17E-01
u233	1.61E+01	1.61E+01	1.61E+01	1.61E+01	1.62E+01	1.62E+01	1.62E+01
u234	6.71E+03	6.71E+03	6.71E+03	6.71E+03	6.71E+03	6.71E+03	6.71E+03
u235	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02
u236	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03	1.05E+03
u238	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02
np235	2.42E-08	1.42E-08	8.34E-09	4.90E-09	2.87E-09	1.69E-09	9.91E-10
np237	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03
pu236	1.42E-01	1.16E-01	9.53E-02	7.81E-02	6.40E-02	5.25E-02	4.30E-02
pu237	2.62E-08	2.45E-10	2.30E-12	2.15E-14	2.02E-16	1.89E-18	1.77E-20
pu238	8.27E+04	8.22E+04	8.16E+04	8.11E+04	8.06E+04	8.00E+04	7.95E+04

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neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu239	4.87E+04	4.87E+04	4.87E+04	4.87E+04	4.87E+04	4.87E+04	4.87E+04
pu240	8.55E+02	8.55E+02	8.55E+02	8.54E+02	8.54E+02	8.54E+02	8.54E+02
pu241	2.99E-03	2.87E-03	2.75E-03	2.65E-03	2.54E-03	2.44E-03	2.35E-03
pu242	4.87E-05	4.87E-05	4.88E-05	4.88E-05	4.88E-05	4.88E-05	4.88E-05
am239	7.58E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	1.19E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	7.23E+01	7.25E+01	7.26E+01	7.28E+01	7.29E+01	7.30E+01	7.31E+01
am242m	2.57E-04	2.56E-04	2.55E-04	2.54E-04	2.53E-04	2.52E-04	2.51E-04
am243	8.95E-06	8.95E-06	8.95E-06	8.95E-06	8.95E-06	8.95E-06	8.95E-06
cm241	1.02E-14	1.64E-17	2.64E-20	4.25E-23	6.84E-26	1.10E-28	2.56E-31
cm242	7.70E-01	2.69E-01	1.31E-01	9.30E-02	8.23E-02	7.92E-02	7.81E-02
cm243	4.01E-09	3.93E-09	3.85E-09	3.77E-09	3.70E-09	3.62E-09	3.55E-09
cm244	5.50E-07	5.32E-07	5.16E-07	4.99E-07	4.84E-07	4.68E-07	4.54E-07
cm245	1.73E-13	1.73E-13	1.73E-13	1.73E-13	1.73E-13	1.73E-13	1.73E-13
cm246	2.57E-16	2.57E-16	2.57E-16	2.57E-16	2.57E-16	2.57E-16	2.57E-16
cm247	7.78E-25	7.78E-25	7.78E-25	7.78E-25	7.78E-25	7.78E-25	7.78E-25
cm248	5.24E-27	5.24E-27	5.24E-27	5.24E-27	5.24E-27	5.24E-27	5.24E-27
bk249	8.93E-33	4.73E-33	2.36E-33	1.31E-33	5.25E-34	2.63E-34	2.63E-34
cf249	1.51E-28	1.51E-28	1.51E-28	1.51E-28	1.51E-28	1.51E-28	1.51E-28
0 total	1.45E+05	1.44E+05	1.44E+05	1.43E+05	1.43E+05	1.42E+05	1.41E+05

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neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
th230	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03
pa231	5.98E-04	5.99E-04	5.99E-04	6.00E-04	6.00E-04	6.01E-04	6.01E-04
u232	5.90E-05	5.85E-05	5.81E-05	5.77E-05	5.72E-05	5.68E-05	5.63E-05
u234	1.44E+01	1.44E+01	1.44E+01	1.44E+01	1.44E+01	1.44E+01	1.44E+01
u235	1.66E+00	1.66E+00	1.66E+00	1.66E+00	1.66E+00	1.66E+00	1.66E+00

	u236	1.58E+02	1.58E+02	1.58E+02	1.58E+02	1.58E+02	1.58E+02	1.58E+02
	u237	1.22E-09	1.05E-16	1.01E-16	9.69E-17	9.31E-17	8.94E-17	8.59E-17
	u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
	u239	9.66E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	np236	7.33E-09	7.33E-09	7.33E-09	7.33E-09	7.33E-09	7.33E-09	7.33E-09
	np238	2.01E-08	7.51E-17	7.48E-17	7.45E-17	7.42E-17	7.39E-17	7.36E-17
	np239	1.98E-05	9.28E-17	9.28E-17	9.28E-17	9.28E-17	9.28E-17	9.28E-17
	pu236	9.60E-03	7.87E-03	6.45E-03	5.29E-03	4.33E-03	3.55E-03	2.91E-03
	pu238	1.53E+04	1.52E+04	1.51E+04	1.50E+04	1.49E+04	1.48E+04	1.47E+04
	pu239	2.61E+01	2.61E+01	2.61E+01	2.61E+01	2.61E+01	2.61E+01	2.61E+01
	pu240	5.68E+03	5.68E+03	5.68E+03	5.68E+03	5.68E+03	5.68E+03	5.68E+03
	pu241	1.07E-04	1.03E-04	9.91E-05	9.52E-05	9.15E-05	8.78E-05	8.44E-05
	pu242	3.80E-02	3.80E-02	3.80E-02	3.80E-02	3.80E-02	3.80E-02	3.80E-02
	pu243	3.08E-15	3.36E-35	3.36E-35	3.36E-35	3.36E-35	3.36E-35	3.36E-35
	pu244	7.37E-28	7.43E-28	7.49E-28	7.55E-28	7.61E-28	7.67E-28	7.73E-28
	am241	2.78E-02	2.79E-02	2.80E-02	2.80E-02	2.81E-02	2.81E-02	2.81E-02
	am242m	1.22E-03	1.22E-03	1.21E-03	1.21E-03	1.20E-03	1.20E-03	1.19E-03
	am242	1.28E-05	1.32E-06	1.31E-06	1.31E-06	1.30E-06	1.30E-06	1.29E-06
	am243	4.12E-08	4.12E-08	4.12E-08	4.12E-08	4.12E-08	4.12E-08	4.12E-08
	am244	8.31E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	cm242	3.85E+00	1.35E+00	6.55E-01	4.64E-01	4.11E-01	3.95E-01	3.90E-01
	cm243	8.71E-11	8.53E-11	8.36E-11	8.19E-11	8.03E-11	7.87E-11	7.71E-11
	cm244	7.17E-05	6.94E-05	6.73E-05	6.51E-05	6.31E-05	6.11E-05	5.92E-05
	cm245	4.69E-14	4.69E-14	4.69E-14	4.69E-14	4.69E-14	4.69E-14	4.69E-14
	cm246	9.25E-12	9.25E-12	9.25E-12	9.25E-12	9.25E-12	9.25E-12	9.25E-12
	cm248	8.59E-20	8.59E-20	8.59E-20	8.59E-20	8.59E-20	8.59E-20	8.59E-20
	bk249	4.92E-29	2.55E-29	1.32E-29	6.81E-30	3.52E-30	1.82E-30	9.42E-31
	cf249	8.82E-29	8.87E-29	8.89E-29	8.89E-29	8.88E-29	8.87E-29	8.86E-29
	cf250	3.95E-26	3.78E-26	3.62E-26	3.46E-26	3.31E-26	3.17E-26	3.03E-26
	cf252	4.08E-30	3.26E-30	2.45E-30	1.63E-30	1.63E-30	1.63E-30	1.63E-30
0	total	1.38E+05	1.38E+05	1.38E+05	1.38E+05	1.38E+05	1.38E+05	1.38E+05
0	total	2.83E+05	2.83E+05	2.82E+05	2.81E+05	2.81E+05	2.80E+05	2.79E+05

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alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	2.801E+04	2.791E+04	2.780E+04	2.770E+04	2.759E+04	2.749E+04	2.739E+04
3	1.85E+00 - 3.00E+00	7.935E+04	7.905E+04	7.875E+04	7.846E+04	7.817E+04	7.788E+04	7.759E+04
4	1.40E+00 - 1.85E+00	2.131E+04	2.123E+04	2.115E+04	2.107E+04	2.099E+04	2.092E+04	2.084E+04
5	9.00E-01 - 1.40E+00	1.199E+04	1.194E+04	1.190E+04	1.185E+04	1.181E+04	1.177E+04	1.172E+04
6	4.00E-01 - 9.00E-01	3.482E+03	3.469E+03	3.456E+03	3.443E+03	3.430E+03	3.418E+03	3.405E+03
7	1.00E-01 - 4.00E-01	5.442E+02	5.422E+02	5.401E+02	5.381E+02	5.361E+02	5.341E+02	5.321E+02
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.447E+05	1.441E+05	1.436E+05	1.431E+05	1.425E+05	1.420E+05	1.415E+05

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spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	2.645E+03	2.643E+03	2.641E+03	2.639E+03	2.637E+03	2.635E+03	2.634E+03
2	3.00E+00 - 6.43E+00	2.899E+04	2.897E+04	2.895E+04	2.893E+04	2.891E+04	2.889E+04	2.887E+04
3	1.85E+00 - 3.00E+00	3.159E+04	3.157E+04	3.155E+04	3.152E+04	3.150E+04	3.148E+04	3.146E+04
4	1.40E+00 - 1.85E+00	1.790E+04	1.789E+04	1.788E+04	1.786E+04	1.785E+04	1.784E+04	1.783E+04
5	9.00E-01 - 1.40E+00	2.457E+04	2.455E+04	2.454E+04	2.452E+04	2.450E+04	2.448E+04	2.447E+04
6	4.00E-01 - 9.00E-01	2.738E+04	2.736E+04	2.734E+04	2.732E+04	2.730E+04	2.728E+04	2.726E+04
7	1.00E-01 - 4.00E-01	5.406E+03	5.402E+03	5.398E+03	5.394E+03	5.390E+03	5.386E+03	5.382E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		1.385E+05	1.384E+05	1.383E+05	1.382E+05	1.381E+05	1.380E+05	1.379E+05

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total (alpha-n plus spon. fission) neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	2.645E+03	2.643E+03	2.641E+03	2.639E+03	2.637E+03	2.635E+03	2.634E+03
2	3.00E+00 - 6.43E+00	5.700E+04	5.687E+04	5.675E+04	5.662E+04	5.650E+04	5.638E+04	5.625E+04

3	1.85E+00	- 3.00E+00	1.109E+05	1.106E+05	1.103E+05	1.100E+05	1.097E+05	1.094E+05	1.090E+05
4	1.40E+00	- 1.85E+00	3.921E+04	3.912E+04	3.903E+04	3.894E+04	3.885E+04	3.875E+04	3.866E+04
5	9.00E-01	- 1.40E+00	3.656E+04	3.650E+04	3.643E+04	3.637E+04	3.631E+04	3.625E+04	3.619E+04
6	4.00E-01	- 9.00E-01	3.086E+04	3.083E+04	3.080E+04	3.076E+04	3.073E+04	3.070E+04	3.067E+04
7	1.00E-01	- 4.00E-01	5.950E+03	5.944E+03	5.938E+03	5.932E+03	5.926E+03	5.920E+03	5.915E+03
8	1.70E-02	- 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03	- 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04	- 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04	- 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05	- 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05	- 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06	- 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06	- 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06	- 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06	- 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06	- 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07	- 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07	- 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07	- 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07	- 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07	- 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08	- 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08	- 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08	- 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11	- 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0			2.832E+05	2.825E+05	2.819E+05	2.812E+05	2.806E+05	2.800E+05	2.794E+05

1

1 * gamma sources determined *

0case applies the following photon data base
master photon library
in binary mode

0 the sources include photons of nuclides for...

light elements
actinides
fission products

1 gamma source spectrum for gamma lines (sas2)

0 1826.25 day time of the requested nuclides

0	energy interval in mev		photons / second	mev / second
0				
	1.0000E-02 to	5.0000E-02	4.2926E+12	1.2878E+11
	5.0000E-02 to	1.0000E-01	1.2905E+12	9.6789E+10
	1.0000E-01 to	2.0000E-01	7.9924E+11	1.1989E+11
	2.0000E-01 to	3.0000E-01	2.5376E+11	6.3439E+10
	3.0000E-01 to	4.0000E-01	2.7579E+11	9.6525E+10
	4.0000E-01 to	6.0000E-01	1.3287E+11	6.6435E+10
	6.0000E-01 to	8.0000E-01	5.6825E+12	3.9777E+12
	8.0000E-01 to	1.0000E+00	2.8643E+10	2.5779E+10
	1.0000E+00 to	1.3300E+00	2.0943E+10	2.4399E+10
	1.3300E+00 to	1.6600E+00	7.7815E+09	1.1633E+10
	1.6600E+00 to	2.0000E+00	7.8011E+08	1.4276E+09
	2.0000E+00 to	2.5000E+00	7.4369E+08	1.6733E+09
	2.5000E+00 to	3.0000E+00	2.1896E+07	6.0214E+07
	3.0000E+00 to	4.0000E+00	8.9081E+05	3.1178E+06
	4.0000E+00 to	5.0000E+00	6.3857E+03	2.8736E+04
	5.0000E+00 to	6.5000E+00	2.5277E+03	1.4534E+04
	6.5000E+00 to	8.0000E+00	4.8968E+02	3.5502E+03
	8.0000E+00 to	1.0000E+01	1.0307E+02	9.2764E+02
0	totals		1.2786E+13	4.6146E+12

0

```
0                    total energy from nuclides with spectrum data    =   4.6146E+12
0                    total energy from nuclides with no spectrum data =   7.5490E+05
1
0  .results on logical unit no. 71, position  2, for time step  6, subcase12. (run position 1, case position 2)
   title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
0     .terminated logical unit no. 71 with zero flag record.
1  * normal termination of execution *
```

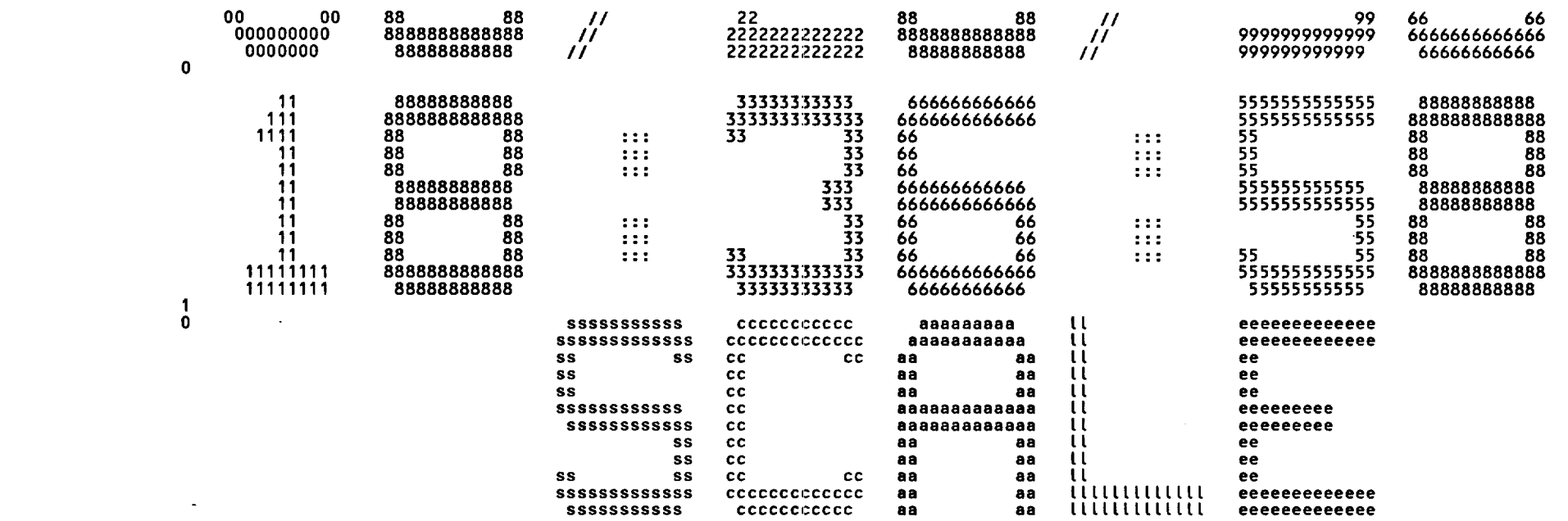
```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module sas2h    will be called
       SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
       44group    latticecell
       '
       '  mixtures of tuff infinite slabs:
       arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                                13027 4.434 14000 20.193 19000 1.370 20000 1.439
                                26000 0.494 92235 0.567 92234 0.007 92236 0.136
                                92238 28.593 93237 0.033 1 1.0 538   end
       kr-83      1 0 1-20 538 end
       kr-85      1 0 1-20 538 end
       sr-90      1 0 1-20 538 end
        y-89      1 0 1-20 538 end
       mo-95      1 0 1-20 538 end
       zr-93      1 0 1-20 538 end
       zr-94      1 0 1-20 538 end
       zr-95      1 0 1-20 538 end
       nb-94      1 0 1-20 538 end
       tc-99      1 0 1-20 538 end
       rh-103     1 0 1-20 538 end
       rh-105     1 0 1-20 538 end
       ru-101     1 0 1-20 538 end
       ru-106     1 0 1-20 538 end
       pd-105     1 0 1-20 538 end
       pd-108     1 0 1-20 538 end
       ag-109     1 0 1-20 538 end
       sb-124     1 0 1-20 538 end
       xe-131     1 0 1-20 538 end
       xe-132     1 0 1-20 538 end
       xe-135     1 0 1-20 538 end
       xe-136     1 0 1-20 538 end
       cs-134     1 0 1-20 538 end
       cs-135     1 0 1-20 538 end
       cs-137     1 0 1-20 538 end
       ba-136     1 0 1-20 538 end
       la-139     1 0 1-20 538 end
       pr-141     1 0 1-20 538 end
       pr-143     1 0 1-20 538 end
       ce-144     1 0 1-20 538 end
       nd-143     1 0 1-20 538 end
       nd-145     1 0 1-20 538 end
       pm-147     1 0 1-20 538 end
       pm-148     1 0 1-20 538 end
       nd-147     1 0 1-20 538 end
       sm-147     1 0 1-20 538 end
       sm-149     1 0 1-20 538 end
       sm-150     1 0 1-20 538 end
       sm-151     1 0 1-20 538 end
       sm-152     1 0 1-20 538 end
       gd-155     1 0 1-20 538 end
       eu-153     1 0 1-20 538 end
       eu-154     1 0 1-20 538 end
       eu-155     1 0 1-20 538 end
       arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                                13027 6.130 14000 27.919 19000 1.894 20000 1.989
                                26000 0.683 2 1.0 323.   end
       arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                                13027 6.130 14000 27.919 19000 1.894 20000 1.989
                                26000 0.683 3 1.0 323.   end
```

```
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      end comp
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      '
      '  fuel-pin-cell geometry:
      '
      symmslabcell  340.  280. 1 3 281. 2 end
      '
      ' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
      '
      '
      '  assembly and cycle parameters:
      '
      npin/assm=1 fuelngth=280. ncycles=5 nlib/cyc=1 volfueltot=1.1494E7
      printlevel=6 inplevel=0 end
      power=0.004 burn=3.6525e5 down=0.
      power=0.004 burn=3.6525e5 down=0.
      power=0.004 burn=3.6525e5 down=0.
      power=0.004 burn=3.6525e5 down=0.
      power=0.004 burn=3.6525e5 down=1.82625e3
         end
```

```
1   ooooooooooo     rrrrrrrrrrr     iiiiiiiiiii      ggggggggggg     eeeeeeeeeeee   nn          nn   sssssssssss
   oooooooooooo     rrrrrrrrrrrr    iiiiiiiiiiii    gggggggggggg     eeeeeeeeeeee   nnn         nn  sssssssssssss
   oo          oo   rr          rr        ii        gg          gg   ee             nnnn        nn  ss          ss
   oo          oo   rr          rr        ii        gg               ee             nn nn       nn  ss
   oo          oo   rr          rr        ii        gg               ee             nn   nn     nn  ss
   oo          oo   rrrrrrrrrrrr          ii        gg    ggggggg    eeeeeeeee      nn    nn    nn  sssssssssss
   oo          oo   rrrrrrrrrrrr          ii        gg    ggggggg    eeeeeeeee      nn     nn   nn   sssssssssss
   oo          oo   rr        rr          ii        gg          gg   ee             nn      nn  nn              ss
   oo          oo   rr         rr         ii        gg          gg   ee             nn       nn nn              ss
   oo          oo   rr          rr        ii        gg          gg   ee             nn        nnnn  ss          ss
   oooooooooooo     rr          rr  iiiiiiiiiii     ggggggggggggg   eeeeeeeeeeee   nn         nnn  sssssssssssss
    ooooooooooo     rr          rr  iiiiiiiiiii      gggggggggg    eeeeeeeeeeee   nn          nn   sssssssssss
0
```

```
   ddddddddddddd      aaaaaaaaa     vv          vv  iiiiiiiiiii     sssssssssss
   ddddddddddddd     aaaaaaaaaaa    vv          vv  iiiiiiiiiii    sssssssssssss
   dd          dd   aa          aa  vv          vv       ii        ss          ss
   dd          dd   aa          aa  vv          vv       ii        ss
   dd          dd   aa          aa  vv          vv       ii        ss
   dd          dd   aaaaaaaaaaaaa   vv          vv       ii        sssssssssss
   dd          dd   aaaaaaaaaaaaa    vv        vv       ii         sssssssssss
   dd          dd   aa          aa     vv    vv         ii                 ss
   dd          dd   aa          aa      vv  vv          ii                 ss
   dd          dd   aa          aa       vvvv           ii        ss       ss
   ddddddddddddd    aa          aa        vvv       iiiiiiiiiii   sssssssssssss
   ddddddddddddd    aa          aa         v        iiiiiiiiiii    sssssssssss
0
```

```
     0000000       88888888888              //   22222222222    88888888888             //   99999999999    666666666666
   000000000     8888888888888             //   2222222222222  8888888888888           //   9999999999999  6666666666666
  00       00   88          88            //   22          22   88          88         //   99          99  66
 00         00  88          88           //                22   88          88        //   99          99  66
 00         00  88          88          //                 22   88          88       //   99          99  66
 00         00  88888888888            //                22    88888888888      //   9999999999999  666666666666
 00         00  88888888888           //               22       88888888888     //    999999999999  6666666666666
 00         00  88          88       //              22         88          88   //                99  66          66
 00         00  88          88      //             22          88          88  //                 99  66          66
```



****
****
****
***** *****
***** program verification information *****
***** *****
***** code system: scale version: 4.3 *****
***** *****
****
****
***** *****
***** *****
***** program: o0o004 *****
***** *****
***** creation date: 03/13/96 *****
***** *****
***** library: /usr1/ornl/Scale/bin *****
***** *****
***** *****
***** test code: origens *****
***** *****
***** version: 3.0 *****
***** *****
***** jobname: davis *****
***** *****

```
                        *****    date of execution:  08/28/96                                  *****
                        *****                                                                  *****
                        *****    time of execution:  18:36:58                                  *****
                        *****                                                                  *****
                        *****                                                                  *****
                        ********************************************************************************
                        ********************************************************************************
                        ********************************************************************************
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        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 33.

          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 "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:  ft33f001
0                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0         ************************************************************************
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements          page    1
0                                        nuclide concentrations, grams
                                         basis =single reactor assembly
               initial  1E-18 d
     na 23   1.73E+05  1.73E+05
     al 27   1.35E+06  1.35E+06
   total     1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                  actinides          page    2
0                                        nuclide concentrations, grams
                                         basis =single reactor assembly
               initial  1E-18 d
      u234   2.12E+03  2.12E+03
      u235   1.72E+05  1.72E+05
      u236   4.12E+04  4.12E+04
      u238   8.66E+06  8.66E+06
    np237    9.99E+03  9.99E+03
   total     8.88E+06  8.88E+06
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                          page    3
        power=     .00mw, burnup=    1461.mwd, flux= 2.99E+08n/cm**2-sec
0                                       basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial       91313. d      182625. d      273938. d      365250. d      365250. d
     productions   1.022622E+06   1.024453E+06   1.026237E+06   1.027977E+06   1.029673E+06   1.029673E+06
     absorptions   8.468353E+05   8.494152E+05   8.515743E+05   8.534369E+05   8.550839E+05   8.550839E+05
     k infinity    1.207580E+00   1.206068E+00   1.205106E+00   1.204514E+00   1.204177E+00   1.204177E+00
0                    initial       91313. d      182625. d      273938. d      365250. d      365250. d
     actinide
     absorptions   8.430638E+05   8.441381E+05   8.451858E+05   8.462119E+05   8.472176E+05   8.472176E+05
     non-actinide
     abs. fracs.   4.453659E-03   6.212592E-03   7.502079E-03   8.465767E-03   9.199560E-03   9.199560E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                fission products          page    4
0                                    fraction of total absorption rate
        power=     .00mw, burnup=    1461.mwd, flux= 2.99E+08n/cm**2-sec
0              initial  91313. d 182625. d 273938. d 365250. d 365250. d

     sm149       .00E+00  1.54E-03  2.63E-03  3.40E-03  3.95E-03  3.95E-03
     eu151       .00E+00  3.10E-05  8.18E-05  1.34E-04  1.85E-04  1.85E-04
     nd143       .00E+00  3.63E-05  7.24E-05  1.08E-04  1.44E-04  1.44E-04
     gd155       .00E+00  2.23E-05  4.25E-05  6.03E-05  7.59E-05  7.59E-05
     rh103       .00E+00  1.73E-05  3.45E-05  5.18E-05  6.90E-05  6.90E-05
     xe131       .00E+00  1.18E-05  2.36E-05  3.53E-05  4.70E-05  4.70E-05
     cd113       .00E+00  1.45E-05  2.66E-05  3.68E-05  4.53E-05  4.53E-05
     sm151       .00E+00  3.37E-05  3.84E-05  3.91E-05  3.93E-05  3.93E-05
     cs133       .00E+00  9.18E-06  1.83E-05  2.74E-05  3.64E-05  3.64E-05
     gd157       .00E+00  1.48E-05  2.39E-05  2.98E-05  3.37E-05  3.37E-05
```

sm147	.00E+00	6.72E-06	1.35E-05	2.02E-05	2.70E-05	2.70E-05
tc 99	.00E+00	6.78E-06	1.35E-05	2.02E-05	2.69E-05	2.69E-05
nd145	.00E+00	5.19E-06	1.03E-05	1.55E-05	2.06E-05	2.06E-05
mo 95	.00E+00	3.61E-06	7.21E-06	1.08E-05	1.43E-05	1.43E-05
sm152	.00E+00	2.83E-06	5.73E-06	8.68E-06	1.17E-05	1.17E-05
kr 83	.00E+00	2.21E-06	4.41E-06	6.59E-06	8.76E-06	8.76E-06
cs135	.00E+00	2.06E-06	4.11E-06	6.15E-06	8.18E-06	8.18E-06
ru101	.00E+00	1.62E-06	3.24E-06	4.85E-06	6.45E-06	6.45E-06
pr141	.00E+00	1.51E-06	3.02E-06	4.52E-06	6.01E-06	6.01E-06
eu153	.00E+00	1.39E-06	2.79E-06	4.18E-06	5.58E-06	5.58E-06
sm150	.00E+00	4.29E-07	1.54E-06	3.13E-06	5.07E-06	5.07E-06
la139	.00E+00	1.24E-06	2.46E-06	3.69E-06	4.91E-06	4.91E-06
xe135	.00E+00	2.27E-06	2.27E-06	2.26E-06	2.26E-06	2.26E-06
ba137	.00E+00	4.86E-07	1.07E-06	1.65E-06	2.23E-06	2.23E-06
pd105	.00E+00	5.36E-07	1.08E-06	1.62E-06	2.17E-06	2.17E-06
zr 93	.00E+00	5.13E-07	1.02E-06	1.53E-06	2.03E-06	2.03E-06
i129	.00E+00	3.82E-07	7.63E-07	1.14E-06	1.53E-06	1.53E-06
nd144	.00E+00	3.68E-07	7.35E-07	1.10E-06	1.47E-06	1.47E-06
mo 97	.00E+00	2.81E-07	5.61E-07	8.39E-07	1.12E-06	1.12E-06
ag109	.00E+00	2.17E-07	4.64E-07	7.40E-07	1.05E-06	1.05E-06
zr 91	.00E+00	1.32E-07	2.63E-07	3.94E-07	5.23E-07	5.23E-07
y 89	.00E+00	1.26E-07	2.52E-07	3.76E-07	5.00E-07	5.00E-07
ru102	.00E+00	1.14E-07	2.28E-07	3.41E-07	4.54E-07	4.54E-07
ce142	.00E+00	1.02E-07	2.04E-07	3.05E-07	4.06E-07	4.06E-07
nd148	.00E+00	9.94E-08	1.98E-07	2.97E-07	3.95E-07	3.95E-07
nd146	.00E+00	8.27E-08	1.65E-07	2.47E-07	3.28E-07	3.28E-07
pd108	.00E+00	7.18E-08	1.49E-07	2.32E-07	3.21E-07	3.21E-07
ba138	.00E+00	7.04E-08	1.40E-07	2.10E-07	2.80E-07	2.80E-07
in115	.00E+00	6.92E-08	1.38E-07	2.08E-07	2.77E-07	2.77E-07
pm147	.00E+00	2.75E-07	2.74E-07	2.73E-07	2.72E-07	2.72E-07
ce140	.00E+00	6.59E-08	1.32E-07	1.97E-07	2.62E-07	2.62E-07
xe132	.00E+00	6.04E-08	1.20E-07	1.80E-07	2.40E-07	2.40E-07
pd107	.00E+00	4.10E-08	8.43E-08	1.30E-07	1.78E-07	1.78E-07
mo 98	.00E+00	4.22E-08	8.43E-08	1.26E-07	1.68E-07	1.68E-07
eu155	.00E+00	1.61E-07	1.63E-07	1.64E-07	1.66E-07	1.66E-07
mo100	.00E+00	4.04E-08	8.05E-08	1.21E-07	1.60E-07	1.60E-07
xe134	.00E+00	3.91E-08	7.79E-08	1.17E-07	1.55E-07	1.55E-07
zr 92	.00E+00	3.18E-08	6.33E-08	9.46E-08	1.26E-07	1.26E-07
i127	.00E+00	2.63E-08	5.27E-08	7.92E-08	1.06E-07	1.06E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5

0 fraction of total absorption rate

power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec

0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

zr 96	.00E+00	2.60E-08	5.19E-08	7.77E-08	1.03E-07	1.03E-07
ru104	.00E+00	2.48E-08	4.97E-08	7.47E-08	9.98E-08	9.98E-08
gd152	.00E+00	3.29E-09	1.91E-08	4.98E-08	9.52E-08	9.52E-08
nd150	.00E+00	2.22E-08	4.42E-08	6.63E-08	8.82E-08	8.82E-08
xe136	.00E+00	2.11E-08	4.22E-08	6.31E-08	8.40E-08	8.40E-08
br 81	.00E+00	1.61E-08	3.21E-08	4.80E-08	6.39E-08	6.39E-08
rb 85	.00E+00	1.55E-08	3.10E-08	4.65E-08	6.19E-08	6.19E-08
zr 94	.00E+00	1.37E-08	2.74E-08	4.10E-08	5.45E-08	5.45E-08
eu152	.00E+00	8.12E-09	2.14E-08	3.50E-08	4.84E-08	4.84E-08
zr 90	.00E+00	1.05E-08	2.29E-08	3.52E-08	4.75E-08	4.75E-08
cd111	.00E+00	1.05E-08	2.13E-08	3.26E-08	4.43E-08	4.43E-08
te130	.00E+00	9.57E-09	1.91E-08	2.86E-08	3.81E-08	3.81E-08
sm154	.00E+00	9.39E-09	1.88E-08	2.83E-08	3.78E-08	3.78E-08
rb 87	.00E+00	9.08E-09	1.81E-08	2.71E-08	3.60E-08	3.60E-08
se 77	.00E+00	6.33E-09	1.26E-08	1.89E-08	2.51E-08	2.51E-08
pd106	.00E+00	4.68E-09	9.50E-09	1.44E-08	1.95E-08	1.95E-08

kr 84	.00E+00	4.34E-09	8.65E-09	1.29E-08	1.72E-08	1.72E-08
sr 90	.00E+00	1.68E-08	1.68E-08	1.67E-08	1.66E-08	1.66E-08
se 79	.00E+00	3.24E-09	6.47E-09	9.68E-09	1.29E-08	1.29E-08
sb121	.00E+00	3.17E-09	6.35E-09	9.54E-09	1.27E-08	1.27E-08
gd156	.00E+00	1.94E-09	4.39E-09	7.30E-09	1.06E-08	1.06E-08
sb123	.00E+00	2.58E-09	5.16E-09	7.75E-09	1.03E-08	1.03E-08
kr 86	.00E+00	2.35E-09	4.69E-09	7.01E-09	9.32E-09	9.32E-09
rh105	.00E+00	8.37E-09	8.47E-09	8.56E-09	8.66E-09	8.66E-09
te128	.00E+00	2.13E-09	4.26E-09	6.38E-09	8.51E-09	8.51E-09
ru 99	.00E+00	4.68E-10	1.80E-09	3.98E-09	7.02E-09	7.02E-09
dy161	.00E+00	1.41E-09	2.99E-09	4.73E-09	6.64E-09	6.64E-09
se 80	.00E+00	1.52E-09	3.02E-09	4.53E-09	6.02E-09	6.02E-09
te125	.00E+00	1.33E-09	2.68E-09	4.05E-09	5.42E-09	5.42E-09
tb159	.00E+00	9.36E-10	1.92E-09	2.95E-09	4.02E-09	4.02E-09
cs137	.00E+00	3.77E-09	3.77E-09	3.76E-09	3.75E-09	3.75E-09
gd154	.00E+00	2.28E-10	9.26E-10	2.09E-09	3.73E-09	3.73E-09
cd112	.00E+00	8.77E-10	1.77E-09	2.68E-09	3.60E-09	3.60E-09
li 6	.00E+00	8.59E-10	1.71E-09	2.56E-09	3.39E-09	3.39E-09
eu154	.00E+00	7.20E-10	1.43E-09	2.14E-09	2.85E-09	2.85E-09
sn117	.00E+00	6.92E-10	1.39E-09	2.09E-09	2.80E-09	2.80E-09
gd158	.00E+00	4.26E-10	1.06E-09	1.83E-09	2.69E-09	2.69E-09
pr143	.00E+00	2.65E-09	2.64E-09	2.63E-09	2.62E-09	2.62E-09
sn119	.00E+00	5.64E-10	1.13E-09	1.69E-09	2.26E-09	2.26E-09
sn115	.00E+00	5.15E-10	1.03E-09	1.55E-09	2.07E-09	2.07E-09
xe133	.00E+00	1.98E-09	1.98E-09	1.97E-09	1.97E-09	1.97E-09
sr 88	.00E+00	4.34E-10	8.64E-10	1.29E-09	1.72E-09	1.72E-09
cd114	.00E+00	3.41E-10	7.39E-10	1.19E-09	1.67E-09	1.67E-09
ce141	.00E+00	1.57E-09	1.56E-09	1.56E-09	1.56E-09	1.56E-09
pd110	.00E+00	3.25E-10	6.67E-10	1.03E-09	1.40E-09	1.40E-09
ru100	.00E+00	7.91E-11	3.09E-10	6.87E-10	1.21E-09	1.21E-09
se 82	.00E+00	2.94E-10	5.86E-10	8.76E-10	1.16E-09	1.16E-09
dy164	.00E+00	1.83E-10	4.20E-10	7.08E-10	1.05E-09	1.05E-09
dy162	.00E+00	1.96E-10	4.35E-10	7.16E-10	1.04E-09	1.04E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6

0 fraction of total absorption rate

power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec

0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

sn126	.00E+00	2.36E-10	4.74E-10	7.15E-10	9.58E-10	9.58E-10
pm149	.00E+00	9.59E-10	9.57E-10	9.55E-10	9.53E-10	9.53E-10
nd147	.00E+00	9.43E-10	9.40E-10	9.38E-10	9.35E-10	9.35E-10
se 78	.00E+00	2.25E-10	4.49E-10	6.73E-10	8.96E-10	8.96E-10
nd142	.00E+00	5.19E-11	2.07E-10	4.64E-10	8.22E-10	8.22E-10
ba134	.00E+00	5.17E-11	2.06E-10	4.62E-10	8.19E-10	8.19E-10
sm148	.00E+00	5.04E-11	1.95E-10	4.33E-10	7.63E-10	7.63E-10
sn124	.00E+00	1.85E-10	3.70E-10	5.56E-10	7.43E-10	7.43E-10
ba135	.00E+00	4.14E-11	1.65E-10	3.70E-10	6.56E-10	6.56E-10
ce144	.00E+00	5.97E-10	5.95E-10	5.93E-10	5.91E-10	5.91E-10
pd104	.00E+00	3.57E-11	1.43E-10	3.20E-10	5.69E-10	5.69E-10
kr 85	.00E+00	5.66E-10	5.63E-10	5.61E-10	5.59E-10	5.59E-10
as 75	.00E+00	1.34E-10	2.68E-10	4.01E-10	5.34E-10	5.34E-10
in113	.00E+00	9.33E-11	1.95E-10	2.98E-10	4.01E-10	4.01E-10
ru103	.00E+00	3.57E-10	3.57E-10	3.58E-10	3.59E-10	3.59E-10
ba136	.00E+00	7.64E-11	1.62E-10	2.56E-10	3.59E-10	3.59E-10
sn118	.00E+00	7.59E-11	1.52E-10	2.28E-10	3.05E-10	3.05E-10
cs134	.00E+00	6.91E-11	1.37E-10	2.05E-10	2.72E-10	2.72E-10
cd116	.00E+00	6.39E-11	1.28E-10	1.92E-10	2.56E-10	2.56E-10
mo 96	.00E+00	2.87E-11	8.07E-11	1.56E-10	2.53E-10	2.53E-10
sn122	.00E+00	6.22E-11	1.25E-10	1.87E-10	2.50E-10	2.50E-10
dy163	.00E+00	4.42E-11	9.98E-11	1.67E-10	2.45E-10	2.45E-10

kr 82	.00E+00	4.37E-11	9.68E-11	1.59E-10	2.31E-10	2.31E-10
sn120	.00E+00	4.69E-11	9.39E-11	1.41E-10	1.88E-10	1.88E-10
xe130	.00E+00	2.91E-11	6.90E-11	1.20E-10	1.81E-10	1.81E-10
zr 95	.00E+00	1.68E-10	1.67E-10	1.66E-10	1.66E-10	1.66E-10
nb 95	.00E+00	1.53E-10	1.52E-10	1.52E-10	1.51E-10	1.51E-10
ge 73	.00E+00	3.63E-11	7.26E-11	1.09E-10	1.45E-10	1.45E-10
y 91	.00E+00	1.41E-10	1.40E-10	1.40E-10	1.39E-10	1.39E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.09E-10
nb 93	.00E+00	6.03E-12	2.53E-11	5.77E-11	1.03E-10	1.03E-10
cd110	.00E+00	4.89E-12	2.03E-11	4.76E-11	8.80E-11	8.80E-11
br 79	.00E+00	3.36E-12	1.34E-11	3.00E-11	5.33E-11	5.33E-11
ge 76	.00E+00	1.33E-11	2.64E-11	3.95E-11	5.26E-11	5.26E-11
ba140	.00E+00	4.70E-11	4.68E-11	4.67E-11	4.66E-11	4.66E-11
te126	.00E+00	7.59E-12	1.75E-11	2.96E-11	4.41E-11	4.41E-11
gd160	.00E+00	8.77E-12	1.82E-11	2.82E-11	3.89E-11	3.89E-11
sm153	.00E+00	3.81E-11	3.83E-11	3.85E-11	3.87E-11	3.87E-11
eu156	.00E+00	3.46E-11	3.53E-11	3.60E-11	3.68E-11	3.68E-11
ag107	.00E+00	1.80E-12	7.33E-12	1.68E-11	3.04E-11	3.04E-11
xe129	.00E+00	1.90E-12	7.59E-12	1.71E-11	3.03E-11	3.03E-11
sr 89	.00E+00	3.02E-11	3.00E-11	2.99E-11	2.98E-11	2.98E-11
ru106	.00E+00	2.66E-11	2.72E-11	2.79E-11	2.86E-11	2.86E-11
kr 87	.00E+00	2.25E-11	2.24E-11	2.23E-11	2.22E-11	2.22E-11
ho165	.00E+00	3.06E-12	6.96E-12	1.17E-11	1.73E-11	1.73E-11
ce143	.00E+00	1.73E-11	1.73E-11	1.72E-11	1.72E-11	1.72E-11
y 90	.00E+00	1.60E-11	1.59E-11	1.59E-11	1.58E-11	1.58E-11
sb125	.00E+00	1.51E-11	1.52E-11	1.53E-11	1.54E-11	1.54E-11
la140	.00E+00	1.54E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

mo 99	.00E+00	1.31E-11	1.31E-11	1.31E-11	1.30E-11	1.30E-11
pm148m	.00E+00	9.64E-12	9.63E-12	9.62E-12	9.62E-12	9.62E-12
te127m	.00E+00	7.41E-12	7.47E-12	7.52E-12	7.58E-12	7.58E-12
te124	.00E+00	1.57E-12	3.24E-12	5.00E-12	6.84E-12	6.84E-12
i131	.00E+00	6.76E-12	6.75E-12	6.74E-12	6.73E-12	6.73E-12
sr 87	.00E+00	1.52E-12	3.04E-12	4.56E-12	6.09E-12	6.09E-12
dy160	.00E+00	3.06E-13	1.12E-12	2.47E-12	4.36E-12	4.36E-12
nb 94	.00E+00	8.78E-13	1.76E-12	2.64E-12	3.54E-12	3.54E-12
xe128	.00E+00	2.54E-13	8.79E-13	1.87E-12	3.24E-12	3.24E-12
sr 86	.00E+00	5.17E-13	1.21E-12	2.09E-12	3.14E-12	3.14E-12
ge 74	.00E+00	7.30E-13	1.46E-12	2.19E-12	2.91E-12	2.91E-12
ge 72	.00E+00	4.92E-13	9.85E-13	1.48E-12	1.98E-12	1.98E-12
te129m	.00E+00	1.78E-12	1.78E-12	1.79E-12	1.79E-12	1.79E-12
se 76	.00E+00	3.05E-13	6.53E-13	1.04E-12	1.48E-12	1.48E-12
sn116	.00E+00	7.63E-14	3.03E-13	6.80E-13	1.21E-12	1.21E-12
er166	.00E+00	9.78E-14	2.54E-13	4.69E-13	7.40E-13	7.40E-13
te122	.00E+00	3.37E-14	1.30E-13	2.87E-13	5.07E-13	5.07E-13
pm148	.00E+00	3.86E-13	3.85E-13	3.84E-13	3.83E-13	3.83E-13
ag111	.00E+00	3.35E-13	3.48E-13	3.62E-13	3.75E-13	3.75E-13
eu157	.00E+00	3.04E-13	3.13E-13	3.22E-13	3.31E-13	3.31E-13
cd115m	.00E+00	2.37E-13	2.38E-13	2.39E-13	2.40E-13	2.40E-13
kr 80	.00E+00	2.13E-14	4.44E-14	6.95E-14	9.71E-14	9.71E-14
cs136	.00E+00	6.30E-14	7.00E-14	7.70E-14	8.39E-14	8.39E-14
ru105	.00E+00	3.04E-14	3.08E-14	3.11E-14	3.15E-14	3.15E-14
sn125	.00E+00	2.95E-14	2.96E-14	2.98E-14	2.99E-14	2.99E-14
rb 88	.00E+00	1.26E-14	1.26E-14	1.25E-14	1.25E-14	1.25E-14
tb160	.00E+00	2.92E-15	5.64E-15	8.45E-15	1.13E-14	1.13E-14
er167	.00E+00	7.36E-16	2.59E-15	5.83E-15	1.07E-14	1.07E-14

sn123	.00E+00	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	.00E+00	9.97E-15	9.95E-15	9.92E-15	9.90E-15	9.90E-15
te123	.00E+00	1.65E-15	3.73E-15	6.38E-15	9.73E-15	9.73E-15
te132	.00E+00	9.47E-15	9.45E-15	9.43E-15	9.42E-15	9.42E-15
pr142	.00E+00	1.73E-15	3.44E-15	5.14E-15	6.83E-15	6.83E-15
be 9	.00E+00	1.71E-15	3.41E-15	5.10E-15	6.79E-15	6.79E-15
te134	.00E+00	5.74E-15	5.72E-15	5.70E-15	5.68E-15	5.68E-15
sb126	.00E+00	3.41E-15	3.85E-15	4.28E-15	4.71E-15	4.71E-15
li 7	.00E+00	6.63E-16	1.32E-15	1.98E-15	2.63E-15	2.63E-15
sb124	.00E+00	2.23E-15	2.36E-15	2.49E-15	2.62E-15	2.62E-15
in117m	.00E+00	2.09E-15	2.11E-15	2.13E-15	2.15E-15	2.15E-15
i130	.00E+00	1.03E-15	1.34E-15	1.66E-15	1.97E-15	1.97E-15
rb 86	.00E+00	3.41E-16	4.42E-16	5.43E-16	6.43E-16	6.43E-16
in117	.00E+00	6.13E-16	6.20E-16	6.27E-16	6.34E-16	6.34E-16
dy165	.00E+00	2.76E-16	3.44E-16	4.12E-16	4.80E-16	4.80E-16
cd108	.00E+00	2.48E-17	8.36E-17	1.94E-16	3.74E-16	3.74E-16
sn114	.00E+00	1.67E-17	6.95E-17	1.58E-16	2.83E-16	2.83E-16
cd118	.00E+00	1.19E-16	1.20E-16	1.20E-16	1.21E-16	1.21E-16
ge 75	.00E+00	8.47E-17	8.45E-17	8.43E-17	8.42E-17	8.42E-17
cs134m	.00E+00	1.28E-17	2.55E-17	3.81E-17	5.06E-17	5.06E-17
in119m	.00E+00	2.98E-17	2.99E-17	3.00E-17	3.01E-17	3.01E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

in119	.00E+00	2.33E-18	2.35E-18	2.36E-18	2.38E-18	2.38E-18
cd109	.00E+00	6.19E-19	1.05E-18	1.47E-18	1.89E-18	1.89E-18
ag110	.00E+00	2.83E-19	6.08E-19	9.67E-19	1.36E-18	1.36E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
h 1	.00E+00	2.22E-05	4.43E-05	6.64E-05	8.84E-05	8.84E-05
h 2	.00E+00	6.57E-08	1.31E-07	1.97E-07	2.62E-07	2.62E-07
h 3	.00E+00	3.50E-11	3.56E-11	3.63E-11	3.69E-11	3.69E-11
h 4	.00E+00	1.41E-34	1.44E-34	1.46E-34	1.49E-34	1.49E-34
he 3	.00E+00	4.77E-10	9.79E-10	1.47E-09	1.95E-09	1.95E-09
he 4	.00E+00	3.66E-06	7.32E-06	1.10E-05	1.46E-05	1.46E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	4.40E-07	8.79E-07	1.32E-06	1.76E-06	1.76E-06
ne 21	.00E+00	3.97E-12	1.59E-11	3.57E-11	6.33E-11	6.33E-11
ne 22	.00E+00	2.87E-09	5.77E-09	8.68E-09	1.16E-08	1.16E-08
ne 23	.00E+00	7.33E-15	7.32E-15	7.31E-15	7.30E-15	7.30E-15
na 22	.00E+00	4.31E-11	4.30E-11	4.29E-11	4.29E-11	4.29E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.65E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08
na 24m	.00E+00	6.00E-15	5.99E-15	5.98E-15	5.97E-15	5.97E-15
na 25	.00E+00	2.60E-26	7.47E-26	1.46E-25	2.40E-25	2.40E-25
mg 24	.00E+00	3.78E-03	7.56E-03	1.13E-02	1.51E-02	1.51E-02
mg 25	.00E+00	8.61E-10	2.48E-09	4.84E-09	7.96E-09	7.96E-09
mg 26	.00E+00	6.57E-08	1.31E-07	1.97E-07	2.62E-07	2.62E-07
mg 27	.00E+00	2.19E-12	2.18E-12	2.18E-12	2.18E-12	2.18E-12
mg 28	.00E+00	4.43E-24	4.42E-24	4.41E-24	4.40E-24	4.40E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	.00E+00	2.71E-10	2.70E-10	2.70E-10	2.70E-10	2.70E-10
al 29	.00E+00	9.55E-25	3.81E-24	8.55E-24	1.52E-23	1.52E-23
al 30	.00E+00	4.38E-36	3.49E-35	1.18E-34	2.78E-34	2.78E-34

si 28	.00E+00	1.10E-02	2.20E-02	3.30E-02	4.40E-02	4.40E-02
si 29	.00E+00	3.53E-09	1.41E-08	3.17E-08	5.62E-08	5.62E-08
si 30	.00E+00	1.21E-15	9.68E-15	3.26E-14	7.71E-14	7.71E-14
si 31	.00E+00	8.67E-28	6.91E-27	2.33E-26	5.50E-26	5.50E-26
si 32	.00E+00	3.17E-34	4.28E-33	1.86E-32	5.14E-32	5.14E-32
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		3.00E+08	3.00E+08	2.99E+08	2.99E+08	2.99E-07

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
he 4	.00E+00	4.39E-02	1.15E-01	1.97E-01	2.89E-01	2.89E-01
pb206	.00E+00	2.25E-07	1.86E-06	6.26E-06	1.47E-05	1.47E-05
pb207	.00E+00	4.16E-07	1.78E-06	4.11E-06	7.38E-06	7.38E-06
pb208	.00E+00	8.05E-08	3.16E-07	7.02E-07	1.24E-06	1.24E-06
pb209	.00E+00	8.67E-14	3.44E-13	7.67E-13	1.35E-12	1.35E-12
pb210	.00E+00	9.86E-08	3.81E-07	8.28E-07	1.42E-06	1.42E-06
pb211	.00E+00	3.77E-13	7.55E-13	1.13E-12	1.51E-12	1.51E-12
pb212	.00E+00	1.11E-12	2.16E-12	3.21E-12	4.25E-12	4.25E-12
pb214	.00E+00	2.25E-13	8.70E-13	1.89E-12	3.25E-12	3.25E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	1.35E-08	1.07E-07	3.60E-07	8.49E-07	8.49E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	.00E+00	6.07E-11	2.34E-10	5.10E-10	8.76E-10	8.76E-10
bi211	.00E+00	2.23E-14	4.47E-14	6.72E-14	8.96E-14	8.96E-14
bi212	.00E+00	1.05E-13	2.05E-13	3.04E-13	4.03E-13	4.03E-13
bi213	.00E+00	2.02E-14	8.03E-14	1.79E-13	3.16E-13	3.16E-13
bi214	.00E+00	1.67E-13	6.46E-13	1.41E-12	2.42E-12	2.42E-12
po210	.00E+00	1.68E-09	6.47E-09	1.41E-08	2.42E-08	2.42E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	.00E+00	2.47E-19	4.94E-19	7.42E-19	9.90E-19	9.90E-19
po212	.00E+00	5.52E-24	1.08E-23	1.60E-23	2.12E-23	2.12E-23
po213	.00E+00	3.04E-23	1.21E-22	2.69E-22	4.75E-22	4.75E-22
po214	.00E+00	2.30E-20	8.89E-20	1.93E-19	3.32E-19	3.32E-19
po215	.00E+00	3.10E-19	6.20E-19	9.31E-19	1.24E-18	1.24E-18
po216	.00E+00	4.19E-18	8.18E-18	1.21E-17	1.61E-17	1.61E-17
po218	.00E+00	2.61E-14	1.01E-13	2.19E-13	3.76E-13	3.76E-13
rn218	.00E+00	1.70E-29	3.31E-29	4.90E-29	6.49E-29	6.49E-29
rn219	.00E+00	6.89E-16	1.38E-15	2.07E-15	2.76E-15	2.76E-15
rn220	.00E+00	1.61E-15	3.14E-15	4.65E-15	6.17E-15	6.17E-15
rn222	.00E+00	4.63E-11	1.79E-10	3.89E-10	6.69E-10	6.69E-10
ra222	.00E+00	1.84E-26	3.59E-26	5.32E-26	7.04E-26	7.04E-26
ra223	.00E+00	1.72E-10	3.44E-10	5.17E-10	6.90E-10	6.90E-10
ra224	.00E+00	9.14E-12	1.78E-11	2.65E-11	3.51E-11	3.51E-11
ra225	.00E+00	9.47E-12	3.76E-11	8.38E-11	1.48E-10	1.48E-10
ra226	.00E+00	7.08E-06	2.73E-05	5.94E-05	1.02E-04	1.02E-04
ra228	.00E+00	5.28E-13	1.06E-12	1.59E-12	2.12E-12	2.12E-12
ac225	.00E+00	6.40E-12	2.54E-11	5.66E-11	9.98E-11	9.98E-11
ac227	.00E+00	1.20E-07	2.39E-07	3.59E-07	4.80E-07	4.80E-07
ac228	.00E+00	6.45E-17	1.29E-16	1.94E-16	2.59E-16	2.59E-16
th226	.00E+00	9.00E-25	1.75E-24	2.60E-24	3.44E-24	3.44E-24
th227	.00E+00	2.78E-10	5.56E-10	8.34E-10	1.11E-09	1.11E-09
th228	.00E+00	1.75E-09	3.41E-09	5.05E-09	6.70E-09	6.70E-09
th229	.00E+00	1.84E-06	7.30E-06	1.63E-05	2.87E-05	2.87E-05
th230	.00E+00	6.38E-03	1.28E-02	1.92E-02	2.56E-02	2.56E-02
th231	.00E+00	3.04E-09	3.07E-09	3.09E-09	3.11E-09	3.11E-09
th232	.00E+00	1.29E-03	2.59E-03	3.88E-03	5.18E-03	5.18E-03
th233	.00E+00	1.20E-14	2.39E-14	3.59E-14	4.78E-14	4.78E-14

th234	.00E+00	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	.00E+00	1.80E-04	3.60E-04	5.41E-04	7.21E-04	7.21E-04
pa232	.00E+00	3.09E-12	6.18E-12	9.26E-12	1.23E-11	1.23E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 11
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
pa233	.00E+00	1.46E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	.00E+00	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	8.72E-22	1.70E-21	2.52E-21	3.33E-21	3.33E-21
u231	.00E+00	2.74E-18	5.45E-18	8.16E-18	1.08E-17	1.08E-17
u232	.00E+00	6.37E-08	1.24E-07	1.84E-07	2.44E-07	2.44E-07
u233	.00E+00	3.41E-03	6.80E-03	1.02E-02	1.35E-02	1.35E-02
u234	9.06E+00	9.07E+00	9.10E+00	9.14E+00	9.18E+00	9.18E+00
u235	7.30E+02	7.29E+02	7.27E+02	7.25E+02	7.23E+02	7.23E+02
u236	1.74E+02	1.75E+02	1.75E+02	1.75E+02	1.76E+02	1.76E+02
u237	.00E+00	3.25E-06	3.25E-06	3.25E-06	3.26E-06	3.26E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.28E-07	3.28E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	9.13E-12	9.11E-12	9.10E-12	9.08E-12	9.08E-12
np236m	.00E+00	2.17E-12	2.17E-12	2.16E-12	2.16E-12	2.16E-12
np236	.00E+00	5.15E-08	1.03E-07	1.54E-07	2.05E-07	2.05E-07
np237	4.22E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	.00E+00	1.58E-06	1.58E-06	1.57E-06	1.57E-06	1.57E-06
np239	.00E+00	4.76E-05	4.76E-05	4.75E-05	4.74E-05	4.74E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	9.77E-15	9.74E-15	9.72E-15	9.69E-15	9.69E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	1.18E-09	1.18E-09	1.17E-09	1.17E-09	1.17E-09
pu237	.00E+00	2.22E-13	2.61E-13	2.76E-13	2.87E-13	2.87E-13
pu238	.00E+00	2.06E-02	2.34E-02	2.37E-02	2.38E-02	2.38E-02
pu239	.00E+00	1.27E+00	2.52E+00	3.75E+00	4.97E+00	4.97E+00
pu240	.00E+00	1.55E-03	6.10E-03	1.35E-02	2.36E-02	2.36E-02
pu241	.00E+00	6.62E-07	2.60E-06	5.76E-06	1.01E-05	1.01E-05
pu242	.00E+00	7.37E-10	8.71E-09	3.72E-08	1.04E-07	1.04E-07
pu243	.00E+00	1.62E-18	1.92E-17	8.18E-17	2.28E-16	2.28E-16
pu244	.00E+00	4.00E-39	3.81E-36	1.89E-34	2.93E-33	2.93E-33
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	6.45E-22	4.76E-21	1.47E-20	3.18E-20	3.18E-20
am240	.00E+00	2.95E-19	2.18E-18	6.73E-18	1.46E-17	1.46E-17
am241	.00E+00	2.23E-06	1.65E-05	5.09E-05	1.10E-04	1.10E-04
am242m	.00E+00	2.89E-10	3.64E-09	1.43E-08	3.57E-08	3.57E-08
am242	.00E+00	8.20E-14	6.25E-13	1.97E-12	4.32E-12	4.32E-12
am243	.00E+00	5.26E-13	1.38E-11	8.38E-11	2.90E-10	2.90E-10
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	4.15E-21	1.08E-19	6.60E-19	2.28E-18	2.28E-18
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	.00E+00	5.04E-24	3.83E-23	1.21E-22	2.65E-22	2.65E-22
cm242	.00E+00	1.65E-11	1.26E-10	3.98E-10	8.73E-10	8.73E-10
cm243	.00E+00	.00E+00	1.40E-20	1.07E-19	3.36E-19	3.36E-19
cm244	.00E+00	6.52E-17	1.70E-15	1.04E-14	3.58E-14	3.58E-14

