ce144	6.02E-10	6.02E-10	6.02E-10	6.02E-10	6.02E-10	6.02E-10
kr 85	4.16E-10	4.60E-10	4.91E-10	5.14E-10	5.31E-10	5.31E-10
se 79	2.64E-10	3.30E-10	3.96E-10	4.62E-10	5.28E-10	5.28E-10
sb121	2.51E-10	3.14E-10	3.77E-10	4.40E-10	5.02E-10	5.02E-10
sb123	2.05E-10	2.56E-10	3.07E-10	3.58E-10	4.10E-10	4.10E-10
kr 86	1.91E-10	2.39E-10	2.87E-10	3.34E-10	3.82E-10	3.82E-10
ru103	3.57E-10	3.57E-10	3.57E-10	3.57E-10	3.57E-10	3.57E-10
te128	1.71E-10	2.13E-10	2.56E-10	2.99E-10	3.41E-10	3.41E-10
gd156	1.32E-10	1.65E-10	1.99E-10	2.33E-10	2.67E-10	2.67E-10
se 80	1.23E-10	1.54E-10	1.85E-10	2.16E-10	2.46E-10	2.46E-10
dy161	1.08E-10	1.35E-10	1.61E-10	1.88E-10	2.16E-10	2.16E-10
te125	8.69E-11	1.14E-10	1.41E-10	1.68E-10	1.95E-10	1.95E-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
eu152	2.43E-11	4.46E-11	7.23E-11	1.08E-10	1.52E-10	1.52E-10
tb159	7.30E-11	9.13E-11	1.09E-10	1.28E-10	1.46E-10	1.46E-10
y 91	1.43E-10	1.44E-10	1.44E-10	1.44E-10	1.43E-10	1.43E-10
li 6	7.00E-11	8.76E-11	1.05E-10	1.23E-10	1.40E-10	1.40E-10
cd112	7.00E-11	8.74E-11	1.05E-10	1.22E-10	1.40E-10	1.40E-10
sn117	5.54E-11	6.93E-11	8.31E-11	9.70E-11	1.11E-10	1.11E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
sn119	4.56E-11	5.70E-11	6.84E-11	7.98E-11	9.11E-11	9.11E-11
eu154	3.43E-11	4.66E-11	5.95E-11	7.29E-11	8.65E-11	8.65E-11
sn115	4.17E-11	5.21E-11	6.26E-11	7.30E-11	8.34E-11	8.34E-11
sr 88	3.51E-11	4.39E-11	5.27E-11	6.15E-11	7.03E-11	7.03E-11
pd110	2.51E-11	3.14E-11	3.77E-11	4.40E-11	5.03E-11	5.03E-11

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= 58.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 9131.3 d 10957.6 d 12783.8 d 14610.1 d 14610.2 d

cd114	2.46E-11	3.07E-11	3.70E-11	4.32E-11	4.95E-11	4.95E-11
gd158	2.37E-11	3.00E-11	3.63E-11	4.28E-11	4.94E-11	4.94E-11
se 82	2.38E-11	2.98E-11	3.58E-11	4.17E-11	4.77E-11	4.77E-11
ba140	4.72E-11	4.74E-11	4.74E-11	4.74E-11	4.74E-11	4.72E-11
sn126	1.91E-11	2.38E-11	2.86E-11	3.34E-11	3.82E-11	3.82E-11
sm153	3.72E-11	3.81E-11	3.82E-11	3.82E-11	3.82E-11	3.72E-11
se 78	1.81E-11	2.26E-11	2.71E-11	3.17E-11	3.62E-11	3.62E-11
eu156	3.42E-11	3.41E-11	3.42E-11	3.42E-11	3.42E-11	3.42E-11
sr 89	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11	3.07E-11
sn124	1.46E-11	1.82E-11	2.19E-11	2.55E-11	2.92E-11	2.92E-11
dy162	1.41E-11	1.77E-11	2.12E-11	2.48E-11	2.83E-11	2.83E-11
dy164	1.28E-11	1.60E-11	1.93E-11	2.25E-11	2.58E-11	2.58E-11
ru106	2.55E-11	2.55E-11	2.55E-11	2.55E-11	2.55E-11	2.55E-11
as 75	1.08E-11	1.35E-11	1.62E-11	1.89E-11	2.16E-11	2.16E-11
ce143	1.69E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.69E-11
ru 99	5.51E-12	7.76E-12	1.03E-11	1.33E-11	1.66E-11	1.66E-11
la140	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11	1.54E-11
sb125	1.48E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
gd152	1.77E-12	3.52E-12	6.17E-12	9.91E-12	1.49E-11	1.49E-11
mo 99	1.29E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
sn118	5.96E-12	7.45E-12	8.94E-12	1.04E-11	1.19E-11	1.19E-11
ba136	5.75E-12	7.20E-12	8.66E-12	1.01E-11	1.16E-11	1.16E-11
cs134	5.17E-12	6.47E-12	7.82E-12	9.18E-12	1.05E-11	1.05E-11
y 90	6.34E-12	7.49E-12	8.51E-12	9.41E-12	1.02E-11	1.02E-11
cd116	5.05E-12	6.32E-12	7.58E-12	8.84E-12	1.01E-11	1.01E-11
sn122	5.02E-12	6.27E-12	7.52E-12	8.77E-12	1.00E-11	1.00E-11
pm148m	9.75E-12	9.64E-12	9.65E-12	9.66E-12	9.66E-12	9.64E-12
in113	2.94E-12	4.29E-12	5.79E-12	7.40E-12	9.10E-12	9.10E-12
kr 87	8.14E-12	2.30E-11	2.30E-11	2.29E-11	2.29E-11	8.14E-12

sn120	3.76E-12	4.70E-12	5.63E-12	6.57E-12	7.51E-12	7.51E-12
te127m	7.42E-12	7.43E-12	7.43E-12	7.43E-12	7.43E-12	7.43E-12
i131	6.76E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12	6.76E-12
kr 82	3.17E-12	3.98E-12	4.78E-12	5.59E-12	6.41E-12	6.41E-12
dy163	3.12E-12	3.90E-12	4.69E-12	5.48E-12	6.27E-12	6.27E-12
ge 73	2.93E-12	3.67E-12	4.40E-12	5.14E-12	5.87E-12	5.87E-12
xe130	1.96E-12	2.46E-12	2.97E-12	3.48E-12	4.00E-12	4.00E-12
gd154	7.50E-13	1.28E-12	1.99E-12	2.86E-12	3.92E-12	3.92E-12
mo 96	1.43E-12	1.82E-12	2.21E-12	2.61E-12	3.02E-12	3.02E-12
ru100	7.53E-13	1.09E-12	1.49E-12	1.94E-12	2.46E-12	2.46E-12
ge 76	1.07E-12	1.33E-12	1.60E-12	1.87E-12	2.14E-12	2.14E-12
te129m	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12	1.79E-12
sm148	4.61E-13	6.76E-13	9.30E-13	1.22E-12	1.55E-12	1.55E-12
gd160	6.78E-13	8.47E-13	1.02E-12	1.19E-12	1.36E-12	1.36E-12
nd142	3.39E-13	5.29E-13	7.61E-13	1.03E-12	1.35E-12	1.35E-12
ba134	2.94E-13	4.68E-13	6.81E-13	9.35E-13	1.23E-12	1.23E-12
ba135	2.78E-13	4.30E-13	6.15E-13	8.33E-13	1.08E-12	1.08E-12
te126	5.25E-13	6.59E-13	7.94E-13	9.29E-13	1.07E-12	1.07E-12
pd104	2.24E-13	3.50E-13	5.03E-13	6.84E-13	8.93E-13	8.93E-13
ho165	2.14E-13	2.68E-13	3.22E-13	3.77E-13	4.32E-13	4.32E-13

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= 58.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 9131.3 d 10957.6 d 12783.8 d 14610.1 d 14610.2 d

pm148	3.74E-13	3.73E-13	3.73E-13	3.73E-13	3.73E-13	3.70E-13
ag111	3.17E-13	3.18E-13	3.19E-13	3.19E-13	3.19E-13	3.18E-13
eu157	2.76E-13	2.97E-13	2.97E-13	2.97E-13	2.97E-13	2.75E-13
te124	1.23E-13	1.54E-13	1.85E-13	2.17E-13	2.48E-13	2.48E-13
sr 87	1.22E-13	1.53E-13	1.84E-13	2.14E-13	2.45E-13	2.45E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.36E-13
nb 94	6.97E-14	8.72E-14	1.05E-13	1.22E-13	1.40E-13	1.40E-13
cd110	3.40E-14	5.16E-14	7.28E-14	9.77E-14	1.26E-13	1.26E-13
ge 74	5.92E-14	7.40E-14	8.89E-14	1.04E-13	1.19E-13	1.19E-13
br 79	2.17E-14	3.39E-14	4.87E-14	6.63E-14	8.65E-14	8.65E-14
ge 72	3.98E-14	4.97E-14	5.97E-14	6.96E-14	7.96E-14	7.96E-14
sr 86	3.50E-14	4.40E-14	5.31E-14	6.22E-14	7.14E-14	7.14E-14
nb 93	1.01E-14	1.88E-14	3.11E-14	4.72E-14	6.75E-14	6.75E-14
cs136	5.58E-14	5.63E-14	5.64E-14	5.66E-14	5.67E-14	5.65E-14
xe129	1.22E-14	1.91E-14	2.75E-14	3.74E-14	4.89E-14	4.89E-14
se 76	2.32E-14	2.90E-14	3.49E-14	4.07E-14	4.66E-14	4.66E-14
ag107	1.14E-14	1.79E-14	2.57E-14	3.50E-14	4.58E-14	4.58E-14
sn125	2.91E-14	2.93E-14	2.93E-14	2.93E-14	2.93E-14	2.91E-14
ru105	2.27E-14	2.97E-14	2.97E-14	2.97E-14	2.97E-14	2.27E-14
xe128	6.69E-15	8.73E-15	1.09E-14	1.33E-14	1.57E-14	1.57E-14
dy160	5.98E-15	7.98E-15	1.02E-14	1.26E-14	1.51E-14	1.51E-14
er166	5.69E-15	7.17E-15	8.68E-15	1.02E-14	1.18E-14	1.18E-14
sn123	1.02E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14	1.02E-14
te132	9.40E-15	9.56E-15	9.56E-15	9.56E-15	9.56E-15	9.40E-15
rb 88	8.81E-15	1.29E-14	1.29E-14	1.29E-14	1.29E-14	8.82E-15
i135	8.28E-15	1.01E-14	1.01E-14	1.01E-14	1.01E-14	8.28E-15
kr 80	1.66E-15	2.08E-15	2.50E-15	2.92E-15	3.34E-15	3.34E-15
sb126	3.02E-15	3.05E-15	3.06E-15	3.06E-15	3.07E-15	3.06E-15
sb124	2.11E-15	2.12E-15	2.12E-15	2.12E-15	2.12E-15	2.12E-15
sn116	5.34E-16	8.14E-16	1.15E-15	1.55E-15	2.01E-15	2.01E-15
in117m	1.84E-15	2.09E-15	2.09E-15	2.09E-15	2.09E-15	1.84E-15
te122	4.12E-16	5.75E-16	7.63E-16	9.75E-16	1.21E-15	1.21E-15
te134	8.66E-16	5.85E-15	5.85E-15	5.85E-15	5.85E-15	8.66E-16
tb160	5.06E-16	5.57E-16	6.08E-16	6.60E-16	7.11E-16	7.11E-16
i130	6.65E-16	7.46E-16	7.52E-16	7.59E-16	7.65E-16	6.89E-16

in117	5.47E-16	6.15E-16	6.15E-16	6.15E-16	6.15E-16	5.47E-16
be 9	1.34E-16	1.68E-16	2.01E-16	2.35E-16	2.69E-16	2.69E-16
pr142	1.30E-16	1.74E-16	2.08E-16	2.43E-16	2.78E-16	2.59E-16
rb 86	2.48E-16	2.51E-16	2.53E-16	2.55E-16	2.57E-16	2.56E-16
te123	1.18E-16	1.48E-16	1.78E-16	2.09E-16	2.39E-16	2.39E-16
dy165	1.26E-16	2.16E-16	2.18E-16	2.19E-16	2.20E-16	1.28E-16
li 7	5.40E-17	6.74E-17	8.09E-17	9.44E-17	1.08E-16	1.08E-16
er167	2.43E-17	3.13E-17	3.86E-17	4.63E-17	5.43E-17	5.43E-17
ge 75	3.38E-17	8.63E-17	8.63E-17	8.63E-17	8.63E-17	3.38E-17
cd118	2.47E-17	1.20E-16	1.20E-16	1.20E-16	1.20E-16	2.46E-17
cd108	1.15E-18	1.45E-18	1.77E-18	2.09E-18	2.42E-18	2.42E-18
cs134m	6.58E-19	1.28E-18	1.53E-18	1.79E-18	2.04E-18	1.29E-18
in119m	4.20E-19	3.01E-17	3.01E-17	3.01E-17	3.01E-17	4.19E-19
cd109	2.18E-19	2.25E-19	2.35E-19	2.42E-19	2.52E-19	2.52E-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= 58.mwd, flux= 2.81E+08n/cm**2-sec
0 initial 9131.3 d 10957.6 d 12783.8 d 14610.1 d 14610.2 d

sn114	4.70E-20	7.72E-20	1.17E-19	1.68E-19	2.32E-19	2.32E-19

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=5.8440E+01mwd, flux= 2.81E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	9131.3 d	10957.6 d	12783.8 d	14610.1 d	14610.2 d
h 1	1.76E-06	2.19E-06	2.62E-06	3.05E-06	3.48E-06	3.48E-06
h 2	5.22E-09	6.50E-09	7.77E-09	9.05E-09	1.03E-08	1.03E-08
h 3	2.30E-11	2.55E-11	2.74E-11	2.89E-11	2.99E-11	2.99E-11
h 4	.00E+00	1.04E-34	1.11E-34	1.17E-34	1.22E-34	.00E+00
he 3	1.53E-11	2.21E-11	2.96E-11	3.75E-11	4.57E-11	4.57E-11
he 4	2.91E-07	3.62E-07	4.33E-07	5.04E-07	5.75E-07	5.75E-07
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	3.50E-08	4.35E-08	5.20E-08	6.06E-08	6.91E-08	6.91E-08
ne 21	2.53E-14	3.88E-14	5.49E-14	7.36E-14	9.49E-14	9.49E-14
ne 22	1.86E-10	2.42E-10	2.97E-10	3.53E-10	4.09E-10	4.09E-10
ne 23	7.28E-30	7.10E-15	7.10E-15	7.10E-15	7.10E-15	7.10E-30
na 22	4.26E-11	4.19E-11	4.18E-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	3.33E-08	3.07E-08	3.07E-08	3.07E-08	3.07E-08	2.81E-08
na 24m	5.99E-30	5.05E-15	5.05E-15	5.05E-15	5.05E-15	5.05E-30
na 25	1.21E-42	1.50E-27	1.81E-27	2.14E-27	2.47E-27	2.53E-42
mg 24	3.02E-04	3.66E-04	4.30E-04	4.93E-04	5.57E-04	5.57E-04
mg 25	4.07E-11	5.14E-11	6.24E-11	7.36E-11	8.50E-11	8.50E-11
mg 26	5.22E-09	6.50E-09	7.77E-09	9.05E-09	1.03E-08	1.03E-08
mg 27	4.70E-16	2.12E-12	2.12E-12	2.12E-12	2.12E-12	4.59E-16
mg 28	4.14E-24	4.32E-24	4.32E-24	4.32E-24	4.32E-24	4.05E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	3.67E-25	2.28E-10	2.28E-10	2.28E-10	2.28E-10	3.10E-25
al 29	3.18E-32	9.14E-27	1.30E-26	1.75E-26	2.27E-26	1.19E-31
al 30	.00E+00	4.23E-39	7.28E-39	1.15E-38	1.70E-38	.00E+00
si 28	8.79E-04	1.06E-03	1.25E-03	1.44E-03	1.62E-03	1.62E-03
si 29	2.26E-11	3.51E-11	5.00E-11	6.73E-11	8.69E-11	8.69E-11
si 30	6.21E-19	1.21E-18	2.09E-18	3.30E-18	4.89E-18	4.89E-18
si 31	2.68E-31	8.71E-31	1.50E-30	2.37E-30	3.51E-30	2.11E-30
si 32	1.55E-38	3.78E-38	7.81E-38	1.44E-37	2.44E-37	2.44E-37
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=5.8440E+01mwd, flux= 2.81E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	10957.6 d	12783.8 d	14610.1 d	14610.2 d
he 4	1.33E-03	1.75E-03	2.21E-03	2.70E-03	3.22E-03	3.22E-03
pb206	1.79E-11	4.28E-11	8.69E-11	1.57E-10	2.62E-10	2.62E-10
pb207	5.52E-10	1.04E-09	1.74E-09	2.67E-09	3.86E-09	3.86E-09
pb208	2.81E-10	5.05E-10	7.97E-10	1.16E-09	1.59E-09	1.59E-09
pb209	5.60E-16	8.70E-16	1.25E-15	1.71E-15	2.23E-15	2.24E-15
pb210	1.17E-10	2.20E-10	3.67E-10	5.63E-10	8.13E-10	8.13E-10
pb211	7.85E-15	1.17E-14	1.61E-14	2.10E-14	2.62E-14	2.62E-14
pb212	6.61E-14	9.03E-14	1.14E-13	1.38E-13	1.62E-13	1.62E-13
pb214	1.45E-15	2.33E-15	3.35E-15	4.56E-15	5.95E-15	5.77E-15
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	6.87E-12	1.35E-11	2.33E-11	3.70E-11	5.53E-11	5.53E-11
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	7.17E-14	1.35E-13	2.26E-13	3.46E-13	5.00E-13	5.00E-13
bi211	4.69E-16	6.94E-16	9.55E-16	1.24E-15	1.56E-15	1.56E-15
bi212	6.27E-15	8.57E-15	1.08E-14	1.31E-14	1.53E-14	1.53E-14
bi213	1.26E-16	2.03E-16	2.93E-16	3.99E-16	5.21E-16	5.05E-16
bi214	1.09E-15	1.73E-15	2.49E-15	3.38E-15	4.42E-15	4.34E-15
ra222	1.32E-27	1.66E-27	2.05E-27	2.42E-27	2.80E-27	2.80E-27
ra223	3.58E-12	5.34E-12	7.35E-12	9.57E-12	1.20E-11	1.20E-11
ra224	5.46E-13	7.46E-13	9.44E-13	1.14E-12	1.33E-12	1.33E-12
ra225	6.08E-14	9.51E-14	1.37E-13	1.86E-13	2.44E-13	2.44E-13
ra226	4.68E-08	7.31E-08	1.05E-07	1.43E-07	1.87E-07	1.87E-07
ra228	2.63E-14	3.62E-14	4.63E-14	5.67E-14	6.71E-14	6.71E-14
ac225	4.11E-14	6.42E-14	9.25E-14	1.26E-13	1.65E-13	1.65E-13
ac227	2.49E-09	3.71E-09	5.10E-09	6.64E-09	8.31E-09	8.31E-09
ac228	3.21E-18	4.41E-18	5.65E-18	6.92E-18	8.19E-18	8.19E-18
th226	6.42E-26	8.12E-26	9.98E-26	1.18E-25	1.37E-25	1.36E-25
th227	5.78E-12	8.62E-12	1.19E-11	1.54E-11	1.93E-11	1.93E-11
th228	1.04E-10	1.42E-10	1.80E-10	2.17E-10	2.55E-10	2.55E-10
th229	1.18E-08	1.85E-08	2.66E-08	3.63E-08	4.74E-08	4.74E-08
th230	5.11E-04	6.39E-04	7.66E-04	8.94E-04	1.02E-03	1.02E-03
th231	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09	3.02E-09
th232	1.03E-04	1.29E-04	1.55E-04	1.81E-04	2.07E-04	2.07E-04
th233	2.66E-17	1.19E-15	1.43E-15	1.66E-15	1.90E-15	5.29E-17
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	1.44E-05	1.80E-05	2.16E-05	2.52E-05	2.88E-05	2.88E-05
pa232	2.37E-13	3.09E-13	3.71E-13	4.33E-13	4.95E-13	4.74E-13
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	6.21E-23	7.87E-23	9.67E-23	1.15E-22	1.32E-22	1.32E-22
u231	2.14E-19	2.63E-19	3.16E-19	3.68E-19	4.21E-19	4.16E-19
u232	4.57E-09	5.96E-09	7.33E-09	8.68E-09	1.00E-08	1.00E-08
u233	2.72E-04	3.40E-04	4.08E-04	4.76E-04	5.45E-04	5.45E-04
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	1.74E+02	1.74E+02	1.74E+02	1.74E+02
u237	3.21E-06	3.15E-06	3.15E-06	3.15E-06	3.15E-06	3.12E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04

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=5.8440E+01mwd, flux= 2.81E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge	9131.3 d	10957.6 d	12783.8 d	14610.1 d	14610.2 d

```
      u239   1.09E-08  3.22E-07  3.22E-07  3.22E-07  3.22E-07  1.07E-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   9.07E-12  8.80E-12  8.79E-12  8.79E-12  8.79E-12  8.79E-12
    np236m   2.03E-12  2.09E-12  2.09E-12  2.09E-12  2.09E-12  1.97E-12
     np236   4.10E-09  5.09E-09  6.08E-09  7.07E-09  8.06E-09  8.06E-09
     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  4.57E-05
    np240m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     np240   2.68E-15  9.48E-15  9.48E-15  9.48E-15  9.48E-15  2.61E-15
     np241    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236   1.16E-09  1.14E-09  1.14E-09  1.13E-09  1.13E-09  1.13E-09
     pu237   3.63E-14  4.31E-14  5.08E-14  5.81E-14  6.51E-14  6.50E-14
     pu238   3.49E-03  4.27E-03  5.02E-03  5.75E-03  6.44E-03  6.44E-03
     pu239   1.02E-01  1.27E-01  1.52E-01  1.77E-01  2.02E-01  2.02E-01
     pu240   1.01E-05  1.57E-05  2.25E-05  3.06E-05  3.98E-05  3.98E-05
     pu241   1.10E-09  2.02E-09  3.29E-09  4.96E-09  7.05E-09  7.05E-09
     pu242   4.75E-14  1.12E-13  2.25E-13  4.04E-13  6.71E-13  6.71E-13
     pu243   7.97E-23  2.40E-22  4.81E-22  8.65E-22  1.43E-21  1.10E-21
     pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     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   7.10E-26  1.79E-25  3.53E-25  6.25E-25  1.02E-24  9.12E-25
     am240   3.54E-23  8.19E-23  1.62E-22  2.86E-22  4.67E-22  4.55E-22
     am241   2.76E-10  6.42E-10  1.27E-09  2.24E-09  3.66E-09  3.66E-09
    am242m   2.88E-15  8.38E-15  1.99E-14  4.12E-14  7.70E-14  7.70E-14
     am242   8.96E-18  2.25E-17  4.45E-17  7.88E-17  1.29E-16  1.19E-16
     am243   7.89E-19  2.51E-18  6.50E-18  1.46E-17  2.94E-17  2.94E-17
    am244m    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   5.44E-27  1.93E-26  5.00E-26  1.12E-25  2.26E-25  1.98E-25
     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 densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ********************************************************************************
```

```
*                                                                          *
*        prelim lwr origen-s binary working library--id = 1143             *
*      made from modified card-image origen-s libraries of scale 4.2       *
*    data from the light element, actinide, and fission product libraries *
*      decay data, including gamma and total energy, are from endf/b-vi   *
*                                                                          *
*    neutron flux spectrum factors and cross sections were produced from  *
*    the "presas2" case updating all nuclides on the scale "burnup" library *
*                                                                          *
*              fission product yields are from endf/b-v                    *
*                                                                          *
*          photon libraries use an 18-energy-group structure               *
*          the photon data are from the master photon data base,           *
*          produced to include bremsstrahlung from uo2 matrix              *
*                                                                          *
*      see information above this box (if present) for later updates      *
*                                                                          *
****************************************************************************
*                                                                          *
****************************************************************************
```

0

0 .other identification and sizes of library.

0 data set name: 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= 88.mwd, flux= 2.74E+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	16436.4 d	18262.7 d	20088.9 d	21915.2 d	21915.2 d
productions	1.122645E+06	1.122682E+06	1.122719E+06	1.122756E+06	1.122793E+06	1.122793E+06
absorptions	9.163268E+05	9.163854E+05	9.164438E+05	9.165019E+05	9.165596E+05	9.165596E+05
k infinity	1.225158E+00	1.225120E+00	1.225083E+00	1.225045E+00	1.225009E+00	1.225009E+00
0	initial	16436.4 d	18262.7 d	20088.9 d	21915.2 d	21915.2 d
actinide absorptions	9.127919E+05	9.128138E+05	9.128357E+05	9.128577E+05	9.128795E+05	9.128795E+05
non-actinide abs. fracs.	3.857672E-03	3.897429E-03	3.937006E-03	3.976166E-03	4.015088E-03	4.015088E-03

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

0 fraction of total absorption rate

power= .00mw, burnup= 88.mwd, flux= 2.74E+08n/cm**2-sec

0	initial	16436.4 d	18262.7 d	20088.9 d	21915.2 d	21915.2 d
sm149	2.89E-04	3.25E-04	3.59E-04	3.94E-04	4.28E-04	4.28E-04
sm151	1.08E-05	1.19E-05	1.30E-05	1.40E-05	1.50E-05	1.50E-05
nd143	5.93E-06	6.68E-06	7.42E-06	8.16E-06	8.90E-06	8.90E-06
gd155	3.30E-06	3.79E-06	4.28E-06	4.77E-06	5.25E-06	5.25E-06
gd157	2.93E-06	3.27E-06	3.62E-06	3.96E-06	4.30E-06	4.30E-06
rh103	2.75E-06	3.09E-06	3.43E-06	3.78E-06	4.12E-06	4.12E-06
cd113	2.55E-06	2.87E-06	3.18E-06	3.49E-06	3.80E-06	3.80E-06
xe131	1.87E-06	2.11E-06	2.34E-06	2.58E-06	2.81E-06	2.81E-06
eu151	1.29E-06	1.61E-06	1.96E-06	2.35E-06	2.76E-06	2.76E-06
xe135	2.29E-06	2.33E-06	2.33E-06	2.33E-06	2.33E-06	2.29E-06
cs133	1.45E-06	1.64E-06	1.82E-06	2.00E-06	2.18E-06	2.18E-06
tc 99	1.07E-06	1.20E-06	1.34E-06	1.47E-06	1.60E-06	1.60E-06
sm147	9.78E-07	1.11E-06	1.25E-06	1.38E-06	1.52E-06	1.52E-06

nd145	8.31E-07	9.35E-07	1.04E-06	1.14E-06	1.25E-06	1.25E-06
mo 95	5.70E-07	6.42E-07	7.14E-07	7.86E-07	8.58E-07	8.58E-07
sm152	4.40E-07	4.95E-07	5.50E-07	6.05E-07	6.61E-07	6.61E-07
kr 83	3.61E-07	4.06E-07	4.51E-07	4.96E-07	5.41E-07	5.41E-07
cs135	3.28E-07	3.69E-07	4.10E-07	4.51E-07	4.92E-07	4.92E-07
ru101	2.54E-07	2.86E-07	3.17E-07	3.49E-07	3.81E-07	3.81E-07
pr141	2.45E-07	2.76E-07	3.06E-07	3.37E-07	3.68E-07	3.68E-07
eu153	2.22E-07	2.50E-07	2.78E-07	3.06E-07	3.33E-07	3.33E-07
la139	2.01E-07	2.26E-07	2.51E-07	2.76E-07	3.01E-07	3.01E-07
pm147	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
eu155	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07
pd105	8.47E-08	9.53E-08	1.06E-07	1.16E-07	1.27E-07	1.27E-07
zr 93	8.12E-08	9.13E-08	1.01E-07	1.12E-07	1.22E-07	1.22E-07
i129	6.23E-08	7.00E-08	7.78E-08	8.56E-08	9.34E-08	9.34E-08
nd144	5.86E-08	6.61E-08	7.37E-08	8.12E-08	8.87E-08	8.87E-08
mo 97	4.55E-08	5.12E-08	5.68E-08	6.25E-08	6.82E-08	6.82E-08
ba137	3.34E-08	4.09E-08	4.88E-08	5.73E-08	6.61E-08	6.61E-08
ag109	3.20E-08	3.61E-08	4.01E-08	4.42E-08	4.82E-08	4.82E-08
zr 91	2.13E-08	2.40E-08	2.67E-08	2.94E-08	3.21E-08	3.21E-08
y 89	2.05E-08	2.31E-08	2.56E-08	2.82E-08	3.08E-08	3.08E-08
ru102	1.85E-08	2.08E-08	2.32E-08	2.55E-08	2.78E-08	2.78E-08
sm150	1.22E-08	1.54E-08	1.90E-08	2.29E-08	2.72E-08	2.72E-08
ce142	1.67E-08	1.88E-08	2.09E-08	2.30E-08	2.51E-08	2.51E-08
nd148	1.60E-08	1.80E-08	2.01E-08	2.21E-08	2.41E-08	2.41E-08
nd146	1.35E-08	1.51E-08	1.68E-08	1.85E-08	2.02E-08	2.02E-08
ba138	1.15E-08	1.30E-08	1.44E-08	1.58E-08	1.73E-08	1.73E-08
in115	1.11E-08	1.25E-08	1.38E-08	1.52E-08	1.66E-08	1.66E-08
pd108	1.08E-08	1.22E-08	1.36E-08	1.49E-08	1.63E-08	1.63E-08
ce140	1.08E-08	1.21E-08	1.35E-08	1.48E-08	1.62E-08	1.62E-08
xe132	9.64E-09	1.09E-08	1.21E-08	1.33E-08	1.45E-08	1.45E-08
sr 90	1.08E-08	1.15E-08	1.22E-08	1.28E-08	1.33E-08	1.33E-08
mo 98	6.65E-09	7.48E-09	8.31E-09	9.15E-09	9.98E-09	9.98E-09
mo100	6.44E-09	7.25E-09	8.05E-09	8.85E-09	9.66E-09	9.66E-09
pd107	6.43E-09	7.24E-09	8.04E-09	8.84E-09	9.65E-09	9.65E-09
xe134	6.36E-09	7.15E-09	7.95E-09	8.74E-09	9.54E-09	9.54E-09
rh105	8.34E-09	8.37E-09	8.37E-09	8.37E-09	8.38E-09	8.34E-09

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= 88.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

zr 92	5.16E-09	5.81E-09	6.46E-09	7.10E-09	7.75E-09	7.75E-09
i127	4.16E-09	4.68E-09	5.20E-09	5.73E-09	6.25E-09	6.25E-09
zr 96	4.04E-09	4.55E-09	5.05E-09	5.56E-09	6.06E-09	6.06E-09
ru104	3.96E-09	4.46E-09	4.95E-09	5.45E-09	5.94E-09	5.94E-09
nd150	3.55E-09	4.00E-09	4.44E-09	4.88E-09	5.33E-09	5.33E-09
xe136	3.44E-09	3.87E-09	4.30E-09	4.73E-09	5.15E-09	5.15E-09
br 81	2.57E-09	2.90E-09	3.22E-09	3.54E-09	3.86E-09	3.86E-09
rb 85	2.32E-09	2.64E-09	2.95E-09	3.26E-09	3.57E-09	3.57E-09
zr 94	2.18E-09	2.45E-09	2.73E-09	3.00E-09	3.27E-09	3.27E-09
cs137	2.28E-09	2.44E-09	2.59E-09	2.72E-09	2.83E-09	2.83E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09
cd111	1.67E-09	1.88E-09	2.09E-09	2.30E-09	2.51E-09	2.51E-09
te130	1.56E-09	1.76E-09	1.95E-09	2.15E-09	2.34E-09	2.34E-09
sm154	1.51E-09	1.70E-09	1.89E-09	2.08E-09	2.27E-09	2.27E-09
rb 87	1.46E-09	1.64E-09	1.82E-09	2.00E-09	2.18E-09	2.18E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
se 77	1.04E-09	1.17E-09	1.29E-09	1.42E-09	1.55E-09	1.55E-09
zr 90	7.38E-10	9.03E-10	1.08E-09	1.26E-09	1.45E-09	1.45E-09

pd106	7.08E-10	8.00E-10	8.92E-10	9.83E-10	1.08E-09	1.08E-09
kr 84	6.86E-10	7.71E-10	8.57E-10	9.43E-10	1.03E-09	1.03E-09
pm149	9.72E-10	9.79E-10	9.79E-10	9.79E-10	9.79E-10	9.72E-10
nd147	9.28E-10	9.32E-10	9.32E-10	9.32E-10	9.32E-10	9.28E-10
se 79	5.31E-10	5.97E-10	6.64E-10	7.30E-10	7.96E-10	7.96E-10
sb121	5.01E-10	5.64E-10	6.27E-10	6.89E-10	7.52E-10	7.52E-10
sb123	4.09E-10	4.60E-10	5.11E-10	5.62E-10	6.13E-10	6.13E-10
ce144	6.03E-10	6.03E-10	6.03E-10	6.03E-10	6.03E-10	6.03E-10
kr 86	3.84E-10	4.32E-10	4.80E-10	5.28E-10	5.76E-10	5.76E-10
kr 85	5.32E-10	5.44E-10	5.53E-10	5.59E-10	5.64E-10	5.64E-10
te128	3.41E-10	3.84E-10	4.26E-10	4.69E-10	5.12E-10	5.12E-10
eu152	1.53E-10	2.05E-10	2.66E-10	3.35E-10	4.12E-10	4.12E-10
gd156	2.65E-10	2.99E-10	3.33E-10	3.68E-10	4.03E-10	4.03E-10
se 80	2.47E-10	2.78E-10	3.09E-10	3.40E-10	3.71E-10	3.71E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.57E-10
dy161	2.17E-10	2.44E-10	2.71E-10	2.98E-10	3.26E-10	3.26E-10
te125	1.95E-10	2.22E-10	2.49E-10	2.76E-10	3.03E-10	3.03E-10
tb159	1.46E-10	1.64E-10	1.82E-10	2.01E-10	2.19E-10	2.19E-10
li 6	1.41E-10	1.58E-10	1.76E-10	1.94E-10	2.11E-10	2.11E-10
cd112	1.40E-10	1.58E-10	1.75E-10	1.93E-10	2.10E-10	2.10E-10
sn117	1.11E-10	1.25E-10	1.39E-10	1.53E-10	1.67E-10	1.67E-10
zr 95	1.65E-10	1.66E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-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	1.44E-10	1.44E-10	1.44E-10	1.44E-10
eu154	8.69E-11	1.01E-10	1.14E-10	1.28E-10	1.43E-10	1.43E-10
sn119	9.16E-11	1.03E-10	1.14E-10	1.26E-10	1.37E-10	1.37E-10
sn115	8.38E-11	9.43E-11	1.05E-10	1.15E-10	1.26E-10	1.26E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-10
sr 88	7.05E-11	7.93E-11	8.81E-11	9.69E-11	1.06E-10	1.06E-10
gd158	4.93E-11	5.60E-11	6.28E-11	6.98E-11	7.68E-11	7.68E-11

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= 88.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

pd110	5.01E-11	5.64E-11	6.26E-11	6.89E-11	7.52E-11	7.52E-11
cd114	4.92E-11	5.55E-11	6.18E-11	6.81E-11	7.44E-11	7.44E-11
se 82	4.78E-11	5.38E-11	5.98E-11	6.58E-11	7.18E-11	7.18E-11
sn126	3.84E-11	4.32E-11	4.80E-11	5.28E-11	5.76E-11	5.76E-11
se 78	3.62E-11	4.07E-11	4.53E-11	4.98E-11	5.43E-11	5.43E-11
gd152	1.50E-11	2.15E-11	2.97E-11	3.98E-11	5.18E-11	5.18E-11
ba140	4.73E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11	4.73E-11
sn124	2.90E-11	3.26E-11	3.63E-11	3.99E-11	4.35E-11	4.35E-11
dy162	2.84E-11	3.19E-11	3.55E-11	3.92E-11	4.28E-11	4.28E-11
dy164	2.60E-11	2.93E-11	3.26E-11	3.60E-11	3.94E-11	3.94E-11
sm153	3.73E-11	3.82E-11	3.82E-11	3.82E-11	3.82E-11	3.72E-11
eu156	3.43E-11	3.43E-11	3.43E-11	3.43E-11	3.43E-11	3.43E-11
ru 99	1.65E-11	2.02E-11	2.41E-11	2.84E-11	3.31E-11	3.31E-11
as 75	2.16E-11	2.43E-11	2.70E-11	2.97E-11	3.24E-11	3.24E-11
sr 89	3.08E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.08E-11
ru106	2.54E-11	2.53E-11	2.53E-11	2.53E-11	2.54E-11	2.54E-11
sn118	1.18E-11	1.33E-11	1.48E-11	1.63E-11	1.78E-11	1.78E-11
ba136	1.16E-11	1.30E-11	1.45E-11	1.60E-11	1.75E-11	1.75E-11
ce143	1.70E-11	1.75E-11	1.75E-11	1.75E-11	1.75E-11	1.70E-11
in113	9.10E-12	1.09E-11	1.27E-11	1.46E-11	1.65E-11	1.65E-11
cs134	1.06E-11	1.19E-11	1.32E-11	1.46E-11	1.59E-11	1.59E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
cd116	1.01E-11	1.13E-11	1.26E-11	1.38E-11	1.51E-11	1.51E-11
sn122	1.01E-11	1.13E-11	1.26E-11	1.38E-11	1.51E-11	1.51E-11
sb125	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11

mo 99	1.29E-11	1.32E-11	1.32E-11	1.32E-11	1.32E-11	1.29E-11
y 90	1.03E-11	1.10E-11	1.16E-11	1.21E-11	1.26E-11	1.26E-11
sn120	7.52E-12	8.45E-12	9.39E-12	1.03E-11	1.13E-11	1.13E-11
gd154	3.93E-12	5.17E-12	6.60E-12	8.20E-12	1.00E-11	1.00E-11
kr 82	6.43E-12	7.25E-12	8.07E-12	8.90E-12	9.74E-12	9.74E-12
pm148m	9.69E-12	9.63E-12	9.64E-12	9.63E-12	9.63E-12	9.62E-12
dy163	6.28E-12	7.08E-12	7.88E-12	8.69E-12	9.51E-12	9.51E-12
ge 73	5.89E-12	6.63E-12	7.36E-12	8.10E-12	8.84E-12	8.84E-12
kr 87	8.19E-12	2.31E-11	2.31E-11	2.31E-11	2.31E-11	8.19E-12
te127m	7.45E-12	7.46E-12	7.46E-12	7.46E-12	7.46E-12	7.46E-12
i131	6.76E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12	6.76E-12
xe130	4.02E-12	4.54E-12	5.07E-12	5.60E-12	6.13E-12	6.13E-12
ru100	2.47E-12	3.05E-12	3.68E-12	4.38E-12	5.13E-12	5.13E-12
mo 96	3.01E-12	3.43E-12	3.86E-12	4.29E-12	4.74E-12	4.74E-12
sm148	1.55E-12	1.91E-12	2.31E-12	2.75E-12	3.23E-12	3.23E-12
ge 76	2.14E-12	2.41E-12	2.67E-12	2.94E-12	3.21E-12	3.21E-12
nd142	1.36E-12	1.72E-12	2.12E-12	2.56E-12	3.05E-12	3.05E-12
ba134	1.23E-12	1.57E-12	1.94E-12	2.35E-12	2.81E-12	2.81E-12
ba135	1.08E-12	1.37E-12	1.68E-12	2.03E-12	2.42E-12	2.42E-12
gd160	1.36E-12	1.53E-12	1.69E-12	1.86E-12	2.04E-12	2.04E-12
pd104	8.89E-13	1.12E-12	1.39E-12	1.68E-12	1.99E-12	1.99E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
te126	1.07E-12	1.20E-12	1.34E-12	1.48E-12	1.62E-12	1.62E-12
ho165	4.32E-13	4.87E-13	5.43E-13	5.99E-13	6.55E-13	6.55E-13

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= 88.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

te124	2.49E-13	2.81E-13	3.12E-13	3.44E-13	3.76E-13	3.76E-13
sr 87	2.46E-13	2.77E-13	3.07E-13	3.38E-13	3.69E-13	3.69E-13
pm148	3.68E-13	3.69E-13	3.69E-13	3.69E-13	3.69E-13	3.65E-13
ag111	3.16E-13	3.18E-13	3.18E-13	3.19E-13	3.19E-13	3.17E-13
cd110	1.27E-13	1.59E-13	1.95E-13	2.34E-13	2.78E-13	2.78E-13
eu157	2.76E-13	2.98E-13	2.98E-13	2.98E-13	2.99E-13	2.76E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.37E-13
nb 94	1.39E-13	1.57E-13	1.74E-13	1.92E-13	2.09E-13	2.09E-13
br 79	8.66E-14	1.10E-13	1.35E-13	1.64E-13	1.95E-13	1.95E-13
nb 93	6.76E-14	9.23E-14	1.22E-13	1.56E-13	1.95E-13	1.95E-13
ge 74	1.19E-13	1.34E-13	1.49E-13	1.64E-13	1.79E-13	1.79E-13
ge 72	8.00E-14	9.00E-14	1.00E-13	1.10E-13	1.20E-13	1.20E-13
xe129	4.89E-14	6.19E-14	7.65E-14	9.25E-14	1.10E-13	1.10E-13
sr 86	7.17E-14	8.10E-14	9.04E-14	9.98E-14	1.09E-13	1.09E-13
ag107	4.60E-14	5.82E-14	7.18E-14	8.69E-14	1.03E-13	1.03E-13
se 76	4.69E-14	5.28E-14	5.88E-14	6.48E-14	7.08E-14	7.08E-14
cs136	5.63E-14	5.67E-14	5.68E-14	5.70E-14	5.71E-14	5.69E-14
sn125	2.90E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.90E-14
dy160	1.51E-14	1.79E-14	2.08E-14	2.40E-14	2.73E-14	2.73E-14
xe128	1.58E-14	1.84E-14	2.12E-14	2.42E-14	2.72E-14	2.72E-14
ru105	2.26E-14	2.96E-14	2.96E-14	2.96E-14	2.96E-14	2.26E-14
er166	1.18E-14	1.34E-14	1.50E-14	1.66E-14	1.83E-14	1.83E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.43E-15	9.59E-15	9.59E-15	9.59E-15	9.59E-15	9.43E-15
rb 88	8.86E-15	1.30E-14	1.30E-14	1.30E-14	1.30E-14	8.86E-15
i135	8.32E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14	8.32E-15
kr 80	3.35E-15	3.77E-15	4.20E-15	4.62E-15	5.04E-15	5.04E-15
sn116	1.99E-15	2.50E-15	3.07E-15	3.69E-15	4.38E-15	4.38E-15
sb126	3.07E-15	3.09E-15	3.10E-15	3.11E-15	3.12E-15	3.10E-15
te122	1.21E-15	1.47E-15	1.75E-15	2.06E-15	2.39E-15	2.39E-15
sb124	2.12E-15	2.13E-15	2.13E-15	2.13E-15	2.13E-15	2.13E-15

in117m	1.85E-15	2.10E-15	2.10E-15	2.10E-15	2.11E-15	1.85E-15
tb160	7.14E-16	7.65E-16	8.16E-16	8.68E-16	9.19E-16	9.19E-16
te134	8.71E-16	5.88E-15	5.88E-15	5.88E-15	5.88E-15	8.71E-16
i130	6.90E-16	7.73E-16	7.79E-16	7.86E-16	7.92E-16	7.14E-16
in117	5.50E-16	6.18E-16	6.18E-16	6.19E-16	6.19E-16	5.50E-16
be 9	2.66E-16	3.00E-16	3.33E-16	3.66E-16	4.00E-16	4.00E-16
pr142	2.60E-16	3.13E-16	3.48E-16	3.83E-16	4.18E-16	3.90E-16
te123	2.40E-16	2.70E-16	3.01E-16	3.32E-16	3.63E-16	3.63E-16
rb 86	2.57E-16	2.59E-16	2.61E-16	2.64E-16	2.66E-16	2.65E-16
li 7	1.08E-16	1.22E-16	1.36E-16	1.49E-16	1.63E-16	1.63E-16
dy165	1.28E-16	2.22E-16	2.23E-16	2.25E-16	2.26E-16	1.31E-16
er167	5.45E-17	6.29E-17	7.16E-17	8.08E-17	9.02E-17	9.02E-17
ge 75	3.40E-17	8.68E-17	8.68E-17	8.68E-17	8.68E-17	3.40E-17
cd118	2.48E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16	2.48E-17
cd108	2.42E-18	2.76E-18	3.10E-18	3.46E-18	3.82E-18	3.82E-18
cs134m	1.30E-18	2.29E-18	2.55E-18	2.81E-18	3.06E-18	1.94E-18
sn114	2.32E-19	3.07E-19	3.94E-19	4.95E-19	6.10E-19	6.10E-19
in119m	4.21E-19	3.02E-17	3.02E-17	3.02E-17	3.02E-17	4.21E-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= 88.mwd, flux= 2.74E+08n/cm**2-sec
0 initial 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d

cd109	2.53E-19	2.63E-19	2.69E-19	2.80E-19	2.90E-19	2.90E-19

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=8.7659E+01mwd, flux= 2.74E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	16436.4 d	18262.7 d	20088.9 d	21915.2 d	21915.2 d
h 1	3.48E-06	3.91E-06	4.33E-06	4.76E-06	5.18E-06	5.18E-06
h 2	1.03E-08	1.16E-08	1.28E-08	1.41E-08	1.54E-08	1.54E-08
h 3	2.99E-11	3.07E-11	3.13E-11	3.17E-11	3.21E-11	3.21E-11
h 4	.00E+00	1.25E-34	1.27E-34	1.29E-34	1.30E-34	.00E+00
he 3	4.57E-11	5.42E-11	6.29E-11	7.18E-11	8.07E-11	8.07E-11
he 4	5.75E-07	6.46E-07	7.16E-07	7.86E-07	8.57E-07	8.57E-07
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	6.91E-08	7.75E-08	8.60E-08	9.45E-08	1.03E-07	1.03E-07
ne 21	9.49E-14	1.18E-13	1.44E-13	1.72E-13	2.03E-13	2.03E-13
ne 22	4.09E-10	4.64E-10	5.19E-10	5.74E-10	6.30E-10	6.30E-10
ne 23	7.10E-30	7.05E-15	7.05E-15	7.05E-15	7.05E-15	7.05E-30
na 22	4.17E-11	4.15E-11	4.14E-11	4.14E-11	4.14E-11	4.14E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.81E-08	2.85E-08	2.85E-08	2.85E-08	2.85E-08	2.60E-08
na 24m	5.05E-30	4.68E-15	4.68E-15	4.68E-15	4.68E-15	4.68E-30
na 25	2.53E-42	2.77E-27	3.11E-27	3.46E-27	3.81E-27	3.85E-42
mg 24	5.57E-04	6.16E-04	6.75E-04	7.34E-04	7.94E-04	7.94E-04
mg 25	8.50E-11	9.66E-11	1.09E-10	1.21E-10	1.33E-10	1.33E-10
mg 26	1.03E-08	1.16E-08	1.28E-08	1.41E-08	1.54E-08	1.54E-08
mg 27	4.59E-16	2.10E-12	2.10E-12	2.10E-12	2.10E-12	4.55E-16
mg 28	4.05E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24	4.03E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	3.10E-25	2.11E-10	2.11E-10	2.11E-10	2.11E-10	2.88E-25
al 29	1.19E-31	2.80E-26	3.42E-26	4.10E-26	4.84E-26	2.53E-31
al 30	.00E+00	2.38E-38	3.24E-38	4.28E-38	5.52E-38	.00E+00
si 28	1.62E-03	1.79E-03	1.96E-03	2.14E-03	2.31E-03	2.31E-03
si 29	8.69E-11	1.09E-10	1.33E-10	1.60E-10	1.88E-10	1.88E-10
si 30	4.89E-18	6.92E-18	9.43E-18	1.25E-17	1.61E-17	1.61E-17
si 31	2.11E-30	4.97E-30	6.77E-30	8.95E-30	1.15E-29	6.95E-30
si 32	2.44E-37	3.87E-37	5.86E-37	8.50E-37	1.19E-36	1.19E-36

totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.74E+08	2.74E+08	2.74E+08	2.74E+08	2.74E-07