1

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
cm245	.00E+00	2.85E-21	1.54E-19	1.46E-18	6.91E-18	6.91E-18
cm246	.00E+00	6.11E-25	6.80E-23	9.96E-22	6.36E-21	6.36E-21
cm247	.00E+00	2.25E-30	5.17E-28	1.15E-26	9.86E-26	9.86E-26
cm248	.00E+00	8.27E-35	3.89E-32	1.29E-30	1.49E-29	1.49E-29
cm249	.00E+00	.00E+00	.00E+00	3.89E-41	4.82E-40	4.82E-40
cm250	.00E+00	.00E+00	.00E+00	.00E+00	1.40E-45	1.40E-45
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		3.00E+08	3.00E+08	2.99E+08	2.99E+08	2.99E-07

```
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  2 of library on unit 33.

         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 "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:  ft33f001
0               8/28/1996    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                    7993    number of nonzero off-diagonal matrix elements
0      ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page   13
        power=    .00mw, burnup=   2922.mwd, flux= 2.80E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      456563. d      547875. d      639188. d      730500. d      730500. d
     productions  1.096527E+06  1.098196E+06  1.099821E+06  1.101403E+06  1.102943E+06  1.102943E+06
     absorptions  9.037413E+05  9.052724E+05  9.066773E+05  9.079868E+05  9.092220E+05  9.092220E+05
     k infinity   1.213320E+00  1.213111E+00  1.213024E+00  1.213017E+00  1.213062E+00  1.213062E+00
0                  initial      456563. d      547875. d      639188. d      730500. d      730500. d
     actinide
     absorptions  8.959688E+05  8.969688E+05  8.979482E+05  8.989073E+05  8.998463E+05  8.998463E+05
     non-actinide
     abs. fracs.  8.600354E-03  9.172499E-03  9.627581E-03  9.999692E-03  1.031184E-02  1.031184E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2             fission products      page   14
0                              fraction of total absorption rate
        power=    .00mw, burnup=   2922.mwd, flux= 2.80E+08n/cm**2-sec
0              initial 456563. d 547875. d 639188. d 730500. d 730500. d

     sm149     3.99E-03  4.38E-03  4.66E-03  4.85E-03  4.99E-03  4.99E-03
     eu151     1.87E-04  2.38E-04  2.87E-04  3.35E-04  3.82E-04  3.82E-04
     nd143     1.45E-04  1.81E-04  2.17E-04  2.52E-04  2.87E-04  2.87E-04
     rh103     6.89E-05  8.61E-05  1.03E-04  1.20E-04  1.38E-04  1.38E-04
     gd155     7.68E-05  9.08E-05  1.03E-04  1.14E-04  1.24E-04  1.24E-04
     xe131     4.67E-05  5.83E-05  6.98E-05  8.14E-05  9.29E-05  9.29E-05
     cs133     3.62E-05  4.52E-05  5.41E-05  6.31E-05  7.20E-05  7.20E-05
     cd113     4.58E-05  5.30E-05  5.91E-05  6.43E-05  6.87E-05  6.87E-05
     sm147     2.68E-05  3.34E-05  4.01E-05  4.67E-05  5.32E-05  5.32E-05
     tc 99     2.67E-05  3.33E-05  3.98E-05  4.64E-05  5.29E-05  5.29E-05
     gd157     3.41E-05  3.68E-05  3.88E-05  4.04E-05  4.18E-05  4.18E-05
     nd145     2.06E-05  2.56E-05  3.07E-05  3.57E-05  4.08E-05  4.08E-05
     sm151     3.97E-05  3.97E-05  3.98E-05  3.99E-05  4.00E-05  4.00E-05
     mo 95     1.43E-05  1.78E-05  2.13E-05  2.48E-05  2.83E-05  2.83E-05
     sm152     1.16E-05  1.47E-05  1.78E-05  2.09E-05  2.41E-05  2.41E-05
     kr 83     8.83E-06  1.10E-05  1.32E-05  1.53E-05  1.75E-05  1.75E-05
     cs135     8.15E-06  1.02E-05  1.22E-05  1.42E-05  1.62E-05  1.62E-05
     sm150     5.08E-06  7.26E-06  9.60E-06  1.21E-05  1.46E-05  1.46E-05
     ru101     6.37E-06  7.96E-06  9.53E-06  1.11E-05  1.27E-05  1.27E-05
     pr141     6.04E-06  7.54E-06  9.03E-06  1.05E-05  1.20E-05  1.20E-05
     eu153     5.58E-06  6.98E-06  8.39E-06  9.80E-06  1.12E-05  1.12E-05
     la139     4.94E-06  6.16E-06  7.38E-06  8.59E-06  9.80E-06  9.80E-06
     ba137     2.25E-06  2.84E-06  3.42E-06  4.00E-06  4.58E-06  4.58E-06
     pd105     2.17E-06  2.72E-06  3.28E-06  3.85E-06  4.42E-06  4.42E-06
     zr 93     2.02E-06  2.52E-06  3.01E-06  3.51E-06  4.00E-06  4.00E-06
      i129     1.54E-06  1.92E-06  2.31E-06  2.69E-06  3.08E-06  3.08E-06
     nd144     1.48E-06  1.85E-06  2.21E-06  2.58E-06  2.94E-06  2.94E-06
     ag109     1.04E-06  1.37E-06  1.72E-06  2.11E-06  2.52E-06  2.52E-06
     xe135     2.28E-06  2.28E-06  2.28E-06  2.28E-06  2.28E-06  2.28E-06
     mo 97     1.12E-06  1.40E-06  1.68E-06  1.95E-06  2.23E-06  2.23E-06
     zr 91     5.26E-07  6.56E-07  7.85E-07  9.14E-07  1.04E-06  1.04E-06
      y 89     5.04E-07  6.28E-07  7.51E-07  8.74E-07  9.97E-07  9.97E-07
     ru102     4.57E-07  5.71E-07  6.85E-07  7.98E-07  9.11E-07  9.11E-07
     ce142     4.09E-07  5.11E-07  6.12E-07  7.12E-07  8.13E-07  8.13E-07
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nd148	3.96E-07	4.94E-07	5.92E-07	6.89E-07	7.87E-07	7.87E-07
pd108	3.18E-07	4.11E-07	5.09E-07	6.12E-07	7.20E-07	7.20E-07
nd146	3.31E-07	4.13E-07	4.95E-07	5.76E-07	6.57E-07	6.57E-07
ba138	2.82E-07	3.52E-07	4.22E-07	4.91E-07	5.61E-07	5.61E-07
in115	2.78E-07	3.47E-07	4.17E-07	4.88E-07	5.58E-07	5.58E-07
ce140	2.64E-07	3.30E-07	3.95E-07	4.60E-07	5.25E-07	5.25E-07
xe132	2.40E-07	3.00E-07	3.59E-07	4.19E-07	4.78E-07	4.78E-07
gd152	9.62E-08	1.57E-07	2.31E-07	3.20E-07	4.21E-07	4.21E-07
pd107	1.79E-07	2.29E-07	2.81E-07	3.36E-07	3.92E-07	3.92E-07
mo 98	1.66E-07	2.07E-07	2.49E-07	2.90E-07	3.30E-07	3.30E-07
mo100	1.60E-07	2.00E-07	2.39E-07	2.79E-07	3.18E-07	3.18E-07
xe134	1.56E-07	1.95E-07	2.34E-07	2.72E-07	3.11E-07	3.11E-07
pm147	2.71E-07	2.70E-07	2.70E-07	2.69E-07	2.69E-07	2.69E-07
zr 92	1.27E-07	1.58E-07	1.89E-07	2.20E-07	2.51E-07	2.51E-07
i127	1.06E-07	1.32E-07	1.59E-07	1.87E-07	2.14E-07	2.14E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

zr 96	1.02E-07	1.27E-07	1.52E-07	1.77E-07	2.02E-07	2.02E-07
ru104	9.97E-08	1.25E-07	1.50E-07	1.75E-07	2.01E-07	2.01E-07
nd150	8.82E-08	1.10E-07	1.32E-07	1.54E-07	1.76E-07	1.76E-07
eu155	1.66E-07	1.67E-07	1.69E-07	1.70E-07	1.72E-07	1.72E-07
xe136	8.46E-08	1.06E-07	1.26E-07	1.47E-07	1.68E-07	1.68E-07
br 81	6.38E-08	7.96E-08	9.53E-08	1.11E-07	1.27E-07	1.27E-07
rb 85	6.19E-08	7.72E-08	9.25E-08	1.08E-07	1.23E-07	1.23E-07
zr 94	5.42E-08	6.76E-08	8.09E-08	9.42E-08	1.07E-07	1.07E-07
eu152	4.88E-08	6.21E-08	7.48E-08	8.73E-08	9.94E-08	9.94E-08
zr 90	4.77E-08	6.00E-08	7.22E-08	8.44E-08	9.65E-08	9.65E-08
cd111	4.47E-08	5.69E-08	6.95E-08	8.25E-08	9.58E-08	9.58E-08
sm154	3.80E-08	4.76E-08	5.72E-08	6.69E-08	7.67E-08	7.67E-08
te130	3.84E-08	4.80E-08	5.75E-08	6.70E-08	7.66E-08	7.66E-08
rb 87	3.59E-08	4.48E-08	5.36E-08	6.24E-08	7.11E-08	7.11E-08
se 77	2.54E-08	3.16E-08	3.79E-08	4.42E-08	5.04E-08	5.04E-08
pd106	1.94E-08	2.45E-08	2.97E-08	3.50E-08	4.05E-08	4.05E-08
kr 84	1.71E-08	2.13E-08	2.55E-08	2.96E-08	3.38E-08	3.38E-08
ru 99	7.00E-09	1.09E-08	1.56E-08	2.11E-08	2.75E-08	2.75E-08
gd156	1.05E-08	1.41E-08	1.81E-08	2.23E-08	2.68E-08	2.68E-08
se 79	1.30E-08	1.62E-08	1.94E-08	2.26E-08	2.58E-08	2.58E-08
sb121	1.27E-08	1.59E-08	1.91E-08	2.23E-08	2.55E-08	2.55E-08
sb123	1.03E-08	1.29E-08	1.55E-08	1.81E-08	2.07E-08	2.07E-08
kr 86	9.39E-09	1.17E-08	1.40E-08	1.63E-08	1.86E-08	1.86E-08
te128	8.51E-09	1.06E-08	1.28E-08	1.49E-08	1.70E-08	1.70E-08
sr 90	1.68E-08	1.67E-08	1.67E-08	1.66E-08	1.65E-08	1.65E-08
dy161	6.70E-09	8.77E-09	1.10E-08	1.34E-08	1.59E-08	1.59E-08
gd154	3.76E-09	5.86E-09	8.43E-09	1.15E-08	1.50E-08	1.50E-08
se 80	6.07E-09	7.57E-09	9.07E-09	1.06E-08	1.21E-08	1.21E-08
te125	5.42E-09	6.79E-09	8.18E-09	9.57E-09	1.10E-08	1.10E-08
rh105	8.72E-09	8.80E-09	8.89E-09	8.99E-09	9.08E-09	9.08E-09
tb159	4.02E-09	5.13E-09	6.29E-09	7.49E-09	8.73E-09	8.73E-09
cd112	3.62E-09	4.56E-09	5.53E-09	6.50E-09	7.49E-09	7.49E-09
li 6	3.43E-09	4.27E-09	5.11E-09	5.94E-09	6.77E-09	6.77E-09
gd158	2.68E-09	3.60E-09	4.57E-09	5.58E-09	6.61E-09	6.61E-09
sn117	2.82E-09	3.53E-09	4.26E-09	4.99E-09	5.73E-09	5.73E-09
eu154	2.87E-09	3.56E-09	4.27E-09	4.99E-09	5.70E-09	5.70E-09
ru100	1.22E-09	1.89E-09	2.71E-09	3.66E-09	4.76E-09	4.76E-09
sn119	2.28E-09	2.86E-09	3.43E-09	4.01E-09	4.60E-09	4.60E-09
sn115	2.09E-09	2.61E-09	3.14E-09	3.67E-09	4.20E-09	4.20E-09
cd114	1.66E-09	2.17E-09	2.72E-09	3.29E-09	3.88E-09	3.88E-09

cs137	3.75E-09	3.74E-09	3.74E-09	3.73E-09	3.73E-09	3.73E-09
sr 88	1.73E-09	2.15E-09	2.58E-09	3.00E-09	3.42E-09	3.42E-09
nd142	8.30E-10	1.29E-09	1.86E-09	2.52E-09	3.28E-09	3.28E-09
ba134	8.20E-10	1.27E-09	1.82E-09	2.47E-09	3.22E-09	3.22E-09
pd110	1.39E-09	1.78E-09	2.19E-09	2.61E-09	3.04E-09	3.04E-09
sm148	7.64E-10	1.18E-09	1.69E-09	2.28E-09	2.97E-09	2.97E-09
dy164	1.06E-09	1.45E-09	1.89E-09	2.37E-09	2.90E-09	2.90E-09
dy162	1.04E-09	1.40E-09	1.80E-09	2.24E-09	2.72E-09	2.72E-09
ba135	6.56E-10	1.02E-09	1.47E-09	2.00E-09	2.61E-09	2.61E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 16
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

pr143	2.63E-09	2.63E-09	2.62E-09	2.61E-09	2.61E-09	2.61E-09
se 82	1.17E-09	1.46E-09	1.75E-09	2.04E-09	2.33E-09	2.33E-09
pd104	5.64E-10	8.77E-10	1.26E-09	1.71E-09	2.23E-09	2.23E-09
sn126	9.68E-10	1.22E-09	1.47E-09	1.72E-09	1.98E-09	1.98E-09
xe133	1.99E-09	1.98E-09	1.98E-09	1.98E-09	1.98E-09	1.98E-09
se 78	8.97E-10	1.12E-09	1.34E-09	1.57E-09	1.79E-09	1.79E-09
ce141	1.57E-09	1.57E-09	1.57E-09	1.56E-09	1.56E-09	1.56E-09
sn124	7.36E-10	9.22E-10	1.11E-09	1.30E-09	1.49E-09	1.49E-09
as 75	5.34E-10	6.66E-10	7.99E-10	9.30E-10	1.06E-09	1.06E-09
pm149	9.63E-10	9.62E-10	9.60E-10	9.59E-10	9.58E-10	9.58E-10
nd147	9.29E-10	9.27E-10	9.25E-10	9.23E-10	9.22E-10	9.22E-10
mo 96	2.53E-10	3.72E-10	5.13E-10	6.77E-10	8.62E-10	8.62E-10
ba136	3.58E-10	4.69E-10	5.88E-10	7.16E-10	8.53E-10	8.53E-10
in113	4.01E-10	5.04E-10	6.09E-10	7.14E-10	8.19E-10	8.19E-10
dy163	2.45E-10	3.34E-10	4.32E-10	5.42E-10	6.61E-10	6.61E-10
sn118	3.01E-10	3.77E-10	4.54E-10	5.30E-10	6.07E-10	6.07E-10
kr 82	2.32E-10	3.13E-10	4.02E-10	5.00E-10	6.06E-10	6.06E-10
ce144	5.93E-10	5.92E-10	5.90E-10	5.88E-10	5.87E-10	5.87E-10
kr 85	5.62E-10	5.61E-10	5.59E-10	5.57E-10	5.55E-10	5.55E-10
xe130	1.83E-10	2.55E-10	3.38E-10	4.32E-10	5.36E-10	5.36E-10
cs134	2.74E-10	3.36E-10	4.02E-10	4.68E-10	5.34E-10	5.34E-10
cd116	2.54E-10	3.18E-10	3.82E-10	4.47E-10	5.11E-10	5.11E-10
sn122	2.52E-10	3.15E-10	3.79E-10	4.43E-10	5.07E-10	5.07E-10
nb 93	1.03E-10	1.62E-10	2.34E-10	3.18E-10	4.15E-10	4.15E-10
cd110	8.86E-11	1.43E-10	2.13E-10	2.99E-10	4.03E-10	4.03E-10
sn120	1.88E-10	2.36E-10	2.83E-10	3.31E-10	3.79E-10	3.79E-10
ru103	3.60E-10	3.60E-10	3.61E-10	3.62E-10	3.63E-10	3.63E-10
ge 73	1.46E-10	1.82E-10	2.19E-10	2.55E-10	2.92E-10	2.92E-10
br 79	5.34E-11	8.33E-11	1.20E-10	1.63E-10	2.12E-10	2.12E-10
zr 95	1.65E-10	1.64E-10	1.64E-10	1.63E-10	1.63E-10	1.63E-10
nb 95	1.51E-10	1.51E-10	1.51E-10	1.50E-10	1.50E-10	1.50E-10
y 91	1.40E-10	1.40E-10	1.39E-10	1.39E-10	1.38E-10	1.38E-10
ag107	3.06E-11	4.87E-11	7.13E-11	9.86E-11	1.31E-10	1.31E-10
te126	4.42E-11	6.10E-11	8.01E-11	1.02E-10	1.26E-10	1.26E-10
xe129	3.04E-11	4.74E-11	6.82E-11	9.28E-11	1.21E-10	1.21E-10
pm151	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10
ge 76	5.27E-11	6.57E-11	7.87E-11	9.17E-11	1.05E-10	1.05E-10
gd160	3.89E-11	5.01E-11	6.19E-11	7.43E-11	8.73E-11	8.73E-11
ho165	1.74E-11	2.38E-11	3.11E-11	3.92E-11	4.82E-11	4.82E-11
ba140	4.68E-11	4.67E-11	4.66E-11	4.65E-11	4.64E-11	4.64E-11
eu156	3.71E-11	3.77E-11	3.84E-11	3.91E-11	3.97E-11	3.97E-11
sm153	3.89E-11	3.91E-11	3.93E-11	3.95E-11	3.97E-11	3.97E-11
ru106	2.83E-11	2.88E-11	2.95E-11	3.01E-11	3.07E-11	3.07E-11
sr 89	3.00E-11	2.99E-11	2.98E-11	2.97E-11	2.96E-11	2.96E-11
kr 87	2.24E-11	2.23E-11	2.23E-11	2.22E-11	2.21E-11	2.21E-11
dy160	4.34E-12	6.76E-12	9.75E-12	1.33E-11	1.75E-11	1.75E-11

ce143	1.72E-11	1.72E-11	1.72E-11	1.71E-11	1.71E-11	1.71E-11
sb125	1.54E-11	1.55E-11	1.56E-11	1.57E-11	1.58E-11	1.58E-11
y 90	1.59E-11	1.59E-11	1.58E-11	1.58E-11	1.57E-11	1.57E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 17
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

te124	6.90E-12	8.86E-12	1.09E-11	1.30E-11	1.53E-11	1.53E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.51E-11	1.51E-11	1.51E-11
mo 99	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11
xe128	3.27E-12	5.00E-12	7.11E-12	9.59E-12	1.24E-11	1.24E-11
sr 87	6.13E-12	7.67E-12	9.23E-12	1.08E-11	1.23E-11	1.23E-11
pm148m	9.70E-12	9.57E-12	9.57E-12	9.57E-12	9.57E-12	9.57E-12
sr 86	3.17E-12	4.41E-12	5.81E-12	7.40E-12	9.15E-12	9.15E-12
te127m	7.63E-12	7.69E-12	7.74E-12	7.80E-12	7.85E-12	7.85E-12
nb 94	3.52E-12	4.42E-12	5.32E-12	6.24E-12	7.17E-12	7.17E-12
i131	6.74E-12	6.73E-12	6.73E-12	6.73E-12	6.72E-12	6.72E-12
ge 74	2.94E-12	3.67E-12	4.40E-12	5.13E-12	5.86E-12	5.86E-12
sn116	1.19E-12	1.86E-12	2.67E-12	3.63E-12	4.73E-12	4.73E-12
ge 72	2.00E-12	2.50E-12	3.01E-12	3.53E-12	4.04E-12	4.04E-12
se 76	1.49E-12	1.97E-12	2.49E-12	3.06E-12	3.66E-12	3.66E-12
er166	7.45E-13	1.07E-12	1.45E-12	1.89E-12	2.38E-12	2.38E-12
te122	5.05E-13	7.82E-13	1.12E-12	1.52E-12	1.98E-12	1.98E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.81E-12	1.81E-12	1.81E-12
ag111	3.73E-13	3.85E-13	3.97E-13	4.09E-13	4.22E-13	4.22E-13
pm148	3.79E-13	3.74E-13	3.73E-13	3.72E-13	3.72E-13	3.72E-13
eu157	3.33E-13	3.40E-13	3.48E-13	3.57E-13	3.65E-13	3.65E-13
cd115m	2.42E-13	2.43E-13	2.44E-13	2.45E-13	2.46E-13	2.46E-13
kr 80	9.78E-14	1.28E-13	1.62E-13	1.99E-13	2.40E-13	2.40E-13
cs136	8.34E-14	9.00E-14	9.66E-14	1.03E-13	1.10E-13	1.10E-13
er167	1.08E-14	1.76E-14	2.65E-14	3.78E-14	5.17E-14	5.17E-14
te123	9.74E-15	1.39E-14	1.90E-14	2.52E-14	3.26E-14	3.26E-14
ru105	3.12E-14	3.15E-14	3.19E-14	3.22E-14	3.25E-14	3.25E-14
sn125	2.97E-14	2.98E-14	3.00E-14	3.01E-14	3.02E-14	3.02E-14
tb160	1.14E-14	1.43E-14	1.74E-14	2.06E-14	2.38E-14	2.38E-14
pr142	6.86E-15	8.53E-15	1.02E-14	1.19E-14	1.35E-14	1.35E-14
be 9	6.70E-15	8.36E-15	1.00E-14	1.17E-14	1.33E-14	1.33E-14
rb 88	1.26E-14	1.26E-14	1.25E-14	1.25E-14	1.24E-14	1.24E-14
sn123	1.02E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
i135	1.00E-14	9.98E-15	9.97E-15	9.95E-15	9.94E-15	9.94E-15
te132	9.47E-15	9.46E-15	9.45E-15	9.44E-15	9.44E-15	9.44E-15
sb126	4.73E-15	5.16E-15	5.59E-15	6.02E-15	6.45E-15	6.45E-15
te134	5.74E-15	5.72E-15	5.71E-15	5.69E-15	5.68E-15	5.68E-15
li 7	2.66E-15	3.32E-15	3.98E-15	4.63E-15	5.29E-15	5.29E-15
i130	1.97E-15	2.29E-15	2.59E-15	2.90E-15	3.21E-15	3.21E-15
sb124	2.62E-15	2.75E-15	2.88E-15	3.00E-15	3.13E-15	3.13E-15
in117m	2.17E-15	2.19E-15	2.21E-15	2.23E-15	2.25E-15	2.25E-15
cd108	3.76E-16	6.46E-16	1.03E-15	1.54E-15	2.20E-15	2.20E-15
sn114	2.86E-16	4.48E-16	6.46E-16	8.81E-16	1.15E-15	1.15E-15
rb 86	6.47E-16	7.44E-16	8.42E-16	9.40E-16	1.04E-15	1.04E-15
dy165	4.85E-16	5.51E-16	6.19E-16	6.87E-16	7.54E-16	7.54E-16
in117	6.41E-16	6.47E-16	6.54E-16	6.60E-16	6.67E-16	6.67E-16
cd118	1.22E-16	1.23E-16	1.23E-16	1.24E-16	1.25E-16	1.25E-16
cs134m	5.11E-17	6.29E-17	7.52E-17	8.76E-17	9.98E-17	9.98E-17
ge 75	8.51E-17	8.50E-17	8.49E-17	8.48E-17	8.47E-17	8.47E-17
in119m	3.04E-17	3.05E-17	3.06E-17	3.08E-17	3.09E-17	3.09E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 18
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec

0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

cd109	1.91E-18	2.31E-18	2.72E-18	3.12E-18	3.52E-18	3.52E-18
ag110	1.38E-18	1.79E-18	2.25E-18	2.75E-18	3.27E-18	3.27E-18
in119	2.40E-18	2.41E-18	2.43E-18	2.44E-18	2.46E-18	2.46E-18

1

power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge 456563. d	547875. d	639188. d	730500. d	730500. d	
h 1	8.84E-05	1.10E-04	1.32E-04	1.53E-04	1.75E-04	1.75E-04
h 2	2.62E-07	3.27E-07	3.91E-07	4.56E-07	5.20E-07	5.20E-07
h 3	3.69E-11	3.71E-11	3.77E-11	3.83E-11	3.89E-11	3.89E-11
h 4	1.49E-34	1.49E-34	1.52E-34	1.54E-34	1.56E-34	1.56E-34
he 3	1.95E-09	2.42E-09	2.87E-09	3.32E-09	3.76E-09	3.76E-09
he 4	1.46E-05	1.82E-05	2.18E-05	2.54E-05	2.90E-05	2.90E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.76E-06	2.19E-06	2.62E-06	3.05E-06	3.48E-06	3.48E-06
ne 21	6.33E-11	9.74E-11	1.38E-10	1.85E-10	2.38E-10	2.38E-10
ne 22	1.16E-08	1.44E-08	1.73E-08	2.01E-08	2.30E-08	2.30E-08
ne 23	7.30E-15	7.17E-15	7.17E-15	7.16E-15	7.15E-15	7.15E-15
na 22	4.29E-11	4.22E-11	4.22E-11	4.21E-11	4.21E-11	4.21E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.64E-08	3.08E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08
na 24m	5.97E-15	5.05E-15	5.05E-15	5.04E-15	5.04E-15	5.04E-15
na 25	2.40E-25	3.45E-25	4.74E-25	6.22E-25	7.88E-25	7.88E-25
mg 24	1.51E-02	1.83E-02	2.15E-02	2.47E-02	2.78E-02	2.78E-02
mg 25	7.96E-09	1.18E-08	1.62E-08	2.13E-08	2.70E-08	2.70E-08
mg 26	2.62E-07	3.27E-07	3.91E-07	4.56E-07	5.20E-07	5.20E-07
mg 27	2.18E-12	2.14E-12	2.14E-12	2.14E-12	2.13E-12	2.13E-12
mg 28	4.40E-24	4.33E-24	4.32E-24	4.31E-24	4.31E-24	4.31E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.70E-10	2.28E-10	2.28E-10	2.28E-10	2.27E-10	2.27E-10
al 29	1.52E-23	2.29E-23	3.26E-23	4.38E-23	5.65E-23	5.65E-23
al 30	2.78E-34	5.28E-34	9.06E-34	1.43E-33	2.11E-33	2.11E-33
si 28	4.40E-02	5.32E-02	6.25E-02	7.18E-02	8.10E-02	8.10E-02
si 29	5.62E-08	8.73E-08	1.24E-07	1.67E-07	2.16E-07	2.16E-07
si 30	7.71E-14	1.50E-13	2.59E-13	4.08E-13	6.04E-13	6.04E-13
si 31	5.50E-26	1.07E-25	1.84E-25	2.90E-25	4.29E-25	4.29E-25
si 32	5.14E-32	1.12E-31	2.07E-31	3.46E-31	5.34E-31	5.34E-31
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.80E+08	2.80E+08	2.80E+08	2.80E+08	2.79E-07

1

power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge 456563. d	547875. d	639188. d	730500. d	730500. d	
he 4	2.89E-01	3.89E-01	4.98E-01	6.16E-01	7.42E-01	7.42E-01
pb206	1.47E-05	2.82E-05	4.78E-05	7.45E-05	1.09E-04	1.09E-04
pb207	7.38E-06	1.16E-05	1.68E-05	2.30E-05	3.01E-05	3.01E-05
pb208	1.24E-06	1.92E-06	2.76E-06	3.74E-06	4.87E-06	4.87E-06
pb209	1.35E-12	2.09E-12	2.99E-12	4.04E-12	5.23E-12	5.23E-12
pb210	1.42E-06	2.15E-06	3.00E-06	3.96E-06	5.01E-06	5.01E-06
pb211	1.51E-12	1.89E-12	2.27E-12	2.65E-12	3.03E-12	3.03E-12
pb212	4.25E-12	5.28E-12	6.32E-12	7.36E-12	8.40E-12	8.40E-12
pb214	3.25E-12	4.92E-12	6.86E-12	9.04E-12	1.15E-11	1.15E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.49E-07	1.65E-06	2.83E-06	4.46E-06	6.62E-06	6.62E-06

bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.76E-10	1.32E-09	1.85E-09	2.44E-09	3.08E-09	3.08E-09
bi211	8.96E-14	1.12E-13	1.35E-13	1.57E-13	1.80E-13	1.80E-13
bi212	4.03E-13	5.01E-13	6.00E-13	6.99E-13	7.97E-13	7.97E-13
bi213	3.16E-13	4.89E-13	6.99E-13	9.43E-13	1.22E-12	1.22E-12
bi214	2.42E-12	3.65E-12	5.09E-12	6.72E-12	8.50E-12	8.50E-12
po210	2.42E-08	3.66E-08	5.10E-08	6.73E-08	8.52E-08	8.52E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.90E-19	1.24E-18	1.49E-18	1.74E-18	1.99E-18	1.99E-18
po212	2.12E-23	2.63E-23	3.15E-23	3.67E-23	4.19E-23	4.19E-23
po213	4.75E-22	7.35E-22	1.05E-21	1.42E-21	1.84E-21	1.84E-21
po214	3.32E-19	5.02E-19	7.01E-19	9.24E-19	1.17E-18	1.17E-18
po215	1.24E-18	1.55E-18	1.87E-18	2.18E-18	2.49E-18	2.49E-18
po216	1.61E-17	2.00E-17	2.39E-17	2.79E-17	3.18E-17	3.18E-17
po218	3.76E-13	5.69E-13	7.93E-13	1.05E-12	1.32E-12	1.32E-12
rn218	6.49E-29	7.85E-29	9.39E-29	1.09E-28	1.24E-28	1.24E-28
rn219	2.76E-15	3.46E-15	4.15E-15	4.84E-15	5.54E-15	5.54E-15
rn220	6.17E-15	7.67E-15	9.18E-15	1.07E-14	1.22E-14	1.22E-14
rn222	6.69E-10	1.01E-09	1.41E-09	1.86E-09	2.35E-09	2.35E-09
ra222	7.04E-26	8.52E-26	1.02E-25	1.19E-25	1.35E-25	1.35E-25
ra223	6.90E-10	8.62E-10	1.04E-09	1.21E-09	1.38E-09	1.38E-09
ra224	3.51E-11	4.36E-11	5.22E-11	6.08E-11	6.94E-11	6.94E-11
ra225	1.48E-10	2.29E-10	3.27E-10	4.41E-10	5.71E-10	5.71E-10
ra226	1.02E-04	1.54E-04	2.15E-04	2.84E-04	3.60E-04	3.60E-04
ra228	2.12E-12	2.65E-12	3.18E-12	3.72E-12	4.25E-12	4.25E-12
ac225	9.98E-11	1.55E-10	2.21E-10	2.98E-10	3.86E-10	3.86E-10
ac227	4.80E-07	6.00E-07	7.20E-07	8.41E-07	9.61E-07	9.61E-07
ac228	2.59E-16	3.23E-16	3.88E-16	4.54E-16	5.19E-16	5.19E-16
th226	3.44E-24	4.16E-24	4.97E-24	5.78E-24	6.59E-24	6.59E-24
th227	1.11E-09	1.39E-09	1.67E-09	1.95E-09	2.23E-09	2.23E-09
th228	6.70E-09	8.33E-09	9.97E-09	1.16E-08	1.32E-08	1.32E-08
th229	2.87E-05	4.45E-05	6.35E-05	8.57E-05	1.11E-04	1.11E-04
th230	2.56E-02	3.20E-02	3.84E-02	4.48E-02	5.13E-02	5.13E-02
th231	3.11E-09	3.13E-09	3.15E-09	3.17E-09	3.20E-09	3.20E-09
th232	5.18E-03	6.48E-03	7.78E-03	9.08E-03	1.04E-02	1.04E-02
th233	4.78E-14	5.94E-14	7.13E-14	8.32E-14	9.50E-14	9.50E-14
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.21E-04	9.02E-04	1.08E-03	1.26E-03	1.45E-03	1.45E-03
pa232	1.23E-11	1.54E-11	1.85E-11	2.16E-11	2.46E-11	2.46E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 21
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	456563. d	547875. d	639188. d	730500. d	730500. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	3.33E-21	4.03E-21	4.82E-21	5.61E-21	6.39E-21	6.39E-21
u231	1.08E-17	1.32E-17	1.58E-17	1.83E-17	2.09E-17	2.09E-17
u232	2.44E-07	3.03E-07	3.63E-07	4.23E-07	4.82E-07	4.82E-07
u233	1.35E-02	1.69E-02	2.02E-02	2.36E-02	2.69E-02	2.69E-02
u234	9.18E+00	9.21E+00	9.25E+00	9.28E+00	9.32E+00	9.32E+00
u235	7.23E+02	7.21E+02	7.19E+02	7.18E+02	7.16E+02	7.16E+02
u236	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.77E+02	1.77E+02
u237	3.26E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	3.28E-07	3.22E-07	3.22E-07	3.22E-07	3.21E-07	3.21E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
      u241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     np235   9.08E-12  8.87E-12  8.86E-12  8.84E-12  8.83E-12  8.83E-12
    np236m   2.16E-12  2.11E-12  2.11E-12  2.10E-12  2.10E-12  2.10E-12
     np236   2.05E-07  2.55E-07  3.04E-07  3.53E-07  4.03E-07  4.03E-07
     np237   4.21E+01  4.20E+01  4.20E+01  4.20E+01  4.20E+01  4.20E+01
     np238   1.57E-06  1.56E-06  1.55E-06  1.55E-06  1.55E-06  1.55E-06
     np239   4.74E-05  4.66E-05  4.65E-05  4.65E-05  4.64E-05  4.64E-05
    np240m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     np240   9.69E-15  9.47E-15  9.45E-15  9.43E-15  9.41E-15  9.41E-15
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236   1.17E-09  1.14E-09  1.14E-09  1.14E-09  1.14E-09  1.14E-09
     pu237   2.87E-13  2.89E-13  2.98E-13  3.07E-13  3.16E-13  3.16E-13
     pu238   2.38E-02  2.36E-02  2.35E-02  2.35E-02  2.34E-02  2.34E-02
     pu239   4.97E+00  6.14E+00  7.29E+00  8.43E+00  9.55E+00  9.55E+00
     pu240   2.36E-02  3.62E-02  5.12E-02  6.85E-02  8.79E-02  8.79E-02
     pu241   1.01E-05  1.51E-05  2.14E-05  2.86E-05  3.67E-05  3.67E-05
     pu242   1.04E-07  2.27E-07  4.27E-07  7.25E-07  1.14E-06  1.14E-06
     pu243   2.28E-16  4.88E-16  9.17E-16  1.56E-15  2.45E-15  2.45E-15
     pu244   2.93E-33  2.38E-32  1.29E-31  5.32E-31  1.80E-30  1.80E-30
     pu245    .00E+00   .00E+00   .00E+00   .00E+00  7.64E-41  7.64E-41
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   3.18E-20  5.50E-20  8.68E-20  1.26E-19  1.74E-19  1.74E-19
     am240   1.46E-17  2.52E-17  3.97E-17  5.78E-17  7.95E-17  7.95E-17
     am241   1.10E-04  1.95E-04  3.08E-04  4.49E-04  6.18E-04  6.18E-04
    am242m   3.57E-08  6.90E-08  1.16E-07  1.76E-07  2.51E-07  2.51E-07
     am242   4.32E-12  7.68E-12  1.22E-11  1.79E-11  2.47E-11  2.47E-11
     am243   2.90E-10  7.36E-10  1.54E-09  2.86E-09  4.82E-09  4.82E-09
    am244m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   2.28E-18  5.68E-18  1.19E-17  2.20E-17  3.71E-17  3.71E-17
     am245    .00E+00   .00E+00   .00E+00   .00E+00  1.49E-41  1.49E-41
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   2.65E-22  4.59E-22  7.28E-22  1.07E-21  1.47E-21  1.47E-21
     cm242   8.73E-10  1.55E-09  2.46E-09  3.61E-09  4.98E-09  4.98E-09
     cm243   3.36E-19  7.28E-19  1.29E-18  2.05E-18  3.00E-18  3.00E-18
     cm244   3.58E-14  8.92E-14  1.87E-13  3.45E-13  5.83E-13  5.83E-13
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides        page   22
       power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
          charge 456563. d 547875. d 639188. d 730500. d 730500. d
     cm245   6.91E-18  2.19E-17  5.57E-17  1.22E-16  2.36E-16  2.36E-16
     cm246   6.36E-21  2.57E-20  7.88E-20  2.00E-19  4.46E-19  4.46E-19
     cm247   9.86E-26  4.97E-25  1.84E-24  5.48E-24  1.40E-23  1.40E-23
     cm248   1.49E-29  9.49E-29  4.24E-28  1.49E-27  4.38E-27  4.38E-27
     cm249   4.82E-40  3.03E-39  1.35E-38  4.74E-38  1.39E-37  1.39E-37
     cm250   1.40E-45  1.54E-44  8.83E-44  3.69E-43  1.25E-42  1.25E-42
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.80E+08  2.80E+08  2.80E+08  2.80E+08  2.79E-07
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  3 of library on unit 33.
```

```
         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 "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:  ft33f001
0                8/28/1996    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                     7993    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   23
        power=    .00mw, burnup=   4383.mwd, flux= 2.71E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      821813. d      913125. d      ******* d      ******* d      ******* d
     productions   1.133886E+06   1.135393E+06   1.136859E+06   1.138285E+06   1.139671E+06   1.139671E+06
     absorptions   9.323096E+05   9.334989E+05   9.346394E+05   9.357402E+05   9.368058E+05   9.368058E+05
     k infinity    1.216212E+00   1.216277E+00   1.216361E+00   1.216455E+00   1.216550E+00   1.216550E+00
0                    initial      821813. d      913125. d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.229046E+05   9.238316E+05   9.247386E+05   9.256261E+05   9.264941E+05   9.264941E+05
     non-actinide
     abs. fracs.   1.008779E-02   1.035595E-02   1.059318E-02   1.080871E-02   1.100731E-02   1.100731E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products          page   24
0                              fraction of total absorption rate
        power=    .00mw, burnup=   4383.mwd, flux= 2.71E+08n/cm**2-sec
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0 initial 821813. d 913125. d ******* d ******* d ******* d

sm149	5.01E-03	5.11E-03	5.18E-03	5.23E-03	5.27E-03	5.27E-03
eu151	3.83E-04	4.29E-04	4.74E-04	5.17E-04	5.60E-04	5.60E-04
nd143	2.88E-04	3.24E-04	3.59E-04	3.94E-04	4.29E-04	4.29E-04
rh103	1.38E-04	1.55E-04	1.72E-04	1.89E-04	2.06E-04	2.06E-04
gd155	1.24E-04	1.33E-04	1.41E-04	1.48E-04	1.54E-04	1.54E-04
xe131	9.27E-05	1.04E-04	1.16E-04	1.27E-04	1.38E-04	1.38E-04
cs133	7.18E-05	8.07E-05	8.95E-05	9.83E-05	1.07E-04	1.07E-04
cd113	6.89E-05	7.27E-05	7.59E-05	7.87E-05	8.11E-05	8.11E-05
sm147	5.31E-05	5.96E-05	6.62E-05	7.27E-05	7.92E-05	7.92E-05
tc 99	5.27E-05	5.92E-05	6.57E-05	7.21E-05	7.85E-05	7.85E-05
nd145	4.08E-05	4.58E-05	5.08E-05	5.57E-05	6.07E-05	6.07E-05
gd157	4.20E-05	4.32E-05	4.43E-05	4.53E-05	4.64E-05	4.64E-05
mo 95	2.83E-05	3.18E-05	3.52E-05	3.87E-05	4.22E-05	4.22E-05
sm151	4.02E-05	4.02E-05	4.03E-05	4.04E-05	4.05E-05	4.05E-05
sm152	2.40E-05	2.73E-05	3.06E-05	3.39E-05	3.73E-05	3.73E-05
kr 83	1.75E-05	1.97E-05	2.18E-05	2.39E-05	2.60E-05	2.60E-05
sm150	1.46E-05	1.72E-05	1.99E-05	2.25E-05	2.52E-05	2.52E-05
cs135	1.62E-05	1.82E-05	2.02E-05	2.22E-05	2.42E-05	2.42E-05
ru101	1.26E-05	1.42E-05	1.57E-05	1.73E-05	1.89E-05	1.89E-05
pr141	1.20E-05	1.35E-05	1.50E-05	1.65E-05	1.79E-05	1.79E-05
eu153	1.12E-05	1.26E-05	1.41E-05	1.55E-05	1.69E-05	1.69E-05
la139	9.82E-06	1.10E-05	1.22E-05	1.34E-05	1.46E-05	1.46E-05
ba137	4.60E-06	5.18E-06	5.76E-06	6.34E-06	6.92E-06	6.92E-06
pd105	4.41E-06	4.99E-06	5.57E-06	6.15E-06	6.74E-06	6.74E-06
zr 93	3.99E-06	4.48E-06	4.97E-06	5.46E-06	5.94E-06	5.94E-06
i129	3.09E-06	3.47E-06	3.86E-06	4.25E-06	4.63E-06	4.63E-06
nd144	2.95E-06	3.32E-06	3.68E-06	4.05E-06	4.41E-06	4.41E-06
ag109	2.51E-06	2.94E-06	3.40E-06	3.88E-06	4.39E-06	4.39E-06
mo 97	2.23E-06	2.51E-06	2.78E-06	3.05E-06	3.33E-06	3.33E-06
xe135	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06
zr 91	1.04E-06	1.17E-06	1.30E-06	1.43E-06	1.55E-06	1.55E-06
y 89	9.99E-07	1.12E-06	1.24E-06	1.36E-06	1.49E-06	1.49E-06
ru102	9.13E-07	1.03E-06	1.14E-06	1.25E-06	1.37E-06	1.37E-06
ce142	8.16E-07	9.16E-07	1.02E-06	1.12E-06	1.22E-06	1.22E-06
pd108	7.18E-07	8.30E-07	9.48E-07	1.07E-06	1.20E-06	1.20E-06
nd148	7.88E-07	8.85E-07	9.82E-07	1.08E-06	1.18E-06	1.18E-06
nd146	6.59E-07	7.40E-07	8.21E-07	9.02E-07	9.83E-07	9.83E-07
gd152	4.23E-07	5.38E-07	6.66E-07	8.06E-07	9.58E-07	9.58E-07
in115	5.58E-07	6.29E-07	7.00E-07	7.71E-07	8.42E-07	8.42E-07
ba138	5.62E-07	6.32E-07	7.01E-07	7.70E-07	8.39E-07	8.39E-07
ce140	5.27E-07	5.92E-07	6.56E-07	7.21E-07	7.86E-07	7.86E-07
xe132	4.78E-07	5.37E-07	5.97E-07	6.56E-07	7.15E-07	7.15E-07
pd107	3.93E-07	4.52E-07	5.12E-07	5.75E-07	6.40E-07	6.40E-07
mo 98	3.29E-07	3.70E-07	4.11E-07	4.51E-07	4.92E-07	4.92E-07
mo100	3.18E-07	3.57E-07	3.96E-07	4.36E-07	4.75E-07	4.75E-07
xe134	3.11E-07	3.50E-07	3.88E-07	4.26E-07	4.65E-07	4.65E-07
zr 92	2.51E-07	2.82E-07	3.13E-07	3.44E-07	3.74E-07	3.74E-07
i127	2.14E-07	2.41E-07	2.69E-07	2.97E-07	3.25E-07	3.25E-07
ru104	2.01E-07	2.26E-07	2.52E-07	2.78E-07	3.03E-07	3.03E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

zr 96	2.01E-07	2.25E-07	2.50E-07	2.74E-07	2.99E-07	2.99E-07
pm147	2.68E-07	2.68E-07	2.67E-07	2.67E-07	2.66E-07	2.66E-07
nd150	1.76E-07	1.98E-07	2.20E-07	2.41E-07	2.63E-07	2.63E-07
xe136	1.69E-07	1.89E-07	2.10E-07	2.31E-07	2.52E-07	2.52E-07

br 81	1.27E-07	1.42E-07	1.58E-07	1.73E-07	1.89E-07	1.89E-07
rb 85	1.23E-07	1.38E-07	1.53E-07	1.68E-07	1.83E-07	1.83E-07
eu155	1.72E-07	1.73E-07	1.75E-07	1.76E-07	1.78E-07	1.78E-07
zr 94	1.07E-07	1.20E-07	1.34E-07	1.47E-07	1.60E-07	1.60E-07
cd111	9.61E-08	1.10E-07	1.24E-07	1.38E-07	1.53E-07	1.53E-07
eu152	9.97E-08	1.12E-07	1.23E-07	1.34E-07	1.45E-07	1.45E-07
zr 90	9.66E-08	1.09E-07	1.21E-07	1.33E-07	1.45E-07	1.45E-07
sm154	7.68E-08	8.66E-08	9.65E-08	1.06E-07	1.16E-07	1.16E-07
te130	7.68E-08	8.63E-08	9.58E-08	1.05E-07	1.15E-07	1.15E-07
rb 87	7.11E-08	7.98E-08	8.84E-08	9.71E-08	1.06E-07	1.06E-07
se 77	5.05E-08	5.68E-08	6.30E-08	6.92E-08	7.54E-08	7.54E-08
pd106	4.04E-08	4.59E-08	5.15E-08	5.73E-08	6.31E-08	6.31E-08
ru 99	2.75E-08	3.47E-08	4.27E-08	5.15E-08	6.12E-08	6.12E-08
kr 84	3.37E-08	3.79E-08	4.20E-08	4.61E-08	5.02E-08	5.02E-08
gd156	2.67E-08	3.14E-08	3.63E-08	4.14E-08	4.66E-08	4.66E-08
se 79	2.59E-08	2.91E-08	3.23E-08	3.55E-08	3.87E-08	3.87E-08
sb121	2.55E-08	2.87E-08	3.19E-08	3.52E-08	3.84E-08	3.84E-08
gd154	1.50E-08	1.90E-08	2.34E-08	2.83E-08	3.37E-08	3.37E-08
sb123	2.06E-08	2.33E-08	2.59E-08	2.85E-08	3.11E-08	3.11E-08
kr 86	1.86E-08	2.09E-08	2.32E-08	2.55E-08	2.77E-08	2.77E-08
dy161	1.59E-08	1.86E-08	2.14E-08	2.44E-08	2.75E-08	2.75E-08
te128	1.70E-08	1.92E-08	2.13E-08	2.35E-08	2.56E-08	2.56E-08
se 80	1.21E-08	1.36E-08	1.51E-08	1.66E-08	1.80E-08	1.80E-08
te125	1.10E-08	1.24E-08	1.38E-08	1.52E-08	1.67E-08	1.67E-08
sr 90	1.66E-08	1.65E-08	1.65E-08	1.64E-08	1.64E-08	1.64E-08
tb159	8.73E-09	1.00E-08	1.13E-08	1.27E-08	1.41E-08	1.41E-08
cd112	7.51E-09	8.52E-09	9.54E-09	1.06E-08	1.16E-08	1.16E-08
gd158	6.61E-09	7.67E-09	8.77E-09	9.89E-09	1.10E-08	1.10E-08
ru100	4.78E-09	6.02E-09	7.40E-09	8.92E-09	1.06E-08	1.06E-08
li 6	6.79E-09	7.62E-09	8.44E-09	9.26E-09	1.01E-08	1.01E-08
rh105	9.10E-09	9.19E-09	9.27E-09	9.36E-09	9.45E-09	9.45E-09
sn117	5.74E-09	6.49E-09	7.24E-09	8.00E-09	8.77E-09	8.77E-09
eu154	5.71E-09	6.41E-09	7.13E-09	7.85E-09	8.57E-09	8.57E-09
nd142	3.29E-09	4.16E-09	5.12E-09	6.19E-09	7.35E-09	7.35E-09
ba134	3.22E-09	4.06E-09	4.99E-09	6.02E-09	7.15E-09	7.15E-09
sn119	4.61E-09	5.20E-09	5.78E-09	6.37E-09	6.97E-09	6.97E-09
sm148	2.97E-09	3.74E-09	4.60E-09	5.55E-09	6.58E-09	6.58E-09
cd114	3.87E-09	4.48E-09	5.10E-09	5.74E-09	6.39E-09	6.39E-09
sn115	4.22E-09	4.75E-09	5.29E-09	5.83E-09	6.38E-09	6.38E-09
ba135	2.61E-09	3.29E-09	4.06E-09	4.91E-09	5.84E-09	5.84E-09
dy164	2.91E-09	3.48E-09	4.10E-09	4.75E-09	5.45E-09	5.45E-09
sr 88	3.43E-09	3.85E-09	4.26E-09	4.68E-09	5.09E-09	5.09E-09
dy162	2.72E-09	3.24E-09	3.79E-09	4.37E-09	5.00E-09	5.00E-09
pd104	2.22E-09	2.80E-09	3.46E-09	4.18E-09	4.96E-09	4.96E-09
pd110	3.04E-09	3.49E-09	3.95E-09	4.43E-09	4.92E-09	4.92E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

cs137	3.73E-09	3.72E-09	3.72E-09	3.71E-09	3.71E-09	3.71E-09
se 82	2.33E-09	2.62E-09	2.90E-09	3.19E-09	3.47E-09	3.47E-09
sn126	1.98E-09	2.24E-09	2.50E-09	2.77E-09	3.03E-09	3.03E-09
se 78	1.79E-09	2.01E-09	2.23E-09	2.45E-09	2.68E-09	2.68E-09
pr143	2.61E-09	2.60E-09	2.60E-09	2.59E-09	2.59E-09	2.59E-09
sn124	1.48E-09	1.67E-09	1.86E-09	2.05E-09	2.24E-09	2.24E-09
xe133	1.98E-09	1.98E-09	1.98E-09	1.97E-09	1.97E-09	1.97E-09
mo 96	8.61E-10	1.07E-09	1.30E-09	1.54E-09	1.82E-09	1.82E-09
as 75	1.06E-09	1.19E-09	1.32E-09	1.46E-09	1.59E-09	1.59E-09
ce141	1.56E-09	1.56E-09	1.56E-09	1.56E-09	1.55E-09	1.55E-09

ba136	8.52E-10	9.96E-10	1.15E-09	1.31E-09	1.48E-09	1.48E-09
in113	8.19E-10	9.25E-10	1.03E-09	1.14E-09	1.25E-09	1.25E-09
dy163	6.61E-10	7.90E-10	9.29E-10	1.08E-09	1.23E-09	1.23E-09
kr 82	6.07E-10	7.22E-10	8.45E-10	9.76E-10	1.11E-09	1.11E-09
xe130	5.38E-10	6.53E-10	7.78E-10	9.14E-10	1.06E-09	1.06E-09
cd110	4.04E-10	5.27E-10	6.69E-10	8.33E-10	1.02E-09	1.02E-09
pm149	9.62E-10	9.61E-10	9.60E-10	9.59E-10	9.58E-10	9.58E-10
nb 93	4.16E-10	5.26E-10	6.49E-10	7.85E-10	9.33E-10	9.33E-10
nd147	9.19E-10	9.18E-10	9.16E-10	9.15E-10	9.14E-10	9.14E-10
sn118	6.04E-10	6.81E-10	7.58E-10	8.36E-10	9.14E-10	9.14E-10
cs134	5.35E-10	5.97E-10	6.62E-10	7.27E-10	7.91E-10	7.91E-10
cd116	5.10E-10	5.75E-10	6.39E-10	7.04E-10	7.70E-10	7.70E-10
sn122	5.08E-10	5.72E-10	6.37E-10	7.02E-10	7.68E-10	7.68E-10
ce144	5.88E-10	5.86E-10	5.85E-10	5.84E-10	5.82E-10	5.82E-10
sn120	3.79E-10	4.27E-10	4.75E-10	5.24E-10	5.72E-10	5.72E-10
kr 85	5.56E-10	5.55E-10	5.53E-10	5.52E-10	5.50E-10	5.50E-10
br 79	2.12E-10	2.68E-10	3.31E-10	4.00E-10	4.75E-10	4.75E-10
ge 73	2.93E-10	3.29E-10	3.66E-10	4.03E-10	4.39E-10	4.39E-10
ru103	3.63E-10	3.64E-10	3.65E-10	3.66E-10	3.66E-10	3.66E-10
ag107	1.31E-10	1.69E-10	2.11E-10	2.59E-10	3.13E-10	3.13E-10
xe129	1.21E-10	1.53E-10	1.89E-10	2.29E-10	2.73E-10	2.73E-10
te126	1.26E-10	1.52E-10	1.81E-10	2.12E-10	2.45E-10	2.45E-10
zr 95	1.63E-10	1.62E-10	1.62E-10	1.62E-10	1.61E-10	1.61E-10
ge 76	1.05E-10	1.18E-10	1.30E-10	1.43E-10	1.56E-10	1.56E-10
nb 95	1.50E-10	1.50E-10	1.49E-10	1.49E-10	1.49E-10	1.49E-10
gd160	8.73E-11	1.01E-10	1.15E-10	1.29E-10	1.45E-10	1.45E-10
y 91	1.39E-10	1.38E-10	1.38E-10	1.38E-10	1.37E-10	1.37E-10
pm151	1.10E-10	1.10E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
ho165	4.82E-11	5.80E-11	6.86E-11	8.01E-11	9.24E-11	9.24E-11
ba140	4.65E-11	4.64E-11	4.63E-11	4.62E-11	4.62E-11	4.62E-11
eu156	3.98E-11	4.05E-11	4.11E-11	4.18E-11	4.24E-11	4.24E-11
sm153	3.98E-11	4.00E-11	4.02E-11	4.04E-11	4.07E-11	4.07E-11
dy160	1.75E-11	2.22E-11	2.76E-11	3.37E-11	4.03E-11	4.03E-11
ru106	3.06E-11	3.11E-11	3.17E-11	3.23E-11	3.28E-11	3.28E-11
sr 89	2.97E-11	2.96E-11	2.95E-11	2.94E-11	2.93E-11	2.93E-11
xe128	1.25E-11	1.57E-11	1.93E-11	2.33E-11	2.77E-11	2.77E-11
te124	1.53E-11	1.76E-11	2.00E-11	2.25E-11	2.51E-11	2.51E-11
kr 87	2.22E-11	2.21E-11	2.20E-11	2.20E-11	2.19E-11	2.19E-11
sr 87	1.24E-11	1.39E-11	1.55E-11	1.71E-11	1.87E-11	1.87E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 27
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

sr 86	9.18E-12	1.11E-11	1.32E-11	1.55E-11	1.79E-11	1.79E-11
ce143	1.71E-11	1.71E-11	1.70E-11	1.70E-11	1.70E-11	1.70E-11
sb125	1.58E-11	1.59E-11	1.60E-11	1.61E-11	1.62E-11	1.62E-11
y 90	1.58E-11	1.57E-11	1.56E-11	1.56E-11	1.55E-11	1.55E-11
la140	1.51E-11	1.51E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
mo 99	1.30E-11	1.29E-11	1.29E-11	1.29E-11	1.29E-11	1.29E-11
nb 94	7.16E-12	8.09E-12	9.05E-12	1.00E-11	1.10E-11	1.10E-11
sn116	4.71E-12	5.96E-12	7.35E-12	8.89E-12	1.06E-11	1.06E-11
pm148m	9.60E-12	9.56E-12	9.56E-12	9.56E-12	9.57E-12	9.57E-12
ge 74	5.88E-12	6.61E-12	7.35E-12	8.08E-12	8.82E-12	8.82E-12
te127m	7.87E-12	7.93E-12	7.98E-12	8.03E-12	8.08E-12	8.08E-12
i131	6.73E-12	6.72E-12	6.72E-12	6.72E-12	6.72E-12	6.72E-12
se 76	3.68E-12	4.33E-12	5.02E-12	5.75E-12	6.52E-12	6.52E-12
ge 72	4.05E-12	4.57E-12	5.09E-12	5.62E-12	6.15E-12	6.15E-12
er166	2.38E-12	2.92E-12	3.51E-12	4.15E-12	4.84E-12	4.84E-12
te122	1.98E-12	2.49E-12	3.07E-12	3.71E-12	4.41E-12	4.41E-12

te129m	1.81E-12	1.82E-12	1.82E-12	1.82E-12	1.83E-12	1.83E-12
ag111	4.21E-13	4.32E-13	4.44E-13	4.55E-13	4.66E-13	4.66E-13
kr 80	2.40E-13	2.85E-13	3.35E-13	3.89E-13	4.48E-13	4.48E-13
eu157	3.65E-13	3.73E-13	3.80E-13	3.88E-13	3.96E-13	3.96E-13
pm148	3.71E-13	3.68E-13	3.68E-13	3.67E-13	3.67E-13	3.67E-13
cd115m	2.47E-13	2.48E-13	2.49E-13	2.51E-13	2.52E-13	2.52E-13
er167	5.18E-14	6.86E-14	8.84E-14	1.11E-13	1.38E-13	1.38E-13
cs136	1.09E-13	1.16E-13	1.22E-13	1.28E-13	1.35E-13	1.35E-13
te123	3.26E-14	4.13E-14	5.14E-14	6.32E-14	7.66E-14	7.66E-14
tb160	2.39E-14	2.71E-14	3.05E-14	3.39E-14	3.75E-14	3.75E-14
ru105	3.24E-14	3.27E-14	3.31E-14	3.34E-14	3.37E-14	3.37E-14
sn125	3.01E-14	3.02E-14	3.04E-14	3.05E-14	3.06E-14	3.06E-14
pr142	1.36E-14	1.52E-14	1.69E-14	1.85E-14	2.01E-14	2.01E-14
be 9	1.33E-14	1.49E-14	1.65E-14	1.82E-14	1.98E-14	1.98E-14
rb 88	1.25E-14	1.24E-14	1.24E-14	1.24E-14	1.23E-14	1.23E-14
sn123	1.02E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
i135	9.97E-15	9.96E-15	9.95E-15	9.93E-15	9.92E-15	9.92E-15
te132	9.45E-15	9.45E-15	9.44E-15	9.43E-15	9.43E-15	9.43E-15
sb126	6.46E-15	6.89E-15	7.33E-15	7.76E-15	8.19E-15	8.19E-15
li 7	5.30E-15	5.96E-15	6.61E-15	7.27E-15	7.92E-15	7.92E-15
cd108	2.20E-15	3.04E-15	4.07E-15	5.33E-15	6.83E-15	6.83E-15
te134	5.70E-15	5.69E-15	5.67E-15	5.66E-15	5.65E-15	5.65E-15
i130	3.21E-15	3.52E-15	3.82E-15	4.12E-15	4.42E-15	4.42E-15
sb124	3.13E-15	3.25E-15	3.38E-15	3.50E-15	3.63E-15	3.63E-15
sn114	1.16E-15	1.46E-15	1.81E-15	2.19E-15	2.61E-15	2.61E-15
in117m	2.26E-15	2.28E-15	2.30E-15	2.32E-15	2.34E-15	2.34E-15
rb 86	1.04E-15	1.13E-15	1.23E-15	1.33E-15	1.42E-15	1.42E-15
dy165	7.57E-16	8.24E-16	8.92E-16	9.60E-16	1.03E-15	1.03E-15
in117	6.69E-16	6.75E-16	6.82E-16	6.88E-16	6.94E-16	6.94E-16
cs134m	1.00E-16	1.12E-16	1.24E-16	1.36E-16	1.48E-16	1.48E-16
cd118	1.25E-16	1.26E-16	1.26E-16	1.27E-16	1.27E-16	1.27E-16
ge 75	8.50E-17	8.49E-17	8.48E-17	8.47E-17	8.46E-17	8.46E-17
in119m	3.10E-17	3.11E-17	3.12E-17	3.13E-17	3.14E-17	3.14E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 28

0 fraction of total absorption rate

power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec

0 initial 821813. d 913125. d ******* d ******* d ******* d

ag110	3.29E-18	3.83E-18	4.42E-18	5.04E-18	5.70E-18	5.70E-18
cd109	3.53E-18	3.92E-18	4.32E-18	4.72E-18	5.12E-18	5.12E-18
in119	2.47E-18	2.48E-18	2.49E-18	2.51E-18	2.52E-18	2.52E-18

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 29

power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	821813. d	913125. d	******* d	******* d	******* d
h 1	1.75E-04	1.97E-04	2.18E-04	2.40E-04	2.61E-04	2.61E-04
h 2	5.20E-07	5.84E-07	6.48E-07	7.13E-07	7.77E-07	7.77E-07
h 3	3.89E-11	3.95E-11	4.00E-11	4.06E-11	4.11E-11	4.11E-11
h 4	1.56E-34	1.59E-34	1.61E-34	1.63E-34	1.65E-34	1.65E-34
he 3	3.76E-09	4.19E-09	4.61E-09	5.02E-09	5.43E-09	5.43E-09
he 4	2.90E-05	3.25E-05	3.61E-05	3.97E-05	4.32E-05	4.32E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.48E-06	3.91E-06	4.34E-06	4.76E-06	5.19E-06	5.19E-06
ne 21	2.38E-10	2.97E-10	3.62E-10	4.33E-10	5.10E-10	5.10E-10
ne 22	2.30E-08	2.58E-08	2.87E-08	3.15E-08	3.43E-08	3.43E-08
ne 23	7.15E-15	7.14E-15	7.13E-15	7.13E-15	7.12E-15	7.12E-15
na 22	4.21E-11	4.21E-11	4.20E-11	4.20E-11	4.20E-11	4.20E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03

na 24	3.07E-08	2.86E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08
na 24m	5.04E-15	4.69E-15	4.69E-15	4.68E-15	4.68E-15	4.68E-15
na 25	7.88E-25	9.63E-25	1.16E-24	1.38E-24	1.61E-24	1.61E-24
mg 24	2.78E-02	3.08E-02	3.37E-02	3.67E-02	3.97E-02	3.97E-02
mg 25	2.70E-08	3.33E-08	4.02E-08	4.76E-08	5.57E-08	5.57E-08
mg 26	5.20E-07	5.84E-07	6.48E-07	7.12E-07	7.76E-07	7.76E-07
mg 27	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12
mg 28	4.31E-24	4.30E-24	4.29E-24	4.28E-24	4.28E-24	4.28E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.27E-10	2.12E-10	2.11E-10	2.11E-10	2.11E-10	2.11E-10
al 29	5.65E-23	7.00E-23	8.55E-23	1.02E-22	1.20E-22	1.20E-22
al 30	2.11E-33	2.95E-33	4.01E-33	5.29E-33	6.81E-33	6.81E-33
si 28	8.10E-02	8.96E-02	9.82E-02	1.07E-01	1.15E-01	1.15E-01
si 29	2.16E-07	2.70E-07	3.30E-07	3.95E-07	4.66E-07	4.66E-07
si 30	6.04E-13	8.52E-13	1.16E-12	1.53E-12	1.97E-12	1.97E-12
si 31	4.29E-25	6.06E-25	8.23E-25	1.09E-24	1.40E-24	1.40E-24
si 32	5.34E-31	7.81E-31	1.09E-30	1.47E-30	1.93E-30	1.93E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.72E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 30
power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	821813. d	913125. d	******* d	******* d	******* d
he 4	7.42E-01	8.77E-01	1.02E+00	1.17E+00	1.33E+00	1.33E+00
pb206	1.09E-04	1.52E-04	2.04E-04	2.66E-04	3.38E-04	3.38E-04
pb207	3.01E-05	3.81E-05	4.72E-05	5.71E-05	6.81E-05	6.81E-05
pb208	4.87E-06	6.16E-06	7.59E-06	9.17E-06	1.09E-05	1.09E-05
pb209	5.23E-12	6.56E-12	8.03E-12	9.64E-12	1.14E-11	1.14E-11
pb210	5.01E-06	6.15E-06	7.37E-06	8.66E-06	1.00E-05	1.00E-05
pb211	3.03E-12	3.41E-12	3.79E-12	4.17E-12	4.55E-12	4.55E-12
pb212	8.40E-12	9.44E-12	1.05E-11	1.15E-11	1.26E-11	1.26E-11
pb214	1.15E-11	1.41E-11	1.68E-11	1.98E-11	2.29E-11	2.29E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.62E-06	9.37E-06	1.28E-05	1.69E-05	2.18E-05	2.18E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.08E-09	3.79E-09	4.54E-09	5.33E-09	6.17E-09	6.17E-09
bi211	1.80E-13	2.02E-13	2.25E-13	2.47E-13	2.70E-13	2.70E-13
bi212	7.97E-13	8.96E-13	9.94E-13	1.09E-12	1.19E-12	1.19E-12
bi213	1.22E-12	1.53E-12	1.88E-12	2.25E-12	2.66E-12	2.66E-12
bi214	8.50E-12	1.04E-11	1.25E-11	1.47E-11	1.70E-11	1.70E-11
po210	8.52E-08	1.05E-07	1.25E-07	1.47E-07	1.70E-07	1.70E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	1.99E-18	2.23E-18	2.48E-18	2.73E-18	2.98E-18	2.98E-18
po212	4.19E-23	4.71E-23	5.22E-23	5.74E-23	6.26E-23	6.26E-23
po213	1.84E-21	2.30E-21	2.82E-21	3.38E-21	3.99E-21	3.99E-21
po214	1.17E-18	1.44E-18	1.72E-18	2.02E-18	2.34E-18	2.34E-18
po215	2.49E-18	2.80E-18	3.12E-18	3.43E-18	3.74E-18	3.74E-18
po216	3.18E-17	3.57E-17	3.97E-17	4.36E-17	4.75E-17	4.75E-17
po218	1.32E-12	1.63E-12	1.95E-12	2.29E-12	2.65E-12	2.65E-12
rn218	1.24E-28	1.39E-28	1.54E-28	1.69E-28	1.84E-28	1.84E-28
rn219	5.54E-15	6.24E-15	6.93E-15	7.63E-15	8.33E-15	8.33E-15
rn220	1.22E-14	1.37E-14	1.52E-14	1.67E-14	1.82E-14	1.82E-14
rn222	2.35E-09	2.89E-09	3.46E-09	4.07E-09	4.70E-09	4.70E-09
ra222	1.35E-25	1.50E-25	1.67E-25	1.83E-25	2.00E-25	2.00E-25
ra223	1.38E-09	1.56E-09	1.73E-09	1.90E-09	2.08E-09	2.08E-09
ra224	6.94E-11	7.79E-11	8.65E-11	9.51E-11	1.04E-10	1.04E-10
ra225	5.71E-10	7.17E-10	8.77E-10	1.05E-09	1.24E-09	1.24E-09
ra226	3.60E-04	4.42E-04	5.29E-04	6.22E-04	7.19E-04	7.19E-04
am241	6.18E-04	8.11E-04	1.03E-03	1.27E-03	1.54E-03	1.54E-03

```
           *                  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:  ft33f001
0                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0          ********************************************************************************
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                   page   33
          power=    .00mw, burnup=   5844.mwd, flux= 2.68E+08n/cm**2-sec
0                                         basis =
0     (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                   initial       ******* d      ******* d      ******* d      ******* d      ******* d
      productions   1.150297E+06   1.151651E+06   1.152966E+06   1.154243E+06   1.155483E+06   1.155483E+06
      absorptions   9.452068E+05   9.462478E+05   9.472621E+05   9.482513E+05   9.492169E+05   9.492169E+05
      k infinity    1.216979E+00   1.217071E+00   1.217156E+00   1.217234E+00   1.217302E+00   1.217302E+00
0                   initial       ******* d      ******* d      ******* d      ******* d      ******* d
      actinide
      absorptions   9.348808E+05   9.357344E+05   9.365691E+05   9.373851E+05   9.381828E+05   9.381828E+05
      non-actinide
      abs. fracs.   1.092452E-02   1.111060E-02   1.128829E-02   1.145917E-02   1.162446E-02   1.162446E-02
1     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2            fission products       page   34
0                                      fraction of total absorption rate
          power=    .00mw, burnup=   5844.mwd, flux= 2.68E+08n/cm**2-sec
0                initial ******* d ******* d ******* d ******* d ******* d

      sm149      5.27E-03  5.29E-03  5.31E-03  5.32E-03  5.33E-03  5.33E-03
      eu151      5.60E-04  6.02E-04  6.43E-04  6.82E-04  7.21E-04  7.21E-04
      nd143      4.29E-04  4.64E-04  4.98E-04  5.33E-04  5.67E-04  5.67E-04
      rh103      2.06E-04  2.24E-04  2.41E-04  2.58E-04  2.75E-04  2.75E-04
      xe131      1.38E-04  1.50E-04  1.61E-04  1.72E-04  1.84E-04  1.84E-04
      gd155      1.54E-04  1.60E-04  1.65E-04  1.70E-04  1.74E-04  1.74E-04
      cs133      1.07E-04  1.16E-04  1.25E-04  1.33E-04  1.42E-04  1.42E-04
      sm147      7.91E-05  8.56E-05  9.21E-05  9.85E-05  1.05E-04  1.05E-04
      tc 99      7.85E-05  8.49E-05  9.13E-05  9.76E-05  1.04E-04  1.04E-04
      cd113      8.12E-05  8.33E-05  8.52E-05  8.68E-05  8.83E-05  8.83E-05
      nd145      6.07E-05  6.57E-05  7.06E-05  7.55E-05  8.04E-05  8.04E-05
      mo 95      4.21E-05  4.56E-05  4.90E-05  5.24E-05  5.59E-05  5.59E-05
      sm152      3.73E-05  4.07E-05  4.42E-05  4.77E-05  5.12E-05  5.12E-05
      gd157      4.64E-05  4.74E-05  4.83E-05  4.93E-05  5.02E-05  5.02E-05
      sm151      4.05E-05  4.06E-05  4.07E-05  4.08E-05  4.09E-05  4.09E-05
      sm150      2.52E-05  2.79E-05  3.06E-05  3.33E-05  3.60E-05  3.60E-05
      kr 83      2.60E-05  2.81E-05  3.02E-05  3.23E-05  3.44E-05  3.44E-05
      cs135      2.42E-05  2.62E-05  2.82E-05  3.02E-05  3.21E-05  3.21E-05
      ru101      1.89E-05  2.04E-05  2.20E-05  2.35E-05  2.50E-05  2.50E-05
      pr141      1.79E-05  1.94E-05  2.09E-05  2.23E-05  2.38E-05  2.38E-05
      eu153      1.69E-05  1.84E-05  1.98E-05  2.13E-05  2.27E-05  2.27E-05
      la139      1.47E-05  1.59E-05  1.70E-05  1.82E-05  1.94E-05  1.94E-05
```

ba137	6.92E-06	7.50E-06	8.07E-06	8.65E-06	9.22E-06	9.22E-06
pd105	6.74E-06	7.34E-06	7.94E-06	8.54E-06	9.15E-06	9.15E-06
zr 93	5.94E-06	6.42E-06	6.91E-06	7.39E-06	7.86E-06	7.86E-06
ag109	4.39E-06	4.92E-06	5.47E-06	6.04E-06	6.63E-06	6.63E-06
i129	4.64E-06	5.02E-06	5.41E-06	5.80E-06	6.19E-06	6.19E-06
nd144	4.41E-06	4.77E-06	5.14E-06	5.50E-06	5.86E-06	5.86E-06
mo 97	3.33E-06	3.60E-06	3.87E-06	4.15E-06	4.42E-06	4.42E-06
xe135	2.28E-06	2.28E-06	2.27E-06	2.27E-06	2.27E-06	2.27E-06
zr 91	1.55E-06	1.68E-06	1.80E-06	1.93E-06	2.05E-06	2.05E-06
y 89	1.49E-06	1.61E-06	1.73E-06	1.85E-06	1.96E-06	1.96E-06
ru102	1.37E-06	1.48E-06	1.59E-06	1.71E-06	1.82E-06	1.82E-06
pd108	1.20E-06	1.33E-06	1.46E-06	1.60E-06	1.75E-06	1.75E-06
gd152	9.59E-07	1.12E-06	1.30E-06	1.48E-06	1.68E-06	1.68E-06
ce142	1.22E-06	1.32E-06	1.42E-06	1.51E-06	1.61E-06	1.61E-06
nd148	1.18E-06	1.27E-06	1.37E-06	1.46E-06	1.56E-06	1.56E-06
nd146	9.84E-07	1.06E-06	1.14E-06	1.22E-06	1.31E-06	1.31E-06
in115	8.42E-07	9.13E-07	9.85E-07	1.06E-06	1.13E-06	1.13E-06
ba138	8.39E-07	9.08E-07	9.77E-07	1.05E-06	1.11E-06	1.11E-06
ce140	7.86E-07	8.50E-07	9.15E-07	9.79E-07	1.04E-06	1.04E-06
xe132	7.15E-07	7.74E-07	8.34E-07	8.93E-07	9.52E-07	9.52E-07
pd107	6.40E-07	7.06E-07	7.75E-07	8.45E-07	9.17E-07	9.17E-07
mo 98	4.91E-07	5.32E-07	5.72E-07	6.12E-07	6.52E-07	6.52E-07
mo100	4.75E-07	5.14E-07	5.53E-07	5.92E-07	6.30E-07	6.30E-07
xe134	4.65E-07	5.03E-07	5.41E-07	5.79E-07	6.17E-07	6.17E-07
zr 92	3.74E-07	4.05E-07	4.35E-07	4.65E-07	4.95E-07	4.95E-07
i127	3.25E-07	3.53E-07	3.81E-07	4.10E-07	4.38E-07	4.38E-07
ru104	3.03E-07	3.29E-07	3.55E-07	3.81E-07	4.08E-07	4.08E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35

0 fraction of total absorption rate

power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	2.99E-07	3.23E-07	3.48E-07	3.72E-07	3.96E-07	3.96E-07
nd150	2.63E-07	2.85E-07	3.07E-07	3.29E-07	3.50E-07	3.50E-07
xe136	2.52E-07	2.72E-07	2.93E-07	3.14E-07	3.34E-07	3.34E-07
pm147	2.66E-07	2.66E-07	2.66E-07	2.65E-07	2.65E-07	2.65E-07
br 81	1.89E-07	2.04E-07	2.20E-07	2.35E-07	2.51E-07	2.51E-07
rb 85	1.83E-07	1.98E-07	2.12E-07	2.27E-07	2.42E-07	2.42E-07
cd111	1.53E-07	1.69E-07	1.84E-07	2.00E-07	2.16E-07	2.16E-07
zr 94	1.60E-07	1.73E-07	1.86E-07	1.99E-07	2.12E-07	2.12E-07
zr 90	1.45E-07	1.57E-07	1.68E-07	1.80E-07	1.92E-07	1.92E-07
eu152	1.45E-07	1.56E-07	1.67E-07	1.77E-07	1.87E-07	1.87E-07
eu155	1.78E-07	1.79E-07	1.81E-07	1.82E-07	1.83E-07	1.83E-07
sm154	1.16E-07	1.26E-07	1.36E-07	1.47E-07	1.57E-07	1.57E-07
te130	1.15E-07	1.24E-07	1.34E-07	1.43E-07	1.53E-07	1.53E-07
rb 87	1.06E-07	1.14E-07	1.23E-07	1.31E-07	1.40E-07	1.40E-07
ru 99	6.12E-08	7.17E-08	8.30E-08	9.51E-08	1.08E-07	1.08E-07
se 77	7.54E-08	8.16E-08	8.77E-08	9.39E-08	1.00E-07	1.00E-07
pd106	6.31E-08	6.90E-08	7.50E-08	8.11E-08	8.73E-08	8.73E-08
gd156	4.66E-08	5.20E-08	5.76E-08	6.32E-08	6.90E-08	6.90E-08
kr 84	5.02E-08	5.43E-08	5.83E-08	6.24E-08	6.64E-08	6.64E-08
gd154	3.37E-08	3.96E-08	4.59E-08	5.27E-08	5.99E-08	5.99E-08
sb121	3.84E-08	4.17E-08	4.49E-08	4.82E-08	5.15E-08	5.15E-08
se 79	3.87E-08	4.19E-08	4.50E-08	4.82E-08	5.13E-08	5.13E-08
sb123	3.11E-08	3.38E-08	3.64E-08	3.90E-08	4.17E-08	4.17E-08
dy161	2.75E-08	3.07E-08	3.40E-08	3.75E-08	4.11E-08	4.11E-08
kr 86	2.77E-08	3.00E-08	3.22E-08	3.44E-08	3.67E-08	3.67E-08
te128	2.56E-08	2.78E-08	2.99E-08	3.21E-08	3.42E-08	3.42E-08
se 80	1.80E-08	1.95E-08	2.10E-08	2.25E-08	2.39E-08	2.39E-08
te125	1.67E-08	1.81E-08	1.95E-08	2.10E-08	2.25E-08	2.25E-08

tb159	1.41E-08	1.55E-08	1.70E-08	1.85E-08	2.01E-08	2.01E-08
ru100	1.06E-08	1.24E-08	1.43E-08	1.64E-08	1.86E-08	1.86E-08
sr 90	1.64E-08	1.63E-08	1.63E-08	1.62E-08	1.62E-08	1.62E-08
cd112	1.16E-08	1.27E-08	1.38E-08	1.49E-08	1.60E-08	1.60E-08
gd158	1.10E-08	1.22E-08	1.34E-08	1.46E-08	1.58E-08	1.58E-08
li 6	1.01E-08	1.09E-08	1.17E-08	1.25E-08	1.33E-08	1.33E-08
nd142	7.35E-09	8.61E-09	9.97E-09	1.14E-08	1.30E-08	1.30E-08
ba134	7.15E-09	8.37E-09	9.69E-09	1.11E-08	1.26E-08	1.26E-08
sn117	8.77E-09	9.54E-09	1.03E-08	1.11E-08	1.19E-08	1.19E-08
sm148	6.58E-09	7.70E-09	8.91E-09	1.02E-08	1.16E-08	1.16E-08
eu154	8.57E-09	9.29E-09	1.00E-08	1.07E-08	1.15E-08	1.15E-08
ba135	5.84E-09	6.84E-09	7.93E-09	9.09E-09	1.03E-08	1.03E-08
rh105	9.45E-09	9.53E-09	9.62E-09	9.70E-09	9.78E-09	9.78E-09
sn119	6.97E-09	7.56E-09	8.16E-09	8.76E-09	9.36E-09	9.36E-09
cd114	6.39E-09	7.05E-09	7.72E-09	8.40E-09	9.09E-09	9.09E-09
pd104	4.96E-09	5.82E-09	6.74E-09	7.73E-09	8.78E-09	8.78E-09
dy164	5.45E-09	6.18E-09	6.96E-09	7.76E-09	8.61E-09	8.61E-09
sn115	6.38E-09	6.92E-09	7.47E-09	8.02E-09	8.57E-09	8.57E-09
dy162	5.00E-09	5.66E-09	6.35E-09	7.07E-09	7.83E-09	7.83E-09
pd110	4.92E-09	5.43E-09	5.95E-09	6.48E-09	7.03E-09	7.03E-09
sr 88	5.10E-09	5.51E-09	5.92E-09	6.33E-09	6.74E-09	6.74E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 36
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	3.47E-09	3.76E-09	4.04E-09	4.32E-09	4.60E-09	4.60E-09
sn126	3.04E-09	3.30E-09	3.57E-09	3.85E-09	4.12E-09	4.12E-09
cs137	3.71E-09	3.71E-09	3.70E-09	3.70E-09	3.70E-09	3.70E-09
se 78	2.68E-09	2.90E-09	3.12E-09	3.34E-09	3.56E-09	3.56E-09
mo 96	1.82E-09	2.11E-09	2.42E-09	2.75E-09	3.11E-09	3.11E-09
sn124	2.24E-09	2.43E-09	2.63E-09	2.82E-09	3.02E-09	3.02E-09
pr143	2.59E-09	2.58E-09	2.58E-09	2.57E-09	2.57E-09	2.57E-09
ba136	1.48E-09	1.65E-09	1.84E-09	2.03E-09	2.23E-09	2.23E-09
as 75	1.59E-09	1.72E-09	1.85E-09	1.98E-09	2.11E-09	2.11E-09
cd110	1.02E-09	1.23E-09	1.46E-09	1.72E-09	2.00E-09	2.00E-09
xe133	1.97E-09	1.97E-09	1.97E-09	1.97E-09	1.96E-09	1.96E-09
dy163	1.23E-09	1.40E-09	1.58E-09	1.76E-09	1.96E-09	1.96E-09
xe130	1.06E-09	1.22E-09	1.38E-09	1.56E-09	1.75E-09	1.75E-09
kr 82	1.11E-09	1.26E-09	1.41E-09	1.58E-09	1.74E-09	1.74E-09
in113	1.25E-09	1.36E-09	1.46E-09	1.57E-09	1.68E-09	1.68E-09
nb 93	9.33E-10	1.09E-09	1.27E-09	1.45E-09	1.65E-09	1.65E-09
ce141	1.56E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09
sn118	9.13E-10	9.91E-10	1.07E-09	1.15E-09	1.23E-09	1.23E-09
cs134	7.91E-10	8.55E-10	9.19E-10	9.82E-10	1.05E-09	1.05E-09
cd116	7.69E-10	8.35E-10	9.00E-10	9.66E-10	1.03E-09	1.03E-09
sn122	7.68E-10	8.34E-10	8.99E-10	9.66E-10	1.03E-09	1.03E-09
pm149	9.59E-10	9.58E-10	9.57E-10	9.57E-10	9.56E-10	9.56E-10
nd147	9.13E-10	9.12E-10	9.11E-10	9.09E-10	9.08E-10	9.08E-10
br 79	4.75E-10	5.57E-10	6.45E-10	7.39E-10	8.40E-10	8.40E-10
sn120	5.72E-10	6.21E-10	6.70E-10	7.19E-10	7.68E-10	7.68E-10
ag107	3.13E-10	3.73E-10	4.38E-10	5.10E-10	5.88E-10	5.88E-10
ge 73	4.39E-10	4.76E-10	5.13E-10	5.50E-10	5.87E-10	5.87E-10
ce144	5.82E-10	5.81E-10	5.80E-10	5.79E-10	5.78E-10	5.78E-10
kr 85	5.50E-10	5.49E-10	5.47E-10	5.46E-10	5.44E-10	5.44E-10
xe129	2.73E-10	3.20E-10	3.71E-10	4.26E-10	4.84E-10	4.84E-10
te126	2.45E-10	2.81E-10	3.19E-10	3.60E-10	4.03E-10	4.03E-10
ru103	3.67E-10	3.67E-10	3.68E-10	3.69E-10	3.70E-10	3.70E-10
gd160	1.45E-10	1.60E-10	1.76E-10	1.93E-10	2.10E-10	2.10E-10
ge 76	1.56E-10	1.69E-10	1.81E-10	1.94E-10	2.07E-10	2.07E-10

zr 95	1.61E-10	1.61E-10	1.61E-10	1.60E-10	1.60E-10	1.60E-10
ho165	9.24E-11	1.06E-10	1.20E-10	1.34E-10	1.50E-10	1.50E-10
nb 95	1.49E-10	1.48E-10	1.48E-10	1.48E-10	1.48E-10	1.48E-10
y 91	1.37E-10	1.37E-10	1.36E-10	1.36E-10	1.36E-10	1.36E-10
pm151	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
dy160	4.03E-11	4.77E-11	5.57E-11	6.44E-11	7.38E-11	7.38E-11
xe128	2.77E-11	3.24E-11	3.75E-11	4.30E-11	4.89E-11	4.89E-11
ba140	4.62E-11	4.61E-11	4.60E-11	4.60E-11	4.59E-11	4.59E-11
eu156	4.24E-11	4.30E-11	4.36E-11	4.42E-11	4.48E-11	4.48E-11
sm153	4.07E-11	4.09E-11	4.11E-11	4.14E-11	4.16E-11	4.16E-11
te124	2.51E-11	2.78E-11	3.06E-11	3.34E-11	3.63E-11	3.63E-11
ru106	3.28E-11	3.34E-11	3.39E-11	3.44E-11	3.49E-11	3.49E-11
sr 86	1.79E-11	2.05E-11	2.33E-11	2.62E-11	2.93E-11	2.93E-11
sr 89	2.93E-11	2.92E-11	2.91E-11	2.90E-11	2.89E-11	2.89E-11
sr 87	1.87E-11	2.03E-11	2.19E-11	2.35E-11	2.51E-11	2.51E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 37
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

kr 87	2.19E-11	2.19E-11	2.18E-11	2.17E-11	2.17E-11	2.17E-11
sn116	1.06E-11	1.24E-11	1.44E-11	1.65E-11	1.88E-11	1.88E-11
ce143	1.70E-11	1.69E-11	1.69E-11	1.69E-11	1.68E-11	1.68E-11
sb125	1.62E-11	1.63E-11	1.64E-11	1.64E-11	1.65E-11	1.65E-11
y 90	1.56E-11	1.55E-11	1.55E-11	1.54E-11	1.54E-11	1.54E-11
nb 94	1.10E-11	1.20E-11	1.30E-11	1.40E-11	1.51E-11	1.51E-11
la140	1.50E-11	1.50E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
mo 99	1.29E-11	1.29E-11	1.29E-11	1.28E-11	1.28E-11	1.28E-11
ge 74	8.82E-12	9.55E-12	1.03E-11	1.10E-11	1.18E-11	1.18E-11
se 76	6.52E-12	7.34E-12	8.19E-12	9.09E-12	1.00E-11	1.00E-11
pm148m	9.57E-12	9.57E-12	9.57E-12	9.57E-12	9.58E-12	9.58E-12
ge 72	6.15E-12	6.68E-12	7.21E-12	7.75E-12	8.29E-12	8.29E-12
te127m	8.09E-12	8.14E-12	8.19E-12	8.24E-12	8.28E-12	8.28E-12
er166	4.84E-12	5.57E-12	6.36E-12	7.19E-12	8.06E-12	8.06E-12
te122	4.41E-12	5.17E-12	5.99E-12	6.88E-12	7.82E-12	7.82E-12
i131	6.72E-12	6.72E-12	6.71E-12	6.71E-12	6.71E-12	6.71E-12
te129m	1.83E-12	1.83E-12	1.83E-12	1.84E-12	1.84E-12	1.84E-12
kr 80	4.48E-13	5.13E-13	5.83E-13	6.59E-13	7.41E-13	7.41E-13
ag111	4.66E-13	4.77E-13	4.87E-13	4.98E-13	5.08E-13	5.08E-13
eu157	3.96E-13	4.03E-13	4.10E-13	4.17E-13	4.24E-13	4.24E-13
pm148	3.67E-13	3.66E-13	3.66E-13	3.65E-13	3.65E-13	3.65E-13
er167	1.38E-13	1.68E-13	2.02E-13	2.40E-13	2.82E-13	2.82E-13
cd115m	2.52E-13	2.53E-13	2.54E-13	2.55E-13	2.56E-13	2.56E-13
cs136	1.35E-13	1.41E-13	1.47E-13	1.53E-13	1.59E-13	1.59E-13
te123	7.66E-14	9.18E-14	1.09E-13	1.28E-13	1.50E-13	1.50E-13
tb160	3.75E-14	4.11E-14	4.48E-14	4.86E-14	5.24E-14	5.24E-14
ru105	3.37E-14	3.40E-14	3.43E-14	3.45E-14	3.48E-14	3.48E-14
sn125	3.06E-14	3.07E-14	3.08E-14	3.09E-14	3.10E-14	3.10E-14
pr142	2.01E-14	2.18E-14	2.34E-14	2.50E-14	2.66E-14	2.66E-14
be 9	1.98E-14	2.14E-14	2.30E-14	2.46E-14	2.63E-14	2.63E-14
cd108	6.84E-15	8.61E-15	1.07E-14	1.31E-14	1.58E-14	1.58E-14
rb 88	1.23E-14	1.23E-14	1.22E-14	1.22E-14	1.22E-14	1.22E-14
li 7	7.92E-15	8.57E-15	9.22E-15	9.87E-15	1.05E-14	1.05E-14
sn123	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
sb126	8.19E-15	8.63E-15	9.06E-15	9.49E-15	9.93E-15	9.93E-15
i135	9.93E-15	9.91E-15	9.90E-15	9.89E-15	9.88E-15	9.88E-15
te132	9.43E-15	9.43E-15	9.42E-15	9.41E-15	9.41E-15	9.41E-15
i130	4.42E-15	4.72E-15	5.02E-15	5.32E-15	5.62E-15	5.62E-15
te134	5.65E-15	5.64E-15	5.62E-15	5.61E-15	5.60E-15	5.60E-15
sn114	2.61E-15	3.07E-15	3.57E-15	4.10E-15	4.67E-15	4.67E-15

	sb124	3.63E-15	3.75E-15	3.88E-15	4.00E-15	4.12E-15	4.12E-15
	in117m	2.34E-15	2.36E-15	2.38E-15	2.39E-15	2.41E-15	2.41E-15
	rb 86	1.42E-15	1.52E-15	1.61E-15	1.70E-15	1.80E-15	1.80E-15
	dy165	1.03E-15	1.10E-15	1.16E-15	1.23E-15	1.30E-15	1.30E-15
	in117	6.94E-16	7.00E-16	7.06E-16	7.12E-16	7.18E-16	7.18E-16
	cs134m	1.48E-16	1.60E-16	1.72E-16	1.84E-16	1.96E-16	1.96E-16
	cd118	1.27E-16	1.28E-16	1.28E-16	1.29E-16	1.30E-16	1.30E-16
	ge 75	8.47E-17	8.46E-17	8.45E-17	8.44E-17	8.43E-17	8.43E-17
	in119m	3.15E-17	3.16E-17	3.17E-17	3.18E-17	3.19E-17	3.19E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 38
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

	ag110	5.70E-18	6.38E-18	7.09E-18	7.82E-18	8.59E-18	8.59E-18
	cd109	5.12E-18	5.53E-18	5.94E-18	6.35E-18	6.78E-18	6.78E-18
	in119	2.52E-18	2.53E-18	2.55E-18	2.56E-18	2.57E-18	2.57E-18

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 39
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1	2.61E-04	2.83E-04	3.04E-04	3.26E-04	3.48E-04	3.48E-04
h 2	7.77E-07	8.41E-07	9.06E-07	9.70E-07	1.03E-06	1.03E-06
h 3	4.11E-11	4.19E-11	4.24E-11	4.29E-11	4.34E-11	4.34E-11
h 4	1.65E-34	1.68E-34	1.70E-34	1.72E-34	1.74E-34	1.74E-34
he 3	5.43E-09	5.83E-09	6.23E-09	6.61E-09	6.99E-09	6.99E-09
he 4	4.32E-05	4.68E-05	5.04E-05	5.40E-05	5.76E-05	5.76E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	5.19E-06	5.62E-06	6.05E-06	6.48E-06	6.91E-06	6.91E-06
ne 21	5.10E-10	5.92E-10	6.81E-10	7.75E-10	8.74E-10	8.74E-10
ne 22	3.43E-08	3.72E-08	4.00E-08	4.29E-08	4.57E-08	4.57E-08
ne 23	7.12E-15	7.15E-15	7.15E-15	7.14E-15	7.14E-15	7.14E-15
na 22	4.20E-11	4.22E-11	4.22E-11	4.21E-11	4.21E-11	4.21E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.85E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08
na 24m	4.68E-15	4.56E-15	4.56E-15	4.55E-15	4.55E-15	4.55E-15
na 25	1.61E-24	1.85E-24	2.12E-24	2.40E-24	2.69E-24	2.69E-24
mg 24	3.97E-02	4.25E-02	4.54E-02	4.83E-02	5.11E-02	5.11E-02
mg 25	5.57E-08	6.43E-08	7.35E-08	8.32E-08	9.35E-08	9.35E-08
mg 26	7.76E-07	8.41E-07	9.05E-07	9.69E-07	1.03E-06	1.03E-06
mg 27	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12
mg 28	4.28E-24	4.29E-24	4.29E-24	4.28E-24	4.27E-24	4.27E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.11E-10	2.06E-10	2.06E-10	2.05E-10	2.05E-10	2.05E-10
al 29	1.20E-22	1.40E-22	1.61E-22	1.83E-22	2.07E-22	2.07E-22
al 30	6.81E-33	8.58E-33	1.06E-32	1.30E-32	1.56E-32	1.56E-32
si 28	1.15E-01	1.24E-01	1.32E-01	1.41E-01	1.49E-01	1.49E-01
si 29	4.66E-07	5.42E-07	6.23E-07	7.10E-07	8.01E-07	8.01E-07
si 30	1.97E-12	2.49E-12	3.08E-12	3.76E-12	4.53E-12	4.53E-12
si 31	1.40E-24	1.76E-24	2.18E-24	2.66E-24	3.20E-24	3.20E-24
si 32	1.93E-30	2.48E-30	3.11E-30	3.84E-30	4.68E-30	4.68E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.68E+08	2.68E+08	2.68E+08	2.68E+08	2.68E-07

1
sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 40
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
he 4	1.33E+00	1.50E+00	1.68E+00	1.86E+00	2.06E+00	2.06E+00
pb206	3.38E-04	4.21E-04	5.15E-04	6.21E-04	7.39E-04	7.39E-04
pb207	6.81E-05	8.00E-05	9.29E-05	1.07E-04	1.22E-04	1.22E-04
pb208	1.09E-05	1.28E-05	1.48E-05	1.70E-05	1.93E-05	1.93E-05
pb209	1.14E-11	1.32E-11	1.52E-11	1.73E-11	1.96E-11	1.96E-11
pb210	1.00E-05	1.14E-05	1.29E-05	1.44E-05	1.60E-05	1.60E-05
pb211	4.55E-12	4.94E-12	5.32E-12	5.70E-12	6.09E-12	6.09E-12
pb212	1.26E-11	1.36E-11	1.46E-11	1.57E-11	1.67E-11	1.67E-11
pb214	2.29E-11	2.61E-11	2.95E-11	3.29E-11	3.65E-11	3.65E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.18E-05	2.75E-05	3.42E-05	4.18E-05	5.04E-05	5.04E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	6.17E-09	7.03E-09	7.94E-09	8.87E-09	9.82E-09	9.82E-09
bi211	2.70E-13	2.93E-13	3.15E-13	3.38E-13	3.61E-13	3.61E-13
bi212	1.19E-12	1.29E-12	1.39E-12	1.49E-12	1.59E-12	1.59E-12
bi213	2.66E-12	3.09E-12	3.56E-12	4.05E-12	4.57E-12	4.57E-12
bi214	1.70E-11	1.94E-11	2.19E-11	2.44E-11	2.71E-11	2.71E-11
po210	1.70E-07	1.94E-07	2.19E-07	2.45E-07	2.71E-07	2.71E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.98E-18	3.23E-18	3.48E-18	3.74E-18	3.99E-18	3.99E-18
po212	6.26E-23	6.78E-23	7.29E-23	7.81E-23	8.33E-23	8.33E-23
po213	3.99E-21	4.65E-21	5.35E-21	6.09E-21	6.87E-21	6.87E-21
po214	2.34E-18	2.67E-18	3.01E-18	3.36E-18	3.72E-18	3.72E-18
po215	3.74E-18	4.06E-18	4.37E-18	4.69E-18	5.00E-18	5.00E-18
po216	4.75E-17	5.15E-17	5.54E-17	5.93E-17	6.33E-17	6.33E-17
po218	2.65E-12	3.02E-12	3.41E-12	3.81E-12	4.22E-12	4.22E-12
rn218	1.84E-28	1.99E-28	2.14E-28	2.29E-28	2.44E-28	2.44E-28
rn219	8.33E-15	9.03E-15	9.73E-15	1.04E-14	1.11E-14	1.11E-14
rn220	1.82E-14	1.97E-14	2.12E-14	2.28E-14	2.43E-14	2.43E-14
rn222	4.70E-09	5.37E-09	6.05E-09	6.76E-09	7.49E-09	7.49E-09
ra222	2.00E-25	2.16E-25	2.32E-25	2.48E-25	2.65E-25	2.65E-25
ra223	2.08E-09	2.25E-09	2.43E-09	2.60E-09	2.78E-09	2.78E-09
ra224	1.04E-10	1.12E-10	1.21E-10	1.29E-10	1.38E-10	1.38E-10
ra225	1.24E-09	1.45E-09	1.66E-09	1.89E-09	2.14E-09	2.14E-09
ra226	7.19E-04	8.20E-04	9.25E-04	1.03E-03	1.14E-03	1.14E-03
ra228	6.40E-12	6.93E-12	7.47E-12	8.01E-12	8.55E-12	8.55E-12
ac225	8.39E-10	9.77E-10	1.12E-09	1.28E-09	1.44E-09	1.44E-09
ac227	1.44E-06	1.57E-06	1.69E-06	1.81E-06	1.93E-06	1.93E-06
ac228	7.81E-16	8.46E-16	9.12E-16	9.78E-16	1.04E-15	1.04E-15
th226	9.73E-24	1.05E-23	1.13E-23	1.21E-23	1.29E-23	1.29E-23
th227	3.35E-09	3.63E-09	3.92E-09	4.20E-09	4.48E-09	4.48E-09
th228	1.98E-08	2.14E-08	2.31E-08	2.47E-08	2.63E-08	2.63E-08
th229	2.42E-04	2.81E-04	3.23E-04	3.68E-04	4.15E-04	4.15E-04
th230	7.71E-02	8.36E-02	9.00E-02	9.65E-02	1.03E-01	1.03E-01
th231	3.28E-09	3.30E-09	3.33E-09	3.35E-09	3.37E-09	3.37E-09
th232	1.56E-02	1.69E-02	1.83E-02	1.96E-02	2.09E-02	2.09E-02
th233	1.42E-13	1.54E-13	1.66E-13	1.78E-13	1.90E-13	1.90E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.17E-03	2.35E-03	2.54E-03	2.72E-03	2.90E-03	2.90E-03
pa232	3.69E-11	4.00E-11	4.30E-11	4.61E-11	4.91E-11	4.91E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 41
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12

pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	9.43E-21	1.02E-20	1.10E-20	1.17E-20	1.25E-20	1.25E-20
u231	3.07E-17	3.32E-17	3.57E-17	3.81E-17	4.05E-17	4.05E-17
u232	7.21E-07	7.80E-07	8.40E-07	8.99E-07	9.59E-07	9.59E-07
u233	4.00E-02	4.33E-02	4.65E-02	4.98E-02	5.30E-02	5.30E-02
u234	9.46E+00	9.49E+00	9.53E+00	9.56E+00	9.59E+00	9.59E+00
u235	7.09E+02	7.07E+02	7.05E+02	7.04E+02	7.02E+02	7.02E+02
u236	1.78E+02	1.78E+02	1.78E+02	1.79E+02	1.79E+02	1.79E+02
u237	3.17E-06	3.17E-06	3.17E-06	3.17E-06	3.18E-06	3.18E-06
u238	3.64E+04	3.64E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.18E-07	3.18E-07	3.18E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.33E-39	2.77E-39	5.44E-39	9.95E-39	1.74E-38	1.74E-38
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.73E-12	8.74E-12	8.73E-12	8.72E-12	8.71E-12	8.71E-12
np236m	2.08E-12	2.08E-12	2.07E-12	2.07E-12	2.07E-12	2.07E-12
np236	5.97E-07	6.45E-07	6.94E-07	7.42E-07	7.90E-07	7.90E-07
np237	4.19E+01	4.19E+01	4.19E+01	4.19E+01	4.18E+01	4.18E+01
np238	1.54E-06	1.53E-06	1.53E-06	1.53E-06	1.53E-06	1.53E-06
np239	4.60E-05	4.59E-05	4.59E-05	4.59E-05	4.58E-05	4.58E-05
np240m	1.14E-41	2.36E-41	4.64E-41	8.49E-41	1.49E-40	1.49E-40
np240	9.27E-15	9.25E-15	9.24E-15	9.22E-15	9.21E-15	9.21E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.12E-09	1.12E-09
pu237	3.49E-13	3.58E-13	3.66E-13	3.75E-13	3.83E-13	3.83E-13
pu238	2.33E-02	2.32E-02	2.32E-02	2.32E-02	2.31E-02	2.31E-02
pu239	1.38E+01	1.49E+01	1.59E+01	1.69E+01	1.79E+01	1.79E+01
pu240	1.85E-01	2.13E-01	2.43E-01	2.74E-01	3.07E-01	3.07E-01
pu241	7.62E-05	8.78E-05	1.00E-04	1.13E-04	1.26E-04	1.26E-04
pu242	4.36E-06	5.64E-06	7.14E-06	8.88E-06	1.09E-05	1.09E-05
pu243	9.24E-15	1.19E-14	1.51E-14	1.88E-14	2.29E-14	2.29E-14
pu244	6.88E-29	1.40E-28	2.69E-28	4.93E-28	8.68E-28	8.68E-28
pu245	2.75E-39	5.65E-39	1.09E-38	1.99E-38	3.49E-38	3.49E-38
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	4.29E-19	5.10E-19	5.96E-19	6.87E-19	7.83E-19	7.83E-19
am240	1.96E-16	2.33E-16	2.73E-16	3.14E-16	3.58E-16	3.58E-16
am241	1.54E-03	1.83E-03	2.14E-03	2.47E-03	2.82E-03	2.82E-03
am242m	6.77E-07	8.12E-07	9.59E-07	1.12E-06	1.28E-06	1.28E-06
am242	6.18E-11	7.34E-11	8.58E-11	9.91E-11	1.13E-10	1.13E-10
am243	2.23E-08	3.00E-08	3.92E-08	5.03E-08	6.34E-08	6.34E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.70E-16	2.28E-16	2.98E-16	3.83E-16	4.82E-16	4.82E-16
am245	6.27E-40	1.28E-39	2.43E-39	4.42E-39	7.70E-39	7.70E-39
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	3.65E-21	4.34E-21	5.07E-21	5.85E-21	6.68E-21	6.68E-21
cm242	1.25E-08	1.48E-08	1.73E-08	2.00E-08	2.28E-08	2.28E-08
cm243	8.50E-18	1.03E-17	1.22E-17	1.43E-17	1.65E-17	1.65E-17
cm244	2.67E-12	3.58E-12	4.69E-12	6.01E-12	7.57E-12	7.57E-12

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 42
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
cm245	1.66E-15	2.42E-15	3.42E-15	4.70E-15	6.31E-15	6.31E-15
cm246	4.73E-18	7.45E-18	1.13E-17	1.67E-17	2.38E-17	2.38E-17
cm247	2.28E-22	3.91E-22	6.42E-22	1.02E-21	1.56E-21	1.56E-21
cm248	1.09E-25	2.04E-25	3.62E-25	6.17E-25	1.01E-24	1.01E-24
cm249	3.43E-36	6.41E-36	1.14E-35	1.94E-35	3.18E-35	3.18E-35
cm250	4.70E-41	9.52E-41	1.83E-40	3.34E-40	5.86E-40	5.86E-40
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