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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=8.7659E+01mwd, flux= 2.74E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge 16436.4 d	18262.7 d	20088.9 d	21915.2 d	21915.2 d
he 4	3.22E-03	3.77E-03	4.35E-03	4.96E-03	5.60E-03	5.60E-03
pb206	2.62E-10	4.10E-10	6.10E-10	8.72E-10	1.21E-09	1.21E-09
pb207	3.86E-09	5.32E-09	7.07E-09	9.13E-09	1.15E-08	1.15E-08
pb208	1.59E-09	2.08E-09	2.64E-09	3.27E-09	3.96E-09	3.96E-09
pb209	2.24E-15	2.82E-15	3.49E-15	4.22E-15	5.02E-15	5.05E-15
pb210	8.13E-10	1.12E-09	1.49E-09	1.92E-09	2.42E-09	2.42E-09
pb211	2.62E-14	3.18E-14	3.77E-14	4.38E-14	5.02E-14	5.02E-14
pb212	1.62E-13	1.85E-13	2.08E-13	2.31E-13	2.54E-13	2.54E-13
pb214	5.77E-15	7.52E-15	9.28E-15	1.12E-14	1.33E-14	1.29E-14
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	5.53E-11	7.88E-11	1.08E-10	1.44E-10	1.87E-10	1.87E-10
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	5.00E-13	6.90E-13	9.16E-13	1.18E-12	1.49E-12	1.49E-12
bi211	1.56E-15	1.89E-15	2.24E-15	2.60E-15	2.97E-15	2.99E-15
bi212	1.53E-14	1.75E-14	1.97E-14	2.19E-14	2.41E-14	2.41E-14
bi213	5.05E-16	6.59E-16	8.14E-16	9.85E-16	1.17E-15	1.14E-15
bi214	4.34E-15	5.59E-15	6.89E-15	8.33E-15	9.91E-15	9.75E-15
ra222	2.80E-27	3.13E-27	3.49E-27	3.85E-27	4.21E-27	4.21E-27
ra223	1.20E-11	1.45E-11	1.72E-11	2.00E-11	2.29E-11	2.29E-11
ra224	1.33E-12	1.53E-12	1.72E-12	1.91E-12	2.09E-12	2.09E-12
ra225	2.44E-13	3.08E-13	3.81E-13	4.61E-13	5.48E-13	5.48E-13
ra226	1.87E-07	2.36E-07	2.91E-07	3.52E-07	4.19E-07	4.19E-07
ra228	6.71E-14	7.76E-14	8.81E-14	9.87E-14	1.09E-13	1.09E-13
ac225	1.65E-13	2.08E-13	2.57E-13	3.11E-13	3.70E-13	3.70E-13
ac227	8.31E-09	1.01E-08	1.19E-08	1.39E-08	1.59E-08	1.59E-08
ac228	8.19E-18	9.47E-18	1.08E-17	1.20E-17	1.33E-17	1.33E-17
th226	1.36E-25	1.53E-25	1.70E-25	1.88E-25	2.06E-25	2.05E-25
th227	1.93E-11	2.34E-11	2.78E-11	3.23E-11	3.69E-11	3.69E-11
th228	2.55E-10	2.91E-10	3.28E-10	3.64E-10	4.00E-10	4.00E-10
th229	4.74E-08	6.00E-08	7.40E-08	8.96E-08	1.07E-07	1.07E-07
th230	1.02E-03	1.15E-03	1.28E-03	1.40E-03	1.53E-03	1.53E-03
th231	3.02E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09
th232	2.07E-04	2.32E-04	2.58E-04	2.84E-04	3.10E-04	3.10E-04
th233	5.29E-17	2.13E-15	2.37E-15	2.61E-15	2.84E-15	7.92E-17
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	2.88E-05	3.24E-05	3.60E-05	3.96E-05	4.32E-05	4.32E-05
pa232	4.74E-13	5.56E-13	6.18E-13	6.80E-13	7.42E-13	7.11E-13
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	1.32E-22	1.48E-22	1.65E-22	1.82E-22	1.99E-22	1.99E-22
u231	4.16E-19	4.67E-19	5.19E-19	5.71E-19	6.23E-19	6.15E-19
u232	1.00E-08	1.14E-08	1.27E-08	1.40E-08	1.53E-08	1.53E-08
u233	5.45E-04	6.13E-04	6.81E-04	7.49E-04	8.17E-04	8.17E-04
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	3.12E-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

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=8.7659E+01mwd, flux= 2.74E+08n/cm**2-sec
0                                                nuclide concentrations, gram atoms
                                                 basis = single reactor assembly
            charge 16436.4 d 18262.7 d 20088.9 d 21915.2 d 21915.2 d
      u239   1.07E-08  3.19E-07  3.19E-07  3.19E-07  3.19E-07  1.06E-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   8.79E-12  8.68E-12  8.67E-12  8.67E-12  8.67E-12  8.67E-12
     np236m  1.97E-12  2.06E-12  2.06E-12  2.06E-12  2.06E-12  1.94E-12
     np236   8.06E-09  9.04E-09  1.00E-08  1.10E-08  1.20E-08  1.20E-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   4.57E-05  4.61E-05  4.61E-05  4.61E-05  4.61E-05  4.53E-05
     np240m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     np240   2.61E-15  9.37E-15  9.37E-15  9.37E-15  9.37E-15  2.58E-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   6.50E-14  7.09E-14  7.73E-14  8.34E-14  8.94E-14  8.93E-14
     pu238   6.44E-03  7.10E-03  7.74E-03  8.35E-03  8.94E-03  8.94E-03
     pu239   2.02E-01  2.27E-01  2.52E-01  2.76E-01  3.01E-01  3.01E-01
     pu240   3.98E-05  5.03E-05  6.20E-05  7.49E-05  8.90E-05  8.90E-05
     pu241   7.05E-09  9.54E-09  1.25E-08  1.59E-08  1.97E-08  1.97E-08
     pu242   6.71E-13  1.05E-12  1.55E-12  2.22E-12  3.06E-12  3.06E-12
     pu243   1.10E-21  2.21E-21  3.28E-21  4.69E-21  6.48E-21  4.95E-21
     pu244    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     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   9.12E-25  1.54E-24  2.26E-24  3.17E-24  4.32E-24  3.87E-24
     am240   4.55E-22  7.07E-22  1.03E-21  1.45E-21  1.98E-21  1.93E-21
     am241   3.66E-09  5.62E-09  8.22E-09  1.16E-08  1.57E-08  1.57E-08
     am242m  7.70E-14  1.33E-13  2.16E-13  3.34E-13  4.97E-13  4.97E-13
     am242   1.19E-16  1.97E-16  2.88E-16  4.06E-16  5.53E-16  5.10E-16
     am243   2.94E-17  5.44E-17  9.46E-17  1.56E-16  2.46E-16  2.46E-16
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   1.98E-25  4.15E-25  7.21E-25  1.19E-24  1.88E-24  1.64E-24
     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               2.74E+08  2.74E+08  2.74E+08  2.74E+08  2.74E-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=    117.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      23741.5 d      25567.7 d      27394.0 d      29220.2 d      29220.3 d
   productions  1.135003E+06  1.135040E+06  1.135077E+06  1.135114E+06  1.135151E+06  1.135151E+06
   absorptions  9.251454E+05  9.252036E+05  9.252616E+05  9.253189E+05  9.253764E+05  9.253763E+05
   k infinity   1.226838E+00  1.226801E+00  1.226764E+00  1.226728E+00  1.226692E+00  1.226692E+00
0                 initial      23741.5 d      25567.7 d      27394.0 d      29220.2 d      29220.3 d
   actinide
   absorptions  9.215212E+05  9.215431E+05  9.215651E+05  9.215869E+05  9.216088E+05  9.216088E+05
   non-actinide
   abs. fracs.  3.917515E-03  3.956497E-03  3.995001E-03  4.033267E-03  4.071355E-03  4.071295E-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=    117.mwd, flux= 2.71E+08n/cm**2-sec
0            initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

   sm149     4.29E-04  4.63E-04  4.97E-04  5.31E-04  5.64E-04  5.64E-04
   sm151     1.50E-05  1.60E-05  1.69E-05  1.78E-05  1.87E-05  1.87E-05
   nd143     8.92E-06  9.66E-06  1.04E-05  1.12E-05  1.19E-05  1.19E-05
   gd155     5.27E-06  5.75E-06  6.24E-06  6.72E-06  7.20E-06  7.20E-06
   gd157     4.31E-06  4.64E-06  4.97E-06  5.30E-06  5.63E-06  5.63E-06
   rh103     4.12E-06  4.46E-06  4.81E-06  5.15E-06  5.50E-06  5.50E-06
   cd113     3.81E-06  4.12E-06  4.42E-06  4.73E-06  5.04E-06  5.04E-06
   eu151     2.76E-06  3.20E-06  3.67E-06  4.16E-06  4.68E-06  4.68E-06
   xe131     2.81E-06  3.04E-06  3.27E-06  3.51E-06  3.74E-06  3.74E-06
```

cs133	2.18E-06	2.36E-06	2.54E-06	2.72E-06	2.90E-06	2.90E-06
xe135	2.29E-06	2.33E-06	2.33E-06	2.33E-06	2.33E-06	2.29E-06
tc 99	1.60E-06	1.74E-06	1.87E-06	2.00E-06	2.14E-06	2.14E-06
sm147	1.52E-06	1.65E-06	1.79E-06	1.92E-06	2.05E-06	2.05E-06
nd145	1.25E-06	1.35E-06	1.45E-06	1.56E-06	1.66E-06	1.66E-06
mo 95	8.58E-07	9.30E-07	1.00E-06	1.07E-06	1.15E-06	1.15E-06
sm152	6.60E-07	7.15E-07	7.70E-07	8.26E-07	8.81E-07	8.81E-07
kr 83	5.42E-07	5.87E-07	6.32E-07	6.78E-07	7.23E-07	7.23E-07
cs135	4.91E-07	5.32E-07	5.73E-07	6.14E-07	6.55E-07	6.55E-07
ru101	3.80E-07	4.12E-07	4.43E-07	4.75E-07	5.06E-07	5.06E-07
pr141	3.68E-07	3.99E-07	4.29E-07	4.60E-07	4.91E-07	4.91E-07
eu153	3.33E-07	3.61E-07	3.89E-07	4.17E-07	4.44E-07	4.44E-07
la139	3.01E-07	3.26E-07	3.52E-07	3.77E-07	4.02E-07	4.02E-07
pm147	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07	2.71E-07
pd105	1.27E-07	1.38E-07	1.48E-07	1.59E-07	1.69E-07	1.69E-07
zr 93	1.22E-07	1.32E-07	1.42E-07	1.52E-07	1.62E-07	1.62E-07
eu155	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07
i129	9.36E-08	1.01E-07	1.09E-07	1.17E-07	1.25E-07	1.25E-07
nd144	8.89E-08	9.64E-08	1.04E-07	1.12E-07	1.19E-07	1.19E-07
ba137	6.62E-08	7.54E-08	8.49E-08	9.46E-08	1.05E-07	1.05E-07
mo 97	6.83E-08	7.39E-08	7.96E-08	8.53E-08	9.10E-08	9.10E-08
ag109	4.82E-08	5.22E-08	5.63E-08	6.04E-08	6.45E-08	6.45E-08
sm150	2.72E-08	3.19E-08	3.69E-08	4.23E-08	4.80E-08	4.80E-08
zr 91	3.21E-08	3.48E-08	3.75E-08	4.02E-08	4.28E-08	4.28E-08
y 89	3.08E-08	3.34E-08	3.60E-08	3.86E-08	4.11E-08	4.11E-08
ru102	2.78E-08	3.01E-08	3.25E-08	3.48E-08	3.71E-08	3.71E-08
ce142	2.51E-08	2.72E-08	2.93E-08	3.14E-08	3.35E-08	3.35E-08
nd148	2.41E-08	2.61E-08	2.81E-08	3.01E-08	3.21E-08	3.21E-08
nd146	2.02E-08	2.19E-08	2.36E-08	2.53E-08	2.70E-08	2.70E-08
ba138	1.73E-08	1.87E-08	2.02E-08	2.16E-08	2.31E-08	2.31E-08
in115	1.66E-08	1.80E-08	1.94E-08	2.08E-08	2.21E-08	2.21E-08
pd108	1.62E-08	1.76E-08	1.90E-08	2.03E-08	2.17E-08	2.17E-08
ce140	1.62E-08	1.75E-08	1.89E-08	2.02E-08	2.16E-08	2.16E-08
xe132	1.45E-08	1.57E-08	1.69E-08	1.81E-08	1.93E-08	1.93E-08
sr 90	1.33E-08	1.38E-08	1.42E-08	1.45E-08	1.48E-08	1.48E-08
mo 98	9.96E-09	1.08E-08	1.16E-08	1.24E-08	1.33E-08	1.33E-08
pd107	9.66E-09	1.05E-08	1.13E-08	1.21E-08	1.29E-08	1.29E-08
mo100	9.65E-09	1.05E-08	1.13E-08	1.21E-08	1.29E-08	1.29E-08
xe134	9.55E-09	1.03E-08	1.11E-08	1.19E-08	1.27E-08	1.27E-08
zr 92	7.76E-09	8.40E-09	9.05E-09	9.69E-09	1.03E-08	1.03E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 32
0 fraction of total absorption rate
power= .00mw, burnup= 117.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

rh105	8.35E-09	8.39E-09	8.39E-09	8.39E-09	8.39E-09	8.36E-09
i127	6.24E-09	6.77E-09	7.29E-09	7.81E-09	8.33E-09	8.33E-09
zr 96	6.04E-09	6.55E-09	7.05E-09	7.55E-09	8.06E-09	8.06E-09
ru104	5.94E-09	6.43E-09	6.93E-09	7.42E-09	7.92E-09	7.92E-09
nd150	5.33E-09	5.77E-09	6.21E-09	6.66E-09	7.10E-09	7.10E-09
xe136	5.16E-09	5.59E-09	6.02E-09	6.45E-09	6.88E-09	6.88E-09
br 81	3.86E-09	4.18E-09	4.50E-09	4.83E-09	5.15E-09	5.15E-09
rb 85	3.57E-09	3.89E-09	4.20E-09	4.51E-09	4.83E-09	4.83E-09
zr 94	3.27E-09	3.54E-09	3.81E-09	4.08E-09	4.35E-09	4.35E-09
cd111	2.51E-09	2.72E-09	2.93E-09	3.15E-09	3.36E-09	3.36E-09
cs137	2.83E-09	2.93E-09	3.03E-09	3.11E-09	3.18E-09	3.18E-09
te130	2.35E-09	2.54E-09	2.74E-09	2.93E-09	3.13E-09	3.13E-09
sm154	2.27E-09	2.46E-09	2.65E-09	2.84E-09	3.03E-09	3.03E-09
rb 87	2.18E-09	2.36E-09	2.55E-09	2.73E-09	2.91E-09	2.91E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09

zr 90	1.45E-09	1.65E-09	1.86E-09	2.07E-09	2.29E-09	2.29E-09
se 77	1.56E-09	1.69E-09	1.82E-09	1.95E-09	2.08E-09	2.08E-09
xe133	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09
ce141	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
pd106	1.07E-09	1.17E-09	1.26E-09	1.35E-09	1.44E-09	1.44E-09
kr 84	1.03E-09	1.11E-09	1.20E-09	1.28E-09	1.37E-09	1.37E-09
se 79	7.98E-10	8.64E-10	9.31E-10	9.97E-10	1.06E-09	1.06E-09
sb121	7.51E-10	8.14E-10	8.77E-10	9.39E-10	1.00E-09	1.00E-09
pm149	9.74E-10	9.81E-10	9.81E-10	9.81E-10	9.80E-10	9.73E-10
nd147	9.27E-10	9.31E-10	9.31E-10	9.30E-10	9.30E-10	9.27E-10
sb123	6.13E-10	6.64E-10	7.15E-10	7.66E-10	8.17E-10	8.17E-10
eu152	4.13E-10	4.98E-10	5.91E-10	6.91E-10	7.99E-10	7.99E-10
kr 86	5.76E-10	6.24E-10	6.72E-10	7.20E-10	7.68E-10	7.68E-10
te128	5.12E-10	5.54E-10	5.97E-10	6.40E-10	6.82E-10	6.82E-10
ce144	6.04E-10	6.04E-10	6.04E-10	6.04E-10	6.04E-10	6.03E-10
kr 85	5.65E-10	5.68E-10	5.70E-10	5.72E-10	5.73E-10	5.73E-10
gd156	4.02E-10	4.36E-10	4.72E-10	5.07E-10	5.42E-10	5.42E-10
se 80	3.72E-10	4.03E-10	4.34E-10	4.65E-10	4.96E-10	4.96E-10
dy161	3.26E-10	3.54E-10	3.81E-10	4.09E-10	4.36E-10	4.36E-10
te125	3.03E-10	3.30E-10	3.57E-10	3.84E-10	4.11E-10	4.11E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10
tb159	2.19E-10	2.37E-10	2.56E-10	2.74E-10	2.92E-10	2.92E-10
li 6	2.12E-10	2.29E-10	2.47E-10	2.64E-10	2.82E-10	2.82E-10
cd112	2.10E-10	2.28E-10	2.46E-10	2.63E-10	2.81E-10	2.81E-10
sn117	1.67E-10	1.81E-10	1.94E-10	2.08E-10	2.22E-10	2.22E-10
eu154	1.43E-10	1.57E-10	1.71E-10	1.85E-10	1.99E-10	1.99E-10
sn119	1.38E-10	1.49E-10	1.60E-10	1.72E-10	1.83E-10	1.83E-10
sn115	1.26E-10	1.36E-10	1.47E-10	1.57E-10	1.68E-10	1.68E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-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	1.44E-10	1.44E-10	1.44E-10	1.44E-10
sr 88	1.06E-10	1.15E-10	1.23E-10	1.32E-10	1.41E-10	1.41E-10
gd152	5.19E-11	6.62E-11	8.28E-11	1.02E-10	1.24E-10	1.24E-10
pm151	1.06E-10	1.10E-10	1.10E-10	1.10E-10	1.10E-10	1.06E-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= 117.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

gd158	7.68E-11	8.39E-11	9.12E-11	9.86E-11	1.06E-10	1.06E-10
pd110	7.51E-11	8.14E-11	8.77E-11	9.40E-11	1.00E-10	1.00E-10
cd114	7.43E-11	8.06E-11	8.70E-11	9.34E-11	9.99E-11	9.99E-11
se 82	7.19E-11	7.78E-11	8.38E-11	8.98E-11	9.58E-11	9.58E-11
sn126	5.77E-11	6.25E-11	6.73E-11	7.21E-11	7.70E-11	7.70E-11
se 78	5.43E-11	5.89E-11	6.34E-11	6.79E-11	7.24E-11	7.24E-11
sn124	4.34E-11	4.71E-11	5.07E-11	5.43E-11	5.79E-11	5.79E-11
dy162	4.28E-11	4.64E-11	5.01E-11	5.38E-11	5.75E-11	5.75E-11
ru 99	3.31E-11	3.81E-11	4.34E-11	4.91E-11	5.51E-11	5.51E-11
dy164	3.94E-11	4.28E-11	4.63E-11	4.97E-11	5.32E-11	5.32E-11
ba140	4.73E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11	4.73E-11
as 75	3.24E-11	3.51E-11	3.78E-11	4.05E-11	4.32E-11	4.32E-11
sm153	3.73E-11	3.83E-11	3.83E-11	3.83E-11	3.83E-11	3.73E-11
eu156	3.44E-11	3.44E-11	3.44E-11	3.44E-11	3.44E-11	3.44E-11
sr 89	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11
ru106	2.53E-11	2.53E-11	2.53E-11	2.53E-11	2.53E-11	2.53E-11
in113	1.65E-11	1.84E-11	2.03E-11	2.23E-11	2.43E-11	2.43E-11
sn118	1.77E-11	1.92E-11	2.07E-11	2.21E-11	2.36E-11	2.36E-11
ba136	1.74E-11	1.89E-11	2.04E-11	2.19E-11	2.34E-11	2.34E-11
cs134	1.59E-11	1.73E-11	1.86E-11	1.99E-11	2.13E-11	2.13E-11
sn122	1.51E-11	1.64E-11	1.76E-11	1.89E-11	2.01E-11	2.01E-11

cd116	1.51E-11	1.63E-11	1.76E-11	1.88E-11	2.01E-11	2.01E-11
gd154	1.00E-11	1.20E-11	1.42E-11	1.65E-11	1.91E-11	1.91E-11
ce143	1.70E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11	1.70E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
sn120	1.13E-11	1.22E-11	1.31E-11	1.41E-11	1.50E-11	1.50E-11
sb125	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
y 90	1.27E-11	1.31E-11	1.35E-11	1.38E-11	1.41E-11	1.41E-11
kr 82	9.75E-12	1.06E-11	1.14E-11	1.23E-11	1.31E-11	1.31E-11
mo 99	1.29E-11	1.32E-11	1.31E-11	1.31E-11	1.31E-11	1.29E-11
dy163	9.51E-12	1.03E-11	1.11E-11	1.20E-11	1.28E-11	1.28E-11
ge 73	8.85E-12	9.59E-12	1.03E-11	1.11E-11	1.18E-11	1.18E-11
pm148m	9.64E-12	9.63E-12	9.63E-12	9.62E-12	9.62E-12	9.61E-12
ru100	5.14E-12	5.96E-12	6.83E-12	7.77E-12	8.76E-12	8.76E-12
xe130	6.14E-12	6.69E-12	7.23E-12	7.78E-12	8.34E-12	8.34E-12
kr 87	8.20E-12	2.31E-11	2.31E-11	2.31E-11	2.31E-11	8.20E-12
te127m	7.47E-12	7.47E-12	7.47E-12	7.47E-12	7.47E-12	7.47E-12
i131	6.76E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12	6.76E-12
mo 96	4.74E-12	5.19E-12	5.66E-12	6.13E-12	6.61E-12	6.61E-12
sm148	3.23E-12	3.74E-12	4.28E-12	4.87E-12	5.49E-12	5.49E-12
nd142	3.06E-12	3.59E-12	4.16E-12	4.77E-12	5.43E-12	5.43E-12
ba134	2.81E-12	3.31E-12	3.84E-12	4.41E-12	5.03E-12	5.03E-12
ge 76	3.21E-12	3.48E-12	3.75E-12	4.01E-12	4.28E-12	4.28E-12
ba135	2.42E-12	2.83E-12	3.28E-12	3.76E-12	4.28E-12	4.28E-12
pd104	1.99E-12	2.33E-12	2.70E-12	3.10E-12	3.53E-12	3.53E-12
gd160	2.04E-12	2.21E-12	2.38E-12	2.55E-12	2.72E-12	2.72E-12
te126	1.62E-12	1.77E-12	1.91E-12	2.05E-12	2.20E-12	2.20E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ho165	6.55E-13	7.11E-13	7.68E-13	8.25E-13	8.83E-13	8.83E-13

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= 117.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

te124	3.76E-13	4.08E-13	4.40E-13	4.72E-13	5.04E-13	5.04E-13
sr 87	3.69E-13	4.00E-13	4.31E-13	4.62E-13	4.93E-13	4.93E-13
cd110	2.78E-13	3.25E-13	3.76E-13	4.30E-13	4.88E-13	4.88E-13
nb 93	1.95E-13	2.39E-13	2.88E-13	3.42E-13	4.01E-13	4.01E-13
pm148	3.65E-13	3.67E-13	3.67E-13	3.67E-13	3.67E-13	3.63E-13
br 79	1.95E-13	2.29E-13	2.65E-13	3.04E-13	3.46E-13	3.46E-13
ag111	3.17E-13	3.19E-13	3.19E-13	3.19E-13	3.19E-13	3.18E-13
nb 94	2.09E-13	2.26E-13	2.44E-13	2.61E-13	2.78E-13	2.78E-13
eu157	2.76E-13	2.99E-13	2.99E-13	2.99E-13	2.99E-13	2.77E-13
ge 74	1.79E-13	1.94E-13	2.09E-13	2.24E-13	2.39E-13	2.39E-13
cd115m	2.37E-13	2.37E-13	2.37E-13	2.37E-13	2.38E-13	2.37E-13
xe129	1.10E-13	1.29E-13	1.50E-13	1.72E-13	1.96E-13	1.96E-13
ag107	1.04E-13	1.22E-13	1.41E-13	1.62E-13	1.84E-13	1.84E-13
ge 72	1.20E-13	1.30E-13	1.40E-13	1.50E-13	1.60E-13	1.60E-13
sr 86	1.10E-13	1.19E-13	1.29E-13	1.39E-13	1.48E-13	1.48E-13
se 76	7.09E-14	7.69E-14	8.30E-14	8.90E-14	9.51E-14	9.51E-14
cs136	5.68E-14	5.72E-14	5.73E-14	5.75E-14	5.76E-14	5.74E-14
dy160	2.73E-14	3.08E-14	3.46E-14	3.85E-14	4.26E-14	4.26E-14
xe128	2.73E-14	3.05E-14	3.39E-14	3.74E-14	4.11E-14	4.11E-14
sn125	2.90E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14	2.90E-14
er166	1.83E-14	2.00E-14	2.17E-14	2.34E-14	2.52E-14	2.52E-14
ru105	2.26E-14	2.95E-14	2.95E-14	2.95E-14	2.95E-14	2.26E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.44E-15	9.60E-15	9.60E-15	9.60E-15	9.60E-15	9.44E-15
rb 88	8.88E-15	1.30E-14	1.30E-14	1.30E-14	1.30E-14	8.88E-15
i135	8.34E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14	8.34E-15
sn116	4.37E-15	5.11E-15	5.90E-15	6.76E-15	7.67E-15	7.67E-15

kr 80	5.05E-15	5.48E-15	5.90E-15	6.33E-15	6.75E-15	6.75E-15
te122	2.39E-15	2.74E-15	3.12E-15	3.52E-15	3.95E-15	3.95E-15
sb126	3.10E-15	3.13E-15	3.14E-15	3.14E-15	3.15E-15	3.14E-15
sb124	2.13E-15	2.14E-15	2.14E-15	2.14E-15	2.14E-15	2.14E-15
in117m	1.85E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15	1.85E-15
tb160	9.20E-16	9.72E-16	1.02E-15	1.08E-15	1.13E-15	1.13E-15
te134	8.72E-16	5.89E-15	5.89E-15	5.89E-15	5.89E-15	8.72E-16
i130	7.14E-16	7.99E-16	8.06E-16	8.12E-16	8.18E-16	7.37E-16
in117	5.51E-16	6.20E-16	6.20E-16	6.20E-16	6.20E-16	5.51E-16
be 9	3.99E-16	4.32E-16	4.65E-16	4.98E-16	5.31E-16	5.31E-16
pr142	3.90E-16	4.53E-16	4.87E-16	5.22E-16	5.57E-16	5.20E-16
te123	3.64E-16	3.95E-16	4.26E-16	4.58E-16	4.90E-16	4.90E-16
rb 86	2.65E-16	2.68E-16	2.70E-16	2.72E-16	2.74E-16	2.73E-16
li 7	1.63E-16	1.77E-16	1.90E-16	2.04E-16	2.17E-16	2.17E-16
dy165	1.31E-16	2.28E-16	2.29E-16	2.30E-16	2.32E-16	1.34E-16
er167	9.04E-17	1.00E-16	1.10E-16	1.21E-16	1.32E-16	1.32E-16
ge 75	3.41E-17	8.70E-17	8.70E-17	8.70E-17	8.70E-17	3.41E-17
cd118	2.48E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16	2.48E-17
cd108	3.82E-18	4.19E-18	4.57E-18	4.95E-18	5.35E-18	5.35E-18
cs134m	1.94E-18	3.31E-18	3.56E-18	3.82E-18	4.08E-18	2.58E-18
sn114	6.14E-19	7.42E-19	8.84E-19	1.04E-18	1.21E-18	1.21E-18
in119m	4.22E-19	3.03E-17	3.03E-17	3.03E-17	3.03E-17	4.22E-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= 117.mwd, flux= 2.71E+08n/cm**2-sec
0 initial 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d

cd109	2.90E-19	2.97E-19	3.07E-19	3.14E-19	3.24E-19	3.24E-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=1.1688E+02mwd, flux= 2.71E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

charge	23741.5 d	25567.7 d	27394.0 d	29220.2 d	29220.3 d
h 1	5.18E-06	5.61E-06	6.04E-06	6.46E-06	6.89E-06	6.89E-06
h 2	1.54E-08	1.66E-08	1.79E-08	1.92E-08	2.04E-08	2.04E-08
h 3	3.21E-11	3.23E-11	3.25E-11	3.26E-11	3.28E-11	3.28E-11
h 4	.00E+00	1.31E-34	1.32E-34	1.33E-34	1.33E-34	.00E+00
he 3	8.07E-11	8.97E-11	9.88E-11	1.08E-10	1.17E-10	1.17E-10
he 4	8.57E-07	9.27E-07	9.98E-07	1.07E-06	1.14E-06	1.14E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.03E-07	1.11E-07	1.20E-07	1.28E-07	1.37E-07	1.37E-07
ne 21	2.03E-13	2.35E-13	2.70E-13	3.08E-13	3.47E-13	3.47E-13
ne 22	6.30E-10	6.85E-10	7.40E-10	7.95E-10	8.50E-10	8.50E-10
ne 23	7.05E-30	7.04E-15	7.04E-15	7.04E-15	7.04E-15	7.04E-30
na 22	4.14E-11	4.14E-11	4.14E-11	4.14E-11	4.14E-11	4.14E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.60E-08	2.77E-08	2.77E-08	2.77E-08	2.77E-08	2.53E-08
na 24m	4.68E-30	4.55E-15	4.55E-15	4.55E-15	4.55E-15	4.55E-30
na 25	3.85E-42	4.15E-27	4.52E-27	4.89E-27	5.27E-27	5.30E-42
mg 24	7.94E-04	8.51E-04	9.08E-04	9.66E-04	1.02E-03	1.02E-03
mg 25	1.33E-10	1.46E-10	1.58E-10	1.71E-10	1.85E-10	1.85E-10
mg 26	1.54E-08	1.66E-08	1.79E-08	1.92E-08	2.04E-08	2.04E-08
mg 27	4.55E-16	2.10E-12	2.10E-12	2.10E-12	2.10E-12	4.54E-16
mg 28	4.03E-24	4.29E-24	4.29E-24	4.29E-24	4.29E-24	4.03E-24
al 27	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04	4.99E+04
al 28	2.88E-25	2.05E-10	2.05E-10	2.05E-10	2.05E-10	2.80E-25
al 29	2.53E-31	5.60E-26	6.44E-26	7.34E-26	8.29E-26	4.34E-31
al 30	.00E+00	6.93E-38	8.60E-38	1.05E-37	1.27E-37	.00E+00
si 28	2.31E-03	2.48E-03	2.64E-03	2.81E-03	2.98E-03	2.98E-03

si 29	1.88E-10	2.19E-10	2.52E-10	2.87E-10	3.25E-10	3.25E-10
si 30	1.61E-17	2.03E-17	2.52E-17	3.08E-17	3.71E-17	3.71E-17
si 31	6.95E-30	1.46E-29	1.81E-29	2.21E-29	2.67E-29	1.61E-29
si 32	1.19E-36	1.63E-36	2.17E-36	2.83E-36	3.64E-36	3.64E-36
totals	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04	5.75E+04
0 flux		2.71E+08	2.71E+08	2.71E+08	2.71E+08	2.71E-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=1.1688E+02mwd, flux= 2.71E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge 23741.5 d	25567.7 d	27394.0 d	29220.2 d	29220.3 d	
he 4	5.60E-03	6.26E-03	6.95E-03	7.67E-03	8.40E-03	8.40E-03
pb206	1.21E-09	1.62E-09	2.13E-09	2.75E-09	3.48E-09	3.48E-09
pb207	1.15E-08	1.42E-08	1.72E-08	2.06E-08	2.43E-08	2.43E-08
pb208	3.96E-09	4.72E-09	5.54E-09	6.43E-09	7.38E-09	7.38E-09
pb209	5.05E-15	5.89E-15	6.83E-15	7.84E-15	8.92E-15	8.98E-15
pb210	2.42E-09	2.98E-09	3.62E-09	4.32E-09	5.10E-09	5.10E-09
pb211	5.02E-14	5.67E-14	6.34E-14	7.02E-14	7.71E-14	7.70E-14
pb212	2.54E-13	2.76E-13	2.99E-13	3.21E-13	3.44E-13	3.44E-13
pb214	1.29E-14	1.56E-14	1.81E-14	2.08E-14	2.37E-14	2.29E-14
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	1.87E-10	2.38E-10	2.97E-10	3.65E-10	4.44E-10	4.44E-10
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	1.49E-12	1.84E-12	2.23E-12	2.66E-12	3.14E-12	3.14E-12
bi211	2.99E-15	3.36E-15	3.76E-15	4.16E-15	4.57E-15	4.60E-15
bi212	2.41E-14	2.62E-14	2.84E-14	3.05E-14	3.26E-14	3.26E-14
bi213	1.14E-15	1.38E-15	1.60E-15	1.83E-15	2.08E-15	2.02E-15
bi214	9.75E-15	1.16E-14	1.35E-14	1.54E-14	1.76E-14	1.73E-14
po210	4.11E-11	5.07E-11	6.15E-11	7.35E-11	8.68E-11	8.68E-11
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	3.31E-20	3.71E-20	4.15E-20	4.60E-20	5.05E-20	5.08E-20
po212	1.27E-24	1.38E-24	1.49E-24	1.60E-24	1.71E-24	1.71E-24
po213	1.71E-24	2.07E-24	2.40E-24	2.75E-24	3.13E-24	3.04E-24
po214	1.34E-21	1.60E-21	1.85E-21	2.13E-21	2.42E-21	2.38E-21
po215	4.12E-20	4.66E-20	5.21E-20	5.77E-20	6.33E-20	6.33E-20
po216	9.61E-19	1.05E-18	1.13E-18	1.22E-18	1.30E-18	1.30E-18
po218	1.54E-15	1.81E-15	2.10E-15	2.41E-15	2.74E-15	2.74E-15
ra222	4.21E-27	4.55E-27	4.90E-27	5.25E-27	5.60E-27	5.60E-27
ra223	2.29E-11	2.59E-11	2.89E-11	3.20E-11	3.52E-11	3.52E-11
ra224	2.09E-12	2.28E-12	2.47E-12	2.65E-12	2.84E-12	2.84E-12
ra225	5.48E-13	6.43E-13	7.46E-13	8.56E-13	9.74E-13	9.74E-13
ra226	4.19E-07	4.91E-07	5.70E-07	6.53E-07	7.43E-07	7.43E-07
ra228	1.09E-13	1.20E-13	1.30E-13	1.41E-13	1.51E-13	1.51E-13
ac225	3.70E-13	4.35E-13	5.04E-13	5.79E-13	6.58E-13	6.58E-13
ac227	1.59E-08	1.80E-08	2.01E-08	2.22E-08	2.44E-08	2.44E-08
ac228	1.33E-17	1.46E-17	1.59E-17	1.72E-17	1.85E-17	1.85E-17
th226	2.05E-25	2.22E-25	2.39E-25	2.56E-25	2.73E-25	2.73E-25
th227	3.69E-11	4.17E-11	4.67E-11	5.17E-11	5.67E-11	5.67E-11
th228	4.00E-10	4.35E-10	4.71E-10	5.06E-10	5.41E-10	5.41E-10
th229	1.07E-07	1.25E-07	1.45E-07	1.67E-07	1.89E-07	1.89E-07
th230	1.53E-03	1.66E-03	1.79E-03	1.92E-03	2.04E-03	2.04E-03
th231	3.03E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09
th232	3.10E-04	3.36E-04	3.61E-04	3.87E-04	4.13E-04	4.13E-04
th233	7.92E-17	3.08E-15	3.31E-15	3.55E-15	3.79E-15	1.05E-16
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	4.32E-05	4.68E-05	5.04E-05	5.40E-05	5.76E-05	5.76E-05
pa232	7.11E-13	8.04E-13	8.66E-13	9.27E-13	9.89E-13	9.48E-13
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
1
     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=1.1688E+02mwd, flux= 2.71E+08n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = single reactor assembly
            charge 23741.5 d 25567.7 d 27394.0 d 29220.2 d 29220.3 d
      u230  1.99E-22  2.15E-22  2.32E-22  2.48E-22  2.65E-22  2.64E-22
      u231  6.15E-19  6.72E-19  7.24E-19  7.75E-19  8.27E-19  8.16E-19
      u232  1.53E-08  1.66E-08  1.79E-08  1.92E-08  2.05E-08  2.05E-08
      u233  8.17E-04  8.86E-04  9.54E-04  1.02E-03  1.09E-03  1.09E-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  1.75E+02  1.75E+02  1.75E+02  1.75E+02  1.75E+02  1.75E+02
      u237  3.09E-06  3.10E-06  3.10E-06  3.10E-06  3.10E-06  3.07E-06
      u238  3.64E+04  3.64E+04  3.64E+04  3.64E+04  3.64E+04  3.64E+04
      u239  1.06E-08  3.18E-07  3.18E-07  3.18E-07  3.18E-07  1.06E-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  8.67E-12  8.63E-12  8.63E-12  8.62E-12  8.62E-12  8.62E-12
     np236m 1.94E-12  2.05E-12  2.05E-12  2.05E-12  2.05E-12  1.93E-12
     np236  1.20E-08  1.29E-08  1.39E-08  1.49E-08  1.59E-08  1.59E-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  4.53E-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  2.58E-15  9.33E-15  9.33E-15  9.33E-15  9.33E-15  2.57E-15
     np241   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     pu236  1.12E-09  1.11E-09  1.11E-09  1.11E-09  1.11E-09  1.11E-09
     pu237  8.93E-14  9.46E-14  1.00E-13  1.05E-13  1.10E-13  1.10E-13
     pu238  8.94E-03  9.50E-03  1.00E-02  1.06E-02  1.11E-02  1.11E-02
     pu239  3.01E-01  3.26E-01  3.50E-01  3.75E-01  4.00E-01  4.00E-01
     pu240  8.90E-05  1.04E-04  1.21E-04  1.38E-04  1.57E-04  1.57E-04
     pu241  1.97E-08  2.40E-08  2.88E-08  3.41E-08  3.98E-08  3.98E-08
     pu242  3.06E-12  4.13E-12  5.43E-12  7.01E-12  8.89E-12  8.89E-12
     pu243  4.95E-21  8.69E-21  1.14E-20  1.48E-20  1.87E-20  1.43E-20
     pu244   .00E+00   .00E+00   .00E+00  1.40E-45  4.20E-45  4.20E-45
     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  3.87E-24  5.70E-24  7.39E-24  9.40E-24  1.18E-23  1.05E-23
     am240  1.93E-21  2.61E-21  3.39E-21  4.30E-21  5.38E-21  5.24E-21
     am241  1.57E-08  2.09E-08  2.70E-08  3.44E-08  4.30E-08  4.30E-08
     am242m 4.97E-13  7.13E-13  9.96E-13  1.36E-12  1.81E-12  1.81E-12
     am242  5.10E-16  7.34E-16  9.52E-16  1.21E-15  1.52E-15  1.40E-15
     am243  2.46E-16  3.74E-16  5.51E-16  7.91E-16  1.11E-15  1.11E-15
     am244m  .00E+00   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244  1.64E-24  2.84E-24  4.19E-24  6.01E-24  8.42E-24  7.38E-24
     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              2.71E+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  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   39
       power=    .00mw, burnup=    146.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      31046.6 d      32872.8 d      34699.1 d      36525.3 d
    productions  1.138556E+06  1.138592E+06  1.138629E+06  1.138666E+06  1.138703E+06
    absorptions  9.278101E+05  9.278671E+05  9.279241E+05  9.279809E+05  9.280372E+05
    k infinity   1.227143E+00  1.227107E+00  1.227072E+00  1.227036E+00  1.227001E+00
0                  initial      31046.6 d      32872.8 d      34699.1 d      36525.3 d
    actinide
    absorptions  9.240538E+05  9.240755E+05  9.240974E+05  9.241194E+05  9.241413E+05
    non-actinide
    abs. fracs.  4.048586E-03  4.086375E-03  4.123926E-03  4.161179E-03  4.198015E-03
```

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 40
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

sm149	5.65E-04	5.98E-04	6.31E-04	6.64E-04	6.96E-04
sm151	1.87E-05	1.95E-05	2.03E-05	2.10E-05	2.18E-05
nd143	1.19E-05	1.26E-05	1.34E-05	1.41E-05	1.49E-05
gd155	7.20E-06	7.69E-06	8.17E-06	8.64E-06	9.12E-06
eu151	4.68E-06	5.22E-06	5.79E-06	6.37E-06	6.98E-06
gd157	5.63E-06	5.95E-06	6.27E-06	6.59E-06	6.90E-06
rh103	5.50E-06	5.84E-06	6.18E-06	6.53E-06	6.87E-06
cd113	5.04E-06	5.34E-06	5.65E-06	5.95E-06	6.25E-06
xe131	3.74E-06	3.97E-06	4.21E-06	4.44E-06	4.67E-06
cs133	2.90E-06	3.08E-06	3.26E-06	3.45E-06	3.63E-06
tc 99	2.13E-06	2.27E-06	2.40E-06	2.53E-06	2.67E-06
sm147	2.05E-06	2.19E-06	2.32E-06	2.46E-06	2.59E-06
xe135	2.29E-06	2.33E-06	2.33E-06	2.33E-06	2.33E-06
nd145	1.66E-06	1.76E-06	1.87E-06	1.97E-06	2.08E-06
mo 95	1.14E-06	1.22E-06	1.29E-06	1.36E-06	1.43E-06
sm152	8.81E-07	9.36E-07	9.91E-07	1.05E-06	1.10E-06
kr 83	7.23E-07	7.68E-07	8.13E-07	8.58E-07	9.04E-07
cs135	6.55E-07	6.96E-07	7.37E-07	7.78E-07	8.18E-07
ru101	5.06E-07	5.38E-07	5.69E-07	6.01E-07	6.32E-07
pr141	4.91E-07	5.22E-07	5.52E-07	5.83E-07	6.14E-07
eu153	4.44E-07	4.72E-07	5.00E-07	5.28E-07	5.55E-07
la139	4.02E-07	4.27E-07	4.52E-07	4.77E-07	5.02E-07
pm147	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
pd105	1.69E-07	1.80E-07	1.90E-07	2.01E-07	2.12E-07
zr 93	1.62E-07	1.72E-07	1.82E-07	1.92E-07	2.03E-07
eu155	1.58E-07	1.58E-07	1.58E-07	1.59E-07	1.59E-07
i129	1.25E-07	1.33E-07	1.40E-07	1.48E-07	1.56E-07
nd144	1.19E-07	1.27E-07	1.34E-07	1.42E-07	1.49E-07
ba137	1.05E-07	1.15E-07	1.25E-07	1.36E-07	1.47E-07
mo 97	9.10E-08	9.67E-08	1.02E-07	1.08E-07	1.14E-07
ag109	6.45E-08	6.86E-08	7.28E-08	7.69E-08	8.11E-08
sm150	4.80E-08	5.41E-08	6.05E-08	6.72E-08	7.43E-08
zr 91	4.29E-08	4.55E-08	4.82E-08	5.09E-08	5.36E-08
y 89	4.12E-08	4.37E-08	4.63E-08	4.89E-08	5.15E-08
ru102	3.71E-08	3.94E-08	4.17E-08	4.41E-08	4.64E-08
ce142	3.35E-08	3.56E-08	3.77E-08	3.97E-08	4.18E-08
nd148	3.21E-08	3.41E-08	3.61E-08	3.81E-08	4.01E-08
nd146	2.70E-08	2.87E-08	3.03E-08	3.20E-08	3.37E-08
ba138	2.31E-08	2.45E-08	2.60E-08	2.74E-08	2.88E-08
in115	2.21E-08	2.35E-08	2.49E-08	2.63E-08	2.77E-08
pd108	2.17E-08	2.31E-08	2.44E-08	2.58E-08	2.72E-08
ce140	2.16E-08	2.29E-08	2.43E-08	2.56E-08	2.70E-08
xe132	1.93E-08	2.05E-08	2.17E-08	2.29E-08	2.41E-08
mo 98	1.33E-08	1.41E-08	1.49E-08	1.58E-08	1.66E-08
pd107	1.29E-08	1.37E-08	1.45E-08	1.53E-08	1.61E-08
mo100	1.29E-08	1.37E-08	1.45E-08	1.53E-08	1.61E-08
xe134	1.27E-08	1.35E-08	1.43E-08	1.51E-08	1.59E-08
sr 90	1.48E-08	1.51E-08	1.54E-08	1.56E-08	1.58E-08
zr 92	1.03E-08	1.10E-08	1.16E-08	1.23E-08	1.29E-08

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= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

i127	8.33E-09	8.85E-09	9.37E-09	9.89E-09	1.04E-08

zr 96	8.05E-09	8.55E-09	9.05E-09	9.56E-09	1.01E-08
ru104	7.92E-09	8.41E-09	8.91E-09	9.40E-09	9.90E-09
nd150	7.10E-09	7.54E-09	7.99E-09	8.43E-09	8.87E-09
xe136	6.88E-09	7.31E-09	7.74E-09	8.17E-09	8.60E-09
rh105	8.36E-09	8.40E-09	8.40E-09	8.40E-09	8.40E-09
br 81	5.15E-09	5.47E-09	5.79E-09	6.11E-09	6.43E-09
rb 85	4.83E-09	5.14E-09	5.46E-09	5.77E-09	6.08E-09
zr 94	4.35E-09	4.62E-09	4.90E-09	5.17E-09	5.44E-09
cd111	3.36E-09	3.57E-09	3.78E-09	3.99E-09	4.20E-09
te130	3.13E-09	3.33E-09	3.52E-09	3.72E-09	3.91E-09
sm154	3.03E-09	3.22E-09	3.41E-09	3.60E-09	3.79E-09
rb 87	2.91E-09	3.09E-09	3.27E-09	3.45E-09	3.64E-09
cs137	3.18E-09	3.24E-09	3.30E-09	3.35E-09	3.40E-09
zr 90	2.29E-09	2.51E-09	2.73E-09	2.96E-09	3.19E-09
pr143	2.68E-09	2.68E-09	2.68E-09	2.68E-09	2.68E-09
se 77	2.08E-09	2.21E-09	2.34E-09	2.47E-09	2.60E-09
xe133	2.03E-09	2.03E-09	2.03E-09	2.03E-09	2.03E-09
pd106	1.44E-09	1.53E-09	1.62E-09	1.72E-09	1.81E-09
kr 84	1.37E-09	1.45E-09	1.54E-09	1.62E-09	1.71E-09
ce141	1.61E-09	1.61E-09	1.61E-09	1.61E-09	1.61E-09
se 79	1.06E-09	1.13E-09	1.20E-09	1.26E-09	1.33E-09
eu152	8.00E-10	9.15E-10	1.04E-09	1.16E-09	1.30E-09
sb121	1.00E-09	1.06E-09	1.13E-09	1.19E-09	1.25E-09
sb123	8.17E-10	8.68E-10	9.19E-10	9.70E-10	1.02E-09
pm149	9.74E-10	9.81E-10	9.81E-10	9.81E-10	9.81E-10
kr 86	7.69E-10	8.17E-10	8.65E-10	9.13E-10	9.61E-10
nd147	9.26E-10	9.30E-10	9.30E-10	9.30E-10	9.30E-10
te128	6.82E-10	7.25E-10	7.68E-10	8.10E-10	8.53E-10
gd156	5.42E-10	5.78E-10	6.14E-10	6.50E-10	6.86E-10
se 80	4.96E-10	5.27E-10	5.58E-10	5.89E-10	6.20E-10
ce144	6.04E-10	6.04E-10	6.04E-10	6.04E-10	6.03E-10
kr 85	5.73E-10	5.74E-10	5.75E-10	5.75E-10	5.76E-10
dy161	4.36E-10	4.64E-10	4.92E-10	5.20E-10	5.48E-10
te125	4.11E-10	4.39E-10	4.66E-10	4.93E-10	5.20E-10
tb159	2.92E-10	3.11E-10	3.29E-10	3.47E-10	3.66E-10
ru103	3.58E-10	3.58E-10	3.58E-10	3.58E-10	3.58E-10
li 6	2.82E-10	3.00E-10	3.17E-10	3.35E-10	3.53E-10
cd112	2.81E-10	2.98E-10	3.16E-10	3.34E-10	3.51E-10
sn117	2.22E-10	2.36E-10	2.50E-10	2.64E-10	2.78E-10
eu154	1.99E-10	2.13E-10	2.28E-10	2.42E-10	2.56E-10
gd152	1.24E-10	1.48E-10	1.76E-10	2.07E-10	2.41E-10
sn119	1.83E-10	1.95E-10	2.06E-10	2.18E-10	2.29E-10
sn115	1.68E-10	1.78E-10	1.89E-10	1.99E-10	2.10E-10
sr 88	1.41E-10	1.50E-10	1.59E-10	1.68E-10	1.76E-10
zr 95	1.65E-10	1.65E-10	1.65E-10	1.65E-10	1.65E-10
nb 95	1.53E-10	1.53E-10	1.53E-10	1.53E-10	1.53E-10
y 91	1.44E-10	1.44E-10	1.44E-10	1.44E-10	1.44E-10
gd158	1.06E-10	1.14E-10	1.21E-10	1.29E-10	1.37E-10