```
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux             2.68E+08  2.68E+08  2.68E+08  2.68E+08  2.68E-07
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 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 "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                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page   43
        power=    .00mw, burnup=   7305.mwd, flux= 2.67E+08n/cm**2-sec
0                                    basis =
```

(note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

	initial	******* d	******* d	******* d	******* d
productions	1.157562E+06	1.158774E+06	1.159951E+06	1.161091E+06	1.162197E+06
absorptions	9.515668E+05	9.525161E+05	9.534447E+05	9.543523E+05	9.552406E+05
k infinity	1.216479E+00	1.216540E+00	1.216589E+00	1.216627E+00	1.216654E+00

	initial	******* d	******* d	******* d	******* d
actinide absorptions	9.405191E+05	9.413034E+05	9.420699E+05	9.428184E+05	9.435494E+05
non-actinide abs. fracs.	1.161009E-02	1.177174E-02	1.193023E-02	1.208556E-02	1.223892E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 44

fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

	initial	******* d	******* d	******* d	******* d
sm149	5.33E-03	5.34E-03	5.34E-03	5.35E-03	5.35E-03
eu151	7.20E-04	7.58E-04	7.95E-04	8.32E-04	8.67E-04
nd143	5.66E-04	6.01E-04	6.35E-04	6.69E-04	7.02E-04
rh103	2.75E-04	2.93E-04	3.10E-04	3.27E-04	3.45E-04
xe131	1.84E-04	1.95E-04	2.06E-04	2.18E-04	2.29E-04
gd155	1.74E-04	1.78E-04	1.82E-04	1.85E-04	1.89E-04
cs133	1.42E-04	1.51E-04	1.60E-04	1.68E-04	1.77E-04
sm147	1.05E-04	1.11E-04	1.18E-04	1.24E-04	1.31E-04
tc 99	1.04E-04	1.10E-04	1.17E-04	1.23E-04	1.29E-04
nd145	8.04E-05	8.53E-05	9.02E-05	9.51E-05	1.00E-04
cd113	8.82E-05	8.96E-05	9.08E-05	9.19E-05	9.29E-05
mo 95	5.59E-05	5.93E-05	6.27E-05	6.61E-05	6.95E-05
sm152	5.12E-05	5.48E-05	5.84E-05	6.21E-05	6.58E-05
gd157	5.02E-05	5.11E-05	5.20E-05	5.29E-05	5.37E-05
sm150	3.60E-05	3.87E-05	4.14E-05	4.41E-05	4.68E-05
kr 83	3.44E-05	3.65E-05	3.85E-05	4.06E-05	4.26E-05
sm151	4.09E-05	4.10E-05	4.11E-05	4.12E-05	4.12E-05
cs135	3.22E-05	3.41E-05	3.61E-05	3.81E-05	4.01E-05
ru101	2.51E-05	2.66E-05	2.82E-05	2.97E-05	3.12E-05
pr141	2.38E-05	2.52E-05	2.67E-05	2.81E-05	2.96E-05
eu153	2.27E-05	2.42E-05	2.57E-05	2.71E-05	2.86E-05
la139	1.94E-05	2.06E-05	2.18E-05	2.30E-05	2.42E-05
pd105	9.15E-06	9.77E-06	1.04E-05	1.10E-05	1.16E-05
ba137	9.21E-06	9.79E-06	1.04E-05	1.09E-05	1.15E-05
zr 93	7.87E-06	8.35E-06	8.83E-06	9.30E-06	9.77E-06
ag109	6.64E-06	7.26E-06	7.89E-06	8.55E-06	9.23E-06
i129	6.18E-06	6.57E-06	6.96E-06	7.35E-06	7.74E-06
nd144	5.86E-06	6.22E-06	6.58E-06	6.94E-06	7.30E-06
mo 97	4.41E-06	4.69E-06	4.96E-06	5.22E-06	5.49E-06
gd152	1.68E-06	1.89E-06	2.11E-06	2.33E-06	2.57E-06
zr 91	2.05E-06	2.18E-06	2.30E-06	2.42E-06	2.55E-06
y 89	1.96E-06	2.08E-06	2.20E-06	2.32E-06	2.43E-06
pd108	1.75E-06	1.90E-06	2.05E-06	2.20E-06	2.37E-06
ru102	1.82E-06	1.93E-06	2.04E-06	2.16E-06	2.27E-06
xe135	2.27E-06	2.27E-06	2.27E-06	2.26E-06	2.26E-06
ce142	1.61E-06	1.71E-06	1.81E-06	1.91E-06	2.01E-06
nd148	1.56E-06	1.66E-06	1.75E-06	1.85E-06	1.94E-06
nd146	1.30E-06	1.38E-06	1.46E-06	1.54E-06	1.62E-06
in115	1.13E-06	1.20E-06	1.27E-06	1.35E-06	1.42E-06
ba138	1.11E-06	1.18E-06	1.25E-06	1.32E-06	1.38E-06
ce140	1.04E-06	1.11E-06	1.17E-06	1.23E-06	1.30E-06
pd107	9.17E-07	9.90E-07	1.07E-06	1.14E-06	1.22E-06
xe132	9.52E-07	1.01E-06	1.07E-06	1.13E-06	1.19E-06
mo 98	6.53E-07	6.93E-07	7.33E-07	7.73E-07	8.13E-07
mo100	6.31E-07	6.69E-07	7.08E-07	7.47E-07	7.85E-07

xe134	6.17E-07	6.54E-07	6.92E-07	7.30E-07	7.67E-07
zr 92	4.95E-07	5.25E-07	5.55E-07	5.85E-07	6.14E-07
i127	4.38E-07	4.67E-07	4.96E-07	5.25E-07	5.54E-07
ru104	4.08E-07	4.34E-07	4.60E-07	4.87E-07	5.13E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 45
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

zr 96	3.97E-07	4.21E-07	4.45E-07	4.69E-07	4.93E-07
nd150	3.50E-07	3.72E-07	3.94E-07	4.16E-07	4.37E-07
xe136	3.34E-07	3.55E-07	3.75E-07	3.96E-07	4.16E-07
br 81	2.51E-07	2.66E-07	2.81E-07	2.97E-07	3.12E-07
rb 85	2.42E-07	2.57E-07	2.71E-07	2.86E-07	3.00E-07
cd111	2.16E-07	2.32E-07	2.49E-07	2.66E-07	2.84E-07
pm147	2.65E-07	2.65E-07	2.64E-07	2.64E-07	2.64E-07
zr 94	2.12E-07	2.25E-07	2.38E-07	2.51E-07	2.63E-07
zr 90	1.92E-07	2.04E-07	2.15E-07	2.27E-07	2.38E-07
eu152	1.87E-07	1.96E-07	2.06E-07	2.15E-07	2.24E-07
sm154	1.57E-07	1.67E-07	1.77E-07	1.87E-07	1.98E-07
te130	1.53E-07	1.62E-07	1.72E-07	1.81E-07	1.90E-07
eu155	1.83E-07	1.85E-07	1.86E-07	1.87E-07	1.89E-07
rb 87	1.40E-07	1.48E-07	1.57E-07	1.65E-07	1.73E-07
ru 99	1.08E-07	1.22E-07	1.36E-07	1.52E-07	1.68E-07
se 77	9.99E-08	1.06E-07	1.12E-07	1.18E-07	1.24E-07
pd106	8.74E-08	9.37E-08	1.00E-07	1.07E-07	1.13E-07
gd154	5.99E-08	6.76E-08	7.59E-08	8.45E-08	9.37E-08
gd156	6.91E-08	7.50E-08	8.10E-08	8.72E-08	9.34E-08
kr 84	6.65E-08	7.05E-08	7.46E-08	7.86E-08	8.26E-08
sb121	5.15E-08	5.48E-08	5.81E-08	6.14E-08	6.48E-08
se 79	5.13E-08	5.44E-08	5.75E-08	6.07E-08	6.38E-08
dy161	4.11E-08	4.48E-08	4.86E-08	5.25E-08	5.66E-08
sb123	4.17E-08	4.44E-08	4.71E-08	4.97E-08	5.24E-08
kr 86	3.66E-08	3.88E-08	4.10E-08	4.32E-08	4.54E-08
te128	3.42E-08	3.64E-08	3.85E-08	4.07E-08	4.29E-08
se 80	2.39E-08	2.54E-08	2.68E-08	2.83E-08	2.97E-08
ru100	1.86E-08	2.10E-08	2.34E-08	2.61E-08	2.88E-08
te125	2.25E-08	2.39E-08	2.54E-08	2.69E-08	2.84E-08
tb159	2.01E-08	2.16E-08	2.33E-08	2.49E-08	2.66E-08
gd158	1.58E-08	1.71E-08	1.84E-08	1.97E-08	2.10E-08
cd112	1.60E-08	1.71E-08	1.82E-08	1.94E-08	2.06E-08
nd142	1.30E-08	1.46E-08	1.63E-08	1.82E-08	2.01E-08
ba134	1.26E-08	1.42E-08	1.59E-08	1.77E-08	1.96E-08
sm148	1.16E-08	1.30E-08	1.46E-08	1.62E-08	1.79E-08
li 6	1.33E-08	1.41E-08	1.48E-08	1.56E-08	1.64E-08
ba135	1.03E-08	1.17E-08	1.31E-08	1.45E-08	1.61E-08
sr 90	1.62E-08	1.61E-08	1.61E-08	1.60E-08	1.60E-08
sn117	1.19E-08	1.27E-08	1.35E-08	1.43E-08	1.51E-08
eu154	1.15E-08	1.22E-08	1.29E-08	1.37E-08	1.44E-08
pd104	8.79E-09	9.91E-09	1.11E-08	1.24E-08	1.37E-08
dy164	8.60E-09	9.48E-09	1.04E-08	1.13E-08	1.23E-08
cd114	9.10E-09	9.79E-09	1.05E-08	1.12E-08	1.19E-08
sn119	9.35E-09	9.95E-09	1.06E-08	1.12E-08	1.18E-08
dy162	7.83E-09	8.62E-09	9.45E-09	1.03E-08	1.12E-08
sn115	8.56E-09	9.11E-09	9.66E-09	1.02E-08	1.08E-08
rh105	9.77E-09	9.85E-09	9.93E-09	1.00E-08	1.01E-08
pd110	7.03E-09	7.59E-09	8.17E-09	8.75E-09	9.35E-09
sr 88	6.73E-09	7.14E-09	7.55E-09	7.95E-09	8.35E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 46
0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

	initial ******* d	******* d	******* d	******* d
se 82	4.60E-09	4.88E-09	5.15E-09	5.43E-09	5.71E-09
sn126	4.12E-09	4.39E-09	4.67E-09	4.95E-09	5.24E-09
mo 96	3.11E-09	3.49E-09	3.88E-09	4.30E-09	4.74E-09
se 78	3.56E-09	3.78E-09	4.00E-09	4.22E-09	4.44E-09
sn124	3.02E-09	3.21E-09	3.41E-09	3.61E-09	3.80E-09
cs137	3.70E-09	3.69E-09	3.69E-09	3.69E-09	3.68E-09
cd110	2.00E-09	2.31E-09	2.64E-09	3.01E-09	3.41E-09
ba136	2.23E-09	2.44E-09	2.65E-09	2.87E-09	3.10E-09
dy163	1.95E-09	2.16E-09	2.37E-09	2.59E-09	2.81E-09
as 75	2.11E-09	2.24E-09	2.37E-09	2.49E-09	2.62E-09
xe130	1.75E-09	1.94E-09	2.15E-09	2.37E-09	2.59E-09
nb 93	1.65E-09	1.86E-09	2.09E-09	2.32E-09	2.57E-09
pr143	2.57E-09	2.56E-09	2.56E-09	2.55E-09	2.55E-09
kr 82	1.74E-09	1.92E-09	2.10E-09	2.29E-09	2.49E-09
in113	1.68E-09	1.80E-09	1.91E-09	2.02E-09	2.13E-09
xe133	1.96E-09	1.96E-09	1.96E-09	1.96E-09	1.96E-09
sn118	1.23E-09	1.31E-09	1.39E-09	1.47E-09	1.55E-09
ce141	1.55E-09	1.54E-09	1.54E-09	1.54E-09	1.54E-09
br 79	8.40E-10	9.47E-10	1.06E-09	1.18E-09	1.31E-09
sn122	1.03E-09	1.10E-09	1.16E-09	1.23E-09	1.30E-09
cs134	1.05E-09	1.11E-09	1.17E-09	1.24E-09	1.30E-09
cd116	1.03E-09	1.10E-09	1.17E-09	1.23E-09	1.30E-09
sn120	7.68E-10	8.17E-10	8.67E-10	9.16E-10	9.66E-10
ag107	5.88E-10	6.72E-10	7.63E-10	8.60E-10	9.65E-10
pm149	9.55E-10	9.54E-10	9.54E-10	9.53E-10	9.53E-10
nd147	9.09E-10	9.08E-10	9.06E-10	9.05E-10	9.04E-10
xe129	4.84E-10	5.47E-10	6.13E-10	6.83E-10	7.57E-10
ge 73	5.86E-10	6.23E-10	6.60E-10	6.97E-10	7.34E-10
te126	4.03E-10	4.49E-10	4.97E-10	5.48E-10	6.01E-10
ce144	5.77E-10	5.76E-10	5.75E-10	5.74E-10	5.73E-10
kr 85	5.44E-10	5.42E-10	5.41E-10	5.40E-10	5.38E-10
ru103	3.70E-10	3.70E-10	3.71E-10	3.72E-10	3.72E-10
gd160	2.10E-10	2.28E-10	2.46E-10	2.64E-10	2.83E-10
ge 76	2.07E-10	2.19E-10	2.32E-10	2.44E-10	2.57E-10
ho165	1.50E-10	1.66E-10	1.84E-10	2.02E-10	2.21E-10
zr 95	1.60E-10	1.60E-10	1.60E-10	1.59E-10	1.59E-10
nb 95	1.48E-10	1.47E-10	1.47E-10	1.47E-10	1.46E-10
y 91	1.36E-10	1.35E-10	1.35E-10	1.34E-10	1.34E-10
dy160	7.39E-11	8.40E-11	9.49E-11	1.06E-10	1.19E-10
pm151	1.11E-10	1.11E-10	1.11E-10	1.12E-10	1.12E-10
xe128	4.89E-11	5.51E-11	6.18E-11	6.88E-11	7.63E-11
te124	3.63E-11	3.93E-11	4.24E-11	4.56E-11	4.89E-11
eu156	4.48E-11	4.54E-11	4.59E-11	4.65E-11	4.70E-11
ba140	4.59E-11	4.58E-11	4.57E-11	4.57E-11	4.56E-11
sr 86	2.93E-11	3.25E-11	3.60E-11	3.95E-11	4.33E-11
sm153	4.16E-11	4.18E-11	4.21E-11	4.23E-11	4.25E-11
ru106	3.50E-11	3.55E-11	3.60E-11	3.65E-11	3.70E-11
sr 87	2.51E-11	2.67E-11	2.84E-11	3.00E-11	3.16E-11
sn116	1.88E-11	2.12E-11	2.38E-11	2.65E-11	2.94E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 47

0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

	initial ******* d	******* d	******* d	******* d
sr 89	2.89E-11	2.88E-11	2.88E-11	2.87E-11	2.86E-11
kr 87	2.16E-11	2.16E-11	2.15E-11	2.15E-11	2.14E-11
nb 94	1.51E-11	1.62E-11	1.73E-11	1.84E-11	1.95E-11

sb125	1.65E-11	1.66E-11	1.67E-11	1.68E-11	1.69E-11
ce143	1.68E-11	1.68E-11	1.68E-11	1.67E-11	1.67E-11
y 90	1.54E-11	1.53E-11	1.53E-11	1.52E-11	1.52E-11
la140	1.49E-11	1.49E-11	1.49E-11	1.48E-11	1.48E-11
ge 74	1.17E-11	1.25E-11	1.32E-11	1.40E-11	1.47E-11
se 76	1.00E-11	1.10E-11	1.20E-11	1.31E-11	1.42E-11
mo 99	1.28E-11	1.28E-11	1.28E-11	1.28E-11	1.28E-11
te122	7.82E-12	8.83E-12	9.90E-12	1.10E-11	1.22E-11
er166	8.05E-12	8.97E-12	9.94E-12	1.09E-11	1.20E-11
ge 72	8.28E-12	8.82E-12	9.36E-12	9.91E-12	1.05E-11
pm148m	9.57E-12	9.58E-12	9.59E-12	9.59E-12	9.60E-12
te127m	8.28E-12	8.33E-12	8.37E-12	8.42E-12	8.47E-12
i131	6.71E-12	6.71E-12	6.71E-12	6.71E-12	6.70E-12
te129m	1.84E-12	1.84E-12	1.84E-12	1.85E-12	1.85E-12
kr 80	7.41E-13	8.30E-13	9.26E-13	1.03E-12	1.14E-12
ag111	5.08E-13	5.19E-13	5.29E-13	5.38E-13	5.48E-13
er167	2.82E-13	3.29E-13	3.80E-13	4.36E-13	4.97E-13
eu157	4.24E-13	4.31E-13	4.37E-13	4.44E-13	4.50E-13
pm148	3.65E-13	3.65E-13	3.65E-13	3.65E-13	3.64E-13
cd115m	2.56E-13	2.58E-13	2.59E-13	2.60E-13	2.61E-13
te123	1.50E-13	1.74E-13	2.00E-13	2.29E-13	2.60E-13
cs136	1.59E-13	1.65E-13	1.71E-13	1.77E-13	1.83E-13
tb160	5.23E-14	5.63E-14	6.02E-14	6.43E-14	6.84E-14
ru105	3.49E-14	3.51E-14	3.54E-14	3.57E-14	3.60E-14
pr142	2.66E-14	2.82E-14	2.98E-14	3.15E-14	3.30E-14
be 9	2.63E-14	2.79E-14	2.95E-14	3.12E-14	3.28E-14
sn125	3.10E-14	3.11E-14	3.12E-14	3.13E-14	3.14E-14
cd108	1.58E-14	1.90E-14	2.25E-14	2.65E-14	3.09E-14
li 7	1.05E-14	1.11E-14	1.18E-14	1.24E-14	1.31E-14
rb 88	1.22E-14	1.21E-14	1.21E-14	1.21E-14	1.20E-14
sb126	9.92E-15	1.04E-14	1.08E-14	1.12E-14	1.17E-14
sn123	1.03E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	9.87E-15	9.86E-15	9.85E-15	9.84E-15	9.83E-15
te132	9.40E-15	9.40E-15	9.39E-15	9.39E-15	9.38E-15
sn114	4.66E-15	5.27E-15	5.92E-15	6.60E-15	7.33E-15
i130	5.62E-15	5.91E-15	6.21E-15	6.50E-15	6.80E-15
te134	5.59E-15	5.58E-15	5.57E-15	5.56E-15	5.55E-15
sb124	4.12E-15	4.25E-15	4.37E-15	4.49E-15	4.61E-15
in117m	2.41E-15	2.43E-15	2.44E-15	2.46E-15	2.48E-15
rb 86	1.80E-15	1.89E-15	1.98E-15	2.07E-15	2.16E-15
dy165	1.30E-15	1.37E-15	1.44E-15	1.50E-15	1.57E-15
in117	7.17E-16	7.23E-16	7.28E-16	7.34E-16	7.39E-16
cs134m	1.96E-16	2.08E-16	2.20E-16	2.32E-16	2.44E-16
cd118	1.29E-16	1.30E-16	1.30E-16	1.31E-16	1.31E-16
ge 75	8.43E-17	8.42E-17	8.41E-17	8.40E-17	8.39E-17
in119m	3.19E-17	3.20E-17	3.21E-17	3.22E-17	3.23E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 48
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

ag110	8.58E-18	9.38E-18	1.02E-17	1.10E-17	1.19E-17
cd109	6.77E-18	7.20E-18	7.64E-18	8.09E-18	8.56E-18
in119	2.57E-18	2.58E-18	2.60E-18	2.61E-18	2.62E-18
in120	4.32E-22	4.33E-22	4.35E-22	4.36E-22	4.38E-22
in120m	6.21E-23	6.30E-23	6.40E-23	6.49E-23	6.59E-23

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 49
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d
h 1	3.48E-04	3.69E-04	3.91E-04	4.13E-04	4.34E-04
h 2	1.03E-06	1.10E-06	1.16E-06	1.23E-06	1.29E-06
h 3	4.34E-11	4.42E-11	4.47E-11	4.51E-11	4.56E-11
h 4	1.74E-34	1.76E-34	1.78E-34	1.80E-34	1.82E-34
he 3	6.99E-09	7.37E-09	7.73E-09	8.09E-09	8.45E-09
he 4	5.76E-05	6.11E-05	6.47E-05	6.83E-05	7.19E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.91E-06	7.35E-06	7.78E-06	8.21E-06	8.64E-06
ne 21	8.74E-10	9.80E-10	1.09E-09	1.21E-09	1.33E-09
ne 22	4.57E-08	4.86E-08	5.15E-08	5.43E-08	5.72E-08
ne 23	7.14E-15	7.18E-15	7.17E-15	7.17E-15	7.16E-15
na 22	4.21E-11	4.24E-11	4.23E-11	4.23E-11	4.23E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.77E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.55E-15	4.54E-15	4.54E-15	4.53E-15	4.53E-15
na 25	2.69E-24	3.01E-24	3.34E-24	3.68E-24	4.04E-24
mg 24	5.11E-02	5.40E-02	5.69E-02	5.97E-02	6.26E-02
mg 25	9.35E-08	1.04E-07	1.16E-07	1.28E-07	1.40E-07
mg 26	1.03E-06	1.10E-06	1.16E-06	1.23E-06	1.29E-06
mg 27	2.13E-12	2.14E-12	2.14E-12	2.14E-12	2.14E-12
mg 28	4.27E-24	4.29E-24	4.28E-24	4.28E-24	4.27E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.05E-10	2.05E-10	2.05E-10	2.04E-10	2.04E-10
al 29	2.07E-22	2.32E-22	2.58E-22	2.86E-22	3.15E-22
al 30	1.56E-32	1.86E-32	2.20E-32	2.56E-32	2.97E-32
si 28	1.49E-01	1.57E-01	1.66E-01	1.74E-01	1.82E-01
si 29	8.01E-07	8.98E-07	1.00E-06	1.11E-06	1.22E-06
si 30	4.53E-12	5.40E-12	6.36E-12	7.43E-12	8.62E-12
si 31	3.20E-24	3.81E-24	4.49E-24	5.24E-24	6.08E-24
si 32	4.68E-30	5.62E-30	6.67E-30	7.85E-30	9.16E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.67E+08	2.67E+08	2.67E+08	2.66E+08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 50
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d
he 4	2.06E+00	2.26E+00	2.47E+00	2.69E+00	2.91E+00
pb206	7.39E-04	8.69E-04	1.01E-03	1.17E-03	1.34E-03
pb207	1.22E-04	1.37E-04	1.54E-04	1.72E-04	1.90E-04
pb208	1.93E-05	2.18E-05	2.44E-05	2.72E-05	3.01E-05
pb209	1.96E-11	2.19E-11	2.44E-11	2.69E-11	2.96E-11
pb210	1.60E-05	1.75E-05	1.92E-05	2.08E-05	2.25E-05
pb211	6.09E-12	6.47E-12	6.85E-12	7.24E-12	7.62E-12
pb212	1.67E-11	1.78E-11	1.88E-11	1.98E-11	2.09E-11
pb214	3.65E-11	4.01E-11	4.38E-11	4.76E-11	5.14E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.04E-05	6.01E-05	7.09E-05	8.28E-05	9.60E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.82E-09	1.08E-08	1.18E-08	1.28E-08	1.39E-08
bi211	3.61E-13	3.84E-13	4.06E-13	4.29E-13	4.52E-13
bi212	1.59E-12	1.68E-12	1.78E-12	1.88E-12	1.98E-12
bi213	4.57E-12	5.11E-12	5.69E-12	6.29E-12	6.91E-12
bi214	2.71E-11	2.98E-11	3.25E-11	3.53E-11	3.82E-11
po210	2.71E-07	2.98E-07	3.26E-07	3.54E-07	3.83E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.99E-18	4.24E-18	4.49E-18	4.74E-18	4.99E-18

po212	8.33E-23	8.85E-23	9.37E-23	9.88E-23	1.04E-22
po213	6.87E-21	7.69E-21	8.55E-21	9.45E-21	1.04E-20
po214	3.72E-18	4.10E-18	4.47E-18	4.86E-18	5.25E-18
po215	5.00E-18	5.32E-18	5.63E-18	5.95E-18	6.27E-18
po216	6.33E-17	6.72E-17	7.11E-17	7.51E-17	7.90E-17
po218	4.22E-12	4.64E-12	5.07E-12	5.51E-12	5.95E-12
rn218	2.44E-28	2.60E-28	2.75E-28	2.90E-28	3.05E-28
rn219	1.11E-14	1.18E-14	1.25E-14	1.32E-14	1.39E-14
rn220	2.43E-14	2.58E-14	2.73E-14	2.88E-14	3.03E-14
rn222	7.49E-09	8.24E-09	9.00E-09	9.78E-09	1.06E-08
ra222	2.65E-25	2.82E-25	2.98E-25	3.14E-25	3.31E-25
ra223	2.78E-09	2.95E-09	3.13E-09	3.30E-09	3.48E-09
ra224	1.38E-10	1.47E-10	1.55E-10	1.64E-10	1.72E-10
ra225	2.14E-09	2.39E-09	2.66E-09	2.94E-09	3.23E-09
ra226	1.14E-03	1.26E-03	1.38E-03	1.49E-03	1.62E-03
ra228	8.55E-12	9.09E-12	9.64E-12	1.02E-11	1.07E-11
ac225	1.44E-09	1.62E-09	1.80E-09	1.99E-09	2.18E-09
ac227	1.93E-06	2.05E-06	2.17E-06	2.30E-06	2.42E-06
ac228	1.04E-15	1.11E-15	1.18E-15	1.24E-15	1.31E-15
th226	1.29E-23	1.38E-23	1.45E-23	1.53E-23	1.61E-23
th227	4.48E-09	4.76E-09	5.05E-09	5.33E-09	5.61E-09
th228	2.63E-08	2.80E-08	2.96E-08	3.13E-08	3.29E-08
th229	4.15E-04	4.65E-04	5.17E-04	5.72E-04	6.28E-04
th230	1.03E-01	1.10E-01	1.16E-01	1.23E-01	1.29E-01
th231	3.37E-09	3.39E-09	3.42E-09	3.44E-09	3.46E-09
th232	2.09E-02	2.22E-02	2.36E-02	2.49E-02	2.62E-02
th233	1.90E-13	2.02E-13	2.13E-13	2.25E-13	2.37E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.90E-03	3.09E-03	3.27E-03	3.45E-03	3.64E-03
pa232	4.91E-11	5.22E-11	5.53E-11	5.83E-11	6.14E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 51
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d
pa233	1.45E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.25E-20	1.33E-20	1.41E-20	1.49E-20	1.56E-20
u231	4.05E-17	4.31E-17	4.55E-17	4.79E-17	5.03E-17
u232	9.59E-07	1.02E-06	1.08E-06	1.14E-06	1.20E-06
u233	5.30E-02	5.62E-02	5.94E-02	6.26E-02	6.58E-02
u234	9.59E+00	9.63E+00	9.66E+00	9.70E+00	9.73E+00
u235	7.02E+02	7.00E+02	6.99E+02	6.97E+02	6.96E+02
u236	1.79E+02	1.79E+02	1.79E+02	1.80E+02	1.80E+02
u237	3.18E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.74E-38	2.96E-38	4.85E-38	7.75E-38	1.21E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.71E-12	8.75E-12	8.74E-12	8.73E-12	8.72E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.07E-12	2.07E-12
np236	7.90E-07	8.38E-07	8.86E-07	9.33E-07	9.81E-07
np237	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01
np238	1.53E-06	1.53E-06	1.53E-06	1.53E-06	1.52E-06
np239	4.58E-05	4.59E-05	4.59E-05	4.58E-05	4.58E-05
np240m	1.49E-40	2.52E-40	4.14E-40	6.61E-40	1.03E-39
np240	9.21E-15	9.22E-15	9.20E-15	9.19E-15	9.18E-15

np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.12E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	3.83E-13	3.93E-13	4.01E-13	4.09E-13	4.16E-13
pu238	2.31E-02	2.31E-02	2.31E-02	2.31E-02	2.31E-02
pu239	1.79E+01	1.88E+01	1.98E+01	2.07E+01	2.17E+01
pu240	3.07E-01	3.41E-01	3.76E-01	4.13E-01	4.50E-01
pu241	1.26E-04	1.40E-04	1.55E-04	1.70E-04	1.85E-04
pu242	1.09E-05	1.31E-05	1.56E-05	1.85E-05	2.16E-05
pu243	2.29E-14	2.77E-14	3.31E-14	3.90E-14	4.55E-14
pu244	8.68E-28	1.47E-27	2.42E-27	3.86E-27	6.01E-27
pu245	3.49E-38	5.92E-38	9.73E-38	1.55E-37	2.41E-37
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	7.83E-19	8.90E-19	9.96E-19	1.11E-18	1.22E-18
am240	3.58E-16	4.07E-16	4.56E-16	5.06E-16	5.59E-16
am241	2.82E-03	3.18E-03	3.57E-03	3.97E-03	4.38E-03
am242m	1.28E-06	1.46E-06	1.64E-06	1.84E-06	2.04E-06
am242	1.13E-10	1.28E-10	1.43E-10	1.59E-10	1.76E-10
am243	6.34E-08	7.87E-08	9.63E-08	1.16E-07	1.39E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	4.82E-16	5.98E-16	7.32E-16	8.84E-16	1.06E-15
am245	7.70E-39	1.30E-38	2.12E-38	3.36E-38	5.20E-38
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	6.68E-21	7.58E-21	8.49E-21	9.44E-21	1.04E-20
cm242	2.28E-08	2.58E-08	2.90E-08	3.22E-08	3.56E-08
cm243	1.65E-17	1.88E-17	2.12E-17	2.38E-17	2.65E-17
cm244	7.57E-12	9.40E-12	1.15E-11	1.39E-11	1.66E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 52

power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	
cm245	6.31E-15	8.32E-15	1.08E-14	1.38E-14	1.73E-14
cm246	2.38E-17	3.33E-17	4.56E-17	6.13E-17	8.10E-17
cm247	1.56E-21	2.33E-21	3.39E-21	4.82E-21	6.73E-21
cm248	1.01E-24	1.61E-24	2.49E-24	3.76E-24	5.54E-24
cm249	3.18E-35	5.06E-35	7.82E-35	1.18E-34	1.74E-34
cm250	5.86E-40	9.92E-40	1.63E-39	2.59E-39	4.03E-39
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.67E+08	2.67E+08	2.67E+08	2.66E+08

0 .results on logical unit no. 71, position 1, for time step 4, subcase 6. (run position 1, case position 1)

title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 53

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide concentrations, grams

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 1	4.34E-04	4.34E-04	4.34E-04	4.34E-04	4.34E-04	4.34E-04	4.34E-04
h 2	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06
he 4	2.88E-04	2.88E-04	2.88E-04	2.88E-04	2.88E-04	2.88E-04	2.88E-04
ne 20	1.73E-04	1.73E-04	1.73E-04	1.73E-04	1.73E-04	1.73E-04	1.73E-04
ne 22	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06
na 23	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05
mg 24	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00
mg 25	3.51E-06	3.51E-06	3.51E-06	3.51E-06	3.51E-06	3.51E-06	3.51E-06
mg 26	3.36E-05	3.36E-05	3.36E-05	3.36E-05	3.36E-05	3.36E-05	3.36E-05
al 27	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06
si 28	5.10E+00	5.10E+00	5.10E+00	5.10E+00	5.10E+00	5.10E+00	5.10E+00

si 29	3.54E-05	3.54E-05	3.54E-05	3.54E-05	3.54E-05	3.54E-05	3.54E-05
total	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 54
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 element radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.32E-06	1.26E-06	1.20E-06	1.15E-06	1.10E-06	1.05E-06	9.99E-07
na	8.43E+00	4.66E-06	3.73E-06	2.99E-06	2.39E-06	1.92E-06	1.53E-06
totals	2.56E+01	5.92E-06	4.93E-06	4.14E-06	3.49E-06	2.96E-06	2.53E-06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 55
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na	1.71E-01	6.59E-08	5.28E-08	4.23E-08	3.38E-08	2.71E-08	2.17E-08
totals	4.78E-01	6.59E-08	5.28E-08	4.23E-08	3.39E-08	2.71E-08	2.17E-08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 56
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na 22	7.56E-08	6.05E-08	4.85E-08	3.88E-08	3.11E-08	2.49E-08	1.99E-08
total	3.32E-01	6.05E-08	4.85E-08	3.88E-08	3.11E-08	2.49E-08	1.99E-08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 57
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.92E+00	2.92E+00	2.92E+00
pb206	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
pb207	1.90E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04
pb208	3.01E-05	3.01E-05	3.01E-05	3.01E-05	3.01E-05	3.02E-05	3.02E-05
pb210	2.25E-05	2.25E-05	2.25E-05	2.25E-05	2.25E-05	2.25E-05	2.25E-05
bi209	9.60E-05	9.60E-05	9.61E-05	9.61E-05	9.62E-05	9.62E-05	9.63E-05
ra226	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03
ac227	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06
th229	6.28E-04	6.28E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04	6.29E-04
th230	1.29E-01	1.29E-01	1.29E-01	1.29E-01	1.29E-01	1.29E-01	1.29E-01
th232	2.62E-02	2.62E-02	2.62E-02	2.62E-02	2.62E-02	2.62E-02	2.62E-02
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
u232	1.20E-06	1.19E-06	1.18E-06	1.17E-06	1.16E-06	1.15E-06	1.14E-06
u233	6.58E-02	6.58E-02	6.58E-02	6.58E-02	6.58E-02	6.58E-02	6.58E-02
u234	9.73E+00	9.73E+00	9.73E+00	9.73E+00	9.73E+00	9.73E+00	9.73E+00
u235	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02
u236	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.80E+02	1.80E+02
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
np236	9.81E-07	9.81E-07	9.81E-07	9.81E-07	9.81E-07	9.81E-07	9.81E-07
np237	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01
pu238	2.31E-02	2.29E-02	2.28E-02	2.26E-02	2.25E-02	2.23E-02	2.22E-02
pu239	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01	2.17E+01
pu240	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01
pu241	1.85E-04	1.78E-04	1.71E-04	1.64E-04	1.57E-04	1.51E-04	1.45E-04
pu242	2.16E-05	2.16E-05	2.16E-05	2.16E-05	2.16E-05	2.16E-05	2.16E-05

am241	4.38E-03	4.38E-03	4.38E-03	4.38E-03	4.38E-03	4.38E-03	4.38E-03
am242m	2.04E-06	2.03E-06	2.02E-06	2.01E-06	2.00E-06	2.00E-06	1.99E-06
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 58
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.92E+00	2.92E+00	2.92E+00
pb	1.58E-03	1.58E-03	1.58E-03	1.58E-03	1.58E-03	1.58E-03	1.58E-03
bi	9.60E-05	9.61E-05	9.61E-05	9.62E-05	9.62E-05	9.62E-05	9.63E-05
ra	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03	1.62E-03
ac	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06
th	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01
pa	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03	3.64E-03
u	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04
np	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01
pu	2.22E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01	2.21E+01
am	4.38E-03	4.38E-03	4.39E-03	4.39E-03	4.39E-03	4.39E-03	4.39E-03
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 59
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01
pb206	2.75E-01	2.75E-01	2.75E-01	2.75E-01	2.76E-01	2.76E-01	2.76E-01
pb207	3.94E-02	3.94E-02	3.95E-02	3.95E-02	3.95E-02	3.95E-02	3.95E-02
pb208	6.26E-03	6.26E-03	6.27E-03	6.27E-03	6.27E-03	6.27E-03	6.27E-03
pb210	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03	4.73E-03
bi209	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02
bi210	2.91E-06	2.91E-06	2.91E-06	2.91E-06	2.91E-06	2.91E-06	2.91E-06
po210	8.04E-05	7.95E-05	7.94E-05	7.93E-05	7.93E-05	7.93E-05	7.93E-05
rn222	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06
ra223	7.75E-07	7.77E-07	7.77E-07	7.77E-07	7.77E-07	7.77E-07	7.77E-07
ra225	7.27E-07	7.27E-07	7.27E-07	7.28E-07	7.28E-07	7.28E-07	7.28E-07
ra226	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.66E-01	3.66E-01
ac227	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04
th227	1.27E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06
th228	7.50E-06	7.49E-06	7.46E-06	7.43E-06	7.39E-06	7.34E-06	7.29E-06
th229	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01	1.44E-01
th230	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01	2.97E+01
th231	8.00E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07	6.65E-07
th232	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.08E+00	6.09E+00	6.09E+00
th234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
pa231	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.40E-01	8.41E-01
pa233	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04	3.36E-04
u232	2.78E-04	2.76E-04	2.73E-04	2.71E-04	2.69E-04	2.67E-04	2.65E-04
u233	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01
u234	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03	2.28E+03
u235	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05
u236	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04	4.25E+04
u238	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06	8.65E+06
np236	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04	2.32E-04
np237	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03
pu238	5.49E+00	5.45E+00	5.41E+00	5.38E+00	5.34E+00	5.31E+00	5.27E+00
pu239	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03	5.18E+03
pu240	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02

pu241	4.45E-02	4.28E-02	4.11E-02	3.95E-02	3.79E-02	3.64E-02	3.50E-02
pu242	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03	5.22E-03
am241	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
am242m	4.93E-04	4.91E-04	4.89E-04	4.87E-04	4.85E-04	4.83E-04	4.81E-04
am243	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05	3.38E-05
cm242	8.60E-06	3.29E-06	1.83E-06	1.42E-06	1.31E-06	1.27E-06	1.26E-06
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 60

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0

element concentrations, grams

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01
pb	3.25E-01	3.26E-01	3.26E-01	3.26E-01	3.26E-01	3.26E-01	3.26E-01
bi	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02	2.01E-02
po	8.04E-05	7.95E-05	7.94E-05	7.93E-05	7.93E-05	7.93E-05	7.93E-05
rn	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06	2.35E-06
ra	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.65E-01	3.66E-01	3.66E-01
ac	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04	5.49E-04
th	3.59E+01	3.59E+01	3.59E+01	3.59E+01	3.59E+01	3.59E+01	3.60E+01
pa	8.40E-01	8.40E-01	8.40E-01	8.41E-01	8.41E-01	8.41E-01	8.41E-01
u	8.86E+06	8.86E+06	8.86E+06	8.86E+06	8.86E+06	8.86E+06	8.86E+06
np	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03	9.90E+03
pu	5.29E+03	5.29E+03	5.29E+03	5.29E+03	5.29E+03	5.29E+03	5.29E+03
am	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00	1.06E+00
cm	8.61E-06	3.30E-06	1.83E-06	1.43E-06	1.31E-06	1.27E-06	1.26E-06
totals	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 61

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0

nuclide radioactivity, curies

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	3.96E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02
tl208	2.21E-03	2.22E-03	2.21E-03	2.20E-03	2.19E-03	2.17E-03	2.16E-03
tl209	5.99E-04	5.99E-04	5.99E-04	5.99E-04	5.99E-04	6.00E-04	6.00E-04
pb209	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02
pb210	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01
pb211	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
pb212	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
pb214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01
bi210	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01
bi211	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
bi212	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
bi213	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02
bi214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01
po210	3.61E-01	3.57E-01	3.57E-01	3.56E-01	3.56E-01	3.56E-01	3.56E-01
po211	1.09E-04	1.10E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04	1.09E-04
po212	3.94E-03	3.95E-03	3.94E-03	3.92E-03	3.90E-03	3.87E-03	3.85E-03
po213	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.79E-02	2.80E-02
po214	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01
po215	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
po216	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
po218	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
at217	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
rn219	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
rn220	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
rn222	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
fr221	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02

fr223	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04	5.48E-04
ra223	3.97E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02	3.98E-02
ra224	6.15E-03	6.16E-03	6.14E-03	6.11E-03	6.08E-03	6.04E-03	6.00E-03
ra225	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
ra226	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.61E-01	3.62E-01	3.62E-01
ra228	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07
ac225	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
ac227	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02
ac228	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07	6.67E-07
th227	3.92E-02	3.93E-02	3.93E-02	3.93E-02	3.93E-02	3.93E-02	3.93E-02
th228	6.15E-03	6.14E-03	6.12E-03	6.09E-03	6.06E-03	6.02E-03	5.98E-03
th229	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.85E-02	2.86E-02	2.86E-02
th230	6.12E-01	6.13E-01	6.13E-01	6.13E-01	6.13E-01	6.13E-01	6.13E-01
th231	4.25E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01
th232	6.67E-07	6.67E-07	6.67E-07	6.68E-07	6.68E-07	6.68E-07	6.68E-07
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02	3.97E-02
pa233	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
u232	6.14E-03	6.09E-03	6.04E-03	5.99E-03	5.94E-03	5.89E-03	5.84E-03
u233	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01	1.48E-01
u234	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
u235	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01	3.53E-01
u236	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00	2.75E+00
u237	6.18E+01	1.06E-04	1.02E-04	9.77E-05	9.38E-05	9.01E-05	8.66E-05

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 62
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np236	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06	3.05E-06
np237	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00	6.98E+00
np238	9.40E+01	2.32E-05	2.31E-05	2.30E-05	2.29E-05	2.28E-05	2.27E-05
np239	2.54E+03	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06
pu236	1.39E-04	1.14E-04	9.34E-05	7.66E-05	6.28E-05	5.15E-05	4.22E-05
pu238	9.40E+01	9.34E+01	9.28E+01	9.22E+01	9.16E+01	9.10E+01	9.04E+01
pu239	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02	3.22E+02
pu240	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01	2.45E+01
pu241	4.61E+00	4.42E+00	4.25E+00	4.08E+00	3.92E+00	3.77E+00	3.62E+00
pu242	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05	2.07E-05
am241	3.62E+00	3.62E+00	3.62E+00	3.62E+00	3.63E+00	3.63E+00	3.63E+00
am242m	5.17E-03	5.15E-03	5.12E-03	5.10E-03	5.08E-03	5.06E-03	5.04E-03
am242	3.45E-02	5.12E-03	5.10E-03	5.08E-03	5.06E-03	5.04E-03	5.02E-03
am243	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06	6.76E-06
cm242	2.85E-02	1.09E-02	6.05E-03	4.71E-03	4.33E-03	4.21E-03	4.17E-03
total	5.73E+03	4.92E+02	4.92E+02	4.91E+02	4.90E+02	4.89E+02	4.89E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 63
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	1.78E-04	1.79E-04	1.79E-04	1.78E-04	1.78E-04	1.78E-04	1.77E-04
pb	1.42E-03	1.42E-03	1.42E-03	1.42E-03	1.42E-03	1.42E-03	1.42E-03
bi	7.27E-03	7.28E-03	7.28E-03	7.28E-03	7.28E-03	7.28E-03	7.28E-03
po	4.51E-02	4.50E-02	4.49E-02	4.49E-02	4.49E-02	4.50E-02	4.50E-02
at	1.22E-03	1.22E-03	1.22E-03	1.22E-03	1.22E-03	1.22E-03	1.22E-03

rn	1.38E-02	1.39E-02	1.39E-02	1.39E-02	1.39E-02	1.39E-02	1.39E-02
fr	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03
ra	1.21E-02	1.21E-02	1.21E-02	1.21E-02	1.21E-02	1.21E-02	1.21E-02
ac	1.01E-03	1.01E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03
th	2.15E-02	2.14E-02	2.14E-02	2.14E-02	2.14E-02	2.14E-02	2.14E-02
pa	3.33E-02	3.33E-02	3.33E-02	3.33E-02	3.33E-02	3.33E-02	3.33E-02
u	7.58E+00	5.70E-01	5.70E-01	5.70E-01	5.70E-01	5.70E-01	5.70E-01
np	7.09E+00	1.99E-01	1.99E-01	1.99E-01	1.99E-01	1.99E-01	1.99E-01
pu	1.39E+01	1.39E+01	1.38E+01	1.38E+01	1.38E+01	1.38E+01	1.38E+01
am	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.21E-01	1.21E-01
cm	1.04E-03	3.98E-04	2.21E-04	1.72E-04	1.58E-04	1.54E-04	1.52E-04
totals	2.88E+01	1.49E+01	1.49E+01	1.48E+01	1.48E+01	1.48E+01	1.48E+01

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 64

decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 nuclide gamma power, watts

basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	5.17E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07	5.18E-07
tl208	4.40E-05	4.41E-05	4.40E-05	4.38E-05	4.35E-05	4.33E-05	4.30E-05
tl209	7.53E-06	7.53E-06	7.53E-06	7.53E-06	7.53E-06	7.54E-06	7.54E-06
pb210	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05
pb211	1.59E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05
pb212	5.29E-06	5.30E-06	5.28E-06	5.26E-06	5.23E-06	5.20E-06	5.16E-06
pb214	5.35E-04	5.35E-04	5.35E-04	5.35E-04	5.36E-04	5.36E-04	5.36E-04
bi211	1.10E-05	1.10E-05	1.10E-05	1.10E-05	1.10E-05	1.10E-05	1.10E-05
bi212	3.84E-06	3.84E-06	3.83E-06	3.81E-06	3.79E-06	3.77E-06	3.74E-06
bi213	2.13E-05	2.13E-05	2.14E-05	2.14E-05	2.14E-05	2.14E-05	2.14E-05
bi214	3.23E-03	3.23E-03	3.23E-03	3.23E-03	3.23E-03	3.23E-03	3.23E-03
po210	1.82E-08	1.80E-08	1.80E-08	1.80E-08	1.80E-08	1.80E-08	1.80E-08
po214	1.78E-07	1.78E-07	1.78E-07	1.78E-07	1.78E-07	1.78E-07	1.78E-07
po215	4.13E-08	4.14E-08	4.14E-08	4.14E-08	4.14E-08	4.14E-08	4.14E-08
rn219	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05	1.32E-05
rn220	2.22E-08	2.23E-08	2.22E-08	2.21E-08	2.20E-08	2.19E-08	2.17E-08
rn222	8.33E-07	8.33E-07	8.33E-07	8.33E-07	8.33E-07	8.34E-07	8.34E-07
fr221	5.00E-06	5.00E-06	5.00E-06	5.01E-06	5.01E-06	5.01E-06	5.01E-06
fr223	1.87E-07	1.87E-07	1.87E-07	1.87E-07	1.87E-07	1.87E-07	1.87E-07
ra223	3.16E-05	3.17E-05	3.17E-05	3.17E-05	3.17E-05	3.17E-05	3.17E-05
ra224	3.67E-07	3.68E-07	3.67E-07	3.65E-07	3.63E-07	3.61E-07	3.58E-07
ra225	2.43E-06	2.43E-06	2.43E-06	2.43E-06	2.44E-06	2.44E-06	2.44E-06
ra226	1.55E-05	1.55E-05	1.55E-05	1.55E-05	1.55E-05	1.55E-05	1.55E-05
ac225	2.84E-06	2.84E-06	2.84E-06	2.84E-06	2.84E-06	2.84E-06	2.84E-06
ac227	4.54E-08	4.54E-08	4.54E-08	4.54E-08	4.54E-08	4.54E-08	4.54E-08
th227	2.58E-05	2.58E-05	2.58E-05	2.58E-05	2.58E-05	2.58E-05	2.58E-05
th228	1.28E-07	1.28E-07	1.28E-07	1.27E-07	1.26E-07	1.26E-07	1.25E-07
th229	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05	1.60E-05
th230	6.10E-06	6.10E-06	6.10E-06	6.10E-06	6.10E-06	6.11E-06	6.11E-06
th231	7.82E-05	6.50E-05	6.50E-05	6.50E-05	6.50E-05	6.50E-05	6.50E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	9.41E-06	9.41E-06	9.41E-06	9.41E-06	9.42E-06	9.42E-06	9.42E-06
pa233	9.25E-03	9.25E-03	9.25E-03	9.25E-03	9.25E-03	9.25E-03	9.25E-03
pa234m	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04
pa234	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05
u232	7.89E-08	7.83E-08	7.77E-08	7.70E-08	7.64E-08	7.58E-08	7.52E-08
u233	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06	1.09E-06
u234	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04	1.35E-04
u235	3.48E-04	3.48E-04	3.48E-04	3.48E-04	3.48E-04	3.48E-04	3.48E-04
u236	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05	2.77E-05
u237	5.22E-02	8.95E-08	8.60E-08	8.26E-08	7.93E-08	7.62E-08	7.32E-08
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05

np237	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
np238	3.61E-01	8.88E-08	8.84E-08	8.81E-08	8.77E-08	8.74E-08	8.70E-08
np239	2.76E+00	7.36E-09	7.35E-09	7.35E-09	7.35E-09	7.35E-09	7.35E-09
pu238	1.06E-03	1.05E-03	1.05E-03	1.04E-03	1.03E-03	1.02E-03	1.02E-03
pu239	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03	1.54E-03
pu240	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04
pu241	4.78E-08	4.59E-08	4.41E-08	4.23E-08	4.07E-08	3.91E-08	3.75E-08
am241	6.14E-04	6.14E-04	6.14E-04	6.15E-04	6.15E-04	6.15E-04	6.15E-04
am242m	1.87E-07	1.86E-07	1.85E-07	1.85E-07	1.84E-07	1.83E-07	1.82E-07
am242	3.97E-06	5.90E-07	5.87E-07	5.85E-07	5.83E-07	5.80E-07	5.78E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 65
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
cm242	3.56E-07	1.36E-07	7.57E-08	5.89E-08	5.41E-08	5.27E-08	5.21E-08
total	3.97E+00	1.92E-02	1.92E-02	1.92E-02	1.92E-02	1.91E-02	1.91E-02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 66
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.90E-05	3.72E-05	3.55E-05	3.38E-05	3.23E-05	3.08E-05	2.94E-05
li 6	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05	9.49E-05
li 7	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06	2.29E-06
be 9	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06	4.42E-06
be 10	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05	2.94E-05
c 14	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06	4.47E-06
zn 70	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07	5.31E-07
ga 71	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06	6.77E-06
ge 72	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
ge 73	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03	2.85E-03
ge 74	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03	2.47E-03
as 75	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02	2.82E-02
ge 76	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02	9.28E-02
se 76	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05	1.17E-05
se 77	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01	2.07E-01
se 78	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01	5.54E-01
se 79	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
br 79	5.96E-03	5.96E-03	5.96E-03	5.96E-03	5.96E-03	5.97E-03	5.97E-03
se 80	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00	3.37E+00
kr 80	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06	5.14E-06
br 81	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00	5.03E+00
se 82	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00	8.60E+00
kr 82	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03	5.27E-03
kr 83	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01	1.42E+01
kr 84	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01	2.89E+01
kr 85	2.18E-02	2.06E-02	1.95E-02	1.85E-02	1.75E-02	1.66E-02	1.58E-02
rb 85	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01	3.32E+01
kr 86	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01	5.38E+01
sr 86	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
rb 87	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01	7.04E+01
sr 87	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
sr 88	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02	1.01E+02
y 89	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
sr 90	1.34E+00	1.31E+00	1.28E+00	1.26E+00	1.23E+00	1.21E+00	1.18E+00
y 90	3.47E-04	3.40E-04	3.33E-04	3.26E-04	3.20E-04	3.13E-04	3.07E-04
zr 90	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02	1.66E+02

zr 91	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02	1.72E+02
zr 92	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.76E+02
zr 93	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02
nb 93	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01
nb 93m	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03	1.33E-03
zr 94	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
nb 94	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05	5.78E-05
mo 95	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
zr 96	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02	1.95E+02
mo 96	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01	2.44E-01
mo 97	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02	1.78E+02
mo 98	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02	1.86E+02
tc 98	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05	3.19E-05
tc 99	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02	1.96E+02
ru 99	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00
mo100	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02	2.05E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 67
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ru100	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01	4.36E-01
ru101	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02	1.70E+02
ru102	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02
rh103	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02	1.09E+02
ru104	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01	7.03E+01
pd104	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00	1.19E+00
pd105	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01	4.14E+01
ru106	7.16E-03	4.06E-03	2.30E-03	1.30E-03	7.39E-04	4.19E-04	2.37E-04
pd106	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01	2.06E+01
pd107	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00	9.81E+00
ag107	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03	2.32E-03
pd108	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
cd108	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06	2.38E-06
ag109	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
pd110	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00	1.87E+00
cd110	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02	2.78E-02
cd111	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
cd112	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01	7.83E-01
cd113	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01
cd113m	5.05E-05	4.85E-05	4.65E-05	4.47E-05	4.29E-05	4.11E-05	3.95E-05
in113	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
cd114	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
sn114	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06	7.66E-06
in115	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01	4.50E-01
sn115	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02
cd116	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01	7.12E-01
sn116	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03	5.47E-03
sn117	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01	5.02E-01
sn118	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01	4.89E-01
sn119	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn120	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
sn121m	7.28E-05	7.20E-05	7.12E-05	7.05E-05	6.98E-05	6.90E-05	6.83E-05
sb121	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01	5.83E-01
sn122	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01	6.85E-01
te122	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04	2.57E-04
sb123	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01	7.06E-01
sn124	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00	1.16E+00
te124	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04	7.94E-04

sb125	1.13E-03	9.16E-04	7.41E-04	6.00E-04	4.86E-04	3.93E-04	3.18E-04
te125	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
te125m	1.51E-05	1.30E-05	1.05E-05	8.52E-06	6.90E-06	5.58E-06	4.52E-06
sn126	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00
te126	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02	4.89E-02
i127	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
te128	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01	1.54E+01
xe128	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03	2.31E-03
i129	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01	3.30E+01
xe129	3.61E-03	3.61E-03	3.61E-03	3.62E-03	3.62E-03	3.62E-03	3.62E-03
te130	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01	7.56E+01
xe130	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02	4.97E-02
xe131	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
xe132	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02	1.90E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 68
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
cs133	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02	2.91E+02
xe134	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02	3.43E+02
cs134	9.42E-04	7.12E-04	5.38E-04	4.07E-04	3.07E-04	2.32E-04	1.76E-04
ba134	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01	7.97E-01
cs135	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02	2.90E+02
ba135	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01	2.19E-01
xe136	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02	2.81E+02
ba136	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01	5.29E-01
cs137	2.44E+00	2.40E+00	2.35E+00	2.31E+00	2.26E+00	2.22E+00	2.18E+00
ba137	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02	2.80E+02
ba138	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02	3.00E+02
la138	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03	1.56E-03
la139	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
ce140	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
pr141	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02	2.66E+02
ce142	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
nd142	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01	1.41E-01
nd143	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
ce144	5.66E-02	2.70E-02	1.29E-02	6.14E-03	2.93E-03	1.40E-03	6.66E-04
nd144	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02	2.57E+02
nd145	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
nd146	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02	1.43E+02
sm146	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05	6.38E-05
pm147	8.19E-02	6.65E-02	5.33E-02	4.28E-02	3.43E-02	2.75E-02	2.21E-02
sm147	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02	1.08E+02
nd148	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01	8.14E+01
sm148	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01	6.52E-01
sm149	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00	7.89E+00
nd150	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01	3.33E+01
sm150	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01	4.54E+01
sm151	5.80E-01	5.76E-01	5.72E-01	5.69E-01	5.65E-01	5.62E-01	5.58E-01
eu151	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01	1.65E+01
sm152	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01	1.69E+01
eu152	2.19E-02	2.10E-02	2.01E-02	1.93E-02	1.84E-02	1.77E-02	1.69E-02
gd152	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00	1.99E+00
eu153	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
sm154	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00	4.24E+00
eu154	7.29E-04	6.82E-04	6.37E-04	5.96E-04	5.57E-04	5.21E-04	4.87E-04
gd154	1.44E-01	1.44E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01	1.45E-01
eu155	2.96E-03	2.62E-03	2.31E-03	2.05E-03	1.81E-03	1.60E-03	1.41E-03

gd155	6.99E-01	6.99E-01	7.00E-01	7.00E-01	7.00E-01	7.00E-01	7.00E-01
gd156	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
gd157	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02	5.42E-02
gd158	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01	6.67E-01
tb159	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02	9.66E-02
gd160	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02	3.72E-02
dy160	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04	1.48E-04
dy161	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02	1.43E-02
dy162	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03	6.06E-03
dy163	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03	2.28E-03
dy164	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04	7.78E-04
ho165	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04	3.77E-04

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 69
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
er166	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05
total	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03	7.57E+03

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 70
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.77E-01	3.59E-01	3.43E-01	3.27E-01	3.12E-01	2.98E-01	2.84E-01
be 10	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07	6.58E-07
c 14	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05	1.99E-05
se 79	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02	1.55E-02
kr 85	8.54E+00	8.10E+00	7.67E+00	7.27E+00	6.89E+00	6.53E+00	6.18E+00
rb 87	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06	6.02E-06
sr 90	1.89E+02	1.85E+02	1.81E+02	1.77E+02	1.74E+02	1.70E+02	1.67E+02
y 90	1.89E+02	1.85E+02	1.81E+02	1.77E+02	1.74E+02	1.70E+02	1.67E+02
y 91	1.91E+02	5.24E+00	1.42E-01	3.86E-03	1.05E-04	2.85E-06	7.74E-08
zr 93	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01
nb 93m	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01	3.17E-01
nb 94	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05	1.08E-05
zr 95	2.14E+02	7.95E+00	2.94E-01	1.09E-02	4.04E-04	1.50E-05	5.54E-07
nb 95	2.14E+02	1.69E+01	6.47E-01	2.40E-02	8.89E-04	3.29E-05	1.22E-06
tc 99	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00	3.35E+00
rh102	1.18E-05	9.67E-06	7.92E-06	6.49E-06	5.32E-06	4.36E-06	3.57E-06
ru106	2.37E+01	1.35E+01	7.63E+00	4.32E+00	2.45E+00	1.39E+00	7.87E-01
rh106	2.37E+01	1.35E+01	7.63E+00	4.32E+00	2.45E+00	1.39E+00	7.87E-01
pd107	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03	5.05E-03
ag110m	2.47E-03	1.06E-03	4.57E-04	1.96E-04	8.43E-05	3.62E-05	1.56E-05
cd113m	1.13E-02	1.09E-02	1.04E-02	1.00E-02	9.62E-03	9.23E-03	8.86E-03
sn119m	1.77E-03	8.62E-04	4.19E-04	2.04E-04	9.94E-05	4.84E-05	2.36E-05
sn121	5.20E-01	3.00E-03	2.97E-03	2.94E-03	2.91E-03	2.88E-03	2.85E-03
sn121m	3.91E-03	3.87E-03	3.83E-03	3.79E-03	3.75E-03	3.71E-03	3.67E-03
sn123	6.09E-02	1.19E-02	2.32E-03	4.53E-04	8.85E-05	1.73E-05	3.38E-06
sb125	1.18E+00	9.60E-01	7.77E-01	6.29E-01	5.09E-01	4.12E-01	3.33E-01
te125m	2.72E-01	2.34E-01	1.90E-01	1.54E-01	1.24E-01	1.01E-01	8.14E-02
sn126	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02
sb126	1.53E-02	7.96E-03	7.96E-03	7.96E-03	7.96E-03	7.96E-03	7.96E-03
sb126m	6.70E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02
te127	4.92E+00	1.27E-01	1.83E-02	2.65E-03	3.82E-04	5.51E-05	7.96E-06
te127m	8.66E-01	1.30E-01	1.87E-02	2.70E-03	3.90E-04	5.63E-05	8.12E-06
i129	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03	5.83E-03
cs134	1.22E+00	9.22E-01	6.97E-01	5.26E-01	3.98E-01	3.01E-01	2.27E-01

cs135	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01	3.34E-01
cs137	2.13E+02	2.09E+02	2.05E+02	2.01E+02	1.97E+02	1.93E+02	1.90E+02
ba137m	2.01E+02	1.97E+02	1.93E+02	1.90E+02	1.86E+02	1.82E+02	1.79E+02
ce142	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06	6.49E-06
ce144	1.80E+02	8.59E+01	4.10E+01	1.95E+01	9.32E+00	4.45E+00	2.12E+00
pr144	1.80E+02	8.59E+01	4.10E+01	1.95E+01	9.32E+00	4.45E+00	2.12E+00
pr144m	2.53E+00	1.20E+00	5.74E-01	2.74E-01	1.31E-01	6.23E-02	2.97E-02
pm147	7.59E+01	6.16E+01	4.95E+01	3.97E+01	3.18E+01	2.55E+01	2.05E+01
sm147	2.47E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
eu150	1.11E-06	1.09E-06	1.07E-06	1.05E-06	1.04E-06	1.02E-06	1.00E-06
sm151	1.53E+01	1.52E+01	1.51E+01	1.50E+01	1.49E+01	1.48E+01	1.47E+01
eu152	3.87E+00	3.71E+00	3.55E+00	3.40E+00	3.25E+00	3.12E+00	2.98E+00
gd153	1.77E-02	7.38E-03	3.08E-03	1.29E-03	5.37E-04	2.24E-04	9.36E-05
eu154	1.97E-01	1.84E-01	1.72E-01	1.61E-01	1.51E-01	1.41E-01	1.32E-01
eu155	1.46E+00	1.29E+00	1.14E+00	1.01E+00	8.92E-01	7.88E-01	6.97E-01
ho166m	5.32E-07	5.32E-07	5.32E-07	5.32E-07	5.31E-07	5.31E-07	5.31E-07
total	2.06E+04	1.11E+03	9.42E+02	8.66E+02	8.18E+02	7.84E+02	7.58E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 71
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.27E-05	1.21E-05	1.16E-05	1.10E-05	1.05E-05	1.01E-05	9.59E-06
c	5.84E-09	5.84E-09	5.84E-09	5.84E-09	5.84E-09	5.84E-09	5.84E-09
se	3.18E+00	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06	4.87E-06
kr	1.24E+01	1.21E-02	1.15E-02	1.09E-02	1.03E-02	9.79E-03	9.27E-03
sr	1.96E+01	2.23E-01	2.10E-01	2.06E-01	2.02E-01	1.98E-01	1.94E-01
y	2.76E+01	1.04E+00	1.00E+00	9.82E-01	9.62E-01	9.42E-01	9.23E-01
zr	1.19E+01	4.01E-02	1.52E-03	9.06E-05	3.77E-05	3.57E-05	3.57E-05
nb	2.16E+01	8.11E-02	3.16E-03	1.70E-04	5.88E-05	5.47E-05	5.45E-05
tc	7.19E+00	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03	1.68E-03
ru	9.24E-01	2.56E-03	4.62E-04	2.57E-04	1.46E-04	8.26E-05	4.68E-05
rh	6.43E-01	1.29E-01	7.31E-02	4.14E-02	2.35E-02	1.33E-02	7.55E-03
pd	4.86E-02	2.78E-07	2.78E-07	2.78E-07	2.78E-07	2.78E-07	2.78E-07
ag	8.74E-02	1.78E-05	7.66E-06	3.29E-06	1.42E-06	6.09E-07	2.62E-07
cd	7.30E-02	1.25E-05	1.14E-05	1.09E-05	1.05E-05	1.00E-05	9.64E-06
sn	1.87E+00	1.29E-04	9.90E-05	9.31E-05	9.18E-05	9.16E-05	9.15E-05
sb	7.48E+00	3.92E-03	3.34E-03	2.87E-03	2.49E-03	2.19E-03	1.94E-03
te	9.16E+00	4.78E-04	1.95E-04	1.34E-04	1.05E-04	8.48E-05	6.85E-05
i	2.06E+01	2.73E-06	2.73E-06	2.73E-06	2.73E-06	2.73E-06	2.73E-06
cs	1.80E+01	2.41E-01	2.35E-01	2.29E-01	2.23E-01	2.18E-01	2.13E-01
ba	1.18E+01	7.74E-01	7.59E-01	7.45E-01	7.31E-01	7.17E-01	7.03E-01
ce	4.34E+00	5.67E-02	2.68E-02	1.28E-02	6.10E-03	2.91E-03	1.39E-03
pr	6.18E+00	6.31E-01	3.01E-01	1.44E-01	6.85E-02	3.27E-02	1.56E-02
pm	3.61E-01	2.26E-02	1.82E-02	1.46E-02	1.17E-02	9.38E-03	7.53E-03
sm	2.66E-02	1.78E-03	1.77E-03	1.76E-03	1.75E-03	1.74E-03	1.73E-03
eu	5.48E-02	3.10E-02	2.95E-02	2.82E-02	2.69E-02	2.57E-02	2.45E-02
gd	3.26E-04	6.49E-06	2.71E-06	1.13E-06	4.72E-07	1.97E-07	8.23E-08
ho	2.30E-07	5.59E-09	5.59E-09	5.59E-09	5.59E-09	5.58E-09	5.58E-09
totals	2.58E+02	3.29E+00	2.68E+00	2.42E+00	2.27E+00	2.17E+00	2.10E+00

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 72
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec
0
nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.13E-04	1.07E-04	1.01E-04	9.61E-05	9.10E-05	8.63E-05	8.17E-05
y 90	1.90E-06	1.86E-06	1.82E-06	1.79E-06	1.75E-06	1.71E-06	1.68E-06
nb 93m	3.53E-06	3.53E-06	3.53E-06	3.53E-06	3.53E-06	3.53E-06	3.53E-06

nb 94	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07
zr 95	9.31E-01	3.45E-02	1.28E-03	4.73E-05	1.75E-06	6.49E-08	2.40E-09
nb 95	9.71E-01	7.65E-02	2.93E-03	1.09E-04	4.03E-06	1.49E-07	5.53E-09
tc 99	1.23E-08	1.23E-08	1.23E-08	1.23E-08	1.23E-08	1.23E-08	1.23E-08
rh102	1.51E-07	1.24E-07	1.01E-07	8.31E-08	6.81E-08	5.58E-08	4.57E-08
rh106	2.90E-02	1.64E-02	9.31E-03	5.28E-03	2.99E-03	1.70E-03	9.61E-04
ag110m	4.02E-05	1.73E-05	7.42E-06	3.19E-06	1.37E-06	5.88E-07	2.53E-07
sn121m	1.16E-07	1.15E-07	1.13E-07	1.12E-07	1.11E-07	1.10E-07	1.09E-07
sb125	3.04E-03	2.47E-03	2.00E-03	1.62E-03	1.31E-03	1.06E-03	8.58E-04
te125m	5.74E-05	4.94E-05	4.00E-05	3.24E-05	2.62E-05	2.12E-05	1.72E-05
sn126	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05
sb126	2.50E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
sb126m	6.17E-04	5.24E-04	5.24E-04	5.24E-04	5.24E-04	5.24E-04	5.24E-04
i129	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07
cs134	1.12E-02	8.50E-03	6.42E-03	4.85E-03	3.67E-03	2.77E-03	2.09E-03
ba137m	7.13E-01	7.00E-01	6.86E-01	6.73E-01	6.60E-01	6.48E-01	6.35E-01
ce144	2.03E-02	9.68E-03	4.62E-03	2.20E-03	1.05E-03	5.01E-04	2.39E-04
pr144	3.09E-02	1.47E-02	7.02E-03	3.35E-03	1.60E-03	7.62E-04	3.63E-04
pr144m	1.87E-04	8.92E-05	4.25E-05	2.03E-05	9.67E-06	4.61E-06	2.20E-06
pm147	1.97E-06	1.60E-06	1.28E-06	1.03E-06	8.27E-07	6.63E-07	5.32E-07
eu150	1.01E-08	9.89E-09	9.74E-09	9.58E-09	9.43E-09	9.28E-09	9.13E-09
sm151	1.28E-06	1.28E-06	1.27E-06	1.26E-06	1.25E-06	1.24E-06	1.24E-06
eu152	2.67E-02	2.55E-02	2.44E-02	2.34E-02	2.24E-02	2.15E-02	2.06E-02
gd153	1.13E-05	4.71E-06	1.97E-06	8.21E-07	3.43E-07	1.43E-07	5.97E-08
eu154	1.46E-03	1.37E-03	1.28E-03	1.20E-03	1.12E-03	1.05E-03	9.79E-04
eu155	5.60E-04	4.95E-04	4.38E-04	3.87E-04	3.42E-04	3.02E-04	2.67E-04
ho166m	5.14E-09	5.13E-09	5.13E-09	5.13E-09	5.13E-09	5.12E-09	5.12E-09
total	1.27E+02	8.93E-01	7.47E-01	7.17E-01	6.96E-01	6.78E-01	6.63E-01

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 73
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.77E+08n/cm**2-sec

0 element gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.43E+00	1.07E-04	1.01E-04	9.61E-05	9.10E-05	8.63E-05	8.17E-05
y	9.58E+00	1.15E-04	4.88E-06	1.87E-06	1.75E-06	1.71E-06	1.68E-06
zr	4.75E+00	3.45E-02	1.28E-03	4.73E-05	1.75E-06	6.49E-08	2.40E-09
nb	9.17E+00	7.65E-02	2.94E-03	1.12E-04	7.66E-06	3.78E-06	3.63E-06
tc	3.63E+00	1.25E-08	1.25E-08	1.25E-08	1.25E-08	1.25E-08	1.25E-08
rh	1.92E-01	1.64E-02	9.31E-03	5.28E-03	2.99E-03	1.70E-03	9.61E-04
ag	3.47E-02	1.73E-05	7.42E-06	3.19E-06	1.37E-06	5.89E-07	2.54E-07
sn	1.22E+00	4.47E-05	4.42E-05	4.41E-05	4.41E-05	4.41E-05	4.41E-05
sb	5.14E+00	3.12E-03	2.65E-03	2.27E-03	1.96E-03	1.71E-03	1.51E-03
te	5.49E+00	6.59E-05	4.18E-05	3.27E-05	2.63E-05	2.12E-05	1.72E-05
i	1.35E+01	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07	8.51E-07
cs	8.62E+00	8.50E-03	6.42E-03	4.85E-03	3.67E-03	2.77E-03	2.09E-03
ba	5.32E+00	7.00E-01	6.86E-01	6.73E-01	6.60E-01	6.48E-01	6.35E-01
ce	2.05E+00	9.81E-03	4.62E-03	2.20E-03	1.05E-03	5.01E-04	2.39E-04
pr	1.79E+00	1.48E-02	7.07E-03	3.37E-03	1.61E-03	7.67E-04	3.66E-04
pm	9.45E-02	1.67E-06	1.28E-06	1.03E-06	8.27E-07	6.64E-07	5.32E-07
sm	5.77E-03	1.28E-06	1.27E-06	1.26E-06	1.25E-06	1.24E-06	1.24E-06
eu	4.01E-02	2.74E-02	2.62E-02	2.50E-02	2.39E-02	2.28E-02	2.18E-02
gd	1.01E-04	4.71E-06	1.97E-06	8.21E-07	3.43E-07	1.43E-07	5.97E-08
ho	1.43E-08	5.13E-09	5.13E-09	5.13E-09	5.13E-09	5.12E-09	5.12E-09
totals	1.27E+02	8.93E-01	7.47E-01	7.17E-01	6.96E-01	6.78E-01	6.63E-01

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photon spectrum as a function of time for light elements, cladding and structural materials

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 7305.mwd, flux= 2.77E+08 n**2-sec

spectrum of photon release rates, photons/sec
basis = single reactor assembly

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
1.00E-02	5.17E+11	5.67E+04	4.54E+04	3.64E+04	2.91E+04	2.33E+04	1.87E+04
3.00E-02	1.70E+11	1.80E+04	1.44E+04	1.16E+04	9.27E+03	7.42E+03	5.95E+03
5.50E-02	1.18E+11	1.22E+04	9.76E+03	7.82E+03	6.26E+03	5.01E+03	4.02E+03
8.50E-02	6.92E+10	6.86E+03	5.49E+03	4.40E+03	3.52E+03	2.82E+03	2.26E+03
1.20E-01	4.92E+10	4.69E+03	3.75E+03	3.01E+03	2.41E+03	1.93E+03	1.54E+03
1.70E-01	5.15E+10	4.60E+03	3.69E+03	2.95E+03	2.37E+03	1.89E+03	1.52E+03
3.00E-01	5.90E+10	4.58E+03	3.67E+03	2.94E+03	2.35E+03	1.88E+03	1.51E+03
6.50E-01	2.90E+10	2.45E+05	1.96E+05	1.57E+05	1.26E+05	1.01E+05	8.07E+04
1.13E+00	4.99E+09	1.95E+05	1.56E+05	1.25E+05	1.00E+05	8.03E+04	6.43E+04
1.58E+00	9.07E+11	4.89E-01	3.91E-01	3.13E-01	2.51E-01	2.01E-01	1.61E-01
2.00E+00	1.80E+08	4.34E-02	3.48E-02	2.79E-02	2.23E-02	1.79E-02	1.43E-02
2.40E+00	3.64E+07	9.74E-03	7.80E-03	6.25E-03	5.00E-03	4.01E-03	3.21E-03
2.80E+00	2.14E+11	1.53E-04	1.22E-04	9.78E-05	7.83E-05	6.28E-05	5.03E-05
3.25E+00	1.38E+04	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.39E+08	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.83E+06	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	8.15E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.37E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	2.19E+12	5.47E+05	4.38E+05	3.51E+05	2.81E+05	2.25E+05	1.80E+05
mev/sec	2.11E+12	3.84E+05	3.07E+05	2.46E+05	1.97E+05	1.58E+05	1.26E+05

spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
1.00E-02	1.29E+06	1.42E-01	1.14E-01	9.09E-02	7.28E-02	5.83E-02	4.67E-02
3.00E-02	1.27E+06	1.35E-01	1.08E-01	8.68E-02	6.95E-02	5.57E-02	4.46E-02
5.50E-02	1.63E+06	1.68E-01	1.34E-01	1.07E-01	8.61E-02	6.89E-02	5.52E-02
8.50E-02	1.47E+06	1.46E-01	1.17E-01	9.35E-02	7.49E-02	6.00E-02	4.80E-02
1.20E-01	1.48E+06	1.41E-01	1.13E-01	9.02E-02	7.22E-02	5.79E-02	4.63E-02
1.70E-01	2.19E+06	1.96E-01	1.57E-01	1.25E-01	1.01E-01	8.05E-02	6.45E-02
3.00E-01	4.43E+06	3.44E-01	2.75E-01	2.20E-01	1.76E-01	1.41E-01	1.13E-01
6.50E-01	4.72E+06	3.98E+01	3.19E+01	2.55E+01	2.04E+01	1.64E+01	1.31E+01
1.13E+00	1.40E+06	5.49E+01	4.39E+01	3.52E+01	2.82E+01	2.26E+01	1.81E+01
1.58E+00	3.57E+08	1.92E-04	1.54E-04	1.23E-04	9.88E-05	7.92E-05	6.34E-05
2.00E+00	8.99E+04	2.17E-05	1.74E-05	1.39E-05	1.12E-05	8.94E-06	7.16E-06
2.40E+00	2.18E+04	5.84E-06	4.68E-06	3.75E-06	3.00E-06	2.40E-06	1.93E-06
2.80E+00	1.50E+08	1.07E-07	8.55E-08	6.85E-08	5.48E-08	4.39E-08	3.52E-08
3.25E+00	1.12E+01	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
3.75E+00	1.31E+05	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.25E+00	1.94E+03	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
4.75E+00	9.68E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.88E-14	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
total	5.27E+08	9.59E+01	7.68E+01	6.15E+01	4.93E+01	3.95E+01	3.16E+01
gamma watts	3.38E-01	6.15E-08	4.92E-08	3.94E-08	3.16E-08	2.53E-08	2.03E-08

photon spectrum as a function of time for fission products

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 7305.mwd, flux= 2.77E+08 n**2-sec

spectrum of photon release rates, photons/sec
basis = single reactor assembly

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				

1.00E-02	2.58E+14	8.27E+12	6.61E+12	5.80E+12	5.35E+12	5.07E+12	4.88E+12
3.00E-02	1.13E+14	3.63E+12	2.89E+12	2.52E+12	2.32E+12	2.19E+12	2.11E+12
5.50E-02	6.01E+13	1.84E+12	1.45E+12	1.26E+12	1.15E+12	1.09E+12	1.05E+12
8.50E-02	4.15E+13	1.07E+12	8.19E+11	6.96E+11	6.30E+11	5.91E+11	5.66E+11
1.20E-01	3.40E+13	1.11E+12	7.57E+11	5.86E+11	4.99E+11	4.51E+11	4.23E+11
1.70E-01	5.44E+13	6.84E+11	5.26E+11	4.50E+11	4.08E+11	3.84E+11	3.68E+11
3.00E-01	1.10E+14	7.96E+11	6.15E+11	5.25E+11	4.76E+11	4.47E+11	4.27E+11
6.50E-01	2.29E+14	8.41E+12	7.05E+12	6.78E+12	6.59E+12	6.43E+12	6.29E+12
1.13E+00	7.71E+13	1.24E+11	1.01E+11	8.81E+10	8.02E+10	7.48E+10	7.08E+10
1.58E+00	3.99E+13	4.76E+10	3.74E+10	3.17E+10	2.84E+10	2.62E+10	2.46E+10
2.00E+00	1.21E+13	2.91E+10	1.40E+10	6.82E+09	3.36E+09	1.69E+09	8.92E+08
2.40E+00	1.04E+13	7.82E+08	4.20E+08	2.27E+08	1.23E+08	6.72E+07	3.69E+07
2.80E+00	4.16E+12	1.09E+08	5.97E+07	3.29E+07	1.82E+07	1.01E+07	5.64E+06
3.25E+00	2.40E+12	1.50E+07	8.52E+06	4.83E+06	2.74E+06	1.55E+06	8.79E+05
3.75E+00	1.22E+12	6.63E+03	3.76E+03	2.13E+03	1.21E+03	6.84E+02	3.88E+02
4.25E+00	1.33E+12	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05
4.75E+00	3.90E+11	5.03E-06	5.03E-06	5.03E-06	5.03E-06	5.03E-06	5.03E-06
5.50E+00	2.91E+11	3.73E-06	3.73E-06	3.73E-06	3.73E-06	3.73E-06	3.73E-06
total	1.05E+15	2.60E+13	2.09E+13	1.87E+13	1.75E+13	1.68E+13	1.62E+13
mev/sec	4.40E+14	6.62E+12	5.45E+12	5.13E+12	4.94E+12	4.79E+12	4.67E+12

spectrum of energy release rates, mev/watt-sec
basis = single reactor assembly

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	6.45E+08	2.07E+07	1.65E+07	1.45E+07	1.34E+07	1.27E+07	1.22E+07
3.00E-02	8.48E+08	2.72E+07	2.17E+07	1.89E+07	1.74E+07	1.65E+07	1.58E+07
5.50E-02	8.26E+08	2.53E+07	1.99E+07	1.73E+07	1.59E+07	1.50E+07	1.44E+07
8.50E-02	8.82E+08	2.27E+07	1.74E+07	1.48E+07	1.34E+07	1.26E+07	1.20E+07
1.20E-01	1.02E+09	3.32E+07	2.27E+07	1.76E+07	1.50E+07	1.35E+07	1.27E+07
1.70E-01	2.31E+09	2.91E+07	2.23E+07	1.91E+07	1.74E+07	1.63E+07	1.56E+07
3.00E-01	8.25E+09	5.97E+07	4.61E+07	3.94E+07	3.57E+07	3.35E+07	3.20E+07
6.50E-01	3.72E+10	1.37E+09	1.15E+09	1.10E+09	1.07E+09	1.04E+09	1.02E+09
1.13E+00	2.17E+10	3.48E+07	2.84E+07	2.48E+07	2.26E+07	2.10E+07	1.99E+07
1.58E+00	1.57E+10	1.87E+07	1.47E+07	1.25E+07	1.12E+07	1.03E+07	9.70E+06
2.00E+00	6.04E+09	1.45E+07	7.01E+06	3.41E+06	1.68E+06	8.47E+05	4.46E+05
2.40E+00	6.23E+09	4.69E+05	2.52E+05	1.36E+05	7.38E+04	4.03E+04	2.21E+04
2.80E+00	2.91E+09	7.61E+04	4.18E+04	2.30E+04	1.28E+04	7.09E+03	3.95E+03
3.25E+00	1.95E+09	1.22E+04	6.92E+03	3.92E+03	2.22E+03	1.26E+03	7.15E+02
3.75E+00	1.14E+09	6.21E+00	3.52E+00	2.00E+00	1.13E+00	6.41E-01	3.63E-01
4.25E+00	1.42E+09	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08	1.06E-08
4.75E+00	4.63E+08	5.97E-09	5.97E-09	5.97E-09	5.97E-09	5.97E-09	5.97E-09
5.50E+00	4.01E+08	5.13E-09	5.13E-09	5.13E-09	5.13E-09	5.13E-09	5.13E-09
total	1.10E+11	1.65E+09	1.36E+09	1.28E+09	1.23E+09	1.20E+09	1.17E+09
gamma watts	7.05E+01	1.06E+00	8.74E-01	8.23E-01	7.91E-01	7.68E-01	7.48E-01

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principal photon sources in group 1, photons/sec
mean energy = .0100 mev. nuclides exceeding 1.0E-03 of total group release rate (5.07E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	4.51E+10	4.27E+10	4.05E+10	3.84E+10	3.63E+10	3.44E+10	3.26E+10
sr 90	7.68E+11	7.52E+11	7.37E+11	7.22E+11	7.08E+11	6.93E+11	6.79E+11
y 90	3.77E+12	3.70E+12	3.62E+12	3.55E+12	3.48E+12	3.41E+12	3.34E+12
tc 99	5.54E+09	5.54E+09	5.54E+09	5.54E+09	5.54E+09	5.54E+09	5.54E+09
rh106	7.06E+11	4.00E+11	2.27E+11	1.29E+11	7.29E+10	4.13E+10	2.34E+10
cs137	7.51E+11	7.36E+11	7.22E+11	7.09E+11	6.95E+11	6.82E+11	6.69E+11
ba137m	3.52E+10	3.45E+10	3.39E+10	3.32E+10	3.26E+10	3.20E+10	3.14E+10
ce144	3.47E+11	1.65E+11	7.89E+10	3.76E+10	1.79E+10	8.56E+09	4.08E+09
pr144	4.60E+12	2.19E+12	1.05E+12	4.99E+11	2.38E+11	1.13E+11	5.41E+10
pm147	8.82E+10	7.16E+10	5.75E+10	4.61E+10	3.70E+10	2.97E+10	2.38E+10

eu152	1.43E+10	1.36E+10	1.31E+10	1.25E+10	1.20E+10	1.15E+10	1.10E+10

0 principal photon sources in group 2, photons/sec

mean energy = .0300 mev. nuclides exceeding 1.0E-03 of total group release rate (2.19E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.31E+10	1.24E+10	1.18E+10	1.12E+10	1.06E+10	1.00E+10	9.51E+09
sr 90	2.17E+11	2.13E+11	2.08E+11	2.04E+11	2.00E+11	1.96E+11	1.92E+11
y 90	1.23E+12	1.20E+12	1.18E+12	1.16E+12	1.13E+12	1.11E+12	1.09E+12
rh106	2.36E+11	1.34E+11	7.58E+10	4.30E+10	2.44E+10	1.38E+10	7.82E+09
sb125	2.17E+10	1.76E+10	1.43E+10	1.15E+10	9.34E+09	7.56E+09	6.12E+09
te125m	1.16E+10	1.00E+10	8.12E+09	6.57E+09	5.32E+09	4.30E+09	3.48E+09
cs137	2.09E+11	2.05E+11	2.01E+11	1.97E+11	1.94E+11	1.90E+11	1.86E+11
ba137m	6.05E+11	5.93E+11	5.82E+11	5.71E+11	5.60E+11	5.49E+11	5.39E+11
ce144	8.06E+11	3.84E+11	1.83E+11	8.74E+10	4.17E+10	1.99E+10	9.48E+09
pr144	1.52E+12	7.25E+11	3.46E+11	1.65E+11	7.87E+10	3.75E+10	1.79E+10
pm147	1.94E+10	1.57E+10	1.26E+10	1.01E+10	8.14E+09	6.53E+09	5.24E+09
eu152	5.66E+10	5.42E+10	5.19E+10	4.97E+10	4.76E+10	4.55E+10	4.36E+10

0 principal photon sources in group 3, photons/sec

mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (1.09E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	8.06E+09	7.63E+09	7.23E+09	6.85E+09	6.49E+09	6.15E+09	5.83E+09
sr 90	1.28E+11	1.26E+11	1.23E+11	1.21E+11	1.18E+11	1.16E+11	1.13E+11
y 90	8.50E+11	8.33E+11	8.16E+11	7.99E+11	7.83E+11	7.67E+11	7.51E+11
rh106	1.67E+11	9.47E+10	5.37E+10	3.04E+10	1.72E+10	9.78E+09	5.54E+09
cs137	1.22E+11	1.19E+11	1.17E+11	1.15E+11	1.13E+11	1.11E+11	1.08E+11
ce144	1.17E+11	5.56E+10	2.65E+10	1.26E+10	6.03E+09	2.88E+09	1.37E+09
pr144	1.07E+12	5.09E+11	2.43E+11	1.16E+11	5.52E+10	2.63E+10	1.26E+10
pm147	8.15E+09	6.62E+09	5.31E+09	4.26E+09	3.42E+09	2.74E+09	2.20E+09
eu152	4.91E+10	4.71E+10	4.51E+10	4.32E+10	4.13E+10	3.96E+10	3.79E+10
eu154	1.66E+09	1.55E+09	1.45E+09	1.36E+09	1.27E+09	1.19E+09	1.11E+09
eu155	1.13E+10	9.96E+09	8.80E+09	7.78E+09	6.87E+09	6.08E+09	5.37E+09

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0 principal photon sources in group 4, photons/sec

mean energy = .0850 mev. nuclides exceeding 1.0E-03 of total group release rate (5.91E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	4.03E+09	3.82E+09	3.62E+09	3.43E+09	3.25E+09	3.08E+09	2.92E+09
sr 90	6.12E+10	5.99E+10	5.87E+10	5.75E+10	5.63E+10	5.52E+10	5.41E+10
y 90	4.92E+11	4.82E+11	4.72E+11	4.62E+11	4.53E+11	4.44E+11	4.35E+11
rh106	9.93E+10	5.63E+10	3.19E+10	1.81E+10	1.02E+10	5.81E+09	3.29E+09
sn126	1.00E+09	1.00E+09	1.00E+09	1.00E+09	1.00E+09	1.00E+09	1.00E+09
cs137	5.70E+10	5.59E+10	5.49E+10	5.38E+10	5.28E+10	5.18E+10	5.08E+10
ce144	1.65E+11	7.85E+10	3.74E+10	1.79E+10	8.51E+09	4.06E+09	1.94E+09
pr144	6.28E+11	3.00E+11	1.43E+11	6.82E+10	3.25E+10	1.55E+10	7.39E+09
pm147	2.32E+09	1.88E+09	1.51E+09	1.21E+09	9.73E+08	7.80E+08	6.26E+08
eu155	1.71E+10	1.51E+10	1.34E+10	1.18E+10	1.04E+10	9.23E+09	8.15E+09

0 principal photon sources in group 5, photons/sec

mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (4.51E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	2.43E+09	2.30E+09	2.18E+09	2.07E+09	1.96E+09	1.86E+09	1.76E+09
sr 90	3.48E+10	3.41E+10	3.34E+10	3.27E+10	3.21E+10	3.14E+10	3.08E+10
y 90	3.46E+11	3.39E+11	3.32E+11	3.25E+11	3.19E+11	3.12E+11	3.06E+11
rh106	7.17E+10	4.06E+10	2.30E+10	1.31E+10	7.40E+09	4.20E+09	2.38E+09
cs137	3.20E+10	3.13E+10	3.07E+10	3.02E+10	2.96E+10	2.90E+10	2.85E+10
ce144	8.07E+11	3.85E+11	1.84E+11	8.75E+10	4.17E+10	1.99E+10	9.50E+09
pr144	4.50E+11	2.14E+11	1.02E+11	4.88E+10	2.33E+10	1.11E+10	5.29E+09
eu152	4.14E+10	3.96E+10	3.79E+10	3.63E+10	3.48E+10	3.33E+10	3.19E+10
eu154	3.09E+09	2.89E+09	2.70E+09	2.53E+09	2.36E+09	2.21E+09	2.07E+09

eu155	9.76E+09	8.63E+09	7.63E+09	6.74E+09	5.96E+09	5.27E+09	4.66E+09

0 principal photon sources in group 6, photons/sec
mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (3.84E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.93E+09	1.83E+09	1.73E+09	1.64E+09	1.56E+09	1.48E+09	1.40E+09
sr 90	2.48E+10	2.43E+10	2.38E+10	2.33E+10	2.29E+10	2.24E+10	2.20E+10
y 90	3.57E+11	3.49E+11	3.42E+11	3.35E+11	3.29E+11	3.22E+11	3.15E+11
rh106	7.69E+10	4.36E+10	2.47E+10	1.40E+10	7.94E+09	4.50E+09	2.55E+09
sb125	3.27E+09	2.65E+09	2.15E+09	1.74E+09	1.41E+09	1.14E+09	9.21E+08
cs137	2.26E+10	2.21E+10	2.17E+10	2.13E+10	2.09E+10	2.05E+10	2.01E+10
pr144	4.75E+11	2.27E+11	1.08E+11	5.16E+10	2.46E+10	1.17E+10	5.60E+09

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0 principal photon sources in group 7, photons/sec
mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (4.47E+11) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.17E+09	1.10E+09	1.05E+09	9.92E+08	9.40E+08	8.91E+08	8.44E+08
sr 90	1.13E+10	1.10E+10	1.08E+10	1.06E+10	1.04E+10	1.02E+10	9.95E+09
y 90	3.96E+11	3.88E+11	3.80E+11	3.72E+11	3.65E+11	3.57E+11	3.50E+11
rh106	9.28E+10	5.26E+10	2.98E+10	1.69E+10	9.58E+09	5.43E+09	3.08E+09
sb126m	1.53E+09	1.30E+09	1.30E+09	1.30E+09	1.30E+09	1.30E+09	1.30E+09
cs137	1.14E+10	1.12E+10	1.10E+10	1.08E+10	1.06E+10	1.04E+10	1.02E+10
pr144	5.57E+11	2.65E+11	1.27E+11	6.04E+10	2.88E+10	1.37E+10	6.55E+09
eu152	5.74E+10	5.49E+10	5.26E+10	5.04E+10	4.82E+10	4.62E+10	4.42E+10

0 principal photon sources in group 8, photons/sec
mean energy = .6500 mev. nuclides exceeding 1.0E-03 of total group release rate (6.43E+12) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.67E+11	1.64E+11	1.61E+11	1.57E+11	1.54E+11	1.51E+11	1.48E+11
rh106	2.86E+11	1.62E+11	9.20E+10	5.22E+10	2.96E+10	1.68E+10	9.50E+09
sb125	2.66E+10	2.16E+10	1.74E+10	1.41E+10	1.14E+10	9.25E+09	7.48E+09
cs134	1.03E+11	7.77E+10	5.87E+10	4.44E+10	3.35E+10	2.54E+10	1.92E+10
ba137m	6.80E+12	6.67E+12	6.54E+12	6.42E+12	6.30E+12	6.18E+12	6.06E+12
pr144	3.80E+11	1.81E+11	8.64E+10	4.12E+10	1.97E+10	9.37E+09	4.47E+09
eu152	4.05E+10	3.88E+10	3.71E+10	3.56E+10	3.41E+10	3.26E+10	3.12E+10

0 principal photon sources in group 9, photons/sec
mean energy = 1.1250 mev. nuclides exceeding 1.0E-03 of total group release rate (7.48E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	2.18E+10	2.14E+10	2.10E+10	2.05E+10	2.01E+10	1.97E+10	1.93E+10
rh106	2.67E+10	1.51E+10	8.57E+09	4.86E+09	2.75E+09	1.56E+09	8.85E+08
cs134	1.26E+09	9.52E+08	7.19E+08	5.44E+08	4.11E+08	3.10E+08	2.35E+08
pr144	4.86E+10	2.32E+10	1.11E+10	5.27E+09	2.51E+09	1.20E+09	5.72E+08
eu152	6.01E+10	5.76E+10	5.51E+10	5.28E+10	5.06E+10	4.84E+10	4.64E+10
eu154	4.91E+09	4.59E+09	4.29E+09	4.01E+09	3.75E+09	3.51E+09	3.28E+09

0 principal photon sources in group 10, photons/sec
mean energy = 1.5750 mev. nuclides exceeding 1.0E-03 of total group release rate (2.62E+10) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	2.79E+09	2.73E+09	2.68E+09	2.62E+09	2.57E+09	2.52E+09	2.46E+09
rh106	5.03E+09	2.85E+09	1.62E+09	9.16E+08	5.19E+08	2.94E+08	1.67E+08
cs134	1.19E+09	8.99E+08	6.79E+08	5.13E+08	3.88E+08	2.93E+08	2.21E+08
pr144	3.02E+10	1.44E+10	6.88E+09	3.28E+09	1.56E+09	7.46E+08	3.56E+08
eu152	2.76E+10	2.65E+10	2.53E+10	2.43E+10	2.32E+10	2.22E+10	2.13E+10
eu154	1.77E+08	1.66E+08	1.55E+08	1.45E+08	1.36E+08	1.27E+08	1.19E+08

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0 principal photon sources in group 11, photons/sec
mean energy = 2.0000 mev. nuclides exceeding 1.0E-03 of total group release rate (1.69E+09) at 1521.9 d

nuclide	time after discharge

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.67E+08	1.63E+08	1.60E+08	1.57E+08	1.54E+08	1.50E+08	1.47E+08
rh106	1.63E+09	9.27E+08	5.25E+08	2.98E+08	1.69E+08	9.57E+07	5.42E+07
pr144	5.86E+10	2.80E+10	1.33E+10	6.36E+09	3.03E+09	1.45E+09	6.90E+08

0 principal photon sources in group 12, photons/sec
mean energy = 2.4000 mev. nuclides exceeding 1.0E-03 of total group release rate (6.72E+07) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	9.73E+04	9.53E+04	9.34E+04	9.15E+04	8.96E+04	8.78E+04	8.60E+04
rh106	9.14E+08	5.18E+08	2.94E+08	1.66E+08	9.43E+07	5.35E+07	3.03E+07
pr144	5.54E+08	2.64E+08	1.26E+08	6.01E+07	2.87E+07	1.37E+07	6.52E+06

0 principal photon sources in group 13, photons/sec
mean energy = 2.8000 mev. nuclides exceeding 1.0E-03 of total group release rate (1.01E+07) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
rh106	1.54E+08	8.74E+07	4.95E+07	2.81E+07	1.59E+07	9.02E+06	5.11E+06
pr144	4.46E+07	2.13E+07	1.02E+07	4.84E+06	2.31E+06	1.10E+06	5.25E+05

0 principal photon sources in group 14, photons/sec
mean energy = 3.2500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.55E+06) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
rh106	2.65E+07	1.50E+07	8.52E+06	4.83E+06	2.74E+06	1.55E+06	8.79E+05

0 principal photon sources in group 15, photons/sec
mean energy = 3.7500 mev. nuclides exceeding 1.0E-03 of total group release rate (6.84E+02) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
rh106	1.17E+04	6.63E+03	3.76E+03	2.13E+03	1.21E+03	6.84E+02	3.88E+02

0 principal photon sources in group 16, photons/sec
mean energy = 4.2500 mev. nuclides exceeding 1.0E-03 of total group release rate (1.00E-05) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ce142	7.25E-06	7.25E-06	7.25E-06	7.25E-06	7.25E-06	7.25E-06	7.25E-06
sm147	2.77E-06	2.77E-06	2.77E-06	2.77E-06	2.77E-06	2.77E-06	2.77E-06

1

0 principal photon sources in group 17, photons/sec
mean energy = 4.7500 mev. nuclides exceeding 1.0E-03 of total group release rate (5.03E-06) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ce142	3.64E-06	3.64E-06	3.64E-06	3.64E-06	3.64E-06	3.64E-06	3.64E-06
sm147	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06	1.39E-06

0 principal photon sources in group 18, photons/sec
mean energy = 5.5000 mev. nuclides exceeding 1.0E-03 of total group release rate (3.73E-06) at 1521.9 d

nuclide	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ce142	2.70E-06	2.70E-06	2.70E-06	2.70E-06	2.70E-06	2.70E-06	2.70E-06
sm147	1.03E-06	1.03E-06	1.03E-06	1.03E-06	1.03E-06	1.03E-06	1.03E-06

1

photon spectrum as a function of time for heavy metals and their daughters

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
power= .00 mw, burnup= 7305.mwd, flux= 2.77E+08 n**2-sec
0 actinide photon release rates, photons/sec
basis = single reactor assembly
0

emean	time after discharge						
(mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	1.34E+14	1.96E+12	1.95E+12	1.95E+12	1.95E+12	1.94E+12	1.94E+12
3.00E-02	8.45E+12	5.36E+10	5.36E+10	5.36E+10	5.36E+10	5.36E+10	5.36E+10
5.50E-02	1.10E+13	7.96E+10	7.96E+10	7.96E+10	7.96E+10	7.96E+10	7.96E+10
8.50E-02	5.25E+13	1.56E+11	1.56E+11	1.56E+11	1.56E+11	1.56E+11	1.56E+11

1.20E-01	5.42E+13	3.10E+10	3.10E+10	3.10E+10	3.10E+10	3.10E+10	3.10E+10
1.70E-01	1.72E+12	2.01E+10	2.01E+10	2.01E+10	2.01E+10	2.01E+10	2.01E+10
3.00E-01	2.87E+13	1.42E+11	1.42E+11	1.42E+11	1.42E+11	1.42E+11	1.42E+11
6.50E-01	1.46E+12	1.50E+10	1.50E+10	1.50E+10	1.50E+10	1.50E+10	1.50E+10
1.13E+00	1.83E+12	4.98E+09	4.98E+09	4.98E+09	4.98E+09	4.98E+09	4.98E+09
1.58E+00	4.78E+09	4.78E+09	4.78E+09	4.78E+09	4.78E+09	4.78E+09	4.78E+09
2.00E+00	1.01E+09	1.01E+09	1.01E+09	1.01E+09	1.01E+09	1.01E+09	1.01E+09
2.40E+00	5.78E+08	5.78E+08	5.78E+08	5.78E+08	5.78E+08	5.78E+08	5.78E+08
2.80E+00	9.41E+07	9.43E+07	9.40E+07	9.37E+07	9.33E+07	9.28E+07	9.23E+07
3.25E+00	4.63E+06	4.63E+06	4.63E+06	4.63E+06	4.63E+06	4.64E+06	4.64E+06
3.75E+00	1.24E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04	1.23E+04
4.25E+00	7.08E+03	7.08E+03	7.07E+03	7.07E+03	7.07E+03	7.06E+03	7.06E+03
4.75E+00	4.07E+03	4.06E+03	4.06E+03	4.06E+03	4.06E+03	4.05E+03	4.05E+03
5.50E+00	3.64E+03	3.63E+03	3.63E+03	3.63E+03	3.63E+03	3.63E+03	3.62E+03
total	2.94E+14	2.47E+12	2.46E+12	2.46E+12	2.45E+12	2.45E+12	2.45E+12
mev/sec	2.51E+13	1.15E+11	1.15E+11	1.15E+11	1.15E+11	1.15E+11	1.15E+11

actinide energy release rates, mev/watt-sec
basis = single reactor assembly

emean (mev)	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
			time after discharge				
1.00E-02	3.36E+08	4.89E+06	4.88E+06	4.88E+06	4.87E+06	4.86E+06	4.85E+06
3.00E-02	6.34E+07	4.02E+05	4.02E+05	4.02E+05	4.02E+05	4.02E+05	4.02E+05
5.50E-02	1.51E+08	1.09E+06	1.09E+06	1.09E+06	1.09E+06	1.09E+06	1.09E+06
8.50E-02	1.12E+09	3.31E+06	3.31E+06	3.31E+06	3.31E+06	3.31E+06	3.31E+06
1.20E-01	1.63E+09	9.29E+05	9.29E+05	9.29E+05	9.29E+05	9.29E+05	9.29E+05
1.70E-01	7.31E+07	8.56E+05	8.56E+05	8.56E+05	8.56E+05	8.56E+05	8.56E+05
3.00E-01	2.15E+09	1.06E+07	1.06E+07	1.06E+07	1.06E+07	1.06E+07	1.06E+07
6.50E-01	2.37E+08	2.43E+06	2.43E+06	2.43E+06	2.43E+06	2.43E+06	2.43E+06
1.13E+00	5.15E+08	1.40E+06	1.40E+06	1.40E+06	1.40E+06	1.40E+06	1.40E+06
1.58E+00	1.88E+06	1.88E+06	1.88E+06	1.88E+06	1.88E+06	1.88E+06	1.88E+06
2.00E+00	5.06E+05	5.06E+05	5.06E+05	5.06E+05	5.06E+05	5.07E+05	5.07E+05
2.40E+00	3.47E+05	3.47E+05	3.47E+05	3.47E+05	3.47E+05	3.47E+05	3.47E+05
2.80E+00	6.59E+04	6.60E+04	6.58E+04	6.56E+04	6.53E+04	6.50E+04	6.46E+04
3.25E+00	3.76E+03	3.76E+03	3.76E+03	3.76E+03	3.77E+03	3.77E+03	3.77E+03
3.75E+00	1.16E+01	1.16E+01	1.16E+01	1.16E+01	1.16E+01	1.16E+01	1.15E+01
4.25E+00	7.53E+00	7.52E+00	7.52E+00	7.51E+00	7.51E+00	7.50E+00	7.50E+00
4.75E+00	4.83E+00	4.82E+00	4.82E+00	4.82E+00	4.82E+00	4.81E+00	4.81E+00
5.50E+00	5.00E+00	5.00E+00	4.99E+00	4.99E+00	4.99E+00	4.99E+00	4.98E+00
total	6.27E+09	2.88E+07	2.87E+07	2.87E+07	2.87E+07	2.87E+07	2.87E+07
gamma watts	4.02E+00	1.84E-02	1.84E-02	1.84E-02	1.84E-02	1.84E-02	1.84E-02

neutron source intensity as a function of time

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pb210	8.74E-07	8.74E-07	8.74E-07	8.74E-07	8.74E-07	8.74E-07	8.74E-07
bi210	2.23E-04	2.23E-04	2.23E-04	2.23E-04	2.23E-04	2.23E-04	2.23E-04
bi211	6.30E+01	6.31E+01	6.31E+01	6.31E+01	6.31E+01	6.31E+01	6.31E+01
bi212	2.70E+00	2.70E+00	2.69E+00	2.68E+00	2.67E+00	2.65E+00	2.63E+00
bi213	6.60E-01	6.60E-01	6.60E-01	6.60E-01	6.60E-01	6.61E-01	6.61E-01
bi214	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01
po210	2.75E+02	2.72E+02	2.71E+02	2.71E+02	2.71E+02	2.71E+02	2.71E+02
po211	2.49E-01	2.50E-01	2.50E-01	2.50E-01	2.50E-01	2.50E-01	2.50E-01
po212	1.38E+01	1.38E+01	1.38E+01	1.37E+01	1.36E+01	1.36E+01	1.35E+01
po213	8.71E+01	8.71E+01	8.71E+01	8.71E+01	8.72E+01	8.72E+01	8.72E+01

po214	9.01E+02	9.01E+02	9.02E+02	9.02E+02	9.02E+02	9.02E+02	9.03E+02
po215	8.91E+01	8.93E+01	8.93E+01	8.92E+01	8.92E+01	8.92E+01	8.92E+01
po216	1.08E+01	1.08E+01	1.08E+01	1.07E+01	1.06E+01	1.06E+01	1.05E+01
po218	4.29E+02	4.29E+02	4.29E+02	4.29E+02	4.29E+02	4.29E+02	4.29E+02
at217	5.64E+01	5.64E+01	5.65E+01	5.65E+01	5.65E+01	5.65E+01	5.65E+01
rn218	1.99E-10	7.84E-15	3.08E-19	1.21E-23	9.25E-28	.00E+00	.00E+00
rn219	7.08E+01	7.10E+01	7.10E+01	7.10E+01	7.10E+01	7.10E+01	7.10E+01
rn220	8.53E+00	8.55E+00	8.52E+00	8.48E+00	8.44E+00	8.38E+00	8.33E+00
rn222	3.13E+02	3.13E+02	3.13E+02	3.13E+02	3.13E+02	3.14E+02	3.14E+02
fr221	4.12E+01	4.12E+01	4.12E+01	4.12E+01	4.12E+01	4.12E+01	4.12E+01
fr223	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05
ra222	1.54E-10	6.06E-15	2.38E-19	9.37E-24	3.58E-28	.00E+00	.00E+00
ra223	4.10E+01	4.11E+01	4.11E+01	4.11E+01	4.11E+01	4.11E+01	4.11E+01
ra224	6.03E+00	6.04E+00	6.02E+00	6.00E+00	5.96E+00	5.93E+00	5.89E+00
ra226	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.83E+02	1.83E+02
ac225	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01
ac227	3.02E-01	3.02E-01	3.02E-01	3.02E-01	3.02E-01	3.02E-01	3.02E-01
ac228	1.17E-11	1.17E-11	1.17E-11	1.17E-11	1.17E-11	1.17E-11	1.17E-11
th226	1.39E-10	5.47E-15	2.15E-19	8.46E-24	3.23E-28	.00E+00	.00E+00
th227	4.52E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01	4.53E+01
th228	5.09E+00	5.08E+00	5.06E+00	5.04E+00	5.01E+00	4.98E+00	4.95E+00
th229	1.73E+01	1.73E+01	1.73E+01	1.73E+01	1.73E+01	1.73E+01	1.73E+01
th230	2.86E+02	2.86E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02	2.87E+02
th232	1.48E-04	1.48E-04	1.49E-04	1.49E-04	1.49E-04	1.49E-04	1.49E-04
pa231	2.41E+01	2.41E+01	2.41E+01	2.41E+01	2.41E+01	2.41E+01	2.41E+01
u230	1.10E-10	4.31E-15	1.69E-19	6.66E-24	2.54E-28	.00E+00	.00E+00
u231	7.27E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	4.73E+00	4.70E+00	4.66E+00	4.62E+00	4.58E+00	4.54E+00	4.51E+00
u233	7.81E+01	7.81E+01	7.81E+01	7.81E+01	7.82E+01	7.82E+01	7.82E+01
u234	7.12E+03	7.12E+03	7.12E+03	7.12E+03	7.12E+03	7.12E+03	7.12E+03
u235	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02
u236	1.08E+03	1.08E+03	1.08E+03	1.08E+03	1.08E+03	1.08E+03	1.08E+03
u238	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02
np235	2.44E-08	1.43E-08	8.42E-09	4.94E-09	2.90E-09	1.70E-09	1.00E-09
np237	3.32E+03	3.32E+03	3.32E+03	3.32E+03	3.32E+03	3.32E+03	3.32E+03
pu236	1.43E-01	1.18E-01	9.63E-02	7.90E-02	6.48E-02	5.31E-02	4.36E-02
pu237	4.07E-08	3.81E-10	3.57E-12	3.35E-14	3.13E-16	2.94E-18	2.75E-20
pu238	8.15E+04	8.10E+04	8.04E+04	7.99E+04	7.94E+04	7.89E+04	7.84E+04

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neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
pu239	2.19E+05	2.19E+05	2.19E+05	2.19E+05	2.19E+05	2.19E+05	2.19E+05
pu240	1.68E+04	1.68E+04	1.68E+04	1.68E+04	1.68E+04	1.68E+04	1.68E+04
pu241	6.12E-02	5.87E-02	5.64E-02	5.42E-02	5.21E-02	5.00E-02	4.80E-02
pu242	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02
pu244	1.15E-26	1.15E-26	1.15E-26	1.15E-26	1.15E-26	1.15E-26	1.16E-26
am239	3.32E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	5.23E-11	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	3.12E+03	3.12E+03	3.12E+03	3.12E+03	3.12E+03	3.12E+03	3.12E+03
am242m	1.67E-02	1.66E-02	1.65E-02	1.65E-02	1.64E-02	1.63E-02	1.63E-02
am243	5.07E-03	5.07E-03	5.07E-03	5.07E-03	5.07E-03	5.07E-03	5.07E-03
cm241	4.65E-13	7.49E-16	1.20E-18	1.94E-21	3.12E-24	5.02E-27	8.19E-30
cm242	3.46E+01	1.32E+01	7.35E+00	5.72E+00	5.26E+00	5.11E+00	5.06E+00
cm243	3.61E-10	3.54E-10	3.46E-10	3.40E-10	3.33E-10	3.26E-10	3.19E-10

	cm244	3.47E-04	3.36E-04	3.25E-04	3.15E-04	3.05E-04	2.96E-04	2.86E-04
	cm245	6.07E-10	6.06E-10	6.06E-10	6.06E-10	6.06E-10	6.06E-10	6.06E-10
	cm246	4.93E-12	4.92E-12	4.92E-12	4.92E-12	4.92E-12	4.92E-12	4.92E-12
	cm247	8.85E-20	8.85E-20	8.85E-20	8.85E-20	8.85E-20	8.85E-20	8.85E-20
	cm248	3.42E-21	3.42E-21	3.42E-21	3.42E-21	3.42E-21	3.42E-21	3.42E-21
	bk249	5.86E-27	3.03E-27	1.57E-27	8.11E-28	4.19E-28	2.17E-28	1.12E-28
	cf249	3.06E-22	3.06E-22	3.06E-22	3.06E-22	3.05E-22	3.05E-22	3.05E-22
	cf250	1.14E-24	1.09E-24	1.04E-24	9.95E-25	9.52E-25	9.11E-25	8.71E-25
	cf251	1.95E-28	1.95E-28	1.95E-28	1.95E-28	1.95E-28	1.95E-28	1.95E-28
0	total	3.36E+05	3.35E+05	3.35E+05	3.34E+05	3.34E+05	3.33E+05	3.33E+05

1

neutron source intensity as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron source, neutrons/sec/basis
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
th230	7.35E-03	7.35E-03	7.35E-03	7.36E-03	7.36E-03	7.36E-03	7.36E-03
pa231	3.02E-03	3.02E-03	3.02E-03	3.02E-03	3.02E-03	3.02E-03	3.02E-03
u232	2.91E-04	2.88E-04	2.86E-04	2.84E-04	2.81E-04	2.79E-04	2.77E-04
u234	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01	1.53E+01
u235	1.60E+00	1.60E+00	1.60E+00	1.60E+00	1.60E+00	1.60E+00	1.60E+00
u236	1.62E+02	1.62E+02	1.62E+02	1.62E+02	1.62E+02	1.62E+02	1.62E+02
u237	1.26E-09	2.15E-15	2.07E-15	1.98E-15	1.91E-15	1.83E-15	1.76E-15
u238	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05	1.17E+05
u239	9.65E-10	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np236	3.67E-08	3.67E-08	3.67E-08	3.67E-08	3.67E-08	3.67E-08	3.67E-08
np238	1.98E-08	4.87E-15	4.85E-15	4.83E-15	4.81E-15	4.79E-15	4.77E-15
np239	1.97E-05	5.25E-14	5.25E-14	5.25E-14	5.25E-14	5.25E-14	5.25E-14
pu236	9.69E-03	7.95E-03	6.52E-03	5.35E-03	4.38E-03	3.60E-03	2.95E-03
pu238	1.50E+04	1.50E+04	1.49E+04	1.48E+04	1.47E+04	1.46E+04	1.45E+04
pu239	1.17E+02	1.17E+02	1.17E+02	1.17E+02	1.17E+02	1.17E+02	1.17E+02
pu240	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05	1.12E+05
pu241	2.20E-03	2.11E-03	2.03E-03	1.95E-03	1.87E-03	1.80E-03	1.73E-03
pu242	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.02E+00	9.02E+00
pu243	7.32E-13	3.82E-30	3.82E-30	3.82E-30	3.82E-30	3.82E-30	3.82E-30
pu244	2.74E-21	2.75E-21	2.75E-21	2.75E-21	2.76E-21	2.76E-21	2.77E-21
am241	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00	1.20E+00
am242m	7.92E-02	7.89E-02	7.86E-02	7.83E-02	7.79E-02	7.76E-02	7.73E-02
am242	5.76E-04	8.57E-05	8.53E-05	8.50E-05	8.46E-05	8.43E-05	8.39E-05
am243	2.33E-05	2.33E-05	2.33E-05	2.33E-05	2.33E-05	2.33E-05	2.33E-05
am244	4.70E-13	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	1.73E+02	6.62E+01	3.67E+01	2.86E+01	2.62E+01	2.55E+01	2.53E+01
cm243	7.84E-12	7.68E-12	7.52E-12	7.37E-12	7.23E-12	7.08E-12	6.94E-12
cm244	4.52E-02	4.38E-02	4.24E-02	4.11E-02	3.98E-02	3.86E-02	3.74E-02
cm245	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10	1.64E-10
cm246	1.78E-07	1.78E-07	1.78E-07	1.77E-07	1.77E-07	1.77E-07	1.77E-07
cm248	5.60E-14	5.60E-14	5.60E-14	5.60E-14	5.60E-14	5.60E-14	5.60E-14
cm250	6.19E-27	6.19E-27	6.19E-27	6.19E-27	6.19E-27	6.18E-27	6.18E-27
bk249	3.23E-23	1.67E-23	8.64E-24	4.47E-24	2.31E-24	1.20E-24	6.19E-25
cf249	1.86E-22	1.86E-22	1.86E-22	1.86E-22	1.86E-22	1.85E-22	1.85E-22
cf250	9.51E-20	9.10E-20	8.71E-20	8.33E-20	7.97E-20	7.63E-20	7.30E-20
0 total	2.45E+05	2.44E+05	2.44E+05	2.44E+05	2.44E+05	2.44E+05	2.44E+05
0 total	5.81E+05	5.80E+05	5.79E+05	5.78E+05	5.78E+05	5.77E+05	5.77E+05

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alpha-n neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
alpha-n neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
2	3.00E+00 - 6.43E+00	6.507E+04	6.494E+04	6.483E+04	6.473E+04	6.462E+04	6.452E+04	6.442E+04
3	1.85E+00 - 3.00E+00	1.842E+05	1.839E+05	1.836E+05	1.833E+05	1.830E+05	1.828E+05	1.825E+05
4	1.40E+00 - 1.85E+00	4.947E+04	4.940E+04	4.932E+04	4.924E+04	4.916E+04	4.909E+04	4.901E+04
5	9.00E-01 - 1.40E+00	2.783E+04	2.778E+04	2.774E+04	2.770E+04	2.765E+04	2.761E+04	2.757E+04
6	4.00E-01 - 9.00E-01	8.082E+03	8.071E+03	8.058E+03	8.045E+03	8.033E+03	8.020E+03	8.007E+03
7	1.00E-01 - 4.00E-01	1.263E+03	1.261E+03	1.259E+03	1.257E+03	1.255E+03	1.253E+03	1.251E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		3.359E+05	3.354E+05	3.348E+05	3.343E+05	3.338E+05	3.332E+05	3.327E+05

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spontaneous fission neutron source spectrum as a function of time

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
spontaneous fission neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	4.671E+03	4.667E+03	4.665E+03	4.662E+03	4.660E+03	4.658E+03	4.656E+03
2	3.00E+00 - 6.43E+00	5.120E+04	5.116E+04	5.113E+04	5.110E+04	5.108E+04	5.106E+04	5.104E+04
3	1.85E+00 - 3.00E+00	5.580E+04	5.575E+04	5.572E+04	5.569E+04	5.566E+04	5.564E+04	5.562E+04
4	1.40E+00 - 1.85E+00	3.162E+04	3.159E+04	3.157E+04	3.156E+04	3.154E+04	3.153E+04	3.152E+04
5	9.00E-01 - 1.40E+00	4.340E+04	4.336E+04	4.334E+04	4.332E+04	4.330E+04	4.328E+04	4.326E+04
6	4.00E-01 - 9.00E-01	4.836E+04	4.831E+04	4.829E+04	4.826E+04	4.824E+04	4.822E+04	4.820E+04
7	1.00E-01 - 4.00E-01	9.547E+03	9.539E+03	9.534E+03	9.529E+03	9.525E+03	9.521E+03	9.516E+03
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		2.446E+05	2.444E+05	2.442E+05	2.441E+05	2.440E+05	2.439E+05	2.438E+05

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total (alpha-n plus spon. fission) neutron source spectrum as a function of time
(using reaction spectra for uranium dioxide)

0 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
neutron spectra, neutrons/sec/basis
basis = single reactor assembly

	boundaries, mev	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1	6.43E+00 - 2.00E+01	4.671E+03	4.667E+03	4.665E+03	4.662E+03	4.660E+03	4.658E+03	4.656E+03
2	3.00E+00 - 6.43E+00	1.163E+05	1.161E+05	1.160E+05	1.158E+05	1.157E+05	1.156E+05	1.155E+05
3	1.85E+00 - 3.00E+00	2.400E+05	2.397E+05	2.393E+05	2.390E+05	2.387E+05	2.384E+05	2.381E+05
4	1.40E+00 - 1.85E+00	8.109E+04	8.099E+04	8.089E+04	8.080E+04	8.071E+04	8.062E+04	8.052E+04
5	9.00E-01 - 1.40E+00	7.122E+04	7.114E+04	7.108E+04	7.101E+04	7.095E+04	7.089E+04	7.082E+04
6	4.00E-01 - 9.00E-01	5.644E+04	5.639E+04	5.635E+04	5.631E+04	5.628E+04	5.624E+04	5.621E+04
7	1.00E-01 - 4.00E-01	1.081E+04	1.080E+04	1.079E+04	1.079E+04	1.078E+04	1.077E+04	1.077E+04
8	1.70E-02 - 1.00E-01	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
9	3.00E-03 - 1.70E-02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
10	5.50E-04 - 3.00E-03	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
11	1.00E-04 - 5.50E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
12	3.00E-05 - 1.00E-04	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
13	1.00E-05 - 3.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
14	3.05E-06 - 1.00E-05	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
15	1.77E-06 - 3.05E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
16	1.30E-06 - 1.77E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
17	1.13E-06 - 1.30E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
18	1.00E-06 - 1.13E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
19	8.00E-07 - 1.00E-06	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
20	4.00E-07 - 8.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
21	3.25E-07 - 4.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
22	2.25E-07 - 3.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
23	1.00E-07 - 2.25E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
24	5.00E-08 - 1.00E-07	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
25	3.00E-08 - 5.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
26	1.00E-08 - 3.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
27	1.00E-11 - 1.00E-08	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00
0		5.805E+05	5.798E+05	5.791E+05	5.784E+05	5.778E+05	5.772E+05	5.765E+05

1

1 * gamma sources determined *

0case applies the following photon data base
master photon library
in binary mode

0 the sources include photons of nuclides for...

light elements
actinides
fission products

1 gamma source spectrum for gamma lines (sas2)
0 1826.25 day time of the requested nuclides
0

energy interval in mev			photons / second	mev / second
1.0000E-02	to	5.0000E-02	4.5456E+12	1.3637E+11
5.0000E-02	to	1.0000E-01	1.3084E+12	9.8128E+10
1.0000E-01	to	2.0000E-01	8.0297E+11	1.2045E+11
2.0000E-01	to	3.0000E-01	2.5946E+11	6.4865E+10
3.0000E-01	to	4.0000E-01	2.9989E+11	1.0496E+11
4.0000E-01	to	6.0000E-01	1.4630E+11	7.3149E+10
6.0000E-01	to	8.0000E-01	5.7216E+12	4.0051E+12
8.0000E-01	to	1.0000E+00	5.1356E+10	4.6221E+10
1.0000E+00	to	1.3300E+00	5.0368E+10	5.8679E+10
1.3300E+00	to	1.6600E+00	2.7444E+10	4.1029E+10
1.6600E+00	to	2.0000E+00	3.5763E+09	6.5447E+09
2.0000E+00	to	2.5000E+00	1.8088E+09	4.0697E+09
2.5000E+00	to	3.0000E+00	1.0130E+08	2.7858E+08
3.0000E+00	to	4.0000E+00	5.1254E+06	1.7939E+07
4.0000E+00	to	5.0000E+00	1.0944E+04	4.9249E+04
5.0000E+00	to	6.5000E+00	4.3054E+03	2.4756E+04
6.5000E+00	to	8.0000E+00	8.2934E+02	6.0127E+03
8.0000E+00	to	1.0000E+01	1.7387E+02	1.5648E+03
totals			1.3219E+13	4.7599E+12

0
0 total energy from nuclides with spectrum data = 4.7599E+12
0 total energy from nuclides with no spectrum data = 1.0212E+06
1
0 .results on logical unit no. 71, position 2, for time step 6, subcase 7. (run position 1, case position 2)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2
0 .terminated logical unit no. 71 with zero flag record.
1 * normal termination of execution *

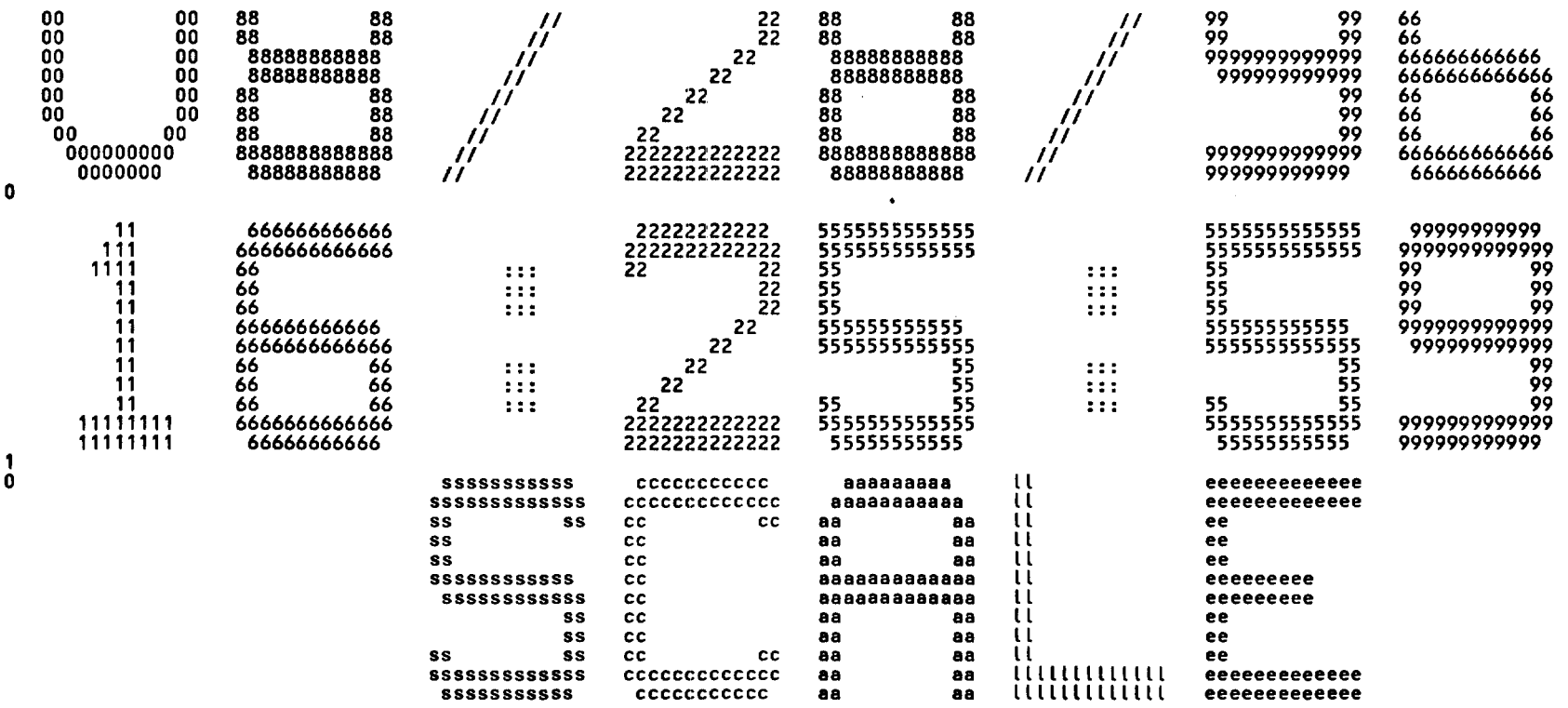
```
1          primary module access and input record ( scale driver - 95/03/29 - 09:06:37 )
-    module sas2h     will be called
       SAS2H: Far-Field Crit based on B&W 15x15, 3.00wt%, 20gwd/mtu 40% H2O/ 8% UO2
       44group     latticecell
       '
       '  mixtures of tuff infinite slabs:
       arbm-ftuff  2.6344 14 0 0 0 1001 1.055 8016 40.755 11023 0.570 12000 0.354
                                13027 4.434 14000 20.193 19000 1.370 20000 1.439
                                26000 0.494 92235 0.567 92234 0.007 92236 0.136
                                92238 28.593 93237 0.033 1 1.0 538   end
       kr-83      1 0 1-20 538 end
       kr-85      1 0 1-20 538 end
       sr-90      1 0 1-20 538 end
        y-89      1 0 1-20 538 end
       mo-95      1 0 1-20 538 end
       zr-93      1 0 1-20 538 end
       zr-94      1 0 1-20 538 end
       zr-95      1 0 1-20 538 end
       nb-94      1 0 1-20 538 end
       tc-99      1 0 1-20 538 end
       rh-103     1 0 1-20 538 end
       rh-105     1 0 1-20 538 end
       ru-101     1 0 1-20 538 end
       ru-106     1 0 1-20 538 end
       pd-105     1 0 1-20 538 end
       pd-108     1 0 1-20 538 end
       ag-109     1 0 1-20 538 end
       sb-124     1 0 1-20 538 end
       xe-131     1 0 1-20 538 end
       xe-132     1 0 1-20 538 end
       xe-135     1 0 1-20 538 end
       xe-136     1 0 1-20 538 end
       cs-134     1 0 1-20 538 end
       cs-135     1 0 1-20 538 end
       cs-137     1 0 1-20 538 end
       ba-136     1 0 1-20 538 end
       la-139     1 0 1-20 538 end
       pr-141     1 0 1-20 538 end
       pr-143     1 0 1-20 538 end
       ce-144     1 0 1-20 538 end
       nd-143     1 0 1-20 538 end
       nd-145     1 0 1-20 538 end
       pm-147     1 0 1-20 538 end
       pm-148     1 0 1-20 538 end
       nd-147     1 0 1-20 538 end
       sm-147     1 0 1-20 538 end
       sm-149     1 0 1-20 538 end
       sm-150     1 0 1-20 538 end
       sm-151     1 0 1-20 538 end
       sm-152     1 0 1-20 538 end
       gd-155     1 0 1-20 538 end
       eu-153     1 0 1-20 538 end
       eu-154     1 0 1-20 538 end
       eu-155     1 0 1-20 538 end
       arbm-tuff1  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                                13027 6.130 14000 27.919 19000 1.894 20000 1.989
                                26000 0.683 2 1.0 323.   end
       arbm-tuff2  1.90533 9 0 0 0 1001 2.326 8016 57.779 11023 0.789 12000 0.490
                                13027 6.130 14000 27.919 19000 1.894 20000 1.989
                                26000 0.683 3 1.0 323.   end
```