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= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

cd114	9.98E-11	1.06E-10	1.13E-10	1.19E-10	1.26E-10
pd110	1.00E-10	1.07E-10	1.13E-10	1.19E-10	1.26E-10
se 82	9.58E-11	1.02E-10	1.08E-10	1.14E-10	1.20E-10
pm151	1.06E-10	1.11E-10	1.11E-10	1.11E-10	1.11E-10
sn126	7.70E-11	8.18E-11	8.66E-11	9.15E-11	9.63E-11
se 78	7.24E-11	7.70E-11	8.15E-11	8.60E-11	9.06E-11
ru 99	5.51E-11	6.15E-11	6.82E-11	7.53E-11	8.27E-11

dy162	5.75E-11	6.12E-11	6.49E-11	6.86E-11	7.24E-11
sn124	5.79E-11	6.15E-11	6.51E-11	6.88E-11	7.24E-11
dy164	5.32E-11	5.67E-11	6.02E-11	6.37E-11	6.73E-11
as 75	4.32E-11	4.59E-11	4.86E-11	5.13E-11	5.40E-11
ba140	4.73E-11	4.75E-11	4.75E-11	4.75E-11	4.75E-11
sm153	3.73E-11	3.83E-11	3.83E-11	3.83E-11	3.83E-11
eu156	3.44E-11	3.45E-11	3.45E-11	3.45E-11	3.45E-11
in113	2.43E-11	2.62E-11	2.82E-11	3.02E-11	3.22E-11
gd154	1.91E-11	2.18E-11	2.47E-11	2.78E-11	3.11E-11
sr 89	3.09E-11	3.09E-11	3.09E-11	3.09E-11	3.09E-11
sn118	2.36E-11	2.51E-11	2.65E-11	2.80E-11	2.95E-11
ba136	2.34E-11	2.49E-11	2.64E-11	2.79E-11	2.94E-11
cs134	2.13E-11	2.26E-11	2.40E-11	2.53E-11	2.67E-11
ru106	2.53E-11	2.53E-11	2.54E-11	2.54E-11	2.54E-11
sn122	2.01E-11	2.14E-11	2.26E-11	2.39E-11	2.52E-11
cd116	2.01E-11	2.13E-11	2.26E-11	2.38E-11	2.51E-11
kr 87	8.20E-12	2.31E-11	2.31E-11	2.31E-11	2.31E-11
sn120	1.50E-11	1.60E-11	1.69E-11	1.78E-11	1.88E-11
ce143	1.70E-11	1.76E-11	1.76E-11	1.76E-11	1.76E-11
kr 82	1.31E-11	1.40E-11	1.48E-11	1.57E-11	1.66E-11
dy163	1.28E-11	1.36E-11	1.45E-11	1.53E-11	1.62E-11
la140	1.53E-11	1.53E-11	1.53E-11	1.53E-11	1.53E-11
y 90	1.41E-11	1.44E-11	1.46E-11	1.48E-11	1.50E-11
sb125	1.49E-11	1.49E-11	1.49E-11	1.49E-11	1.49E-11
ge 73	1.18E-11	1.25E-11	1.33E-11	1.40E-11	1.48E-11
ru100	8.76E-12	9.82E-12	1.09E-11	1.21E-11	1.33E-11
mo 99	1.29E-11	1.31E-11	1.31E-11	1.31E-11	1.31E-11
xe130	8.34E-12	8.90E-12	9.46E-12	1.00E-11	1.06E-11
pm148m	9.62E-12	9.62E-12	9.62E-12	9.62E-12	9.62E-12
mo 96	6.61E-12	7.10E-12	7.60E-12	8.11E-12	8.63E-12
nd142	5.43E-12	6.13E-12	6.87E-12	7.66E-12	8.48E-12
sm148	5.49E-12	6.15E-12	6.84E-12	7.58E-12	8.34E-12
ba134	5.03E-12	5.69E-12	6.38E-12	7.12E-12	7.89E-12
te127m	7.48E-12	7.48E-12	7.48E-12	7.48E-12	7.48E-12
i131	6.76E-12	6.78E-12	6.78E-12	6.78E-12	6.78E-12
ba135	4.28E-12	4.83E-12	5.41E-12	6.02E-12	6.67E-12
pd104	3.53E-12	3.98E-12	4.46E-12	4.97E-12	5.50E-12
ge 76	4.28E-12	4.55E-12	4.82E-12	5.08E-12	5.35E-12
gd160	2.72E-12	2.89E-12	3.06E-12	3.23E-12	3.41E-12
te126	2.20E-12	2.34E-12	2.49E-12	2.63E-12	2.78E-12
te129m	1.80E-12	1.80E-12	1.80E-12	1.80E-12	1.80E-12
ho165	8.83E-13	9.40E-13	9.98E-13	1.06E-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 43
0 fraction of total absorption rate
power= .00mw, burnup= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

cd110	4.89E-13	5.50E-13	6.16E-13	6.85E-13	7.59E-13
nb 93	4.01E-13	4.65E-13	5.35E-13	6.10E-13	6.90E-13
te124	5.04E-13	5.36E-13	5.68E-13	6.00E-13	6.32E-13
sr 87	4.93E-13	5.23E-13	5.54E-13	5.85E-13	6.16E-13
br 79	3.46E-13	3.91E-13	4.38E-13	4.88E-13	5.41E-13
pm148	3.63E-13	3.67E-13	3.67E-13	3.67E-13	3.67E-13
nb 94	2.78E-13	2.96E-13	3.13E-13	3.31E-13	3.48E-13
ag111	3.18E-13	3.20E-13	3.20E-13	3.20E-13	3.20E-13
xe129	1.96E-13	2.21E-13	2.48E-13	2.76E-13	3.06E-13
eu157	2.77E-13	3.00E-13	3.00E-13	3.00E-13	3.00E-13
ge 74	2.39E-13	2.54E-13	2.68E-13	2.83E-13	2.98E-13
ag107	1.84E-13	2.08E-13	2.33E-13	2.60E-13	2.88E-13
cd115m	2.37E-13	2.38E-13	2.38E-13	2.38E-13	2.38E-13

ge 72	1.60E-13	1.70E-13	1.81E-13	1.91E-13	2.01E-13
sr 86	1.48E-13	1.58E-13	1.68E-13	1.78E-13	1.89E-13
se 76	9.52E-14	1.01E-13	1.07E-13	1.14E-13	1.20E-13
dy160	4.26E-14	4.69E-14	5.14E-14	5.61E-14	6.09E-14
cs136	5.74E-14	5.77E-14	5.79E-14	5.80E-14	5.81E-14
xe128	4.11E-14	4.49E-14	4.89E-14	5.30E-14	5.72E-14
er166	2.52E-14	2.69E-14	2.87E-14	3.06E-14	3.24E-14
ru105	2.26E-14	2.95E-14	2.95E-14	2.96E-14	2.96E-14
sn125	2.90E-14	2.92E-14	2.92E-14	2.92E-14	2.92E-14
rb 88	8.88E-15	1.30E-14	1.30E-14	1.30E-14	1.30E-14
sn116	7.67E-15	8.63E-15	9.66E-15	1.07E-14	1.19E-14
i135	8.34E-15	1.02E-14	1.02E-14	1.02E-14	1.02E-14
sn123	1.01E-14	1.01E-14	1.01E-14	1.01E-14	1.01E-14
te132	9.44E-15	9.60E-15	9.60E-15	9.60E-15	9.60E-15
kr 80	6.76E-15	7.18E-15	7.61E-15	8.04E-15	8.47E-15
te134	8.73E-16	5.89E-15	5.89E-15	5.89E-15	5.89E-15
te122	3.95E-15	4.40E-15	4.87E-15	5.37E-15	5.89E-15
sb126	3.14E-15	3.16E-15	3.17E-15	3.18E-15	3.19E-15
sb124	2.14E-15	2.15E-15	2.15E-15	2.15E-15	2.15E-15
in117m	1.86E-15	2.11E-15	2.11E-15	2.11E-15	2.11E-15
tb160	1.13E-15	1.18E-15	1.23E-15	1.28E-15	1.33E-15
i130	7.37E-16	8.25E-16	8.31E-16	8.38E-16	8.44E-16
pr142	5.20E-16	5.92E-16	6.27E-16	6.61E-16	6.96E-16
be 9	5.31E-16	5.64E-16	5.97E-16	6.30E-16	6.64E-16
in117	5.52E-16	6.21E-16	6.21E-16	6.21E-16	6.21E-16
te123	4.90E-16	5.22E-16	5.53E-16	5.86E-16	6.18E-16
rb 86	2.73E-16	2.76E-16	2.78E-16	2.80E-16	2.82E-16
li 7	2.17E-16	2.31E-16	2.45E-16	2.58E-16	2.72E-16
dy165	1.34E-16	2.33E-16	2.34E-16	2.36E-16	2.37E-16
er167	1.32E-16	1.43E-16	1.55E-16	1.67E-16	1.80E-16
cd118	2.48E-17	1.21E-16	1.21E-16	1.21E-16	1.21E-16
ge 75	3.41E-17	8.71E-17	8.70E-17	8.70E-17	8.70E-17
in119m	4.23E-19	3.03E-17	3.03E-17	3.03E-17	3.03E-17
cd108	5.35E-18	5.76E-18	6.17E-18	6.59E-18	7.02E-18
cs134m	2.58E-18	4.33E-18	4.58E-18	4.84E-18	5.09E-18
in119	1.63E-21	2.37E-18	2.37E-18	2.37E-18	2.37E-18

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= 146.mwd, flux= 2.70E+08n/cm**2-sec
0 initial 31046.6 d 32872.8 d 34699.1 d 36525.3 d

sn114	1.21E-18	1.40E-18	1.60E-18	1.81E-18	2.04E-18
cd109	3.24E-19	3.32E-19	3.41E-19	3.50E-19	3.58E-19
ag110	6.39E-23	9.10E-20	9.64E-20	1.02E-19	1.07E-19
in120	.00E+00	3.99E-22	3.99E-22	3.99E-22	3.99E-22
in120m	.00E+00	4.33E-23	4.33E-23	4.33E-23	4.33E-23

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 light elements page 45
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec
0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 31046.6 d	32872.8 d	34699.1 d	36525.3 d	
h 1	6.89E-06	7.31E-06	7.74E-06	8.17E-06	8.59E-06
h 2	2.04E-08	2.17E-08	2.30E-08	2.42E-08	2.55E-08
h 3	3.28E-11	3.28E-11	3.29E-11	3.30E-11	3.30E-11
h 4	.00E+00	1.34E-34	1.34E-34	1.34E-34	1.34E-34
he 3	1.17E-10	1.26E-10	1.35E-10	1.45E-10	1.54E-10
he 4	1.14E-06	1.21E-06	1.28E-06	1.35E-06	1.42E-06
he 6	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
ne 20	1.37E-07	1.45E-07	1.54E-07	1.62E-07	1.71E-07

ne 21	3.47E-13	3.89E-13	4.33E-13	4.79E-13	5.28E-13
ne 22	8.50E-10	9.05E-10	9.60E-10	1.02E-09	1.07E-09
ne 23	7.04E-30	7.04E-15	7.04E-15	7.04E-15	7.04E-15
na 22	4.14E-11	4.14E-11	4.14E-11	4.14E-11	4.14E-11
na 23	7.53E+03	7.53E+03	7.53E+03	7.53E+03	7.53E+03
na 24	2.53E-08	2.75E-08	2.75E-08	2.75E-08	2.75E-08
na 24m	4.55E-30	4.51E-15	4.51E-15	4.51E-15	4.51E-15
na 25	5.30E-42	5.65E-27	6.04E-27	6.43E-27	6.84E-27
mg 24	1.02E-03	1.08E-03	1.14E-03	1.19E-03	1.25E-03
mg 25	1.85E-10	1.98E-10	2.12E-10	2.26E-10	2.40E-10
mg 26	2.04E-08	2.17E-08	2.30E-08	2.42E-08	2.55E-08
mg 27	4.54E-16	2.10E-12	2.10E-12	2.10E-12	2.10E-12
mg 28	4.03E-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
al 28	2.80E-25	2.04E-10	2.04E-10	2.04E-10	2.04E-10
al 29	4.34E-31	9.29E-26	1.04E-25	1.15E-25	1.26E-25
al 30	.00E+00	1.51E-37	1.78E-37	2.08E-37	2.42E-37
si 28	2.98E-03	3.14E-03	3.31E-03	3.47E-03	3.64E-03
si 29	3.25E-10	3.64E-10	4.06E-10	4.49E-10	4.95E-10
si 30	3.71E-17	4.43E-17	5.22E-17	6.11E-17	7.09E-17
si 31	1.61E-29	3.18E-29	3.75E-29	4.39E-29	5.10E-29
si 32	3.64E-36	4.59E-36	5.72E-36	7.04E-36	8.57E-36
totals	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

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 46
power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = single reactor assembly

	charge 31046.6 d	32872.8 d	34699.1 d	36525.3 d	
he 4	8.40E-03	9.16E-03	9.95E-03	1.07E-02	1.16E-02
pb206	3.48E-09	4.34E-09	5.33E-09	6.48E-09	7.78E-09
pb207	2.43E-08	2.84E-08	3.28E-08	3.76E-08	4.27E-08
pb208	7.38E-09	8.40E-09	9.47E-09	1.06E-08	1.18E-08
pb209	8.98E-15	1.01E-14	1.13E-14	1.26E-14	1.39E-14
pb210	5.10E-09	5.95E-09	6.88E-09	7.88E-09	8.96E-09
pb211	7.70E-14	8.41E-14	9.12E-14	9.83E-14	1.06E-13
pb212	3.44E-13	3.66E-13	3.88E-13	4.10E-13	4.32E-13
pb214	2.29E-14	2.67E-14	2.99E-14	3.33E-14	3.68E-14
bi208	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi209	4.44E-10	5.32E-10	6.32E-10	7.43E-10	8.66E-10
bi210m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
bi210	3.14E-12	3.67E-12	4.24E-12	4.85E-12	5.51E-12
bi211	4.60E-15	4.98E-15	5.40E-15	5.83E-15	6.26E-15
bi212	3.26E-14	3.47E-14	3.68E-14	3.89E-14	4.10E-14
bi213	2.02E-15	2.35E-15	2.64E-15	2.94E-15	3.25E-15
bi214	1.73E-14	1.98E-14	2.22E-14	2.47E-14	2.74E-14
po210	8.68E-11	1.01E-10	1.17E-10	1.34E-10	1.52E-10
po211m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
po211	5.08E-20	5.51E-20	5.97E-20	6.44E-20	6.91E-20
po212	1.71E-24	1.82E-24	1.93E-24	2.04E-24	2.15E-24
po213	3.04E-24	3.54E-24	3.96E-24	4.42E-24	4.89E-24
po214	2.38E-21	2.73E-21	3.05E-21	3.40E-21	3.76E-21
po215	6.33E-20	6.91E-20	7.49E-20	8.08E-20	8.67E-20
po216	1.30E-18	1.39E-18	1.47E-18	1.55E-18	1.64E-18
po218	2.74E-15	3.09E-15	3.46E-15	3.85E-15	4.26E-15
ra222	5.60E-27	5.94E-27	6.29E-27	6.64E-27	6.98E-27
ra223	3.52E-11	3.83E-11	4.16E-11	4.48E-11	4.81E-11
ra224	2.84E-12	3.02E-12	3.20E-12	3.39E-12	3.57E-12
ra225	9.74E-13	1.10E-12	1.23E-12	1.37E-12	1.52E-12

ra226	7.43E-07	8.38E-07	9.39E-07	1.05E-06	1.16E-06
ra228	1.51E-13	1.62E-13	1.73E-13	1.83E-13	1.94E-13
ac225	6.58E-13	7.43E-13	8.33E-13	9.28E-13	1.03E-12
ac227	2.44E-08	2.66E-08	2.89E-08	3.11E-08	3.34E-08
ac228	1.85E-17	1.98E-17	2.11E-17	2.24E-17	2.37E-17
th226	2.73E-25	2.90E-25	3.07E-25	3.24E-25	3.41E-25
th227	5.67E-11	6.19E-11	6.71E-11	7.24E-11	7.77E-11
th228	5.41E-10	5.76E-10	6.11E-10	6.46E-10	6.81E-10
th229	1.89E-07	2.14E-07	2.40E-07	2.67E-07	2.96E-07
th230	2.04E-03	2.17E-03	2.30E-03	2.43E-03	2.55E-03
th231	3.03E-09	3.03E-09	3.03E-09	3.03E-09	3.03E-09
th232	4.13E-04	4.39E-04	4.65E-04	4.91E-04	5.16E-04
th233	1.05E-16	4.02E-15	4.26E-15	4.50E-15	4.73E-15
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	5.76E-05	6.12E-05	6.48E-05	6.83E-05	7.19E-05
pa232	9.48E-13	1.05E-12	1.11E-12	1.17E-12	1.24E-12
pa233	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
pa234	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

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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=1.4610E+02mwd, flux= 2.79E+08n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = single reactor assembly

	charge 31046.6 d	32872.8 d	34699.1 d	36525.3 d	
u230	2.64E-22	2.81E-22	2.97E-22	3.14E-22	3.30E-22
u231	8.16E-19	8.78E-19	9.29E-19	9.81E-19	1.03E-18
u232	2.05E-08	2.17E-08	2.30E-08	2.43E-08	2.55E-08
u233	1.09E-03	1.16E-03	1.23E-03	1.29E-03	1.36E-03
u234	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
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02
u237	3.07E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06
u238	3.64E+04	3.64E+04	3.64E+04	3.64E+04	3.64E+04
u239	1.06E-08	3.17E-07	3.17E-07	3.17E-07	3.17E-07
u240	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.62E-12	8.61E-12	8.61E-12	8.61E-12	8.61E-12
np236m	1.93E-12	2.05E-12	2.05E-12	2.05E-12	2.05E-12
np236	1.59E-08	1.68E-08	1.78E-08	1.88E-08	1.97E-08
np237	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
np239	4.51E-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	2.57E-15	9.32E-15	9.32E-15	9.32E-15	9.32E-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	1.10E-13	1.15E-13	1.20E-13	1.24E-13	1.29E-13
pu238	1.11E-02	1.16E-02	1.20E-02	1.25E-02	1.29E-02
pu239	4.00E-01	4.24E-01	4.49E-01	4.73E-01	4.98E-01
pu240	1.57E-04	1.77E-04	1.99E-04	2.21E-04	2.45E-04
pu241	3.98E-08	4.61E-08	5.28E-08	5.99E-08	6.76E-08
pu242	8.89E-12	1.11E-11	1.37E-11	1.67E-11	2.02E-11
pu243	1.43E-20	2.34E-20	2.89E-20	3.52E-20	4.25E-20
pu244	4.20E-45	8.41E-45	1.54E-44	2.80E-44	4.90E-44
pu245	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu246	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am239	1.05E-23	1.45E-23	1.76E-23	2.11E-23	2.52E-23
am240	5.24E-21	6.62E-21	8.05E-21	9.68E-21	1.15E-20

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     am241   4.30E-08  5.30E-08  6.44E-08  7.75E-08  9.22E-08
     am242m  1.81E-12  2.36E-12  3.04E-12  3.85E-12  4.82E-12
     am242   1.40E-15  1.87E-15  2.28E-15  2.74E-15  3.26E-15
     am243   1.11E-15  1.52E-15  2.05E-15  2.71E-15  3.54E-15
     am244m   .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am244   7.38E-24  1.15E-23  1.55E-23  2.06E-23  2.69E-23
     am245    .00E+00   .00E+00   .00E+00   .00E+00   .00E+00
     am246    .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              2.70E+08  2.70E+08  2.70E+08  2.70E+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
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements         page   48
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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-06  8.59E-06  8.59E-06  8.59E-06  8.59E-06  8.59E-06  8.59E-06
    he  4   5.68E-06  5.68E-06  5.68E-06  5.68E-06  5.68E-06  5.68E-06  5.68E-06
    ne 20   3.41E-06  3.41E-06  3.41E-06  3.41E-06  3.41E-06  3.41E-06  3.41E-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   3.00E-02  3.00E-02  3.00E-02  3.00E-02  3.00E-02  3.00E-02  3.00E-02
    mg 26   6.63E-07  6.63E-07  6.63E-07  6.63E-07  6.63E-07  6.63E-07  6.63E-07
    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   1.02E-01  1.02E-01  1.02E-01  1.02E-01  1.02E-01  1.02E-01  1.02E-01
   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   49
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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     9.58E-07  9.14E-07  8.72E-07  8.33E-07  7.94E-07  7.58E-07  7.23E-07
     na     8.40E+00  4.56E-06  3.65E-06  2.92E-06  2.34E-06  1.87E-06  1.50E-06
   totals   2.55E+01  5.47E-06  4.52E-06  3.75E-06  3.13E-06  2.63E-06  2.22E-06
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements         page   50
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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  6.45E-08  5.16E-08  4.13E-08  3.31E-08  2.65E-08  2.12E-08
   totals    4.76E-01  6.45E-08  5.17E-08  4.14E-08  3.31E-08  2.65E-08  2.13E-08
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2              light elements         page   51
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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   7.39E-08  5.92E-08  4.74E-08  3.80E-08  3.04E-08  2.44E-08  1.95E-08
   total    3.31E-01  5.92E-08  4.74E-08  3.80E-08  3.04E-08  2.44E-08  1.95E-08
1
     sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2                actinides            page   52
 decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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   1.16E-02  1.17E-02  1.19E-02  1.20E-02  1.21E-02  1.23E-02  1.24E-02
    ra226   1.16E-06  1.18E-06  1.20E-06  1.22E-06  1.24E-06  1.25E-06  1.27E-06
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th230	2.55E-03	2.57E-03	2.60E-03	2.62E-03	2.64E-03	2.66E-03	2.68E-03
th232	5.16E-04	5.21E-04	5.25E-04	5.29E-04	5.34E-04	5.38E-04	5.42E-04
th234	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07	5.37E-07
pa231	7.19E-05	7.25E-05	7.31E-05	7.37E-05	7.43E-05	7.49E-05	7.55E-05
pa233	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06	1.46E-06
u233	1.36E-03	1.38E-03	1.39E-03	1.40E-03	1.41E-03	1.43E-03	1.44E-03
u234	9.06E+00	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	7.30E+02
u236	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+02	1.75E+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	1.29E-02	1.28E-02	1.27E-02	1.26E-02	1.26E-02	1.25E-02	1.24E-02
pu239	4.98E-01	4.98E-01	4.98E-01	4.98E-01	4.98E-01	4.98E-01	4.98E-01
pu240	2.45E-04	2.45E-04	2.44E-04	2.44E-04	2.44E-04	2.44E-04	2.44E-04
total	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 53
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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	1.16E-02	1.17E-02	1.19E-02	1.20E-02	1.21E-02	1.23E-02	1.24E-02
ra	1.16E-06	1.18E-06	1.20E-06	1.22E-06	1.24E-06	1.26E-06	1.28E-06
th	3.07E-03	3.10E-03	3.12E-03	3.15E-03	3.17E-03	3.20E-03	3.22E-03
pa	7.34E-05	7.40E-05	7.46E-05	7.52E-05	7.58E-05	7.64E-05	7.70E-05
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	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.11E-01	5.10E-01
totals	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04	3.73E+04

1

sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 actinides page 54
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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	4.63E-02	4.69E-02	4.74E-02	4.80E-02	4.85E-02	4.91E-02	4.96E-02
pb206	1.60E-06	1.65E-06	1.70E-06	1.75E-06	1.80E-06	1.85E-06	1.91E-06
pb207	8.84E-06	9.02E-06	9.21E-06	9.40E-06	9.59E-06	9.78E-06	9.98E-06
pb208	2.46E-06	2.50E-06	2.54E-06	2.59E-06	2.63E-06	2.68E-06	2.72E-06
pb210	1.88E-06	1.92E-06	1.96E-06	2.00E-06	2.04E-06	2.08E-06	2.12E-06
ra226	2.62E-04	2.66E-04	2.70E-04	2.75E-04	2.79E-04	2.84E-04	2.88E-04
ac227	7.58E-06	7.67E-06	7.76E-06	7.84E-06	7.93E-06	8.02E-06	8.11E-06
th229	6.78E-05	6.89E-05	7.00E-05	7.12E-05	7.24E-05	7.35E-05	7.47E-05
th230	5.87E-01	5.92E-01	5.97E-01	6.02E-01	6.07E-01	6.12E-01	6.17E-01
th231	7.00E-07	6.97E-07	6.97E-07	6.97E-07	6.97E-07	6.97E-07	6.97E-07
th232	1.20E-01	1.21E-01	1.22E-01	1.23E-01	1.24E-01	1.25E-01	1.26E-01
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-02	1.68E-02	1.69E-02	1.70E-02	1.72E-02	1.73E-02	1.75E-02
pa233	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04	3.39E-04
u232	5.93E-06	5.92E-06	5.91E-06	5.89E-06	5.87E-06	5.84E-06	5.81E-06
u233	3.18E-01	3.21E-01	3.24E-01	3.27E-01	3.30E-01	3.32E-01	3.35E-01
u234	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03	2.12E+03
u235	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05	1.71E+05
u236	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04	4.12E+04
u238	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06	8.66E+06
np236	4.66E-06	4.66E-06	4.66E-06	4.66E-06	4.66E-06	4.66E-06	4.66E-06
np237	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03
pu238	3.07E+00	3.05E+00	3.03E+00	3.01E+00	2.99E+00	2.97E+00	2.95E+00
pu239	1.19E+02	1.19E+02	1.19E+02	1.19E+02	1.19E+02	1.19E+02	1.19E+02
pu240	5.87E-02	5.87E-02	5.87E-02	5.87E-02	5.87E-02	5.87E-02	5.87E-02

pu241	1.63E-05	1.57E-05	1.50E-05	1.44E-05	1.39E-05	1.33E-05	1.28E-05
am241	2.22E-05	2.28E-05	2.34E-05	2.40E-05	2.45E-05	2.50E-05	2.55E-05
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 55
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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	4.63E-02	4.69E-02	4.74E-02	4.80E-02	4.85E-02	4.91E-02	4.96E-02
pb	1.48E-05	1.51E-05	1.54E-05	1.57E-05	1.61E-05	1.64E-05	1.67E-05
ra	2.62E-04	2.66E-04	2.70E-04	2.75E-04	2.79E-04	2.84E-04	2.88E-04
ac	7.58E-06	7.67E-06	7.76E-06	7.84E-06	7.93E-06	8.02E-06	8.11E-06
th	7.07E-01	7.13E-01	7.19E-01	7.25E-01	7.31E-01	7.37E-01	7.43E-01
pa	1.70E-02	1.71E-02	1.72E-02	1.74E-02	1.75E-02	1.77E-02	1.78E-02
u	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06	8.87E+06
np	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03	9.99E+03
pu	1.22E+02	1.22E+02	1.22E+02	1.22E+02	1.22E+02	1.22E+02	1.22E+02
am	2.22E-05	2.28E-05	2.34E-05	2.40E-05	2.45E-05	2.50E-05	2.55E-05
totals	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 56
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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	5.48E-04	5.55E-04	5.61E-04	5.67E-04	5.74E-04	5.80E-04	5.86E-04
tl208	4.58E-05	4.63E-05	4.65E-05	4.66E-05	4.67E-05	4.67E-05	4.66E-05
pb209	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
pb210	1.44E-04	1.47E-04	1.50E-04	1.53E-04	1.56E-04	1.59E-04	1.62E-04
pb211	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
pb212	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
pb214	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.80E-04	2.85E-04
bi210	1.44E-04	1.47E-04	1.50E-04	1.53E-04	1.56E-04	1.59E-04	1.62E-04
bi211	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
bi212	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
bi213	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
bi214	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.80E-04	2.85E-04
po210	1.44E-04	1.44E-04	1.46E-04	1.49E-04	1.52E-04	1.55E-04	1.58E-04
po211	1.51E-06	1.53E-06	1.55E-06	1.56E-06	1.58E-06	1.60E-06	1.62E-06
po212	8.16E-05	8.24E-05	8.29E-05	8.31E-05	8.32E-05	8.32E-05	8.31E-05
po213	1.31E-05	1.34E-05	1.36E-05	1.38E-05	1.40E-05	1.43E-05	1.45E-05
po214	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.80E-04	2.85E-04
po215	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
po216	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
po218	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.81E-04	2.85E-04
at217	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
rn219	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
rn220	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
rn222	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.81E-04	2.85E-04
fr221	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
fr223	7.57E-06	7.66E-06	7.75E-06	7.83E-06	7.92E-06	8.01E-06	8.10E-06
ra223	5.50E-04	5.56E-04	5.63E-04	5.69E-04	5.75E-04	5.82E-04	5.88E-04
ra224	1.27E-04	1.29E-04	1.29E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
ra225	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
ra226	2.59E-04	2.63E-04	2.67E-04	2.72E-04	2.76E-04	2.81E-04	2.85E-04
ac225	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
ac227	5.49E-04	5.55E-04	5.61E-04	5.68E-04	5.74E-04	5.80E-04	5.87E-04
th227	5.42E-04	5.49E-04	5.55E-04	5.61E-04	5.67E-04	5.74E-04	5.80E-04
th228	1.27E-04	1.28E-04	1.29E-04	1.29E-04	1.29E-04	1.29E-04	1.29E-04

th229	1.34E-05	1.37E-05	1.39E-05	1.41E-05	1.43E-05	1.46E-05	1.48E-05
th230	1.21E-02	1.22E-02	1.23E-02	1.24E-02	1.25E-02	1.26E-02	1.27E-02
th231	3.72E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01
th234	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
pa231	7.85E-04	7.92E-04	7.98E-04	8.05E-04	8.12E-04	8.18E-04	8.25E-04
pa233	7.04E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+00	7.05E+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	1.31E-04	1.31E-04	1.31E-04	1.30E-04	1.30E-04	1.29E-04	1.28E-04
u233	3.06E-03	3.09E-03	3.12E-03	3.15E-03	3.18E-03	3.21E-03	3.23E-03
u234	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01	1.32E+01
u235	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01	3.71E-01
u236	2.67E+00	2.67E+00	2.67E+00	2.67E+00	2.67E+00	2.67E+00	2.67E+00
u238	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00	2.91E+00
np237	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00	7.04E+00
pu236	1.37E-04	1.12E-04	9.20E-05	7.54E-05	6.18E-05	5.06E-05	4.15E-05
pu238	5.25E+01	5.22E+01	5.19E+01	5.15E+01	5.12E+01	5.08E+01	5.05E+01
pu239	7.39E+00	7.39E+00	7.39E+00	7.39E+00	7.39E+00	7.39E+00	7.39E+00

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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=1.4610E+02mwd, flux= 2.79E+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
pu240	1.33E-02	1.33E-02	1.33E-02	1.33E-02	1.33E-02	1.33E-02	1.33E-02
pu241	1.69E-03	1.62E-03	1.56E-03	1.49E-03	1.43E-03	1.38E-03	1.32E-03
am241	7.62E-05	7.83E-05	8.03E-05	8.23E-05	8.41E-05	8.59E-05	8.75E-05
total	5.34E+03	9.90E+01	9.87E+01	9.84E+01	9.80E+01	9.77E+01	9.74E+01

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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=1.4610E+02mwd, flux= 2.79E+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	2.69E-06	2.72E-06	2.75E-06	2.77E-06	2.79E-06	2.81E-06	2.82E-06
pb	2.82E-06	2.86E-06	2.90E-06	2.93E-06	2.97E-06	3.00E-06	3.04E-06
bi	2.78E-05	2.81E-05	2.85E-05	2.88E-05	2.91E-05	2.94E-05	2.97E-05
po	6.08E-05	6.16E-05	6.23E-05	6.31E-05	6.39E-05	6.46E-05	6.54E-05
at	5.73E-07	5.83E-07	5.92E-07	6.02E-07	6.12E-07	6.22E-07	6.32E-07
rn	3.62E-05	3.67E-05	3.71E-05	3.75E-05	3.80E-05	3.84E-05	3.88E-05
fr	5.37E-07	5.46E-07	5.55E-07	5.64E-07	5.73E-07	5.82E-07	5.91E-07
ra	3.14E-05	3.18E-05	3.22E-05	3.25E-05	3.29E-05	3.33E-05	3.36E-05
ac	7.34E-07	7.45E-07	7.56E-07	7.67E-07	7.78E-07	7.90E-07	8.01E-07
th	1.98E-03	1.98E-03	1.98E-03	1.98E-03	1.99E-03	1.99E-03	1.99E-03
pa	3.22E-02	3.23E-02	3.23E-02	3.23E-02	3.23E-02	3.23E-02	3.23E-02
u	7.56E+00	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01	5.36E-01
np	7.11E+00	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01	2.01E-01
pu	1.97E+00	1.96E+00	1.95E+00	1.94E+00	1.93E+00	1.92E+00	1.90E+00
am	2.54E-06	2.61E-06	2.68E-06	2.74E-06	2.81E-06	2.86E-06	2.92E-06
totals	1.67E+01	2.73E+00	2.72E+00	2.71E+00	2.70E+00	2.69E+00	2.68E+00

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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=1.4610E+02mwd, flux= 2.79E+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	7.15E-09	7.24E-09	7.32E-09	7.40E-09	7.48E-09	7.57E-09	7.65E-09
tl208	9.12E-07	9.21E-07	9.26E-07	9.29E-07	9.30E-07	9.30E-07	9.29E-07
pb211	2.20E-07	2.23E-07	2.26E-07	2.28E-07	2.31E-07	2.33E-07	2.36E-07
pb212	1.09E-07	1.11E-07	1.11E-07	1.12E-07	1.12E-07	1.12E-07	1.12E-07

pb214	3.83E-07	3.90E-07	3.96E-07	4.03E-07	4.09E-07	4.16E-07	4.22E-07
bi211	1.53E-07	1.54E-07	1.56E-07	1.58E-07	1.60E-07	1.61E-07	1.63E-07
bi212	7.94E-08	8.03E-08	8.07E-08	8.09E-08	8.10E-08	8.10E-08	8.09E-08
bi213	1.01E-08	1.02E-08	1.04E-08	1.06E-08	1.07E-08	1.09E-08	1.11E-08
bi214	2.31E-06	2.35E-06	2.39E-06	2.43E-06	2.47E-06	2.51E-06	2.55E-06
rn219	1.83E-07	1.85E-07	1.87E-07	1.89E-07	1.91E-07	1.93E-07	1.95E-07
ra223	4.38E-07	4.43E-07	4.48E-07	4.53E-07	4.58E-07	4.63E-07	4.68E-07
ra224	7.60E-09	7.68E-09	7.72E-09	7.74E-09	7.75E-09	7.75E-09	7.74E-09
ra226	1.11E-08	1.13E-08	1.14E-08	1.16E-08	1.18E-08	1.20E-08	1.22E-08
th227	3.57E-07	3.61E-07	3.65E-07	3.69E-07	3.73E-07	3.77E-07	3.82E-07
th229	7.53E-09	7.66E-09	7.78E-09	7.91E-09	8.04E-09	8.17E-09	8.30E-09
th230	1.21E-07	1.22E-07	1.23E-07	1.24E-07	1.25E-07	1.26E-07	1.27E-07
th231	6.84E-05	6.81E-05	6.81E-05	6.81E-05	6.81E-05	6.81E-05	6.81E-05
th234	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04	1.67E-04
pa231	1.86E-07	1.88E-07	1.89E-07	1.91E-07	1.92E-07	1.94E-07	1.96E-07
pa233	9.33E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03	9.34E-03
pa234m	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04	1.92E-04
pa234	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05	4.40E-05
u233	2.25E-08	2.27E-08	2.29E-08	2.31E-08	2.34E-08	2.36E-08	2.38E-08
u234	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04	1.26E-04
u235	3.65E-04	3.65E-04	3.65E-04	3.65E-04	3.65E-04	3.65E-04	3.65E-04
u236	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05
u238	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05	2.32E-05
np237	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03	1.47E-03
pu238	5.92E-04	5.88E-04	5.84E-04	5.80E-04	5.77E-04	5.73E-04	5.69E-04
pu239	3.55E-05	3.55E-05	3.55E-05	3.55E-05	3.55E-05	3.55E-05	3.55E-05
pu240	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07	1.30E-07
am241	1.29E-08	1.33E-08	1.36E-08	1.39E-08	1.43E-08	1.46E-08	1.48E-08
total	3.97E+00	1.24E-02	1.24E-02	1.24E-02	1.24E-02	1.24E-02	1.24E-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 60
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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	3.82E-05	3.64E-05	3.48E-05	3.32E-05	3.17E-05	3.02E-05	2.88E-05
li 6	1.97E-06	1.97E-06	1.97E-06	1.97E-06	1.97E-06	1.97E-06	1.97E-06
be 10	5.90E-07	5.90E-07	5.90E-07	5.90E-07	5.90E-07	5.90E-07	5.90E-07
ge 72	1.26E-05	1.26E-05	1.26E-05	1.26E-05	1.26E-05	1.26E-05	1.26E-05
ge 73	5.53E-05	5.53E-05	5.53E-05	5.53E-05	5.53E-05	5.53E-05	5.53E-05
ge 74	4.84E-05	4.84E-05	4.84E-05	4.84E-05	4.84E-05	4.84E-05	4.84E-05
as 75	5.64E-04	5.64E-04	5.64E-04	5.64E-04	5.64E-04	5.64E-04	5.64E-04
ge 76	1.88E-03	1.88E-03	1.88E-03	1.88E-03	1.88E-03	1.88E-03	1.88E-03
se 77	4.17E-03	4.17E-03	4.17E-03	4.17E-03	4.17E-03	4.17E-03	4.17E-03
se 78	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02
se 79	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02
br 79	2.39E-06	2.43E-06	2.47E-06	2.51E-06	2.55E-06	2.59E-06	2.63E-06
se 80	6.79E-02	6.79E-02	6.79E-02	6.79E-02	6.79E-02	6.79E-02	6.79E-02
br 81	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01
se 82	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01	1.74E-01
kr 82	3.39E-05	3.39E-05	3.39E-05	3.39E-05	3.39E-05	3.39E-05	3.39E-05
kr 83	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01
kr 84	5.86E-01	5.86E-01	5.86E-01	5.86E-01	5.86E-01	5.86E-01	5.86E-01
kr 85	2.25E-02	2.13E-02	2.02E-02	1.92E-02	1.81E-02	1.72E-02	1.63E-02
rb 85	6.56E-01	6.57E-01	6.58E-01	6.59E-01	6.60E-01	6.61E-01	6.62E-01
kr 86	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
sr 86	4.81E-06	4.81E-06	4.81E-06	4.81E-06	4.81E-06	4.81E-06	4.81E-06
rb 87	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00	1.44E+00
sr 87	2.45E-06	2.45E-06	2.45E-06	2.45E-06	2.45E-06	2.45E-06	2.45E-06
sr 88	2.07E+00	2.07E+00	2.07E+00	2.07E+00	2.07E+00	2.07E+00	2.07E+00

y 89	2.81E+00	2.81E+00	2.81E+00	2.81E+00	2.81E+00	2.81E+00	2.81E+00
sr 90	1.27E+00	1.25E+00	1.22E+00	1.20E+00	1.17E+00	1.15E+00	1.13E+00
y 90	3.31E-04	3.24E-04	3.18E-04	3.11E-04	3.05E-04	2.99E-04	2.93E-04
zr 90	2.16E+00	2.18E+00	2.21E+00	2.23E+00	2.26E+00	2.28E+00	2.30E+00
zr 91	3.50E+00	3.51E+00	3.51E+00	3.51E+00	3.51E+00	3.51E+00	3.51E+00
zr 92	3.57E+00	3.57E+00	3.57E+00	3.57E+00	3.57E+00	3.57E+00	3.57E+00
zr 93	2.56E+00	2.56E+00	2.56E+00	2.56E+00	2.56E+00	2.56E+00	2.56E+00
nb 93	3.72E-05	3.79E-05	3.87E-05	3.94E-05	4.02E-05	4.10E-05	4.18E-05
nb 93m	2.08E-05	2.10E-05	2.12E-05	2.14E-05	2.16E-05	2.18E-05	2.20E-05
zr 94	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00
nb 94	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06	1.01E-06
mo 95	4.00E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00	4.02E+00
zr 96	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00	3.94E+00
mo 96	4.33E-04	4.33E-04	4.33E-04	4.33E-04	4.33E-04	4.33E-04	4.33E-04
mo 97	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00	3.58E+00
mo 98	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00
tc 99	3.96E+00	3.96E+00	3.96E+00	3.96E+00	3.96E+00	3.96E+00	3.96E+00
ru 99	7.79E-04	7.90E-04	8.00E-04	8.11E-04	8.22E-04	8.33E-04	8.44E-04
mo100	4.10E+00	4.10E+00	4.10E+00	4.10E+00	4.10E+00	4.10E+00	4.10E+00
ru100	1.95E-04	1.95E-04	1.95E-04	1.95E-04	1.95E-04	1.95E-04	1.95E-04
ru101	3.39E+00	3.39E+00	3.39E+00	3.39E+00	3.39E+00	3.39E+00	3.39E+00
ru102	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00	2.87E+00
rh103	2.12E+00	2.12E+00	2.12E+00	2.12E+00	2.12E+00	2.12E+00	2.12E+00
ru104	1.32E+00	1.32E+00	1.32E+00	1.32E+00	1.32E+00	1.32E+00	1.32E+00
pd104	4.68E-04	4.68E-04	4.68E-04	4.68E-04	4.68E-04	4.68E-04	4.68E-04
pd105	7.35E-01	7.35E-01	7.35E-01	7.35E-01	7.35E-01	7.35E-01	7.35E-01
ru106	4.83E-03	2.74E-03	1.55E-03	8.79E-04	4.98E-04	2.82E-04	1.60E-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 61
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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
pd106	3.23E-01	3.25E-01	3.26E-01	3.27E-01	3.27E-01	3.27E-01	3.28E-01
pd107	1.26E-01	1.26E-01	1.26E-01	1.26E-01	1.26E-01	1.26E-01	1.26E-01
ag107	6.68E-07	6.80E-07	6.91E-07	7.02E-07	7.13E-07	7.24E-07	7.35E-07
pd108	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02	6.05E-02
ag109	3.08E-02	3.08E-02	3.08E-02	3.08E-02	3.08E-02	3.08E-02	3.08E-02
pd110	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02	2.46E-02
cd110	5.99E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06
cd111	1.61E-02	1.61E-02	1.61E-02	1.61E-02	1.61E-02	1.61E-02	1.61E-02
cd112	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02	1.30E-02
cd113	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02	1.23E-02
cd113m	4.29E-05	4.12E-05	3.95E-05	3.80E-05	3.64E-05	3.50E-05	3.36E-05
in113	1.69E-04	1.71E-04	1.73E-04	1.74E-04	1.76E-04	1.77E-04	1.79E-04
cd114	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02	1.16E-02
in115	8.54E-03	8.54E-03	8.54E-03	8.54E-03	8.54E-03	8.54E-03	8.54E-03
sn115	4.30E-04	4.30E-04	4.30E-04	4.30E-04	4.30E-04	4.30E-04	4.30E-04
cd116	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02	1.35E-02
sn116	2.18E-06	2.18E-06	2.18E-06	2.18E-06	2.18E-06	2.18E-06	2.18E-06
sn117	8.95E-03	8.95E-03	8.95E-03	8.95E-03	8.95E-03	8.95E-03	8.95E-03
sn118	9.18E-03	9.18E-03	9.18E-03	9.18E-03	9.18E-03	9.18E-03	9.18E-03
sn119	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02
sn120	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02	1.01E-02
sn121m	3.82E-05	3.78E-05	3.74E-05	3.71E-05	3.67E-05	3.63E-05	3.59E-05
sb121	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02	1.10E-02
sn122	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02	1.28E-02
sb123	1.34E-02	1.34E-02	1.34E-02	1.34E-02	1.34E-02	1.34E-02	1.34E-02
sn124	2.16E-02	2.16E-02	2.16E-02	2.16E-02	2.16E-02	2.16E-02	2.16E-02
te124	9.89E-06	9.92E-06	9.92E-06	9.92E-06	9.92E-06	9.92E-06	9.92E-06

sb125	9.74E-04	7.91E-04	6.40E-04	5.18E-04	4.19E-04	3.39E-04	2.75E-04
te125	2.39E-02	2.41E-02	2.42E-02	2.43E-02	2.44E-02	2.45E-02	2.46E-02
te125m	1.33E-05	1.12E-05	9.09E-06	7.36E-06	5.95E-06	4.82E-06	3.90E-06
sn126	3.55E-02	3.55E-02	3.55E-02	3.55E-02	3.55E-02	3.55E-02	3.55E-02
te126	2.20E-04	2.20E-04	2.20E-04	2.20E-04	2.21E-04	2.21E-04	2.21E-04
i127	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01	1.04E-01
te128	2.99E-01	2.99E-01	2.99E-01	2.99E-01	2.99E-01	2.99E-01	2.99E-01
xe128	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06	1.68E-06
i129	6.43E-01	6.43E-01	6.43E-01	6.43E-01	6.43E-01	6.43E-01	6.43E-01
xe129	1.42E-06	1.44E-06	1.47E-06	1.49E-06	1.51E-06	1.54E-06	1.56E-06
te130	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00	1.50E+00
xe130	1.96E-04	1.96E-04	1.96E-04	1.96E-04	1.96E-04	1.96E-04	1.96E-04
xe131	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.49E+00	2.49E+00
xe132	3.75E+00	3.75E+00	3.75E+00	3.75E+00	3.75E+00	3.75E+00	3.75E+00
cs133	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00	5.84E+00
xe134	6.87E+00	6.87E+00	6.87E+00	6.87E+00	6.87E+00	6.87E+00	6.87E+00
cs134	1.88E-05	1.42E-05	1.07E-05	8.09E-06	6.11E-06	4.62E-06	3.49E-06
ba134	3.12E-04	3.17E-04	3.20E-04	3.23E-04	3.25E-04	3.26E-04	3.28E-04
cs135	5.79E+00	5.79E+00	5.79E+00	5.79E+00	5.79E+00	5.79E+00	5.79E+00
ba135	8.81E-05	8.96E-05	9.10E-05	9.25E-05	9.40E-05	9.54E-05	9.69E-05
xe136	5.63E+00	5.63E+00	5.63E+00	5.63E+00	5.63E+00	5.63E+00	5.63E+00
ba136	4.88E-03	4.88E-03	4.88E-03	4.88E-03	4.88E-03	4.88E-03	4.88E-03
cs137	2.20E+00	2.16E+00	2.12E+00	2.08E+00	2.04E+00	2.00E+00	1.96E+00
ba137	3.44E+00	3.48E+00	3.52E+00	3.56E+00	3.60E+00	3.64E+00	3.68E+00
ba138	6.04E+00	6.04E+00	6.04E+00	6.04E+00	6.04E+00	6.04E+00	6.04E+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 62
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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
la138	3.03E-05	3.03E-05	3.03E-05	3.03E-05	3.03E-05	3.03E-05	3.03E-05
la139	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00
ce140	5.77E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00	5.78E+00
pr141	5.34E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00	5.35E+00
ce142	5.44E+00	5.44E+00	5.44E+00	5.44E+00	5.44E+00	5.44E+00	5.44E+00
nd142	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.73E-05
nd143	5.52E+00	5.53E+00	5.53E+00	5.53E+00	5.53E+00	5.53E+00	5.53E+00
ce144	5.78E-02	2.76E-02	1.32E-02	6.28E-03	2.99E-03	1.43E-03	6.81E-04
nd144	5.08E+00	5.11E+00	5.13E+00	5.13E+00	5.14E+00	5.14E+00	5.14E+00
nd145	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00	3.72E+00
nd146	2.86E+00	2.86E+00	2.86E+00	2.86E+00	2.86E+00	2.86E+00	2.86E+00
pm147	8.22E-02	6.67E-02	5.35E-02	4.30E-02	3.45E-02	2.77E-02	2.22E-02
sm147	2.10E+00	2.11E+00	2.13E+00	2.14E+00	2.15E+00	2.15E+00	2.16E+00
nd148	1.63E+00	1.63E+00	1.63E+00	1.63E+00	1.63E+00	1.63E+00	1.63E+00
sm148	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04
sm149	9.89E-01	9.90E-01	9.90E-01	9.90E-01	9.90E-01	9.90E-01	9.90E-01
nd150	6.57E-01	6.57E-01	6.57E-01	6.57E-01	6.57E-01	6.57E-01	6.57E-01
sm150	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02	7.00E-02
sm151	2.95E-01	2.94E-01	2.92E-01	2.90E-01	2.88E-01	2.86E-01	2.84E-01
eu151	1.28E-01	1.30E-01	1.32E-01	1.34E-01	1.36E-01	1.37E-01	1.39E-01
sm152	2.78E-01	2.78E-01	2.78E-01	2.78E-01	2.78E-01	2.78E-01	2.78E-01
eu152	1.23E-04	1.18E-04	1.13E-04	1.08E-04	1.03E-04	9.90E-05	9.48E-05
gd152	1.80E-04	1.81E-04	1.82E-04	1.84E-04	1.85E-04	1.86E-04	1.87E-04
eu153	1.70E-01	1.70E-01	1.70E-01	1.70E-01	1.70E-01	1.70E-01	1.70E-01
sm154	7.87E-02	7.87E-02	7.87E-02	7.87E-02	7.87E-02	7.87E-02	7.87E-02
eu154	1.25E-05	1.17E-05	1.09E-05	1.02E-05	9.56E-06	8.94E-06	8.36E-06
gd154	4.63E-05	4.72E-05	4.79E-05	4.86E-05	4.93E-05	4.99E-05	5.05E-05
eu155	2.42E-03	2.14E-03	1.89E-03	1.67E-03	1.48E-03	1.31E-03	1.16E-03
gd155	3.26E-02	3.28E-02	3.31E-02	3.33E-02	3.35E-02	3.37E-02	3.38E-02