```
'
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
end comp
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'  fuel-pin-cell geometry:
'
symmslabcell  340.  280. 1 3 281. 2 end
' - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
'
'
'  assembly and cycle parameters:
'
npin/assm=1 fuelngth=280. ncycles=10 nlib/cyc=1 volfueltot=1.1494E7
printlevel=6 inplevel=0 end
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=0.
power=0.004 burn=3.6525e5 down=1.82625e3
   end
```

```
1   ooooooooooo    rrrrrrrrrrr    iiiiiiiiiii     ggggggggggg    eeeeeeeeeeee   nn          nn   sssssssssss
   ooooooooooooo   rrrrrrrrrrrr   iiiiiiiiiiii    gggggggggggg   eeeeeeeeeeee   nnn         nn  sssssssssssss
   oo          oo  rr          rr       ii        gg          gg  ee            nnnn        nn  ss          ss
   oo          oo  rr          rr       ii        gg              ee            nn nn       nn  ss
   oo          oo  rr          rr       ii        gg              ee            nn  nn      nn  ss
   oo          oo  rrrrrrrrrrrr         ii        gg    ggggggg   eeeeeeeee     nn   nn     nn  sssssssssss
   oo          oo  rrrrrrrrrrr          ii        gg    ggggggg   eeeeeeeee     nn    nn    nn   sssssssssss
   oo          oo  rr       rr          ii        gg          gg  ee            nn     nn   nn             ss
   oo          oo  rr        rr         ii        gg          gg  ee            nn      nn nn             ss
   oo          oo  rr         rr        ii        gg          gg  ee            nn       nnnn  ss         ss
   ooooooooooooo   rr          rr  iiiiiiiiiiii    ggggggggggggg  eeeeeeeeeeee   nn         nnn  sssssssssssss
    ooooooooooo    rr          rr  iiiiiiiiiiii     gggggggggg   eeeeeeeeeeee   nn          nn   sssssssssss
0
```

```
   ddddddddddd      aaaaaaaaa    vv          vv  iiiiiiiiiii     sssssssssss
   ddddddddddddd   aaaaaaaaaaa   vv          vv  iiiiiiiiiii    sssssssssssss
   dd          dd  aa         aa  vv          vv      ii        ss          ss
   dd          dd  aa         aa  vv          vv      ii        ss
   dd          dd  aa         aa  vv          vv      ii        ss
   dd          dd  aaaaaaaaaaaaa  vv          vv      ii        sssssssssss
   dd          dd  aaaaaaaaaaaaa   vv        vv       ii         sssssssssss
   dd          dd  aa         aa     vv    vv         ii                 ss
   dd          dd  aa         aa      vv  vv          ii                 ss
   dd          dd  aa         aa       vvvv           ii        ss       ss
   ddddddddddddd   aa         aa        vv    iiiiiiiiiii    sssssssssssss
   ddddddddddddd   aa         aa              iiiiiiiiiii     sssssssssss
0
```

```
     0000000       88888888888          //   22222222222    88888888888          //   99999999999    666666666666
    000000000     8888888888888        //   2222222222222  8888888888888        //   9999999999999  6666666666666
   00       00    88          88      //    22          22  88          88      //   99          99  66
```


0
1
0
program verification information
code system: scale version: 4.3
program: o0o004
creation date: 03/13/96
library: /usr1/ornl/Scale/bin

```
                    *****           test code:  origens                          *****
                    *****                                                        *****
                    *****             version:  3.0                              *****
                    *****                                                        *****
                    *****             jobname:  davis                            *****
                    *****                                                        *****
                    *****   date of execution:  08/28/96                         *****
                    *****                                                        *****
                    *****   time of execution:  16:25:59                         *****
                    *****                                                        *****
                    *****                                                        *****
                    *******************************************************************
                    *******************************************************************
                    *******************************************************************
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         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 33.

           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 "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:  ft33f001
0                8/28/1996    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                    7993    number of nonzero off-diagonal matrix elements
0         ***********************************************************************
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2          light elements          page    1
0                                        nuclide concentrations, grams
                                         basis =single reactor assembly
               initial  1E-18 d
     na 23   1.73E+05  1.73E+05
     al 27   1.35E+06  1.35E+06
   total     1.52E+06  1.52E+06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              actinides          page    2
0                                        nuclide concentrations, grams
                                         basis =single reactor assembly
               initial  1E-18 d
      u234   2.12E+03  2.12E+03
      u235   1.72E+05  1.72E+05
      u236   4.12E+04  4.12E+04
      u238   8.66E+06  8.66E+06
     np237   9.99E+03  9.99E+03
   total     8.88E+06  8.88E+06
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page    3
        power=     .00mw, burnup=    1461.mwd, flux= 2.99E+08n/cm**2-sec
0                                       basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial       91313. d      182625. d      273938. d      365250. d      365250. d
     productions   1.022622E+06   1.024453E+06   1.026237E+06   1.027977E+06   1.029673E+06   1.029673E+06
     absorptions   8.468353E+05   8.494152E+05   8.515743E+05   8.534369E+05   8.550839E+05   8.550839E+05
     k infinity    1.207580E+00   1.206068E+00   1.205106E+00   1.204514E+00   1.204177E+00   1.204177E+00
0                    initial       91313. d      182625. d      273938. d      365250. d      365250. d
     actinide
     absorptions   8.430638E+05   8.441381E+05   8.451858E+05   8.462119E+05   8.472176E+05   8.472176E+05
     non-actinide
     abs. fracs.   4.453659E-03   6.212592E-03   7.502079E-03   8.465767E-03   9.199560E-03   9.199560E-03
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2               fission products          page    4
0                                       fraction of total absorption rate
        power=     .00mw, burnup=    1461.mwd, flux= 2.99E+08n/cm**2-sec
0              initial  91313. d 182625. d 273938. d 365250. d 365250. d

     sm149       .00E+00  1.54E-03  2.63E-03  3.40E-03  3.95E-03  3.95E-03
     eu151       .00E+00  3.10E-05  8.18E-05  1.34E-04  1.85E-04  1.85E-04
     nd143       .00E+00  3.63E-05  7.24E-05  1.08E-04  1.44E-04  1.44E-04
     gd155       .00E+00  2.23E-05  4.25E-05  6.03E-05  7.59E-05  7.59E-05
```

rh103	.00E+00	1.73E-05	3.45E-05	5.18E-05	6.90E-05	6.90E-05
xe131	.00E+00	1.18E-05	2.36E-05	3.53E-05	4.70E-05	4.70E-05
cd113	.00E+00	1.45E-05	2.66E-05	3.68E-05	4.53E-05	4.53E-05
sm151	.00E+00	3.37E-05	3.84E-05	3.91E-05	3.93E-05	3.93E-05
cs133	.00E+00	9.18E-06	1.83E-05	2.74E-05	3.64E-05	3.64E-05
gd157	.00E+00	1.48E-05	2.39E-05	2.98E-05	3.37E-05	3.37E-05
sm147	.00E+00	6.72E-06	1.35E-05	2.02E-05	2.70E-05	2.70E-05
tc 99	.00E+00	6.78E-06	1.35E-05	2.02E-05	2.69E-05	2.69E-05
nd145	.00E+00	5.19E-06	1.03E-05	1.55E-05	2.06E-05	2.06E-05
mo 95	.00E+00	3.61E-06	7.21E-06	1.08E-05	1.43E-05	1.43E-05
sm152	.00E+00	2.83E-06	5.73E-06	8.68E-06	1.17E-05	1.17E-05
kr 83	.00E+00	2.21E-06	4.41E-06	6.59E-06	8.76E-06	8.76E-06
cs135	.00E+00	2.06E-06	4.11E-06	6.15E-06	8.18E-06	8.18E-06
ru101	.00E+00	1.62E-06	3.24E-06	4.85E-06	6.45E-06	6.45E-06
pr141	.00E+00	1.51E-06	3.02E-06	4.52E-06	6.01E-06	6.01E-06
eu153	.00E+00	1.39E-06	2.79E-06	4.18E-06	5.58E-06	5.58E-06
sm150	.00E+00	4.29E-07	1.54E-06	3.13E-06	5.07E-06	5.07E-06
la139	.00E+00	1.24E-06	2.46E-06	3.69E-06	4.91E-06	4.91E-06
xe135	.00E+00	2.27E-06	2.27E-06	2.26E-06	2.26E-06	2.26E-06
ba137	.00E+00	4.86E-07	1.07E-06	1.65E-06	2.23E-06	2.23E-06
pd105	.00E+00	5.36E-07	1.08E-06	1.62E-06	2.17E-06	2.17E-06
zr 93	.00E+00	5.13E-07	1.02E-06	1.53E-06	2.03E-06	2.03E-06
i129	.00E+00	3.82E-07	7.63E-07	1.14E-06	1.53E-06	1.53E-06
nd144	.00E+00	3.68E-07	7.35E-07	1.10E-06	1.47E-06	1.47E-06
mo 97	.00E+00	2.81E-07	5.61E-07	8.39E-07	1.12E-06	1.12E-06
ag109	.00E+00	2.17E-07	4.64E-07	7.40E-07	1.05E-06	1.05E-06
zr 91	.00E+00	1.32E-07	2.63E-07	3.94E-07	5.23E-07	5.23E-07
y 89	.00E+00	1.26E-07	2.52E-07	3.76E-07	5.00E-07	5.00E-07
ru102	.00E+00	1.14E-07	2.28E-07	3.41E-07	4.54E-07	4.54E-07
ce142	.00E+00	1.02E-07	2.04E-07	3.05E-07	4.06E-07	4.06E-07
nd148	.00E+00	9.94E-08	1.98E-07	2.97E-07	3.95E-07	3.95E-07
nd146	.00E+00	8.27E-08	1.65E-07	2.47E-07	3.28E-07	3.28E-07
pd108	.00E+00	7.18E-08	1.49E-07	2.32E-07	3.21E-07	3.21E-07
ba138	.00E+00	7.04E-08	1.40E-07	2.10E-07	2.80E-07	2.80E-07
in115	.00E+00	6.92E-08	1.38E-07	2.08E-07	2.77E-07	2.77E-07
pm147	.00E+00	2.75E-07	2.74E-07	2.73E-07	2.72E-07	2.72E-07
ce140	.00E+00	6.59E-08	1.32E-07	1.97E-07	2.62E-07	2.62E-07
xe132	.00E+00	6.04E-08	1.20E-07	1.80E-07	2.40E-07	2.40E-07
pd107	.00E+00	4.10E-08	8.43E-08	1.30E-07	1.78E-07	1.78E-07
mo 98	.00E+00	4.22E-08	8.43E-08	1.26E-07	1.68E-07	1.68E-07
eu155	.00E+00	1.61E-07	1.63E-07	1.64E-07	1.66E-07	1.66E-07
mo100	.00E+00	4.04E-08	8.05E-08	1.21E-07	1.60E-07	1.60E-07
xe134	.00E+00	3.91E-08	7.79E-08	1.17E-07	1.55E-07	1.55E-07
zr 92	.00E+00	3.18E-08	6.33E-08	9.46E-08	1.26E-07	1.26E-07
i127	.00E+00	2.63E-08	5.27E-08	7.92E-08	1.06E-07	1.06E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 5
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

zr 96	.00E+00	2.60E-08	5.19E-08	7.77E-08	1.03E-07	1.03E-07
ru104	.00E+00	2.48E-08	4.97E-08	7.47E-08	9.98E-08	9.98E-08
gd152	.00E+00	3.29E-09	1.91E-08	4.98E-08	9.52E-08	9.52E-08
nd150	.00E+00	2.22E-08	4.42E-08	6.63E-08	8.82E-08	8.82E-08
xe136	.00E+00	2.11E-08	4.22E-08	6.31E-08	8.40E-08	8.40E-08
br 81	.00E+00	1.61E-08	3.21E-08	4.80E-08	6.39E-08	6.39E-08
rb 85	.00E+00	1.55E-08	3.10E-08	4.65E-08	6.19E-08	6.19E-08
zr 94	.00E+00	1.37E-08	2.74E-08	4.10E-08	5.45E-08	5.45E-08
eu152	.00E+00	8.12E-09	2.14E-08	3.50E-08	4.84E-08	4.84E-08
zr 90	.00E+00	1.05E-08	2.29E-08	3.52E-08	4.75E-08	4.75E-08

cd111	.00E+00	1.05E-08	2.13E-08	3.26E-08	4.43E-08	4.43E-08
te130	.00E+00	9.57E-09	1.91E-08	2.86E-08	3.81E-08	3.81E-08
sm154	.00E+00	9.39E-09	1.88E-08	2.83E-08	3.78E-08	3.78E-08
rb 87	.00E+00	9.08E-09	1.81E-08	2.71E-08	3.60E-08	3.60E-08
se 77	.00E+00	6.33E-09	1.26E-08	1.89E-08	2.51E-08	2.51E-08
pd106	.00E+00	4.68E-09	9.50E-09	1.44E-08	1.95E-08	1.95E-08
kr 84	.00E+00	4.34E-09	8.65E-09	1.29E-08	1.72E-08	1.72E-08
sr 90	.00E+00	1.68E-08	1.68E-08	1.67E-08	1.66E-08	1.66E-08
se 79	.00E+00	3.24E-09	6.47E-09	9.68E-09	1.29E-08	1.29E-08
sb121	.00E+00	3.17E-09	6.35E-09	9.54E-09	1.27E-08	1.27E-08
gd156	.00E+00	1.94E-09	4.39E-09	7.30E-09	1.06E-08	1.06E-08
sb123	.00E+00	2.58E-09	5.16E-09	7.75E-09	1.03E-08	1.03E-08
kr 86	.00E+00	2.35E-09	4.69E-09	7.01E-09	9.32E-09	9.32E-09
rh105	.00E+00	8.37E-09	8.47E-09	8.56E-09	8.66E-09	8.66E-09
te128	.00E+00	2.13E-09	4.26E-09	6.38E-09	8.51E-09	8.51E-09
ru 99	.00E+00	4.68E-10	1.80E-09	3.98E-09	7.02E-09	7.02E-09
dy161	.00E+00	1.41E-09	2.99E-09	4.73E-09	6.64E-09	6.64E-09
se 80	.00E+00	1.52E-09	3.02E-09	4.53E-09	6.02E-09	6.02E-09
te125	.00E+00	1.33E-09	2.68E-09	4.05E-09	5.42E-09	5.42E-09
tb159	.00E+00	9.36E-10	1.92E-09	2.95E-09	4.02E-09	4.02E-09
cs137	.00E+00	3.77E-09	3.77E-09	3.76E-09	3.75E-09	3.75E-09
gd154	.00E+00	2.28E-10	9.26E-10	2.09E-09	3.73E-09	3.73E-09
cd112	.00E+00	8.77E-10	1.77E-09	2.68E-09	3.60E-09	3.60E-09
li 6	.00E+00	8.59E-10	1.71E-09	2.56E-09	3.39E-09	3.39E-09
eu154	.00E+00	7.20E-10	1.43E-09	2.14E-09	2.85E-09	2.85E-09
sn117	.00E+00	6.92E-10	1.39E-09	2.09E-09	2.80E-09	2.80E-09
gd158	.00E+00	4.26E-10	1.06E-09	1.83E-09	2.69E-09	2.69E-09
pr143	.00E+00	2.65E-09	2.64E-09	2.63E-09	2.62E-09	2.62E-09
sn119	.00E+00	5.64E-10	1.13E-09	1.69E-09	2.26E-09	2.26E-09
sn115	.00E+00	5.15E-10	1.03E-09	1.55E-09	2.07E-09	2.07E-09
xe133	.00E+00	1.98E-09	1.98E-09	1.97E-09	1.97E-09	1.97E-09
sr 88	.00E+00	4.34E-10	8.64E-10	1.29E-09	1.72E-09	1.72E-09
cd114	.00E+00	3.41E-10	7.39E-10	1.19E-09	1.67E-09	1.67E-09
ce141	.00E+00	1.57E-09	1.56E-09	1.56E-09	1.56E-09	1.56E-09
pd110	.00E+00	3.25E-10	6.67E-10	1.03E-09	1.40E-09	1.40E-09
ru100	.00E+00	7.91E-11	3.09E-10	6.87E-10	1.21E-09	1.21E-09
se 82	.00E+00	2.94E-10	5.86E-10	8.76E-10	1.16E-09	1.16E-09
dy164	.00E+00	1.83E-10	4.20E-10	7.08E-10	1.05E-09	1.05E-09
dy162	.00E+00	1.96E-10	4.35E-10	7.16E-10	1.04E-09	1.04E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 6
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

sn126	.00E+00	2.36E-10	4.74E-10	7.15E-10	9.58E-10	9.58E-10
pm149	.00E+00	9.59E-10	9.57E-10	9.55E-10	9.53E-10	9.53E-10
nd147	.00E+00	9.43E-10	9.40E-10	9.38E-10	9.35E-10	9.35E-10
se 78	.00E+00	2.25E-10	4.49E-10	6.73E-10	8.96E-10	8.96E-10
nd142	.00E+00	5.19E-11	2.07E-10	4.64E-10	8.22E-10	8.22E-10
ba134	.00E+00	5.17E-11	2.06E-10	4.62E-10	8.19E-10	8.19E-10
sm148	.00E+00	5.04E-11	1.95E-10	4.33E-10	7.63E-10	7.63E-10
sn124	.00E+00	1.85E-10	3.70E-10	5.56E-10	7.43E-10	7.43E-10
ba135	.00E+00	4.14E-11	1.65E-10	3.70E-10	6.56E-10	6.56E-10
ce144	.00E+00	5.97E-10	5.95E-10	5.93E-10	5.91E-10	5.91E-10
pd104	.00E+00	3.57E-11	1.43E-10	3.20E-10	5.69E-10	5.69E-10
kr 85	.00E+00	5.66E-10	5.63E-10	5.61E-10	5.59E-10	5.59E-10
as 75	.00E+00	1.34E-10	2.68E-10	4.01E-10	5.34E-10	5.34E-10
in113	.00E+00	9.33E-11	1.95E-10	2.98E-10	4.01E-10	4.01E-10
ru103	.00E+00	3.57E-10	3.57E-10	3.58E-10	3.59E-10	3.59E-10
ba136	.00E+00	7.64E-11	1.62E-10	2.56E-10	3.59E-10	3.59E-10

sn118	.00E+00	7.59E-11	1.52E-10	2.28E-10	3.05E-10	3.05E-10
cs134	.00E+00	6.91E-11	1.37E-10	2.05E-10	2.72E-10	2.72E-10
cd116	.00E+00	6.39E-11	1.28E-10	1.92E-10	2.56E-10	2.56E-10
mo 96	.00E+00	2.87E-11	8.07E-11	1.56E-10	2.53E-10	2.53E-10
sn122	.00E+00	6.22E-11	1.25E-10	1.87E-10	2.50E-10	2.50E-10
dy163	.00E+00	4.42E-11	9.98E-11	1.67E-10	2.45E-10	2.45E-10
kr 82	.00E+00	4.37E-11	9.68E-11	1.59E-10	2.31E-10	2.31E-10
sn120	.00E+00	4.69E-11	9.39E-11	1.41E-10	1.88E-10	1.88E-10
xe130	.00E+00	2.91E-11	6.90E-11	1.20E-10	1.81E-10	1.81E-10
zr 95	.00E+00	1.68E-10	1.67E-10	1.66E-10	1.66E-10	1.66E-10
nb 95	.00E+00	1.53E-10	1.52E-10	1.52E-10	1.51E-10	1.51E-10
ge 73	.00E+00	3.63E-11	7.26E-11	1.09E-10	1.45E-10	1.45E-10
y 91	.00E+00	1.41E-10	1.40E-10	1.40E-10	1.39E-10	1.39E-10
pm151	.00E+00	1.09E-10	1.09E-10	1.09E-10	1.09E-10	1.09E-10
nb 93	.00E+00	6.03E-12	2.53E-11	5.77E-11	1.03E-10	1.03E-10
cd110	.00E+00	4.89E-12	2.03E-11	4.76E-11	8.80E-11	8.80E-11
br 79	.00E+00	3.36E-12	1.34E-11	3.00E-11	5.33E-11	5.33E-11
ge 76	.00E+00	1.33E-11	2.64E-11	3.95E-11	5.26E-11	5.26E-11
ba140	.00E+00	4.70E-11	4.68E-11	4.67E-11	4.66E-11	4.66E-11
te126	.00E+00	7.59E-12	1.75E-11	2.96E-11	4.41E-11	4.41E-11
gd160	.00E+00	8.77E-12	1.82E-11	2.82E-11	3.89E-11	3.89E-11
sm153	.00E+00	3.81E-11	3.83E-11	3.85E-11	3.87E-11	3.87E-11
eu156	.00E+00	3.46E-11	3.53E-11	3.60E-11	3.68E-11	3.68E-11
ag107	.00E+00	1.80E-12	7.33E-12	1.68E-11	3.04E-11	3.04E-11
xe129	.00E+00	1.90E-12	7.59E-12	1.71E-11	3.03E-11	3.03E-11
sr 89	.00E+00	3.02E-11	3.00E-11	2.99E-11	2.98E-11	2.98E-11
ru106	.00E+00	2.66E-11	2.72E-11	2.79E-11	2.86E-11	2.86E-11
kr 87	.00E+00	2.25E-11	2.24E-11	2.23E-11	2.22E-11	2.22E-11
ho165	.00E+00	3.06E-12	6.96E-12	1.17E-11	1.73E-11	1.73E-11
ce143	.00E+00	1.73E-11	1.73E-11	1.72E-11	1.72E-11	1.72E-11
y 90	.00E+00	1.60E-11	1.59E-11	1.59E-11	1.58E-11	1.58E-11
sb125	.00E+00	1.51E-11	1.52E-11	1.53E-11	1.54E-11	1.54E-11
la140	.00E+00	1.54E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 7
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

mo 99	.00E+00	1.31E-11	1.31E-11	1.31E-11	1.30E-11	1.30E-11
pm148m	.00E+00	9.64E-12	9.63E-12	9.62E-12	9.62E-12	9.62E-12
te127m	.00E+00	7.41E-12	7.47E-12	7.52E-12	7.58E-12	7.58E-12
te124	.00E+00	1.57E-12	3.24E-12	5.00E-12	6.84E-12	6.84E-12
i131	.00E+00	6.76E-12	6.75E-12	6.74E-12	6.73E-12	6.73E-12
sr 87	.00E+00	1.52E-12	3.04E-12	4.56E-12	6.09E-12	6.09E-12
dy160	.00E+00	3.06E-13	1.12E-12	2.47E-12	4.36E-12	4.36E-12
nb 94	.00E+00	8.78E-13	1.76E-12	2.64E-12	3.54E-12	3.54E-12
xe128	.00E+00	2.54E-13	8.79E-13	1.87E-12	3.24E-12	3.24E-12
sr 86	.00E+00	5.17E-13	1.21E-12	2.09E-12	3.14E-12	3.14E-12
ge 74	.00E+00	7.30E-13	1.46E-12	2.19E-12	2.91E-12	2.91E-12
ge 72	.00E+00	4.92E-13	9.85E-13	1.48E-12	1.98E-12	1.98E-12
te129m	.00E+00	1.78E-12	1.78E-12	1.79E-12	1.79E-12	1.79E-12
se 76	.00E+00	3.05E-13	6.53E-13	1.04E-12	1.48E-12	1.48E-12
sn116	.00E+00	7.63E-14	3.03E-13	6.80E-13	1.21E-12	1.21E-12
er166	.00E+00	9.78E-14	2.54E-13	4.69E-13	7.40E-13	7.40E-13
te122	.00E+00	3.37E-14	1.30E-13	2.87E-13	5.07E-13	5.07E-13
pm148	.00E+00	3.86E-13	3.85E-13	3.84E-13	3.83E-13	3.83E-13
ag111	.00E+00	3.35E-13	3.48E-13	3.62E-13	3.75E-13	3.75E-13
eu157	.00E+00	3.04E-13	3.13E-13	3.22E-13	3.31E-13	3.31E-13
cd115m	.00E+00	2.37E-13	2.38E-13	2.39E-13	2.40E-13	2.40E-13
kr 80	.00E+00	2.13E-14	4.44E-14	6.95E-14	9.71E-14	9.71E-14

cs136	.00E+00	6.30E-14	7.00E-14	7.70E-14	8.39E-14	8.39E-14
ru105	.00E+00	3.04E-14	3.08E-14	3.11E-14	3.15E-14	3.15E-14
sn125	.00E+00	2.95E-14	2.96E-14	2.98E-14	2.99E-14	2.99E-14
rb 88	.00E+00	1.26E-14	1.26E-14	1.25E-14	1.25E-14	1.25E-14
tb160	.00E+00	2.92E-15	5.64E-15	8.45E-15	1.13E-14	1.13E-14
er167	.00E+00	7.36E-16	2.59E-15	5.83E-15	1.07E-14	1.07E-14
sn123	.00E+00	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	.00E+00	9.97E-15	9.95E-15	9.92E-15	9.90E-15	9.90E-15
te123	.00E+00	1.65E-15	3.73E-15	6.38E-15	9.73E-15	9.73E-15
te132	.00E+00	9.47E-15	9.45E-15	9.43E-15	9.42E-15	9.42E-15
pr142	.00E+00	1.73E-15	3.44E-15	5.14E-15	6.83E-15	6.83E-15
be 9	.00E+00	1.71E-15	3.41E-15	5.10E-15	6.79E-15	6.79E-15
te134	.00E+00	5.74E-15	5.72E-15	5.70E-15	5.68E-15	5.68E-15
sb126	.00E+00	3.41E-15	3.85E-15	4.28E-15	4.71E-15	4.71E-15
li 7	.00E+00	6.63E-16	1.32E-15	1.98E-15	2.63E-15	2.63E-15
sb124	.00E+00	2.23E-15	2.36E-15	2.49E-15	2.62E-15	2.62E-15
in117m	.00E+00	2.09E-15	2.11E-15	2.13E-15	2.15E-15	2.15E-15
i130	.00E+00	1.03E-15	1.34E-15	1.66E-15	1.97E-15	1.97E-15
rb 86	.00E+00	3.41E-16	4.42E-16	5.43E-16	6.43E-16	6.43E-16
in117	.00E+00	6.13E-16	6.20E-16	6.27E-16	6.34E-16	6.34E-16
dy165	.00E+00	2.76E-16	3.44E-16	4.12E-16	4.80E-16	4.80E-16
cd108	.00E+00	2.48E-17	8.36E-17	1.94E-16	3.74E-16	3.74E-16
sn114	.00E+00	1.67E-17	6.95E-17	1.58E-16	2.83E-16	2.83E-16
cd118	.00E+00	1.19E-16	1.20E-16	1.20E-16	1.21E-16	1.21E-16
ge 75	.00E+00	8.47E-17	8.45E-17	8.43E-17	8.42E-17	8.42E-17
cs134m	.00E+00	1.28E-17	2.55E-17	3.81E-17	5.06E-17	5.06E-17
in119m	.00E+00	2.98E-17	2.99E-17	3.00E-17	3.01E-17	3.01E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 8
0 fraction of total absorption rate
power= .00mw, burnup= 1461.mwd, flux= 2.99E+08n/cm**2-sec
0 initial 91313. d 182625. d 273938. d 365250. d 365250. d

in119	.00E+00	2.33E-18	2.35E-18	2.36E-18	2.38E-18	2.38E-18
cd109	.00E+00	6.19E-19	1.05E-18	1.47E-18	1.89E-18	1.89E-18
ag110	.00E+00	2.83E-19	6.08E-19	9.67E-19	1.36E-18	1.36E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 9
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
h 1	.00E+00	2.22E-05	4.43E-05	6.64E-05	8.84E-05	8.84E-05
h 2	.00E+00	6.57E-08	1.31E-07	1.97E-07	2.62E-07	2.62E-07
h 3	.00E+00	3.50E-11	3.56E-11	3.63E-11	3.69E-11	3.69E-11
h 4	.00E+00	1.41E-34	1.44E-34	1.46E-34	1.49E-34	1.49E-34
he 3	.00E+00	4.77E-10	9.79E-10	1.47E-09	1.95E-09	1.95E-09
he 4	.00E+00	3.66E-06	7.32E-06	1.10E-05	1.46E-05	1.46E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	.00E+00	4.40E-07	8.79E-07	1.32E-06	1.76E-06	1.76E-06
ne 21	.00E+00	3.97E-12	1.59E-11	3.57E-11	6.33E-11	6.33E-11
ne 22	.00E+00	2.87E-09	5.77E-09	8.68E-09	1.16E-08	1.16E-08
ne 23	.00E+00	7.33E-15	7.32E-15	7.31E-15	7.30E-15	7.30E-15
na 22	.00E+00	4.31E-11	4.30E-11	4.29E-11	4.29E-11	4.29E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	.00E+00	3.65E-08	3.64E-08	3.64E-08	3.64E-08	3.64E-08
na 24m	.00E+00	6.00E-15	5.99E-15	5.98E-15	5.97E-15	5.97E-15
na 25	.00E+00	2.60E-26	7.47E-26	1.46E-25	2.40E-25	2.40E-25
mg 24	.00E+00	3.78E-03	7.56E-03	1.13E-02	1.51E-02	1.51E-02
mg 25	.00E+00	8.61E-10	2.48E-09	4.84E-09	7.96E-09	7.96E-09
mg 26	.00E+00	6.57E-08	1.31E-07	1.97E-07	2.62E-07	2.62E-07

	mg 27	.00E+00	2.19E-12	2.18E-12	2.18E-12	2.18E-12	2.18E-12
	mg 28	.00E+00	4.43E-24	4.42E-24	4.41E-24	4.40E-24	4.40E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	.00E+00	2.71E-10	2.70E-10	2.70E-10	2.70E-10	2.70E-10
	al 29	.00E+00	9.55E-25	3.81E-24	8.55E-24	1.52E-23	1.52E-23
	al 30	.00E+00	4.38E-36	3.49E-35	1.18E-34	2.78E-34	2.78E-34
	si 28	.00E+00	1.10E-02	2.20E-02	3.30E-02	4.40E-02	4.40E-02
	si 29	.00E+00	3.53E-09	1.41E-08	3.17E-08	5.62E-08	5.62E-08
	si 30	.00E+00	1.21E-15	9.68E-15	3.26E-14	7.71E-14	7.71E-14
	si 31	.00E+00	8.67E-28	6.91E-27	2.33E-26	5.50E-26	5.50E-26
	si 32	.00E+00	3.17E-34	4.28E-33	1.86E-32	5.14E-32	5.14E-32
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		3.00E+08	3.00E+08	2.99E+08	2.99E+08	2.99E-07
1							

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 10
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
he 4	.00E+00	4.39E-02	1.15E-01	1.97E-01	2.89E-01	2.89E-01
pb206	.00E+00	2.25E-07	1.86E-06	6.26E-06	1.47E-05	1.47E-05
pb207	.00E+00	4.16E-07	1.78E-06	4.11E-06	7.38E-06	7.38E-06
pb208	.00E+00	8.05E-08	3.16E-07	7.02E-07	1.24E-06	1.24E-06
pb209	.00E+00	8.67E-14	3.44E-13	7.67E-13	1.35E-12	1.35E-12
pb210	.00E+00	9.86E-08	3.81E-07	8.28E-07	1.42E-06	1.42E-06
pb211	.00E+00	3.77E-13	7.55E-13	1.13E-12	1.51E-12	1.51E-12
pb212	.00E+00	1.11E-12	2.16E-12	3.21E-12	4.25E-12	4.25E-12
pb214	.00E+00	2.25E-13	8.70E-13	1.89E-12	3.25E-12	3.25E-12
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	.00E+00	1.35E-08	1.07E-07	3.60E-07	8.49E-07	8.49E-07
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	.00E+00	6.07E-11	2.34E-10	5.10E-10	8.76E-10	8.76E-10
bi211	.00E+00	2.23E-14	4.47E-14	6.72E-14	8.96E-14	8.96E-14
bi212	.00E+00	1.05E-13	2.05E-13	3.04E-13	4.03E-13	4.03E-13
bi213	.00E+00	2.02E-14	8.03E-14	1.79E-13	3.16E-13	3.16E-13
bi214	.00E+00	1.67E-13	6.46E-13	1.41E-12	2.42E-12	2.42E-12
po210	.00E+00	1.68E-09	6.47E-09	1.41E-08	2.42E-08	2.42E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	.00E+00	2.47E-19	4.94E-19	7.42E-19	9.90E-19	9.90E-19
po212	.00E+00	5.52E-24	1.08E-23	1.60E-23	2.12E-23	2.12E-23
po213	.00E+00	3.04E-23	1.21E-22	2.69E-22	4.75E-22	4.75E-22
po214	.00E+00	2.30E-20	8.89E-20	1.93E-19	3.32E-19	3.32E-19
po215	.00E+00	3.10E-19	6.20E-19	9.31E-19	1.24E-18	1.24E-18
po216	.00E+00	4.19E-18	8.18E-18	1.21E-17	1.61E-17	1.61E-17
po218	.00E+00	2.61E-14	1.01E-13	2.19E-13	3.76E-13	3.76E-13
rn218	.00E+00	1.70E-29	3.31E-29	4.90E-29	6.49E-29	6.49E-29
rn219	.00E+00	6.89E-16	1.38E-15	2.07E-15	2.76E-15	2.76E-15
rn220	.00E+00	1.61E-15	3.14E-15	4.65E-15	6.17E-15	6.17E-15
rn222	.00E+00	4.63E-11	1.79E-10	3.89E-10	6.69E-10	6.69E-10
ra222	.00E+00	1.84E-26	3.59E-26	5.32E-26	7.04E-26	7.04E-26
ra223	.00E+00	1.72E-10	3.44E-10	5.17E-10	6.90E-10	6.90E-10
ra224	.00E+00	9.14E-12	1.78E-11	2.65E-11	3.51E-11	3.51E-11
ra225	.00E+00	9.47E-12	3.76E-11	8.38E-11	1.48E-10	1.48E-10
ra226	.00E+00	7.08E-06	2.73E-05	5.94E-05	1.02E-04	1.02E-04
ra228	.00E+00	5.28E-13	1.06E-12	1.59E-12	2.12E-12	2.12E-12
ac225	.00E+00	6.40E-12	2.54E-11	5.66E-11	9.98E-11	9.98E-11
ac227	.00E+00	1.20E-07	2.39E-07	3.59E-07	4.80E-07	4.80E-07
ac228	.00E+00	6.45E-17	1.29E-16	1.94E-16	2.59E-16	2.59E-16
th226	.00E+00	9.00E-25	1.75E-24	2.60E-24	3.44E-24	3.44E-24
th227	.00E+00	2.78E-10	5.56E-10	8.34E-10	1.11E-09	1.11E-09

th228	.00E+00	1.75E-09	3.41E-09	5.05E-09	6.70E-09	6.70E-09
th229	.00E+00	1.84E-06	7.30E-06	1.63E-05	2.87E-05	2.87E-05
th230	.00E+00	6.38E-03	1.28E-02	1.92E-02	2.56E-02	2.56E-02
th231	.00E+00	3.04E-09	3.07E-09	3.09E-09	3.11E-09	3.11E-09
th232	.00E+00	1.29E-03	2.59E-03	3.88E-03	5.18E-03	5.18E-03
th233	.00E+00	1.20E-14	2.39E-14	3.59E-14	4.78E-14	4.78E-14
th234	.00E+00	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	.00E+00	1.80E-04	3.60E-04	5.41E-04	7.21E-04	7.21E-04
pa232	.00E+00	3.09E-12	6.18E-12	9.26E-12	1.23E-11	1.23E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 11
power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	91313. d	182625. d	273938. d	365250. d	365250. d
pa233	.00E+00	1.46E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	.00E+00	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	.00E+00	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	.00E+00	8.72E-22	1.70E-21	2.52E-21	3.33E-21	3.33E-21
u231	.00E+00	2.74E-18	5.45E-18	8.16E-18	1.08E-17	1.08E-17
u232	.00E+00	6.37E-08	1.24E-07	1.84E-07	2.44E-07	2.44E-07
u233	.00E+00	3.41E-03	6.80E-03	1.02E-02	1.35E-02	1.35E-02
u234	9.06E+00	9.07E+00	9.10E+00	9.14E+00	9.18E+00	9.18E+00
u235	7.30E+02	7.29E+02	7.27E+02	7.25E+02	7.23E+02	7.23E+02
u236	1.74E+02	1.75E+02	1.75E+02	1.75E+02	1.76E+02	1.76E+02
u237	.00E+00	3.25E-06	3.25E-06	3.25E-06	3.26E-06	3.26E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	.00E+00	3.29E-07	3.29E-07	3.29E-07	3.28E-07	3.28E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	.00E+00	9.13E-12	9.11E-12	9.10E-12	9.08E-12	9.08E-12
np236m	.00E+00	2.17E-12	2.17E-12	2.16E-12	2.16E-12	2.16E-12
np236	.00E+00	5.15E-08	1.03E-07	1.54E-07	2.05E-07	2.05E-07
np237	4.22E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01	4.21E+01
np238	.00E+00	1.58E-06	1.58E-06	1.57E-06	1.57E-06	1.57E-06
np239	.00E+00	4.76E-05	4.76E-05	4.75E-05	4.74E-05	4.74E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	.00E+00	9.77E-15	9.74E-15	9.72E-15	9.69E-15	9.69E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	.00E+00	1.18E-09	1.18E-09	1.17E-09	1.17E-09	1.17E-09
pu237	.00E+00	2.22E-13	2.61E-13	2.76E-13	2.87E-13	2.87E-13
pu238	.00E+00	2.06E-02	2.34E-02	2.37E-02	2.38E-02	2.38E-02
pu239	.00E+00	1.27E+00	2.52E+00	3.75E+00	4.97E+00	4.97E+00
pu240	.00E+00	1.55E-03	6.10E-03	1.35E-02	2.36E-02	2.36E-02
pu241	.00E+00	6.62E-07	2.60E-06	5.76E-06	1.01E-05	1.01E-05
pu242	.00E+00	7.37E-10	8.71E-09	3.72E-08	1.04E-07	1.04E-07
pu243	.00E+00	1.62E-18	1.92E-17	8.18E-17	2.28E-16	2.28E-16
pu244	.00E+00	4.00E-39	3.81E-36	1.89E-34	2.93E-33	2.93E-33
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	.00E+00	6.45E-22	4.76E-21	1.47E-20	3.18E-20	3.18E-20
am240	.00E+00	2.95E-19	2.18E-18	6.73E-18	1.46E-17	1.46E-17
am241	.00E+00	2.23E-06	1.65E-05	5.09E-05	1.10E-04	1.10E-04
am242m	.00E+00	2.89E-10	3.64E-09	1.43E-08	3.57E-08	3.57E-08
am242	.00E+00	8.20E-14	6.25E-13	1.97E-12	4.32E-12	4.32E-12
am243	.00E+00	5.26E-13	1.38E-11	8.38E-11	2.90E-10	2.90E-10
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	.00E+00	4.15E-21	1.08E-19	6.60E-19	2.28E-18	2.28E-18
am245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

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     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241    .00E+00  5.04E-24  3.83E-23  1.21E-22  2.65E-22  2.65E-22
     cm242    .00E+00  1.65E-11  1.26E-10  3.98E-10  8.73E-10  8.73E-10
     cm243    .00E+00   .00E+00  1.40E-20  1.07E-19  3.36E-19  3.36E-19
     cm244    .00E+00  6.52E-17  1.70E-15  1.04E-14  3.58E-14  3.58E-14
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   12
       power= 4.000E-03mw, burnup=1.4610E+03mwd, flux= 2.99E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge  91313. d 182625. d 273938. d 365250. d 365250. d
     cm245    .00E+00  2.85E-21  1.54E-19  1.46E-18  6.91E-18  6.91E-18
     cm246    .00E+00  6.11E-25  6.80E-23  9.96E-22  6.36E-21  6.36E-21
     cm247    .00E+00  2.25E-30  5.17E-28  1.15E-26  9.86E-26  9.86E-26
     cm248    .00E+00  8.27E-35  3.89E-32  1.29E-30  1.49E-29  1.49E-29
     cm249    .00E+00   .00E+00   .00E+00  3.89E-41  4.82E-40  4.82E-40
     cm250    .00E+00   .00E+00   .00E+00   .00E+00  1.40E-45  1.40E-45
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               3.00E+08  3.00E+08  2.99E+08  2.99E+08  2.99E-07
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  2 of library on unit 33.

          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 "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:  ft33f001
0               8/28/1996    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                   7993    number of nonzero off-diagonal matrix elements
0        *******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   13
        power=    .00mw, burnup=   2922.mwd, flux= 2.80E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      456563. d      547875. d      639188. d      730500. d      730500. d
     productions  1.096527E+06   1.098196E+06   1.099821E+06   1.101403E+06   1.102943E+06   1.102943E+06
     absorptions  9.037413E+05   9.052724E+05   9.066773E+05   9.079868E+05   9.092220E+05   9.092220E+05
     k infinity   1.213320E+00   1.213111E+00   1.213024E+00   1.213017E+00   1.213062E+00   1.213062E+00
0                    initial      456563. d      547875. d      639188. d      730500. d      730500. d
     actinide
     absorptions  8.959688E+05   8.969688E+05   8.979482E+05   8.989073E+05   8.998463E+05   8.998463E+05
     non-actinide
     abs. fracs.  8.600354E-03   9.172499E-03   9.627581E-03   9.999692E-03   1.031184E-02   1.031184E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2             fission products        page   14
0                              fraction of total absorption rate
        power=    .00mw, burnup=   2922.mwd, flux= 2.80E+08n/cm**2-sec
0              initial 456563. d 547875. d 639188. d 730500. d 730500. d

     sm149     3.99E-03  4.38E-03  4.66E-03  4.85E-03  4.99E-03  4.99E-03
     eu151     1.87E-04  2.38E-04  2.87E-04  3.35E-04  3.82E-04  3.82E-04
     nd143     1.45E-04  1.81E-04  2.17E-04  2.52E-04  2.87E-04  2.87E-04
     rh103     6.89E-05  8.61E-05  1.03E-04  1.20E-04  1.38E-04  1.38E-04
     gd155     7.68E-05  9.08E-05  1.03E-04  1.14E-04  1.24E-04  1.24E-04
     xe131     4.67E-05  5.83E-05  6.98E-05  8.14E-05  9.29E-05  9.29E-05
     cs133     3.62E-05  4.52E-05  5.41E-05  6.31E-05  7.20E-05  7.20E-05
     cd113     4.58E-05  5.30E-05  5.91E-05  6.43E-05  6.87E-05  6.87E-05
     sm147     2.68E-05  3.34E-05  4.01E-05  4.67E-05  5.32E-05  5.32E-05
     tc 99     2.67E-05  3.33E-05  3.98E-05  4.64E-05  5.29E-05  5.29E-05
     gd157     3.41E-05  3.68E-05  3.88E-05  4.04E-05  4.18E-05  4.18E-05
     nd145     2.06E-05  2.56E-05  3.07E-05  3.57E-05  4.08E-05  4.08E-05
     sm151     3.97E-05  3.97E-05  3.98E-05  3.99E-05  4.00E-05  4.00E-05
     mo 95     1.43E-05  1.78E-05  2.13E-05  2.48E-05  2.83E-05  2.83E-05
     sm152     1.16E-05  1.47E-05  1.78E-05  2.09E-05  2.41E-05  2.41E-05
     kr 83     8.83E-06  1.10E-05  1.32E-05  1.53E-05  1.75E-05  1.75E-05
     cs135     8.15E-06  1.02E-05  1.22E-05  1.42E-05  1.62E-05  1.62E-05
     sm150     5.08E-06  7.26E-06  9.60E-06  1.21E-05  1.46E-05  1.46E-05
     ru101     6.37E-06  7.96E-06  9.53E-06  1.11E-05  1.27E-05  1.27E-05
     pr141     6.04E-06  7.54E-06  9.03E-06  1.05E-05  1.20E-05  1.20E-05
     eu153     5.58E-06  6.98E-06  8.39E-06  9.80E-06  1.12E-05  1.12E-05
     la139     4.94E-06  6.16E-06  7.38E-06  8.59E-06  9.80E-06  9.80E-06
     ba137     2.25E-06  2.84E-06  3.42E-06  4.00E-06  4.58E-06  4.58E-06
     pd105     2.17E-06  2.72E-06  3.28E-06  3.85E-06  4.42E-06  4.42E-06
     zr 93     2.02E-06  2.52E-06  3.01E-06  3.51E-06  4.00E-06  4.00E-06
      i129     1.54E-06  1.92E-06  2.31E-06  2.69E-06  3.08E-06  3.08E-06
     nd144     1.48E-06  1.85E-06  2.21E-06  2.58E-06  2.94E-06  2.94E-06
     ag109     1.04E-06  1.37E-06  1.72E-06  2.11E-06  2.52E-06  2.52E-06
```

xe135	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06
mo 97	1.12E-06	1.40E-06	1.68E-06	1.95E-06	2.23E-06	2.23E-06
zr 91	5.26E-07	6.56E-07	7.85E-07	9.14E-07	1.04E-06	1.04E-06
y 89	5.04E-07	6.28E-07	7.51E-07	8.74E-07	9.97E-07	9.97E-07
ru102	4.57E-07	5.71E-07	6.85E-07	7.98E-07	9.11E-07	9.11E-07
ce142	4.09E-07	5.11E-07	6.12E-07	7.12E-07	8.13E-07	8.13E-07
nd148	3.96E-07	4.94E-07	5.92E-07	6.89E-07	7.87E-07	7.87E-07
pd108	3.18E-07	4.11E-07	5.09E-07	6.12E-07	7.20E-07	7.20E-07
nd146	3.31E-07	4.13E-07	4.95E-07	5.76E-07	6.57E-07	6.57E-07
ba138	2.82E-07	3.52E-07	4.22E-07	4.91E-07	5.61E-07	5.61E-07
in115	2.78E-07	3.47E-07	4.17E-07	4.88E-07	5.58E-07	5.58E-07
ce140	2.64E-07	3.30E-07	3.95E-07	4.60E-07	5.25E-07	5.25E-07
xe132	2.40E-07	3.00E-07	3.59E-07	4.19E-07	4.78E-07	4.78E-07
gd152	9.62E-08	1.57E-07	2.31E-07	3.20E-07	4.21E-07	4.21E-07
pd107	1.79E-07	2.29E-07	2.81E-07	3.36E-07	3.92E-07	3.92E-07
mo 98	1.66E-07	2.07E-07	2.49E-07	2.90E-07	3.30E-07	3.30E-07
mo100	1.60E-07	2.00E-07	2.39E-07	2.79E-07	3.18E-07	3.18E-07
xe134	1.56E-07	1.95E-07	2.34E-07	2.72E-07	3.11E-07	3.11E-07
pm147	2.71E-07	2.70E-07	2.70E-07	2.69E-07	2.69E-07	2.69E-07
zr 92	1.27E-07	1.58E-07	1.89E-07	2.20E-07	2.51E-07	2.51E-07
i127	1.06E-07	1.32E-07	1.59E-07	1.87E-07	2.14E-07	2.14E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 15
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

zr 96	1.02E-07	1.27E-07	1.52E-07	1.77E-07	2.02E-07	2.02E-07
ru104	9.97E-08	1.25E-07	1.50E-07	1.75E-07	2.01E-07	2.01E-07
nd150	8.82E-08	1.10E-07	1.32E-07	1.54E-07	1.76E-07	1.76E-07
eu155	1.66E-07	1.67E-07	1.69E-07	1.70E-07	1.72E-07	1.72E-07
xe136	8.46E-08	1.06E-07	1.26E-07	1.47E-07	1.68E-07	1.68E-07
br 81	6.38E-08	7.96E-08	9.53E-08	1.11E-07	1.27E-07	1.27E-07
rb 85	6.19E-08	7.72E-08	9.25E-08	1.08E-07	1.23E-07	1.23E-07
zr 94	5.42E-08	6.76E-08	8.09E-08	9.42E-08	1.07E-07	1.07E-07
eu152	4.88E-08	6.21E-08	7.48E-08	8.73E-08	9.94E-08	9.94E-08
zr 90	4.77E-08	6.00E-08	7.22E-08	8.44E-08	9.65E-08	9.65E-08
cd111	4.47E-08	5.69E-08	6.95E-08	8.25E-08	9.58E-08	9.58E-08
sm154	3.80E-08	4.76E-08	5.72E-08	6.69E-08	7.67E-08	7.67E-08
te130	3.84E-08	4.80E-08	5.75E-08	6.70E-08	7.66E-08	7.66E-08
rb 87	3.59E-08	4.48E-08	5.36E-08	6.24E-08	7.11E-08	7.11E-08
se 77	2.54E-08	3.16E-08	3.79E-08	4.42E-08	5.04E-08	5.04E-08
pd106	1.94E-08	2.45E-08	2.97E-08	3.50E-08	4.05E-08	4.05E-08
kr 84	1.71E-08	2.13E-08	2.55E-08	2.96E-08	3.38E-08	3.38E-08
ru 99	7.00E-09	1.09E-08	1.56E-08	2.11E-08	2.75E-08	2.75E-08
gd156	1.05E-08	1.41E-08	1.81E-08	2.23E-08	2.68E-08	2.68E-08
se 79	1.30E-08	1.62E-08	1.94E-08	2.26E-08	2.58E-08	2.58E-08
sb121	1.27E-08	1.59E-08	1.91E-08	2.23E-08	2.55E-08	2.55E-08
sb123	1.03E-08	1.29E-08	1.55E-08	1.81E-08	2.07E-08	2.07E-08
kr 86	9.39E-09	1.17E-08	1.40E-08	1.63E-08	1.86E-08	1.86E-08
te128	8.51E-09	1.06E-08	1.28E-08	1.49E-08	1.70E-08	1.70E-08
sr 90	1.68E-08	1.67E-08	1.67E-08	1.66E-08	1.65E-08	1.65E-08
dy161	6.70E-09	8.77E-09	1.10E-08	1.34E-08	1.59E-08	1.59E-08
gd154	3.76E-09	5.86E-09	8.43E-09	1.15E-08	1.50E-08	1.50E-08
se 80	6.07E-09	7.57E-09	9.07E-09	1.06E-08	1.21E-08	1.21E-08
te125	5.42E-09	6.79E-09	8.18E-09	9.57E-09	1.10E-08	1.10E-08
rh105	8.72E-09	8.80E-09	8.89E-09	8.99E-09	9.08E-09	9.08E-09
tb159	4.02E-09	5.13E-09	6.29E-09	7.49E-09	8.73E-09	8.73E-09
cd112	3.62E-09	4.56E-09	5.53E-09	6.50E-09	7.49E-09	7.49E-09
li 6	3.43E-09	4.27E-09	5.11E-09	5.94E-09	6.77E-09	6.77E-09
gd158	2.68E-09	3.60E-09	4.57E-09	5.58E-09	6.61E-09	6.61E-09

sn117	2.82E-09	3.53E-09	4.26E-09	4.99E-09	5.73E-09	5.73E-09
eu154	2.87E-09	3.56E-09	4.27E-09	4.99E-09	5.70E-09	5.70E-09
ru100	1.22E-09	1.89E-09	2.71E-09	3.66E-09	4.76E-09	4.76E-09
sn119	2.28E-09	2.86E-09	3.43E-09	4.01E-09	4.60E-09	4.60E-09
sn115	2.09E-09	2.61E-09	3.14E-09	3.67E-09	4.20E-09	4.20E-09
cd114	1.66E-09	2.17E-09	2.72E-09	3.29E-09	3.88E-09	3.88E-09
cs137	3.75E-09	3.74E-09	3.74E-09	3.73E-09	3.73E-09	3.73E-09
sr 88	1.73E-09	2.15E-09	2.58E-09	3.00E-09	3.42E-09	3.42E-09
nd142	8.30E-10	1.29E-09	1.86E-09	2.52E-09	3.28E-09	3.28E-09
ba134	8.20E-10	1.27E-09	1.82E-09	2.47E-09	3.22E-09	3.22E-09
pd110	1.39E-09	1.78E-09	2.19E-09	2.61E-09	3.04E-09	3.04E-09
sm148	7.64E-10	1.18E-09	1.69E-09	2.28E-09	2.97E-09	2.97E-09
dy164	1.06E-09	1.45E-09	1.89E-09	2.37E-09	2.90E-09	2.90E-09
dy162	1.04E-09	1.40E-09	1.80E-09	2.24E-09	2.72E-09	2.72E-09
ba135	6.56E-10	1.02E-09	1.47E-09	2.00E-09	2.61E-09	2.61E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 16
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

pr143	2.63E-09	2.63E-09	2.62E-09	2.61E-09	2.61E-09	2.61E-09
se 82	1.17E-09	1.46E-09	1.75E-09	2.04E-09	2.33E-09	2.33E-09
pd104	5.64E-10	8.77E-10	1.26E-09	1.71E-09	2.23E-09	2.23E-09
sn126	9.68E-10	1.22E-09	1.47E-09	1.72E-09	1.98E-09	1.98E-09
xe133	1.99E-09	1.98E-09	1.98E-09	1.98E-09	1.98E-09	1.98E-09
se 78	8.97E-10	1.12E-09	1.34E-09	1.57E-09	1.79E-09	1.79E-09
ce141	1.57E-09	1.57E-09	1.57E-09	1.56E-09	1.56E-09	1.56E-09
sn124	7.36E-10	9.22E-10	1.11E-09	1.30E-09	1.49E-09	1.49E-09
as 75	5.34E-10	6.66E-10	7.99E-10	9.30E-10	1.06E-09	1.06E-09
pm149	9.63E-10	9.62E-10	9.60E-10	9.59E-10	9.58E-10	9.58E-10
nd147	9.29E-10	9.27E-10	9.25E-10	9.23E-10	9.22E-10	9.22E-10
mo 96	2.53E-10	3.72E-10	5.13E-10	6.77E-10	8.62E-10	8.62E-10
ba136	3.58E-10	4.69E-10	5.88E-10	7.16E-10	8.53E-10	8.53E-10
in113	4.01E-10	5.04E-10	6.09E-10	7.14E-10	8.19E-10	8.19E-10
dy163	2.45E-10	3.34E-10	4.32E-10	5.42E-10	6.61E-10	6.61E-10
sn118	3.01E-10	3.77E-10	4.54E-10	5.30E-10	6.07E-10	6.07E-10
kr 82	2.32E-10	3.13E-10	4.02E-10	5.00E-10	6.06E-10	6.06E-10
ce144	5.93E-10	5.92E-10	5.90E-10	5.88E-10	5.87E-10	5.87E-10
kr 85	5.62E-10	5.61E-10	5.59E-10	5.57E-10	5.55E-10	5.55E-10
xe130	1.83E-10	2.55E-10	3.38E-10	4.32E-10	5.36E-10	5.36E-10
cs134	2.74E-10	3.36E-10	4.02E-10	4.68E-10	5.34E-10	5.34E-10
cd116	2.54E-10	3.18E-10	3.82E-10	4.47E-10	5.11E-10	5.11E-10
sn122	2.52E-10	3.15E-10	3.79E-10	4.43E-10	5.07E-10	5.07E-10
nb 93	1.03E-10	1.62E-10	2.34E-10	3.18E-10	4.15E-10	4.15E-10
cd110	8.86E-11	1.43E-10	2.13E-10	2.99E-10	4.03E-10	4.03E-10
sn120	1.88E-10	2.36E-10	2.83E-10	3.31E-10	3.79E-10	3.79E-10
ru103	3.60E-10	3.60E-10	3.61E-10	3.62E-10	3.63E-10	3.63E-10
ge 73	1.46E-10	1.82E-10	2.19E-10	2.55E-10	2.92E-10	2.92E-10
br 79	5.34E-11	8.33E-11	1.20E-10	1.63E-10	2.12E-10	2.12E-10
zr 95	1.65E-10	1.64E-10	1.64E-10	1.63E-10	1.63E-10	1.63E-10
nb 95	1.51E-10	1.51E-10	1.51E-10	1.50E-10	1.50E-10	1.50E-10
y 91	1.40E-10	1.40E-10	1.39E-10	1.39E-10	1.38E-10	1.38E-10
ag107	3.06E-11	4.87E-11	7.13E-11	9.86E-11	1.31E-10	1.31E-10
te126	4.42E-11	6.10E-11	8.01E-11	1.02E-10	1.26E-10	1.26E-10
xe129	3.04E-11	4.74E-11	6.82E-11	9.28E-11	1.21E-10	1.21E-10
pm151	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10
ge 76	5.27E-11	6.57E-11	7.87E-11	9.17E-11	1.05E-10	1.05E-10
gd160	3.89E-11	5.01E-11	6.19E-11	7.43E-11	8.73E-11	8.73E-11
ho165	1.74E-11	2.38E-11	3.11E-11	3.92E-11	4.82E-11	4.82E-11
ba140	4.68E-11	4.67E-11	4.66E-11	4.65E-11	4.64E-11	4.64E-11

eu156	3.71E-11	3.77E-11	3.84E-11	3.91E-11	3.97E-11	3.97E-11
sm153	3.89E-11	3.91E-11	3.93E-11	3.95E-11	3.97E-11	3.97E-11
ru106	2.83E-11	2.88E-11	2.95E-11	3.01E-11	3.07E-11	3.07E-11
sr 89	3.00E-11	2.99E-11	2.98E-11	2.97E-11	2.96E-11	2.96E-11
kr 87	2.24E-11	2.23E-11	2.23E-11	2.22E-11	2.21E-11	2.21E-11
dy160	4.34E-12	6.76E-12	9.75E-12	1.33E-11	1.75E-11	1.75E-11
ce143	1.72E-11	1.72E-11	1.72E-11	1.71E-11	1.71E-11	1.71E-11
sb125	1.54E-11	1.55E-11	1.56E-11	1.57E-11	1.58E-11	1.58E-11
y 90	1.59E-11	1.59E-11	1.58E-11	1.58E-11	1.57E-11	1.57E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 17
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

te124	6.90E-12	8.86E-12	1.09E-11	1.30E-11	1.53E-11	1.53E-11
la140	1.52E-11	1.52E-11	1.52E-11	1.51E-11	1.51E-11	1.51E-11
mo 99	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11	1.30E-11
xe128	3.27E-12	5.00E-12	7.11E-12	9.59E-12	1.24E-11	1.24E-11
sr 87	6.13E-12	7.67E-12	9.23E-12	1.08E-11	1.23E-11	1.23E-11
pm148m	9.70E-12	9.57E-12	9.57E-12	9.57E-12	9.57E-12	9.57E-12
sr 86	3.17E-12	4.41E-12	5.81E-12	7.40E-12	9.15E-12	9.15E-12
te127m	7.63E-12	7.69E-12	7.74E-12	7.80E-12	7.85E-12	7.85E-12
nb 94	3.52E-12	4.42E-12	5.32E-12	6.24E-12	7.17E-12	7.17E-12
i131	6.74E-12	6.73E-12	6.73E-12	6.73E-12	6.72E-12	6.72E-12
ge 74	2.94E-12	3.67E-12	4.40E-12	5.13E-12	5.86E-12	5.86E-12
sn116	1.19E-12	1.86E-12	2.67E-12	3.63E-12	4.73E-12	4.73E-12
ge 72	2.00E-12	2.50E-12	3.01E-12	3.53E-12	4.04E-12	4.04E-12
se 76	1.49E-12	1.97E-12	2.49E-12	3.06E-12	3.66E-12	3.66E-12
er166	7.45E-13	1.07E-12	1.45E-12	1.89E-12	2.38E-12	2.38E-12
te122	5.05E-13	7.82E-13	1.12E-12	1.52E-12	1.98E-12	1.98E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.81E-12	1.81E-12	1.81E-12
ag111	3.73E-13	3.85E-13	3.97E-13	4.09E-13	4.22E-13	4.22E-13
pm148	3.79E-13	3.74E-13	3.73E-13	3.72E-13	3.72E-13	3.72E-13
eu157	3.33E-13	3.40E-13	3.48E-13	3.57E-13	3.65E-13	3.65E-13
cd115m	2.42E-13	2.43E-13	2.44E-13	2.45E-13	2.46E-13	2.46E-13
kr 80	9.78E-14	1.28E-13	1.62E-13	1.99E-13	2.40E-13	2.40E-13
cs136	8.34E-14	9.00E-14	9.66E-14	1.03E-13	1.10E-13	1.10E-13
er167	1.08E-14	1.76E-14	2.65E-14	3.78E-14	5.17E-14	5.17E-14
te123	9.74E-15	1.39E-14	1.90E-14	2.52E-14	3.26E-14	3.26E-14
ru105	3.12E-14	3.15E-14	3.19E-14	3.22E-14	3.25E-14	3.25E-14
sn125	2.97E-14	2.98E-14	3.00E-14	3.01E-14	3.02E-14	3.02E-14
tb160	1.14E-14	1.43E-14	1.74E-14	2.06E-14	2.38E-14	2.38E-14
pr142	6.86E-15	8.53E-15	1.02E-14	1.19E-14	1.35E-14	1.35E-14
be 9	6.70E-15	8.36E-15	1.00E-14	1.17E-14	1.33E-14	1.33E-14
rb 88	1.26E-14	1.26E-14	1.25E-14	1.25E-14	1.24E-14	1.24E-14
sn123	1.02E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
i135	1.00E-14	9.98E-15	9.97E-15	9.95E-15	9.94E-15	9.94E-15
te132	9.47E-15	9.46E-15	9.45E-15	9.44E-15	9.44E-15	9.44E-15
sb126	4.73E-15	5.16E-15	5.59E-15	6.02E-15	6.45E-15	6.45E-15
te134	5.74E-15	5.72E-15	5.71E-15	5.69E-15	5.68E-15	5.68E-15
li 7	2.66E-15	3.32E-15	3.98E-15	4.63E-15	5.29E-15	5.29E-15
i130	1.97E-15	2.29E-15	2.59E-15	2.90E-15	3.21E-15	3.21E-15
sb124	2.62E-15	2.75E-15	2.88E-15	3.00E-15	3.13E-15	3.13E-15
in117m	2.17E-15	2.19E-15	2.21E-15	2.23E-15	2.25E-15	2.25E-15
cd108	3.76E-16	6.46E-16	1.03E-15	1.54E-15	2.20E-15	2.20E-15
sn114	2.86E-16	4.48E-16	6.46E-16	8.81E-16	1.15E-15	1.15E-15
rb 86	6.47E-16	7.44E-16	8.42E-16	9.40E-16	1.04E-15	1.04E-15
dy165	4.85E-16	5.51E-16	6.19E-16	6.87E-16	7.54E-16	7.54E-16
in117	6.41E-16	6.47E-16	6.54E-16	6.60E-16	6.67E-16	6.67E-16
cd118	1.22E-16	1.23E-16	1.23E-16	1.24E-16	1.25E-16	1.25E-16

cs134m	5.11E-17	6.29E-17	7.52E-17	8.76E-17	9.98E-17	9.98E-17
ge 75	8.51E-17	8.50E-17	8.49E-17	8.48E-17	8.47E-17	8.47E-17
in119m	3.04E-17	3.05E-17	3.06E-17	3.08E-17	3.09E-17	3.09E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 18
0 fraction of total absorption rate
power= .00mw, burnup= 2922.mwd, flux= 2.80E+08n/cm**2-sec
0 initial 456563. d 547875. d 639188. d 730500. d 730500. d

cd109	1.91E-18	2.31E-18	2.72E-18	3.12E-18	3.52E-18	3.52E-18
ag110	1.38E-18	1.79E-18	2.25E-18	2.75E-18	3.27E-18	3.27E-18
in119	2.40E-18	2.41E-18	2.43E-18	2.44E-18	2.46E-18	2.46E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 19
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	456563. d	547875. d	639188. d	730500. d	730500. d
h 1	8.84E-05	1.10E-04	1.32E-04	1.53E-04	1.75E-04	1.75E-04
h 2	2.62E-07	3.27E-07	3.91E-07	4.56E-07	5.20E-07	5.20E-07
h 3	3.69E-11	3.71E-11	3.77E-11	3.83E-11	3.89E-11	3.89E-11
h 4	1.49E-34	1.49E-34	1.52E-34	1.54E-34	1.56E-34	1.56E-34
he 3	1.95E-09	2.42E-09	2.87E-09	3.32E-09	3.76E-09	3.76E-09
he 4	1.46E-05	1.82E-05	2.18E-05	2.54E-05	2.90E-05	2.90E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.76E-06	2.19E-06	2.62E-06	3.05E-06	3.48E-06	3.48E-06
ne 21	6.33E-11	9.74E-11	1.38E-10	1.85E-10	2.38E-10	2.38E-10
ne 22	1.16E-08	1.44E-08	1.73E-08	2.01E-08	2.30E-08	2.30E-08
ne 23	7.30E-15	7.17E-15	7.17E-15	7.16E-15	7.15E-15	7.15E-15
na 22	4.29E-11	4.22E-11	4.22E-11	4.21E-11	4.21E-11	4.21E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	3.64E-08	3.08E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08
na 24m	5.97E-15	5.05E-15	5.05E-15	5.04E-15	5.04E-15	5.04E-15
na 25	2.40E-25	3.45E-25	4.74E-25	6.22E-25	7.88E-25	7.88E-25
mg 24	1.51E-02	1.83E-02	2.15E-02	2.47E-02	2.78E-02	2.78E-02
mg 25	7.96E-09	1.18E-08	1.62E-08	2.13E-08	2.70E-08	2.70E-08
mg 26	2.62E-07	3.27E-07	3.91E-07	4.56E-07	5.20E-07	5.20E-07
mg 27	2.18E-12	2.14E-12	2.14E-12	2.14E-12	2.13E-12	2.13E-12
mg 28	4.40E-24	4.33E-24	4.32E-24	4.31E-24	4.31E-24	4.31E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.70E-10	2.28E-10	2.28E-10	2.28E-10	2.27E-10	2.27E-10
al 29	1.52E-23	2.29E-23	3.26E-23	4.38E-23	5.65E-23	5.65E-23
al 30	2.78E-34	5.28E-34	9.06E-34	1.43E-33	2.11E-33	2.11E-33
si 28	4.40E-02	5.32E-02	6.25E-02	7.18E-02	8.10E-02	8.10E-02
si 29	5.62E-08	8.73E-08	1.24E-07	1.67E-07	2.16E-07	2.16E-07
si 30	7.71E-14	1.50E-13	2.59E-13	4.08E-13	6.04E-13	6.04E-13
si 31	5.50E-26	1.07E-25	1.84E-25	2.90E-25	4.29E-25	4.29E-25
si 32	5.14E-32	1.12E-31	2.07E-31	3.46E-31	5.34E-31	5.34E-31
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.80E+08	2.80E+08	2.80E+08	2.80E+08	2.79E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 20
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	456563. d	547875. d	639188. d	730500. d	730500. d
he 4	2.89E-01	3.89E-01	4.98E-01	6.16E-01	7.42E-01	7.42E-01
pb206	1.47E-05	2.82E-05	4.78E-05	7.45E-05	1.09E-04	1.09E-04
pb207	7.38E-06	1.16E-05	1.68E-05	2.30E-05	3.01E-05	3.01E-05
pb208	1.24E-06	1.92E-06	2.76E-06	3.74E-06	4.87E-06	4.87E-06
pb209	1.35E-12	2.09E-12	2.99E-12	4.04E-12	5.23E-12	5.23E-12

pb210	1.42E-06	2.15E-06	3.00E-06	3.96E-06	5.01E-06	5.01E-06
pb211	1.51E-12	1.89E-12	2.27E-12	2.65E-12	3.03E-12	3.03E-12
pb212	4.25E-12	5.28E-12	6.32E-12	7.36E-12	8.40E-12	8.40E-12
pb214	3.25E-12	4.92E-12	6.86E-12	9.04E-12	1.15E-11	1.15E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	8.49E-07	1.65E-06	2.83E-06	4.46E-06	6.62E-06	6.62E-06
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	8.76E-10	1.32E-09	1.85E-09	2.44E-09	3.08E-09	3.08E-09
bi211	8.96E-14	1.12E-13	1.35E-13	1.57E-13	1.80E-13	1.80E-13
bi212	4.03E-13	5.01E-13	6.00E-13	6.99E-13	7.97E-13	7.97E-13
bi213	3.16E-13	4.89E-13	6.99E-13	9.43E-13	1.22E-12	1.22E-12
bi214	2.42E-12	3.65E-12	5.09E-12	6.72E-12	8.50E-12	8.50E-12
po210	2.42E-08	3.66E-08	5.10E-08	6.73E-08	8.52E-08	8.52E-08
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.90E-19	1.24E-18	1.49E-18	1.74E-18	1.99E-18	1.99E-18
po212	2.12E-23	2.63E-23	3.15E-23	3.67E-23	4.19E-23	4.19E-23
po213	4.75E-22	7.35E-22	1.05E-21	1.42E-21	1.84E-21	1.84E-21
po214	3.32E-19	5.02E-19	7.01E-19	9.24E-19	1.17E-18	1.17E-18
po215	1.24E-18	1.55E-18	1.87E-18	2.18E-18	2.49E-18	2.49E-18
po216	1.61E-17	2.00E-17	2.39E-17	2.79E-17	3.18E-17	3.18E-17
po218	3.76E-13	5.69E-13	7.93E-13	1.05E-12	1.32E-12	1.32E-12
rn218	6.49E-29	7.85E-29	9.39E-29	1.09E-28	1.24E-28	1.24E-28
rn219	2.76E-15	3.46E-15	4.15E-15	4.84E-15	5.54E-15	5.54E-15
rn220	6.17E-15	7.67E-15	9.18E-15	1.07E-14	1.22E-14	1.22E-14
rn222	6.69E-10	1.01E-09	1.41E-09	1.86E-09	2.35E-09	2.35E-09
ra222	7.04E-26	8.52E-26	1.02E-25	1.19E-25	1.35E-25	1.35E-25
ra223	6.90E-10	8.62E-10	1.04E-09	1.21E-09	1.38E-09	1.38E-09
ra224	3.51E-11	4.36E-11	5.22E-11	6.08E-11	6.94E-11	6.94E-11
ra225	1.48E-10	2.29E-10	3.27E-10	4.41E-10	5.71E-10	5.71E-10
ra226	1.02E-04	1.54E-04	2.15E-04	2.84E-04	3.60E-04	3.60E-04
ra228	2.12E-12	2.65E-12	3.18E-12	3.72E-12	4.25E-12	4.25E-12
ac225	9.98E-11	1.55E-10	2.21E-10	2.98E-10	3.86E-10	3.86E-10
ac227	4.80E-07	6.00E-07	7.20E-07	8.41E-07	9.61E-07	9.61E-07
ac228	2.59E-16	3.23E-16	3.88E-16	4.54E-16	5.19E-16	5.19E-16
th226	3.44E-24	4.16E-24	4.97E-24	5.78E-24	6.59E-24	6.59E-24
th227	1.11E-09	1.39E-09	1.67E-09	1.95E-09	2.23E-09	2.23E-09
th228	6.70E-09	8.33E-09	9.97E-09	1.16E-08	1.32E-08	1.32E-08
th229	2.87E-05	4.45E-05	6.35E-05	8.57E-05	1.11E-04	1.11E-04
th230	2.56E-02	3.20E-02	3.84E-02	4.48E-02	5.13E-02	5.13E-02
th231	3.11E-09	3.13E-09	3.15E-09	3.17E-09	3.20E-09	3.20E-09
th232	5.18E-03	6.48E-03	7.78E-03	9.08E-03	1.04E-02	1.04E-02
th233	4.78E-14	5.94E-14	7.13E-14	8.32E-14	9.50E-14	9.50E-14
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.21E-04	9.02E-04	1.08E-03	1.26E-03	1.45E-03	1.45E-03
pa232	1.23E-11	1.54E-11	1.85E-11	2.16E-11	2.46E-11	2.46E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 21
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 456563. d	547875. d	639188. d	730500. d	730500. d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.09E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	3.33E-21	4.03E-21	4.82E-21	5.61E-21	6.39E-21	6.39E-21
u231	1.08E-17	1.32E-17	1.58E-17	1.83E-17	2.09E-17	2.09E-17
u232	2.44E-07	3.03E-07	3.63E-07	4.23E-07	4.82E-07	4.82E-07
u233	1.35E-02	1.69E-02	2.02E-02	2.36E-02	2.69E-02	2.69E-02
u234	9.18E+00	9.21E+00	9.25E+00	9.28E+00	9.32E+00	9.32E+00

u235	7.23E+02	7.21E+02	7.19E+02	7.18E+02	7.16E+02	7.16E+02
u236	1.76E+02	1.76E+02	1.76E+02	1.76E+02	1.77E+02	1.77E+02
u237	3.26E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	3.28E-07	3.22E-07	3.22E-07	3.22E-07	3.21E-07	3.21E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	9.08E-12	8.87E-12	8.86E-12	8.84E-12	8.83E-12	8.83E-12
np236m	2.16E-12	2.11E-12	2.11E-12	2.10E-12	2.10E-12	2.10E-12
np236	2.05E-07	2.55E-07	3.04E-07	3.53E-07	4.03E-07	4.03E-07
np237	4.21E+01	4.20E+01	4.20E+01	4.20E+01	4.20E+01	4.20E+01
np238	1.57E-06	1.56E-06	1.55E-06	1.55E-06	1.55E-06	1.55E-06
np239	4.74E-05	4.66E-05	4.65E-05	4.65E-05	4.64E-05	4.64E-05
np240m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np240	9.69E-15	9.47E-15	9.45E-15	9.43E-15	9.41E-15	9.41E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.17E-09	1.14E-09	1.14E-09	1.14E-09	1.14E-09	1.14E-09
pu237	2.87E-13	2.89E-13	2.98E-13	3.07E-13	3.16E-13	3.16E-13
pu238	2.38E-02	2.36E-02	2.35E-02	2.35E-02	2.34E-02	2.34E-02
pu239	4.97E+00	6.14E+00	7.29E+00	8.43E+00	9.55E+00	9.55E+00
pu240	2.36E-02	3.62E-02	5.12E-02	6.85E-02	8.79E-02	8.79E-02
pu241	1.01E-05	1.51E-05	2.14E-05	2.86E-05	3.67E-05	3.67E-05
pu242	1.04E-07	2.27E-07	4.27E-07	7.25E-07	1.14E-06	1.14E-06
pu243	2.28E-16	4.88E-16	9.17E-16	1.56E-15	2.45E-15	2.45E-15
pu244	2.93E-33	2.38E-32	1.29E-31	5.32E-31	1.80E-30	1.80E-30
pu245	.00E+00	.00E+00	.00E+00	.00E+00	7.64E-41	7.64E-41
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.18E-20	5.50E-20	8.68E-20	1.26E-19	1.74E-19	1.74E-19
am240	1.46E-17	2.52E-17	3.97E-17	5.78E-17	7.95E-17	7.95E-17
am241	1.10E-04	1.95E-04	3.08E-04	4.49E-04	6.18E-04	6.18E-04
am242m	3.57E-08	6.90E-08	1.16E-07	1.76E-07	2.51E-07	2.51E-07
am242	4.32E-12	7.68E-12	1.22E-11	1.79E-11	2.47E-11	2.47E-11
am243	2.90E-10	7.36E-10	1.54E-09	2.86E-09	4.82E-09	4.82E-09
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.28E-18	5.68E-18	1.19E-17	2.20E-17	3.71E-17	3.71E-17
am245	.00E+00	.00E+00	.00E+00	.00E+00	1.49E-41	1.49E-41
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.65E-22	4.59E-22	7.28E-22	1.07E-21	1.47E-21	1.47E-21
cm242	8.73E-10	1.55E-09	2.46E-09	3.61E-09	4.98E-09	4.98E-09
cm243	3.36E-19	7.28E-19	1.29E-18	2.05E-18	3.00E-18	3.00E-18
cm244	3.58E-14	8.92E-14	1.87E-13	3.45E-13	5.83E-13	5.83E-13

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 22
power= 4.000E-03mw, burnup=2.9220E+03mwd, flux= 2.80E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge 456563. d 547875. d 639188. d 730500. d 730500. d

cm245	6.91E-18	2.19E-17	5.57E-17	1.22E-16	2.36E-16	2.36E-16
cm246	6.36E-21	2.57E-20	7.88E-20	2.00E-19	4.46E-19	4.46E-19
cm247	9.86E-26	4.97E-25	1.84E-24	5.48E-24	1.40E-23	1.40E-23
cm248	1.49E-29	9.49E-29	4.24E-28	1.49E-27	4.38E-27	4.38E-27
cm249	4.82E-40	3.03E-39	1.35E-38	4.74E-38	1.39E-37	1.39E-37
cm250	1.40E-45	1.54E-44	8.83E-44	3.69E-43	1.25E-42	1.25E-42
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.80E+08	2.80E+08	2.80E+08	2.80E+08	2.79E-07

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  3 of library on unit 33.

          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 "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:  ft33f001
0                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
0
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                          page   23
         power=    .00mw, burnup=   4383.mwd, flux= 2.71E+08n/cm**2-sec
0                                              basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                     initial        821813. d        913125. d        ******* d        ******* d        ******* d
     productions    1.133886E+06    1.135393E+06    1.136859E+06    1.138285E+06    1.139671E+06    1.139671E+06
     absorptions    9.323096E+05    9.334989E+05    9.346394E+05    9.357402E+05    9.368058E+05    9.368058E+05
     k infinity     1.216212E+00    1.216277E+00    1.216361E+00    1.216455E+00    1.216550E+00    1.216550E+00
0                     initial        821813. d        913125. d        ******* d        ******* d        ******* d
     actinide
```

	absorptions	9.229046E+05	9.238316E+05	9.247386E+05	9.256261E+05	9.264941E+05	9.264941E+05
	non-actinide abs. fracs.	1.008779E-02	1.035595E-02	1.059318E-02	1.080871E-02	1.100731E-02	1.100731E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 24
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

sm149	5.01E-03	5.11E-03	5.18E-03	5.23E-03	5.27E-03	5.27E-03
eu151	3.83E-04	4.29E-04	4.74E-04	5.17E-04	5.60E-04	5.60E-04
nd143	2.88E-04	3.24E-04	3.59E-04	3.94E-04	4.29E-04	4.29E-04
rh103	1.38E-04	1.55E-04	1.72E-04	1.89E-04	2.06E-04	2.06E-04
gd155	1.24E-04	1.33E-04	1.41E-04	1.48E-04	1.54E-04	1.54E-04
xe131	9.27E-05	1.04E-04	1.16E-04	1.27E-04	1.38E-04	1.38E-04
cs133	7.18E-05	8.07E-05	8.95E-05	9.83E-05	1.07E-04	1.07E-04
cd113	6.89E-05	7.27E-05	7.59E-05	7.87E-05	8.11E-05	8.11E-05
sm147	5.31E-05	5.96E-05	6.62E-05	7.27E-05	7.92E-05	7.92E-05
tc 99	5.27E-05	5.92E-05	6.57E-05	7.21E-05	7.85E-05	7.85E-05
nd145	4.08E-05	4.58E-05	5.08E-05	5.57E-05	6.07E-05	6.07E-05
gd157	4.20E-05	4.32E-05	4.43E-05	4.53E-05	4.64E-05	4.64E-05
mo 95	2.83E-05	3.18E-05	3.52E-05	3.87E-05	4.22E-05	4.22E-05
sm151	4.02E-05	4.02E-05	4.03E-05	4.04E-05	4.05E-05	4.05E-05
sm152	2.40E-05	2.73E-05	3.06E-05	3.39E-05	3.73E-05	3.73E-05
kr 83	1.75E-05	1.97E-05	2.18E-05	2.39E-05	2.60E-05	2.60E-05
sm150	1.46E-05	1.72E-05	1.99E-05	2.25E-05	2.52E-05	2.52E-05
cs135	1.62E-05	1.82E-05	2.02E-05	2.22E-05	2.42E-05	2.42E-05
ru101	1.26E-05	1.42E-05	1.57E-05	1.73E-05	1.89E-05	1.89E-05
pr141	1.20E-05	1.35E-05	1.50E-05	1.65E-05	1.79E-05	1.79E-05
eu153	1.12E-05	1.26E-05	1.41E-05	1.55E-05	1.69E-05	1.69E-05
la139	9.82E-06	1.10E-05	1.22E-05	1.34E-05	1.46E-05	1.46E-05
ba137	4.60E-06	5.18E-06	5.76E-06	6.34E-06	6.92E-06	6.92E-06
pd105	4.41E-06	4.99E-06	5.57E-06	6.15E-06	6.74E-06	6.74E-06
zr 93	3.99E-06	4.48E-06	4.97E-06	5.46E-06	5.94E-06	5.94E-06
i129	3.09E-06	3.47E-06	3.86E-06	4.25E-06	4.63E-06	4.63E-06
nd144	2.95E-06	3.32E-06	3.68E-06	4.05E-06	4.41E-06	4.41E-06
ag109	2.51E-06	2.94E-06	3.40E-06	3.88E-06	4.39E-06	4.39E-06
mo 97	2.23E-06	2.51E-06	2.78E-06	3.05E-06	3.33E-06	3.33E-06
xe135	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06	2.28E-06
zr 91	1.04E-06	1.17E-06	1.30E-06	1.43E-06	1.55E-06	1.55E-06
y 89	9.99E-07	1.12E-06	1.24E-06	1.36E-06	1.49E-06	1.49E-06
ru102	9.13E-07	1.03E-06	1.14E-06	1.25E-06	1.37E-06	1.37E-06
ce142	8.16E-07	9.16E-07	1.02E-06	1.12E-06	1.22E-06	1.22E-06
pd108	7.18E-07	8.30E-07	9.48E-07	1.07E-06	1.20E-06	1.20E-06
nd148	7.88E-07	8.85E-07	9.82E-07	1.08E-06	1.18E-06	1.18E-06
nd146	6.59E-07	7.40E-07	8.21E-07	9.02E-07	9.83E-07	9.83E-07
gd152	4.23E-07	5.38E-07	6.66E-07	8.06E-07	9.58E-07	9.58E-07
in115	5.58E-07	6.29E-07	7.00E-07	7.71E-07	8.42E-07	8.42E-07
ba138	5.62E-07	6.32E-07	7.01E-07	7.70E-07	8.39E-07	8.39E-07
ce140	5.27E-07	5.92E-07	6.56E-07	7.21E-07	7.86E-07	7.86E-07
xe132	4.78E-07	5.37E-07	5.97E-07	6.56E-07	7.15E-07	7.15E-07
pd107	3.93E-07	4.52E-07	5.12E-07	5.75E-07	6.40E-07	6.40E-07
mo 98	3.29E-07	3.70E-07	4.11E-07	4.51E-07	4.92E-07	4.92E-07
mo100	3.18E-07	3.57E-07	3.96E-07	4.36E-07	4.75E-07	4.75E-07
xe134	3.11E-07	3.50E-07	3.88E-07	4.26E-07	4.65E-07	4.65E-07
zr 92	2.51E-07	2.82E-07	3.13E-07	3.44E-07	3.74E-07	3.74E-07
i127	2.14E-07	2.41E-07	2.69E-07	2.97E-07	3.25E-07	3.25E-07
ru104	2.01E-07	2.26E-07	2.52E-07	2.78E-07	3.03E-07	3.03E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 25
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec

0 initial 821813. d 913125. d ******* d ******* d ******* d

zr 96	2.01E-07	2.25E-07	2.50E-07	2.74E-07	2.99E-07	2.99E-07
pm147	2.68E-07	2.68E-07	2.67E-07	2.67E-07	2.66E-07	2.66E-07
nd150	1.76E-07	1.98E-07	2.20E-07	2.41E-07	2.63E-07	2.63E-07
xe136	1.69E-07	1.89E-07	2.10E-07	2.31E-07	2.52E-07	2.52E-07
br 81	1.27E-07	1.42E-07	1.58E-07	1.73E-07	1.89E-07	1.89E-07
rb 85	1.23E-07	1.38E-07	1.53E-07	1.68E-07	1.83E-07	1.83E-07
eu155	1.72E-07	1.73E-07	1.75E-07	1.76E-07	1.78E-07	1.78E-07
zr 94	1.07E-07	1.20E-07	1.34E-07	1.47E-07	1.60E-07	1.60E-07
cd111	9.61E-08	1.10E-07	1.24E-07	1.38E-07	1.53E-07	1.53E-07
eu152	9.97E-08	1.12E-07	1.23E-07	1.34E-07	1.45E-07	1.45E-07
zr 90	9.66E-08	1.09E-07	1.21E-07	1.33E-07	1.45E-07	1.45E-07
sm154	7.68E-08	8.66E-08	9.65E-08	1.06E-07	1.16E-07	1.16E-07
te130	7.68E-08	8.63E-08	9.58E-08	1.05E-07	1.15E-07	1.15E-07
rb 87	7.11E-08	7.98E-08	8.84E-08	9.71E-08	1.06E-07	1.06E-07
se 77	5.05E-08	5.68E-08	6.30E-08	6.92E-08	7.54E-08	7.54E-08
pd106	4.04E-08	4.59E-08	5.15E-08	5.73E-08	6.31E-08	6.31E-08
ru 99	2.75E-08	3.47E-08	4.27E-08	5.15E-08	6.12E-08	6.12E-08
kr 84	3.37E-08	3.79E-08	4.20E-08	4.61E-08	5.02E-08	5.02E-08
gd156	2.67E-08	3.14E-08	3.63E-08	4.14E-08	4.66E-08	4.66E-08
se 79	2.59E-08	2.91E-08	3.23E-08	3.55E-08	3.87E-08	3.87E-08
sb121	2.55E-08	2.87E-08	3.19E-08	3.52E-08	3.84E-08	3.84E-08
gd154	1.50E-08	1.90E-08	2.34E-08	2.83E-08	3.37E-08	3.37E-08
sb123	2.06E-08	2.33E-08	2.59E-08	2.85E-08	3.11E-08	3.11E-08
kr 86	1.86E-08	2.09E-08	2.32E-08	2.55E-08	2.77E-08	2.77E-08
dy161	1.59E-08	1.86E-08	2.14E-08	2.44E-08	2.75E-08	2.75E-08
te128	1.70E-08	1.92E-08	2.13E-08	2.35E-08	2.56E-08	2.56E-08
se 80	1.21E-08	1.36E-08	1.51E-08	1.66E-08	1.80E-08	1.80E-08
te125	1.10E-08	1.24E-08	1.38E-08	1.52E-08	1.67E-08	1.67E-08
sr 90	1.66E-08	1.65E-08	1.65E-08	1.64E-08	1.64E-08	1.64E-08
tb159	8.73E-09	1.00E-08	1.13E-08	1.27E-08	1.41E-08	1.41E-08
cd112	7.51E-09	8.52E-09	9.54E-09	1.06E-08	1.16E-08	1.16E-08
gd158	6.61E-09	7.67E-09	8.77E-09	9.89E-09	1.10E-08	1.10E-08
ru100	4.78E-09	6.02E-09	7.40E-09	8.92E-09	1.06E-08	1.06E-08
li 6	6.79E-09	7.62E-09	8.44E-09	9.26E-09	1.01E-08	1.01E-08
rh105	9.10E-09	9.19E-09	9.27E-09	9.36E-09	9.45E-09	9.45E-09
sn117	5.74E-09	6.49E-09	7.24E-09	8.00E-09	8.77E-09	8.77E-09
eu154	5.71E-09	6.41E-09	7.13E-09	7.85E-09	8.57E-09	8.57E-09
nd142	3.29E-09	4.16E-09	5.12E-09	6.19E-09	7.35E-09	7.35E-09
ba134	3.22E-09	4.06E-09	4.99E-09	6.02E-09	7.15E-09	7.15E-09
sn119	4.61E-09	5.20E-09	5.78E-09	6.37E-09	6.97E-09	6.97E-09
sm148	2.97E-09	3.74E-09	4.60E-09	5.55E-09	6.58E-09	6.58E-09
cd114	3.87E-09	4.48E-09	5.10E-09	5.74E-09	6.39E-09	6.39E-09
sn115	4.22E-09	4.75E-09	5.29E-09	5.83E-09	6.38E-09	6.38E-09
ba135	2.61E-09	3.29E-09	4.06E-09	4.91E-09	5.84E-09	5.84E-09
dy164	2.91E-09	3.48E-09	4.10E-09	4.75E-09	5.45E-09	5.45E-09
sr 88	3.43E-09	3.85E-09	4.26E-09	4.68E-09	5.09E-09	5.09E-09
dy162	2.72E-09	3.24E-09	3.79E-09	4.37E-09	5.00E-09	5.00E-09
pd104	2.22E-09	2.80E-09	3.46E-09	4.18E-09	4.96E-09	4.96E-09
pd110	3.04E-09	3.49E-09	3.95E-09	4.43E-09	4.92E-09	4.92E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 26
0 fraction of total absorption rate
power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 821813. d 913125. d ******* d ******* d ******* d

cs137	3.73E-09	3.72E-09	3.72E-09	3.71E-09	3.71E-09	3.71E-09
se 82	2.33E-09	2.62E-09	2.90E-09	3.19E-09	3.47E-09	3.47E-09
sn126	1.98E-09	2.24E-09	2.50E-09	2.77E-09	3.03E-09	3.03E-09
se 78	1.79E-09	2.01E-09	2.23E-09	2.45E-09	2.68E-09	2.68E-09

pr143	2.61E-09	2.60E-09	2.60E-09	2.59E-09	2.59E-09	2.59E-09
sn124	1.48E-09	1.67E-09	1.86E-09	2.05E-09	2.24E-09	2.24E-09
xe133	1.98E-09	1.98E-09	1.98E-09	1.97E-09	1.97E-09	1.97E-09
mo 96	8.61E-10	1.07E-09	1.30E-09	1.54E-09	1.82E-09	1.82E-09
as 75	1.06E-09	1.19E-09	1.32E-09	1.46E-09	1.59E-09	1.59E-09
ce141	1.56E-09	1.56E-09	1.56E-09	1.56E-09	1.55E-09	1.55E-09
ba136	8.52E-10	9.96E-10	1.15E-09	1.31E-09	1.48E-09	1.48E-09
in113	8.19E-10	9.25E-10	1.03E-09	1.14E-09	1.25E-09	1.25E-09
dy163	6.61E-10	7.90E-10	9.29E-10	1.08E-09	1.23E-09	1.23E-09
kr 82	6.07E-10	7.22E-10	8.45E-10	9.76E-10	1.11E-09	1.11E-09
xe130	5.38E-10	6.53E-10	7.78E-10	9.14E-10	1.06E-09	1.06E-09
cd110	4.04E-10	5.27E-10	6.69E-10	8.33E-10	1.02E-09	1.02E-09
pm149	9.62E-10	9.61E-10	9.60E-10	9.59E-10	9.58E-10	9.58E-10
nb 93	4.16E-10	5.26E-10	6.49E-10	7.85E-10	9.33E-10	9.33E-10
nd147	9.19E-10	9.18E-10	9.16E-10	9.15E-10	9.14E-10	9.14E-10
sn118	6.04E-10	6.81E-10	7.58E-10	8.36E-10	9.14E-10	9.14E-10
cs134	5.35E-10	5.97E-10	6.62E-10	7.27E-10	7.91E-10	7.91E-10
cd116	5.10E-10	5.75E-10	6.39E-10	7.04E-10	7.70E-10	7.70E-10
sn122	5.08E-10	5.72E-10	6.37E-10	7.02E-10	7.68E-10	7.68E-10
ce144	5.88E-10	5.86E-10	5.85E-10	5.84E-10	5.82E-10	5.82E-10
sn120	3.79E-10	4.27E-10	4.75E-10	5.24E-10	5.72E-10	5.72E-10
kr 85	5.56E-10	5.55E-10	5.53E-10	5.52E-10	5.50E-10	5.50E-10
br 79	2.12E-10	2.68E-10	3.31E-10	4.00E-10	4.75E-10	4.75E-10
ge 73	2.93E-10	3.29E-10	3.66E-10	4.03E-10	4.39E-10	4.39E-10
ru103	3.63E-10	3.64E-10	3.65E-10	3.66E-10	3.66E-10	3.66E-10
ag107	1.31E-10	1.69E-10	2.11E-10	2.59E-10	3.13E-10	3.13E-10
xe129	1.21E-10	1.53E-10	1.89E-10	2.29E-10	2.73E-10	2.73E-10
te126	1.26E-10	1.52E-10	1.81E-10	2.12E-10	2.45E-10	2.45E-10
zr 95	1.63E-10	1.62E-10	1.62E-10	1.62E-10	1.61E-10	1.61E-10
ge 76	1.05E-10	1.18E-10	1.30E-10	1.43E-10	1.56E-10	1.56E-10
nb 95	1.50E-10	1.50E-10	1.49E-10	1.49E-10	1.49E-10	1.49E-10
gd160	8.73E-11	1.01E-10	1.15E-10	1.29E-10	1.45E-10	1.45E-10
y 91	1.39E-10	1.38E-10	1.38E-10	1.38E-10	1.37E-10	1.37E-10
pm151	1.10E-10	1.10E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
ho165	4.82E-11	5.80E-11	6.86E-11	8.01E-11	9.24E-11	9.24E-11
ba140	4.65E-11	4.64E-11	4.63E-11	4.62E-11	4.62E-11	4.62E-11
eu156	3.98E-11	4.05E-11	4.11E-11	4.18E-11	4.24E-11	4.24E-11
sm153	3.98E-11	4.00E-11	4.02E-11	4.04E-11	4.07E-11	4.07E-11
dy160	1.75E-11	2.22E-11	2.76E-11	3.37E-11	4.03E-11	4.03E-11
ru106	3.06E-11	3.11E-11	3.17E-11	3.23E-11	3.28E-11	3.28E-11
sr 89	2.97E-11	2.96E-11	2.95E-11	2.94E-11	2.93E-11	2.93E-11
xe128	1.25E-11	1.57E-11	1.93E-11	2.33E-11	2.77E-11	2.77E-11
te124	1.53E-11	1.76E-11	2.00E-11	2.25E-11	2.51E-11	2.51E-11
kr 87	2.22E-11	2.21E-11	2.20E-11	2.20E-11	2.19E-11	2.19E-11
sr 87	1.24E-11	1.39E-11	1.55E-11	1.71E-11	1.87E-11	1.87E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 27

0 fraction of total absorption rate

power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec

0 initial 821813. d 913125. d ******* d ******* d ******* d

sr 86	9.18E-12	1.11E-11	1.32E-11	1.55E-11	1.79E-11	1.79E-11
ce143	1.71E-11	1.71E-11	1.70E-11	1.70E-11	1.70E-11	1.70E-11
sb125	1.58E-11	1.59E-11	1.60E-11	1.61E-11	1.62E-11	1.62E-11
y 90	1.58E-11	1.57E-11	1.56E-11	1.56E-11	1.55E-11	1.55E-11
la140	1.51E-11	1.51E-11	1.50E-11	1.50E-11	1.50E-11	1.50E-11
mo 99	1.30E-11	1.29E-11	1.29E-11	1.29E-11	1.29E-11	1.29E-11
nb 94	7.16E-12	8.09E-12	9.05E-12	1.00E-11	1.10E-11	1.10E-11
sn116	4.71E-12	5.96E-12	7.35E-12	8.89E-12	1.06E-11	1.06E-11
pm148m	9.60E-12	9.56E-12	9.56E-12	9.56E-12	9.57E-12	9.57E-12
ge 74	5.88E-12	6.61E-12	7.35E-12	8.08E-12	8.82E-12	8.82E-12

te127m	7.87E-12	7.93E-12	7.98E-12	8.03E-12	8.08E-12	8.08E-12
i131	6.73E-12	6.72E-12	6.72E-12	6.72E-12	6.72E-12	6.72E-12
se 76	3.68E-12	4.33E-12	5.02E-12	5.75E-12	6.52E-12	6.52E-12
ge 72	4.05E-12	4.57E-12	5.09E-12	5.62E-12	6.15E-12	6.15E-12
er166	2.38E-12	2.92E-12	3.51E-12	4.15E-12	4.84E-12	4.84E-12
te122	1.98E-12	2.49E-12	3.07E-12	3.71E-12	4.41E-12	4.41E-12
te129m	1.81E-12	1.82E-12	1.82E-12	1.82E-12	1.83E-12	1.83E-12
ag111	4.21E-13	4.32E-13	4.44E-13	4.55E-13	4.66E-13	4.66E-13
kr 80	2.40E-13	2.85E-13	3.35E-13	3.89E-13	4.48E-13	4.48E-13
eu157	3.65E-13	3.73E-13	3.80E-13	3.88E-13	3.96E-13	3.96E-13
pm148	3.71E-13	3.68E-13	3.68E-13	3.67E-13	3.67E-13	3.67E-13
cd115m	2.47E-13	2.48E-13	2.49E-13	2.51E-13	2.52E-13	2.52E-13
er167	5.18E-14	6.86E-14	8.84E-14	1.11E-13	1.38E-13	1.38E-13
cs136	1.09E-13	1.16E-13	1.22E-13	1.28E-13	1.35E-13	1.35E-13
te123	3.26E-14	4.13E-14	5.14E-14	6.32E-14	7.66E-14	7.66E-14
tb160	2.39E-14	2.71E-14	3.05E-14	3.39E-14	3.75E-14	3.75E-14
ru105	3.24E-14	3.27E-14	3.31E-14	3.34E-14	3.37E-14	3.37E-14
sn125	3.01E-14	3.02E-14	3.04E-14	3.05E-14	3.06E-14	3.06E-14
pr142	1.36E-14	1.52E-14	1.69E-14	1.85E-14	2.01E-14	2.01E-14
be 9	1.33E-14	1.49E-14	1.65E-14	1.82E-14	1.98E-14	1.98E-14
rb 88	1.25E-14	1.24E-14	1.24E-14	1.24E-14	1.23E-14	1.23E-14
sn123	1.02E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14
i135	9.97E-15	9.96E-15	9.95E-15	9.93E-15	9.92E-15	9.92E-15
te132	9.45E-15	9.45E-15	9.44E-15	9.43E-15	9.43E-15	9.43E-15
sb126	6.46E-15	6.89E-15	7.33E-15	7.76E-15	8.19E-15	8.19E-15
li 7	5.30E-15	5.96E-15	6.61E-15	7.27E-15	7.92E-15	7.92E-15
cd108	2.20E-15	3.04E-15	4.07E-15	5.33E-15	6.83E-15	6.83E-15
te134	5.70E-15	5.69E-15	5.67E-15	5.66E-15	5.65E-15	5.65E-15
i130	3.21E-15	3.52E-15	3.82E-15	4.12E-15	4.42E-15	4.42E-15
sb124	3.13E-15	3.25E-15	3.38E-15	3.50E-15	3.63E-15	3.63E-15
sn114	1.16E-15	1.46E-15	1.81E-15	2.19E-15	2.61E-15	2.61E-15
in117m	2.26E-15	2.28E-15	2.30E-15	2.32E-15	2.34E-15	2.34E-15
rb 86	1.04E-15	1.13E-15	1.23E-15	1.33E-15	1.42E-15	1.42E-15
dy165	7.57E-16	8.24E-16	8.92E-16	9.60E-16	1.03E-15	1.03E-15
in117	6.69E-16	6.75E-16	6.82E-16	6.88E-16	6.94E-16	6.94E-16
cs134m	1.00E-16	1.12E-16	1.24E-16	1.36E-16	1.48E-16	1.48E-16
cd118	1.25E-16	1.26E-16	1.26E-16	1.27E-16	1.27E-16	1.27E-16
ge 75	8.50E-17	8.49E-17	8.48E-17	8.47E-17	8.46E-17	8.46E-17
in119m	3.10E-17	3.11E-17	3.12E-17	3.13E-17	3.14E-17	3.14E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 28

0 fraction of total absorption rate

power= .00mw, burnup= 4383.mwd, flux= 2.71E+08n/cm**2-sec

0 initial 821813. d 913125. d ******* d ******* d ******* d

ag110	3.29E-18	3.83E-18	4.42E-18	5.04E-18	5.70E-18	5.70E-18
cd109	3.53E-18	3.92E-18	4.32E-18	4.72E-18	5.12E-18	5.12E-18
in119	2.47E-18	2.48E-18	2.49E-18	2.51E-18	2.52E-18	2.52E-18

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 29

power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	821813. d	913125. d	******* d	******* d	******* d
h	1	1.75E-04	1.97E-04	2.18E-04	2.40E-04	2.61E-04	2.61E-04
h	2	5.20E-07	5.84E-07	6.48E-07	7.13E-07	7.77E-07	7.77E-07
h	3	3.89E-11	3.95E-11	4.00E-11	4.06E-11	4.11E-11	4.11E-11
h	4	1.56E-34	1.59E-34	1.61E-34	1.63E-34	1.65E-34	1.65E-34
he	3	3.76E-09	4.19E-09	4.61E-09	5.02E-09	5.43E-09	5.43E-09
he	4	2.90E-05	3.25E-05	3.61E-05	3.97E-05	4.32E-05	4.32E-05
he	6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

	ne 20	3.48E-06	3.91E-06	4.34E-06	4.76E-06	5.19E-06	5.19E-06
	ne 21	2.38E-10	2.97E-10	3.62E-10	4.33E-10	5.10E-10	5.10E-10
	ne 22	2.30E-08	2.58E-08	2.87E-08	3.15E-08	3.43E-08	3.43E-08
	ne 23	7.15E-15	7.14E-15	7.13E-15	7.13E-15	7.12E-15	7.12E-15
	na 22	4.21E-11	4.21E-11	4.20E-11	4.20E-11	4.20E-11	4.20E-11
	na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
	na 24	3.07E-08	2.86E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08
	na 24m	5.04E-15	4.69E-15	4.69E-15	4.68E-15	4.68E-15	4.68E-15
	na 25	7.88E-25	9.63E-25	1.16E-24	1.38E-24	1.61E-24	1.61E-24
	mg 24	2.78E-02	3.08E-02	3.37E-02	3.67E-02	3.97E-02	3.97E-02
	mg 25	2.70E-08	3.33E-08	4.02E-08	4.76E-08	5.57E-08	5.57E-08
	mg 26	5.20E-07	5.84E-07	6.48E-07	7.12E-07	7.76E-07	7.76E-07
	mg 27	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12
	mg 28	4.31E-24	4.30E-24	4.29E-24	4.28E-24	4.28E-24	4.28E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	2.27E-10	2.12E-10	2.11E-10	2.11E-10	2.11E-10	2.11E-10
	al 29	5.65E-23	7.00E-23	8.55E-23	1.02E-22	1.20E-22	1.20E-22
	al 30	2.11E-33	2.95E-33	4.01E-33	5.29E-33	6.81E-33	6.81E-33
	si 28	8.10E-02	8.96E-02	9.82E-02	1.07E-01	1.15E-01	1.15E-01
	si 29	2.16E-07	2.70E-07	3.30E-07	3.95E-07	4.66E-07	4.66E-07
	si 30	6.04E-13	8.52E-13	1.16E-12	1.53E-12	1.97E-12	1.97E-12
	si 31	4.29E-25	6.06E-25	8.23E-25	1.09E-24	1.40E-24	1.40E-24
	si 32	5.34E-31	7.81E-31	1.09E-30	1.47E-30	1.93E-30	1.93E-30
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.72E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 30
power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	821813. d	913125. d	******* d	******* d	******* d
	he 4	7.42E-01	8.77E-01	1.02E+00	1.17E+00	1.33E+00	1.33E+00
	pb206	1.09E-04	1.52E-04	2.04E-04	2.66E-04	3.38E-04	3.38E-04
	pb207	3.01E-05	3.81E-05	4.72E-05	5.71E-05	6.81E-05	6.81E-05
	pb208	4.87E-06	6.16E-06	7.59E-06	9.17E-06	1.09E-05	1.09E-05
	pb209	5.23E-12	6.56E-12	8.03E-12	9.64E-12	1.14E-11	1.14E-11
	pb210	5.01E-06	6.15E-06	7.37E-06	8.66E-06	1.00E-05	1.00E-05
	pb211	3.03E-12	3.41E-12	3.79E-12	4.17E-12	4.55E-12	4.55E-12
	pb212	8.40E-12	9.44E-12	1.05E-11	1.15E-11	1.26E-11	1.26E-11
	pb214	1.15E-11	1.41E-11	1.68E-11	1.98E-11	2.29E-11	2.29E-11
	bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	bi209	6.62E-06	9.37E-06	1.28E-05	1.69E-05	2.18E-05	2.18E-05
	bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	bi210	3.08E-09	3.79E-09	4.54E-09	5.33E-09	6.17E-09	6.17E-09
	bi211	1.80E-13	2.02E-13	2.25E-13	2.47E-13	2.70E-13	2.70E-13
	bi212	7.97E-13	8.96E-13	9.94E-13	1.09E-12	1.19E-12	1.19E-12
	bi213	1.22E-12	1.53E-12	1.88E-12	2.25E-12	2.66E-12	2.66E-12
	bi214	8.50E-12	1.04E-11	1.25E-11	1.47E-11	1.70E-11	1.70E-11
	po210	8.52E-08	1.05E-07	1.25E-07	1.47E-07	1.70E-07	1.70E-07
	po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
	po211	1.99E-18	2.23E-18	2.48E-18	2.73E-18	2.98E-18	2.98E-18
	po212	4.19E-23	4.71E-23	5.22E-23	5.74E-23	6.26E-23	6.26E-23
	po213	1.84E-21	2.30E-21	2.82E-21	3.38E-21	3.99E-21	3.99E-21
	po214	1.17E-18	1.44E-18	1.72E-18	2.02E-18	2.34E-18	2.34E-18
	po215	2.49E-18	2.80E-18	3.12E-18	3.43E-18	3.74E-18	3.74E-18
	po216	3.18E-17	3.57E-17	3.97E-17	4.36E-17	4.75E-17	4.75E-17
	po218	1.32E-12	1.63E-12	1.95E-12	2.29E-12	2.65E-12	2.65E-12
	rn218	1.24E-28	1.39E-28	1.54E-28	1.69E-28	1.84E-28	1.84E-28
	rn219	5.54E-15	6.24E-15	6.93E-15	7.63E-15	8.33E-15	8.33E-15
	rn220	1.22E-14	1.37E-14	1.52E-14	1.67E-14	1.82E-14	1.82E-14

rn222	2.35E-09	2.89E-09	3.46E-09	4.07E-09	4.70E-09	4.70E-09
ra222	1.35E-25	1.50E-25	1.67E-25	1.83E-25	2.00E-25	2.00E-25
ra223	1.38E-09	1.56E-09	1.73E-09	1.90E-09	2.08E-09	2.08E-09
ra224	6.94E-11	7.79E-11	8.65E-11	9.51E-11	1.04E-10	1.04E-10
ra225	5.71E-10	7.17E-10	8.77E-10	1.05E-09	1.24E-09	1.24E-09
ra226	3.60E-04	4.42E-04	5.29E-04	6.22E-04	7.19E-04	7.19E-04
ra228	4.25E-12	4.79E-12	5.32E-12	5.86E-12	6.40E-12	6.40E-12
ac225	3.86E-10	4.84E-10	5.93E-10	7.11E-10	8.39E-10	8.39E-10
ac227	9.61E-07	1.08E-06	1.20E-06	1.32E-06	1.44E-06	1.44E-06
ac228	5.19E-16	5.84E-16	6.49E-16	7.15E-16	7.81E-16	7.81E-16
th226	6.59E-24	7.34E-24	8.14E-24	8.94E-24	9.73E-24	9.73E-24
th227	2.23E-09	2.51E-09	2.79E-09	3.07E-09	3.35E-09	3.35E-09
th228	1.32E-08	1.49E-08	1.65E-08	1.82E-08	1.98E-08	1.98E-08
th229	1.11E-04	1.39E-04	1.71E-04	2.05E-04	2.42E-04	2.42E-04
th230	5.13E-02	5.77E-02	6.41E-02	7.06E-02	7.71E-02	7.71E-02
th231	3.20E-09	3.22E-09	3.24E-09	3.26E-09	3.28E-09	3.28E-09
th232	1.04E-02	1.17E-02	1.30E-02	1.43E-02	1.56E-02	1.56E-02
th233	9.50E-14	1.07E-13	1.19E-13	1.30E-13	1.42E-13	1.42E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.45E-03	1.63E-03	1.81E-03	1.99E-03	2.17E-03	2.17E-03
pa232	2.46E-11	2.77E-11	3.08E-11	3.38E-11	3.69E-11	3.69E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 31
power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 821813. d	913125. d	******* d	******* d	******* d	
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.09E-12	8.09E-12	8.09E-12	8.09E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	6.39E-21	7.11E-21	7.89E-21	8.66E-21	9.43E-21	9.43E-21
u231	2.09E-17	2.32E-17	2.57E-17	2.82E-17	3.07E-17	3.07E-17
u232	4.82E-07	5.42E-07	6.01E-07	6.61E-07	7.21E-07	7.21E-07
u233	2.69E-02	3.02E-02	3.35E-02	3.68E-02	4.00E-02	4.00E-02
u234	9.32E+00	9.35E+00	9.39E+00	9.42E+00	9.46E+00	9.46E+00
u235	7.16E+02	7.14E+02	7.12E+02	7.11E+02	7.09E+02	7.09E+02
u236	1.77E+02	1.77E+02	1.77E+02	1.77E+02	1.78E+02	1.78E+02
u237	3.19E-06	3.17E-06	3.17E-06	3.17E-06	3.17E-06	3.17E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	3.21E-07	3.19E-07	3.19E-07	3.19E-07	3.18E-07	3.18E-07
u240	.00E+00	1.03E-40	3.08E-40	6.16E-40	1.33E-39	1.33E-39
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.83E-12	8.77E-12	8.76E-12	8.75E-12	8.73E-12	8.73E-12
np236m	2.10E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12
np236	4.03E-07	4.52E-07	5.00E-07	5.49E-07	5.97E-07	5.97E-07
np237	4.20E+01	4.20E+01	4.19E+01	4.19E+01	4.19E+01	4.19E+01
np238	1.55E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06
np239	4.64E-05	4.61E-05	4.61E-05	4.61E-05	4.60E-05	4.60E-05
np240m	.00E+00	8.76E-43	2.63E-42	5.25E-42	1.14E-41	1.14E-41
np240	9.41E-15	9.32E-15	9.31E-15	9.29E-15	9.27E-15	9.27E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.14E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	3.16E-13	3.23E-13	3.32E-13	3.41E-13	3.49E-13	3.49E-13
pu238	2.34E-02	2.34E-02	2.33E-02	2.33E-02	2.33E-02	2.33E-02
pu239	9.55E+00	1.06E+01	1.17E+01	1.28E+01	1.38E+01	1.38E+01
pu240	8.79E-02	1.09E-01	1.33E-01	1.58E-01	1.85E-01	1.85E-01
pu241	3.67E-05	4.52E-05	5.48E-05	6.52E-05	7.62E-05	7.62E-05
pu242	1.14E-06	1.69E-06	2.40E-06	3.28E-06	4.36E-06	4.36E-06
pu243	2.45E-15	3.60E-15	5.10E-15	6.97E-15	9.24E-15	9.24E-15

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     pu244    1.80E-30  5.23E-30  1.35E-29  3.17E-29  6.88E-29  6.88E-29
     pu245    7.64E-41  2.29E-40  5.35E-40  1.30E-39  2.75E-39  2.75E-39
     pu246     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239    1.74E-19  2.26E-19  2.87E-19  3.55E-19  4.29E-19  4.29E-19
     am240    7.95E-17  1.04E-16  1.31E-16  1.62E-16  1.96E-16  1.96E-16
     am241    6.18E-04  8.11E-04  1.03E-03  1.27E-03  1.54E-03  1.54E-03
     am242m   2.51E-07  3.38E-07  4.39E-07  5.52E-07  6.77E-07  6.77E-07
     am242    2.47E-11  3.24E-11  4.12E-11  5.10E-11  6.18E-11  6.18E-11
     am243    4.82E-09  7.58E-09  1.13E-08  1.62E-08  2.23E-08  2.23E-08
     am244m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244    3.71E-17  5.80E-17  8.64E-17  1.23E-16  1.70E-16  1.70E-16
     am245    1.49E-41  5.97E-41  1.34E-40  2.98E-40  6.27E-40  6.27E-40
     am246     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241    1.47E-21  1.92E-21  2.44E-21  3.02E-21  3.65E-21  3.65E-21
     cm242    4.98E-09  6.54E-09  8.32E-09  1.03E-08  1.25E-08  1.25E-08
     cm243    3.00E-18  4.12E-18  5.40E-18  6.87E-18  8.50E-18  8.50E-18
     cm244    5.83E-13  9.11E-13  1.36E-12  1.94E-12  2.67E-12  2.67E-12
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     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   32
       power= 4.000E-03mw, burnup=4.3830E+03mwd, flux= 2.71E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge 821813. d 913125. d ******* d ******* d ******* d
     cm245    2.36E-16  4.20E-16  6.98E-16  1.10E-15  1.66E-15  1.66E-15
     cm246    4.46E-19  8.95E-19  1.66E-18  2.87E-18  4.73E-18  4.73E-18
     cm247    1.40E-23  3.18E-23  6.57E-23  1.26E-22  2.28E-22  2.28E-22
     cm248    4.38E-27  1.12E-26  2.59E-26  5.51E-26  1.09E-25  1.09E-25
     cm249    1.39E-37  3.55E-37  8.19E-37  1.74E-36  3.43E-36  3.43E-36
     cm250    1.25E-42  3.60E-42  9.27E-42  2.17E-41  4.70E-41  4.70E-41
     cm251     .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals     3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.72E+08  2.71E+08  2.71E+08  2.71E+08  2.71E-07
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  4 of library on unit 33.

          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 "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:  ft33f001
0               8/28/1996    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                    7993    number of nonzero off-diagonal matrix elements
0       ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   33
        power=     .00mw, burnup=   5844.mwd, flux= 2.68E+08n/cm**2-sec
0                                        basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial       ******* d       ******* d       ******* d       ******* d       ******* d
     productions   1.150297E+06   1.151651E+06   1.152966E+06   1.154243E+06   1.155483E+06   1.155483E+06
     absorptions   9.452068E+05   9.462478E+05   9.472621E+05   9.482513E+05   9.492169E+05   9.492169E+05
     k infinity    1.216979E+00   1.217071E+00   1.217156E+00   1.217234E+00   1.217302E+00   1.217302E+00
0                  initial       ******* d       ******* d       ******* d       ******* d       ******* d
     actinide
     absorptions   9.348808E+05   9.357344E+05   9.365691E+05   9.373851E+05   9.381828E+05   9.381828E+05
     non-actinide
     abs. fracs.   1.092452E-02   1.111060E-02   1.128829E-02   1.145917E-02   1.162446E-02   1.162446E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products          page   34
0                              fraction of total absorption rate
        power=     .00mw, burnup=   5844.mwd, flux= 2.68E+08n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149      5.27E-03  5.29E-03  5.31E-03  5.32E-03  5.33E-03  5.33E-03
     eu151      5.60E-04  6.02E-04  6.43E-04  6.82E-04  7.21E-04  7.21E-04
     nd143      4.29E-04  4.64E-04  4.98E-04  5.33E-04  5.67E-04  5.67E-04
     rh103      2.06E-04  2.24E-04  2.41E-04  2.58E-04  2.75E-04  2.75E-04
     xe131      1.38E-04  1.50E-04  1.61E-04  1.72E-04  1.84E-04  1.84E-04
     gd155      1.54E-04  1.60E-04  1.65E-04  1.70E-04  1.74E-04  1.74E-04
     cs133      1.07E-04  1.16E-04  1.25E-04  1.33E-04  1.42E-04  1.42E-04
     sm147      7.91E-05  8.56E-05  9.21E-05  9.85E-05  1.05E-04  1.05E-04
     tc 99      7.85E-05  8.49E-05  9.13E-05  9.76E-05  1.04E-04  1.04E-04
     cd113      8.12E-05  8.33E-05  8.52E-05  8.68E-05  8.83E-05  8.83E-05
     nd145      6.07E-05  6.57E-05  7.06E-05  7.55E-05  8.04E-05  8.04E-05
     mo 95      4.21E-05  4.56E-05  4.90E-05  5.24E-05  5.59E-05  5.59E-05
     sm152      3.73E-05  4.07E-05  4.42E-05  4.77E-05  5.12E-05  5.12E-05
     gd157      4.64E-05  4.74E-05  4.83E-05  4.93E-05  5.02E-05  5.02E-05
     sm151      4.05E-05  4.06E-05  4.07E-05  4.08E-05  4.09E-05  4.09E-05
     sm150      2.52E-05  2.79E-05  3.06E-05  3.33E-05  3.60E-05  3.60E-05
```

kr 83	2.60E-05	2.81E-05	3.02E-05	3.23E-05	3.44E-05	3.44E-05
cs135	2.42E-05	2.62E-05	2.82E-05	3.02E-05	3.21E-05	3.21E-05
ru101	1.89E-05	2.04E-05	2.20E-05	2.35E-05	2.50E-05	2.50E-05
pr141	1.79E-05	1.94E-05	2.09E-05	2.23E-05	2.38E-05	2.38E-05
eu153	1.69E-05	1.84E-05	1.98E-05	2.13E-05	2.27E-05	2.27E-05
la139	1.47E-05	1.59E-05	1.70E-05	1.82E-05	1.94E-05	1.94E-05
ba137	6.92E-06	7.50E-06	8.07E-06	8.65E-06	9.22E-06	9.22E-06
pd105	6.74E-06	7.34E-06	7.94E-06	8.54E-06	9.15E-06	9.15E-06
zr 93	5.94E-06	6.42E-06	6.91E-06	7.39E-06	7.86E-06	7.86E-06
ag109	4.39E-06	4.92E-06	5.47E-06	6.04E-06	6.63E-06	6.63E-06
i129	4.64E-06	5.02E-06	5.41E-06	5.80E-06	6.19E-06	6.19E-06
nd144	4.41E-06	4.77E-06	5.14E-06	5.50E-06	5.86E-06	5.86E-06
mo 97	3.33E-06	3.60E-06	3.87E-06	4.15E-06	4.42E-06	4.42E-06
xe135	2.28E-06	2.28E-06	2.27E-06	2.27E-06	2.27E-06	2.27E-06
zr 91	1.55E-06	1.68E-06	1.80E-06	1.93E-06	2.05E-06	2.05E-06
y 89	1.49E-06	1.61E-06	1.73E-06	1.85E-06	1.96E-06	1.96E-06
ru102	1.37E-06	1.48E-06	1.59E-06	1.71E-06	1.82E-06	1.82E-06
pd108	1.20E-06	1.33E-06	1.46E-06	1.60E-06	1.75E-06	1.75E-06
gd152	9.59E-07	1.12E-06	1.30E-06	1.48E-06	1.68E-06	1.68E-06
ce142	1.22E-06	1.32E-06	1.42E-06	1.51E-06	1.61E-06	1.61E-06
nd148	1.18E-06	1.27E-06	1.37E-06	1.46E-06	1.56E-06	1.56E-06
nd146	9.84E-07	1.06E-06	1.14E-06	1.22E-06	1.31E-06	1.31E-06
in115	8.42E-07	9.13E-07	9.85E-07	1.06E-06	1.13E-06	1.13E-06
ba138	8.39E-07	9.08E-07	9.77E-07	1.05E-06	1.11E-06	1.11E-06
ce140	7.86E-07	8.50E-07	9.15E-07	9.79E-07	1.04E-06	1.04E-06
xe132	7.15E-07	7.74E-07	8.34E-07	8.93E-07	9.52E-07	9.52E-07
pd107	6.40E-07	7.06E-07	7.75E-07	8.45E-07	9.17E-07	9.17E-07
mo 98	4.91E-07	5.32E-07	5.72E-07	6.12E-07	6.52E-07	6.52E-07
mo100	4.75E-07	5.14E-07	5.53E-07	5.92E-07	6.30E-07	6.30E-07
xe134	4.65E-07	5.03E-07	5.41E-07	5.79E-07	6.17E-07	6.17E-07
zr 92	3.74E-07	4.05E-07	4.35E-07	4.65E-07	4.95E-07	4.95E-07
i127	3.25E-07	3.53E-07	3.81E-07	4.10E-07	4.38E-07	4.38E-07
ru104	3.03E-07	3.29E-07	3.55E-07	3.81E-07	4.08E-07	4.08E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 35

0 fraction of total absorption rate

power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	2.99E-07	3.23E-07	3.48E-07	3.72E-07	3.96E-07	3.96E-07
nd150	2.63E-07	2.85E-07	3.07E-07	3.29E-07	3.50E-07	3.50E-07
xe136	2.52E-07	2.72E-07	2.93E-07	3.14E-07	3.34E-07	3.34E-07
pm147	2.66E-07	2.66E-07	2.66E-07	2.65E-07	2.65E-07	2.65E-07
br 81	1.89E-07	2.04E-07	2.20E-07	2.35E-07	2.51E-07	2.51E-07
rb 85	1.83E-07	1.98E-07	2.12E-07	2.27E-07	2.42E-07	2.42E-07
cd111	1.53E-07	1.69E-07	1.84E-07	2.00E-07	2.16E-07	2.16E-07
zr 94	1.60E-07	1.73E-07	1.86E-07	1.99E-07	2.12E-07	2.12E-07
zr 90	1.45E-07	1.57E-07	1.68E-07	1.80E-07	1.92E-07	1.92E-07
eu152	1.45E-07	1.56E-07	1.67E-07	1.77E-07	1.87E-07	1.87E-07
eu155	1.78E-07	1.79E-07	1.81E-07	1.82E-07	1.83E-07	1.83E-07
sm154	1.16E-07	1.26E-07	1.36E-07	1.47E-07	1.57E-07	1.57E-07
te130	1.15E-07	1.24E-07	1.34E-07	1.43E-07	1.53E-07	1.53E-07
rb 87	1.06E-07	1.14E-07	1.23E-07	1.31E-07	1.40E-07	1.40E-07
ru 99	6.12E-08	7.17E-08	8.30E-08	9.51E-08	1.08E-07	1.08E-07
se 77	7.54E-08	8.16E-08	8.77E-08	9.39E-08	1.00E-07	1.00E-07
pd106	6.31E-08	6.90E-08	7.50E-08	8.11E-08	8.73E-08	8.73E-08
gd156	4.66E-08	5.20E-08	5.76E-08	6.32E-08	6.90E-08	6.90E-08
kr 84	5.02E-08	5.43E-08	5.83E-08	6.24E-08	6.64E-08	6.64E-08
gd154	3.37E-08	3.96E-08	4.59E-08	5.27E-08	5.99E-08	5.99E-08
sb121	3.84E-08	4.17E-08	4.49E-08	4.82E-08	5.15E-08	5.15E-08
se 79	3.87E-08	4.19E-08	4.50E-08	4.82E-08	5.13E-08	5.13E-08

sb123	3.11E-08	3.38E-08	3.64E-08	3.90E-08	4.17E-08	4.17E-08
dy161	2.75E-08	3.07E-08	3.40E-08	3.75E-08	4.11E-08	4.11E-08
kr 86	2.77E-08	3.00E-08	3.22E-08	3.44E-08	3.67E-08	3.67E-08
te128	2.56E-08	2.78E-08	2.99E-08	3.21E-08	3.42E-08	3.42E-08
se 80	1.80E-08	1.95E-08	2.10E-08	2.25E-08	2.39E-08	2.39E-08
te125	1.67E-08	1.81E-08	1.95E-08	2.10E-08	2.25E-08	2.25E-08
tb159	1.41E-08	1.55E-08	1.70E-08	1.85E-08	2.01E-08	2.01E-08
ru100	1.06E-08	1.24E-08	1.43E-08	1.64E-08	1.86E-08	1.86E-08
sr 90	1.64E-08	1.63E-08	1.63E-08	1.62E-08	1.62E-08	1.62E-08
cd112	1.16E-08	1.27E-08	1.38E-08	1.49E-08	1.60E-08	1.60E-08
gd158	1.10E-08	1.22E-08	1.34E-08	1.46E-08	1.58E-08	1.58E-08
li 6	1.01E-08	1.09E-08	1.17E-08	1.25E-08	1.33E-08	1.33E-08
nd142	7.35E-09	8.61E-09	9.97E-09	1.14E-08	1.30E-08	1.30E-08
ba134	7.15E-09	8.37E-09	9.69E-09	1.11E-08	1.26E-08	1.26E-08
sn117	8.77E-09	9.54E-09	1.03E-08	1.11E-08	1.19E-08	1.19E-08
sm148	6.58E-09	7.70E-09	8.91E-09	1.02E-08	1.16E-08	1.16E-08
eu154	8.57E-09	9.29E-09	1.00E-08	1.07E-08	1.15E-08	1.15E-08
ba135	5.84E-09	6.84E-09	7.93E-09	9.09E-09	1.03E-08	1.03E-08
rh105	9.45E-09	9.53E-09	9.62E-09	9.70E-09	9.78E-09	9.78E-09
sn119	6.97E-09	7.56E-09	8.16E-09	8.76E-09	9.36E-09	9.36E-09
cd114	6.39E-09	7.05E-09	7.72E-09	8.40E-09	9.09E-09	9.09E-09
pd104	4.96E-09	5.82E-09	6.74E-09	7.73E-09	8.78E-09	8.78E-09
dy164	5.45E-09	6.18E-09	6.96E-09	7.76E-09	8.61E-09	8.61E-09
sn115	6.38E-09	6.92E-09	7.47E-09	8.02E-09	8.57E-09	8.57E-09
dy162	5.00E-09	5.66E-09	6.35E-09	7.07E-09	7.83E-09	7.83E-09
pd110	4.92E-09	5.43E-09	5.95E-09	6.48E-09	7.03E-09	7.03E-09
sr 88	5.10E-09	5.51E-09	5.92E-09	6.33E-09	6.74E-09	6.74E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 36
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	3.47E-09	3.76E-09	4.04E-09	4.32E-09	4.60E-09	4.60E-09
sn126	3.04E-09	3.30E-09	3.57E-09	3.85E-09	4.12E-09	4.12E-09
cs137	3.71E-09	3.71E-09	3.70E-09	3.70E-09	3.70E-09	3.70E-09
se 78	2.68E-09	2.90E-09	3.12E-09	3.34E-09	3.56E-09	3.56E-09
mo 96	1.82E-09	2.11E-09	2.42E-09	2.75E-09	3.11E-09	3.11E-09
sn124	2.24E-09	2.43E-09	2.63E-09	2.82E-09	3.02E-09	3.02E-09
pr143	2.59E-09	2.58E-09	2.58E-09	2.57E-09	2.57E-09	2.57E-09
ba136	1.48E-09	1.65E-09	1.84E-09	2.03E-09	2.23E-09	2.23E-09
as 75	1.59E-09	1.72E-09	1.85E-09	1.98E-09	2.11E-09	2.11E-09
cd110	1.02E-09	1.23E-09	1.46E-09	1.72E-09	2.00E-09	2.00E-09
xe133	1.97E-09	1.97E-09	1.97E-09	1.97E-09	1.96E-09	1.96E-09
dy163	1.23E-09	1.40E-09	1.58E-09	1.76E-09	1.96E-09	1.96E-09
xe130	1.06E-09	1.22E-09	1.38E-09	1.56E-09	1.75E-09	1.75E-09
kr 82	1.11E-09	1.26E-09	1.41E-09	1.58E-09	1.74E-09	1.74E-09
in113	1.25E-09	1.36E-09	1.46E-09	1.57E-09	1.68E-09	1.68E-09
nb 93	9.33E-10	1.09E-09	1.27E-09	1.45E-09	1.65E-09	1.65E-09
ce141	1.56E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09	1.55E-09
sn118	9.13E-10	9.91E-10	1.07E-09	1.15E-09	1.23E-09	1.23E-09
cs134	7.91E-10	8.55E-10	9.19E-10	9.82E-10	1.05E-09	1.05E-09
cd116	7.69E-10	8.35E-10	9.00E-10	9.66E-10	1.03E-09	1.03E-09
sn122	7.68E-10	8.34E-10	8.99E-10	9.66E-10	1.03E-09	1.03E-09
pm149	9.59E-10	9.58E-10	9.57E-10	9.57E-10	9.56E-10	9.56E-10
nd147	9.13E-10	9.12E-10	9.11E-10	9.09E-10	9.08E-10	9.08E-10
br 79	4.75E-10	5.57E-10	6.45E-10	7.39E-10	8.40E-10	8.40E-10
sn120	5.72E-10	6.21E-10	6.70E-10	7.19E-10	7.68E-10	7.68E-10
ag107	3.13E-10	3.73E-10	4.38E-10	5.10E-10	5.88E-10	5.88E-10
ge 73	4.39E-10	4.76E-10	5.13E-10	5.50E-10	5.87E-10	5.87E-10
ce144	5.82E-10	5.81E-10	5.80E-10	5.79E-10	5.78E-10	5.78E-10

kr 85	5.50E-10	5.49E-10	5.47E-10	5.46E-10	5.44E-10	5.44E-10
xe129	2.73E-10	3.20E-10	3.71E-10	4.26E-10	4.84E-10	4.84E-10
te126	2.45E-10	2.81E-10	3.19E-10	3.60E-10	4.03E-10	4.03E-10
ru103	3.67E-10	3.67E-10	3.68E-10	3.69E-10	3.70E-10	3.70E-10
gd160	1.45E-10	1.60E-10	1.76E-10	1.93E-10	2.10E-10	2.10E-10
ge 76	1.56E-10	1.69E-10	1.81E-10	1.94E-10	2.07E-10	2.07E-10
zr 95	1.61E-10	1.61E-10	1.61E-10	1.60E-10	1.60E-10	1.60E-10
ho165	9.24E-11	1.06E-10	1.20E-10	1.34E-10	1.50E-10	1.50E-10
nb 95	1.49E-10	1.48E-10	1.48E-10	1.48E-10	1.48E-10	1.48E-10
y 91	1.37E-10	1.37E-10	1.36E-10	1.36E-10	1.36E-10	1.36E-10
pm151	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
dy160	4.03E-11	4.77E-11	5.57E-11	6.44E-11	7.38E-11	7.38E-11
xe128	2.77E-11	3.24E-11	3.75E-11	4.30E-11	4.89E-11	4.89E-11
ba140	4.62E-11	4.61E-11	4.60E-11	4.60E-11	4.59E-11	4.59E-11
eu156	4.24E-11	4.30E-11	4.36E-11	4.42E-11	4.48E-11	4.48E-11
sm153	4.07E-11	4.09E-11	4.11E-11	4.14E-11	4.16E-11	4.16E-11
te124	2.51E-11	2.78E-11	3.06E-11	3.34E-11	3.63E-11	3.63E-11
ru106	3.28E-11	3.34E-11	3.39E-11	3.44E-11	3.49E-11	3.49E-11
sr 86	1.79E-11	2.05E-11	2.33E-11	2.62E-11	2.93E-11	2.93E-11
sr 89	2.93E-11	2.92E-11	2.91E-11	2.90E-11	2.89E-11	2.89E-11
sr 87	1.87E-11	2.03E-11	2.19E-11	2.35E-11	2.51E-11	2.51E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 37
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

kr 87	2.19E-11	2.19E-11	2.18E-11	2.17E-11	2.17E-11	2.17E-11
sn116	1.06E-11	1.24E-11	1.44E-11	1.65E-11	1.88E-11	1.88E-11
ce143	1.70E-11	1.69E-11	1.69E-11	1.69E-11	1.68E-11	1.68E-11
sb125	1.62E-11	1.63E-11	1.64E-11	1.64E-11	1.65E-11	1.65E-11
y 90	1.56E-11	1.55E-11	1.55E-11	1.54E-11	1.54E-11	1.54E-11
nb 94	1.10E-11	1.20E-11	1.30E-11	1.40E-11	1.51E-11	1.51E-11
la140	1.50E-11	1.50E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
mo 99	1.29E-11	1.29E-11	1.29E-11	1.28E-11	1.28E-11	1.28E-11
ge 74	8.82E-12	9.55E-12	1.03E-11	1.10E-11	1.18E-11	1.18E-11
se 76	6.52E-12	7.34E-12	8.19E-12	9.09E-12	1.00E-11	1.00E-11
pm148m	9.57E-12	9.57E-12	9.57E-12	9.57E-12	9.58E-12	9.58E-12
ge 72	6.15E-12	6.68E-12	7.21E-12	7.75E-12	8.29E-12	8.29E-12
te127m	8.09E-12	8.14E-12	8.19E-12	8.24E-12	8.28E-12	8.28E-12
er166	4.84E-12	5.57E-12	6.36E-12	7.19E-12	8.06E-12	8.06E-12
te122	4.41E-12	5.17E-12	5.99E-12	6.88E-12	7.82E-12	7.82E-12
i131	6.72E-12	6.72E-12	6.71E-12	6.71E-12	6.71E-12	6.71E-12
te129m	1.83E-12	1.83E-12	1.83E-12	1.84E-12	1.84E-12	1.84E-12
kr 80	4.48E-13	5.13E-13	5.83E-13	6.59E-13	7.41E-13	7.41E-13
ag111	4.66E-13	4.77E-13	4.87E-13	4.98E-13	5.08E-13	5.08E-13
eu157	3.96E-13	4.03E-13	4.10E-13	4.17E-13	4.24E-13	4.24E-13
pm148	3.67E-13	3.66E-13	3.66E-13	3.65E-13	3.65E-13	3.65E-13
er167	1.38E-13	1.68E-13	2.02E-13	2.40E-13	2.82E-13	2.82E-13
cd115m	2.52E-13	2.53E-13	2.54E-13	2.55E-13	2.56E-13	2.56E-13
cs136	1.35E-13	1.41E-13	1.47E-13	1.53E-13	1.59E-13	1.59E-13
te123	7.66E-14	9.18E-14	1.09E-13	1.28E-13	1.50E-13	1.50E-13
tb160	3.75E-14	4.11E-14	4.48E-14	4.86E-14	5.24E-14	5.24E-14
ru105	3.37E-14	3.40E-14	3.43E-14	3.45E-14	3.48E-14	3.48E-14
sn125	3.06E-14	3.07E-14	3.08E-14	3.09E-14	3.10E-14	3.10E-14
pr142	2.01E-14	2.18E-14	2.34E-14	2.50E-14	2.66E-14	2.66E-14
be 9	1.98E-14	2.14E-14	2.30E-14	2.46E-14	2.63E-14	2.63E-14
cd108	6.84E-15	8.61E-15	1.07E-14	1.31E-14	1.58E-14	1.58E-14
rb 88	1.23E-14	1.23E-14	1.22E-14	1.22E-14	1.22E-14	1.22E-14
li 7	7.92E-15	8.57E-15	9.22E-15	9.87E-15	1.05E-14	1.05E-14
sn123	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14	1.03E-14

sb126	8.19E-15	8.63E-15	9.06E-15	9.49E-15	9.93E-15	9.93E-15
i135	9.93E-15	9.91E-15	9.90E-15	9.89E-15	9.88E-15	9.88E-15
te132	9.43E-15	9.43E-15	9.42E-15	9.41E-15	9.41E-15	9.41E-15
i130	4.42E-15	4.72E-15	5.02E-15	5.32E-15	5.62E-15	5.62E-15
te134	5.65E-15	5.64E-15	5.62E-15	5.61E-15	5.60E-15	5.60E-15
sn114	2.61E-15	3.07E-15	3.57E-15	4.10E-15	4.67E-15	4.67E-15
sb124	3.63E-15	3.75E-15	3.88E-15	4.00E-15	4.12E-15	4.12E-15
in117m	2.34E-15	2.36E-15	2.38E-15	2.39E-15	2.41E-15	2.41E-15
rb 86	1.42E-15	1.52E-15	1.61E-15	1.70E-15	1.80E-15	1.80E-15
dy165	1.03E-15	1.10E-15	1.16E-15	1.23E-15	1.30E-15	1.30E-15
in117	6.94E-16	7.00E-16	7.06E-16	7.12E-16	7.18E-16	7.18E-16
cs134m	1.48E-16	1.60E-16	1.72E-16	1.84E-16	1.96E-16	1.96E-16
cd118	1.27E-16	1.28E-16	1.28E-16	1.29E-16	1.30E-16	1.30E-16
ge 75	8.47E-17	8.46E-17	8.45E-17	8.44E-17	8.43E-17	8.43E-17
in119m	3.15E-17	3.16E-17	3.17E-17	3.18E-17	3.19E-17	3.19E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 38
0 fraction of total absorption rate
power= .00mw, burnup= 5844.mwd, flux= 2.68E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag110	5.70E-18	6.38E-18	7.09E-18	7.82E-18	8.59E-18	8.59E-18
cd109	5.12E-18	5.53E-18	5.94E-18	6.35E-18	6.78E-18	6.78E-18
in119	2.52E-18	2.53E-18	2.55E-18	2.56E-18	2.57E-18	2.57E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 39
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	2.61E-04	2.83E-04	3.04E-04	3.26E-04	3.48E-04	3.48E-04
h 2	7.77E-07	8.41E-07	9.06E-07	9.70E-07	1.03E-06	1.03E-06
h 3	4.11E-11	4.19E-11	4.24E-11	4.29E-11	4.34E-11	4.34E-11
h 4	1.65E-34	1.68E-34	1.70E-34	1.72E-34	1.74E-34	1.74E-34
he 3	5.43E-09	5.83E-09	6.23E-09	6.61E-09	6.99E-09	6.99E-09
he 4	4.32E-05	4.68E-05	5.04E-05	5.40E-05	5.76E-05	5.76E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	5.19E-06	5.62E-06	6.05E-06	6.48E-06	6.91E-06	6.91E-06
ne 21	5.10E-10	5.92E-10	6.81E-10	7.75E-10	8.74E-10	8.74E-10
ne 22	3.43E-08	3.72E-08	4.00E-08	4.29E-08	4.57E-08	4.57E-08
ne 23	7.12E-15	7.15E-15	7.15E-15	7.14E-15	7.14E-15	7.14E-15
na 22	4.20E-11	4.22E-11	4.22E-11	4.21E-11	4.21E-11	4.21E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.85E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08
na 24m	4.68E-15	4.56E-15	4.56E-15	4.55E-15	4.55E-15	4.55E-15
na 25	1.61E-24	1.85E-24	2.12E-24	2.40E-24	2.69E-24	2.69E-24
mg 24	3.97E-02	4.25E-02	4.54E-02	4.83E-02	5.11E-02	5.11E-02
mg 25	5.57E-08	6.43E-08	7.35E-08	8.32E-08	9.35E-08	9.35E-08
mg 26	7.76E-07	8.41E-07	9.05E-07	9.69E-07	1.03E-06	1.03E-06
mg 27	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12	2.13E-12
mg 28	4.28E-24	4.29E-24	4.29E-24	4.28E-24	4.27E-24	4.27E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.11E-10	2.06E-10	2.06E-10	2.05E-10	2.05E-10	2.05E-10
al 29	1.20E-22	1.40E-22	1.61E-22	1.83E-22	2.07E-22	2.07E-22
al 30	6.81E-33	8.58E-33	1.06E-32	1.30E-32	1.56E-32	1.56E-32
si 28	1.15E-01	1.24E-01	1.32E-01	1.41E-01	1.49E-01	1.49E-01
si 29	4.66E-07	5.42E-07	6.23E-07	7.10E-07	8.01E-07	8.01E-07
si 30	1.97E-12	2.49E-12	3.08E-12	3.76E-12	4.53E-12	4.53E-12
si 31	1.40E-24	1.76E-24	2.18E-24	2.66E-24	3.20E-24	3.20E-24
si 32	1.93E-30	2.48E-30	3.11E-30	3.84E-30	4.68E-30	4.68E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04

0 flux 2.68E+08 2.68E+08 2.68E+08 2.68E+08 2.68E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 40
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	1.33E+00	1.50E+00	1.68E+00	1.86E+00	2.06E+00	2.06E+00
pb206	3.38E-04	4.21E-04	5.15E-04	6.21E-04	7.39E-04	7.39E-04
pb207	6.81E-05	8.00E-05	9.29E-05	1.07E-04	1.22E-04	1.22E-04
pb208	1.09E-05	1.28E-05	1.48E-05	1.70E-05	1.93E-05	1.93E-05
pb209	1.14E-11	1.32E-11	1.52E-11	1.73E-11	1.96E-11	1.96E-11
pb210	1.00E-05	1.14E-05	1.29E-05	1.44E-05	1.60E-05	1.60E-05
pb211	4.55E-12	4.94E-12	5.32E-12	5.70E-12	6.09E-12	6.09E-12
pb212	1.26E-11	1.36E-11	1.46E-11	1.57E-11	1.67E-11	1.67E-11
pb214	2.29E-11	2.61E-11	2.95E-11	3.29E-11	3.65E-11	3.65E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.18E-05	2.75E-05	3.42E-05	4.18E-05	5.04E-05	5.04E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	6.17E-09	7.03E-09	7.94E-09	8.87E-09	9.82E-09	9.82E-09
bi211	2.70E-13	2.93E-13	3.15E-13	3.38E-13	3.61E-13	3.61E-13
bi212	1.19E-12	1.29E-12	1.39E-12	1.49E-12	1.59E-12	1.59E-12
bi213	2.66E-12	3.09E-12	3.56E-12	4.05E-12	4.57E-12	4.57E-12
bi214	1.70E-11	1.94E-11	2.19E-11	2.44E-11	2.71E-11	2.71E-11
po210	1.70E-07	1.94E-07	2.19E-07	2.45E-07	2.71E-07	2.71E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	2.98E-18	3.23E-18	3.48E-18	3.74E-18	3.99E-18	3.99E-18
po212	6.26E-23	6.78E-23	7.29E-23	7.81E-23	8.33E-23	8.33E-23
po213	3.99E-21	4.65E-21	5.35E-21	6.09E-21	6.87E-21	6.87E-21
po214	2.34E-18	2.67E-18	3.01E-18	3.36E-18	3.72E-18	3.72E-18
po215	3.74E-18	4.06E-18	4.37E-18	4.69E-18	5.00E-18	5.00E-18
po216	4.75E-17	5.15E-17	5.54E-17	5.93E-17	6.33E-17	6.33E-17
po218	2.65E-12	3.02E-12	3.41E-12	3.81E-12	4.22E-12	4.22E-12
rn218	1.84E-28	1.99E-28	2.14E-28	2.29E-28	2.44E-28	2.44E-28
rn219	8.33E-15	9.03E-15	9.73E-15	1.04E-14	1.11E-14	1.11E-14
rn220	1.82E-14	1.97E-14	2.12E-14	2.28E-14	2.43E-14	2.43E-14
rn222	4.70E-09	5.37E-09	6.05E-09	6.76E-09	7.49E-09	7.49E-09
ra222	2.00E-25	2.16E-25	2.32E-25	2.48E-25	2.65E-25	2.65E-25
ra223	2.08E-09	2.25E-09	2.43E-09	2.60E-09	2.78E-09	2.78E-09
ra224	1.04E-10	1.12E-10	1.21E-10	1.29E-10	1.38E-10	1.38E-10
ra225	1.24E-09	1.45E-09	1.66E-09	1.89E-09	2.14E-09	2.14E-09
ra226	7.19E-04	8.20E-04	9.25E-04	1.03E-03	1.14E-03	1.14E-03
ra228	6.40E-12	6.93E-12	7.47E-12	8.01E-12	8.55E-12	8.55E-12
ac225	8.39E-10	9.77E-10	1.12E-09	1.28E-09	1.44E-09	1.44E-09
ac227	1.44E-06	1.57E-06	1.69E-06	1.81E-06	1.93E-06	1.93E-06
ac228	7.81E-16	8.46E-16	9.12E-16	9.78E-16	1.04E-15	1.04E-15
th226	9.73E-24	1.05E-23	1.13E-23	1.21E-23	1.29E-23	1.29E-23
th227	3.35E-09	3.63E-09	3.92E-09	4.20E-09	4.48E-09	4.48E-09
th228	1.98E-08	2.14E-08	2.31E-08	2.47E-08	2.63E-08	2.63E-08
th229	2.42E-04	2.81E-04	3.23E-04	3.68E-04	4.15E-04	4.15E-04
th230	7.71E-02	8.36E-02	9.00E-02	9.65E-02	1.03E-01	1.03E-01
th231	3.28E-09	3.30E-09	3.33E-09	3.35E-09	3.37E-09	3.37E-09
th232	1.56E-02	1.69E-02	1.83E-02	1.96E-02	2.09E-02	2.09E-02
th233	1.42E-13	1.54E-13	1.66E-13	1.78E-13	1.90E-13	1.90E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.17E-03	2.35E-03	2.54E-03	2.72E-03	2.90E-03	2.90E-03
pa232	3.69E-11	4.00E-11	4.30E-11	4.61E-11	4.91E-11	4.91E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 41
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06	1.45E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	9.43E-21	1.02E-20	1.10E-20	1.17E-20	1.25E-20	1.25E-20
u231	3.07E-17	3.32E-17	3.57E-17	3.81E-17	4.05E-17	4.05E-17
u232	7.21E-07	7.80E-07	8.40E-07	8.99E-07	9.59E-07	9.59E-07
u233	4.00E-02	4.33E-02	4.65E-02	4.98E-02	5.30E-02	5.30E-02
u234	9.46E+00	9.49E+00	9.53E+00	9.56E+00	9.59E+00	9.59E+00
u235	7.09E+02	7.07E+02	7.05E+02	7.04E+02	7.02E+02	7.02E+02
u236	1.78E+02	1.78E+02	1.78E+02	1.79E+02	1.79E+02	1.79E+02
u237	3.17E-06	3.17E-06	3.17E-06	3.17E-06	3.18E-06	3.18E-06
u238	3.64E+04	3.64E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.18E-07	3.18E-07	3.18E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.33E-39	2.77E-39	5.44E-39	9.95E-39	1.74E-38	1.74E-38
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.73E-12	8.74E-12	8.73E-12	8.72E-12	8.71E-12	8.71E-12
np236m	2.08E-12	2.08E-12	2.07E-12	2.07E-12	2.07E-12	2.07E-12
np236	5.97E-07	6.45E-07	6.94E-07	7.42E-07	7.90E-07	7.90E-07
np237	4.19E+01	4.19E+01	4.19E+01	4.19E+01	4.18E+01	4.18E+01
np238	1.54E-06	1.53E-06	1.53E-06	1.53E-06	1.53E-06	1.53E-06
np239	4.60E-05	4.59E-05	4.59E-05	4.59E-05	4.58E-05	4.58E-05
np240m	1.14E-41	2.36E-41	4.64E-41	8.49E-41	1.49E-40	1.49E-40
np240	9.27E-15	9.25E-15	9.24E-15	9.22E-15	9.21E-15	9.21E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.12E-09	1.12E-09
pu237	3.49E-13	3.58E-13	3.66E-13	3.75E-13	3.83E-13	3.83E-13
pu238	2.33E-02	2.32E-02	2.32E-02	2.32E-02	2.31E-02	2.31E-02
pu239	1.38E+01	1.49E+01	1.59E+01	1.69E+01	1.79E+01	1.79E+01
pu240	1.85E-01	2.13E-01	2.43E-01	2.74E-01	3.07E-01	3.07E-01
pu241	7.62E-05	8.78E-05	1.00E-04	1.13E-04	1.26E-04	1.26E-04
pu242	4.36E-06	5.64E-06	7.14E-06	8.88E-06	1.09E-05	1.09E-05
pu243	9.24E-15	1.19E-14	1.51E-14	1.88E-14	2.29E-14	2.29E-14
pu244	6.88E-29	1.40E-28	2.69E-28	4.93E-28	8.68E-28	8.68E-28
pu245	2.75E-39	5.65E-39	1.09E-38	1.99E-38	3.49E-38	3.49E-38
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	4.29E-19	5.10E-19	5.96E-19	6.87E-19	7.83E-19	7.83E-19
am240	1.96E-16	2.33E-16	2.73E-16	3.14E-16	3.58E-16	3.58E-16
am241	1.54E-03	1.83E-03	2.14E-03	2.47E-03	2.82E-03	2.82E-03
am242m	6.77E-07	8.12E-07	9.59E-07	1.12E-06	1.28E-06	1.28E-06
am242	6.18E-11	7.34E-11	8.58E-11	9.91E-11	1.13E-10	1.13E-10
am243	2.23E-08	3.00E-08	3.92E-08	5.03E-08	6.34E-08	6.34E-08
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.70E-16	2.28E-16	2.98E-16	3.83E-16	4.82E-16	4.82E-16
am245	6.27E-40	1.28E-39	2.43E-39	4.42E-39	7.70E-39	7.70E-39
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	3.65E-21	4.34E-21	5.07E-21	5.85E-21	6.68E-21	6.68E-21
cm242	1.25E-08	1.48E-08	1.73E-08	2.00E-08	2.28E-08	2.28E-08
cm243	8.50E-18	1.03E-17	1.22E-17	1.43E-17	1.65E-17	1.65E-17
cm244	2.67E-12	3.58E-12	4.69E-12	6.01E-12	7.57E-12	7.57E-12