gd156	1.62E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02	1.63E-02
gd157	6.71E-03	6.71E-03	6.71E-03	6.71E-03	6.71E-03	6.71E-03	6.71E-03
gd158	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03	4.26E-03
tb159	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03
gd160	4.35E-04	4.35E-04	4.35E-04	4.35E-04	4.35E-04	4.35E-04	4.35E-04
dy161	1.33E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04	1.34E-04
dy162	3.81E-05	3.81E-05	3.81E-05	3.81E-05	3.81E-05	3.81E-05	3.81E-05
dy163	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05	1.27E-05
dy164	4.10E-06	4.10E-06	4.10E-06	4.10E-06	4.10E-06	4.10E-06	4.10E-06
ho165	1.85E-06	1.85E-06	1.85E-06	1.85E-06	1.85E-06	1.85E-06	1.85E-06
total	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+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 63
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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	3.69E-01	3.52E-01	3.36E-01	3.21E-01	3.06E-01	2.92E-01	2.79E-01
c 14	5.29E-07	5.29E-07	5.29E-07	5.29E-07	5.29E-07	5.29E-07	5.29E-07
se 79	3.13E-04	3.13E-04	3.13E-04	3.13E-04	3.13E-04	3.13E-04	3.12E-04
kr 85	8.84E+00	8.37E+00	7.93E+00	7.52E+00	7.12E+00	6.75E+00	6.40E+00
sr 90	1.80E+02	1.76E+02	1.73E+02	1.69E+02	1.66E+02	1.62E+02	1.59E+02
y 90	1.80E+02	1.76E+02	1.73E+02	1.69E+02	1.66E+02	1.62E+02	1.59E+02
y 91	1.99E+02	5.44E+00	1.48E-01	4.01E-03	1.09E-04	2.96E-06	8.04E-08
zr 93	6.43E-03	6.43E-03	6.43E-03	6.43E-03	6.43E-03	6.43E-03	6.43E-03
nb 93m	4.95E-03	5.00E-03	5.06E-03	5.10E-03	5.15E-03	5.19E-03	5.24E-03
zr 95	2.18E+02	8.09E+00	3.00E-01	1.11E-02	4.11E-04	1.52E-05	5.64E-07
nb 95	2.18E+02	1.72E+01	6.58E-01	2.44E-02	9.05E-04	3.35E-05	1.24E-06
tc 99	6.78E-02	6.78E-02	6.78E-02	6.78E-02	6.78E-02	6.78E-02	6.78E-02
rh102	8.00E-06	6.56E-06	5.37E-06	4.40E-06	3.61E-06	2.96E-06	2.42E-06
ru106	1.60E+01	9.07E+00	5.14E+00	2.92E+00	1.65E+00	9.37E-01	5.31E-01
rh106	1.60E+01	9.07E+00	5.14E+00	2.92E+00	1.65E+00	9.37E-01	5.31E-01
pd107	6.46E-05	6.46E-05	6.46E-05	6.46E-05	6.46E-05	6.46E-05	6.46E-05
cd113m	9.63E-03	9.25E-03	8.88E-03	8.52E-03	8.18E-03	7.85E-03	7.53E-03
sn119m	1.53E-03	7.46E-04	3.63E-04	1.77E-04	8.60E-05	4.19E-05	2.04E-05
sn121	4.70E-01	1.58E-03	1.56E-03	1.55E-03	1.53E-03	1.51E-03	1.50E-03
sn121m	2.05E-03	2.03E-03	2.01E-03	1.99E-03	1.97E-03	1.95E-03	1.93E-03
sn123	5.82E-02	1.14E-02	2.22E-03	4.33E-04	8.46E-05	1.65E-05	3.23E-06
sb125	1.02E+00	8.29E-01	6.71E-01	5.43E-01	4.39E-01	3.56E-01	2.88E-01
te125m	2.39E-01	2.02E-01	1.64E-01	1.33E-01	1.07E-01	8.68E-02	7.03E-02
sn126	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03
sb126	4.07E-03	1.41E-04	1.41E-04	1.41E-04	1.41E-04	1.41E-04	1.41E-04
sb126m	6.41E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03	1.01E-03
te127	4.21E+00	1.09E-01	1.57E-02	2.26E-03	3.26E-04	4.71E-05	6.80E-06
te127m	7.40E-01	1.11E-01	1.60E-02	2.31E-03	3.33E-04	4.81E-05	6.94E-06
i129	1.13E-04	1.14E-04	1.14E-04	1.14E-04	1.14E-04	1.14E-04	1.14E-04
cs134	2.43E-02	1.83E-02	1.39E-02	1.05E-02	7.92E-03	5.98E-03	4.52E-03
cs135	6.67E-03	6.67E-03	6.67E-03	6.67E-03	6.67E-03	6.67E-03	6.67E-03
cs137	1.91E+02	1.88E+02	1.84E+02	1.81E+02	1.77E+02	1.74E+02	1.70E+02
ba137m	1.81E+02	1.77E+02	1.74E+02	1.71E+02	1.67E+02	1.64E+02	1.61E+02
ce144	1.84E+02	8.78E+01	4.19E+01	2.00E+01	9.53E+00	4.54E+00	2.17E+00
pr144	1.84E+02	8.78E+01	4.19E+01	2.00E+01	9.53E+00	4.54E+00	2.17E+00
pr144m	2.58E+00	1.23E+00	5.86E-01	2.80E-01	1.33E-01	6.36E-02	3.03E-02
pm147	7.62E+01	6.19E+01	4.96E+01	3.98E+01	3.20E+01	2.56E+01	2.06E+01
sm151	7.78E+00	7.73E+00	7.68E+00	7.63E+00	7.58E+00	7.53E+00	7.48E+00
eu152	2.17E-02	2.08E-02	1.99E-02	1.91E-02	1.83E-02	1.75E-02	1.67E-02
eu154	3.38E-03	3.16E-03	2.96E-03	2.76E-03	2.59E-03	2.42E-03	2.26E-03
eu155	1.19E+00	1.06E+00	9.33E-01	8.25E-01	7.29E-01	6.45E-01	5.70E-01
total	2.07E+04	1.03E+03	8.67E+02	7.92E+02	7.47E+02	7.15E+02	6.91E+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 64
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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	1.19E-05	1.13E-05	1.08E-05	1.03E-05	9.85E-06	9.40E-06
se	3.33E+00	9.80E-08	9.80E-08	9.80E-08	9.80E-08	9.80E-08	9.80E-08
kr	1.29E+01	1.26E-02	1.19E-02	1.13E-02	1.07E-02	1.01E-02	9.59E-03
sr	2.01E+01	2.13E-01	2.01E-01	1.96E-01	1.92E-01	1.88E-01	1.85E-01
y	2.81E+01	9.95E-01	9.56E-01	9.37E-01	9.17E-01	8.99E-01	8.81E-01
zr	1.20E+01	4.08E-02	1.51E-03	5.67E-05	2.80E-06	8.01E-07	7.27E-07
nb	2.15E+01	8.25E-02	3.16E-03	1.18E-04	5.23E-06	1.06E-06	9.08E-07
tc	6.48E+00	3.40E-05	3.40E-05	3.40E-05	3.40E-05	3.40E-05	3.40E-05
ru	7.12E-01	2.18E-03	3.13E-04	1.73E-04	9.82E-05	5.57E-05	3.16E-05
rh	3.83E-01	8.71E-02	4.93E-02	2.79E-02	1.58E-02	8.98E-03	5.09E-03
ag	7.41E-02	2.00E-07	8.59E-08	3.69E-08	1.59E-08	6.81E-09	2.93E-09
cd	6.86E-02	1.06E-05	9.66E-06	9.27E-06	8.89E-06	8.54E-06	8.19E-06
sn	1.87E+00	3.90E-05	1.02E-05	4.53E-06	3.38E-06	3.13E-06	3.06E-06
sb	7.51E+00	2.64E-03	2.14E-03	1.73E-03	1.40E-03	1.14E-03	9.25E-04
te	9.29E+00	4.13E-04	1.68E-04	1.16E-04	9.09E-05	7.32E-05	5.92E-05
i	2.08E+01	5.31E-08	5.31E-08	5.31E-08	5.31E-08	5.31E-08	5.31E-08
cs	1.83E+01	2.09E-01	2.05E-01	2.01E-01	1.97E-01	1.93E-01	1.89E-01
ba	1.19E+01	6.96E-01	6.83E-01	6.70E-01	6.57E-01	6.45E-01	6.32E-01
ce	4.40E+00	5.79E-02	2.74E-02	1.31E-02	6.24E-03	2.97E-03	1.42E-03
pr	6.24E+00	6.45E-01	3.08E-01	1.47E-01	7.00E-02	3.34E-02	1.59E-02
pm	3.40E-01	2.27E-02	1.82E-02	1.46E-02	1.17E-02	9.41E-03	7.55E-03
sm	2.10E-02	9.09E-04	9.03E-04	8.97E-04	8.91E-04	8.86E-04	8.80E-04
eu	9.31E-03	1.01E-03	9.04E-04	8.12E-04	7.30E-04	6.56E-04	5.91E-04
totals	2.61E+02	3.07E+00	2.47E+00	2.22E+00	2.08E+00	1.99E+00	1.93E+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 65
decay, following reactor irradiation identified by: power= 4.000E-03mw, burnup=1.4610E+02mwd, flux= 2.79E+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	1.17E-04	1.11E-04	1.05E-04	9.94E-05	9.41E-05	8.92E-05	8.45E-05
y 90	1.81E-06	1.78E-06	1.74E-06	1.70E-06	1.67E-06	1.64E-06	1.60E-06
nb 93m	5.52E-08	5.58E-08	5.63E-08	5.69E-08	5.74E-08	5.79E-08	5.84E-08
zr 95	9.47E-01	3.51E-02	1.30E-03	4.81E-05	1.78E-06	6.61E-08	2.45E-09
nb 95	9.88E-01	7.78E-02	2.98E-03	1.11E-04	4.10E-06	1.52E-07	5.63E-09
rh102	1.02E-07	8.39E-08	6.88E-08	5.64E-08	4.62E-08	3.78E-08	3.10E-08
rh106	1.95E-02	1.11E-02	6.28E-03	3.56E-03	2.02E-03	1.14E-03	6.48E-04
ag110m	4.50E-07	1.93E-07	8.31E-08	3.57E-08	1.53E-08	6.59E-09	2.83E-09
sn121m	6.09E-08	6.03E-08	5.96E-08	5.90E-08	5.84E-08	5.78E-08	5.72E-08
sb125	2.63E-03	2.13E-03	1.73E-03	1.40E-03	1.13E-03	9.15E-04	7.40E-04
te125m	5.04E-05	4.27E-05	3.46E-05	2.80E-05	2.26E-05	1.83E-05	1.48E-05
sn126	7.80E-07	7.80E-07	7.80E-07	7.80E-07	7.80E-07	7.80E-07	7.80E-07
sb126	6.64E-05	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06
sb126m	5.90E-05	9.29E-06	9.29E-06	9.29E-06	9.29E-06	9.29E-06	9.29E-06
i129	1.65E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08
cs134	2.24E-04	1.69E-04	1.28E-04	9.65E-05	7.30E-05	5.51E-05	4.17E-05
ba137m	6.42E-01	6.29E-01	6.17E-01	6.05E-01	5.94E-01	5.83E-01	5.71E-01
ce144	2.07E-02	9.89E-03	4.72E-03	2.25E-03	1.07E-03	5.12E-04	2.44E-04
pr144	3.16E-02	1.51E-02	7.18E-03	3.42E-03	1.63E-03	7.79E-04	3.71E-04
pr144m	1.91E-04	9.11E-05	4.35E-05	2.07E-05	9.88E-06	4.71E-06	2.25E-06
pm147	1.98E-06	1.61E-06	1.29E-06	1.03E-06	8.30E-07	6.66E-07	5.34E-07
sm151	6.54E-07	6.50E-07	6.46E-07	6.42E-07	6.38E-07	6.34E-07	6.30E-07
eu152	1.50E-04	1.43E-04	1.37E-04	1.31E-04	1.26E-04	1.20E-04	1.15E-04
eu154	2.51E-05	2.35E-05	2.20E-05	2.06E-05	1.92E-05	1.80E-05	1.68E-05
eu155	4.58E-04	4.05E-04	3.58E-04	3.16E-04	2.80E-04	2.47E-04	2.19E-04

total	1.29E+02	7.83E-01	6.42E-01	6.17E-01	6.00E-01	5.87E-01	5.74E-01

1

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=1.4610E+02mwd, flux= 2.79E+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	6.74E+00	1.11E-04	1.05E-04	9.94E-05	9.41E-05	8.92E-05	8.45E-05
y	9.80E+00	1.19E-04	4.91E-06	1.79E-06	1.67E-06	1.64E-06	1.60E-06
zr	4.81E+00	3.51E-02	1.30E-03	4.81E-05	1.78E-06	6.61E-08	2.45E-09
nb	9.13E+00	7.79E-02	2.98E-03	1.11E-04	4.16E-06	2.12E-07	6.58E-08
rh	1.07E-01	1.11E-02	6.28E-03	3.56E-03	2.02E-03	1.14E-03	6.48E-04
ag	3.07E-02	1.93E-07	8.31E-08	3.57E-08	1.54E-08	6.60E-09	2.84E-09
sn	1.23E+00	1.36E-06	9.56E-07	8.69E-07	8.48E-07	8.42E-07	8.39E-07
sb	5.16E+00	2.14E-03	1.74E-03	1.41E-03	1.14E-03	9.26E-04	7.52E-04
te	5.57E+00	5.71E-05	3.61E-05	2.82E-05	2.27E-05	1.83E-05	1.48E-05
i	1.36E+01	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08	1.66E-08
cs	8.74E+00	1.69E-04	1.28E-04	9.65E-05	7.30E-05	5.51E-05	4.17E-05
ba	5.34E+00	6.29E-01	6.17E-01	6.05E-01	5.94E-01	5.83E-01	5.71E-01
ce	2.08E+00	1.00E-02	4.72E-03	2.25E-03	1.07E-03	5.12E-04	2.44E-04
pr	1.80E+00	1.51E-02	7.22E-03	3.44E-03	1.64E-03	7.83E-04	3.74E-04
pm	8.55E-02	1.67E-06	1.29E-06	1.03E-06	8.30E-07	6.66E-07	5.34E-07
sm	4.47E-03	6.50E-07	6.46E-07	6.42E-07	6.38E-07	6.34E-07	6.30E-07
eu	5.77E-03	5.72E-04	5.17E-04	4.68E-04	4.25E-04	3.86E-04	3.51E-04
totals	1.29E+02	7.83E-01	6.42E-01	6.17E-01	6.00E-01	5.87E-01	5.74E-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= 146.mwd, flux= 2.79E+08 n**2-sec
0 spectrum of photon release rates, photons/sec
basis = single reactor assembly

0

emean (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	5.55E+04	4.44E+04	3.56E+04	2.85E+04	2.28E+04	1.83E+04
3.00E-02	1.69E+11	1.77E+04	1.41E+04	1.13E+04	9.07E+03	7.26E+03	5.82E+03
5.50E-02	1.18E+11	1.19E+04	9.55E+03	7.65E+03	6.13E+03	4.91E+03	3.93E+03
8.50E-02	6.90E+10	6.71E+03	5.37E+03	4.30E+03	3.45E+03	2.76E+03	2.21E+03
1.20E-01	4.90E+10	4.59E+03	3.67E+03	2.94E+03	2.36E+03	1.89E+03	1.51E+03
1.70E-01	5.13E+10	4.50E+03	3.61E+03	2.89E+03	2.31E+03	1.85E+03	1.48E+03
3.00E-01	5.88E+10	4.48E+03	3.59E+03	2.88E+03	2.30E+03	1.84E+03	1.48E+03
6.50E-01	2.89E+10	2.39E+05	1.92E+05	1.54E+05	1.23E+05	9.85E+04	7.89E+04
1.13E+00	4.97E+09	1.91E+05	1.53E+05	1.22E+05	9.81E+04	7.85E+04	6.29E+04
1.58E+00	9.04E+11	4.78E-01	3.83E-01	3.07E-01	2.46E-01	1.97E-01	1.58E-01
2.00E+00	1.79E+08	4.25E-02	3.40E-02	2.73E-02	2.18E-02	1.75E-02	1.40E-02
2.40E+00	3.63E+07	9.53E-03	7.63E-03	6.11E-03	4.90E-03	3.92E-03	3.14E-03
2.80E+00	2.13E+11	1.49E-04	1.20E-04	9.57E-05	7.67E-05	6.14E-05	4.92E-05
3.25E+00	1.36E+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	6.63E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.09E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	2.18E+12	5.36E+05	4.29E+05	3.44E+05	2.75E+05	2.20E+05	1.77E+05
0 mev/sec	2.10E+12	3.75E+05	3.01E+05	2.41E+05	1.93E+05	1.54E+05	1.24E+05

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

0

emean (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	1.39E-01	1.11E-01	8.90E-02	7.13E-02	5.71E-02	4.57E-02
3.00E-02	1.27E+06	1.32E-01	1.06E-01	8.49E-02	6.80E-02	5.45E-02	4.36E-02
5.50E-02	1.62E+06	1.64E-01	1.31E-01	1.05E-01	8.42E-02	6.75E-02	5.40E-02
8.50E-02	1.47E+06	1.43E-01	1.14E-01	9.15E-02	7.33E-02	5.87E-02	4.70E-02
1.20E-01	1.47E+06	1.38E-01	1.10E-01	8.83E-02	7.07E-02	5.66E-02	4.54E-02
1.70E-01	2.18E+06	1.91E-01	1.53E-01	1.23E-01	9.84E-02	7.88E-02	6.31E-02
3.00E-01	4.41E+06	3.36E-01	2.69E-01	2.16E-01	1.73E-01	1.38E-01	1.11E-01
6.50E-01	4.70E+06	3.89E+01	3.12E+01	2.50E+01	2.00E+01	1.60E+01	1.28E+01
1.13E+00	1.40E+06	5.37E+01	4.30E+01	3.44E+01	2.76E+01	2.21E+01	1.77E+01
1.58E+00	3.56E+08	1.88E-04	1.51E-04	1.21E-04	9.67E-05	7.75E-05	6.20E-05
2.00E+00	8.96E+04	2.13E-05	1.70E-05	1.36E-05	1.09E-05	8.75E-06	7.00E-06
2.40E+00	2.18E+04	5.72E-06	4.58E-06	3.67E-06	2.94E-06	2.35E-06	1.88E-06
2.80E+00	1.49E+08	1.04E-07	8.37E-08	6.70E-08	5.37E-08	4.30E-08	3.44E-08
3.25E+00	1.10E+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	7.87E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
5.50E+00	1.50E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
0 total	5.25E+08	9.38E+01	7.52E+01	6.02E+01	4.82E+01	3.86E+01	3.09E+01
0 gamma watts	3.37E-01	6.02E-08	4.82E-08	3.86E-08	3.09E-08	2.48E-08	1.98E-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= 146.mwd, flux= 2.79E+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	2.61E+14	7.89E+12	6.25E+12	5.47E+12	5.04E+12	4.78E+12	4.60E+12
3.00E-02	1.14E+14	3.41E+12	2.67E+12	2.32E+12	2.12E+12	2.01E+12	1.93E+12
5.50E-02	6.07E+13	1.71E+12	1.33E+12	1.15E+12	1.05E+12	9.93E+11	9.54E+11
8.50E-02	4.20E+13	1.02E+12	7.78E+11	6.59E+11	5.95E+11	5.58E+11	5.34E+11
1.20E-01	3.44E+13	1.04E+12	6.94E+11	5.25E+11	4.40E+11	3.95E+11	3.70E+11
1.70E-01	5.50E+13	6.56E+11	5.00E+11	4.27E+11	3.88E+11	3.65E+11	3.50E+11
3.00E-01	1.10E+14	7.09E+11	5.35E+11	4.50E+11	4.05E+11	3.79E+11	3.63E+11
6.50E-01	2.29E+14	7.58E+12	6.25E+12	6.02E+12	5.86E+12	5.73E+12	5.61E+12
1.13E+00	7.81E+13	5.55E+10	3.75E+10	2.86E+10	2.40E+10	2.14E+10	1.99E+10
1.58E+00	4.04E+13	1.94E+10	1.08E+10	6.62E+09	4.54E+09	3.49E+09	2.95E+09
2.00E+00	1.23E+13	2.94E+10	1.41E+10	6.85E+09	3.36E+09	1.69E+09	8.83E+08
2.40E+00	1.06E+13	6.19E+08	3.27E+08	1.74E+08	9.30E+07	5.01E+07	2.72E+07
2.80E+00	4.23E+12	8.07E+07	4.38E+07	2.39E+07	1.31E+07	7.21E+06	3.99E+06
3.25E+00	2.48E+12	1.01E+07	5.75E+06	3.26E+06	1.85E+06	1.05E+06	5.93E+05
3.75E+00	1.26E+12	4.47E+03	2.53E+03	1.44E+03	8.14E+02	4.61E+02	2.61E+02
4.25E+00	1.39E+12	2.00E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07
4.75E+00	4.08E+11	1.00E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07	1.01E-07
5.50E+00	3.04E+11	7.45E-08	7.46E-08	7.47E-08	7.48E-08	7.49E-08	7.49E-08
0 total	1.06E+15	2.41E+13	1.91E+13	1.71E+13	1.59E+13	1.52E+13	1.47E+13
0 mev/sec	4.44E+14	5.89E+12	4.76E+12	4.48E+12	4.31E+12	4.19E+12	4.09E+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	1.97E+07	1.56E+07	1.37E+07	1.26E+07	1.19E+07	1.15E+07
3.00E-02	8.54E+08	2.56E+07	2.01E+07	1.74E+07	1.59E+07	1.51E+07	1.45E+07
5.50E-02	8.35E+08	2.35E+07	1.83E+07	1.58E+07	1.45E+07	1.36E+07	1.31E+07
8.50E-02	8.92E+08	2.17E+07	1.65E+07	1.40E+07	1.26E+07	1.19E+07	1.14E+07
1.20E-01	1.03E+09	3.13E+07	2.08E+07	1.58E+07	1.32E+07	1.19E+07	1.11E+07