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 42
power= 4.000E-03mw, burnup=5.8440E+03mwd, flux= 2.68E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
cm245	1.66E-15	2.42E-15	3.42E-15	4.70E-15	6.31E-15	6.31E-15

```
     cm246   4.73E-18  7.45E-18  1.13E-17  1.67E-17  2.38E-17  2.38E-17
     cm247   2.28E-22  3.91E-22  6.42E-22  1.02E-21  1.56E-21  1.56E-21
     cm248   1.09E-25  2.04E-25  3.62E-25  6.17E-25  1.01E-24  1.01E-24
     cm249   3.43E-36  6.41E-36  1.14E-35  1.94E-35  3.18E-35  3.18E-35
     cm250   4.70E-41  9.52E-41  1.83E-40  3.34E-40  5.86E-40  5.86E-40
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.68E+08  2.68E+08  2.68E+08  2.68E+08  2.68E-07
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  5 of library on unit 33.

          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 "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:  ft33f001
0                   8/28/1996    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 7993 number of nonzero off-diagonal matrix elements
0 **
1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 page 43
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec
0 basis =
0 (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

0	initial	******* d	******* d	******* d	******* d	******* d
productions	1.157562E+06	1.158774E+06	1.159951E+06	1.161091E+06	1.162197E+06	1.162197E+06
absorptions	9.515668E+05	9.525161E+05	9.534447E+05	9.543523E+05	9.552406E+05	9.552406E+05
k infinity	1.216480E+00	1.216540E+00	1.216589E+00	1.216627E+00	1.216654E+00	1.216654E+00
0	initial	******* d	******* d	******* d	******* d	******* d
actinide absorptions	9.405190E+05	9.413034E+05	9.420698E+05	9.428184E+05	9.435494E+05	9.435494E+05
non-actinide abs. fracs.	1.161009E-02	1.177174E-02	1.193029E-02	1.208556E-02	1.223892E-02	1.223892E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 44
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
sm149	5.33E-03	5.34E-03	5.34E-03	5.35E-03	5.35E-03	5.35E-03
eu151	7.20E-04	7.58E-04	7.95E-04	8.32E-04	8.67E-04	8.67E-04
nd143	5.66E-04	6.01E-04	6.35E-04	6.69E-04	7.02E-04	7.02E-04
rh103	2.75E-04	2.93E-04	3.10E-04	3.27E-04	3.45E-04	3.45E-04
xe131	1.84E-04	1.95E-04	2.06E-04	2.18E-04	2.29E-04	2.29E-04
gd155	1.74E-04	1.78E-04	1.82E-04	1.85E-04	1.89E-04	1.89E-04
cs133	1.42E-04	1.51E-04	1.60E-04	1.68E-04	1.77E-04	1.77E-04
sm147	1.05E-04	1.11E-04	1.18E-04	1.24E-04	1.31E-04	1.31E-04
tc 99	1.04E-04	1.10E-04	1.17E-04	1.23E-04	1.29E-04	1.29E-04
nd145	8.04E-05	8.53E-05	9.02E-05	9.51E-05	1.00E-04	1.00E-04
cd113	8.82E-05	8.96E-05	9.08E-05	9.19E-05	9.29E-05	9.29E-05
mo 95	5.59E-05	5.93E-05	6.27E-05	6.61E-05	6.95E-05	6.95E-05
sm152	5.12E-05	5.48E-05	5.84E-05	6.21E-05	6.58E-05	6.58E-05
gd157	5.02E-05	5.11E-05	5.20E-05	5.29E-05	5.37E-05	5.37E-05
sm150	3.60E-05	3.87E-05	4.14E-05	4.41E-05	4.68E-05	4.68E-05
kr 83	3.44E-05	3.65E-05	3.85E-05	4.06E-05	4.26E-05	4.26E-05
sm151	4.09E-05	4.10E-05	4.11E-05	4.12E-05	4.12E-05	4.12E-05
cs135	3.22E-05	3.41E-05	3.61E-05	3.81E-05	4.01E-05	4.01E-05
ru101	2.51E-05	2.66E-05	2.82E-05	2.97E-05	3.12E-05	3.12E-05
pr141	2.38E-05	2.52E-05	2.67E-05	2.81E-05	2.96E-05	2.96E-05
eu153	2.27E-05	2.42E-05	2.57E-05	2.71E-05	2.86E-05	2.86E-05
la139	1.94E-05	2.06E-05	2.18E-05	2.30E-05	2.42E-05	2.42E-05
pd105	9.15E-06	9.77E-06	1.04E-05	1.10E-05	1.16E-05	1.16E-05
ba137	9.21E-06	9.79E-06	1.04E-05	1.09E-05	1.15E-05	1.15E-05
zr 93	7.87E-06	8.35E-06	8.83E-06	9.30E-06	9.77E-06	9.77E-06
ag109	6.64E-06	7.26E-06	7.89E-06	8.55E-06	9.23E-06	9.23E-06
i129	6.18E-06	6.57E-06	6.96E-06	7.35E-06	7.74E-06	7.74E-06
nd144	5.86E-06	6.22E-06	6.58E-06	6.94E-06	7.30E-06	7.30E-06
mo 97	4.41E-06	4.69E-06	4.96E-06	5.22E-06	5.49E-06	5.49E-06
gd152	1.68E-06	1.89E-06	2.11E-06	2.33E-06	2.57E-06	2.57E-06
zr 91	2.05E-06	2.18E-06	2.30E-06	2.42E-06	2.55E-06	2.55E-06
y 89	1.96E-06	2.08E-06	2.20E-06	2.32E-06	2.43E-06	2.43E-06
pd108	1.75E-06	1.90E-06	2.05E-06	2.20E-06	2.37E-06	2.37E-06
ru102	1.82E-06	1.93E-06	2.04E-06	2.16E-06	2.27E-06	2.27E-06
xe135	2.27E-06	2.27E-06	2.27E-06	2.26E-06	2.26E-06	2.26E-06
ce142	1.61E-06	1.71E-06	1.81E-06	1.91E-06	2.01E-06	2.01E-06
hd148	1.56E-06	1.66E-06	1.75E-06	1.85E-06	1.94E-06	1.94E-06
nd146	1.30E-06	1.38E-06	1.46E-06	1.54E-06	1.62E-06	1.62E-06
in115	1.13E-06	1.20E-06	1.27E-06	1.35E-06	1.42E-06	1.42E-06
ba138	1.11E-06	1.18E-06	1.25E-06	1.32E-06	1.38E-06	1.38E-06

ce140	1.04E-06	1.11E-06	1.17E-06	1.23E-06	1.30E-06	1.30E-06
pd107	9.17E-07	9.90E-07	1.07E-06	1.14E-06	1.22E-06	1.22E-06
xe132	9.52E-07	1.01E-06	1.07E-06	1.13E-06	1.19E-06	1.19E-06
mo 98	6.53E-07	6.93E-07	7.33E-07	7.73E-07	8.13E-07	8.13E-07
mo100	6.31E-07	6.69E-07	7.08E-07	7.47E-07	7.85E-07	7.85E-07
xe134	6.17E-07	6.54E-07	6.92E-07	7.30E-07	7.67E-07	7.67E-07
zr 92	4.95E-07	5.25E-07	5.55E-07	5.85E-07	6.14E-07	6.14E-07
i127	4.38E-07	4.67E-07	4.96E-07	5.25E-07	5.54E-07	5.54E-07
ru104	4.08E-07	4.34E-07	4.60E-07	4.87E-07	5.13E-07	5.13E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 45

0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

0

	initial ******* d	******* d	******* d	******* d	******* d
zr 96	3.97E-07	4.21E-07	4.45E-07	4.69E-07	4.93E-07	4.93E-07
nd150	3.50E-07	3.72E-07	3.94E-07	4.16E-07	4.37E-07	4.37E-07
xe136	3.34E-07	3.55E-07	3.75E-07	3.96E-07	4.16E-07	4.16E-07
br 81	2.51E-07	2.66E-07	2.81E-07	2.97E-07	3.12E-07	3.12E-07
rb 85	2.42E-07	2.57E-07	2.71E-07	2.86E-07	3.00E-07	3.00E-07
cd111	2.16E-07	2.32E-07	2.49E-07	2.66E-07	2.84E-07	2.84E-07
pm147	2.65E-07	2.65E-07	2.64E-07	2.64E-07	2.64E-07	2.64E-07
zr 94	2.12E-07	2.25E-07	2.38E-07	2.51E-07	2.63E-07	2.63E-07
zr 90	1.92E-07	2.04E-07	2.15E-07	2.27E-07	2.38E-07	2.38E-07
eu152	1.87E-07	1.96E-07	2.06E-07	2.15E-07	2.24E-07	2.24E-07
sm154	1.57E-07	1.67E-07	1.77E-07	1.87E-07	1.98E-07	1.98E-07
te130	1.53E-07	1.62E-07	1.72E-07	1.81E-07	1.90E-07	1.90E-07
eu155	1.83E-07	1.85E-07	1.86E-07	1.87E-07	1.89E-07	1.89E-07
rb 87	1.40E-07	1.48E-07	1.57E-07	1.65E-07	1.73E-07	1.73E-07
ru 99	1.08E-07	1.22E-07	1.36E-07	1.52E-07	1.68E-07	1.68E-07
se 77	9.99E-08	1.06E-07	1.12E-07	1.18E-07	1.24E-07	1.24E-07
pd106	8.74E-08	9.37E-08	1.00E-07	1.07E-07	1.13E-07	1.13E-07
gd154	5.99E-08	6.76E-08	7.59E-08	8.45E-08	9.37E-08	9.37E-08
gd156	6.91E-08	7.50E-08	8.10E-08	8.72E-08	9.34E-08	9.34E-08
kr 84	6.65E-08	7.05E-08	7.46E-08	7.86E-08	8.26E-08	8.26E-08
sb121	5.15E-08	5.48E-08	5.81E-08	6.14E-08	6.48E-08	6.48E-08
se 79	5.13E-08	5.44E-08	5.75E-08	6.07E-08	6.38E-08	6.38E-08
dy161	4.11E-08	4.48E-08	4.86E-08	5.25E-08	5.66E-08	5.66E-08
sb123	4.17E-08	4.44E-08	4.71E-08	4.97E-08	5.24E-08	5.24E-08
kr 86	3.66E-08	3.88E-08	4.10E-08	4.32E-08	4.54E-08	4.54E-08
te128	3.42E-08	3.64E-08	3.85E-08	4.07E-08	4.29E-08	4.29E-08
se 80	2.39E-08	2.54E-08	2.68E-08	2.83E-08	2.97E-08	2.97E-08
ru100	1.86E-08	2.10E-08	2.34E-08	2.61E-08	2.88E-08	2.88E-08
te125	2.25E-08	2.39E-08	2.54E-08	2.69E-08	2.84E-08	2.84E-08
tb159	2.01E-08	2.16E-08	2.33E-08	2.49E-08	2.66E-08	2.66E-08
gd158	1.58E-08	1.71E-08	1.84E-08	1.97E-08	2.10E-08	2.10E-08
cd112	1.60E-08	1.71E-08	1.82E-08	1.94E-08	2.06E-08	2.06E-08
nd142	1.30E-08	1.46E-08	1.63E-08	1.82E-08	2.01E-08	2.01E-08
ba134	1.26E-08	1.42E-08	1.59E-08	1.77E-08	1.96E-08	1.96E-08
sm148	1.16E-08	1.30E-08	1.46E-08	1.62E-08	1.79E-08	1.79E-08
li 6	1.33E-08	1.41E-08	1.48E-08	1.56E-08	1.64E-08	1.64E-08
ba135	1.03E-08	1.17E-08	1.31E-08	1.45E-08	1.61E-08	1.61E-08
sr 90	1.62E-08	1.61E-08	1.61E-08	1.60E-08	1.60E-08	1.60E-08
sn117	1.19E-08	1.27E-08	1.35E-08	1.43E-08	1.51E-08	1.51E-08
eu154	1.15E-08	1.22E-08	1.29E-08	1.37E-08	1.44E-08	1.44E-08
pd104	8.79E-09	9.91E-09	1.11E-08	1.24E-08	1.37E-08	1.37E-08
dy164	8.60E-09	9.48E-09	1.04E-08	1.13E-08	1.23E-08	1.23E-08
cd114	9.10E-09	9.79E-09	1.05E-08	1.12E-08	1.19E-08	1.19E-08
sn119	9.35E-09	9.95E-09	1.06E-08	1.12E-08	1.18E-08	1.18E-08
dy162	7.83E-09	8.62E-09	9.45E-09	1.03E-08	1.12E-08	1.12E-08
sn115	8.56E-09	9.11E-09	9.66E-09	1.02E-08	1.08E-08	1.08E-08

rh105	9.77E-09	9.85E-09	9.93E-09	1.00E-08	1.01E-08	1.01E-08
pd110	7.03E-09	7.59E-09	8.17E-09	8.75E-09	9.35E-09	9.35E-09
sr 88	6.73E-09	7.14E-09	7.55E-09	7.95E-09	8.35E-09	8.35E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 46
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	4.60E-09	4.88E-09	5.15E-09	5.43E-09	5.71E-09	5.71E-09
sn126	4.12E-09	4.39E-09	4.67E-09	4.95E-09	5.24E-09	5.24E-09
mo 96	3.11E-09	3.49E-09	3.88E-09	4.30E-09	4.74E-09	4.74E-09
se 78	3.56E-09	3.78E-09	4.00E-09	4.22E-09	4.44E-09	4.44E-09
sn124	3.02E-09	3.21E-09	3.41E-09	3.61E-09	3.80E-09	3.80E-09
cs137	3.70E-09	3.69E-09	3.69E-09	3.69E-09	3.68E-09	3.68E-09
cd110	2.00E-09	2.31E-09	2.64E-09	3.01E-09	3.41E-09	3.41E-09
ba136	2.23E-09	2.44E-09	2.65E-09	2.87E-09	3.10E-09	3.10E-09
dy163	1.95E-09	2.16E-09	2.37E-09	2.59E-09	2.81E-09	2.81E-09
as 75	2.11E-09	2.24E-09	2.37E-09	2.49E-09	2.62E-09	2.62E-09
xe130	1.75E-09	1.94E-09	2.15E-09	2.37E-09	2.59E-09	2.59E-09
nb 93	1.65E-09	1.86E-09	2.09E-09	2.32E-09	2.57E-09	2.57E-09
pr143	2.57E-09	2.56E-09	2.56E-09	2.55E-09	2.55E-09	2.55E-09
kr 82	1.74E-09	1.92E-09	2.10E-09	2.29E-09	2.49E-09	2.49E-09
in113	1.68E-09	1.80E-09	1.91E-09	2.02E-09	2.13E-09	2.13E-09
xe133	1.96E-09	1.96E-09	1.96E-09	1.96E-09	1.96E-09	1.96E-09
sn118	1.23E-09	1.31E-09	1.39E-09	1.47E-09	1.55E-09	1.55E-09
ce141	1.55E-09	1.54E-09	1.54E-09	1.54E-09	1.54E-09	1.54E-09
br 79	8.40E-10	9.47E-10	1.06E-09	1.18E-09	1.31E-09	1.31E-09
sn122	1.03E-09	1.10E-09	1.16E-09	1.23E-09	1.30E-09	1.30E-09
cs134	1.05E-09	1.11E-09	1.17E-09	1.24E-09	1.30E-09	1.30E-09
cd116	1.03E-09	1.10E-09	1.17E-09	1.23E-09	1.30E-09	1.30E-09
sn120	7.68E-10	8.17E-10	8.67E-10	9.16E-10	9.66E-10	9.66E-10
ag107	5.88E-10	6.72E-10	7.63E-10	8.60E-10	9.65E-10	9.65E-10
pm149	9.55E-10	9.54E-10	9.54E-10	9.53E-10	9.53E-10	9.53E-10
nd147	9.09E-10	9.08E-10	9.06E-10	9.05E-10	9.04E-10	9.04E-10
xe129	4.84E-10	5.47E-10	6.13E-10	6.83E-10	7.57E-10	7.57E-10
ge 73	5.86E-10	6.23E-10	6.60E-10	6.97E-10	7.34E-10	7.34E-10
te126	4.03E-10	4.49E-10	4.97E-10	5.48E-10	6.01E-10	6.01E-10
ce144	5.77E-10	5.76E-10	5.75E-10	5.74E-10	5.73E-10	5.73E-10
kr 85	5.44E-10	5.42E-10	5.41E-10	5.40E-10	5.38E-10	5.38E-10
ru103	3.70E-10	3.70E-10	3.71E-10	3.72E-10	3.72E-10	3.72E-10
gd160	2.10E-10	2.28E-10	2.46E-10	2.64E-10	2.83E-10	2.83E-10
ge 76	2.07E-10	2.19E-10	2.32E-10	2.44E-10	2.57E-10	2.57E-10
ho165	1.50E-10	1.66E-10	1.84E-10	2.02E-10	2.21E-10	2.21E-10
zr 95	1.60E-10	1.60E-10	1.60E-10	1.59E-10	1.59E-10	1.59E-10
nb 95	1.48E-10	1.47E-10	1.47E-10	1.47E-10	1.46E-10	1.46E-10
y 91	1.36E-10	1.35E-10	1.35E-10	1.34E-10	1.34E-10	1.34E-10
dy160	7.39E-11	8.40E-11	9.49E-11	1.06E-10	1.19E-10	1.19E-10
pm151	1.11E-10	1.11E-10	1.11E-10	1.12E-10	1.12E-10	1.12E-10
xe128	4.89E-11	5.51E-11	6.18E-11	6.88E-11	7.63E-11	7.63E-11
te124	3.63E-11	3.93E-11	4.24E-11	4.56E-11	4.89E-11	4.89E-11
eu156	4.48E-11	4.54E-11	4.59E-11	4.65E-11	4.70E-11	4.70E-11
ba140	4.59E-11	4.58E-11	4.57E-11	4.57E-11	4.56E-11	4.56E-11
sr 86	2.93E-11	3.25E-11	3.60E-11	3.95E-11	4.33E-11	4.33E-11
sm153	4.16E-11	4.18E-11	4.21E-11	4.23E-11	4.25E-11	4.25E-11
ru106	3.50E-11	3.55E-11	3.60E-11	3.65E-11	3.70E-11	3.70E-11
sr 87	2.51E-11	2.67E-11	2.84E-11	3.00E-11	3.16E-11	3.16E-11
sn116	1.88E-11	2.12E-11	2.38E-11	2.65E-11	2.94E-11	2.94E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 47
0 fraction of total absorption rate
power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
sr 89	2.89E-11	2.88E-11	2.88E-11	2.87E-11	2.86E-11	2.86E-11
kr 87	2.16E-11	2.16E-11	2.15E-11	2.15E-11	2.14E-11	2.14E-11
nb 94	1.51E-11	1.62E-11	1.73E-11	1.84E-11	1.95E-11	1.95E-11
sb125	1.65E-11	1.66E-11	1.67E-11	1.68E-11	1.69E-11	1.69E-11
ce143	1.68E-11	1.68E-11	1.68E-11	1.67E-11	1.67E-11	1.67E-11
y 90	1.54E-11	1.53E-11	1.53E-11	1.52E-11	1.52E-11	1.52E-11
la140	1.49E-11	1.49E-11	1.49E-11	1.48E-11	1.48E-11	1.48E-11
ge 74	1.17E-11	1.25E-11	1.32E-11	1.40E-11	1.47E-11	1.47E-11
se 76	1.00E-11	1.10E-11	1.20E-11	1.31E-11	1.42E-11	1.42E-11
mo 99	1.28E-11	1.28E-11	1.28E-11	1.28E-11	1.28E-11	1.28E-11
te122	7.82E-12	8.83E-12	9.90E-12	1.10E-11	1.22E-11	1.22E-11
er166	8.05E-12	8.97E-12	9.94E-12	1.09E-11	1.20E-11	1.20E-11
ge 72	8.28E-12	8.82E-12	9.36E-12	9.91E-12	1.05E-11	1.05E-11
pm148m	9.57E-12	9.58E-12	9.59E-12	9.59E-12	9.60E-12	9.60E-12
te127m	8.28E-12	8.33E-12	8.37E-12	8.42E-12	8.47E-12	8.47E-12
i131	6.71E-12	6.71E-12	6.71E-12	6.71E-12	6.70E-12	6.70E-12
te129m	1.84E-12	1.84E-12	1.84E-12	1.85E-12	1.85E-12	1.85E-12
kr 80	7.41E-13	8.30E-13	9.26E-13	1.03E-12	1.14E-12	1.14E-12
ag111	5.08E-13	5.19E-13	5.29E-13	5.38E-13	5.48E-13	5.48E-13
er167	2.82E-13	3.29E-13	3.80E-13	4.36E-13	4.97E-13	4.97E-13
eu157	4.24E-13	4.31E-13	4.37E-13	4.44E-13	4.50E-13	4.50E-13
pm148	3.65E-13	3.65E-13	3.65E-13	3.65E-13	3.64E-13	3.64E-13
cd115m	2.56E-13	2.58E-13	2.59E-13	2.60E-13	2.61E-13	2.61E-13
te123	1.50E-13	1.74E-13	2.00E-13	2.29E-13	2.60E-13	2.60E-13
cs136	1.59E-13	1.65E-13	1.71E-13	1.77E-13	1.83E-13	1.83E-13
tb160	5.23E-14	5.63E-14	6.02E-14	6.43E-14	6.84E-14	6.84E-14
ru105	3.49E-14	3.51E-14	3.54E-14	3.57E-14	3.60E-14	3.60E-14
pr142	2.66E-14	2.82E-14	2.98E-14	3.15E-14	3.30E-14	3.30E-14
be 9	2.63E-14	2.79E-14	2.95E-14	3.12E-14	3.28E-14	3.28E-14
sn125	3.10E-14	3.11E-14	3.12E-14	3.13E-14	3.14E-14	3.14E-14
cd108	1.58E-14	1.90E-14	2.25E-14	2.65E-14	3.09E-14	3.09E-14
li 7	1.05E-14	1.11E-14	1.18E-14	1.24E-14	1.31E-14	1.31E-14
rb 88	1.22E-14	1.21E-14	1.21E-14	1.21E-14	1.20E-14	1.20E-14
sb126	9.92E-15	1.04E-14	1.08E-14	1.12E-14	1.17E-14	1.17E-14
sn123	1.03E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	9.87E-15	9.86E-15	9.85E-15	9.84E-15	9.83E-15	9.83E-15
te132	9.40E-15	9.40E-15	9.39E-15	9.39E-15	9.38E-15	9.38E-15
sn114	4.66E-15	5.27E-15	5.92E-15	6.60E-15	7.33E-15	7.33E-15
i130	5.62E-15	5.91E-15	6.21E-15	6.50E-15	6.80E-15	6.80E-15
te134	5.59E-15	5.58E-15	5.57E-15	5.56E-15	5.55E-15	5.55E-15
sb124	4.12E-15	4.25E-15	4.37E-15	4.49E-15	4.61E-15	4.61E-15
in117m	2.41E-15	2.43E-15	2.44E-15	2.46E-15	2.48E-15	2.48E-15
rb 86	1.80E-15	1.89E-15	1.98E-15	2.07E-15	2.16E-15	2.16E-15
dy165	1.30E-15	1.37E-15	1.44E-15	1.50E-15	1.57E-15	1.57E-15
in117	7.17E-16	7.23E-16	7.28E-16	7.34E-16	7.39E-16	7.39E-16
cs134m	1.96E-16	2.08E-16	2.20E-16	2.32E-16	2.44E-16	2.44E-16
cd118	1.29E-16	1.30E-16	1.30E-16	1.31E-16	1.31E-16	1.31E-16
ge 75	8.43E-17	8.42E-17	8.41E-17	8.40E-17	8.39E-17	8.39E-17
in119m	3.19E-17	3.20E-17	3.21E-17	3.22E-17	3.23E-17	3.23E-17

0 fraction of total absorption rate

power= .00mw, burnup= 7305.mwd, flux= 2.67E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d	******* d
ag110	8.58E-18	9.38E-18	1.02E-17	1.10E-17	1.19E-17	1.19E-17
cd109	6.77E-18	7.20E-18	7.64E-18	8.09E-18	8.56E-18	8.56E-18
in119	2.57E-18	2.59E-18	2.60E-18	2.61E-18	2.62E-18	2.62E-18

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 49
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.67E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
h 1	3.48E-04	3.69E-04	3.91E-04	4.13E-04	4.34E-04	4.34E-04
h 2	1.03E-06	1.10E-06	1.16E-06	1.23E-06	1.29E-06	1.29E-06
h 3	4.34E-11	4.42E-11	4.47E-11	4.51E-11	4.56E-11	4.56E-11
h 4	1.74E-34	1.76E-34	1.78E-34	1.80E-34	1.82E-34	1.82E-34
he 3	6.99E-09	7.37E-09	7.73E-09	8.09E-09	8.45E-09	8.45E-09
he 4	5.76E-05	6.11E-05	6.47E-05	6.83E-05	7.19E-05	7.19E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.91E-06	7.35E-06	7.78E-06	8.21E-06	8.64E-06	8.64E-06
ne 21	8.74E-10	9.80E-10	1.09E-09	1.21E-09	1.33E-09	1.33E-09
ne 22	4.57E-08	4.86E-08	5.15E-08	5.43E-08	5.72E-08	5.72E-08
ne 23	7.14E-15	7.18E-15	7.17E-15	7.17E-15	7.16E-15	7.16E-15
na 22	4.21E-11	4.24E-11	4.23E-11	4.23E-11	4.23E-11	4.23E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.77E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.55E-15	4.54E-15	4.54E-15	4.53E-15	4.53E-15	4.53E-15
na 25	2.69E-24	3.01E-24	3.34E-24	3.68E-24	4.04E-24	4.04E-24
mg 24	5.11E-02	5.40E-02	5.69E-02	5.97E-02	6.26E-02	6.26E-02
mg 25	9.35E-08	1.04E-07	1.16E-07	1.28E-07	1.40E-07	1.40E-07
mg 26	1.03E-06	1.10E-06	1.16E-06	1.23E-06	1.29E-06	1.29E-06
mg 27	2.13E-12	2.14E-12	2.14E-12	2.14E-12	2.14E-12	2.14E-12
mg 28	4.27E-24	4.29E-24	4.28E-24	4.28E-24	4.27E-24	4.27E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.05E-10	2.05E-10	2.05E-10	2.04E-10	2.04E-10	2.04E-10
al 29	2.07E-22	2.32E-22	2.58E-22	2.86E-22	3.15E-22	3.15E-22
al 30	1.56E-32	1.86E-32	2.20E-32	2.56E-32	2.97E-32	2.97E-32
si 28	1.49E-01	1.57E-01	1.66E-01	1.74E-01	1.82E-01	1.82E-01
si 29	8.01E-07	8.98E-07	1.00E-06	1.11E-06	1.22E-06	1.22E-06
si 30	4.53E-12	5.40E-12	6.36E-12	7.43E-12	8.62E-12	8.62E-12
si 31	3.20E-24	3.81E-24	4.49E-24	5.24E-24	6.08E-24	6.08E-24
si 32	4.68E-30	5.62E-30	6.67E-30	7.85E-30	9.16E-30	9.16E-30
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.67E+08	2.67E+08	2.67E+08	2.66E+08	2.66E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 50
power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.67E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
he 4	2.06E+00	2.26E+00	2.47E+00	2.69E+00	2.91E+00	2.91E+00
pb206	7.39E-04	8.69E-04	1.01E-03	1.17E-03	1.34E-03	1.34E-03
pb207	1.22E-04	1.37E-04	1.54E-04	1.72E-04	1.90E-04	1.90E-04
pb208	1.93E-05	2.18E-05	2.44E-05	2.72E-05	3.01E-05	3.01E-05
pb209	1.96E-11	2.19E-11	2.44E-11	2.69E-11	2.96E-11	2.96E-11
pb210	1.60E-05	1.75E-05	1.92E-05	2.08E-05	2.25E-05	2.25E-05
pb211	6.09E-12	6.47E-12	6.85E-12	7.24E-12	7.62E-12	7.62E-12
pb212	1.67E-11	1.78E-11	1.88E-11	1.98E-11	2.09E-11	2.09E-11
pb214	3.65E-11	4.01E-11	4.38E-11	4.76E-11	5.14E-11	5.14E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.04E-05	6.01E-05	7.09E-05	8.28E-05	9.60E-05	9.60E-05
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	9.82E-09	1.08E-08	1.18E-08	1.28E-08	1.39E-08	1.39E-08
bi211	3.61E-13	3.84E-13	4.06E-13	4.29E-13	4.52E-13	4.52E-13
bi212	1.59E-12	1.68E-12	1.78E-12	1.88E-12	1.98E-12	1.98E-12
bi213	4.57E-12	5.11E-12	5.69E-12	6.29E-12	6.91E-12	6.91E-12
bi214	2.71E-11	2.98E-11	3.25E-11	3.53E-11	3.82E-11	3.82E-11

po210	2.71E-07	2.98E-07	3.26E-07	3.54E-07	3.83E-07	3.83E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.99E-18	4.24E-18	4.49E-18	4.74E-18	4.99E-18	4.99E-18
po212	8.33E-23	8.85E-23	9.37E-23	9.88E-23	1.04E-22	1.04E-22
po213	6.87E-21	7.69E-21	8.55E-21	9.45E-21	1.04E-20	1.04E-20
po214	3.72E-18	4.10E-18	4.47E-18	4.86E-18	5.25E-18	5.25E-18
po215	5.00E-18	5.32E-18	5.63E-18	5.95E-18	6.27E-18	6.27E-18
po216	6.33E-17	6.72E-17	7.11E-17	7.51E-17	7.90E-17	7.90E-17
po218	4.22E-12	4.64E-12	5.07E-12	5.51E-12	5.95E-12	5.95E-12
rn218	2.44E-28	2.60E-28	2.75E-28	2.90E-28	3.05E-28	3.05E-28
rn219	1.11E-14	1.18E-14	1.25E-14	1.32E-14	1.39E-14	1.39E-14
rn220	2.43E-14	2.58E-14	2.73E-14	2.88E-14	3.03E-14	3.03E-14
rn222	7.49E-09	8.24E-09	9.00E-09	9.78E-09	1.06E-08	1.06E-08
ra222	2.65E-25	2.82E-25	2.98E-25	3.14E-25	3.31E-25	3.31E-25
ra223	2.78E-09	2.95E-09	3.13E-09	3.30E-09	3.48E-09	3.48E-09
ra224	1.38E-10	1.47E-10	1.55E-10	1.64E-10	1.72E-10	1.72E-10
ra225	2.14E-09	2.39E-09	2.66E-09	2.94E-09	3.23E-09	3.23E-09
ra226	1.14E-03	1.26E-03	1.38E-03	1.49E-03	1.62E-03	1.62E-03
ra228	8.55E-12	9.09E-12	9.64E-12	1.02E-11	1.07E-11	1.07E-11
ac225	1.44E-09	1.62E-09	1.80E-09	1.99E-09	2.18E-09	2.18E-09
ac227	1.93E-06	2.05E-06	2.17E-06	2.30E-06	2.42E-06	2.42E-06
ac228	1.04E-15	1.11E-15	1.18E-15	1.24E-15	1.31E-15	1.31E-15
th226	1.29E-23	1.38E-23	1.45E-23	1.53E-23	1.61E-23	1.61E-23
th227	4.48E-09	4.76E-09	5.05E-09	5.33E-09	5.61E-09	5.61E-09
th228	2.63E-08	2.80E-08	2.96E-08	3.13E-08	3.29E-08	3.29E-08
th229	4.15E-04	4.65E-04	5.17E-04	5.72E-04	6.28E-04	6.28E-04
th230	1.03E-01	1.10E-01	1.16E-01	1.23E-01	1.29E-01	1.29E-01
th231	3.37E-09	3.39E-09	3.42E-09	3.44E-09	3.46E-09	3.46E-09
th232	2.09E-02	2.22E-02	2.36E-02	2.49E-02	2.62E-02	2.62E-02
th233	1.90E-13	2.02E-13	2.13E-13	2.25E-13	2.37E-13	2.37E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.90E-03	3.09E-03	3.27E-03	3.45E-03	3.64E-03	3.64E-03
pa232	4.91E-11	5.22E-11	5.53E-11	5.83E-11	6.14E-11	6.14E-11

1

power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.67E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.45E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.25E-20	1.33E-20	1.41E-20	1.49E-20	1.56E-20	1.56E-20
u231	4.05E-17	4.31E-17	4.55E-17	4.79E-17	5.03E-17	5.03E-17
u232	9.59E-07	1.02E-06	1.08E-06	1.14E-06	1.20E-06	1.20E-06
u233	5.30E-02	5.62E-02	5.94E-02	6.26E-02	6.58E-02	6.58E-02
u234	9.59E+00	9.63E+00	9.66E+00	9.70E+00	9.73E+00	9.73E+00
u235	7.02E+02	7.00E+02	6.99E+02	6.97E+02	6.96E+02	6.96E+02
u236	1.79E+02	1.79E+02	1.79E+02	1.80E+02	1.80E+02	1.80E+02
u237	3.18E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06	3.19E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.74E-38	2.96E-38	4.85E-38	7.75E-38	1.21E-37	1.21E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.71E-12	8.75E-12	8.74E-12	8.73E-12	8.72E-12	8.72E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.07E-12	2.07E-12	2.07E-12
np236	7.90E-07	8.38E-07	8.86E-07	9.33E-07	9.81E-07	9.81E-07
np237	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01	4.18E+01
np238	1.53E-06	1.53E-06	1.53E-06	1.53E-06	1.52E-06	1.52E-06

```
     np239   4.58E-05  4.59E-05  4.59E-05  4.58E-05  4.58E-05  4.58E-05
     np240m  1.49E-40  2.52E-40  4.14E-40  6.61E-40  1.03E-39  1.03E-39
     np240   9.21E-15  9.22E-15  9.20E-15  9.19E-15  9.18E-15  9.18E-15
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236   1.12E-09  1.13E-09  1.13E-09  1.13E-09  1.13E-09  1.13E-09
     pu237   3.83E-13  3.93E-13  4.01E-13  4.09E-13  4.16E-13  4.16E-13
     pu238   2.31E-02  2.31E-02  2.31E-02  2.31E-02  2.31E-02  2.31E-02
     pu239   1.79E+01  1.88E+01  1.98E+01  2.07E+01  2.17E+01  2.17E+01
     pu240   3.07E-01  3.41E-01  3.76E-01  4.13E-01  4.50E-01  4.50E-01
     pu241   1.26E-04  1.40E-04  1.55E-04  1.70E-04  1.85E-04  1.85E-04
     pu242   1.09E-05  1.31E-05  1.56E-05  1.85E-05  2.16E-05  2.16E-05
     pu243   2.29E-14  2.77E-14  3.31E-14  3.90E-14  4.55E-14  4.55E-14
     pu244   8.68E-28  1.47E-27  2.42E-27  3.86E-27  6.01E-27  6.01E-27
     pu245   3.49E-38  5.92E-38  9.73E-38  1.55E-37  2.41E-37  2.41E-37
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   7.83E-19  8.90E-19  9.96E-19  1.11E-18  1.22E-18  1.22E-18
     am240   3.58E-16  4.07E-16  4.56E-16  5.06E-16  5.59E-16  5.59E-16
     am241   2.82E-03  3.18E-03  3.57E-03  3.97E-03  4.38E-03  4.38E-03
     am242m  1.28E-06  1.46E-06  1.64E-06  1.84E-06  2.04E-06  2.04E-06
     am242   1.13E-10  1.28E-10  1.43E-10  1.59E-10  1.76E-10  1.76E-10
     am243   6.34E-08  7.87E-08  9.63E-08  1.16E-07  1.39E-07  1.39E-07
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   4.82E-16  5.98E-16  7.32E-16  8.84E-16  1.06E-15  1.06E-15
     am245   7.70E-39  1.30E-38  2.12E-38  3.36E-38  5.20E-38  5.20E-38
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   6.68E-21  7.58E-21  8.49E-21  9.44E-21  1.04E-20  1.04E-20
     cm242   2.28E-08  2.58E-08  2.90E-08  3.22E-08  3.56E-08  3.56E-08
     cm243   1.65E-17  1.88E-17  2.12E-17  2.38E-17  2.65E-17  2.65E-17
     cm244   7.57E-12  9.40E-12  1.15E-11  1.39E-11  1.66E-11  1.66E-11
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   52
       power= 4.000E-03mw, burnup=7.3050E+03mwd, flux= 2.67E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
          charge ******* d ******* d ******* d ******* d ******* d
     cm245   6.31E-15  8.32E-15  1.08E-14  1.38E-14  1.73E-14  1.73E-14
     cm246   2.38E-17  3.33E-17  4.56E-17  6.13E-17  8.10E-17  8.10E-17
     cm247   1.56E-21  2.33E-21  3.39E-21  4.82E-21  6.73E-21  6.73E-21
     cm248   1.01E-24  1.61E-24  2.49E-24  3.76E-24  5.54E-24  5.54E-24
     cm249   3.18E-35  5.06E-35  7.82E-35  1.18E-34  1.74E-34  1.74E-34
     cm250   5.86E-40  9.92E-40  1.63E-39  2.59E-39  4.03E-39  4.03E-39
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.67E+08  2.67E+08  2.67E+08  2.66E+08  2.66E-07
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  6 of library on unit 33.

          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 densiities
            pass n applies mid time densities of nth library interval
          first library updated was...
          *******************************************************************************
          *                                                                             *
          *             prelim lwr origen-s binary working library--id = 1143           *
          *          made from modified card-image origen-s libraries of scale 4.2      *
          *       data from the light element, actinide, and fission product libraries  *
          *         decay data, including gamma and total energy, are from endf/b-vi    *
          *                                                                             *
          *       neutron flux spectrum factors and cross sections were produced from   *
          *      the "presas2" case updating all nuclides on the scale "burnup" library *
          *                                                                             *
          *                   fission product yields are from endf/b-v                . *
          *                                                                             *
          *               photon libraries use an 18-energy-group structure             *
          *              the photon data are from the master photon data base,          *
          *               produced to include bremsstrahlung from uo2 matrix            *
          *                                                                             *
          *         see information above this box (if present) for later updates      *
          *                                                                             *
          *******************************************************************************
          *                                                                             *
0         *******************************************************************************
0                   .other identification and sizes of library.
0                    data set name:  ft33f001
0                8/28/1996    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                     7993    number of nonzero off-diagonal matrix elements
0         *******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                  page   53
         power=     .00mw, burnup=   8766.mwd, flux= 2.66E+08n/cm**2-sec
0                                                     basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial        ******* d      ******* d      ******* d      ******* d      ******* d
     productions   1.163128E+06   1.164209E+06   1.165256E+06   1.166270E+06   1.167251E+06   1.167251E+06
     absorptions   9.567318E+05   9.576066E+05   9.584629E+05   9.593006E+05   9.601203E+05   9.601203E+05
     k infinity    1.215731E+00   1.215749E+00   1.215755E+00   1.215750E+00   1.215734E+00   1.215734E+00
0                    initial        ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions   9.450275E+05   9.457461E+05   9.464477E+05   9.471324E+05   9.478004E+05   9.478004E+05
     non-actinide
     abs. fracs.   1.223361E-02   1.238549E-02   1.253587E-02   1.268452E-02   1.283157E-02   1.283157E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2               fission products       page   54
0                                                fraction of total absorption rate
         power=     .00mw, burnup=   8766.mwd, flux= 2.66E+08n/cm**2-sec
0                 initial ******* d ******* d ******* d ******* d ******* d

     sm149      5.34E-03  5.34E-03  5.35E-03  5.35E-03  5.35E-03  5.35E-03
     eu151      8.66E-04  9.01E-04  9.34E-04  9.67E-04  1.00E-03  1.00E-03
     nd143      7.02E-04  7.35E-04  7.69E-04  8.02E-04  8.36E-04  8.36E-04
     rh103      3.45E-04  3.62E-04  3.79E-04  3.97E-04  4.14E-04  4.14E-04
```

xe131	2.29E-04	2.40E-04	2.51E-04	2.63E-04	2.74E-04	2.74E-04
cs133	1.77E-04	1.86E-04	1.94E-04	2.03E-04	2.12E-04	2.12E-04
gd155	1.88E-04	1.91E-04	1.94E-04	1.97E-04	1.99E-04	1.99E-04
sm147	1.31E-04	1.37E-04	1.43E-04	1.50E-04	1.56E-04	1.56E-04
tc 99	1.29E-04	1.36E-04	1.42E-04	1.48E-04	1.54E-04	1.54E-04
nd145	1.00E-04	1.05E-04	1.10E-04	1.14E-04	1.19E-04	1.19E-04
cd113	9.28E-05	9.37E-05	9.46E-05	9.54E-05	9.62E-05	9.62E-05
mo 95	6.95E-05	7.29E-05	7.62E-05	7.96E-05	8.29E-05	8.29E-05
sm152	6.58E-05	6.96E-05	7.33E-05	7.71E-05	8.09E-05	8.09E-05
sm150	4.68E-05	4.95E-05	5.21E-05	5.48E-05	5.75E-05	5.75E-05
gd157	5.37E-05	5.45E-05	5.54E-05	5.62E-05	5.70E-05	5.70E-05
kr 83	4.26E-05	4.46E-05	4.67E-05	4.87E-05	5.07E-05	5.07E-05
cs135	4.01E-05	4.20E-05	4.40E-05	4.60E-05	4.79E-05	4.79E-05
sm151	4.12E-05	4.13E-05	4.14E-05	4.15E-05	4.16E-05	4.16E-05
ru101	3.13E-05	3.28E-05	3.44E-05	3.59E-05	3.74E-05	3.74E-05
pr141	2.96E-05	3.10E-05	3.25E-05	3.39E-05	3.53E-05	3.53E-05
eu153	2.86E-05	3.01E-05	3.16E-05	3.31E-05	3.46E-05	3.46E-05
la139	2.41E-05	2.53E-05	2.65E-05	2.77E-05	2.88E-05	2.88E-05
pd105	1.16E-05	1.23E-05	1.29E-05	1.35E-05	1.42E-05	1.42E-05
ba137	1.15E-05	1.21E-05	1.26E-05	1.32E-05	1.38E-05	1.38E-05
ag109	9.24E-06	9.94E-06	1.07E-05	1.14E-05	1.22E-05	1.22E-05
zr 93	9.78E-06	1.03E-05	1.07E-05	1.12E-05	1.17E-05	1.17E-05
i129	7.73E-06	8.12E-06	8.51E-06	8.90E-06	9.29E-06	9.29E-06
nd144	7.29E-06	7.65E-06	8.01E-06	8.36E-06	8.72E-06	8.72E-06
mo 97	5.49E-06	5.76E-06	6.03E-06	6.30E-06	6.56E-06	6.56E-06
gd152	2.57E-06	2.81E-06	3.07E-06	3.33E-06	3.61E-06	3.61E-06
pd108	2.37E-06	2.53E-06	2.70E-06	2.87E-06	3.05E-06	3.05E-06
zr 91	2.55E-06	2.67E-06	2.79E-06	2.91E-06	3.03E-06	3.03E-06
y 89	2.43E-06	2.55E-06	2.67E-06	2.78E-06	2.90E-06	2.90E-06
ru102	2.27E-06	2.38E-06	2.49E-06	2.60E-06	2.72E-06	2.72E-06
ce142	2.00E-06	2.10E-06	2.20E-06	2.30E-06	2.39E-06	2.39E-06
nd148	1.94E-06	2.04E-06	2.13E-06	2.23E-06	2.32E-06	2.32E-06
xe135	2.26E-06	2.26E-06	2.26E-06	2.26E-06	2.26E-06	2.26E-06
nd146	1.62E-06	1.70E-06	1.78E-06	1.86E-06	1.94E-06	1.94E-06
in115	1.42E-06	1.49E-06	1.56E-06	1.64E-06	1.71E-06	1.71E-06
ba138	1.38E-06	1.45E-06	1.52E-06	1.59E-06	1.65E-06	1.65E-06
pd107	1.22E-06	1.30E-06	1.38E-06	1.47E-06	1.55E-06	1.55E-06
ce140	1.29E-06	1.36E-06	1.42E-06	1.48E-06	1.55E-06	1.55E-06
xe132	1.19E-06	1.25E-06	1.31E-06	1.37E-06	1.42E-06	1.42E-06
mo 98	8.14E-07	8.54E-07	8.94E-07	9.33E-07	9.73E-07	9.73E-07
mo100	7.86E-07	8.24E-07	8.63E-07	9.01E-07	9.40E-07	9.40E-07
xe134	7.67E-07	8.04E-07	8.42E-07	8.79E-07	9.17E-07	9.17E-07
zr 92	6.14E-07	6.44E-07	6.73E-07	7.03E-07	7.32E-07	7.32E-07
i127	5.55E-07	5.84E-07	6.13E-07	6.43E-07	6.73E-07	6.73E-07
ru104	5.13E-07	5.40E-07	5.67E-07	5.93E-07	6.20E-07	6.20E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 55
0 fraction of total absorption rate
power= .00mw, burnup= 8766.mwd, flux= 2.66E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	4.94E-07	5.18E-07	5.42E-07	5.66E-07	5.90E-07	5.90E-07
nd150	4.37E-07	4.59E-07	4.81E-07	5.03E-07	5.24E-07	5.24E-07
xe136	4.16E-07	4.36E-07	4.57E-07	4.77E-07	4.97E-07	4.97E-07
br 81	3.12E-07	3.27E-07	3.42E-07	3.57E-07	3.73E-07	3.73E-07
rb 85	3.00E-07	3.15E-07	3.29E-07	3.43E-07	3.58E-07	3.58E-07
cd111	2.84E-07	3.01E-07	3.19E-07	3.38E-07	3.56E-07	3.56E-07
zr 94	2.64E-07	2.76E-07	2.89E-07	3.02E-07	3.15E-07	3.15E-07
zr 90	2.38E-07	2.50E-07	2.61E-07	2.73E-07	2.84E-07	2.84E-07
pm147	2.64E-07	2.63E-07	2.63E-07	2.63E-07	2.62E-07	2.62E-07
eu152	2.24E-07	2.32E-07	2.41E-07	2.49E-07	2.57E-07	2.57E-07

ru 99	1.68E-07	1.85E-07	2.02E-07	2.21E-07	2.40E-07	2.40E-07
sm154	1.98E-07	2.08E-07	2.18E-07	2.29E-07	2.39E-07	2.39E-07
te130	1.90E-07	2.00E-07	2.09E-07	2.18E-07	2.28E-07	2.28E-07
rb 87	1.73E-07	1.82E-07	1.90E-07	1.98E-07	2.07E-07	2.07E-07
eu155	1.89E-07	1.90E-07	1.91E-07	1.93E-07	1.94E-07	1.94E-07
se 77	1.24E-07	1.30E-07	1.36E-07	1.42E-07	1.48E-07	1.48E-07
pd106	1.13E-07	1.20E-07	1.27E-07	1.33E-07	1.40E-07	1.40E-07
gd154	9.36E-08	1.03E-07	1.13E-07	1.24E-07	1.35E-07	1.35E-07
gd156	9.35E-08	9.98E-08	1.06E-07	1.13E-07	1.19E-07	1.19E-07
kr 84	8.27E-08	8.67E-08	9.06E-08	9.46E-08	9.86E-08	9.86E-08
sb121	6.48E-08	6.81E-08	7.15E-08	7.48E-08	7.82E-08	7.82E-08
se 79	6.37E-08	6.68E-08	6.99E-08	7.30E-08	7.61E-08	7.61E-08
dy161	5.65E-08	6.07E-08	6.50E-08	6.94E-08	7.38E-08	7.38E-08
sb123	5.24E-08	5.51E-08	5.78E-08	6.05E-08	6.32E-08	6.32E-08
kr 86	4.54E-08	4.76E-08	4.97E-08	5.19E-08	5.41E-08	5.41E-08
te128	4.29E-08	4.50E-08	4.72E-08	4.94E-08	5.16E-08	5.16E-08
ru100	2.88E-08	3.17E-08	3.47E-08	3.79E-08	4.12E-08	4.12E-08
se 80	2.97E-08	3.12E-08	3.26E-08	3.41E-08	3.55E-08	3.55E-08
te125	2.84E-08	2.99E-08	3.14E-08	3.29E-08	3.44E-08	3.44E-08
tb159	2.66E-08	2.83E-08	3.01E-08	3.18E-08	3.37E-08	3.37E-08
nd142	2.01E-08	2.21E-08	2.42E-08	2.65E-08	2.88E-08	2.88E-08
ba134	1.96E-08	2.15E-08	2.36E-08	2.58E-08	2.80E-08	2.80E-08
gd158	2.10E-08	2.23E-08	2.37E-08	2.51E-08	2.65E-08	2.65E-08
sm148	1.79E-08	1.97E-08	2.16E-08	2.36E-08	2.56E-08	2.56E-08
cd112	2.05E-08	2.17E-08	2.29E-08	2.41E-08	2.53E-08	2.53E-08
ba135	1.61E-08	1.77E-08	1.94E-08	2.12E-08	2.31E-08	2.31E-08
pd104	1.37E-08	1.51E-08	1.66E-08	1.81E-08	1.97E-08	1.97E-08
li 6	1.64E-08	1.72E-08	1.79E-08	1.87E-08	1.95E-08	1.95E-08
sn117	1.51E-08	1.59E-08	1.67E-08	1.76E-08	1.84E-08	1.84E-08
eu154	1.44E-08	1.51E-08	1.59E-08	1.66E-08	1.74E-08	1.74E-08
dy164	1.23E-08	1.33E-08	1.43E-08	1.54E-08	1.65E-08	1.65E-08
sr 90	1.60E-08	1.59E-08	1.59E-08	1.58E-08	1.58E-08	1.58E-08
dy162	1.12E-08	1.21E-08	1.31E-08	1.40E-08	1.51E-08	1.51E-08
cd114	1.19E-08	1.26E-08	1.34E-08	1.41E-08	1.48E-08	1.48E-08
sn119	1.18E-08	1.24E-08	1.30E-08	1.36E-08	1.42E-08	1.42E-08
sn115	1.08E-08	1.13E-08	1.19E-08	1.24E-08	1.30E-08	1.30E-08
pd110	9.36E-09	9.97E-09	1.06E-08	1.12E-08	1.19E-08	1.19E-08
rh105	1.01E-08	1.01E-08	1.02E-08	1.03E-08	1.04E-08	1.04E-08
sr 88	8.35E-09	8.75E-09	9.15E-09	9.55E-09	9.94E-09	9.94E-09

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 56
0 fraction of total absorption rate
power= .00mw, burnup= 8766.mwd, flux= 2.66E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

se 82	5.71E-09	5.98E-09	6.26E-09	6.53E-09	6.81E-09	6.81E-09
mo 96	4.74E-09	5.20E-09	5.68E-09	6.18E-09	6.71E-09	6.71E-09
sn126	5.23E-09	5.51E-09	5.80E-09	6.09E-09	6.37E-09	6.37E-09
se 78	4.44E-09	4.66E-09	4.88E-09	5.10E-09	5.32E-09	5.32E-09
cd110	3.40E-09	3.83E-09	4.29E-09	4.77E-09	5.30E-09	5.30E-09
sn124	3.81E-09	4.01E-09	4.21E-09	4.41E-09	4.61E-09	4.61E-09
ba136	3.11E-09	3.34E-09	3.59E-09	3.84E-09	4.10E-09	4.10E-09
dy163	2.81E-09	3.05E-09	3.29E-09	3.54E-09	3.80E-09	3.80E-09
nb 93	2.57E-09	2.83E-09	3.10E-09	3.38E-09	3.68E-09	3.68E-09
cs137	3.68E-09	3.68E-09	3.68E-09	3.68E-09	3.67E-09	3.67E-09
xe130	2.59E-09	2.83E-09	3.08E-09	3.33E-09	3.60E-09	3.60E-09
kr 82	2.49E-09	2.69E-09	2.90E-09	3.12E-09	3.35E-09	3.35E-09
as 75	2.62E-09	2.75E-09	2.88E-09	3.01E-09	3.14E-09	3.14E-09
in113	2.13E-09	2.25E-09	2.36E-09	2.47E-09	2.59E-09	2.59E-09
pr143	2.55E-09	2.54E-09	2.54E-09	2.54E-09	2.53E-09	2.53E-09
xe133	1.95E-09	1.95E-09	1.95E-09	1.95E-09	1.95E-09	1.95E-09

br 79	1.31E-09	1.44E-09	1.58E-09	1.72E-09	1.87E-09	1.87E-09
sn118	1.55E-09	1.63E-09	1.71E-09	1.79E-09	1.87E-09	1.87E-09
sn122	1.30E-09	1.37E-09	1.43E-09	1.50E-09	1.57E-09	1.57E-09
cd116	1.30E-09	1.37E-09	1.43E-09	1.50E-09	1.57E-09	1.57E-09
cs134	1.30E-09	1.36E-09	1.43E-09	1.49E-09	1.55E-09	1.55E-09
ce141	1.54E-09	1.53E-09	1.53E-09	1.53E-09	1.53E-09	1.53E-09
ag107	9.64E-10	1.08E-09	1.19E-09	1.32E-09	1.45E-09	1.45E-09
sn120	9.66E-10	1.02E-09	1.07E-09	1.12E-09	1.17E-09	1.17E-09
xe129	7.56E-10	8.34E-10	9.15E-10	1.00E-09	1.09E-09	1.09E-09
pm149	9.52E-10	9.51E-10	9.50E-10	9.50E-10	9.49E-10	9.49E-10
nd147	9.05E-10	9.04E-10	9.03E-10	9.01E-10	9.00E-10	9.00E-10
ge 73	7.34E-10	7.71E-10	8.08E-10	8.45E-10	8.82E-10	8.82E-10
te126	6.01E-10	6.56E-10	7.15E-10	7.75E-10	8.39E-10	8.39E-10
ce144	5.73E-10	5.72E-10	5.71E-10	5.70E-10	5.69E-10	5.69E-10
kr 85	5.38E-10	5.37E-10	5.35E-10	5.34E-10	5.33E-10	5.33E-10
ru103	3.72E-10	3.73E-10	3.74E-10	3.74E-10	3.75E-10	3.75E-10
gd160	2.83E-10	3.02E-10	3.22E-10	3.42E-10	3.63E-10	3.63E-10
ge 76	2.57E-10	2.69E-10	2.82E-10	2.94E-10	3.07E-10	3.07E-10
ho165	2.21E-10	2.41E-10	2.61E-10	2.83E-10	3.05E-10	3.05E-10
dy160	1.19E-10	1.32E-10	1.46E-10	1.61E-10	1.76E-10	1.76E-10
zr 95	1.59E-10	1.59E-10	1.59E-10	1.58E-10	1.58E-10	1.58E-10
nb 95	1.46E-10	1.46E-10	1.46E-10	1.46E-10	1.46E-10	1.46E-10
y 91	1.34E-10	1.34E-10	1.33E-10	1.33E-10	1.33E-10	1.33E-10
pm151	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.12E-10
xe128	7.62E-11	8.40E-11	9.22E-11	1.01E-10	1.10E-10	1.10E-10
te124	4.89E-11	5.22E-11	5.57E-11	5.92E-11	6.28E-11	6.28E-11
sr 86	4.32E-11	4.71E-11	5.12E-11	5.54E-11	5.98E-11	5.98E-11
eu156	4.70E-11	4.75E-11	4.81E-11	4.86E-11	4.91E-11	4.91E-11
ba140	4.56E-11	4.55E-11	4.55E-11	4.54E-11	4.54E-11	4.54E-11
sm153	4.25E-11	4.27E-11	4.30E-11	4.32E-11	4.35E-11	4.35E-11
sn116	2.94E-11	3.24E-11	3.56E-11	3.89E-11	4.24E-11	4.24E-11
ru106	3.70E-11	3.75E-11	3.80E-11	3.84E-11	3.89E-11	3.89E-11
sr 87	3.16E-11	3.32E-11	3.49E-11	3.65E-11	3.82E-11	3.82E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 57
0 fraction of total absorption rate
power= .00mw, burnup= 8766.mwd, flux= 2.66E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sr 89	2.86E-11	2.85E-11	2.84E-11	2.83E-11	2.83E-11	2.83E-11
nb 94	1.95E-11	2.07E-11	2.19E-11	2.31E-11	2.44E-11	2.44E-11
kr 87	2.14E-11	2.13E-11	2.13E-11	2.12E-11	2.12E-11	2.12E-11
se 76	1.41E-11	1.53E-11	1.65E-11	1.77E-11	1.89E-11	1.89E-11
ge 74	1.47E-11	1.54E-11	1.61E-11	1.69E-11	1.76E-11	1.76E-11
te122	1.22E-11	1.35E-11	1.48E-11	1.62E-11	1.76E-11	1.76E-11
sb125	1.69E-11	1.70E-11	1.70E-11	1.71E-11	1.72E-11	1.72E-11
ce143	1.67E-11	1.67E-11	1.66E-11	1.66E-11	1.66E-11	1.66E-11
er166	1.20E-11	1.31E-11	1.42E-11	1.54E-11	1.66E-11	1.66E-11
y 90	1.52E-11	1.51E-11	1.51E-11	1.50E-11	1.50E-11	1.50E-11
la140	1.48E-11	1.48E-11	1.48E-11	1.48E-11	1.47E-11	1.47E-11
mo 99	1.28E-11	1.28E-11	1.27E-11	1.27E-11	1.27E-11	1.27E-11
ge 72	1.04E-11	1.10E-11	1.15E-11	1.21E-11	1.27E-11	1.27E-11
pm148m	9.59E-12	9.60E-12	9.61E-12	9.61E-12	9.62E-12	9.62E-12
te127m	8.46E-12	8.50E-12	8.55E-12	8.59E-12	8.63E-12	8.63E-12
i131	6.70E-12	6.70E-12	6.70E-12	6.70E-12	6.70E-12	6.70E-12
te129m	1.85E-12	1.85E-12	1.85E-12	1.86E-12	1.86E-12	1.86E-12
kr 80	1.14E-12	1.26E-12	1.38E-12	1.52E-12	1.66E-12	1.66E-12
er167	4.97E-13	5.63E-13	6.34E-13	7.11E-13	7.93E-13	7.93E-13
ag111	5.48E-13	5.58E-13	5.67E-13	5.76E-13	5.85E-13	5.85E-13
eu157	4.50E-13	4.57E-13	4.63E-13	4.69E-13	4.75E-13	4.75E-13
te123	2.60E-13	2.95E-13	3.32E-13	3.72E-13	4.16E-13	4.16E-13

pm148	3.65E-13	3.65E-13	3.64E-13	3.64E-13	3.64E-13	3.64E-13
cd115m	2.61E-13	2.62E-13	2.63E-13	2.64E-13	2.65E-13	2.65E-13
cs136	1.83E-13	1.89E-13	1.95E-13	2.01E-13	2.06E-13	2.06E-13
tb160	6.83E-14	7.25E-14	7.68E-14	8.11E-14	8.54E-14	8.54E-14
cd108	3.09E-14	3.59E-14	4.13E-14	4.74E-14	5.40E-14	5.40E-14
pr142	3.30E-14	3.46E-14	3.62E-14	3.78E-14	3.94E-14	3.94E-14
be 9	3.28E-14	3.44E-14	3.60E-14	3.76E-14	3.92E-14	3.92E-14
ru105	3.60E-14	3.63E-14	3.65E-14	3.68E-14	3.70E-14	3.70E-14
sn125	3.14E-14	3.15E-14	3.16E-14	3.17E-14	3.18E-14	3.18E-14
li 7	1.31E-14	1.37E-14	1.43E-14	1.50E-14	1.56E-14	1.56E-14
sb126	1.17E-14	1.21E-14	1.25E-14	1.30E-14	1.34E-14	1.34E-14
rb 88	1.20E-14	1.20E-14	1.19E-14	1.19E-14	1.19E-14	1.19E-14
sn114	7.32E-15	8.08E-15	8.88E-15	9.72E-15	1.06E-14	1.06E-14
sn123	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14	1.04E-14
i135	9.82E-15	9.81E-15	9.80E-15	9.79E-15	9.78E-15	9.78E-15
te132	9.38E-15	9.37E-15	9.37E-15	9.37E-15	9.36E-15	9.36E-15
i130	6.79E-15	7.09E-15	7.38E-15	7.67E-15	7.96E-15	7.96E-15
te134	5.54E-15	5.53E-15	5.52E-15	5.51E-15	5.50E-15	5.50E-15
sb124	4.62E-15	4.74E-15	4.86E-15	4.98E-15	5.10E-15	5.10E-15
in117m	2.47E-15	2.49E-15	2.51E-15	2.52E-15	2.54E-15	2.54E-15
rb 86	2.16E-15	2.26E-15	2.35E-15	2.44E-15	2.53E-15	2.53E-15
dy165	1.57E-15	1.64E-15	1.71E-15	1.78E-15	1.84E-15	1.84E-15
in117	7.38E-16	7.44E-16	7.49E-16	7.54E-16	7.59E-16	7.59E-16
cs134m	2.43E-16	2.55E-16	2.67E-16	2.79E-16	2.90E-16	2.90E-16
cd118	1.31E-16	1.32E-16	1.32E-16	1.33E-16	1.33E-16	1.33E-16
ge 75	8.39E-17	8.38E-17	8.37E-17	8.36E-17	8.36E-17	8.36E-17
in119m	3.23E-17	3.24E-17	3.25E-17	3.26E-17	3.26E-17	3.26E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 58

0 fraction of total absorption rate

power= .00mw, burnup= 8766.mwd, flux= 2.66E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

ag110	1.19E-17	1.28E-17	1.37E-17	1.47E-17	1.56E-17	1.56E-17
cd109	8.55E-18	9.02E-18	9.52E-18	1.00E-17	1.05E-17	1.05E-17
in119	2.62E-18	2.63E-18	2.64E-18	2.65E-18	2.67E-18	2.67E-18

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 59

power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	******* d
h 1	4.34E-04	4.56E-04	4.78E-04	4.99E-04	5.21E-04	5.21E-04
h 2	1.29E-06	1.36E-06	1.42E-06	1.49E-06	1.55E-06	1.55E-06
h 3	4.56E-11	4.63E-11	4.68E-11	4.72E-11	4.76E-11	4.76E-11
h 4	1.82E-34	1.84E-34	1.86E-34	1.88E-34	1.89E-34	1.89E-34
he 3	8.45E-09	8.80E-09	9.14E-09	9.48E-09	9.81E-09	9.81E-09
he 4	7.19E-05	7.55E-05	7.91E-05	8.28E-05	8.64E-05	8.64E-05
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	8.64E-06	9.07E-06	9.51E-06	9.94E-06	1.04E-05	1.04E-05
ne 21	1.33E-09	1.46E-09	1.59E-09	1.73E-09	1.88E-09	1.88E-09
ne 22	5.72E-08	6.00E-08	6.29E-08	6.58E-08	6.87E-08	6.87E-08
ne 23	7.16E-15	7.20E-15	7.20E-15	7.19E-15	7.19E-15	7.19E-15
na 22	4.23E-11	4.25E-11	4.25E-11	4.25E-11	4.25E-11	4.25E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.75E-08	2.75E-08
na 24m	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15
na 25	4.04E-24	4.43E-24	4.82E-24	5.23E-24	5.65E-24	5.65E-24
mg 24	6.26E-02	6.54E-02	6.83E-02	7.12E-02	7.40E-02	7.40E-02
mg 25	1.40E-07	1.53E-07	1.67E-07	1.81E-07	1.96E-07	1.96E-07
mg 26	1.29E-06	1.36E-06	1.42E-06	1.49E-06	1.55E-06	1.55E-06

	mg 27	2.14E-12	2.15E-12	2.15E-12	2.14E-12	2.14E-12	2.14E-12
	mg 28	4.27E-24	4.29E-24	4.29E-24	4.28E-24	4.28E-24	4.28E-24
	al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
	al 28	2.04E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10
	al 29	3.15E-22	3.46E-22	3.78E-22	4.10E-22	4.45E-22	4.45E-22
	al 30	2.97E-32	3.43E-32	3.92E-32	4.45E-32	5.02E-32	5.02E-32
	si 28	1.82E-01	1.90E-01	1.99E-01	2.07E-01	2.15E-01	2.15E-01
	si 29	1.22E-06	1.34E-06	1.46E-06	1.59E-06	1.72E-06	1.72E-06
	si 30	8.62E-12	9.92E-12	1.13E-11	1.29E-11	1.46E-11	1.46E-11
	si 31	6.08E-24	6.99E-24	7.98E-24	9.07E-24	1.02E-23	1.02E-23
	si 32	9.16E-30	1.06E-29	1.22E-29	1.39E-29	1.58E-29	1.58E-29
	totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0	flux		2.66E+08	2.66E+08	2.66E+08	2.66E+08	2.66E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 60
power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	2.91E+00	3.15E+00	3.39E+00	3.64E+00	3.89E+00	3.89E+00
pb206	1.34E-03	1.52E-03	1.71E-03	1.92E-03	2.14E-03	2.14E-03
pb207	1.90E-04	2.10E-04	2.31E-04	2.52E-04	2.75E-04	2.75E-04
pb208	3.01E-05	3.32E-05	3.64E-05	3.98E-05	4.33E-05	4.33E-05
pb209	2.96E-11	3.23E-11	3.52E-11	3.82E-11	4.12E-11	4.12E-11
pb210	2.25E-05	2.42E-05	2.60E-05	2.77E-05	2.95E-05	2.95E-05
pb211	7.62E-12	8.01E-12	8.40E-12	8.78E-12	9.17E-12	9.17E-12
pb212	2.09E-11	2.19E-11	2.30E-11	2.40E-11	2.50E-11	2.50E-11
pb214	5.14E-11	5.53E-11	5.93E-11	6.33E-11	6.74E-11	6.74E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	9.60E-05	1.10E-04	1.26E-04	1.43E-04	1.62E-04	1.62E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.39E-08	1.49E-08	1.60E-08	1.71E-08	1.81E-08	1.81E-08
bi211	4.52E-13	4.75E-13	4.98E-13	5.21E-13	5.44E-13	5.44E-13
bi212	1.98E-12	2.08E-12	2.18E-12	2.28E-12	2.37E-12	2.37E-12
bi213	6.91E-12	7.55E-12	8.22E-12	8.91E-12	9.63E-12	9.63E-12
bi214	3.82E-11	4.11E-11	4.40E-11	4.70E-11	5.00E-11	5.00E-11
po210	3.83E-07	4.12E-07	4.41E-07	4.71E-07	5.01E-07	5.01E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	4.99E-18	5.25E-18	5.50E-18	5.75E-18	6.01E-18	6.01E-18
po212	1.04E-22	1.09E-22	1.14E-22	1.20E-22	1.25E-22	1.25E-22
po213	1.04E-20	1.14E-20	1.24E-20	1.34E-20	1.45E-20	1.45E-20
po214	5.25E-18	5.65E-18	6.06E-18	6.47E-18	6.88E-18	6.88E-18
po215	6.27E-18	6.58E-18	6.90E-18	7.22E-18	7.54E-18	7.54E-18
po216	7.90E-17	8.30E-17	8.69E-17	9.08E-17	9.48E-17	9.48E-17
po218	5.95E-12	6.40E-12	6.86E-12	7.32E-12	7.79E-12	7.79E-12
rn218	3.05E-28	3.21E-28	3.36E-28	3.51E-28	3.66E-28	3.66E-28
rn219	1.39E-14	1.46E-14	1.54E-14	1.61E-14	1.68E-14	1.68E-14
rn220	3.03E-14	3.18E-14	3.33E-14	3.48E-14	3.63E-14	3.63E-14
rn222	1.06E-08	1.14E-08	1.22E-08	1.30E-08	1.38E-08	1.38E-08
ra222	3.31E-25	3.48E-25	3.65E-25	3.81E-25	3.97E-25	3.97E-25
ra223	3.48E-09	3.65E-09	3.83E-09	4.01E-09	4.18E-09	4.18E-09
ra224	1.72E-10	1.81E-10	1.89E-10	1.98E-10	2.07E-10	2.07E-10
ra225	3.23E-09	3.53E-09	3.85E-09	4.17E-09	4.50E-09	4.50E-09
ra226	1.62E-03	1.74E-03	1.86E-03	1.99E-03	2.12E-03	2.12E-03
ra228	1.07E-11	1.13E-11	1.18E-11	1.24E-11	1.29E-11	1.29E-11
ac225	2.18E-09	2.39E-09	2.60E-09	2.82E-09	3.04E-09	3.04E-09
ac227	2.42E-06	2.54E-06	2.66E-06	2.79E-06	2.91E-06	2.91E-06
ac228	1.31E-15	1.38E-15	1.44E-15	1.51E-15	1.58E-15	1.58E-15
th226	1.61E-23	1.70E-23	1.78E-23	1.86E-23	1.94E-23	1.94E-23
th227	5.61E-09	5.90E-09	6.18E-09	6.47E-09	6.75E-09	6.75E-09

th228	3.29E-08	3.45E-08	3.62E-08	3.78E-08	3.95E-08	3.95E-08
th229	6.28E-04	6.87E-04	7.48E-04	8.11E-04	8.76E-04	8.76E-04
th230	1.29E-01	1.36E-01	1.42E-01	1.49E-01	1.55E-01	1.55E-01
th231	3.46E-09	3.49E-09	3.51E-09	3.53E-09	3.55E-09	3.55E-09
th232	2.62E-02	2.75E-02	2.89E-02	3.02E-02	3.15E-02	3.15E-02
th233	2.37E-13	2.49E-13	2.61E-13	2.73E-13	2.85E-13	2.85E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	3.64E-03	3.82E-03	4.00E-03	4.19E-03	4.37E-03	4.37E-03
pa232	6.14E-11	6.45E-11	6.75E-11	7.06E-11	7.37E-11	7.37E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 61
power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.56E-20	1.65E-20	1.72E-20	1.80E-20	1.88E-20	1.88E-20
u231	5.03E-17	5.29E-17	5.53E-17	5.77E-17	6.00E-17	6.00E-17
u232	1.20E-06	1.26E-06	1.32E-06	1.38E-06	1.44E-06	1.44E-06
u233	6.58E-02	6.89E-02	7.21E-02	7.52E-02	7.83E-02	7.83E-02
u234	9.73E+00	9.76E+00	9.80E+00	9.83E+00	9.87E+00	9.87E+00
u235	6.96E+02	6.94E+02	6.92E+02	6.91E+02	6.89E+02	6.89E+02
u236	1.80E+02	1.80E+02	1.80E+02	1.81E+02	1.81E+02	1.81E+02
u237	3.19E-06	3.20E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.21E-37	1.84E-37	2.74E-37	4.00E-37	5.75E-37	5.75E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.72E-12	8.76E-12	8.75E-12	8.74E-12	8.73E-12	8.73E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.08E-12	2.07E-12	2.07E-12
np236	9.81E-07	1.03E-06	1.08E-06	1.12E-06	1.17E-06	1.17E-06
np237	4.18E+01	4.17E+01	4.17E+01	4.17E+01	4.17E+01	4.17E+01
np238	1.52E-06	1.52E-06	1.52E-06	1.52E-06	1.52E-06	1.52E-06
np239	4.58E-05	4.59E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	1.03E-39	1.57E-39	2.34E-39	3.42E-39	4.91E-39	4.91E-39
np240	9.18E-15	9.19E-15	9.18E-15	9.17E-15	9.16E-15	9.16E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	4.16E-13	4.26E-13	4.34E-13	4.41E-13	4.48E-13	4.48E-13
pu238	2.31E-02	2.30E-02	2.30E-02	2.30E-02	2.30E-02	2.30E-02
pu239	2.17E+01	2.26E+01	2.35E+01	2.44E+01	2.53E+01	2.53E+01
pu240	4.50E-01	4.88E-01	5.28E-01	5.68E-01	6.09E-01	6.09E-01
pu241	1.85E-04	2.01E-04	2.17E-04	2.33E-04	2.50E-04	2.50E-04
pu242	2.16E-05	2.50E-05	2.87E-05	3.28E-05	3.72E-05	3.72E-05
pu243	4.55E-14	5.29E-14	6.07E-14	6.93E-14	7.86E-14	7.86E-14
pu244	6.01E-27	9.14E-27	1.36E-26	1.99E-26	2.87E-26	2.87E-26
pu245	2.41E-37	3.67E-37	5.47E-37	7.99E-37	1.15E-36	1.15E-36
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.22E-18	1.35E-18	1.47E-18	1.60E-18	1.73E-18	1.73E-18
am240	5.59E-16	6.16E-16	6.73E-16	7.30E-16	7.89E-16	7.89E-16
am241	4.38E-03	4.81E-03	5.25E-03	5.71E-03	6.17E-03	6.17E-03
am242m	2.04E-06	2.24E-06	2.46E-06	2.68E-06	2.91E-06	2.91E-06
am242	1.76E-10	1.93E-10	2.11E-10	2.29E-10	2.48E-10	2.48E-10
am243	1.39E-07	1.65E-07	1.94E-07	2.26E-07	2.61E-07	2.61E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.06E-15	1.25E-15	1.47E-15	1.71E-15	1.98E-15	1.98E-15
am245	5.20E-38	7.87E-38	1.17E-37	1.70E-37	2.43E-37	2.43E-37

th228	3.29E-08	3.45E-08	3.62E-08	3.78E-08	3.95E-08	3.95E-08
th229	6.28E-04	6.87E-04	7.48E-04	8.11E-04	8.76E-04	8.76E-04
th230	1.29E-01	1.36E-01	1.42E-01	1.49E-01	1.55E-01	1.55E-01
th231	3.46E-09	3.49E-09	3.51E-09	3.53E-09	3.55E-09	3.55E-09
th232	2.62E-02	2.75E-02	2.89E-02	3.02E-02	3.15E-02	3.15E-02
th233	2.37E-13	2.49E-13	2.61E-13	2.73E-13	2.85E-13	2.85E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	3.64E-03	3.82E-03	4.00E-03	4.19E-03	4.37E-03	4.37E-03
pa232	6.14E-11	6.45E-11	6.75E-11	7.06E-11	7.37E-11	7.37E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 61
power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.56E-20	1.65E-20	1.72E-20	1.80E-20	1.88E-20	1.88E-20
u231	5.03E-17	5.29E-17	5.53E-17	5.77E-17	6.00E-17	6.00E-17
u232	1.20E-06	1.26E-06	1.32E-06	1.38E-06	1.44E-06	1.44E-06
u233	6.58E-02	6.89E-02	7.21E-02	7.52E-02	7.83E-02	7.83E-02
u234	9.73E+00	9.76E+00	9.80E+00	9.83E+00	9.87E+00	9.87E+00
u235	6.96E+02	6.94E+02	6.92E+02	6.91E+02	6.89E+02	6.89E+02
u236	1.80E+02	1.80E+02	1.80E+02	1.81E+02	1.81E+02	1.81E+02
u237	3.19E-06	3.20E-06	3.21E-06	3.21E-06	3.21E-06	3.21E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.21E-37	1.84E-37	2.74E-37	4.00E-37	5.75E-37	5.75E-37
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.72E-12	8.76E-12	8.75E-12	8.74E-12	8.73E-12	8.73E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.08E-12	2.07E-12	2.07E-12
np236	9.81E-07	1.03E-06	1.08E-06	1.12E-06	1.17E-06	1.17E-06
np237	4.18E+01	4.17E+01	4.17E+01	4.17E+01	4.17E+01	4.17E+01
np238	1.52E-06	1.52E-06	1.52E-06	1.52E-06	1.52E-06	1.52E-06
np239	4.58E-05	4.59E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	1.03E-39	1.57E-39	2.34E-39	3.42E-39	4.91E-39	4.91E-39
np240	9.18E-15	9.19E-15	9.18E-15	9.17E-15	9.16E-15	9.16E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	4.16E-13	4.26E-13	4.34E-13	4.41E-13	4.48E-13	4.48E-13
pu238	2.31E-02	2.30E-02	2.30E-02	2.30E-02	2.30E-02	2.30E-02
pu239	2.17E+01	2.26E+01	2.35E+01	2.44E+01	2.53E+01	2.53E+01
pu240	4.50E-01	4.88E-01	5.28E-01	5.68E-01	6.09E-01	6.09E-01
pu241	1.85E-04	2.01E-04	2.17E-04	2.33E-04	2.50E-04	2.50E-04
pu242	2.16E-05	2.50E-05	2.87E-05	3.28E-05	3.72E-05	3.72E-05
pu243	4.55E-14	5.29E-14	6.07E-14	6.93E-14	7.86E-14	7.86E-14
pu244	6.01E-27	9.14E-27	1.36E-26	1.99E-26	2.87E-26	2.87E-26
pu245	2.41E-37	3.67E-37	5.47E-37	7.99E-37	1.15E-36	1.15E-36
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.22E-18	1.35E-18	1.47E-18	1.60E-18	1.73E-18	1.73E-18
am240	5.59E-16	6.16E-16	6.73E-16	7.30E-16	7.89E-16	7.89E-16
am241	4.38E-03	4.81E-03	5.25E-03	5.71E-03	6.17E-03	6.17E-03
am242m	2.04E-06	2.24E-06	2.46E-06	2.68E-06	2.91E-06	2.91E-06
am242	1.76E-10	1.93E-10	2.11E-10	2.29E-10	2.48E-10	2.48E-10
am243	1.39E-07	1.65E-07	1.94E-07	2.26E-07	2.61E-07	2.61E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.06E-15	1.25E-15	1.47E-15	1.71E-15	1.98E-15	1.98E-15
am245	5.20E-38	7.87E-38	1.17E-37	1.70E-37	2.43E-37	2.43E-37

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     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.04E-20  1.15E-20  1.25E-20  1.36E-20  1.47E-20  1.47E-20
     cm242   3.56E-08  3.90E-08  4.26E-08  4.63E-08  5.01E-08  5.01E-08
     cm243   2.65E-17  2.92E-17  3.21E-17  3.50E-17  3.80E-17  3.80E-17
     cm244   1.66E-11  1.97E-11  2.31E-11  2.69E-11  3.11E-11  3.11E-11
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   62
       power= 4.000E-03mw, burnup=8.7659E+03mwd, flux= 2.66E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
            charge ******* d ******* d ******* d ******* d ******* d
     cm245   1.73E-14  2.15E-14  2.64E-14  3.22E-14  3.88E-14  3.88E-14
     cm246   8.10E-17  1.05E-16  1.35E-16  1.72E-16  2.15E-16  2.15E-16
     cm247   6.73E-21  9.24E-21  1.25E-20  1.66E-20  2.18E-20  2.18E-20
     cm248   5.54E-24  8.00E-24  1.14E-23  1.58E-23  2.18E-23  2.18E-23
     cm249   1.74E-34  2.51E-34  3.56E-34  4.97E-34  6.82E-34  6.82E-34
     cm250   4.03E-39  6.12E-39  9.10E-39  1.33E-38  1.91E-38  1.91E-38
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.66E+08  2.66E+08  2.66E+08  2.66E+08  2.66E-07
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  7 of library on unit 33.

          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 "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              *
          *                                                                              *
```

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         *        see information above this box (if present) for later updates        *
         *                                                                             *
         *******************************************************************************
         *                                                                             *
0        *******************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft33f001
0                8/28/1996    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                     7993    number of nonzero off-diagonal matrix elements
0        *******************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   63
        power=    .00mw, burnup=  10227.mwd, flux= 2.65E+08n/cm**2-sec
0                                    basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                  initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions  1.167762E+06  1.168719E+06  1.169645E+06  1.170540E+06  1.171404E+06  1.171404E+06
     absorptions  9.612581E+05  9.620653E+05  9.628549E+05  9.636281E+05  9.643840E+05  9.643840E+05
     k infinity   1.214826E+00  1.214802E+00  1.214768E+00  1.214722E+00  1.214666E+00  1.214666E+00
0                  initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions  9.489255E+05  9.495816E+05  9.502214E+05  9.508454E+05  9.514534E+05  9.514534E+05
     non-actinide
     abs. fracs.  1.282966E-02  1.297593E-02  1.312083E-02  1.326519E-02  1.340818E-02  1.340818E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              fission products        page   64
0                              fraction of total absorption rate
        power=    .00mw, burnup=  10227.mwd, flux= 2.65E+08n/cm**2-sec
0              initial ******* d ******* d ******* d ******* d ******* d

     sm149     5.34E-03  5.34E-03  5.35E-03  5.35E-03  5.35E-03  5.35E-03
     eu151     9.99E-04  1.03E-03  1.06E-03  1.09E-03  1.12E-03  1.12E-03
     nd143     8.35E-04  8.68E-04  9.01E-04  9.34E-04  9.67E-04  9.67E-04
     rh103     4.14E-04  4.31E-04  4.49E-04  4.66E-04  4.83E-04  4.83E-04
     xe131     2.74E-04  2.85E-04  2.96E-04  3.08E-04  3.19E-04  3.19E-04
     cs133     2.12E-04  2.20E-04  2.29E-04  2.38E-04  2.46E-04  2.46E-04
     gd155     1.99E-04  2.02E-04  2.04E-04  2.06E-04  2.08E-04  2.08E-04
     sm147     1.56E-04  1.62E-04  1.69E-04  1.75E-04  1.81E-04  1.81E-04
     tc 99     1.55E-04  1.61E-04  1.67E-04  1.73E-04  1.79E-04  1.79E-04
     nd145     1.19E-04  1.24E-04  1.29E-04  1.34E-04  1.38E-04  1.38E-04
     cd113     9.61E-05  9.68E-05  9.75E-05  9.82E-05  9.88E-05  9.88E-05
     sm152     8.10E-05  8.49E-05  8.88E-05  9.27E-05  9.66E-05  9.66E-05
     mo 95     8.30E-05  8.63E-05  8.97E-05  9.30E-05  9.63E-05  9.63E-05
     sm150     5.75E-05  6.02E-05  6.28E-05  6.55E-05  6.82E-05  6.82E-05
     gd157     5.69E-05  5.77E-05  5.85E-05  5.93E-05  6.01E-05  6.01E-05
     kr 83     5.07E-05  5.27E-05  5.47E-05  5.67E-05  5.87E-05  5.87E-05
     cs135     4.80E-05  4.99E-05  5.19E-05  5.38E-05  5.58E-05  5.58E-05
     ru101     3.75E-05  3.90E-05  4.06E-05  4.21E-05  4.36E-05  4.36E-05
     sm151     4.15E-05  4.16E-05  4.17E-05  4.18E-05  4.19E-05  4.19E-05
     pr141     3.53E-05  3.68E-05  3.82E-05  3.96E-05  4.10E-05  4.10E-05
     eu153     3.46E-05  3.61E-05  3.76E-05  3.92E-05  4.07E-05  4.07E-05
     la139     2.88E-05  3.00E-05  3.12E-05  3.23E-05  3.35E-05  3.35E-05
     pd105     1.42E-05  1.48E-05  1.55E-05  1.62E-05  1.68E-05  1.68E-05
     ba137     1.37E-05  1.43E-05  1.49E-05  1.54E-05  1.60E-05  1.60E-05
     ag109     1.22E-05  1.29E-05  1.37E-05  1.45E-05  1.54E-05  1.54E-05
     zr 93     1.17E-05  1.21E-05  1.26E-05  1.31E-05  1.35E-05  1.35E-05
      i129     9.28E-06  9.67E-06  1.01E-05  1.05E-05  1.08E-05  1.08E-05
     nd144     8.71E-06  9.07E-06  9.43E-06  9.78E-06  1.01E-05  1.01E-05
```

mo 97	6.56E-06	6.83E-06	7.09E-06	7.36E-06	7.62E-06	7.62E-06
gd152	3.60E-06	3.88E-06	4.17E-06	4.47E-06	4.78E-06	4.78E-06
pd108	3.05E-06	3.23E-06	3.42E-06	3.60E-06	3.79E-06	3.79E-06
zr 91	3.03E-06	3.15E-06	3.27E-06	3.39E-06	3.51E-06	3.51E-06
y 89	2.90E-06	3.01E-06	3.13E-06	3.24E-06	3.35E-06	3.35E-06
ru102	2.72E-06	2.83E-06	2.94E-06	3.05E-06	3.16E-06	3.16E-06
ce142	2.39E-06	2.49E-06	2.58E-06	2.68E-06	2.78E-06	2.78E-06
nd148	2.32E-06	2.41E-06	2.51E-06	2.60E-06	2.70E-06	2.70E-06
nd146	1.94E-06	2.02E-06	2.09E-06	2.17E-06	2.25E-06	2.25E-06
xe135	2.25E-06	2.25E-06	2.25E-06	2.25E-06	2.25E-06	2.25E-06
in115	1.71E-06	1.78E-06	1.86E-06	1.93E-06	2.01E-06	2.01E-06
ba138	1.65E-06	1.72E-06	1.78E-06	1.85E-06	1.92E-06	1.92E-06
pd107	1.55E-06	1.64E-06	1.73E-06	1.82E-06	1.91E-06	1.91E-06
ce140	1.55E-06	1.61E-06	1.67E-06	1.73E-06	1.80E-06	1.80E-06
xe132	1.42E-06	1.48E-06	1.54E-06	1.60E-06	1.66E-06	1.66E-06
mo 98	9.74E-07	1.01E-06	1.05E-06	1.09E-06	1.13E-06	1.13E-06
mo100	9.40E-07	9.78E-07	1.02E-06	1.06E-06	1.09E-06	1.09E-06
xe134	9.16E-07	9.53E-07	9.90E-07	1.03E-06	1.06E-06	1.06E-06
zr 92	7.31E-07	7.61E-07	7.90E-07	8.19E-07	8.48E-07	8.48E-07
i127	6.73E-07	7.03E-07	7.33E-07	7.63E-07	7.93E-07	7.93E-07
ru104	6.20E-07	6.47E-07	6.74E-07	7.01E-07	7.29E-07	7.29E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 65

0 fraction of total absorption rate

power= .00mw, burnup= 10227.mwd, flux= 2.65E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	5.91E-07	6.15E-07	6.39E-07	6.63E-07	6.87E-07	6.87E-07
nd150	5.24E-07	5.46E-07	5.68E-07	5.89E-07	6.11E-07	6.11E-07
xe136	4.97E-07	5.17E-07	5.37E-07	5.58E-07	5.78E-07	5.78E-07
br 81	3.73E-07	3.88E-07	4.03E-07	4.18E-07	4.33E-07	4.33E-07
cd111	3.56E-07	3.75E-07	3.94E-07	4.13E-07	4.33E-07	4.33E-07
rb 85	3.58E-07	3.72E-07	3.86E-07	4.01E-07	4.15E-07	4.15E-07
zr 94	3.15E-07	3.27E-07	3.40E-07	3.53E-07	3.65E-07	3.65E-07
zr 90	2.84E-07	2.95E-07	3.07E-07	3.18E-07	3.29E-07	3.29E-07
ru 99	2.40E-07	2.60E-07	2.81E-07	3.03E-07	3.25E-07	3.25E-07
eu152	2.57E-07	2.65E-07	2.73E-07	2.81E-07	2.88E-07	2.88E-07
sm154	2.39E-07	2.50E-07	2.60E-07	2.71E-07	2.81E-07	2.81E-07
te130	2.28E-07	2.37E-07	2.46E-07	2.56E-07	2.65E-07	2.65E-07
pm147	2.63E-07	2.62E-07	2.62E-07	2.62E-07	2.61E-07	2.61E-07
rb 87	2.07E-07	2.15E-07	2.23E-07	2.31E-07	2.39E-07	2.39E-07
eu155	1.94E-07	1.95E-07	1.96E-07	1.97E-07	1.99E-07	1.99E-07
gd154	1.35E-07	1.47E-07	1.59E-07	1.71E-07	1.84E-07	1.84E-07
se 77	1.48E-07	1.54E-07	1.60E-07	1.66E-07	1.72E-07	1.72E-07
pd106	1.40E-07	1.47E-07	1.54E-07	1.61E-07	1.69E-07	1.69E-07
gd156	1.19E-07	1.26E-07	1.33E-07	1.39E-07	1.46E-07	1.46E-07
kr 84	9.87E-08	1.03E-07	1.07E-07	1.11E-07	1.14E-07	1.14E-07
dy161	7.38E-08	7.84E-08	8.30E-08	8.78E-08	9.27E-08	9.27E-08
sb121	7.82E-08	8.16E-08	8.50E-08	8.84E-08	9.18E-08	9.18E-08
se 79	7.60E-08	7.91E-08	8.22E-08	8.53E-08	8.83E-08	8.83E-08
sb123	6.33E-08	6.60E-08	6.87E-08	7.14E-08	7.42E-08	7.42E-08
kr 86	5.40E-08	5.62E-08	5.83E-08	6.05E-08	6.26E-08	6.26E-08
te128	5.16E-08	5.38E-08	5.59E-08	5.81E-08	6.03E-08	6.03E-08
ru100	4.12E-08	4.46E-08	4.82E-08	5.19E-08	5.57E-08	5.57E-08
se 80	3.55E-08	3.69E-08	3.83E-08	3.98E-08	4.12E-08	4.12E-08
tb159	3.37E-08	3.55E-08	3.74E-08	3.93E-08	4.12E-08	4.12E-08
te125	3.44E-08	3.59E-08	3.75E-08	3.90E-08	4.05E-08	4.05E-08
nd142	2.87E-08	3.11E-08	3.36E-08	3.62E-08	3.89E-08	3.89E-08
ba134	2.80E-08	3.03E-08	3.28E-08	3.53E-08	3.79E-08	3.79E-08
sm148	2.56E-08	2.78E-08	3.00E-08	3.23E-08	3.47E-08	3.47E-08
gd158	2.65E-08	2.79E-08	2.93E-08	3.08E-08	3.23E-08	3.23E-08

ba135	2.31E-08	2.51E-08	2.71E-08	2.92E-08	3.14E-08	3.14E-08
cd112	2.53E-08	2.65E-08	2.78E-08	2.90E-08	3.03E-08	3.03E-08
pd104	1.97E-08	2.14E-08	2.31E-08	2.49E-08	2.68E-08	2.68E-08
li 6	1.94E-08	2.02E-08	2.09E-08	2.17E-08	2.24E-08	2.24E-08
sn117	1.84E-08	1.92E-08	2.01E-08	2.09E-08	2.18E-08	2.18E-08
dy164	1.65E-08	1.76E-08	1.87E-08	1.99E-08	2.11E-08	2.11E-08
eu154	1.73E-08	1.81E-08	1.89E-08	1.96E-08	2.04E-08	2.04E-08
dy162	1.50E-08	1.61E-08	1.72E-08	1.83E-08	1.94E-08	1.94E-08
cd114	1.48E-08	1.56E-08	1.63E-08	1.71E-08	1.78E-08	1.78E-08
sn119	1.42E-08	1.48E-08	1.54E-08	1.61E-08	1.67E-08	1.67E-08
sr 90	1.58E-08	1.57E-08	1.57E-08	1.57E-08	1.56E-08	1.56E-08
sn115	1.30E-08	1.36E-08	1.41E-08	1.47E-08	1.53E-08	1.53E-08
pd110	1.19E-08	1.25E-08	1.32E-08	1.39E-08	1.46E-08	1.46E-08
sr 88	9.94E-09	1.03E-08	1.07E-08	1.11E-08	1.15E-08	1.15E-08
rh105	1.04E-08	1.04E-08	1.05E-08	1.06E-08	1.06E-08	1.06E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 66
0 fraction of total absorption rate
power= .00mw, burnup= 10227.mwd, flux= 2.65E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

mo 96	6.71E-09	7.25E-09	7.81E-09	8.40E-09	9.00E-09	9.00E-09
se 82	6.80E-09	7.08E-09	7.35E-09	7.62E-09	7.89E-09	7.89E-09
cd110	5.29E-09	5.85E-09	6.44E-09	7.06E-09	7.73E-09	7.73E-09
sn126	6.37E-09	6.66E-09	6.95E-09	7.24E-09	7.54E-09	7.54E-09
se 78	5.32E-09	5.53E-09	5.75E-09	5.97E-09	6.19E-09	6.19E-09
sn124	4.61E-09	4.81E-09	5.02E-09	5.22E-09	5.42E-09	5.42E-09
ba136	4.10E-09	4.37E-09	4.64E-09	4.92E-09	5.21E-09	5.21E-09
nb 93	3.68E-09	3.99E-09	4.31E-09	4.64E-09	4.99E-09	4.99E-09
dy163	3.80E-09	4.06E-09	4.34E-09	4.62E-09	4.91E-09	4.91E-09
xe130	3.60E-09	3.87E-09	4.16E-09	4.45E-09	4.76E-09	4.76E-09
kr 82	3.34E-09	3.57E-09	3.81E-09	4.05E-09	4.30E-09	4.30E-09
cs137	3.67E-09	3.67E-09	3.67E-09	3.66E-09	3.66E-09	3.66E-09
as 75	3.14E-09	3.27E-09	3.39E-09	3.52E-09	3.65E-09	3.65E-09
in113	2.59E-09	2.70E-09	2.82E-09	2.93E-09	3.05E-09	3.05E-09
br 79	1.87E-09	2.03E-09	2.19E-09	2.36E-09	2.54E-09	2.54E-09
pr143	2.53E-09	2.53E-09	2.52E-09	2.52E-09	2.52E-09	2.52E-09
sn118	1.88E-09	1.96E-09	2.04E-09	2.12E-09	2.20E-09	2.20E-09
ag107	1.45E-09	1.59E-09	1.74E-09	1.90E-09	2.06E-09	2.06E-09
xe133	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09	1.94E-09
sn122	1.57E-09	1.64E-09	1.71E-09	1.77E-09	1.84E-09	1.84E-09
cd116	1.57E-09	1.64E-09	1.71E-09	1.77E-09	1.84E-09	1.84E-09
cs134	1.55E-09	1.61E-09	1.68E-09	1.74E-09	1.80E-09	1.80E-09
ce141	1.53E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09	1.52E-09
xe129	1.09E-09	1.18E-09	1.28E-09	1.38E-09	1.48E-09	1.48E-09
sn120	1.17E-09	1.22E-09	1.27E-09	1.32E-09	1.37E-09	1.37E-09
te126	8.38E-10	9.04E-10	9.73E-10	1.04E-09	1.12E-09	1.12E-09
ge 73	8.81E-10	9.18E-10	9.55E-10	9.92E-10	1.03E-09	1.03E-09
pm149	9.48E-10	9.48E-10	9.47E-10	9.47E-10	9.46E-10	9.46E-10
nd147	9.01E-10	9.00E-10	8.99E-10	8.98E-10	8.97E-10	8.97E-10
ce144	5.68E-10	5.67E-10	5.66E-10	5.66E-10	5.65E-10	5.65E-10
kr 85	5.32E-10	5.31E-10	5.30E-10	5.29E-10	5.28E-10	5.28E-10
gd160	3.63E-10	3.84E-10	4.06E-10	4.28E-10	4.50E-10	4.50E-10
ho165	3.05E-10	3.28E-10	3.52E-10	3.77E-10	4.02E-10	4.02E-10
ru103	3.75E-10	3.76E-10	3.76E-10	3.77E-10	3.78E-10	3.78E-10
ge 76	3.06E-10	3.19E-10	3.31E-10	3.44E-10	3.56E-10	3.56E-10
dy160	1.76E-10	1.93E-10	2.10E-10	2.28E-10	2.47E-10	2.47E-10
zr 95	1.58E-10	1.58E-10	1.58E-10	1.58E-10	1.57E-10	1.57E-10
xe128	1.10E-10	1.19E-10	1.29E-10	1.39E-10	1.50E-10	1.50E-10
nb 95	1.46E-10	1.45E-10	1.45E-10	1.45E-10	1.45E-10	1.45E-10
y 91	1.33E-10	1.32E-10	1.32E-10	1.32E-10	1.31E-10	1.31E-10

pm151	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.12E-10
sr 86	5.97E-11	6.43E-11	6.90E-11	7.38E-11	7.88E-11	7.88E-11
te124	6.28E-11	6.65E-11	7.02E-11	7.41E-11	7.81E-11	7.81E-11
sn116	4.25E-11	4.61E-11	4.99E-11	5.38E-11	5.79E-11	5.79E-11
eu156	4.90E-11	4.96E-11	5.01E-11	5.05E-11	5.10E-11	5.10E-11
ba140	4.53E-11	4.53E-11	4.52E-11	4.52E-11	4.51E-11	4.51E-11
sr 87	3.82E-11	3.98E-11	4.15E-11	4.32E-11	4.49E-11	4.49E-11
sm153	4.34E-11	4.37E-11	4.39E-11	4.41E-11	4.44E-11	4.44E-11
ru106	3.89E-11	3.94E-11	3.98E-11	4.03E-11	4.07E-11	4.07E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 67

0 fraction of total absorption rate

power= .00mw, burnup= 10227.mwd, flux= 2.65E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

nb 94	2.44E-11	2.57E-11	2.70E-11	2.83E-11	2.96E-11	2.96E-11
sr 89	2.82E-11	2.82E-11	2.81E-11	2.80E-11	2.79E-11	2.79E-11
se 76	1.89E-11	2.02E-11	2.15E-11	2.29E-11	2.43E-11	2.43E-11
te122	1.76E-11	1.91E-11	2.07E-11	2.23E-11	2.40E-11	2.40E-11
er166	1.66E-11	1.78E-11	1.91E-11	2.05E-11	2.18E-11	2.18E-11
kr 87	2.11E-11	2.11E-11	2.10E-11	2.10E-11	2.09E-11	2.09E-11
ge 74	1.76E-11	1.83E-11	1.91E-11	1.98E-11	2.05E-11	2.05E-11
sb125	1.72E-11	1.73E-11	1.74E-11	1.74E-11	1.75E-11	1.75E-11
ce143	1.66E-11	1.66E-11	1.65E-11	1.65E-11	1.65E-11	1.65E-11
ge 72	1.26E-11	1.32E-11	1.38E-11	1.43E-11	1.49E-11	1.49E-11
y 90	1.50E-11	1.49E-11	1.49E-11	1.49E-11	1.48E-11	1.48E-11
la140	1.47E-11	1.47E-11	1.47E-11	1.47E-11	1.47E-11	1.47E-11
mo 99	1.27E-11	1.27E-11	1.27E-11	1.27E-11	1.27E-11	1.27E-11
pm148m	9.61E-12	9.62E-12	9.63E-12	9.63E-12	9.64E-12	9.64E-12
te127m	8.63E-12	8.67E-12	8.71E-12	8.75E-12	8.79E-12	8.79E-12
i131	6.70E-12	6.70E-12	6.69E-12	6.69E-12	6.69E-12	6.69E-12
kr 80	1.66E-12	1.82E-12	1.98E-12	2.15E-12	2.33E-12	2.33E-12
te129m	1.86E-12	1.86E-12	1.86E-12	1.87E-12	1.87E-12	1.87E-12
er167	7.92E-13	8.80E-13	9.74E-13	1.07E-12	1.18E-12	1.18E-12
te123	4.16E-13	4.63E-13	5.13E-13	5.67E-13	6.25E-13	6.25E-13
ag111	5.86E-13	5.95E-13	6.03E-13	6.12E-13	6.21E-13	6.21E-13
eu157	4.75E-13	4.81E-13	4.87E-13	4.93E-13	4.98E-13	4.98E-13
pm148	3.64E-13	3.64E-13	3.64E-13	3.64E-13	3.64E-13	3.64E-13
cd115m	2.65E-13	2.66E-13	2.67E-13	2.68E-13	2.69E-13	2.69E-13
cs136	2.07E-13	2.12E-13	2.18E-13	2.24E-13	2.29E-13	2.29E-13
tb160	8.54E-14	8.99E-14	9.43E-14	9.89E-14	1.03E-13	1.03E-13
cd108	5.40E-14	6.12E-14	6.91E-14	7.78E-14	8.71E-14	8.71E-14
be 9	3.93E-14	4.09E-14	4.25E-14	4.41E-14	4.57E-14	4.57E-14
pr142	3.94E-14	4.10E-14	4.25E-14	4.41E-14	4.57E-14	4.57E-14
ru105	3.70E-14	3.73E-14	3.75E-14	3.78E-14	3.80E-14	3.80E-14
sn125	3.18E-14	3.19E-14	3.19E-14	3.20E-14	3.21E-14	3.21E-14
li 7	1.56E-14	1.62E-14	1.69E-14	1.75E-14	1.81E-14	1.81E-14
sb126	1.34E-14	1.38E-14	1.43E-14	1.47E-14	1.51E-14	1.51E-14
sn114	1.06E-14	1.15E-14	1.25E-14	1.35E-14	1.45E-14	1.45E-14
rb 88	1.19E-14	1.18E-14	1.18E-14	1.18E-14	1.18E-14	1.18E-14
sn123	1.05E-14	1.05E-14	1.05E-14	1.05E-14	1.05E-14	1.05E-14
i135	9.78E-15	9.77E-15	9.76E-15	9.75E-15	9.74E-15	9.74E-15
te132	9.36E-15	9.35E-15	9.35E-15	9.34E-15	9.34E-15	9.34E-15
i130	7.96E-15	8.25E-15	8.54E-15	8.82E-15	9.11E-15	9.11E-15
sb124	5.10E-15	5.23E-15	5.35E-15	5.47E-15	5.59E-15	5.59E-15
te134	5.50E-15	5.49E-15	5.48E-15	5.47E-15	5.46E-15	5.46E-15
rb 86	2.52E-15	2.62E-15	2.70E-15	2.79E-15	2.88E-15	2.88E-15
in117m	2.54E-15	2.55E-15	2.57E-15	2.58E-15	2.60E-15	2.60E-15
dy165	1.84E-15	1.91E-15	1.98E-15	2.05E-15	2.12E-15	2.12E-15
in117	7.58E-16	7.63E-16	7.68E-16	7.73E-16	7.78E-16	7.78E-16
cs134m	2.90E-16	3.02E-16	3.14E-16	3.25E-16	3.37E-16	3.37E-16

	cd118	1.33E-16	1.34E-16	1.34E-16	1.34E-16	1.35E-16	1.35E-16
	ge 75	8.35E-17	8.34E-17	8.33E-17	8.33E-17	8.32E-17	8.32E-17
	in119m	3.26E-17	3.27E-17	3.28E-17	3.29E-17	3.30E-17	3.30E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 68
0 fraction of total absorption rate
power= .00mw, burnup= 10227.mwd, flux= 2.65E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

	ag110	1.56E-17	1.66E-17	1.77E-17	1.87E-17	1.97E-17	1.97E-17
	cd109	1.05E-17	1.11E-17	1.16E-17	1.22E-17	1.28E-17	1.28E-17
	in119	2.66E-18	2.67E-18	2.68E-18	2.69E-18	2.71E-18	2.71E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 69
power= 4.000E-03mw, burnup=1.0227E+04mwd, flux= 2.65E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
h 1		5.21E-04	5.43E-04	5.65E-04	5.86E-04	6.08E-04	6.08E-04
h 2		1.55E-06	1.62E-06	1.68E-06	1.75E-06	1.81E-06	1.81E-06
h 3		4.76E-11	4.83E-11	4.87E-11	4.91E-11	4.96E-11	4.96E-11
h 4		1.89E-34	1.92E-34	1.93E-34	1.95E-34	1.97E-34	1.97E-34
he 3		9.81E-09	1.01E-08	1.05E-08	1.08E-08	1.11E-08	1.11E-08
he 4		8.64E-05	9.00E-05	9.36E-05	9.72E-05	1.01E-04	1.01E-04
he 6		.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20		1.04E-05	1.08E-05	1.12E-05	1.17E-05	1.21E-05	1.21E-05
ne 21		1.88E-09	2.03E-09	2.19E-09	2.35E-09	2.52E-09	2.52E-09
ne 22		6.87E-08	7.16E-08	7.44E-08	7.73E-08	8.02E-08	8.02E-08
ne 23		7.19E-15	7.23E-15	7.22E-15	7.22E-15	7.22E-15	7.22E-15
na 22		4.25E-11	4.27E-11	4.27E-11	4.27E-11	4.27E-11	4.27E-11
na 23		7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24		2.75E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m		4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15
na 25		5.65E-24	6.11E-24	6.57E-24	7.04E-24	7.53E-24	7.53E-24
mg 24		7.40E-02	7.69E-02	7.97E-02	8.26E-02	8.54E-02	8.54E-02
mg 25		1.96E-07	2.11E-07	2.27E-07	2.44E-07	2.61E-07	2.61E-07
mg 26		1.55E-06	1.62E-06	1.68E-06	1.75E-06	1.81E-06	1.81E-06
mg 27		2.14E-12	2.15E-12	2.15E-12	2.15E-12	2.15E-12	2.15E-12
mg 28		4.28E-24	4.29E-24	4.29E-24	4.29E-24	4.28E-24	4.28E-24
al 27		4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28		2.04E-10	2.05E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10
al 29		4.45E-22	4.82E-22	5.19E-22	5.57E-22	5.96E-22	5.96E-22
al 30		5.02E-32	5.67E-32	6.34E-32	7.07E-32	7.84E-32	7.84E-32
si 28		2.15E-01	2.24E-01	2.32E-01	2.40E-01	2.49E-01	2.49E-01
si 29		1.72E-06	1.86E-06	2.00E-06	2.15E-06	2.31E-06	2.31E-06
si 30		1.46E-11	1.64E-11	1.83E-11	2.04E-11	2.27E-11	2.27E-11
si 31		1.02E-23	1.15E-23	1.29E-23	1.44E-23	1.59E-23	1.59E-23
si 32		1.58E-29	1.78E-29	2.00E-29	2.23E-29	2.48E-29	2.48E-29
totals		5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux			2.65E+08	2.65E+08	2.65E+08	2.65E+08	2.65E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 70
power= 4.000E-03mw, burnup=1.0227E+04mwd, flux= 2.65E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4		3.89E+00	4.16E+00	4.43E+00	4.71E+00	5.00E+00	5.00E+00
pb206		2.14E-03	2.38E-03	2.63E-03	2.89E-03	3.17E-03	3.17E-03
pb207		2.75E-04	2.99E-04	3.23E-04	3.49E-04	3.75E-04	3.75E-04
pb208		4.33E-05	4.70E-05	5.08E-05	5.48E-05	5.89E-05	5.89E-05
pb209		4.12E-11	4.44E-11	4.76E-11	5.09E-11	5.43E-11	5.43E-11

pb210	2.95E-05	3.13E-05	3.31E-05	3.49E-05	3.67E-05	3.67E-05
pb211	9.17E-12	9.56E-12	9.95E-12	1.03E-11	1.07E-11	1.07E-11
pb212	2.50E-11	2.61E-11	2.71E-11	2.82E-11	2.92E-11	2.92E-11
pb214	6.74E-11	7.14E-11	7.56E-11	7.97E-11	8.39E-11	8.39E-11
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.62E-04	1.82E-04	2.03E-04	2.26E-04	2.51E-04	2.51E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.81E-08	1.92E-08	2.04E-08	2.15E-08	2.26E-08	2.26E-08
bi211	5.44E-13	5.67E-13	5.90E-13	6.13E-13	6.36E-13	6.36E-13
bi212	2.37E-12	2.47E-12	2.57E-12	2.67E-12	2.77E-12	2.77E-12
bi213	9.63E-12	1.04E-11	1.11E-11	1.19E-11	1.27E-11	1.27E-11
bi214	5.00E-11	5.30E-11	5.61E-11	5.92E-11	6.23E-11	6.23E-11
po210	5.01E-07	5.31E-07	5.62E-07	5.93E-07	6.24E-07	6.24E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	6.01E-18	6.26E-18	6.52E-18	6.77E-18	7.03E-18	7.03E-18
po212	1.25E-22	1.30E-22	1.35E-22	1.40E-22	1.46E-22	1.46E-22
po213	1.45E-20	1.56E-20	1.67E-20	1.79E-20	1.91E-20	1.91E-20
po214	6.88E-18	7.30E-18	7.72E-18	8.14E-18	8.57E-18	8.57E-18
po215	7.54E-18	7.86E-18	8.17E-18	8.49E-18	8.81E-18	8.81E-18
po216	9.48E-17	9.87E-17	1.03E-16	1.07E-16	1.11E-16	1.11E-16
po218	7.79E-12	8.27E-12	8.74E-12	9.22E-12	9.71E-12	9.71E-12
rn218	3.66E-28	3.82E-28	3.97E-28	4.12E-28	4.28E-28	4.28E-28
rn219	1.68E-14	1.75E-14	1.82E-14	1.89E-14	1.96E-14	1.96E-14
rn220	3.63E-14	3.79E-14	3.94E-14	4.09E-14	4.24E-14	4.24E-14
rn222	1.38E-08	1.47E-08	1.55E-08	1.64E-08	1.72E-08	1.72E-08
ra222	3.97E-25	4.15E-25	4.31E-25	4.48E-25	4.64E-25	4.64E-25
ra223	4.18E-09	4.36E-09	4.54E-09	4.71E-09	4.89E-09	4.89E-09
ra224	2.07E-10	2.15E-10	2.24E-10	2.33E-10	2.41E-10	2.41E-10
ra225	4.50E-09	4.85E-09	5.20E-09	5.56E-09	5.94E-09	5.94E-09
ra226	2.12E-03	2.24E-03	2.37E-03	2.50E-03	2.64E-03	2.64E-03
ra228	1.29E-11	1.35E-11	1.40E-11	1.46E-11	1.51E-11	1.51E-11
ac225	3.04E-09	3.27E-09	3.51E-09	3.76E-09	4.01E-09	4.01E-09
ac227	2.91E-06	3.03E-06	3.16E-06	3.28E-06	3.40E-06	3.40E-06
ac228	1.58E-15	1.64E-15	1.71E-15	1.78E-15	1.84E-15	1.84E-15
th226	1.94E-23	2.02E-23	2.10E-23	2.18E-23	2.26E-23	2.26E-23
th227	6.75E-09	7.04E-09	7.32E-09	7.61E-09	7.90E-09	7.90E-09
th228	3.95E-08	4.11E-08	4.28E-08	4.44E-08	4.61E-08	4.61E-08
th229	8.76E-04	9.43E-04	1.01E-03	1.08E-03	1.15E-03	1.15E-03
th230	1.55E-01	1.62E-01	1.68E-01	1.75E-01	1.82E-01	1.82E-01
th231	3.55E-09	3.58E-09	3.60E-09	3.62E-09	3.65E-09	3.65E-09
th232	3.15E-02	3.29E-02	3.42E-02	3.56E-02	3.69E-02	3.69E-02
th233	2.85E-13	2.97E-13	3.09E-13	3.21E-13	3.33E-13	3.33E-13
th234	5.37E-07	5.37E-07	5.37E-07	5.36E-07	5.36E-07	5.36E-07
pa231	4.37E-03	4.56E-03	4.74E-03	4.93E-03	5.11E-03	5.11E-03
pa232	7.37E-11	7.68E-11	7.99E-11	8.29E-11	8.60E-11	8.60E-11

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 71
power= 4.000E-03mw, burnup=1.0227E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	1.88E-20	1.96E-20	2.04E-20	2.12E-20	2.20E-20	2.20E-20
u231	6.00E-17	6.26E-17	6.49E-17	6.73E-17	6.96E-17	6.96E-17
u232	1.44E-06	1.50E-06	1.56E-06	1.62E-06	1.68E-06	1.68E-06
u233	7.83E-02	8.14E-02	8.45E-02	8.76E-02	9.07E-02	9.07E-02
u234	9.87E+00	9.90E+00	9.93E+00	9.97E+00	1.00E+01	1.00E+01

u235	6.89E+02	6.88E+02	6.86E+02	6.85E+02	6.83E+02	6.83E+02
u236	1.81E+02	1.81E+02	1.82E+02	1.82E+02	1.82E+02	1.82E+02
u237	3.21E-06	3.22E-06	3.22E-06	3.23E-06	3.23E-06	3.23E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	5.75E-37	8.14E-37	1.14E-36	1.56E-36	2.13E-36	2.13E-36
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.73E-12	8.77E-12	8.76E-12	8.76E-12	8.75E-12	8.75E-12
np236m	2.07E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12
np236	1.17E-06	1.22E-06	1.27E-06	1.31E-06	1.36E-06	1.36E-06
np237	4.17E+01	4.17E+01	4.17E+01	4.16E+01	4.16E+01	4.16E+01
np238	1.52E-06	1.52E-06	1.52E-06	1.52E-06	1.51E-06	1.51E-06
np239	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	4.91E-39	6.95E-39	9.70E-39	1.33E-38	1.81E-38	1.81E-38
np240	9.16E-15	9.17E-15	9.16E-15	9.16E-15	9.15E-15	9.15E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	4.48E-13	4.58E-13	4.65E-13	4.72E-13	4.79E-13	4.79E-13
pu238	2.30E-02	2.30E-02	2.30E-02	2.29E-02	2.29E-02	2.29E-02
pu239	2.53E+01	2.61E+01	2.70E+01	2.78E+01	2.87E+01	2.87E+01
pu240	6.09E-01	6.51E-01	6.93E-01	7.36E-01	7.80E-01	7.80E-01
pu241	2.50E-04	2.67E-04	2.84E-04	3.02E-04	3.20E-04	3.20E-04
pu242	3.72E-05	4.19E-05	4.70E-05	5.25E-05	5.83E-05	5.83E-05
pu243	7.86E-14	8.87E-14	9.95E-14	1.11E-13	1.23E-13	1.23E-13
pu244	2.87E-26	4.06E-26	5.66E-26	7.79E-26	1.06E-25	1.06E-25
pu245	1.15E-36	1.62E-36	2.26E-36	3.12E-36	4.23E-36	4.23E-36
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.73E-18	1.87E-18	2.00E-18	2.14E-18	2.28E-18	2.28E-18
am240	7.89E-16	8.54E-16	9.16E-16	9.80E-16	1.04E-15	1.04E-15
am241	6.17E-03	6.65E-03	7.13E-03	7.63E-03	8.13E-03	8.13E-03
am242m	2.91E-06	3.14E-06	3.38E-06	3.62E-06	3.87E-06	3.87E-06
am242	2.48E-10	2.67E-10	2.87E-10	3.07E-10	3.27E-10	3.27E-10
am243	2.61E-07	3.00E-07	3.43E-07	3.90E-07	4.40E-07	4.40E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.98E-15	2.28E-15	2.60E-15	2.96E-15	3.34E-15	3.34E-15
am245	2.43E-37	3.43E-37	4.77E-37	6.54E-37	8.86E-37	8.86E-37
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	1.47E-20	1.59E-20	1.71E-20	1.83E-20	1.95E-20	1.95E-20
cm242	5.01E-08	5.40E-08	5.79E-08	6.19E-08	6.60E-08	6.60E-08
cm243	3.80E-17	4.12E-17	4.43E-17	4.75E-17	5.08E-17	5.08E-17
cm244	3.11E-11	3.58E-11	4.09E-11	4.64E-11	5.25E-11	5.25E-11

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 72
power= 4.000E-03mw, burnup=1.0227E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge *******	d *******	d *******	d *******	d *******	d
cm245	3.88E-14	4.64E-14	5.50E-14	6.47E-14	7.57E-14	7.57E-14
cm246	2.15E-16	2.67E-16	3.29E-16	4.01E-16	4.85E-16	4.85E-16
cm247	2.18E-20	2.83E-20	3.63E-20	4.61E-20	5.80E-20	5.80E-20
cm248	2.18E-23	2.95E-23	3.95E-23	5.22E-23	6.82E-23	6.82E-23
cm249	6.82E-34	9.26E-34	1.24E-33	1.64E-33	2.14E-33	2.14E-33
cm250	1.91E-38	2.69E-38	3.75E-38	5.15E-38	7.00E-38	7.00E-38
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.65E+08	2.65E+08	2.65E+08	2.65E+08	2.65E-07

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  8 of library on unit 33.

          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 "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:  ft33f001
0                8/28/1996    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                     7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   73
        power=    .00mw, burnup=  11688.mwd, flux= 2.65E+08n/cm**2-sec
0                                      basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                    initial      ******* d     ******* d     ******* d     ******* d     ******* d
     productions   1.171770E+06   1.172613E+06   1.173425E+06   1.174209E+06   1.174963E+06   1.174963E+06
     absorptions   9.653493E+05   9.660934E+05   9.668211E+05   9.675327E+05   9.682284E+05   9.682284E+05
     k infinity    1.213830E+00   1.213767E+00   1.213694E+00   1.213611E+00   1.213519E+00   1.213519E+00
0                    initial      ******* d     ******* d     ******* d     ******* d     ******* d
     actinide
```

absorptions 9.524083E+05 9.530048E+05 9.535861E+05 9.541523E+05 9.547033E+05 9.547033E+05
non-actinide
abs. fracs. 1.340544E-02 1.354790E-02 1.368910E-02 1.382947E-02 1.396894E-02 1.396894E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 74
0 fraction of total absorption rate
power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

sm149	5.34E-03	5.34E-03	5.34E-03	5.34E-03	5.34E-03	5.34E-03
eu151	1.12E-03	1.15E-03	1.18E-03	1.20E-03	1.23E-03	1.23E-03
nd143	9.66E-04	9.99E-04	1.03E-03	1.06E-03	1.10E-03	1.10E-03
rh103	4.83E-04	5.01E-04	5.18E-04	5.35E-04	5.53E-04	5.53E-04
xe131	3.19E-04	3.30E-04	3.41E-04	3.52E-04	3.63E-04	3.63E-04
cs133	2.46E-04	2.55E-04	2.63E-04	2.72E-04	2.81E-04	2.81E-04
gd155	2.08E-04	2.10E-04	2.12E-04	2.14E-04	2.15E-04	2.15E-04
sm147	1.81E-04	1.87E-04	1.94E-04	2.00E-04	2.06E-04	2.06E-04
tc 99	1.79E-04	1.86E-04	1.92E-04	1.98E-04	2.04E-04	2.04E-04
nd145	1.39E-04	1.43E-04	1.48E-04	1.53E-04	1.58E-04	1.58E-04
sm152	9.67E-05	1.01E-04	1.05E-04	1.09E-04	1.13E-04	1.13E-04
mo 95	9.64E-05	9.97E-05	1.03E-04	1.06E-04	1.10E-04	1.10E-04
cd113	9.87E-05	9.93E-05	9.99E-05	1.00E-04	1.01E-04	1.01E-04
sm150	6.82E-05	7.08E-05	7.35E-05	7.61E-05	7.88E-05	7.88E-05
kr 83	5.86E-05	6.06E-05	6.26E-05	6.45E-05	6.65E-05	6.65E-05
cs135	5.58E-05	5.78E-05	5.97E-05	6.17E-05	6.36E-05	6.36E-05
gd157	6.00E-05	6.08E-05	6.15E-05	6.22E-05	6.29E-05	6.29E-05
ru101	4.37E-05	4.52E-05	4.67E-05	4.83E-05	4.98E-05	4.98E-05
eu153	4.07E-05	4.22E-05	4.38E-05	4.53E-05	4.69E-05	4.69E-05
pr141	4.10E-05	4.24E-05	4.39E-05	4.53E-05	4.67E-05	4.67E-05
sm151	4.18E-05	4.19E-05	4.20E-05	4.21E-05	4.22E-05	4.22E-05
la139	3.35E-05	3.46E-05	3.58E-05	3.70E-05	3.81E-05	3.81E-05
pd105	1.68E-05	1.75E-05	1.82E-05	1.88E-05	1.95E-05	1.95E-05
ag109	1.54E-05	1.62E-05	1.71E-05	1.80E-05	1.89E-05	1.89E-05
ba137	1.60E-05	1.66E-05	1.71E-05	1.77E-05	1.82E-05	1.82E-05
zr 93	1.36E-05	1.40E-05	1.45E-05	1.49E-05	1.54E-05	1.54E-05
i129	1.08E-05	1.12E-05	1.16E-05	1.20E-05	1.24E-05	1.24E-05
nd144	1.01E-05	1.05E-05	1.08E-05	1.12E-05	1.16E-05	1.16E-05
mo 97	7.62E-06	7.89E-06	8.15E-06	8.42E-06	8.68E-06	8.68E-06
gd152	4.77E-06	5.09E-06	5.41E-06	5.74E-06	6.07E-06	6.07E-06
pd108	3.80E-06	3.99E-06	4.19E-06	4.39E-06	4.59E-06	4.59E-06
zr 91	3.51E-06	3.63E-06	3.75E-06	3.87E-06	3.99E-06	3.99E-06
y 89	3.35E-06	3.47E-06	3.58E-06	3.69E-06	3.81E-06	3.81E-06
ru102	3.16E-06	3.27E-06	3.39E-06	3.50E-06	3.61E-06	3.61E-06
ce142	2.77E-06	2.87E-06	2.97E-06	3.06E-06	3.16E-06	3.16E-06
nd148	2.70E-06	2.79E-06	2.88E-06	2.98E-06	3.07E-06	3.07E-06
nd146	2.25E-06	2.33E-06	2.41E-06	2.48E-06	2.56E-06	2.56E-06
in115	2.00E-06	2.08E-06	2.15E-06	2.23E-06	2.30E-06	2.30E-06
pd107	1.91E-06	2.00E-06	2.09E-06	2.19E-06	2.29E-06	2.29E-06
xe135	2.25E-06	2.24E-06	2.24E-06	2.24E-06	2.24E-06	2.24E-06
ba138	1.92E-06	1.98E-06	2.05E-06	2.12E-06	2.18E-06	2.18E-06
ce140	1.79E-06	1.86E-06	1.92E-06	1.98E-06	2.04E-06	2.04E-06
xe132	1.66E-06	1.72E-06	1.78E-06	1.84E-06	1.90E-06	1.90E-06
mo 98	1.13E-06	1.17E-06	1.21E-06	1.25E-06	1.29E-06	1.29E-06
mo100	1.09E-06	1.13E-06	1.17E-06	1.21E-06	1.25E-06	1.25E-06
xe134	1.06E-06	1.10E-06	1.14E-06	1.18E-06	1.21E-06	1.21E-06
zr 92	8.48E-07	8.77E-07	9.05E-07	9.34E-07	9.63E-07	9.63E-07
i127	7.94E-07	8.24E-07	8.55E-07	8.85E-07	9.16E-07	9.16E-07
ru104	7.29E-07	7.56E-07	7.83E-07	8.11E-07	8.38E-07	8.38E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 75
0 fraction of total absorption rate
power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec

0		initial	******* d	******* d	******* d	******* d	******* d
	zr 96	6.88E-07	7.12E-07	7.36E-07	7.59E-07	7.83E-07	7.83E-07
	nd150	6.11E-07	6.33E-07	6.54E-07	6.76E-07	6.98E-07	6.98E-07
	xe136	5.78E-07	5.98E-07	6.18E-07	6.38E-07	6.58E-07	6.58E-07
	cd111	4.32E-07	4.52E-07	4.73E-07	4.93E-07	5.14E-07	5.14E-07
	br 81	4.33E-07	4.48E-07	4.63E-07	4.78E-07	4.93E-07	4.93E-07
	rb 85	4.15E-07	4.29E-07	4.43E-07	4.57E-07	4.71E-07	4.71E-07
	ru 99	3.26E-07	3.49E-07	3.73E-07	3.98E-07	4.23E-07	4.23E-07
	zr 94	3.66E-07	3.78E-07	3.91E-07	4.03E-07	4.16E-07	4.16E-07
	zr 90	3.29E-07	3.41E-07	3.52E-07	3.63E-07	3.74E-07	3.74E-07
	sm154	2.81E-07	2.92E-07	3.03E-07	3.13E-07	3.24E-07	3.24E-07
	eu152	2.88E-07	2.95E-07	3.02E-07	3.09E-07	3.16E-07	3.16E-07
	te130	2.65E-07	2.74E-07	2.84E-07	2.93E-07	3.02E-07	3.02E-07
	rb 87	2.39E-07	2.48E-07	2.56E-07	2.64E-07	2.72E-07	2.72E-07
	pm147	2.62E-07	2.61E-07	2.61E-07	2.61E-07	2.61E-07	2.61E-07
	gd154	1.84E-07	1.98E-07	2.12E-07	2.26E-07	2.41E-07	2.41E-07
	eu155	1.99E-07	2.00E-07	2.01E-07	2.02E-07	2.03E-07	2.03E-07
	pd106	1.69E-07	1.76E-07	1.83E-07	1.91E-07	1.98E-07	1.98E-07
	se 77	1.72E-07	1.78E-07	1.84E-07	1.90E-07	1.96E-07	1.96E-07
	gd156	1.46E-07	1.53E-07	1.60E-07	1.67E-07	1.74E-07	1.74E-07
	kr 84	1.15E-07	1.19E-07	1.22E-07	1.26E-07	1.30E-07	1.30E-07
	dy161	9.26E-08	9.76E-08	1.03E-07	1.08E-07	1.13E-07	1.13E-07
	sb121	9.18E-08	9.52E-08	9.86E-08	1.02E-07	1.05E-07	1.05E-07
	se 79	8.83E-08	9.13E-08	9.44E-08	9.74E-08	1.00E-07	1.00E-07
	sb123	7.42E-08	7.69E-08	7.97E-08	8.24E-08	8.52E-08	8.52E-08
	ru100	5.56E-08	5.96E-08	6.37E-08	6.79E-08	7.23E-08	7.23E-08
	kr 86	6.26E-08	6.47E-08	6.68E-08	6.89E-08	7.10E-08	7.10E-08
	te128	6.03E-08	6.25E-08	6.47E-08	6.69E-08	6.91E-08	6.91E-08
	nd142	3.89E-08	4.16E-08	4.45E-08	4.75E-08	5.05E-08	5.05E-08
	ba134	3.79E-08	4.06E-08	4.34E-08	4.63E-08	4.93E-08	4.93E-08
	tb159	4.12E-08	4.32E-08	4.52E-08	4.72E-08	4.92E-08	4.92E-08
	se 80	4.12E-08	4.26E-08	4.40E-08	4.55E-08	4.69E-08	4.69E-08
	te125	4.05E-08	4.21E-08	4.36E-08	4.52E-08	4.68E-08	4.68E-08
	sm148	3.47E-08	3.71E-08	3.97E-08	4.23E-08	4.51E-08	4.51E-08
	ba135	3.14E-08	3.36E-08	3.59E-08	3.84E-08	4.08E-08	4.08E-08
	gd158	3.23E-08	3.38E-08	3.53E-08	3.68E-08	3.83E-08	3.83E-08
	cd112	3.03E-08	3.15E-08	3.28E-08	3.41E-08	3.54E-08	3.54E-08
	pd104	2.68E-08	2.88E-08	3.08E-08	3.28E-08	3.50E-08	3.50E-08
	dy164	2.11E-08	2.23E-08	2.36E-08	2.48E-08	2.61E-08	2.61E-08
	li 6	2.24E-08	2.32E-08	2.39E-08	2.46E-08	2.54E-08	2.54E-08
	sn117	2.17E-08	2.26E-08	2.35E-08	2.43E-08	2.52E-08	2.52E-08
	dy162	1.94E-08	2.05E-08	2.17E-08	2.29E-08	2.42E-08	2.42E-08
	eu154	2.04E-08	2.11E-08	2.19E-08	2.27E-08	2.34E-08	2.34E-08
	cd114	1.78E-08	1.86E-08	1.94E-08	2.01E-08	2.09E-08	2.09E-08
	sn119	1.67E-08	1.73E-08	1.79E-08	1.85E-08	1.92E-08	1.92E-08
	sn115	1.52E-08	1.58E-08	1.64E-08	1.70E-08	1.75E-08	1.75E-08
	pd110	1.46E-08	1.53E-08	1.60E-08	1.67E-08	1.74E-08	1.74E-08
	sr 90	1.56E-08	1.56E-08	1.55E-08	1.55E-08	1.55E-08	1.55E-08
	sr 88	1.15E-08	1.19E-08	1.23E-08	1.27E-08	1.31E-08	1.31E-08
	mo 96	9.00E-09	9.63E-09	1.03E-08	1.09E-08	1.16E-08	1.16E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 76

0 fraction of total absorption rate

power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec

0		initial	******* d	******* d	******* d	******* d	******* d
	rh105	1.06E-08	1.07E-08	1.07E-08	1.08E-08	1.09E-08	1.09E-08
	cd110	7.72E-09	8.42E-09	9.15E-09	9.93E-09	1.07E-08	1.07E-08
	se 82	7.89E-09	8.16E-09	8.43E-09	8.70E-09	8.97E-09	8.97E-09
	sn126	7.53E-09	7.83E-09	8.13E-09	8.43E-09	8.73E-09	8.73E-09

se 78	6.19E-09	6.41E-09	6.63E-09	6.85E-09	7.06E-09	7.06E-09
nb 93	4.98E-09	5.34E-09	5.71E-09	6.09E-09	6.48E-09	6.48E-09
ba136	5.21E-09	5.51E-09	5.81E-09	6.12E-09	6.44E-09	6.44E-09
sn124	5.43E-09	5.63E-09	5.84E-09	6.04E-09	6.25E-09	6.25E-09
dy163	4.91E-09	5.20E-09	5.50E-09	5.81E-09	6.13E-09	6.13E-09
xe130	4.76E-09	5.07E-09	5.40E-09	5.73E-09	6.08E-09	6.08E-09
kr 82	4.30E-09	4.56E-09	4.82E-09	5.09E-09	5.36E-09	5.36E-09
as 75	3.65E-09	3.78E-09	3.90E-09	4.03E-09	4.16E-09	4.16E-09
cs137	3.66E-09	3.66E-09	3.66E-09	3.66E-09	3.65E-09	3.65E-09
in113	3.05E-09	3.17E-09	3.29E-09	3.40E-09	3.52E-09	3.52E-09
br 79	2.54E-09	2.72E-09	2.91E-09	3.10E-09	3.30E-09	3.30E-09
ag107	2.06E-09	2.23E-09	2.41E-09	2.60E-09	2.80E-09	2.80E-09
sn118	2.21E-09	2.29E-09	2.37E-09	2.45E-09	2.54E-09	2.54E-09
pr143	2.52E-09	2.51E-09	2.51E-09	2.50E-09	2.50E-09	2.50E-09
sn122	1.84E-09	1.91E-09	1.98E-09	2.05E-09	2.12E-09	2.12E-09
cd116	1.84E-09	1.91E-09	1.98E-09	2.05E-09	2.12E-09	2.12E-09
cs134	1.80E-09	1.86E-09	1.92E-09	1.99E-09	2.05E-09	2.05E-09
xe129	1.48E-09	1.59E-09	1.70E-09	1.82E-09	1.94E-09	1.94E-09
xe133	1.94E-09	1.94E-09	1.93E-09	1.93E-09	1.93E-09	1.93E-09
sn120	1.37E-09	1.42E-09	1.47E-09	1.52E-09	1.57E-09	1.57E-09
ce141	1.52E-09	1.52E-09	1.51E-09	1.51E-09	1.51E-09	1.51E-09
te126	1.12E-09	1.19E-09	1.27E-09	1.35E-09	1.44E-09	1.44E-09
ge 73	1.03E-09	1.07E-09	1.10E-09	1.14E-09	1.18E-09	1.18E-09
pm149	9.45E-10	9.45E-10	9.44E-10	9.44E-10	9.44E-10	9.44E-10
nd147	8.98E-10	8.97E-10	8.96E-10	8.95E-10	8.94E-10	8.94E-10
ce144	5.64E-10	5.63E-10	5.63E-10	5.62E-10	5.61E-10	5.61E-10
gd160	4.50E-10	4.72E-10	4.96E-10	5.19E-10	5.43E-10	5.43E-10
kr 85	5.27E-10	5.26E-10	5.25E-10	5.24E-10	5.23E-10	5.23E-10
ho165	4.02E-10	4.29E-10	4.56E-10	4.84E-10	5.13E-10	5.13E-10
ge 76	3.56E-10	3.68E-10	3.80E-10	3.92E-10	4.05E-10	4.05E-10
ru103	3.78E-10	3.78E-10	3.79E-10	3.79E-10	3.80E-10	3.80E-10
dy160	2.47E-10	2.67E-10	2.87E-10	3.09E-10	3.31E-10	3.31E-10
xe128	1.50E-10	1.61E-10	1.72E-10	1.84E-10	1.96E-10	1.96E-10
zr 95	1.58E-10	1.57E-10	1.57E-10	1.57E-10	1.57E-10	1.57E-10
nb 95	1.45E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
y 91	1.31E-10	1.31E-10	1.31E-10	1.30E-10	1.30E-10	1.30E-10
pm151	1.12E-10	1.12E-10	1.12E-10	1.12E-10	1.13E-10	1.13E-10
sr 86	7.87E-11	8.39E-11	8.92E-11	9.47E-11	1.00E-10	1.00E-10
te124	7.80E-11	8.20E-11	8.62E-11	9.04E-11	9.46E-11	9.46E-11
sn116	5.80E-11	6.22E-11	6.66E-11	7.11E-11	7.58E-11	7.58E-11
eu156	5.10E-11	5.15E-11	5.19E-11	5.24E-11	5.28E-11	5.28E-11
sr 87	4.48E-11	4.65E-11	4.82E-11	4.99E-11	5.16E-11	5.16E-11
sm153	4.44E-11	4.46E-11	4.48E-11	4.51E-11	4.53E-11	4.53E-11
ba140	4.51E-11	4.50E-11	4.50E-11	4.49E-11	4.49E-11	4.49E-11
ru106	4.07E-11	4.11E-11	4.16E-11	4.20E-11	4.24E-11	4.24E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 77
0 fraction of total absorption rate
power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

nb 94	2.97E-11	3.11E-11	3.25E-11	3.39E-11	3.54E-11	3.54E-11
te122	2.40E-11	2.58E-11	2.76E-11	2.95E-11	3.14E-11	3.14E-11
se 76	2.43E-11	2.57E-11	2.72E-11	2.88E-11	3.03E-11	3.03E-11
er166	2.18E-11	2.32E-11	2.47E-11	2.62E-11	2.77E-11	2.77E-11
sr 89	2.79E-11	2.78E-11	2.78E-11	2.77E-11	2.77E-11	2.77E-11
ge 74	2.05E-11	2.12E-11	2.20E-11	2.27E-11	2.34E-11	2.34E-11
kr 87	2.09E-11	2.09E-11	2.08E-11	2.08E-11	2.07E-11	2.07E-11
sb125	1.75E-11	1.76E-11	1.77E-11	1.77E-11	1.78E-11	1.78E-11
ge 72	1.49E-11	1.54E-11	1.60E-11	1.66E-11	1.72E-11	1.72E-11
ce143	1.65E-11	1.65E-11	1.64E-11	1.64E-11	1.64E-11	1.64E-11

y 90	1.48E-11	1.48E-11	1.48E-11	1.47E-11	1.47E-11	1.47E-11
la140	1.47E-11	1.47E-11	1.47E-11	1.46E-11	1.46E-11	1.46E-11
mo 99	1.27E-11	1.27E-11	1.27E-11	1.26E-11	1.26E-11	1.26E-11
pm148m	9.63E-12	9.64E-12	9.65E-12	9.65E-12	9.66E-12	9.66E-12
te127m	8.79E-12	8.82E-12	8.86E-12	8.90E-12	8.94E-12	8.94E-12
i131	6.69E-12	6.69E-12	6.69E-12	6.69E-12	6.69E-12	6.69E-12
kr 80	2.33E-12	2.52E-12	2.73E-12	2.94E-12	3.17E-12	3.17E-12
te129m	1.87E-12	1.87E-12	1.87E-12	1.88E-12	1.88E-12	1.88E-12
er167	1.18E-12	1.29E-12	1.41E-12	1.54E-12	1.67E-12	1.67E-12
te123	6.25E-13	6.87E-13	7.52E-13	8.22E-13	8.96E-13	8.96E-13
ag111	6.21E-13	6.29E-13	6.37E-13	6.46E-13	6.54E-13	6.54E-13
eu157	4.98E-13	5.04E-13	5.09E-13	5.15E-13	5.20E-13	5.20E-13
pm148	3.64E-13	3.64E-13	3.64E-13	3.64E-13	3.63E-13	3.63E-13
cd115m	2.68E-13	2.69E-13	2.70E-13	2.71E-13	2.72E-13	2.72E-13
cs136	2.30E-13	2.35E-13	2.41E-13	2.46E-13	2.52E-13	2.52E-13
cd108	8.71E-14	9.72E-14	1.08E-13	1.20E-13	1.32E-13	1.32E-13
tb160	1.03E-13	1.08E-13	1.13E-13	1.18E-13	1.22E-13	1.22E-13
be 9	4.58E-14	4.74E-14	4.90E-14	5.06E-14	5.22E-14	5.22E-14
pr142	4.57E-14	4.72E-14	4.88E-14	5.03E-14	5.19E-14	5.19E-14
ru105	3.80E-14	3.83E-14	3.85E-14	3.87E-14	3.90E-14	3.90E-14
sn125	3.21E-14	3.22E-14	3.23E-14	3.24E-14	3.24E-14	3.24E-14
li 7	1.81E-14	1.88E-14	1.94E-14	2.00E-14	2.06E-14	2.06E-14
sn114	1.45E-14	1.55E-14	1.67E-14	1.78E-14	1.90E-14	1.90E-14
sb126	1.51E-14	1.56E-14	1.60E-14	1.64E-14	1.69E-14	1.69E-14
rb 88	1.17E-14	1.17E-14	1.17E-14	1.17E-14	1.16E-14	1.16E-14
sn123	1.05E-14	1.05E-14	1.05E-14	1.05E-14	1.05E-14	1.05E-14
i130	9.11E-15	9.40E-15	9.68E-15	9.97E-15	1.03E-14	1.03E-14
i135	9.73E-15	9.72E-15	9.72E-15	9.71E-15	9.70E-15	9.70E-15
te132	9.33E-15	9.33E-15	9.33E-15	9.32E-15	9.32E-15	9.32E-15
sb124	5.59E-15	5.71E-15	5.83E-15	5.96E-15	6.08E-15	6.08E-15
te134	5.45E-15	5.44E-15	5.43E-15	5.43E-15	5.42E-15	5.42E-15
rb 86	2.88E-15	2.97E-15	3.06E-15	3.15E-15	3.23E-15	3.23E-15
in117m	2.59E-15	2.61E-15	2.62E-15	2.64E-15	2.65E-15	2.65E-15
dy165	2.11E-15	2.18E-15	2.25E-15	2.32E-15	2.39E-15	2.39E-15
in117	7.77E-16	7.82E-16	7.86E-16	7.91E-16	7.95E-16	7.95E-16
cs134m	3.37E-16	3.49E-16	3.60E-16	3.72E-16	3.83E-16	3.83E-16
cd118	1.35E-16	1.35E-16	1.36E-16	1.36E-16	1.36E-16	1.36E-16
ge 75	8.31E-17	8.31E-17	8.30E-17	8.29E-17	8.29E-17	8.29E-17
in119m	3.30E-17	3.30E-17	3.31E-17	3.32E-17	3.33E-17	3.33E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 78

0 fraction of total absorption rate

power= .00mw, burnup= 11688.mwd, flux= 2.65E+08n/cm**2-sec

0

	initial ******* d	******* d	******* d	******* d	******* d
ag110	1.97E-17	2.08E-17	2.19E-17	2.31E-17	2.42E-17	2.42E-17
cd109	1.28E-17	1.34E-17	1.41E-17	1.48E-17	1.55E-17	1.55E-17
in119	2.70E-18	2.71E-18	2.72E-18	2.73E-18	2.74E-18	2.74E-18

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 79

power= 4.000E-03mw, burnup=1.1688E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	6.08E-04	6.30E-04	6.52E-04	6.74E-04	6.96E-04	6.96E-04
h 2	1.81E-06	1.88E-06	1.95E-06	2.01E-06	2.08E-06	2.08E-06
h 3	4.96E-11	5.02E-11	5.06E-11	5.10E-11	5.14E-11	5.14E-11
h 4	1.97E-34	1.99E-34	2.00E-34	2.02E-34	2.03E-34	2.03E-34
he 3	1.11E-08	1.14E-08	1.17E-08	1.20E-08	1.23E-08	1.23E-08
he 4	1.01E-04	1.04E-04	1.08E-04	1.12E-04	1.15E-04	1.15E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00

ne 20	1.21E-05	1.26E-05	1.30E-05	1.34E-05	1.39E-05	1.39E-05
ne 21	2.52E-09	2.70E-09	2.88E-09	3.06E-09	3.26E-09	3.26E-09
ne 22	8.02E-08	8.31E-08	8.60E-08	8.89E-08	9.18E-08	9.18E-08
ne 23	7.22E-15	7.25E-15	7.25E-15	7.24E-15	7.24E-15	7.24E-15
na 22	4.27E-11	4.29E-11	4.29E-11	4.29E-11	4.28E-11	4.28E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15
na 25	7.53E-24	8.05E-24	8.58E-24	9.11E-24	9.66E-24	9.66E-24
mg 24	8.54E-02	8.83E-02	9.12E-02	9.40E-02	9.69E-02	9.69E-02
mg 25	2.61E-07	2.78E-07	2.96E-07	3.15E-07	3.34E-07	3.34E-07
mg 26	1.81E-06	1.88E-06	1.94E-06	2.01E-06	2.07E-06	2.07E-06
mg 27	2.15E-12	2.16E-12	2.16E-12	2.16E-12	2.16E-12	2.16E-12
mg 28	4.28E-24	4.30E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.04E-10	2.05E-10	2.04E-10	2.04E-10	2.04E-10	2.04E-10
al 29	5.96E-22	6.39E-22	6.81E-22	7.25E-22	7.70E-22	7.70E-22
al 30	7.84E-32	8.70E-32	9.59E-32	1.05E-31	1.15E-31	1.15E-31
si 28	2.49E-01	2.57E-01	2.65E-01	2.74E-01	2.82E-01	2.82E-01
si 29	2.31E-06	2.47E-06	2.63E-06	2.80E-06	2.97E-06	2.97E-06
si 30	2.27E-11	2.51E-11	2.77E-11	3.04E-11	3.33E-11	3.33E-11
si 31	1.59E-23	1.76E-23	1.94E-23	2.13E-23	2.34E-23	2.34E-23
si 32	2.48E-29	2.75E-29	3.04E-29	3.35E-29	3.68E-29	3.68E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.65E+08	2.65E+08	2.65E+08	2.65E+08	2.64E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 80
power= 4.000E-03mw, burnup=1.1688E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
he 4	5.00E+00	5.29E+00	5.59E+00	5.90E+00	6.22E+00	6.22E+00
pb206	3.17E-03	3.47E-03	3.77E-03	4.10E-03	4.43E-03	4.43E-03
pb207	3.75E-04	4.03E-04	4.31E-04	4.61E-04	4.91E-04	4.91E-04
pb208	5.89E-05	6.32E-05	6.76E-05	7.22E-05	7.69E-05	7.69E-05
pb209	5.43E-11	5.78E-11	6.14E-11	6.50E-11	6.88E-11	6.88E-11
pb210	3.67E-05	3.86E-05	4.04E-05	4.23E-05	4.42E-05	4.42E-05
pb211	1.07E-11	1.11E-11	1.15E-11	1.19E-11	1.23E-11	1.23E-11
pb212	2.92E-11	3.03E-11	3.13E-11	3.24E-11	3.34E-11	3.34E-11
pb214	8.39E-11	8.81E-11	9.24E-11	9.66E-11	1.01E-10	1.01E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	2.51E-04	2.77E-04	3.05E-04	3.34E-04	3.66E-04	3.66E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	2.26E-08	2.37E-08	2.49E-08	2.60E-08	2.72E-08	2.72E-08
bi211	6.36E-13	6.59E-13	6.82E-13	7.05E-13	7.29E-13	7.29E-13
bi212	2.77E-12	2.87E-12	2.97E-12	3.07E-12	3.17E-12	3.17E-12
bi213	1.27E-11	1.35E-11	1.43E-11	1.52E-11	1.61E-11	1.61E-11
bi214	6.23E-11	6.54E-11	6.86E-11	7.17E-11	7.49E-11	7.49E-11
po210	6.24E-07	6.56E-07	6.87E-07	7.19E-07	7.51E-07	7.51E-07
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	7.03E-18	7.28E-18	7.54E-18	7.79E-18	8.05E-18	8.05E-18
po212	1.46E-22	1.51E-22	1.56E-22	1.61E-22	1.67E-22	1.67E-22
po213	1.91E-20	2.03E-20	2.16E-20	2.28E-20	2.41E-20	2.41E-20
po214	8.57E-18	9.00E-18	9.44E-18	9.87E-18	1.03E-17	1.03E-17
po215	8.81E-18	9.14E-18	9.46E-18	9.78E-18	1.01E-17	1.01E-17
po216	1.11E-16	1.15E-16	1.19E-16	1.23E-16	1.27E-16	1.27E-16
po218	9.71E-12	1.02E-11	1.07E-11	1.12E-11	1.17E-11	1.17E-11
rn218	4.28E-28	4.44E-28	4.59E-28	4.74E-28	4.90E-28	4.90E-28
rn219	1.96E-14	2.03E-14	2.10E-14	2.18E-14	2.25E-14	2.25E-14
rn220	4.24E-14	4.39E-14	4.55E-14	4.70E-14	4.85E-14	4.85E-14

rn222	1.72E-08	1.81E-08	1.90E-08	1.99E-08	2.07E-08	2.07E-08
ra222	4.64E-25	4.82E-25	4.99E-25	5.15E-25	5.32E-25	5.32E-25
ra223	4.89E-09	5.07E-09	5.25E-09	5.43E-09	5.61E-09	5.61E-09
ra224	2.41E-10	2.50E-10	2.59E-10	2.67E-10	2.76E-10	2.76E-10
ra225	5.94E-09	6.32E-09	6.71E-09	7.10E-09	7.51E-09	7.51E-09
ra226	2.64E-03	2.77E-03	2.90E-03	3.03E-03	3.17E-03	3.17E-03
ra228	1.51E-11	1.57E-11	1.62E-11	1.68E-11	1.73E-11	1.73E-11
ac225	4.01E-09	4.27E-09	4.53E-09	4.80E-09	5.07E-09	5.07E-09
ac227	3.40E-06	3.53E-06	3.65E-06	3.77E-06	3.90E-06	3.90E-06
ac228	1.84E-15	1.91E-15	1.98E-15	2.05E-15	2.11E-15	2.11E-15
th226	2.26E-23	2.35E-23	2.43E-23	2.51E-23	2.59E-23	2.59E-23
th227	7.90E-09	8.18E-09	8.47E-09	8.76E-09	9.05E-09	9.05E-09
th228	4.61E-08	4.77E-08	4.94E-08	5.10E-08	5.27E-08	5.27E-08
th229	1.15E-03	1.23E-03	1.30E-03	1.38E-03	1.46E-03	1.46E-03
th230	1.82E-01	1.88E-01	1.95E-01	2.01E-01	2.08E-01	2.08E-01
th231	3.65E-09	3.67E-09	3.70E-09	3.72E-09	3.74E-09	3.74E-09
th232	3.69E-02	3.83E-02	3.96E-02	4.10E-02	4.23E-02	4.23E-02
th233	3.33E-13	3.45E-13	3.57E-13	3.69E-13	3.81E-13	3.81E-13
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	5.11E-03	5.30E-03	5.49E-03	5.67E-03	5.86E-03	5.86E-03
pa232	8.60E-11	8.91E-11	9.22E-11	9.53E-11	9.84E-11	9.84E-11

1

power= 4.000E-03mw, burnup=1.1688E+04mwd, flux= 2.65E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.20E-20	2.28E-20	2.36E-20	2.44E-20	2.51E-20	2.51E-20
u231	6.96E-17	7.22E-17	7.45E-17	7.68E-17	7.91E-17	7.91E-17
u232	1.68E-06	1.74E-06	1.80E-06	1.86E-06	1.92E-06	1.92E-06
u233	9.07E-02	9.38E-02	9.68E-02	9.99E-02	1.03E-01	1.03E-01
u234	1.00E+01	1.00E+01	1.01E+01	1.01E+01	1.01E+01	1.01E+01
u235	6.83E+02	6.82E+02	6.80E+02	6.79E+02	6.77E+02	6.77E+02
u236	1.82E+02	1.82E+02	1.83E+02	1.83E+02	1.83E+02	1.83E+02
u237	3.23E-06	3.24E-06	3.24E-06	3.25E-06	3.25E-06	3.25E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	2.13E-36	2.86E-36	3.80E-36	5.00E-36	6.53E-36	6.53E-36
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.75E-12	8.79E-12	8.78E-12	8.77E-12	8.77E-12	8.77E-12
np236m	2.08E-12	2.09E-12	2.08E-12	2.08E-12	2.08E-12	2.08E-12
np236	1.36E-06	1.41E-06	1.46E-06	1.50E-06	1.55E-06	1.55E-06
np237	4.16E+01	4.16E+01	4.16E+01	4.16E+01	4.16E+01	4.16E+01
np238	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06
np239	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	1.81E-38	2.44E-38	3.24E-38	4.27E-38	5.57E-38	5.57E-38
np240	9.15E-15	9.16E-15	9.15E-15	9.14E-15	9.14E-15	9.14E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09	1.13E-09
pu237	4.79E-13	4.89E-13	4.95E-13	5.02E-13	5.09E-13	5.09E-13
pu238	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02	2.29E-02
pu239	2.87E+01	2.95E+01	3.03E+01	3.11E+01	3.19E+01	3.19E+01
pu240	7.80E-01	8.24E-01	8.69E-01	9.14E-01	9.60E-01	9.60E-01
pu241	3.20E-04	3.38E-04	3.56E-04	3.75E-04	3.93E-04	3.93E-04
pu242	5.83E-05	6.45E-05	7.10E-05	7.79E-05	8.53E-05	8.53E-05
pu243	1.23E-13	1.36E-13	1.50E-13	1.65E-13	1.80E-13	1.80E-13

```
     pu244   1.06E-25  1.42E-25  1.89E-25  2.49E-25  3.25E-25  3.25E-25
     pu245   4.23E-36  5.69E-36  7.56E-36  9.95E-36  1.30E-35  1.30E-35
     pu246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am239   2.28E-18  2.44E-18  2.58E-18  2.73E-18  2.88E-18  2.88E-18
     am240   1.04E-15  1.11E-15  1.18E-15  1.25E-15  1.32E-15  1.32E-15
     am241   8.13E-03  8.65E-03  9.17E-03  9.70E-03  1.02E-02  1.02E-02
     am242m  3.87E-06  4.12E-06  4.37E-06  4.63E-06  4.89E-06  4.89E-06
     am242   3.27E-10  3.48E-10  3.68E-10  3.90E-10  4.11E-10  4.11E-10
     am243   4.40E-07  4.95E-07  5.55E-07  6.19E-07  6.87E-07  6.87E-07
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   3.34E-15  3.76E-15  4.21E-15  4.69E-15  5.21E-15  5.21E-15
     am245   8.86E-37  1.19E-36  1.57E-36  2.07E-36  2.69E-36  2.69E-36
     am246    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     cm241   1.95E-20  2.08E-20  2.20E-20  2.33E-20  2.45E-20  2.45E-20
     cm242   6.60E-08  7.02E-08  7.44E-08  7.87E-08  8.30E-08  8.30E-08
     cm243   5.08E-17  5.42E-17  5.76E-17  6.11E-17  6.45E-17  6.45E-17
     cm244   5.25E-11  5.91E-11  6.61E-11  7.37E-11  8.19E-11  8.19E-11
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                    actinides        page   82
       power= 4.000E-03mw, burnup=1.1688E+04mwd, flux= 2.65E+08n/cm**2-sec
0                                        nuclide concentrations, gram atoms
                                         basis = single reactor assembly
          charge ******* d ******* d ******* d ******* d ******* d
     cm245   7.57E-14  8.81E-14  1.02E-13  1.17E-13  1.34E-13  1.34E-13
     cm246   4.85E-16  5.82E-16  6.94E-16  8.21E-16  9.67E-16  9.67E-16
     cm247   5.80E-20  7.24E-20  8.96E-20  1.10E-19  1.34E-19  1.34E-19
     cm248   6.82E-23  8.84E-23  1.13E-22  1.44E-22  1.82E-22  1.82E-22
     cm249   2.14E-33  2.77E-33  3.56E-33  4.52E-33  5.70E-33  5.70E-33
     cm250   7.00E-38  9.39E-38  1.25E-37  1.64E-37  2.13E-37  2.13E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux              2.65E+08  2.65E+08  2.65E+08  2.65E+08  2.64E-07
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  9 of library on unit 33.

          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 "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:  ft33f001
0                 8/28/1996    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                      7993    number of nonzero off-diagonal matrix elements
0         ********************************************************************************
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                                    page   83
         power=     .00mw, burnup=  13149.mwd, flux= 2.64E+08n/cm**2-sec
0                                        basis =
0    (note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)
0                      initial      ******* d      ******* d      ******* d      ******* d      ******* d
     productions    1.175230E+06   1.175964E+06   1.176671E+06   1.177350E+06   1.178002E+06   1.178002E+06
     absorptions    9.690727E+05   9.697574E+05   9.704266E+05   9.710801E+05   9.717191E+05   9.717191E+05
     k infinity     1.212737E+00   1.212638E+00   1.212529E+00   1.212412E+00   1.212286E+00   1.212286E+00
0                      initial      ******* d      ******* d      ******* d      ******* d      ******* d
     actinide
     absorptions    9.555376E+05   9.560779E+05   9.566034E+05   9.571145E+05   9.576114E+05   9.576114E+05
     non-actinide
     abs. fracs.    1.396710E-02   1.410609E-02   1.424450E-02   1.438147E-02   1.451826E-02   1.451826E-02
1    sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2          fission products        page   84
0                              fraction of total absorption rate
         power=     .00mw, burnup=  13149.mwd, flux= 2.64E+08n/cm**2-sec
0                initial ******* d ******* d ******* d ******* d ******* d

     sm149      5.34E-03  5.34E-03  5.34E-03  5.34E-03  5.34E-03  5.34E-03
     eu151      1.23E-03  1.26E-03  1.28E-03  1.31E-03  1.33E-03  1.33E-03
     nd143      1.10E-03  1.13E-03  1.16E-03  1.19E-03  1.22E-03  1.22E-03
     rh103      5.53E-04  5.70E-04  5.88E-04  6.05E-04  6.22E-04  6.22E-04
     xe131      3.63E-04  3.75E-04  3.86E-04  3.97E-04  4.08E-04  4.08E-04
     cs133      2.81E-04  2.89E-04  2.98E-04  3.06E-04  3.15E-04  3.15E-04
     sm147      2.06E-04  2.13E-04  2.19E-04  2.25E-04  2.31E-04  2.31E-04
     tc 99      2.04E-04  2.10E-04  2.16E-04  2.22E-04  2.29E-04  2.29E-04
     gd155      2.15E-04  2.17E-04  2.19E-04  2.20E-04  2.22E-04  2.22E-04
     nd145      1.58E-04  1.62E-04  1.67E-04  1.72E-04  1.76E-04  1.76E-04
     sm152      1.13E-04  1.17E-04  1.21E-04  1.25E-04  1.29E-04  1.29E-04
     mo 95      1.10E-04  1.13E-04  1.16E-04  1.20E-04  1.23E-04  1.23E-04
     cd113      1.01E-04  1.02E-04  1.02E-04  1.03E-04  1.03E-04  1.03E-04
     sm150      7.88E-05  8.14E-05  8.40E-05  8.67E-05  8.93E-05  8.93E-05
     kr 83      6.65E-05  6.84E-05  7.04E-05  7.23E-05  7.43E-05  7.43E-05
     cs135      6.36E-05  6.56E-05  6.75E-05  6.95E-05  7.14E-05  7.14E-05
```

gd157	6.29E-05	6.36E-05	6.43E-05	6.50E-05	6.57E-05	6.57E-05
ru101	4.99E-05	5.14E-05	5.29E-05	5.44E-05	5.60E-05	5.60E-05
eu153	4.69E-05	4.85E-05	5.00E-05	5.16E-05	5.32E-05	5.32E-05
pr141	4.67E-05	4.81E-05	4.95E-05	5.09E-05	5.23E-05	5.23E-05
la139	3.81E-05	3.92E-05	4.04E-05	4.16E-05	4.27E-05	4.27E-05
sm151	4.21E-05	4.22E-05	4.23E-05	4.24E-05	4.25E-05	4.25E-05
ag109	1.89E-05	1.98E-05	2.07E-05	2.17E-05	2.26E-05	2.26E-05
pd105	1.95E-05	2.02E-05	2.09E-05	2.16E-05	2.23E-05	2.23E-05
ba137	1.82E-05	1.88E-05	1.93E-05	1.99E-05	2.05E-05	2.05E-05
zr 93	1.54E-05	1.59E-05	1.63E-05	1.68E-05	1.73E-05	1.73E-05
i129	1.24E-05	1.28E-05	1.32E-05	1.36E-05	1.40E-05	1.40E-05
nd144	1.15E-05	1.19E-05	1.23E-05	1.26E-05	1.30E-05	1.30E-05
mo 97	8.68E-06	8.94E-06	9.20E-06	9.47E-06	9.73E-06	9.73E-06
gd152	6.07E-06	6.41E-06	6.76E-06	7.11E-06	7.48E-06	7.48E-06
pd108	4.60E-06	4.80E-06	5.02E-06	5.23E-06	5.45E-06	5.45E-06
zr 91	3.99E-06	4.10E-06	4.22E-06	4.34E-06	4.46E-06	4.46E-06
y 89	3.80E-06	3.92E-06	4.03E-06	4.14E-06	4.25E-06	4.25E-06
ru102	3.61E-06	3.72E-06	3.83E-06	3.94E-06	4.06E-06	4.06E-06
ce142	3.16E-06	3.25E-06	3.35E-06	3.44E-06	3.54E-06	3.54E-06
nd148	3.07E-06	3.16E-06	3.26E-06	3.35E-06	3.44E-06	3.44E-06
nd146	2.56E-06	2.64E-06	2.72E-06	2.79E-06	2.87E-06	2.87E-06
pd107	2.29E-06	2.38E-06	2.48E-06	2.58E-06	2.69E-06	2.69E-06
in115	2.30E-06	2.38E-06	2.45E-06	2.53E-06	2.60E-06	2.60E-06
ba138	2.18E-06	2.25E-06	2.31E-06	2.38E-06	2.44E-06	2.44E-06
ce140	2.04E-06	2.10E-06	2.16E-06	2.23E-06	2.29E-06	2.29E-06
xe135	2.24E-06	2.24E-06	2.24E-06	2.24E-06	2.23E-06	2.23E-06
xe132	1.90E-06	1.96E-06	2.01E-06	2.07E-06	2.13E-06	2.13E-06
mo 98	1.29E-06	1.33E-06	1.37E-06	1.41E-06	1.45E-06	1.45E-06
mo100	1.25E-06	1.29E-06	1.32E-06	1.36E-06	1.40E-06	1.40E-06
xe134	1.21E-06	1.25E-06	1.28E-06	1.32E-06	1.36E-06	1.36E-06
zr 92	9.63E-07	9.91E-07	1.02E-06	1.05E-06	1.08E-06	1.08E-06
i127	9.16E-07	9.47E-07	9.79E-07	1.01E-06	1.04E-06	1.04E-06
ru104	8.39E-07	8.66E-07	8.94E-07	9.22E-07	9.50E-07	9.50E-07

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 85
0 fraction of total absorption rate
power= .00mw, burnup= 13149.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

zr 96	7.84E-07	8.08E-07	8.32E-07	8.55E-07	8.79E-07	8.79E-07
nd150	6.98E-07	7.19E-07	7.41E-07	7.63E-07	7.84E-07	7.84E-07
xe136	6.58E-07	6.78E-07	6.98E-07	7.18E-07	7.38E-07	7.38E-07
cd111	5.13E-07	5.34E-07	5.55E-07	5.77E-07	5.98E-07	5.98E-07
br 81	4.93E-07	5.08E-07	5.23E-07	5.38E-07	5.53E-07	5.53E-07
ru 99	4.23E-07	4.50E-07	4.77E-07	5.05E-07	5.33E-07	5.33E-07
rb 85	4.71E-07	4.85E-07	4.99E-07	5.13E-07	5.27E-07	5.27E-07
zr 94	4.16E-07	4.29E-07	4.41E-07	4.54E-07	4.66E-07	4.66E-07
zr 90	3.74E-07	3.85E-07	3.96E-07	4.07E-07	4.18E-07	4.18E-07
sm154	3.24E-07	3.35E-07	3.46E-07	3.57E-07	3.68E-07	3.68E-07
eu152	3.16E-07	3.22E-07	3.29E-07	3.35E-07	3.41E-07	3.41E-07
te130	3.02E-07	3.11E-07	3.21E-07	3.30E-07	3.39E-07	3.39E-07
gd154	2.41E-07	2.57E-07	2.73E-07	2.89E-07	3.06E-07	3.06E-07
rb 87	2.72E-07	2.80E-07	2.88E-07	2.96E-07	3.04E-07	3.04E-07
pm147	2.61E-07	2.60E-07	2.60E-07	2.60E-07	2.60E-07	2.60E-07
pd106	1.98E-07	2.06E-07	2.14E-07	2.21E-07	2.29E-07	2.29E-07
se 77	1.95E-07	2.01E-07	2.07E-07	2.13E-07	2.19E-07	2.19E-07
eu155	2.03E-07	2.04E-07	2.05E-07	2.06E-07	2.07E-07	2.07E-07
gd156	1.74E-07	1.82E-07	1.89E-07	1.96E-07	2.03E-07	2.03E-07
kr 84	1.30E-07	1.34E-07	1.38E-07	1.42E-07	1.46E-07	1.46E-07
dy161	1.13E-07	1.18E-07	1.24E-07	1.29E-07	1.35E-07	1.35E-07
sb121	1.06E-07	1.09E-07	1.12E-07	1.16E-07	1.19E-07	1.19E-07

se 79	1.00E-07	1.03E-07	1.06E-07	1.09E-07	1.13E-07	1.13E-07
sb123	8.52E-08	8.80E-08	9.08E-08	9.35E-08	9.63E-08	9.63E-08
ru100	7.22E-08	7.67E-08	8.14E-08	8.61E-08	9.10E-08	9.10E-08
kr 86	7.10E-08	7.31E-08	7.52E-08	7.73E-08	7.94E-08	7.94E-08
te128	6.91E-08	7.13E-08	7.35E-08	7.57E-08	7.79E-08	7.79E-08
nd142	5.05E-08	5.36E-08	5.68E-08	6.02E-08	6.36E-08	6.36E-08
ba134	4.93E-08	5.24E-08	5.56E-08	5.88E-08	6.22E-08	6.22E-08
tb159	4.92E-08	5.13E-08	5.34E-08	5.55E-08	5.77E-08	5.77E-08
sm148	4.50E-08	4.78E-08	5.07E-08	5.37E-08	5.67E-08	5.67E-08
te125	4.68E-08	4.83E-08	4.99E-08	5.15E-08	5.31E-08	5.31E-08
se 80	4.68E-08	4.83E-08	4.97E-08	5.11E-08	5.25E-08	5.25E-08
ba135	4.08E-08	4.34E-08	4.61E-08	4.88E-08	5.16E-08	5.16E-08
gd158	3.84E-08	3.99E-08	4.15E-08	4.31E-08	4.47E-08	4.47E-08
pd104	3.50E-08	3.72E-08	3.95E-08	4.19E-08	4.43E-08	4.43E-08
cd112	3.54E-08	3.67E-08	3.80E-08	3.93E-08	4.07E-08	4.07E-08
dy164	2.61E-08	2.74E-08	2.88E-08	3.01E-08	3.15E-08	3.15E-08
dy162	2.42E-08	2.54E-08	2.67E-08	2.80E-08	2.94E-08	2.94E-08
sn117	2.52E-08	2.61E-08	2.69E-08	2.78E-08	2.87E-08	2.87E-08
li 6	2.54E-08	2.61E-08	2.68E-08	2.75E-08	2.82E-08	2.82E-08
eu154	2.34E-08	2.42E-08	2.50E-08	2.57E-08	2.65E-08	2.65E-08
cd114	2.09E-08	2.17E-08	2.24E-08	2.32E-08	2.40E-08	2.40E-08
sn119	1.92E-08	1.98E-08	2.04E-08	2.11E-08	2.17E-08	2.17E-08
pd110	1.74E-08	1.82E-08	1.89E-08	1.97E-08	2.05E-08	2.05E-08
sn115	1.75E-08	1.81E-08	1.87E-08	1.93E-08	1.98E-08	1.98E-08
sr 90	1.54E-08	1.54E-08	1.54E-08	1.53E-08	1.53E-08	1.53E-08
sr 88	1.31E-08	1.34E-08	1.38E-08	1.42E-08	1.46E-08	1.46E-08
mo 96	1.16E-08	1.23E-08	1.31E-08	1.38E-08	1.46E-08	1.46E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 86

0 fraction of total absorption rate

power= .00mw, burnup= 13149.mwd, flux= 2.64E+08n/cm**2-sec

0 initial ******* d ******* d ******* d ******* d ******* d

cd110	1.07E-08	1.16E-08	1.25E-08	1.34E-08	1.44E-08	1.44E-08
rh105	1.09E-08	1.09E-08	1.10E-08	1.10E-08	1.11E-08	1.11E-08
se 82	8.96E-09	9.23E-09	9.50E-09	9.76E-09	1.00E-08	1.00E-08
sn126	8.72E-09	9.02E-09	9.33E-09	9.63E-09	9.94E-09	9.94E-09
nb 93	6.48E-09	6.88E-09	7.30E-09	7.73E-09	8.17E-09	8.17E-09
se 78	7.06E-09	7.28E-09	7.50E-09	7.72E-09	7.94E-09	7.94E-09
ba136	6.44E-09	6.76E-09	7.10E-09	7.43E-09	7.78E-09	7.78E-09
xe130	6.07E-09	6.42E-09	6.79E-09	7.16E-09	7.55E-09	7.55E-09
dy163	6.13E-09	6.45E-09	6.78E-09	7.12E-09	7.47E-09	7.47E-09
sn124	6.26E-09	6.46E-09	6.67E-09	6.88E-09	7.09E-09	7.09E-09
kr 82	5.36E-09	5.64E-09	5.92E-09	6.21E-09	6.51E-09	6.51E-09
as 75	4.16E-09	4.29E-09	4.41E-09	4.54E-09	4.67E-09	4.67E-09
br 79	3.30E-09	3.51E-09	3.72E-09	3.94E-09	4.17E-09	4.17E-09
in113	3.52E-09	3.64E-09	3.76E-09	3.88E-09	4.00E-09	4.00E-09
ag107	2.79E-09	3.00E-09	3.21E-09	3.44E-09	3.67E-09	3.67E-09
cs137	3.65E-09	3.65E-09	3.65E-09	3.65E-09	3.64E-09	3.64E-09
sn118	2.54E-09	2.62E-09	2.71E-09	2.79E-09	2.88E-09	2.88E-09
pr143	2.50E-09	2.50E-09	2.49E-09	2.49E-09	2.49E-09	2.49E-09
xe129	1.94E-09	2.06E-09	2.19E-09	2.32E-09	2.45E-09	2.45E-09
sn122	2.12E-09	2.19E-09	2.26E-09	2.33E-09	2.40E-09	2.40E-09
cd116	2.12E-09	2.19E-09	2.26E-09	2.33E-09	2.40E-09	2.40E-09
cs134	2.05E-09	2.11E-09	2.17E-09	2.23E-09	2.29E-09	2.29E-09
xe133	1.93E-09	1.93E-09	1.93E-09	1.93E-09	1.92E-09	1.92E-09
te126	1.44E-09	1.52E-09	1.61E-09	1.70E-09	1.80E-09	1.80E-09
sn120	1.57E-09	1.62E-09	1.68E-09	1.73E-09	1.78E-09	1.78E-09
ce141	1.51E-09	1.51E-09	1.51E-09	1.51E-09	1.50E-09	1.50E-09
ge 73	1.18E-09	1.21E-09	1.25E-09	1.29E-09	1.33E-09	1.33E-09
pm149	9.43E-10	9.42E-10	9.42E-10	9.41E-10	9.41E-10	9.41E-10

nd147	8.95E-10	8.94E-10	8.93E-10	8.92E-10	8.91E-10	8.91E-10
gd160	5.43E-10	5.67E-10	5.92E-10	6.16E-10	6.42E-10	6.42E-10
ho165	5.13E-10	5.43E-10	5.74E-10	6.05E-10	6.37E-10	6.37E-10
ce144	5.61E-10	5.60E-10	5.59E-10	5.58E-10	5.57E-10	5.57E-10
kr 85	5.23E-10	5.22E-10	5.21E-10	5.20E-10	5.19E-10	5.19E-10
ge 76	4.05E-10	4.17E-10	4.29E-10	4.41E-10	4.53E-10	4.53E-10
dy160	3.31E-10	3.54E-10	3.79E-10	4.04E-10	4.30E-10	4.30E-10
ru103	3.80E-10	3.81E-10	3.81E-10	3.82E-10	3.82E-10	3.82E-10
xe128	1.96E-10	2.08E-10	2.21E-10	2.35E-10	2.49E-10	2.49E-10
zr 95	1.57E-10	1.57E-10	1.56E-10	1.56E-10	1.56E-10	1.56E-10
nb 95	1.44E-10	1.44E-10	1.43E-10	1.43E-10	1.43E-10	1.43E-10
y 91	1.30E-10	1.30E-10	1.29E-10	1.29E-10	1.29E-10	1.29E-10
sr 86	1.00E-10	1.06E-10	1.12E-10	1.18E-10	1.24E-10	1.24E-10
pm151	1.12E-10	1.13E-10	1.13E-10	1.13E-10	1.13E-10	1.13E-10
te124	9.46E-11	9.89E-11	1.03E-10	1.08E-10	1.13E-10	1.13E-10
sn116	7.59E-11	8.07E-11	8.58E-11	9.09E-11	9.62E-11	9.62E-11
sr 87	5.16E-11	5.33E-11	5.50E-11	5.67E-11	5.84E-11	5.84E-11
eu156	5.28E-11	5.32E-11	5.37E-11	5.41E-11	5.45E-11	5.45E-11
sm153	4.53E-11	4.56E-11	4.58E-11	4.60E-11	4.63E-11	4.63E-11
ba140	4.49E-11	4.48E-11	4.48E-11	4.47E-11	4.47E-11	4.47E-11
ru106	4.24E-11	4.28E-11	4.32E-11	4.36E-11	4.40E-11	4.40E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 87
0 fraction of total absorption rate
power= .00mw, burnup= 13149.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

nb 94	3.55E-11	3.70E-11	3.86E-11	4.02E-11	4.18E-11	4.18E-11
te122	3.14E-11	3.34E-11	3.55E-11	3.76E-11	3.98E-11	3.98E-11
se 76	3.03E-11	3.19E-11	3.35E-11	3.52E-11	3.69E-11	3.69E-11
er166	2.77E-11	2.92E-11	3.08E-11	3.24E-11	3.41E-11	3.41E-11
sr 89	2.76E-11	2.76E-11	2.75E-11	2.74E-11	2.74E-11	2.74E-11
ge 74	2.34E-11	2.42E-11	2.49E-11	2.56E-11	2.64E-11	2.64E-11
kr 87	2.07E-11	2.07E-11	2.06E-11	2.06E-11	2.05E-11	2.05E-11
ge 72	1.71E-11	1.77E-11	1.83E-11	1.89E-11	1.95E-11	1.95E-11
sb125	1.78E-11	1.79E-11	1.79E-11	1.80E-11	1.81E-11	1.81E-11
ce143	1.64E-11	1.64E-11	1.63E-11	1.63E-11	1.63E-11	1.63E-11
la140	1.46E-11	1.46E-11	1.46E-11	1.46E-11	1.46E-11	1.46E-11
y 90	1.47E-11	1.46E-11	1.46E-11	1.46E-11	1.45E-11	1.45E-11
mo 99	1.26E-11	1.26E-11	1.26E-11	1.26E-11	1.26E-11	1.26E-11
pm148m	9.65E-12	9.67E-12	9.67E-12	9.68E-12	9.68E-12	9.68E-12
te127m	8.93E-12	8.97E-12	9.01E-12	9.04E-12	9.08E-12	9.08E-12
i131	6.69E-12	6.69E-12	6.69E-12	6.68E-12	6.68E-12	6.68E-12
kr 80	3.17E-12	3.40E-12	3.65E-12	3.91E-12	4.19E-12	4.19E-12
er167	1.67E-12	1.81E-12	1.95E-12	2.10E-12	2.27E-12	2.27E-12
te129m	1.88E-12	1.88E-12	1.88E-12	1.88E-12	1.89E-12	1.89E-12
te123	8.96E-13	9.74E-13	1.06E-12	1.14E-12	1.24E-12	1.24E-12
ag111	6.54E-13	6.62E-13	6.69E-13	6.77E-13	6.85E-13	6.85E-13
eu157	5.20E-13	5.25E-13	5.30E-13	5.35E-13	5.40E-13	5.40E-13
pm148	3.64E-13	3.64E-13	3.64E-13	3.63E-13	3.63E-13	3.63E-13
cd115m	2.72E-13	2.73E-13	2.74E-13	2.75E-13	2.75E-13	2.75E-13
cs136	2.52E-13	2.58E-13	2.63E-13	2.68E-13	2.74E-13	2.74E-13
cd108	1.32E-13	1.46E-13	1.60E-13	1.76E-13	1.92E-13	1.92E-13
tb160	1.22E-13	1.27E-13	1.32E-13	1.37E-13	1.42E-13	1.42E-13
be 9	5.23E-14	5.39E-14	5.55E-14	5.70E-14	5.86E-14	5.86E-14
pr142	5.19E-14	5.35E-14	5.50E-14	5.66E-14	5.81E-14	5.81E-14
ru105	3.90E-14	3.92E-14	3.94E-14	3.96E-14	3.98E-14	3.98E-14
sn125	3.25E-14	3.25E-14	3.26E-14	3.27E-14	3.28E-14	3.28E-14
sn114	1.90E-14	2.02E-14	2.15E-14	2.28E-14	2.42E-14	2.42E-14
li 7	2.06E-14	2.13E-14	2.19E-14	2.25E-14	2.31E-14	2.31E-14
sb126	1.69E-14	1.73E-14	1.77E-14	1.82E-14	1.86E-14	1.86E-14

rb 88	1.16E-14	1.16E-14	1.16E-14	1.15E-14	1.15E-14	1.15E-14
i130	1.03E-14	1.05E-14	1.08E-14	1.11E-14	1.14E-14	1.14E-14
sn123	1.06E-14	1.06E-14	1.06E-14	1.06E-14	1.06E-14	1.06E-14
i135	9.69E-15	9.69E-15	9.68E-15	9.67E-15	9.66E-15	9.66E-15
te132	9.32E-15	9.31E-15	9.31E-15	9.31E-15	9.30E-15	9.30E-15
sb124	6.08E-15	6.20E-15	6.32E-15	6.44E-15	6.56E-15	6.56E-15
te134	5.41E-15	5.40E-15	5.40E-15	5.39E-15	5.38E-15	5.38E-15
rb 86	3.23E-15	3.32E-15	3.41E-15	3.49E-15	3.58E-15	3.58E-15
in117m	2.65E-15	2.66E-15	2.67E-15	2.69E-15	2.70E-15	2.70E-15
dy165	2.39E-15	2.45E-15	2.52E-15	2.59E-15	2.66E-15	2.66E-15
in117	7.94E-16	7.99E-16	8.03E-16	8.07E-16	8.12E-16	8.12E-16
cs134m	3.83E-16	3.95E-16	4.06E-16	4.18E-16	4.29E-16	4.29E-16
cd118	1.36E-16	1.37E-16	1.37E-16	1.38E-16	1.38E-16	1.38E-16
ge 75	8.28E-17	8.27E-17	8.27E-17	8.26E-17	8.26E-17	8.26E-17
in119m	3.33E-17	3.34E-17	3.34E-17	3.35E-17	3.36E-17	3.36E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 88
0 fraction of total absorption rate
power= .00mw, burnup= 13149.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d ******* d

ag110	2.42E-17	2.54E-17	2.65E-17	2.78E-17	2.90E-17	2.90E-17
cd109	1.55E-17	1.62E-17	1.70E-17	1.78E-17	1.86E-17	1.86E-17
in119	2.74E-18	2.75E-18	2.76E-18	2.77E-18	2.78E-18	2.78E-18

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 89
power= 4.000E-03mw, burnup=1.3149E+04mwd, flux= 2.64E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	******* d	******* d	******* d	******* d	******* d
h 1	6.96E-04	7.18E-04	7.40E-04	7.61E-04	7.83E-04	7.83E-04
h 2	2.08E-06	2.14E-06	2.21E-06	2.27E-06	2.34E-06	2.34E-06
h 3	5.14E-11	5.19E-11	5.23E-11	5.27E-11	5.30E-11	5.30E-11
h 4	2.03E-34	2.05E-34	2.07E-34	2.08E-34	2.10E-34	2.10E-34
he 3	1.23E-08	1.26E-08	1.29E-08	1.31E-08	1.34E-08	1.34E-08
he 4	1.15E-04	1.19E-04	1.23E-04	1.26E-04	1.30E-04	1.30E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.39E-05	1.43E-05	1.47E-05	1.52E-05	1.56E-05	1.56E-05
ne 21	3.26E-09	3.46E-09	3.66E-09	3.87E-09	4.09E-09	4.09E-09
ne 22	9.18E-08	9.47E-08	9.76E-08	1.01E-07	1.03E-07	1.03E-07
ne 23	7.24E-15	7.27E-15	7.27E-15	7.27E-15	7.26E-15	7.26E-15
na 22	4.28E-11	4.30E-11	4.30E-11	4.30E-11	4.30E-11	4.30E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.53E-15	4.54E-15	4.53E-15	4.53E-15	4.53E-15	4.53E-15
na 25	9.66E-24	1.03E-23	1.08E-23	1.14E-23	1.21E-23	1.21E-23
mg 24	9.69E-02	9.97E-02	1.03E-01	1.05E-01	1.08E-01	1.08E-01
mg 25	3.34E-07	3.54E-07	3.74E-07	3.95E-07	4.16E-07	4.16E-07
mg 26	2.07E-06	2.14E-06	2.21E-06	2.27E-06	2.34E-06	2.34E-06
mg 27	2.16E-12	2.17E-12	2.17E-12	2.16E-12	2.16E-12	2.16E-12
mg 28	4.29E-24	4.30E-24	4.30E-24	4.30E-24	4.29E-24	4.29E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.04E-10	2.05E-10	2.05E-10	2.04E-10	2.04E-10	2.04E-10
al 29	7.70E-22	8.19E-22	8.66E-22	9.15E-22	9.66E-22	9.66E-22
al 30	1.15E-31	1.26E-31	1.38E-31	1.50E-31	1.62E-31	1.62E-31
si 28	2.82E-01	2.90E-01	2.99E-01	3.07E-01	3.15E-01	3.15E-01
si 29	2.97E-06	3.15E-06	3.34E-06	3.53E-06	3.72E-06	3.72E-06
si 30	3.33E-11	3.64E-11	3.97E-11	4.32E-11	4.68E-11	4.68E-11
si 31	2.34E-23	2.55E-23	2.78E-23	3.02E-23	3.28E-23	3.28E-23
si 32	3.68E-29	4.03E-29	4.40E-29	4.79E-29	5.20E-29	5.20E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04

0 flux	2.64E+08	2.64E+08	2.64E+08	2.64E+08	2.64E-07	

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 90
power= 4.000E-03mw, burnup=1.3149E+04mwd, flux= 2.64E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge ******* d	******* d	******* d	******* d	******* d	******* d
he 4 6.22E+00	6.54E+00	6.87E+00	7.21E+00	7.56E+00	7.56E+00
pb206 4.43E-03	4.78E-03	5.15E-03	5.53E-03	5.93E-03	5.93E-03
pb207 4.91E-04	5.22E-04	5.55E-04	5.88E-04	6.23E-04	6.23E-04
pb208 7.69E-05	8.18E-05	8.68E-05	9.20E-05	9.73E-05	9.73E-05
pb209 6.88E-11	7.25E-11	7.64E-11	8.03E-11	8.43E-11	8.43E-11
pb210 4.42E-05	4.61E-05	4.79E-05	4.98E-05	5.17E-05	5.17E-05
pb211 1.23E-11	1.27E-11	1.31E-11	1.35E-11	1.39E-11	1.39E-11
pb212 3.34E-11	3.45E-11	3.55E-11	3.66E-11	3.76E-11	3.76E-11
pb214 1.01E-10	1.05E-10	1.10E-10	1.14E-10	1.18E-10	1.18E-10
bi208 .00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209 3.66E-04	3.99E-04	4.33E-04	4.70E-04	5.09E-04	5.09E-04
bi210m .00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210 2.72E-08	2.83E-08	2.95E-08	3.07E-08	3.18E-08	3.18E-08
bi211 7.29E-13	7.52E-13	7.75E-13	7.98E-13	8.22E-13	8.22E-13
bi212 3.17E-12	3.27E-12	3.37E-12	3.47E-12	3.57E-12	3.57E-12
bi213 1.61E-11	1.69E-11	1.78E-11	1.88E-11	1.97E-11	1.97E-11
bi214 7.49E-11	7.81E-11	8.13E-11	8.45E-11	8.78E-11	8.78E-11
po210 7.51E-07	7.83E-07	8.15E-07	8.47E-07	8.79E-07	8.79E-07
po211m .00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211 8.05E-18	8.31E-18	8.57E-18	8.82E-18	9.08E-18	9.08E-18
po212 1.67E-22	1.72E-22	1.77E-22	1.82E-22	1.88E-22	1.88E-22
po213 2.41E-20	2.55E-20	2.68E-20	2.82E-20	2.96E-20	2.96E-20
po214 1.03E-17	1.07E-17	1.12E-17	1.16E-17	1.21E-17	1.21E-17
po215 1.01E-17	1.04E-17	1.07E-17	1.11E-17	1.14E-17	1.14E-17
po216 1.27E-16	1.31E-16	1.35E-16	1.39E-16	1.43E-16	1.43E-16
po218 1.17E-11	1.22E-11	1.27E-11	1.32E-11	1.37E-11	1.37E-11
rn218 4.90E-28	5.06E-28	5.22E-28	5.37E-28	5.52E-28	5.52E-28
rn219 2.25E-14	2.32E-14	2.39E-14	2.46E-14	2.53E-14	2.53E-14
rn220 4.85E-14	5.00E-14	5.16E-14	5.31E-14	5.46E-14	5.46E-14
rn222 2.07E-08	2.16E-08	2.25E-08	2.34E-08	2.43E-08	2.43E-08
ra222 5.32E-25	5.50E-25	5.66E-25	5.83E-25	6.00E-25	6.00E-25
ra223 5.61E-09	5.78E-09	5.96E-09	6.14E-09	6.32E-09	6.32E-09
ra224 2.76E-10	2.85E-10	2.93E-10	3.02E-10	3.11E-10	3.11E-10
ra225 7.51E-09	7.92E-09	8.35E-09	8.78E-09	9.21E-09	9.21E-09
ra226 3.17E-03	3.30E-03	3.44E-03	3.58E-03	3.71E-03	3.71E-03
ra228 1.73E-11	1.79E-11	1.84E-11	1.90E-11	1.95E-11	1.95E-11
ac225 5.07E-09	5.35E-09	5.64E-09	5.93E-09	6.22E-09	6.22E-09
ac227 3.90E-06	4.02E-06	4.15E-06	4.27E-06	4.40E-06	4.40E-06
ac228 2.11E-15	2.18E-15	2.25E-15	2.32E-15	2.38E-15	2.38E-15
th226 2.59E-23	2.68E-23	2.76E-23	2.85E-23	2.93E-23	2.93E-23
th227 9.05E-09	9.34E-09	9.63E-09	9.92E-09	1.02E-08	1.02E-08
th228 5.27E-08	5.43E-08	5.60E-08	5.77E-08	5.93E-08	5.93E-08
th229 1.46E-03	1.54E-03	1.62E-03	1.71E-03	1.79E-03	1.79E-03
th230 2.08E-01	2.15E-01	2.21E-01	2.28E-01	2.34E-01	2.34E-01
th231 3.74E-09	3.77E-09	3.79E-09	3.81E-09	3.84E-09	3.84E-09
th232 4.23E-02	4.37E-02	4.50E-02	4.64E-02	4.77E-02	4.77E-02
th233 3.81E-13	3.94E-13	4.06E-13	4.18E-13	4.30E-13	4.30E-13
th234 5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231 5.86E-03	6.05E-03	6.24E-03	6.42E-03	6.61E-03	6.61E-03
pa232 9.84E-11	1.02E-10	1.05E-10	1.08E-10	1.11E-10	1.11E-10

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 91
power= 4.000E-03mw, burnup=1.3149E+04mwd, flux= 2.64E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06	1.44E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.51E-20	2.60E-20	2.68E-20	2.76E-20	2.84E-20	2.84E-20
u231	7.91E-17	8.17E-17	8.40E-17	8.62E-17	8.85E-17	8.85E-17
u232	1.92E-06	1.98E-06	2.04E-06	2.10E-06	2.16E-06	2.16E-06
u233	1.03E-01	1.06E-01	1.09E-01	1.12E-01	1.15E-01	1.15E-01
u234	1.01E+01	1.02E+01	1.02E+01	1.02E+01	1.03E+01	1.03E+01
u235	6.77E+02	6.76E+02	6.74E+02	6.73E+02	6.71E+02	6.71E+02
u236	1.83E+02	1.83E+02	1.84E+02	1.84E+02	1.84E+02	1.84E+02
u237	3.25E-06	3.26E-06	3.26E-06	3.26E-06	3.27E-06	3.27E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	6.53E-36	8.44E-36	1.08E-35	1.38E-35	1.74E-35	1.74E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.77E-12	8.80E-12	8.79E-12	8.79E-12	8.78E-12	8.78E-12
np236m	2.08E-12	2.09E-12	2.09E-12	2.09E-12	2.08E-12	2.08E-12
np236	1.55E-06	1.60E-06	1.64E-06	1.69E-06	1.74E-06	1.74E-06
np237	4.16E+01	4.16E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01
np238	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06
np239	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	5.57E-38	7.20E-38	9.24E-38	1.18E-37	1.49E-37	1.49E-37
np240	9.14E-15	9.15E-15	9.14E-15	9.14E-15	9.13E-15	9.13E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.14E-09	1.14E-09	1.14E-09	1.13E-09	1.13E-09
pu237	5.09E-13	5.18E-13	5.24E-13	5.31E-13	5.37E-13	5.37E-13
pu238	2.29E-02	2.29E-02	2.29E-02	2.28E-02	2.28E-02	2.28E-02
pu239	3.19E+01	3.27E+01	3.34E+01	3.42E+01	3.49E+01	3.49E+01
pu240	9.60E-01	1.01E+00	1.05E+00	1.10E+00	1.15E+00	1.15E+00
pu241	3.93E-04	4.12E-04	4.31E-04	4.50E-04	4.69E-04	4.69E-04
pu242	8.53E-05	9.29E-05	1.01E-04	1.09E-04	1.18E-04	1.18E-04
pu243	1.80E-13	1.97E-13	2.14E-13	2.32E-13	2.50E-13	2.50E-13
pu244	3.25E-25	4.20E-25	5.39E-25	6.86E-25	8.67E-25	8.67E-25
pu245	1.30E-35	1.68E-35	2.15E-35	2.74E-35	3.46E-35	3.46E-35
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	2.88E-18	3.05E-18	3.20E-18	3.35E-18	3.51E-18	3.51E-18
am240	1.32E-15	1.39E-15	1.46E-15	1.53E-15	1.60E-15	1.60E-15
am241	1.02E-02	1.08E-02	1.13E-02	1.19E-02	1.24E-02	1.24E-02
am242m	4.89E-06	5.16E-06	5.42E-06	5.69E-06	5.97E-06	5.97E-06
am242	4.11E-10	4.33E-10	4.54E-10	4.77E-10	4.99E-10	4.99E-10
am243	6.87E-07	7.61E-07	8.39E-07	9.23E-07	1.01E-06	1.01E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	5.21E-15	5.78E-15	6.37E-15	7.00E-15	7.67E-15	7.67E-15
am245	2.69E-36	3.47E-36	4.44E-36	5.64E-36	7.12E-36	7.12E-36
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.45E-20	2.59E-20	2.72E-20	2.85E-20	2.99E-20	2.99E-20
cm242	8.30E-08	8.74E-08	9.18E-08	9.62E-08	1.01E-07	1.01E-07
cm243	6.45E-17	6.81E-17	7.17E-17	7.53E-17	7.89E-17	7.89E-17
cm244	8.19E-11	9.07E-11	1.00E-10	1.10E-10	1.21E-10	1.21E-10

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 92
power= 4.000E-03mw, burnup=1.3149E+04mwd, flux= 2.64E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d	******* d
cm245	1.34E-13	1.53E-13	1.73E-13	1.95E-13	2.20E-13	2.20E-13

```
     cm246   9.67E-16  1.13E-15  1.32E-15  1.53E-15  1.76E-15  1.76E-15
     cm247   1.34E-19  1.62E-19  1.95E-19  2.34E-19  2.78E-19  2.78E-19
     cm248   1.82E-22  2.27E-22  2.82E-22  3.49E-22  4.27E-22  4.27E-22
     cm249   5.70E-33  7.14E-33  8.87E-33  1.09E-32  1.34E-32  1.34E-32
     cm250   2.13E-37  2.76E-37  3.53E-37  4.49E-37  5.66E-37  5.66E-37
     cm251    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
   totals    3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04  3.73E+04
0    flux               2.64E+08  2.64E+08  2.64E+08  2.64E+08  2.64E-07
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  10
          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 "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                  8/28/1996    date library was produced
0                       1697    total number of nuclides in library
0                        689    number of light-element nuclides
                         129    number of actinide nuclides
```

879 number of fission product nuclides
7993 number of nonzero off-diagonal matrix elements

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 page 93
power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec
basis =
(note, k-infinities, clad and moderator absorptions are correct, only, if correctly weighted cross sections are applied.)

	initial	******* d	******* d	******* d	******* d
productions	1.178193E+06	1.178826E+06	1.179432E+06	1.180014E+06	1.180570E+06
absorptions	9.724615E+05	9.730900E+05	9.737038E+05	9.743031E+05	9.748882E+05
k infinity	1.211557E+00	1.211425E+00	1.211285E+00	1.211136E+00	1.210979E+00

	initial	******* d	******* d	******* d	******* d
actinide absorptions	9.583446E+05	9.588312E+05	9.593039E+05	9.597630E+05	9.602088E+05
non-actinide abs. fracs.	1.451671E-02	1.465315E-02	1.478875E-02	1.492357E-02	1.505756E-02

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 94
fraction of total absorption rate
power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec

	initial	******* d	******* d	******* d	******* d
sm149	5.33E-03	5.33E-03	5.33E-03	5.33E-03	5.33E-03
eu151	1.33E-03	1.36E-03	1.38E-03	1.40E-03	1.43E-03
nd143	1.22E-03	1.26E-03	1.29E-03	1.32E-03	1.35E-03
rh103	6.22E-04	6.40E-04	6.57E-04	6.75E-04	6.92E-04
xe131	4.08E-04	4.19E-04	4.30E-04	4.41E-04	4.52E-04
cs133	3.15E-04	3.23E-04	3.32E-04	3.40E-04	3.49E-04
sm147	2.31E-04	2.37E-04	2.44E-04	2.50E-04	2.56E-04
tc 99	2.29E-04	2.35E-04	2.41E-04	2.47E-04	2.53E-04
gd155	2.22E-04	2.23E-04	2.25E-04	2.26E-04	2.27E-04
nd145	1.76E-04	1.81E-04	1.86E-04	1.91E-04	1.95E-04
sm152	1.29E-04	1.34E-04	1.38E-04	1.42E-04	1.46E-04
mo 95	1.23E-04	1.26E-04	1.29E-04	1.33E-04	1.36E-04
cd113	1.03E-04	1.03E-04	1.04E-04	1.04E-04	1.05E-04
sm150	8.93E-05	9.19E-05	9.46E-05	9.72E-05	9.98E-05
kr 83	7.42E-05	7.61E-05	7.81E-05	8.00E-05	8.19E-05
cs135	7.15E-05	7.34E-05	7.53E-05	7.73E-05	7.92E-05
gd157	6.56E-05	6.63E-05	6.69E-05	6.76E-05	6.82E-05
ru101	5.60E-05	5.75E-05	5.91E-05	6.06E-05	6.21E-05
eu153	5.32E-05	5.48E-05	5.64E-05	5.80E-05	5.96E-05
pr141	5.23E-05	5.37E-05	5.51E-05	5.65E-05	5.79E-05
la139	4.27E-05	4.38E-05	4.50E-05	4.61E-05	4.73E-05
sm151	4.24E-05	4.25E-05	4.26E-05	4.27E-05	4.28E-05
ag109	2.27E-05	2.36E-05	2.46E-05	2.56E-05	2.67E-05
pd105	2.23E-05	2.30E-05	2.37E-05	2.44E-05	2.51E-05
ba137	2.04E-05	2.10E-05	2.16E-05	2.21E-05	2.27E-05
zr 93	1.73E-05	1.77E-05	1.82E-05	1.86E-05	1.91E-05
i129	1.39E-05	1.43E-05	1.47E-05	1.51E-05	1.55E-05
nd144	1.29E-05	1.33E-05	1.37E-05	1.40E-05	1.44E-05
mo 97	9.73E-06	9.99E-06	1.03E-05	1.05E-05	1.08E-05
gd152	7.47E-06	7.84E-06	8.21E-06	8.59E-06	8.98E-06
pd108	5.45E-06	5.67E-06	5.89E-06	6.12E-06	6.35E-06
zr 91	4.46E-06	4.57E-06	4.69E-06	4.81E-06	4.92E-06
y 89	4.25E-06	4.36E-06	4.47E-06	4.58E-06	4.69E-06
ru102	4.05E-06	4.16E-06	4.28E-06	4.39E-06	4.50E-06
ce142	3.53E-06	3.63E-06	3.72E-06	3.82E-06	3.91E-06
nd148	3.44E-06	3.53E-06	3.63E-06	3.72E-06	3.81E-06
nd146	2.87E-06	2.95E-06	3.02E-06	3.10E-06	3.18E-06
pd107	2.69E-06	2.79E-06	2.89E-06	3.00E-06	3.11E-06
in115	2.60E-06	2.68E-06	2.75E-06	2.83E-06	2.90E-06

ba138	2.44E-06	2.51E-06	2.57E-06	2.64E-06	2.71E-06
ce140	2.29E-06	2.35E-06	2.41E-06	2.47E-06	2.53E-06
xe132	2.13E-06	2.19E-06	2.25E-06	2.31E-06	2.37E-06
xe135	2.23E-06	2.23E-06	2.23E-06	2.23E-06	2.23E-06
mo 98	1.45E-06	1.49E-06	1.53E-06	1.57E-06	1.61E-06
mo100	1.40E-06	1.44E-06	1.48E-06	1.51E-06	1.55E-06
xe134	1.36E-06	1.39E-06	1.43E-06	1.47E-06	1.50E-06
zr 92	1.08E-06	1.10E-06	1.13E-06	1.16E-06	1.19E-06
i127	1.04E-06	1.07E-06	1.10E-06	1.14E-06	1.17E-06
ru104	9.50E-07	9.78E-07	1.01E-06	1.03E-06	1.06E-06

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 95
0 fraction of total absorption rate
power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

zr 96	8.80E-07	9.04E-07	9.27E-07	9.51E-07	9.74E-07
nd150	7.84E-07	8.06E-07	8.28E-07	8.49E-07	8.71E-07
xe136	7.38E-07	7.58E-07	7.78E-07	7.98E-07	8.18E-07
cd111	5.98E-07	6.20E-07	6.42E-07	6.64E-07	6.87E-07
ru 99	5.33E-07	5.63E-07	5.93E-07	6.24E-07	6.56E-07
br 81	5.53E-07	5.68E-07	5.83E-07	5.97E-07	6.12E-07
rb 85	5.27E-07	5.41E-07	5.55E-07	5.69E-07	5.83E-07
zr 94	4.66E-07	4.79E-07	4.91E-07	5.04E-07	5.16E-07
zr 90	4.18E-07	4.29E-07	4.40E-07	4.51E-07	4.62E-07
sm154	3.67E-07	3.78E-07	3.89E-07	4.00E-07	4.11E-07
gd154	3.06E-07	3.23E-07	3.42E-07	3.60E-07	3.79E-07
te130	3.39E-07	3.48E-07	3.58E-07	3.67E-07	3.76E-07
eu152	3.41E-07	3.47E-07	3.53E-07	3.59E-07	3.65E-07
rb 87	3.04E-07	3.12E-07	3.20E-07	3.28E-07	3.36E-07
pd106	2.29E-07	2.37E-07	2.45E-07	2.53E-07	2.61E-07
pm147	2.60E-07	2.60E-07	2.59E-07	2.59E-07	2.59E-07
se 77	2.19E-07	2.25E-07	2.31E-07	2.36E-07	2.42E-07
gd156	2.03E-07	2.11E-07	2.18E-07	2.26E-07	2.33E-07
eu155	2.07E-07	2.08E-07	2.09E-07	2.10E-07	2.11E-07
kr 84	1.46E-07	1.50E-07	1.54E-07	1.58E-07	1.62E-07
dy161	1.35E-07	1.40E-07	1.46E-07	1.52E-07	1.58E-07
sb121	1.19E-07	1.23E-07	1.26E-07	1.30E-07	1.33E-07
se 79	1.12E-07	1.15E-07	1.18E-07	1.21E-07	1.24E-07
ru100	9.09E-08	9.59E-08	1.01E-07	1.06E-07	1.12E-07
sb123	9.64E-08	9.91E-08	1.02E-07	1.05E-07	1.08E-07
kr 86	7.93E-08	8.14E-08	8.35E-08	8.56E-08	8.76E-08
te128	7.79E-08	8.01E-08	8.23E-08	8.45E-08	8.67E-08
nd142	6.35E-08	6.70E-08	7.06E-08	7.43E-08	7.81E-08
ba134	6.22E-08	6.56E-08	6.91E-08	7.28E-08	7.65E-08
sm148	5.67E-08	5.99E-08	6.31E-08	6.64E-08	6.97E-08
tb159	5.77E-08	5.98E-08	6.21E-08	6.43E-08	6.65E-08
ba135	5.16E-08	5.44E-08	5.74E-08	6.04E-08	6.35E-08
te125	5.31E-08	5.47E-08	5.63E-08	5.79E-08	5.95E-08
se 80	5.25E-08	5.39E-08	5.53E-08	5.67E-08	5.81E-08
pd104	4.43E-08	4.68E-08	4.93E-08	5.20E-08	5.47E-08
gd158	4.47E-08	4.63E-08	4.80E-08	4.96E-08	5.13E-08
cd112	4.07E-08	4.20E-08	4.34E-08	4.47E-08	4.61E-08
dy164	3.15E-08	3.29E-08	3.43E-08	3.57E-08	3.72E-08
dy162	2.94E-08	3.07E-08	3.21E-08	3.36E-08	3.50E-08
sn117	2.87E-08	2.96E-08	3.05E-08	3.14E-08	3.23E-08
li 6	2.82E-08	2.89E-08	2.97E-08	3.04E-08	3.11E-08
eu154	2.65E-08	2.73E-08	2.81E-08	2.89E-08	2.97E-08
cd114	2.40E-08	2.48E-08	2.56E-08	2.64E-08	2.72E-08
sn119	2.17E-08	2.23E-08	2.29E-08	2.36E-08	2.42E-08
pd110	2.05E-08	2.13E-08	2.20E-08	2.28E-08	2.37E-08

sn115	1.98E-08	2.04E-08	2.10E-08	2.16E-08	2.22E-08
cd110	1.44E-08	1.54E-08	1.65E-08	1.76E-08	1.87E-08
mo 96	1.46E-08	1.54E-08	1.62E-08	1.70E-08	1.78E-08
sr 88	1.46E-08	1.50E-08	1.54E-08	1.57E-08	1.61E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 96
0 fraction of total absorption rate
power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec
0 initial ******* d ******* d ******* d ******* d

sr 90	1.53E-08	1.53E-08	1.52E-08	1.52E-08	1.52E-08
rh105	1.11E-08	1.12E-08	1.12E-08	1.13E-08	1.13E-08
sn126	9.93E-09	1.02E-08	1.05E-08	1.09E-08	1.12E-08
se 82	1.00E-08	1.03E-08	1.06E-08	1.08E-08	1.11E-08
nb 93	8.17E-09	8.62E-09	9.08E-09	9.55E-09	1.00E-08
ba136	7.78E-09	8.13E-09	8.49E-09	8.86E-09	9.23E-09
xe130	7.54E-09	7.93E-09	8.33E-09	8.75E-09	9.17E-09
dy163	7.46E-09	7.81E-09	8.17E-09	8.53E-09	8.90E-09
se 78	7.94E-09	8.15E-09	8.37E-09	8.59E-09	8.81E-09
sn124	7.10E-09	7.31E-09	7.52E-09	7.73E-09	7.94E-09
kr 82	6.51E-09	6.81E-09	7.12E-09	7.43E-09	7.75E-09
as 75	4.67E-09	4.79E-09	4.92E-09	5.04E-09	5.17E-09
br 79	4.17E-09	4.40E-09	4.64E-09	4.88E-09	5.13E-09
ag107	3.67E-09	3.91E-09	4.16E-09	4.42E-09	4.68E-09
in113	4.00E-09	4.12E-09	4.25E-09	4.37E-09	4.49E-09
cs137	3.64E-09	3.64E-09	3.64E-09	3.64E-09	3.64E-09
sn118	2.88E-09	2.97E-09	3.05E-09	3.14E-09	3.22E-09
xe129	2.45E-09	2.59E-09	2.73E-09	2.88E-09	3.03E-09
sn122	2.40E-09	2.47E-09	2.54E-09	2.61E-09	2.68E-09
cd116	2.40E-09	2.47E-09	2.54E-09	2.61E-09	2.68E-09
cs134	2.29E-09	2.36E-09	2.42E-09	2.48E-09	2.54E-09
pr143	2.49E-09	2.48E-09	2.48E-09	2.48E-09	2.47E-09
te126	1.80E-09	1.90E-09	1.99E-09	2.10E-09	2.20E-09
sn120	1.78E-09	1.83E-09	1.88E-09	1.94E-09	1.99E-09
xe133	1.92E-09	1.92E-09	1.92E-09	1.92E-09	1.92E-09
ce141	1.50E-09	1.50E-09	1.50E-09	1.50E-09	1.50E-09
ge 73	1.33E-09	1.36E-09	1.40E-09	1.44E-09	1.48E-09
pm149	9.40E-10	9.40E-10	9.40E-10	9.39E-10	9.39E-10
nd147	8.92E-10	8.91E-10	8.90E-10	8.89E-10	8.88E-10
ho165	6.37E-10	6.70E-10	7.04E-10	7.39E-10	7.75E-10
gd160	6.42E-10	6.67E-10	6.93E-10	7.19E-10	7.46E-10
ce144	5.57E-10	5.56E-10	5.56E-10	5.55E-10	5.54E-10
dy160	4.30E-10	4.57E-10	4.85E-10	5.14E-10	5.44E-10
kr 85	5.18E-10	5.17E-10	5.16E-10	5.15E-10	5.14E-10
ge 76	4.53E-10	4.65E-10	4.77E-10	4.89E-10	5.01E-10
ru103	3.82E-10	3.83E-10	3.83E-10	3.84E-10	3.84E-10
xe128	2.48E-10	2.63E-10	2.77E-10	2.92E-10	3.08E-10
zr 95	1.56E-10	1.56E-10	1.56E-10	1.55E-10	1.55E-10
sr 86	1.24E-10	1.30E-10	1.37E-10	1.44E-10	1.50E-10
nb 95	1.43E-10	1.43E-10	1.43E-10	1.43E-10	1.42E-10
te124	1.12E-10	1.17E-10	1.22E-10	1.27E-10	1.32E-10
y 91	1.29E-10	1.28E-10	1.28E-10	1.28E-10	1.28E-10
sn116	9.63E-11	1.02E-10	1.07E-10	1.13E-10	1.19E-10
pm151	1.13E-10	1.13E-10	1.13E-10	1.13E-10	1.13E-10
sr 87	5.84E-11	6.01E-11	6.19E-11	6.36E-11	6.54E-11
eu156	5.45E-11	5.49E-11	5.53E-11	5.57E-11	5.61E-11
te122	3.99E-11	4.21E-11	4.45E-11	4.69E-11	4.93E-11
nb 94	4.18E-11	4.35E-11	4.52E-11	4.70E-11	4.88E-11
sm153	4.63E-11	4.65E-11	4.67E-11	4.70E-11	4.72E-11

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 97
0 fraction of total absorption rate

power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d
ru106	4.40E-11	4.44E-11	4.48E-11	4.51E-11	4.55E-11
ba140	4.47E-11	4.46E-11	4.46E-11	4.46E-11	4.45E-11
se 76	3.69E-11	3.87E-11	4.05E-11	4.23E-11	4.42E-11
er166	3.41E-11	3.58E-11	3.75E-11	3.93E-11	4.11E-11
ge 74	2.64E-11	2.71E-11	2.78E-11	2.86E-11	2.93E-11
sr 89	2.74E-11	2.73E-11	2.72E-11	2.72E-11	2.71E-11
ge 72	1.94E-11	2.00E-11	2.06E-11	2.12E-11	2.18E-11
kr 87	2.05E-11	2.05E-11	2.04E-11	2.04E-11	2.03E-11
sb125	1.81E-11	1.81E-11	1.82E-11	1.83E-11	1.83E-11
ce143	1.63E-11	1.63E-11	1.62E-11	1.62E-11	1.62E-11
la140	1.46E-11	1.46E-11	1.45E-11	1.45E-11	1.45E-11
y 90	1.45E-11	1.45E-11	1.45E-11	1.44E-11	1.44E-11
mo 99	1.26E-11	1.26E-11	1.26E-11	1.26E-11	1.26E-11
pm148m	9.68E-12	9.69E-12	9.70E-12	9.70E-12	9.71E-12
te127m	9.07E-12	9.11E-12	9.14E-12	9.18E-12	9.21E-12
i131	6.68E-12	6.68E-12	6.68E-12	6.68E-12	6.68E-12
kr 80	4.19E-12	4.47E-12	4.77E-12	5.09E-12	5.41E-12
er167	2.26E-12	2.43E-12	2.61E-12	2.79E-12	2.98E-12
te129m	1.89E-12	1.89E-12	1.89E-12	1.89E-12	1.90E-12
te123	1.24E-12	1.33E-12	1.44E-12	1.54E-12	1.66E-12
ag111	6.85E-13	6.92E-13	7.00E-13	7.07E-13	7.14E-13
eu157	5.40E-13	5.45E-13	5.50E-13	5.55E-13	5.59E-13
pm148	3.64E-13	3.64E-13	3.64E-13	3.63E-13	3.63E-13
cs136	2.74E-13	2.80E-13	2.85E-13	2.90E-13	2.96E-13
cd115m	2.75E-13	2.76E-13	2.77E-13	2.78E-13	2.79E-13
cd108	1.92E-13	2.10E-13	2.28E-13	2.48E-13	2.69E-13
tb160	1.42E-13	1.47E-13	1.53E-13	1.58E-13	1.63E-13
be 9	5.87E-14	6.03E-14	6.19E-14	6.35E-14	6.51E-14
pr142	5.81E-14	5.96E-14	6.12E-14	6.27E-14	6.43E-14
ru105	3.99E-14	4.01E-14	4.03E-14	4.05E-14	4.07E-14
sn125	3.28E-14	3.28E-14	3.29E-14	3.30E-14	3.31E-14
sn114	2.42E-14	2.56E-14	2.70E-14	2.85E-14	3.00E-14
li 7	2.31E-14	2.37E-14	2.44E-14	2.50E-14	2.56E-14
sb126	1.86E-14	1.91E-14	1.95E-14	1.99E-14	2.04E-14
i130	1.14E-14	1.17E-14	1.20E-14	1.22E-14	1.25E-14
rb 88	1.15E-14	1.15E-14	1.15E-14	1.14E-14	1.14E-14
sn123	1.06E-14	1.06E-14	1.06E-14	1.06E-14	1.06E-14
i135	9.66E-15	9.65E-15	9.64E-15	9.64E-15	9.63E-15
te132	9.30E-15	9.30E-15	9.29E-15	9.29E-15	9.29E-15
sb124	6.56E-15	6.68E-15	6.80E-15	6.92E-15	7.04E-15
te134	5.38E-15	5.37E-15	5.36E-15	5.35E-15	5.34E-15
rb 86	3.58E-15	3.67E-15	3.75E-15	3.84E-15	3.92E-15
dy165	2.66E-15	2.72E-15	2.79E-15	2.86E-15	2.93E-15
in117m	2.70E-15	2.71E-15	2.72E-15	2.74E-15	2.75E-15
in117	8.11E-16	8.15E-16	8.19E-16	8.23E-16	8.27E-16
cs134m	4.29E-16	4.41E-16	4.52E-16	4.64E-16	4.75E-16
cd118	1.38E-16	1.38E-16	1.39E-16	1.39E-16	1.39E-16
ge 75	8.25E-17	8.25E-17	8.24E-17	8.24E-17	8.23E-17
ag110	2.89E-17	3.02E-17	3.15E-17	3.28E-17	3.41E-17

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 98

0 fraction of total absorption rate

power= .00mw, burnup= 14610.mwd, flux= 2.64E+08n/cm**2-sec

0	initial	******* d	******* d	******* d	******* d
in119m	3.36E-17	3.37E-17	3.37E-17	3.38E-17	3.39E-17
cd109	1.86E-17	1.95E-17	2.04E-17	2.13E-17	2.23E-17
in119	2.78E-18	2.78E-18	2.79E-18	2.80E-18	2.81E-18

in120	4.62E-22	4.63E-22	4.64E-22	4.65E-22	4.66E-22
in120m	7.96E-23	8.04E-23	8.11E-23	8.18E-23	8.25E-23

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 99

power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d
h 1	7.83E-04	8.05E-04	8.27E-04	8.49E-04	8.71E-04
h 2	2.34E-06	2.41E-06	2.47E-06	2.54E-06	2.60E-06
h 3	5.30E-11	5.36E-11	5.39E-11	5.43E-11	5.46E-11
h 4	2.10E-34	2.12E-34	2.13E-34	2.14E-34	2.16E-34
he 3	1.34E-08	1.37E-08	1.39E-08	1.42E-08	1.45E-08
he 4	1.30E-04	1.34E-04	1.37E-04	1.41E-04	1.45E-04
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.56E-05	1.61E-05	1.65E-05	1.69E-05	1.74E-05
ne 21	4.09E-09	4.31E-09	4.53E-09	4.77E-09	5.01E-09
ne 22	1.03E-07	1.06E-07	1.09E-07	1.12E-07	1.15E-07
ne 23	7.26E-15	7.29E-15	7.29E-15	7.29E-15	7.29E-15
na 22	4.30E-11	4.32E-11	4.32E-11	4.32E-11	4.32E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.76E-08	2.76E-08	2.76E-08	2.76E-08	2.76E-08
na 24m	4.53E-15	4.54E-15	4.54E-15	4.54E-15	4.54E-15
na 25	1.21E-23	1.27E-23	1.34E-23	1.40E-23	1.47E-23
mg 24	1.08E-01	1.11E-01	1.14E-01	1.17E-01	1.20E-01
mg 25	4.16E-07	4.38E-07	4.61E-07	4.84E-07	5.08E-07
mg 26	2.34E-06	2.40E-06	2.47E-06	2.53E-06	2.60E-06
mg 27	2.16E-12	2.17E-12	2.17E-12	2.17E-12	2.17E-12
mg 28	4.29E-24	4.31E-24	4.31E-24	4.30E-24	4.30E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.04E-10	2.05E-10	2.05E-10	2.05E-10	2.05E-10
al 29	9.66E-22	1.02E-21	1.07E-21	1.13E-21	1.18E-21
al 30	1.62E-31	1.76E-31	1.90E-31	2.05E-31	2.20E-31
si 28	3.15E-01	3.24E-01	3.32E-01	3.40E-01	3.49E-01
si 29	3.72E-06	3.92E-06	4.13E-06	4.34E-06	4.55E-06
si 30	4.68E-11	5.07E-11	5.47E-11	5.90E-11	6.35E-11
si 31	3.28E-23	3.54E-23	3.83E-23	4.12E-23	4.44E-23
si 32	5.20E-29	5.64E-29	6.10E-29	6.58E-29	7.09E-29
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.64E+08	2.64E+08	2.64E+08	2.64E+08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 100

power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

charge	******* d	******* d	******* d	******* d
he 4	7.56E+00	7.91E+00	8.27E+00	8.63E+00	9.00E+00
pb206	5.93E-03	6.34E-03	6.76E-03	7.20E-03	7.66E-03
pb207	6.23E-04	6.58E-04	6.95E-04	7.32E-04	7.70E-04
pb208	9.73E-05	1.03E-04	1.08E-04	1.14E-04	1.20E-04
pb209	8.43E-11	8.84E-11	9.25E-11	9.67E-11	1.01E-10
pb210	5.17E-05	5.37E-05	5.56E-05	5.75E-05	5.94E-05
pb211	1.39E-11	1.43E-11	1.47E-11	1.51E-11	1.54E-11
pb212	3.76E-11	3.87E-11	3.98E-11	4.08E-11	4.19E-11
pb214	1.18E-10	1.23E-10	1.27E-10	1.31E-10	1.36E-10
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.09E-04	5.49E-04	5.91E-04	6.35E-04	6.81E-04
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.18E-08	3.30E-08	3.42E-08	3.54E-08	3.66E-08
bi211	8.22E-13	8.45E-13	8.69E-13	8.92E-13	9.16E-13

bi212	3.57E-12	3.67E-12	3.77E-12	3.87E-12	3.97E-12
bi213	1.97E-11	2.06E-11	2.16E-11	2.26E-11	2.36E-11
bi214	8.78E-11	9.10E-11	9.43E-11	9.75E-11	1.01E-10
po210	8.79E-07	9.12E-07	9.44E-07	9.77E-07	1.01E-06
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	9.08E-18	9.34E-18	9.60E-18	9.86E-18	1.01E-17
po212	1.88E-22	1.93E-22	1.98E-22	2.03E-22	2.09E-22
po213	2.96E-20	3.10E-20	3.25E-20	3.40E-20	3.54E-20
po214	1.21E-17	1.25E-17	1.30E-17	1.34E-17	1.39E-17
po215	1.14E-17	1.17E-17	1.20E-17	1.24E-17	1.27E-17
po216	1.43E-16	1.47E-16	1.51E-16	1.55E-16	1.59E-16
po218	1.37E-11	1.42E-11	1.47E-11	1.52E-11	1.57E-11
rn218	5.52E-28	5.69E-28	5.85E-28	6.00E-28	6.16E-28
rn219	2.53E-14	2.61E-14	2.68E-14	2.75E-14	2.82E-14
rn220	5.46E-14	5.62E-14	5.77E-14	5.93E-14	6.08E-14
rn222	2.43E-08	2.52E-08	2.61E-08	2.70E-08	2.79E-08
ra222	6.00E-25	6.18E-25	6.35E-25	6.52E-25	6.69E-25
ra223	6.32E-09	6.50E-09	6.68E-09	6.86E-09	7.05E-09
ra224	3.11E-10	3.20E-10	3.28E-10	3.37E-10	3.46E-10
ra225	9.21E-09	9.66E-09	1.01E-08	1.06E-08	1.10E-08
ra226	3.71E-03	3.85E-03	3.99E-03	4.12E-03	4.26E-03
ra228	1.95E-11	2.01E-11	2.06E-11	2.12E-11	2.18E-11
ac225	6.22E-09	6.52E-09	6.83E-09	7.13E-09	7.45E-09
ac227	4.40E-06	4.52E-06	4.65E-06	4.77E-06	4.90E-06
ac228	2.38E-15	2.45E-15	2.52E-15	2.59E-15	2.66E-15
th226	2.93E-23	3.02E-23	3.10E-23	3.18E-23	3.26E-23
th227	1.02E-08	1.05E-08	1.08E-08	1.11E-08	1.14E-08
th228	5.93E-08	6.10E-08	6.27E-08	6.44E-08	6.60E-08
th229	1.79E-03	1.88E-03	1.96E-03	2.05E-03	2.14E-03
th230	2.34E-01	2.41E-01	2.48E-01	2.54E-01	2.61E-01
th231	3.84E-09	3.86E-09	3.89E-09	3.91E-09	3.94E-09
th232	4.77E-02	4.91E-02	5.05E-02	5.18E-02	5.32E-02
th233	4.30E-13	4.42E-13	4.54E-13	4.67E-13	4.79E-13
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	6.61E-03	6.80E-03	6.99E-03	7.18E-03	7.37E-03
pa232	1.11E-10	1.14E-10	1.17E-10	1.20E-10	1.23E-10

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 101
power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	******* d	******* d	******* d	******* d
pa233	1.44E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06
pa234m	1.81E-11	1.81E-11	1.81E-11	1.81E-11	1.81E-11
pa234	8.08E-12	8.08E-12	8.08E-12	8.08E-12	8.08E-12
pa235	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u230	2.84E-20	2.92E-20	3.00E-20	3.08E-20	3.16E-20
u231	8.85E-17	9.10E-17	9.33E-17	9.56E-17	9.78E-17
u232	2.16E-06	2.22E-06	2.28E-06	2.34E-06	2.40E-06
u233	1.15E-01	1.18E-01	1.21E-01	1.24E-01	1.27E-01
u234	1.03E+01	1.03E+01	1.03E+01	1.04E+01	1.04E+01
u235	6.71E+02	6.70E+02	6.68E+02	6.67E+02	6.65E+02
u236	1.84E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
u237	3.27E-06	3.28E-06	3.28E-06	3.29E-06	3.29E-06
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04
u239	3.17E-07	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	1.74E-35	2.18E-35	2.72E-35	3.38E-35	4.16E-35
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.78E-12	8.82E-12	8.81E-12	8.81E-12	8.80E-12
np236m	2.08E-12	2.09E-12	2.09E-12	2.09E-12	2.09E-12

np236	1.74E-06	1.79E-06	1.83E-06	1.88E-06	1.93E-06
np237	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01
np238	1.51E-06	1.51E-06	1.51E-06	1.51E-06	1.51E-06
np239	4.58E-05	4.58E-05	4.58E-05	4.58E-05	4.58E-05
np240m	1.49E-37	1.86E-37	2.32E-37	2.88E-37	3.55E-37
np240	9.13E-15	9.14E-15	9.14E-15	9.13E-15	9.13E-15
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	1.13E-09	1.14E-09	1.14E-09	1.14E-09	1.14E-09
pu237	5.37E-13	5.46E-13	5.52E-13	5.58E-13	5.64E-13
pu238	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02
pu239	3.49E+01	3.57E+01	3.64E+01	3.71E+01	3.78E+01
pu240	1.15E+00	1.19E+00	1.24E+00	1.29E+00	1.34E+00
pu241	4.69E-04	4.89E-04	5.08E-04	5.28E-04	5.47E-04
pu242	1.18E-04	1.28E-04	1.37E-04	1.47E-04	1.58E-04
pu243	2.50E-13	2.70E-13	2.91E-13	3.12E-13	3.34E-13
pu244	8.67E-25	1.09E-24	1.36E-24	1.68E-24	2.07E-24
pu245	3.46E-35	4.33E-35	5.40E-35	6.69E-35	8.24E-35
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	3.51E-18	3.68E-18	3.84E-18	4.00E-18	4.16E-18
am240	1.60E-15	1.68E-15	1.75E-15	1.83E-15	1.90E-15
am241	1.24E-02	1.30E-02	1.35E-02	1.41E-02	1.47E-02
am242m	5.97E-06	6.24E-06	6.52E-06	6.80E-06	7.07E-06
am242	4.99E-10	5.21E-10	5.44E-10	5.66E-10	5.89E-10
am243	1.01E-06	1.11E-06	1.21E-06	1.31E-06	1.42E-06
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	7.67E-15	8.40E-15	9.16E-15	9.96E-15	1.08E-14
am245	7.12E-36	8.92E-36	1.11E-35	1.37E-35	1.69E-35
am246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm241	2.99E-20	3.13E-20	3.27E-20	3.40E-20	3.54E-20
cm242	1.01E-07	1.05E-07	1.10E-07	1.14E-07	1.19E-07
cm243	7.89E-17	8.27E-17	8.64E-17	9.01E-17	9.38E-17
cm244	1.21E-10	1.32E-10	1.44E-10	1.56E-10	1.70E-10

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 102
power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge ******* d	******* d	******* d	******* d	
cm245	2.20E-13	2.46E-13	2.75E-13	3.06E-13	3.40E-13
cm246	1.76E-15	2.02E-15	2.31E-15	2.64E-15	2.99E-15
cm247	2.78E-19	3.29E-19	3.87E-19	4.54E-19	5.30E-19
cm248	4.27E-22	5.21E-22	6.31E-22	7.61E-22	9.12E-22
cm249	1.34E-32	1.64E-32	1.98E-32	2.39E-32	2.86E-32
cm250	5.66E-37	7.09E-37	8.83E-37	1.09E-36	1.34E-36
cm251	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04
0 flux		2.64E+08	2.64E+08	2.64E+08	2.64E+08

0 .results on logical unit no. 71, position 1, for time step 4, subcase11. (run position 1, case position 1)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 103
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 1	8.71E-04	8.71E-04	8.71E-04	8.71E-04	8.71E-04	8.71E-04	8.71E-04
h 2	5.21E-06	5.21E-06	5.21E-06	5.21E-06	5.21E-06	5.21E-06	5.21E-06
he 4	5.78E-04	5.78E-04	5.78E-04	5.78E-04	5.78E-04	5.78E-04	5.78E-04
ne 20	3.47E-04	3.47E-04	3.47E-04	3.47E-04	3.47E-04	3.47E-04	3.47E-04
ne 22	2.53E-06	2.53E-06	2.53E-06	2.53E-06	2.53E-06	2.53E-06	2.53E-06

na 23	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05	1.73E+05
mg 24	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00
mg 25	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05
mg 26	6.76E-05	6.76E-05	6.76E-05	6.76E-05	6.76E-05	6.76E-05	6.76E-05
al 27	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06	1.35E+06
si 28	9.76E+00	9.76E+00	9.76E+00	9.76E+00	9.76E+00	9.76E+00	9.76E+00
si 29	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04	1.32E-04
total	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06	1.52E+06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 104
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.58E-06	1.51E-06	1.44E-06	1.38E-06	1.31E-06	1.25E-06	1.20E-06
na	8.44E+00	4.75E-06	3.81E-06	3.05E-06	2.44E-06	1.96E-06	1.57E-06
totals	2.57E+01	6.26E-06	5.25E-06	4.43E-06	3.76E-06	3.21E-06	2.76E-06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 105
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na	1.71E-01	6.73E-08	5.39E-08	4.31E-08	3.46E-08	2.77E-08	2.22E-08
totals	4.79E-01	6.73E-08	5.39E-08	4.32E-08	3.46E-08	2.77E-08	2.22E-08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 106
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
na 22	7.71E-08	6.18E-08	4.95E-08	3.96E-08	3.17E-08	2.54E-08	2.04E-08
total	3.33E-01	6.18E-08	4.95E-08	3.96E-08	3.17E-08	2.54E-08	2.04E-08

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 107
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	9.00E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00
pb206	7.66E-03	7.66E-03	7.66E-03	7.66E-03	7.66E-03	7.67E-03	7.67E-03
pb207	7.70E-04	7.71E-04	7.71E-04	7.71E-04	7.71E-04	7.71E-04	7.71E-04
pb208	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04
pb210	5.94E-05	5.94E-05	5.94E-05	5.94E-05	5.94E-05	5.94E-05	5.94E-05
bi209	6.81E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
po210	1.01E-06	1.00E-06	9.97E-07	9.97E-07	9.97E-07	9.97E-07	9.97E-07
ra226	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.27E-03	4.27E-03
ac227	4.90E-06	4.90E-06	4.90E-06	4.90E-06	4.90E-06	4.90E-06	4.90E-06
th229	2.14E-03	2.14E-03	2.14E-03	2.14E-03	2.15E-03	2.15E-03	2.15E-03
th230	2.61E-01	2.61E-01	2.61E-01	2.61E-01	2.61E-01	2.61E-01	2.61E-01
th232	5.32E-02	5.32E-02	5.32E-02	5.32E-02	5.32E-02	5.32E-02	5.32E-02
th234	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07	5.36E-07
pa231	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03
pa233	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06	1.43E-06
u232	2.40E-06	2.38E-06	2.36E-06	2.35E-06	2.33E-06	2.31E-06	2.29E-06
u233	1.27E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01
u234	1.04E+01	1.04E+01	1.04E+01	1.04E+01	1.04E+01	1.04E+01	1.04E+01
u235	6.65E+02	6.65E+02	6.65E+02	6.65E+02	6.65E+02	6.65E+02	6.65E+02
u236	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02	1.85E+02
u238	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04	3.63E+04

np236	1.93E-06	1.93E-06	1.93E-06	1.93E-06	1.93E-06	1.93E-06	1.93E-06
np237	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01
pu238	2.28E-02	2.27E-02	2.25E-02	2.24E-02	2.22E-02	2.21E-02	2.19E-02
pu239	3.78E+01	3.78E+01	3.78E+01	3.78E+01	3.78E+01	3.78E+01	3.78E+01
pu240	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00	1.34E+00
pu241	5.47E-04	5.26E-04	5.05E-04	4.85E-04	4.66E-04	4.47E-04	4.30E-04
pu242	1.58E-04	1.58E-04	1.58E-04	1.58E-04	1.58E-04	1.58E-04	1.58E-04
am241	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02
am242m	7.07E-06	7.05E-06	7.02E-06	6.99E-06	6.96E-06	6.93E-06	6.90E-06
am243	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06	1.42E-06
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 108
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element concentrations, gram atoms
basis = single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	9.00E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00	9.01E+00
pb	8.61E-03	8.61E-03	8.61E-03	8.61E-03	8.61E-03	8.62E-03	8.62E-03
bi	6.81E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04	6.82E-04
po	1.01E-06	1.00E-06	9.97E-07	9.97E-07	9.97E-07	9.97E-07	9.97E-07
ra	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.27E-03	4.27E-03
ac	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
th	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.17E-01	3.17E-01
pa	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03	7.37E-03
u	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04	3.72E+04
np	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01	4.15E+01
pu	3.92E+01	3.92E+01	3.92E+01	3.92E+01	3.92E+01	3.92E+01	3.92E+01
am	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 109
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he 4	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01
pb206	1.58E+00	1.58E+00	1.58E+00	1.58E+00	1.58E+00	1.58E+00	1.58E+00
pb207	1.59E-01	1.59E-01	1.60E-01	1.60E-01	1.60E-01	1.60E-01	1.60E-01
pb208	2.50E-02	2.50E-02	2.50E-02	2.50E-02	2.50E-02	2.50E-02	2.50E-02
pb210	1.25E-02	1.25E-02	1.25E-02	1.25E-02	1.25E-02	1.25E-02	1.25E-02
bi209	1.42E-01	1.42E-01	1.42E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01
bi210	7.68E-06	7.68E-06	7.68E-06	7.68E-06	7.68E-06	7.68E-06	7.68E-06
po210	2.12E-04	2.10E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04
rn222	6.19E-06	6.19E-06	6.19E-06	6.19E-06	6.20E-06	6.20E-06	6.20E-06
ra223	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06	1.57E-06
ra225	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06	2.48E-06
ra226	9.63E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01
ac225	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06
ac227	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03
th227	2.58E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06	2.59E-06
th228	1.51E-05	1.50E-05	1.50E-05	1.49E-05	1.48E-05	1.47E-05	1.46E-05
th229	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01	4.91E-01
th230	6.00E+01	6.00E+01	6.00E+01	6.01E+01	6.01E+01	6.01E+01	6.01E+01
th231	9.09E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07	6.36E-07
th232	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01	1.23E+01
th234	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04	1.25E-04
pa231	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00
pa233	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04	3.34E-04
u232	5.58E-04	5.53E-04	5.49E-04	5.44E-04	5.40E-04	5.35E-04	5.31E-04

u233	2.95E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01	2.96E+01
u234	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03	2.43E+03
u235	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05	1.56E+05
u236	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04	4.37E+04
u238	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06	8.64E+06
np236	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04	4.54E-04
np237	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03
pu238	5.43E+00	5.39E+00	5.36E+00	5.32E+00	5.29E+00	5.25E+00	5.22E+00
pu239	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03	9.03E+03
pu240	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02	3.21E+02
pu241	1.32E-01	1.27E-01	1.22E-01	1.17E-01	1.12E-01	1.08E-01	1.04E-01
pu242	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02	3.82E-02
am241	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00
am242m	1.71E-03	1.71E-03	1.70E-03	1.69E-03	1.68E-03	1.68E-03	1.67E-03
am243	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04	3.46E-04
cm242	2.88E-05	1.11E-05	6.26E-06	4.91E-06	4.53E-06	4.41E-06	4.37E-06
total	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 110
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
he	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01	3.60E+01
pb	1.77E+00	1.77E+00	1.78E+00	1.78E+00	1.78E+00	1.78E+00	1.78E+00
bi	1.42E-01	1.42E-01	1.42E-01	1.43E-01	1.43E-01	1.43E-01	1.43E-01
po	2.12E-04	2.10E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04	2.09E-04
rn	6.19E-06	6.19E-06	6.19E-06	6.19E-06	6.20E-06	6.20E-06	6.20E-06
ra	9.63E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01	9.64E-01
ac	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03
th	7.29E+01	7.29E+01	7.29E+01	7.29E+01	7.29E+01	7.29E+01	7.29E+01
pa	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00	1.70E+00
u	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06
np	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03	9.83E+03
pu	9.36E+03	9.36E+03	9.36E+03	9.36E+03	9.36E+03	9.36E+03	9.36E+03
am	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00	3.54E+00
cm	2.88E-05	1.12E-05	6.30E-06	4.95E-06	4.57E-06	4.45E-06	4.40E-06
totals	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 111
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl206	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06	1.26E-06
tl207	8.03E-02	8.05E-02	8.05E-02	8.05E-02	8.04E-02	8.04E-02	8.04E-02
tl208	4.44E-03	4.45E-03	4.43E-03	4.41E-03	4.39E-03	4.36E-03	4.33E-03
tl209	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03	2.04E-03
pb209	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
pb210	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
pb211	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
pb212	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
pb214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
bi210	9.53E-01	9.54E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
bi211	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
bi212	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
bi213	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
bi214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
po210	9.53E-01	9.43E-01	9.41E-01	9.41E-01	9.41E-01	9.41E-01	9.41E-01
po211	2.21E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04	2.22E-04

po212	7.91E-03	7.93E-03	7.90E-03	7.86E-03	7.82E-03	7.77E-03	7.72E-03
po213	9.52E-02	9.53E-02	9.53E-02	9.53E-02	9.53E-02	9.53E-02	9.53E-02
po214	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01
po215	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
po216	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
po218	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
at217	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
rn219	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
rn220	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
rn222	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
fr221	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
fr223	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03
ra223	8.05E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02	8.07E-02
ra224	1.23E-02	1.24E-02	1.23E-02	1.23E-02	1.22E-02	1.21E-02	1.20E-02
ra225	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
ra226	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.53E-01	9.54E-01
ra228	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06
ac225	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
ac227	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02	8.05E-02
ac228	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06
th227	7.94E-02	7.96E-02	7.96E-02	7.96E-02	7.96E-02	7.96E-02	7.96E-02
th228	1.23E-02	1.23E-02	1.23E-02	1.22E-02	1.22E-02	1.21E-02	1.20E-02
th229	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.73E-02	9.74E-02	9.74E-02
th230	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00	1.24E+00
th231	4.83E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
th232	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.35E-06	1.36E-06
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02	8.04E-02
pa233	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00
pa234m	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa234	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03	3.78E-03
u232	1.23E-02	1.22E-02	1.21E-02	1.20E-02	1.19E-02	1.18E-02	1.17E-02
u233	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01	2.85E-01
u234	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01	1.51E+01
u235	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01	3.38E-01
u236	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00	2.83E+00

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 112
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0

nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
u237	6.37E+01	3.13E-04	3.01E-04	2.89E-04	2.78E-04	2.67E-04	2.56E-04
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np236	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06	5.99E-06
np237	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00	6.93E+00
np238	9.29E+01	8.04E-05	8.01E-05	7.98E-05	7.94E-05	7.91E-05	7.88E-05
np239	2.54E+03	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05
pu236	1.40E-04	1.15E-04	9.44E-05	7.75E-05	6.36E-05	5.22E-05	4.29E-05
pu238	9.30E+01	9.24E+01	9.18E+01	9.12E+01	9.06E+01	9.00E+01	8.94E+01
pu239	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02	5.61E+02
pu240	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01	7.28E+01
pu241	1.36E+01	1.31E+01	1.26E+01	1.21E+01	1.16E+01	1.12E+01	1.07E+01
pu242	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04	1.51E-04
am241	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
am242m	1.79E-02	1.79E-02	1.78E-02	1.77E-02	1.77E-02	1.76E-02	1.75E-02
am242	1.15E-01	1.78E-02	1.77E-02	1.76E-02	1.76E-02	1.75E-02	1.74E-02
am243	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05	6.91E-05
cm242	9.53E-02	3.69E-02	2.07E-02	1.63E-02	1.50E-02	1.46E-02	1.45E-02
cm244	3.35E-06	3.25E-06	3.15E-06	3.05E-06	2.95E-06	2.86E-06	2.77E-06

total	6.04E+03	8.04E+02	8.03E+02	8.02E+02	8.01E+02	8.00E+02	7.99E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 113
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl	3.74E-04	3.75E-04	3.75E-04	3.74E-04	3.74E-04	3.73E-04	3.72E-04
pb	3.68E-03	3.68E-03	3.68E-03	3.68E-03	3.68E-03	3.68E-03	3.68E-03
bi	1.82E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02	1.83E-02
po	1.19E-01	1.18E-01	1.18E-01	1.18E-01	1.18E-01	1.18E-01	1.18E-01
at	4.15E-03	4.15E-03	4.15E-03	4.15E-03	4.15E-03	4.15E-03	4.16E-03
rn	3.54E-02	3.54E-02	3.54E-02	3.54E-02	3.54E-02	3.54E-02	3.54E-02
fr	3.76E-03	3.76E-03	3.76E-03	3.76E-03	3.76E-03	3.76E-03	3.76E-03
ra	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02
ac	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03	3.44E-03
th	4.30E-02	4.28E-02	4.28E-02	4.28E-02	4.28E-02	4.28E-02	4.28E-02
pa	3.44E-02	3.44E-02	3.44E-02	3.44E-02	3.44E-02	3.44E-02	3.44E-02
u	7.62E+00	6.04E-01	6.04E-01	6.04E-01	6.04E-01	6.04E-01	6.04E-01
np	7.09E+00	1.98E-01	1.98E-01	1.98E-01	1.98E-01	1.98E-01	1.98E-01
pu	2.28E+01	2.28E+01	2.27E+01	2.27E+01	2.27E+01	2.27E+01	2.27E+01
am	4.05E-01	4.05E-01	4.05E-01	4.05E-01	4.05E-01	4.05E-01	4.05E-01
cm	3.48E-03	1.35E-03	7.57E-04	5.94E-04	5.48E-04	5.34E-04	5.28E-04
totals	3.82E+01	2.43E+01	2.42E+01	2.42E+01	2.42E+01	2.42E+01	2.42E+01

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 114
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
tl207	1.05E-06	1.05E-06	1.05E-06	1.05E-06	1.05E-06	1.05E-06	1.05E-06
tl208	8.84E-05	8.86E-05	8.83E-05	8.79E-05	8.74E-05	8.68E-05	8.63E-05
tl209	2.57E-05	2.57E-05	2.57E-05	2.57E-05	2.57E-05	2.57E-05	2.57E-05
pb210	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05
pb211	3.23E-05	3.23E-05	3.23E-05	3.23E-05	3.23E-05	3.23E-05	3.23E-05
pb212	1.06E-05	1.06E-05	1.06E-05	1.06E-05	1.05E-05	1.04E-05	1.04E-05
pb214	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03	1.41E-03
bi211	2.23E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05	2.24E-05
bi212	7.70E-06	7.72E-06	7.69E-06	7.65E-06	7.61E-06	7.56E-06	7.51E-06
bi213	7.28E-05	7.28E-05	7.28E-05	7.29E-05	7.29E-05	7.29E-05	7.29E-05
bi214	8.51E-03	8.52E-03	8.52E-03	8.52E-03	8.52E-03	8.52E-03	8.52E-03
po210	4.80E-08	4.75E-08	4.74E-08	4.74E-08	4.74E-08	4.74E-08	4.74E-08
po211	1.01E-08	1.01E-08	1.01E-08	1.01E-08	1.01E-08	1.01E-08	1.01E-08
po214	4.69E-07	4.69E-07	4.69E-07	4.69E-07	4.69E-07	4.69E-07	4.69E-07
po215	8.37E-08	8.39E-08	8.39E-08	8.39E-08	8.39E-08	8.39E-08	8.39E-08
rn219	2.67E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05	2.68E-05
rn220	4.46E-08	4.47E-08	4.46E-08	4.44E-08	4.41E-08	4.39E-08	4.36E-08
rn222	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06	2.20E-06
fr221	1.71E-05	1.71E-05	1.71E-05	1.71E-05	1.71E-05	1.71E-05	1.71E-05
fr223	3.78E-07	3.78E-07	3.78E-07	3.78E-07	3.78E-07	3.78E-07	3.78E-07
ra223	6.41E-05	6.43E-05	6.43E-05	6.43E-05	6.43E-05	6.43E-05	6.43E-05
ra224	7.37E-07	7.38E-07	7.36E-07	7.33E-07	7.29E-07	7.24E-07	7.19E-07
ra225	8.30E-06	8.30E-06	8.30E-06	8.30E-06	8.31E-06	8.31E-06	8.31E-06
ra226	4.08E-05	4.08E-05	4.08E-05	4.08E-05	4.08E-05	4.08E-05	4.08E-05
ac225	9.69E-06	9.69E-06	9.69E-06	9.69E-06	9.69E-06	9.70E-06	9.70E-06
ac227	9.21E-08	9.21E-08	9.21E-08	9.21E-08	9.21E-08	9.21E-08	9.21E-08
ac228	7.06E-09	7.07E-09	7.07E-09	7.07E-09	7.07E-09	7.07E-09	7.07E-09
th227	5.22E-05	5.24E-05	5.24E-05	5.24E-05	5.24E-05	5.24E-05	5.23E-05
th228	2.58E-07	2.57E-07	2.56E-07	2.55E-07	2.54E-07	2.52E-07	2.50E-07
th229	5.46E-05	5.46E-05	5.46E-05	5.46E-05	5.46E-05	5.46E-05	5.46E-05

th230	1.23E-05	1.23E-05	1.23E-05	1.23E-05	1.23E-05	1.23E-05	1.23E-05
th231	8.89E-05	6.22E-05	6.22E-05	6.22E-05	6.22E-05	6.22E-05	6.22E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	1.91E-05	1.91E-05	1.91E-05	1.91E-05	1.91E-05	1.91E-05	1.91E-05
pa233	9.19E-03	9.19E-03	9.19E-03	9.19E-03	9.19E-03	9.19E-03	9.19E-03
pa234m	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04	1.91E-04
pa234	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05	4.39E-05
u232	1.58E-07	1.57E-07	1.56E-07	1.55E-07	1.53E-07	1.52E-07	1.51E-07
u233	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.10E-06	2.10E-06	2.10E-06
u234	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04	1.44E-04
u235	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04	3.33E-04
u236	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05	2.85E-05
u237	5.38E-02	2.65E-07	2.55E-07	2.44E-07	2.35E-07	2.26E-07	2.17E-07
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np236	5.22E-09	5.22E-09	5.22E-09	5.22E-09	5.22E-09	5.22E-09	5.22E-09
np237	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03	1.44E-03
np238	3.56E-01	3.08E-07	3.07E-07	3.06E-07	3.05E-07	3.03E-07	3.02E-07
np239	2.76E+00	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08	7.52E-08
pu238	1.05E-03	1.04E-03	1.03E-03	1.03E-03	1.02E-03	1.01E-03	1.01E-03
pu239	2.69E-03	2.69E-03	2.69E-03	2.69E-03	2.69E-03	2.69E-03	2.69E-03
pu240	7.12E-04	7.12E-04	7.12E-04	7.12E-04	7.12E-04	7.12E-04	7.12E-04
pu241	1.41E-07	1.36E-07	1.31E-07	1.25E-07	1.20E-07	1.16E-07	1.11E-07

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 115
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
am241	2.06E-03	2.06E-03	2.06E-03	2.06E-03	2.06E-03	2.06E-03	2.06E-03
am242m	6.49E-07	6.46E-07	6.43E-07	6.41E-07	6.38E-07	6.36E-07	6.33E-07
am242	1.33E-05	2.05E-06	2.04E-06	2.03E-06	2.02E-06	2.02E-06	2.01E-06
am243	2.40E-08	2.40E-08	2.40E-08	2.40E-08	2.40E-08	2.40E-08	2.40E-08
cm242	1.19E-06	4.61E-07	2.59E-07	2.04E-07	1.88E-07	1.83E-07	1.81E-07
total	3.97E+00	2.87E-02	2.87E-02	2.86E-02	2.86E-02	2.86E-02	2.86E-02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 116
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.94E-05	3.76E-05	3.59E-05	3.42E-05	3.27E-05	3.12E-05	2.97E-05
li 6	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04	1.83E-04
li 7	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06	4.58E-06
be 9	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06	8.83E-06
be 10	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05	5.87E-05
c 14	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06	6.90E-06
zn 70	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06	1.32E-06
ga 71	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05	1.57E-05
ge 72	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03	1.45E-03
ge 73	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03	5.82E-03
ge 74	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03	5.01E-03
as 75	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02	5.65E-02
ge 76	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01	1.84E-01
se 76	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05	3.71E-05
se 77	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01	4.12E-01
se 78	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
se 79	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00	2.25E+00
br 79	2.37E-02	2.37E-02	2.37E-02	2.38E-02	2.38E-02	2.38E-02	2.38E-02
se 80	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00	6.71E+00
kr 80	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05

br 81	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01
se 82	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01	1.70E+01
kr 82	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02	1.67E-02
kr 83	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01	2.78E+01
kr 84	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01	5.71E+01
kr 85	2.12E-02	2.01E-02	1.90E-02	1.80E-02	1.71E-02	1.62E-02	1.53E-02
rb 85	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01	6.55E+01
kr 86	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
sr 86	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03	4.05E-03
rb 87	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02	1.38E+02
sr 87	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04
sr 88	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02	1.99E+02
y 89	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02	2.70E+02
sr 90	1.29E+00	1.27E+00	1.24E+00	1.21E+00	1.19E+00	1.17E+00	1.14E+00
y 90	3.36E-04	3.29E-04	3.22E-04	3.16E-04	3.09E-04	3.03E-04	2.97E-04
zr 90	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02	3.28E+02
zr 91	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02	3.38E+02
zr 92	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02	3.46E+02
zr 93	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
nb 93	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01	5.67E-01
nb 93m	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03	2.62E-03
zr 94	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02	3.86E+02
nb 94	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04	1.46E-04
mo 95	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02	3.94E+02
zr 96	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02	3.88E+02
mo 96	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01	9.32E-01
mo 97	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02	3.55E+02
mo 98	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02	3.71E+02
tc 98	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05	8.28E-05
tc 99	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02	3.87E+02
ru 99	6.41E+00	6.41E+00	6.41E+00	6.41E+00	6.42E+00	6.42E+00	6.42E+00
mo100	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02	4.11E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 117
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ru100	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00	1.72E+00
ru101	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02	3.40E+02
ru102	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02	2.94E+02
rh103	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02	2.22E+02
ru104	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02	1.47E+02
pd104	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00	4.78E+00
pd105	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01	9.04E+01
ru106	8.89E-03	5.04E-03	2.86E-03	1.62E-03	9.18E-04	5.20E-04	2.95E-04
pd106	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01	4.82E+01
pd107	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01	2.54E+01
ag107	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02	1.15E-02
pd108	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01	1.45E+01
cd108	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05	2.11E-05
ag109	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01	1.05E+01
pd110	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00	4.79E+00
cd110	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01	1.56E-01
cd111	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00	2.78E+00
cd112	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00	1.79E+00
cd113	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01	2.18E-01
cd113m	5.60E-05	5.37E-05	5.16E-05	4.95E-05	4.75E-05	4.56E-05	4.38E-05
in113	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02
cd114	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00

sn114	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05	3.20E-05
in115	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01	9.35E-01
sn115	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02	4.80E-02
cd116	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00	1.49E+00
sn116	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02
sn117	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00	1.09E+00
sn118	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00	1.03E+00
sn119	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00	1.13E+00
sn120	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00	1.12E+00
sn121m	8.73E-05	8.64E-05	8.55E-05	8.46E-05	8.37E-05	8.28E-05	8.20E-05
sb121	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00	1.22E+00
sn122	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
te122	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03	1.05E-03
sb123	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00	1.47E+00
sn124	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00	2.44E+00
te124	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03
sb125	1.24E-03	1.01E-03	8.16E-04	6.60E-04	5.34E-04	4.33E-04	3.50E-04
te125	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00	2.85E+00
te125m	1.66E-05	1.43E-05	1.16E-05	9.38E-06	7.59E-06	6.14E-06	4.97E-06
sn126	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00	4.36E+00
te126	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01	1.82E-01
i127	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01	1.21E+01
te128	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01	3.17E+01
xe128	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03	9.50E-03
i129	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01	6.75E+01
xe129	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02	1.47E-02
te130	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02
xe130	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01	1.79E-01
xe131	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02	2.49E+02
xe132	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02	3.83E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 118
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ba132	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06	1.54E-06
cs133	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
xe134	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02	6.84E+02
cs134	1.88E-03	1.42E-03	1.07E-03	8.10E-04	6.12E-04	4.62E-04	3.49E-04
ba134	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00	3.17E+00
cs135	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02	5.81E+02
ba135	8.75E-01	8.75E-01	8.76E-01	8.76E-01	8.76E-01	8.76E-01	8.76E-01
xe136	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02	5.63E+02
ba136	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00	1.59E+00
cs137	2.45E+00	2.40E+00	2.35E+00	2.31E+00	2.27E+00	2.22E+00	2.18E+00
ba137	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02	5.62E+02
ba138	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02	5.99E+02
la138	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03	3.18E-03
la139	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02	5.72E+02
ce140	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02	5.73E+02
pr141	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
ce142	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02	5.38E+02
nd142	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01	5.58E-01
nd143	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02	5.30E+02
ce144	5.57E-02	2.65E-02	1.27E-02	6.04E-03	2.88E-03	1.37E-03	6.55E-04
nd144	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02	5.16E+02
nd145	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02	3.64E+02
nd146	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02	2.84E+02
sm146	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04	2.55E-04

pm147	8.14E-02	6.60E-02	5.30E-02	4.25E-02	3.41E-02	2.74E-02	2.20E-02
sm147	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02	2.14E+02
nd148	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02	1.63E+02
sm148	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00	2.58E+00
sm149	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00	8.02E+00
nd150	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01	6.73E+01
sm150	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01	9.83E+01
sm151	6.13E-01	6.09E-01	6.05E-01	6.01E-01	5.97E-01	5.93E-01	5.89E-01
eu151	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01	2.77E+01
sm152	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01	3.80E+01
eu152	3.64E-02	3.49E-02	3.34E-02	3.20E-02	3.06E-02	2.93E-02	2.81E-02
gd152	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00	7.10E+00
eu153	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01	1.90E+01
sm154	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00	8.99E+00
eu154	1.53E-03	1.43E-03	1.34E-03	1.25E-03	1.17E-03	1.10E-03	1.02E-03
gd154	5.95E-01	5.95E-01	5.95E-01	5.96E-01	5.96E-01	5.96E-01	5.96E-01
eu155	3.36E-03	2.97E-03	2.63E-03	2.32E-03	2.05E-03	1.81E-03	1.60E-03
gd155	8.59E-01	8.59E-01	8.60E-01	8.60E-01	8.60E-01	8.60E-01	8.61E-01
gd156	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00	5.66E+00
gd157	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02	7.02E-02
gd158	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00	1.65E+00
tb159	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01	2.45E-01
gd160	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02	9.96E-02
dy160	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04	6.86E-04
dy161	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02	4.06E-02
dy162	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02	1.93E-02
dy163	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03	7.35E-03
dy164	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03	2.40E-03

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 119
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, grams
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
ho165	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
ho166m	6.34E-07	6.34E-07	6.34E-07	6.33E-07	6.33E-07	6.33E-07	6.32E-07
er166	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04	1.64E-04
total	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04	1.51E+04

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 120
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide radioactivity, curies
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h 3	3.81E-01	3.64E-01	3.47E-01	3.31E-01	3.16E-01	3.01E-01	2.88E-01
be 10	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06	1.31E-06
c 14	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05	3.08E-05
se 79	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02	3.09E-02
kr 85	8.31E+00	7.88E+00	7.46E+00	7.07E+00	6.70E+00	6.35E+00	6.02E+00
rb 87	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05	1.18E-05
sr 90	1.82E+02	1.79E+02	1.75E+02	1.71E+02	1.68E+02	1.65E+02	1.61E+02
y 90	1.82E+02	1.79E+02	1.75E+02	1.72E+02	1.68E+02	1.65E+02	1.61E+02
y 91	1.86E+02	5.08E+00	1.38E-01	3.75E-03	1.02E-04	2.77E-06	7.51E-08
zr 93	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01
nb 93m	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01	6.25E-01
nb 94	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05	2.74E-05
zr 95	2.12E+02	7.84E+00	2.90E-01	1.08E-02	3.98E-04	1.48E-05	5.47E-07
nb 95	2.11E+02	1.67E+01	6.38E-01	2.37E-02	8.77E-04	3.25E-05	1.20E-06
tc 99	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00	6.62E+00
rh102	1.61E-05	1.32E-05	1.08E-05	8.87E-06	7.27E-06	5.96E-06	4.88E-06

ru106	2.95E+01	1.67E+01	9.47E+00	5.37E+00	3.04E+00	1.72E+00	9.78E-01
rh106	2.95E+01	1.67E+01	9.47E+00	5.37E+00	3.04E+00	1.72E+00	9.78E-01
pd107	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02	1.31E-02
ag110	1.78E-01	4.17E-05	1.79E-05	7.70E-06	3.31E-06	1.42E-06	6.11E-07
ag110m	7.14E-03	3.07E-03	1.32E-03	5.67E-04	2.43E-04	1.05E-04	4.49E-05
cd113m	1.26E-02	1.21E-02	1.16E-02	1.11E-02	1.07E-02	1.02E-02	9.82E-03
sn119m	1.95E-03	9.49E-04	4.62E-04	2.25E-04	1.10E-04	5.33E-05	2.59E-05
sn121	5.57E-01	3.60E-03	3.56E-03	3.53E-03	3.49E-03	3.45E-03	3.42E-03
sn121m	4.69E-03	4.64E-03	4.59E-03	4.54E-03	4.50E-03	4.45E-03	4.40E-03
sn123	6.29E-02	1.23E-02	2.40E-03	4.68E-04	9.14E-05	1.78E-05	3.49E-06
sb125	1.30E+00	1.06E+00	8.55E-01	6.92E-01	5.60E-01	4.53E-01	3.67E-01
te125m	3.00E-01	2.58E-01	2.09E-01	1.69E-01	1.37E-01	1.11E-01	8.96E-02
sn126	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01
sb126	2.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02	1.73E-02
sb126m	1.37E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01
te127	5.45E+00	1.41E-01	2.03E-02	2.93E-03	4.23E-04	6.11E-05	8.82E-06
te127m	9.59E-01	1.44E-01	2.07E-02	2.99E-03	4.32E-04	6.23E-05	9.00E-06
i129	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02	1.19E-02
cs134	2.43E+00	1.84E+00	1.39E+00	1.05E+00	7.92E-01	5.98E-01	4.52E-01
cs135	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01	6.70E-01
cs137	2.13E+02	2.09E+02	2.05E+02	2.01E+02	1.97E+02	1.93E+02	1.90E+02
ba137m	2.01E+02	1.97E+02	1.93E+02	1.90E+02	1.86E+02	1.83E+02	1.79E+02
ce142	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.29E-05
ce144	1.77E+02	8.45E+01	4.03E+01	1.92E+01	9.17E+00	4.37E+00	2.09E+00
pr144	1.77E+02	8.45E+01	4.03E+01	1.92E+01	9.17E+00	4.37E+00	2.09E+00
pr144m	2.48E+00	1.18E+00	5.64E-01	2.69E-01	1.28E-01	6.12E-02	2.92E-02
pm147	7.55E+01	6.12E+01	4.91E+01	3.94E+01	3.16E+01	2.54E+01	2.04E+01
sm147	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06	4.91E-06
eu150	1.88E-06	1.85E-06	1.82E-06	1.79E-06	1.76E-06	1.73E-06	1.70E-06
sm151	1.61E+01	1.60E+01	1.59E+01	1.58E+01	1.57E+01	1.56E+01	1.55E+01
eu152	6.43E+00	6.16E+00	5.90E+00	5.65E+00	5.41E+00	5.18E+00	4.96E+00
gd153	6.24E-02	2.61E-02	1.09E-02	4.54E-03	1.90E-03	7.92E-04	3.31E-04
eu154	4.15E-01	3.88E-01	3.62E-01	3.39E-01	3.17E-01	2.96E-01	2.77E-01
eu155	1.66E+00	1.47E+00	1.30E+00	1.15E+00	1.01E+00	8.95E-01	7.91E-01
ho166m	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06	1.14E-06
total	2.05E+04	1.11E+03	9.42E+02	8.64E+02	8.15E+02	7.82E+02	7.56E+02

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 121
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec

0

element thermal power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
h	1.29E-05	1.23E-05	1.17E-05	1.12E-05	1.07E-05	1.02E-05	9.70E-06
c	9.02E-09	9.02E-09	9.02E-09	9.02E-09	9.02E-09	9.02E-09	9.02E-09
se	3.07E+00	9.70E-06	9.70E-06	9.70E-06	9.70E-06	9.70E-06	9.70E-06
kr	1.19E+01	1.18E-02	1.12E-02	1.06E-02	1.00E-02	9.52E-03	9.02E-03
rb	2.35E+01	5.98E-09	5.73E-09	5.73E-09	5.73E-09	5.73E-09	5.73E-09
sr	1.91E+01	2.16E-01	2.03E-01	1.99E-01	1.95E-01	1.91E-01	1.87E-01
y	2.71E+01	1.01E+00	9.70E-01	9.50E-01	9.30E-01	9.12E-01	8.93E-01
zr	1.18E+01	3.96E-02	1.53E-03	1.25E-04	7.24E-05	7.05E-05	7.04E-05
nb	2.17E+01	8.01E-02	3.17E-03	2.21E-04	1.12E-04	1.08E-04	1.08E-04
tc	7.72E+00	3.32E-03	3.32E-03	3.32E-03	3.32E-03	3.32E-03	3.32E-03
ru	1.08E+00	2.84E-03	5.72E-04	3.19E-04	1.81E-04	1.03E-04	5.81E-05
rh	8.41E-01	1.60E-01	9.08E-02	5.15E-02	2.92E-02	1.65E-02	9.37E-03
pd	5.90E-02	7.20E-07	7.20E-07	7.20E-07	7.20E-07	7.20E-07	7.20E-07
ag	9.78E-02	5.15E-05	2.21E-05	9.50E-06	4.09E-06	1.76E-06	7.57E-07
cd	7.63E-02	1.38E-05	1.26E-05	1.21E-05	1.16E-05	1.11E-05	1.07E-05
sn	1.87E+00	2.35E-04	2.04E-04	1.98E-04	1.97E-04	1.96E-04	1.96E-04
sb	7.45E+00	5.26E-03	4.63E-03	4.11E-03	3.69E-03	3.36E-03	3.08E-03
te	9.06E+00	5.25E-04	2.15E-04	1.48E-04	1.16E-04	9.33E-05	7.54E-05

i	2.05E+01	5.58E-06	5.58E-06	5.58E-06	5.58E-06	5.58E-06	5.58E-06
cs	1.78E+01	2.51E-01	2.42E-01	2.34E-01	2.27E-01	2.21E-01	2.16E-01
ba	1.16E+01	7.75E-01	7.60E-01	7.46E-01	7.31E-01	7.18E-01	7.04E-01
ce	4.29E+00	5.57E-02	2.64E-02	1.26E-02	6.00E-03	2.86E-03	1.36E-03
pr	6.13E+00	6.21E-01	2.96E-01	1.41E-01	6.73E-02	3.21E-02	1.53E-02
pm	3.77E-01	2.25E-02	1.80E-02	1.45E-02	1.16E-02	9.32E-03	7.48E-03
sm	3.07E-02	1.88E-03	1.87E-03	1.86E-03	1.85E-03	1.84E-03	1.82E-03
eu	8.63E-02	5.17E-02	4.93E-02	4.71E-02	4.50E-02	4.29E-02	4.10E-02
gd	5.02E-04	2.29E-05	9.57E-06	3.99E-06	1.67E-06	6.96E-07	2.91E-07
ho	4.01E-07	1.20E-08	1.20E-08	1.20E-08	1.20E-08	1.19E-08	1.19E-08
totals	2.55E+02	3.31E+00	2.68E+00	2.42E+00	2.26E+00	2.16E+00	2.09E+00

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 122
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.10E-04	1.04E-04	9.86E-05	9.35E-05	8.86E-05	8.39E-05	7.95E-05
y 90	1.84E-06	1.80E-06	1.76E-06	1.73E-06	1.69E-06	1.66E-06	1.63E-06
nb 93m	6.97E-06	6.97E-06	6.97E-06	6.97E-06	6.97E-06	6.97E-06	6.97E-06
nb 94	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07	2.55E-07
zr 95	9.18E-01	3.40E-02	1.26E-03	4.67E-05	1.73E-06	6.40E-08	2.37E-09
nb 95	9.58E-01	7.54E-02	2.89E-03	1.07E-04	3.98E-06	1.47E-07	5.45E-09
tc 99	2.43E-08	2.43E-08	2.43E-08	2.43E-08	2.43E-08	2.43E-08	2.43E-08
rh102	2.06E-07	1.69E-07	1.39E-07	1.14E-07	9.31E-08	7.63E-08	6.25E-08
rh106	3.60E-02	2.04E-02	1.16E-02	6.56E-03	3.72E-03	2.11E-03	1.19E-03
ag110m	1.16E-04	4.98E-05	2.14E-05	9.20E-06	3.95E-06	1.70E-06	7.30E-07
sn121m	1.39E-07	1.38E-07	1.36E-07	1.35E-07	1.33E-07	1.32E-07	1.31E-07
sb125	3.35E-03	2.72E-03	2.20E-03	1.78E-03	1.44E-03	1.17E-03	9.44E-04
te125m	6.32E-05	5.44E-05	4.41E-05	3.57E-05	2.89E-05	2.34E-05	1.89E-05
sn126	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05	9.57E-05
sb126	4.45E-04	2.83E-04	2.83E-04	2.83E-04	2.83E-04	2.83E-04	2.83E-04
sb126m	1.27E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03	1.14E-03
i129	1.74E-06	1.74E-06	1.74E-06	1.74E-06	1.74E-06	1.74E-06	1.74E-06
cs134	2.24E-02	1.69E-02	1.28E-02	9.66E-03	7.30E-03	5.52E-03	4.17E-03
ba137m	7.14E-01	7.00E-01	6.87E-01	6.74E-01	6.61E-01	6.48E-01	6.36E-01
ce144	2.00E-02	9.52E-03	4.54E-03	2.16E-03	1.03E-03	4.92E-04	2.35E-04
pr144	3.04E-02	1.45E-02	6.91E-03	3.29E-03	1.57E-03	7.49E-04	3.57E-04
pr144m	1.84E-04	8.77E-05	4.18E-05	1.99E-05	9.51E-06	4.54E-06	2.16E-06
pm147	1.96E-06	1.59E-06	1.28E-06	1.02E-06	8.21E-07	6.59E-07	5.29E-07
eu150	1.71E-08	1.68E-08	1.65E-08	1.63E-08	1.60E-08	1.58E-08	1.55E-08
sm151	1.36E-06	1.35E-06	1.34E-06	1.33E-06	1.32E-06	1.31E-06	1.31E-06
eu152	4.43E-02	4.24E-02	4.06E-02	3.89E-02	3.73E-02	3.57E-02	3.42E-02
gd153	3.98E-05	1.66E-05	6.94E-06	2.90E-06	1.21E-06	5.05E-07	2.11E-07
eu154	3.08E-03	2.88E-03	2.69E-03	2.52E-03	2.35E-03	2.20E-03	2.06E-03
eu155	6.36E-04	5.62E-04	4.97E-04	4.39E-04	3.88E-04	3.43E-04	3.03E-04
ho166m	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08	1.10E-08
total	1.26E+02	9.23E-01	7.75E-01	7.41E-01	7.18E-01	6.98E-01	6.81E-01

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sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 123
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+04mwd, flux= 2.71E+08n/cm**2-sec
0 element gamma power, watts
basis =single reactor assembly

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr	6.21E+00	1.04E-04	9.86E-05	9.35E-05	8.86E-05	8.39E-05	7.95E-05
y	9.41E+00	1.11E-04	4.73E-06	1.81E-06	1.70E-06	1.66E-06	1.63E-06
zr	4.70E+00	3.40E-02	1.26E-03	4.67E-05	1.73E-06	6.40E-08	2.37E-09
nb	9.20E+00	7.55E-02	2.90E-03	1.15E-04	1.12E-05	7.37E-06	7.23E-06
tc	3.91E+00	2.49E-08	2.49E-08	2.49E-08	2.49E-08	2.49E-08	2.49E-08
rh	2.55E-01	2.04E-02	1.16E-02	6.56E-03	3.72E-03	2.11E-03	1.19E-03