	1.70E-01	2.34E+09	2.79E+07	2.13E+07	1.81E+07	1.65E+07	1.55E+07	1.49E+07
	3.00E-01	8.25E+09	5.32E+07	4.01E+07	3.38E+07	3.04E+07	2.85E+07	2.72E+07
	6.50E-01	3.73E+10	1.23E+09	1.02E+09	9.78E+08	9.53E+08	9.31E+08	9.12E+08
	1.13E+00	2.20E+10	1.56E+07	1.05E+07	8.05E+06	6.74E+06	6.03E+06	5.60E+06
	1.58E+00	1.59E+10	7.65E+06	4.26E+06	2.61E+06	1.79E+06	1.38E+06	1.16E+06
	2.00E+00	6.14E+09	1.47E+07	7.07E+06	3.43E+06	1.68E+06	8.44E+05	4.41E+05
	2.40E+00	6.37E+09	3.72E+05	1.96E+05	1.04E+05	5.58E+04	3.01E+04	1.63E+04
	2.80E+00	2.96E+09	5.65E+04	3.07E+04	1.67E+04	9.17E+03	5.05E+03	2.79E+03
	3.25E+00	2.01E+09	8.24E+03	4.67E+03	2.65E+03	1.50E+03	8.50E+02	4.82E+02
	3.75E+00	1.18E+09	4.19E+00	2.37E+00	1.35E+00	7.63E-01	4.32E-01	2.45E-01
	4.25E+00	1.48E+09	2.13E-10	2.13E-10	2.13E-10	2.14E-10	2.14E-10	2.14E-10
	4.75E+00	4.85E+08	1.19E-10	1.19E-10	1.20E-10	1.20E-10	1.20E-10	1.20E-10
	5.50E+00	4.18E+08	1.02E-10	1.03E-10	1.03E-10	1.03E-10	1.03E-10	1.03E-10
0	total	1.11E+11	1.47E+09	1.19E+09	1.12E+09	1.08E+09	1.05E+09	1.02E+09
0	gamma watts	7.12E+01	9.44E-01	7.63E-01	7.18E-01	6.92E-01	6.72E-01	6.56E-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 (4.78E+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	4.66E+10	4.42E+10	4.19E+10	3.97E+10	3.76E+10	3.56E+10	3.37E+10
sr 90	7.33E+11	7.18E+11	7.03E+11	6.89E+11	6.75E+11	6.61E+11	6.48E+11
y 90	3.60E+12	3.53E+12	3.46E+12	3.39E+12	3.32E+12	3.25E+12	3.18E+12
rh106	4.76E+11	2.70E+11	1.53E+11	8.68E+10	4.92E+10	2.79E+10	1.58E+10
cs137	6.75E+11	6.62E+11	6.50E+11	6.37E+11	6.25E+11	6.13E+11	6.01E+11
ba137m	3.17E+10	3.11E+10	3.05E+10	2.99E+10	2.93E+10	2.88E+10	2.82E+10
ce144	3.55E+11	1.69E+11	8.06E+10	3.85E+10	1.83E+10	8.75E+09	4.17E+09
pr144	4.70E+12	2.24E+12	1.07E+12	5.10E+11	2.43E+11	1.16E+11	5.53E+10
pm147	8.86E+10	7.19E+10	5.77E+10	4.63E+10	3.71E+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 (2.01E+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	1.36E+10	1.29E+10	1.22E+10	1.16E+10	1.10E+10	1.04E+10	9.83E+09
sr 90	2.07E+11	2.03E+11	1.99E+11	1.95E+11	1.91E+11	1.87E+11	1.83E+11
y 90	1.17E+12	1.15E+12	1.13E+12	1.10E+12	1.08E+12	1.06E+12	1.04E+12
rh106	1.59E+11	9.02E+10	5.11E+10	2.90E+10	1.64E+10	9.31E+09	5.28E+09
sb125	1.87E+10	1.52E+10	1.23E+10	9.96E+09	8.06E+09	6.52E+09	5.28E+09
te125m	1.02E+10	8.65E+09	7.01E+09	5.67E+09	4.59E+09	3.72E+09	3.01E+09
cs137	1.88E+11	1.85E+11	1.81E+11	1.78E+11	1.74E+11	1.71E+11	1.68E+11
ba137m	5.44E+11	5.34E+11	5.23E+11	5.13E+11	5.04E+11	4.94E+11	4.85E+11
ce144	8.23E+11	3.93E+11	1.87E+11	8.93E+10	4.26E+10	2.03E+10	9.69E+09
pr144	1.55E+12	7.41E+11	3.54E+11	1.69E+11	8.04E+10	3.84E+10	1.83E+10
pm147	1.95E+10	1.58E+10	1.27E+10	1.02E+10	8.17E+09	6.55E+09	5.26E+09

0 principal photon sources in group 3, photons/sec

mean energy = .0550 mev. nuclides exceeding 1.0E-03 of total group release rate (9.93E+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	8.33E+09	7.90E+09	7.48E+09	7.09E+09	6.72E+09	6.36E+09	6.03E+09
sr 90	1.22E+11	1.20E+11	1.17E+11	1.15E+11	1.13E+11	1.10E+11	1.08E+11
y 90	8.11E+11	7.94E+11	7.78E+11	7.62E+11	7.47E+11	7.32E+11	7.17E+11
rh106	1.13E+11	6.39E+10	3.62E+10	2.05E+10	1.16E+10	6.59E+09	3.74E+09
cs137	1.09E+11	1.07E+11	1.05E+11	1.03E+11	1.01E+11	9.94E+10	9.75E+10
ce144	1.19E+11	5.68E+10	2.71E+10	1.29E+10	6.16E+09	2.94E+09	1.40E+09
pr144	1.09E+12	5.20E+11	2.48E+11	1.18E+11	5.65E+10	2.69E+10	1.28E+10
pm147	8.18E+09	6.64E+09	5.33E+09	4.28E+09	3.43E+09	2.75E+09	2.21E+09
eu155	9.21E+09	8.14E+09	7.20E+09	6.36E+09	5.62E+09	4.97E+09	4.39E+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 (5.58E+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	4.17E+09	3.95E+09	3.74E+09	3.55E+09	3.36E+09	3.19E+09	3.02E+09
sr 90	5.84E+10	5.72E+10	5.60E+10	5.49E+10	5.38E+10	5.27E+10	5.16E+10
y 90	4.69E+11	4.60E+11	4.50E+11	4.41E+11	4.32E+11	4.23E+11	4.15E+11
rh106	6.70E+10	3.80E+10	2.15E+10	1.22E+10	6.91E+09	3.92E+09	2.22E+09
cs137	5.13E+10	5.03E+10	4.93E+10	4.84E+10	4.75E+10	4.66E+10	4.57E+10
ce144	1.68E+11	8.02E+10	3.83E+10	1.82E+10	8.70E+09	4.15E+09	1.98E+09
pr144	6.42E+11	3.06E+11	1.46E+11	6.97E+10	3.32E+10	1.58E+10	7.56E+09
pm147	2.33E+09	1.89E+09	1.52E+09	1.22E+09	9.76E+08	7.83E+08	6.29E+08
eu155	1.40E+10	1.24E+10	1.09E+10	9.66E+09	8.54E+09	7.55E+09	6.67E+09

0 principal photon sources in group 5, photons/sec
mean energy = .1200 mev. nuclides exceeding 1.0E-03 of total group release rate (3.95E+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	2.51E+09	2.38E+09	2.26E+09	2.14E+09	2.03E+09	1.92E+09	1.82E+09
sr 90	3.32E+10	3.25E+10	3.19E+10	3.12E+10	3.06E+10	3.00E+10	2.94E+10
y 90	3.30E+11	3.23E+11	3.17E+11	3.10E+11	3.04E+11	2.98E+11	2.92E+11
rh106	4.84E+10	2.74E+10	1.55E+10	8.81E+09	4.99E+09	2.83E+09	1.60E+09
cs137	2.87E+10	2.82E+10	2.76E+10	2.71E+10	2.66E+10	2.61E+10	2.56E+10
ce144	8.25E+11	3.93E+11	1.88E+11	8.95E+10	4.27E+10	2.03E+10	9.70E+09
pr144	4.60E+11	2.19E+11	1.05E+11	4.98E+10	2.38E+10	1.13E+10	5.41E+09
eu155	7.99E+09	7.06E+09	6.24E+09	5.51E+09	4.87E+09	4.31E+09	3.81E+09

0 principal photon sources in group 6, photons/sec
mean energy = .1700 mev. nuclides exceeding 1.0E-03 of total group release rate (3.65E+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	2.00E+09	1.89E+09	1.79E+09	1.70E+09	1.61E+09	1.53E+09	1.45E+09
sr 90	2.37E+10	2.32E+10	2.27E+10	2.23E+10	2.18E+10	2.14E+10	2.09E+10
y 90	3.40E+11	3.33E+11	3.27E+11	3.20E+11	3.13E+11	3.07E+11	3.01E+11
rh106	5.19E+10	2.94E+10	1.67E+10	9.44E+09	5.35E+09	3.03E+09	1.72E+09
sb125	2.82E+09	2.29E+09	1.85E+09	1.50E+09	1.21E+09	9.82E+08	7.95E+08
cs137	2.03E+10	1.99E+10	1.95E+10	1.92E+10	1.88E+10	1.84E+10	1.81E+10
pr144	4.86E+11	2.32E+11	1.11E+11	5.27E+10	2.51E+10	1.20E+10	5.72E+09

0 principal photon sources in group 7, photons/sec
mean energy = .3000 mev. nuclides exceeding 1.0E-03 of total group release rate (3.79E+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	1.21E+09	1.14E+09	1.08E+09	1.03E+09	9.72E+08	9.21E+08	8.73E+08
sr 90	1.07E+10	1.05E+10	1.03E+10	1.01E+10	9.89E+09	9.69E+09	9.50E+09
y 90	3.78E+11	3.70E+11	3.63E+11	3.55E+11	3.48E+11	3.41E+11	3.34E+11
rh106	6.26E+10	3.55E+10	2.01E+10	1.14E+10	6.46E+09	3.66E+09	2.07E+09
cs137	1.03E+10	1.01E+10	9.88E+09	9.69E+09	9.51E+09	9.33E+09	9.15E+09
pr144	5.69E+11	2.71E+11	1.29E+11	6.17E+10	2.94E+10	1.40E+10	6.69E+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 (5.73E+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	1.60E+11	1.56E+11	1.53E+11	1.50E+11	1.47E+11	1.44E+11	1.41E+11
rh106	1.93E+11	1.09E+11	6.21E+10	3.52E+10	1.99E+10	1.13E+10	6.41E+09
sb125	2.29E+10	1.86E+10	1.51E+10	1.22E+10	9.86E+09	7.98E+09	6.46E+09
ba137m	6.12E+12	6.00E+12	5.88E+12	5.77E+12	5.66E+12	5.55E+12	5.45E+12
pr144	3.88E+11	1.85E+11	8.83E+10	4.21E+10	2.01E+10	9.58E+09	4.57E+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 (2.14E+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	2.08E+10	2.04E+10	2.00E+10	1.96E+10	1.92E+10	1.88E+10	1.84E+10
rh106	1.80E+10	1.02E+10	5.78E+09	3.28E+09	1.86E+09	1.05E+09	5.97E+08

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    pr144   4.97E+10  2.37E+10  1.13E+10  5.39E+09  2.57E+09  1.23E+09  5.85E+08
    eu152   3.37E+08  3.23E+08  3.09E+08  2.96E+08  2.84E+08  2.72E+08  2.60E+08
    eu154   8.42E+07  7.87E+07  7.36E+07  6.88E+07  6.44E+07  6.02E+07  5.63E+07
0                  principal photon sources in group 10, photons/sec
     mean energy = 1.5750 mev.  nuclides exceeding  1.0E-03 of total group release rate (3.49E+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  2.66E+09  2.61E+09  2.55E+09  2.50E+09  2.45E+09  2.40E+09  2.35E+09
   rh106  3.39E+09  1.92E+09  1.09E+09  6.18E+08  3.50E+08  1.99E+08  1.13E+08
   cs134  2.37E+07  1.79E+07  1.35E+07  1.02E+07  7.71E+06  5.83E+06  4.41E+06
   pr144  3.09E+10  1.47E+10  7.03E+09  3.35E+09  1.60E+09  7.63E+08  3.64E+08
   eu152  1.55E+08  1.48E+08  1.42E+08  1.36E+08  1.30E+08  1.25E+08  1.19E+08
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  1.59E+08  1.56E+08  1.53E+08  1.50E+08  1.47E+08  1.44E+08  1.41E+08
   rh106  1.10E+09  6.25E+08  3.54E+08  2.01E+08  1.14E+08  6.45E+07  3.66E+07
   pr144  5.99E+10  2.86E+10  1.36E+10  6.50E+09  3.10E+09  1.48E+09  7.05E+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 (5.01E+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
    y 90  9.28E+04  9.10E+04  8.91E+04  8.73E+04  8.55E+04  8.38E+04  8.21E+04
   rh106  6.16E+08  3.49E+08  1.98E+08  1.12E+08  6.36E+07  3.61E+07  2.04E+07
   pr144  5.66E+08  2.70E+08  1.29E+08  6.14E+07  2.93E+07  1.40E+07  6.67E+06
1                                                                                  page  72
0                  principal photon sources in group 13, photons/sec
     mean energy = 2.8000 mev.  nuclides exceeding  1.0E-03 of total group release rate (7.21E+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  1.04E+08  5.89E+07  3.34E+07  1.89E+07  1.07E+07  6.08E+06  3.45E+06
   pr144  4.56E+07  2.18E+07  1.04E+07  4.95E+06  2.36E+06  1.13E+06  5.37E+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 (1.05E+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  1.79E+07  1.01E+07  5.75E+06  3.26E+06  1.85E+06  1.05E+06  5.93E+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 (4.61E+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  7.88E+03  4.47E+03  2.53E+03  1.44E+03  8.14E+02  4.61E+02  2.61E+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 (2.01E-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
   ce142  1.46E-07  1.46E-07  1.46E-07  1.46E-07  1.46E-07  1.46E-07  1.46E-07
   sm147  5.38E-08  5.42E-08  5.46E-08  5.49E-08  5.51E-08  5.52E-08  5.54E-08
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-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  7.32E-08  7.32E-08  7.32E-08  7.32E-08  7.32E-08  7.32E-08  7.32E-08
   sm147  2.70E-08  2.72E-08  2.74E-08  2.75E-08  2.76E-08  2.77E-08  2.78E-08
0                  principal photon sources in group 18, photons/sec
     mean energy = 5.5000 mev.  nuclides exceeding  1.0E-03 of total group release rate (7.49E-08) 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  5.43E-08  5.43E-08  5.43E-08  5.43E-08  5.43E-08  5.43E-08  5.43E-08
```

sm147 2.00E-08 2.02E-08 2.03E-08 2.04E-08 2.05E-08 2.06E-08 2.06E-08

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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= 146.mwd, flux= 2.79E+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	8.65E+11	8.63E+11	8.61E+11	8.59E+11	8.57E+11	8.55E+11
3.00E-02	8.46E+12	4.62E+10	4.62E+10	4.62E+10	4.62E+10	4.62E+10	4.62E+10
5.50E-02	1.09E+13	2.08E+10	2.08E+10	2.08E+10	2.08E+10	2.08E+10	2.08E+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	2.91E+10	2.91E+10	2.91E+10	2.91E+10	2.91E+10	2.91E+10
1.70E-01	1.72E+12	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10
3.00E-01	2.87E+13	1.30E+11	1.30E+11	1.30E+11	1.30E+11	1.30E+11	1.30E+11
6.50E-01	1.45E+12	6.31E+09	6.31E+09	6.31E+09	6.31E+09	6.31E+09	6.31E+09
1.13E+00	1.86E+12	9.19E+08	9.19E+08	9.19E+08	9.19E+08	9.19E+08	9.19E+08
1.58E+00	1.10E+08	1.10E+08	1.10E+08	1.10E+08	1.11E+08	1.11E+08	1.11E+08
2.00E+00	3.72E+07	3.72E+07	3.72E+07	3.72E+07	3.72E+07	3.72E+07	3.72E+07
2.40E+00	4.45E+05	4.52E+05	4.59E+05	4.66E+05	4.73E+05	4.80E+05	4.87E+05
2.80E+00	1.61E+06	1.63E+06	1.63E+06	1.64E+06	1.64E+06	1.64E+06	1.64E+06
3.25E+00	1.44E+04	1.44E+04	1.45E+04	1.45E+04	1.46E+04	1.46E+04	1.47E+04
3.75E+00	6.40E+03	6.39E+03	6.39E+03	6.39E+03	6.38E+03	6.38E+03	6.38E+03
4.25E+00	3.69E+03	3.69E+03	3.69E+03	3.69E+03	3.69E+03	3.68E+03	3.68E+03
4.75E+00	2.13E+03	2.13E+03	2.13E+03	2.13E+03	2.13E+03	2.13E+03	2.13E+03
5.50E+00	1.92E+03	1.92E+03	1.92E+03	1.92E+03	1.92E+03	1.92E+03	1.92E+03
0 total	2.93E+14	1.27E+12	1.27E+12	1.26E+12	1.26E+12	1.26E+12	1.26E+12
0 mev/sec	2.51E+13	7.52E+10	7.52E+10	7.52E+10	7.52E+10	7.51E+10	7.51E+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	3.34E+08	2.16E+06	2.16E+06	2.15E+06	2.15E+06	2.14E+06	2.14E+06
3.00E-02	6.34E+07	3.46E+05	3.46E+05	3.46E+05	3.46E+05	3.46E+05	3.46E+05
5.50E-02	1.50E+08	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+05	2.86E+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	8.72E+05	8.72E+05	8.72E+05	8.72E+05	8.72E+05	8.72E+05
1.70E-01	7.31E+07	8.08E+05	8.08E+05	8.08E+05	8.08E+05	8.08E+05	8.08E+05
3.00E-01	2.15E+09	9.78E+06	9.78E+06	9.78E+06	9.78E+06	9.78E+06	9.78E+06
6.50E-01	2.36E+08	1.03E+06	1.03E+06	1.03E+06	1.03E+06	1.03E+06	1.03E+06
1.13E+00	5.23E+08	2.58E+05	2.58E+05	2.58E+05	2.58E+05	2.59E+05	2.59E+05
1.58E+00	4.34E+04	4.35E+04	4.35E+04	4.35E+04	4.35E+04	4.35E+04	4.36E+04
2.00E+00	1.86E+04	1.86E+04	1.86E+04	1.86E+04	1.86E+04	1.86E+04	1.86E+04
2.40E+00	2.67E+02	2.71E+02	2.76E+02	2.80E+02	2.84E+02	2.88E+02	2.92E+02
2.80E+00	1.13E+03	1.14E+03	1.14E+03	1.15E+03	1.15E+03	1.15E+03	1.15E+03
3.25E+00	1.17E+01	1.17E+01	1.18E+01	1.18E+01	1.18E+01	1.19E+01	1.19E+01
3.75E+00	6.00E+00	5.99E+00	5.99E+00	5.99E+00	5.98E+00	5.98E+00	5.98E+00
4.25E+00	3.92E+00	3.92E+00	3.92E+00	3.92E+00	3.92E+00	3.91E+00	3.91E+00
4.75E+00	2.53E+00	2.53E+00	2.53E+00	2.53E+00	2.53E+00	2.53E+00	2.53E+00
5.50E+00	2.64E+00	2.64E+00	2.64E+00	2.64E+00	2.64E+00	2.64E+00	2.64E+00
0 total	6.28E+09	1.88E+07	1.88E+07	1.88E+07	1.88E+07	1.88E+07	1.88E+07
0 gamma watts	4.02E+00	1.21E-02	1.21E-02	1.21E-02	1.20E-02	1.20E-02	1.20E-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	3.48E-10	3.55E-10	3.62E-10	3.70E-10	3.77E-10	3.85E-10	3.92E-10
bi210	8.87E-08	9.06E-08	9.24E-08	9.43E-08	9.62E-08	9.82E-08	1.00E-07
bi211	8.72E-01	8.82E-01	8.92E-01	9.02E-01	9.12E-01	9.22E-01	9.32E-01
bi212	5.58E-02	5.64E-02	5.67E-02	5.69E-02	5.69E-02	5.69E-02	5.69E-02
bi213	3.11E-04	3.16E-04	3.21E-04	3.26E-04	3.32E-04	3.37E-04	3.43E-04
bi214	7.25E-05	7.37E-05	7.49E-05	7.61E-05	7.73E-05	7.86E-05	7.98E-05
po210	1.09E-01	1.09E-01	1.11E-01	1.13E-01	1.15E-01	1.18E-01	1.20E-01
po211	3.45E-03	3.49E-03	3.53E-03	3.57E-03	3.61E-03	3.65E-03	3.69E-03
po212	2.86E-01	2.89E-01	2.90E-01	2.91E-01	2.92E-01	2.92E-01	2.91E-01
po213	4.10E-02	4.17E-02	4.24E-02	4.31E-02	4.38E-02	4.45E-02	4.52E-02
po214	6.46E-01	6.56E-01	6.67E-01	6.78E-01	6.89E-01	7.00E-01	7.11E-01
po215	1.23E+00	1.25E+00	1.26E+00	1.28E+00	1.29E+00	1.30E+00	1.32E+00
po216	2.23E-01	2.25E-01	2.27E-01	2.27E-01	2.28E-01	2.27E-01	2.27E-01
po218	3.07E-01	3.12E-01	3.17E-01	3.23E-01	3.28E-01	3.33E-01	3.38E-01
at217	2.66E-02	2.70E-02	2.75E-02	2.79E-02	2.84E-02	2.88E-02	2.93E-02
rn218	4.21E-12	1.66E-16	6.51E-21	2.56E-25	.00E+00	.00E+00	.00E+00
rn219	9.80E-01	9.92E-01	1.00E+00	1.01E+00	1.03E+00	1.04E+00	1.05E+00
rn220	1.77E-01	1.79E-01	1.79E-01	1.80E-01	1.80E-01	1.80E-01	1.80E-01
rn222	2.24E-01	2.28E-01	2.32E-01	2.36E-01	2.39E-01	2.43E-01	2.47E-01
fr221	1.94E-02	1.97E-02	2.00E-02	2.04E-02	2.07E-02	2.10E-02	2.14E-02
fr223	3.71E-07	3.75E-07	3.79E-07	3.84E-07	3.88E-07	3.92E-07	3.96E-07
ra222	3.25E-12	1.28E-16	5.03E-21	1.98E-25	.00E+00	.00E+00	.00E+00
ra223	5.67E-01	5.74E-01	5.81E-01	5.87E-01	5.94E-01	6.00E-01	6.07E-01
ra224	1.25E-01	1.26E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01	1.27E-01
ra226	1.31E-01	1.33E-01	1.36E-01	1.38E-01	1.40E-01	1.42E-01	1.45E-01
ac225	1.39E-02	1.42E-02	1.44E-02	1.46E-02	1.49E-02	1.51E-02	1.54E-02
ac227	4.17E-03	4.22E-03	4.27E-03	4.32E-03	4.36E-03	4.41E-03	4.46E-03
ac228	2.11E-13	2.12E-13	2.14E-13	2.16E-13	2.18E-13	2.20E-13	2.22E-13
th226	2.94E-12	1.16E-16	4.54E-21	1.79E-25	.00E+00	.00E+00	.00E+00
th227	6.26E-01	6.33E-01	6.41E-01	6.48E-01	6.55E-01	6.62E-01	6.69E-01
th228	1.05E-01	1.06E-01	1.07E-01	1.07E-01	1.07E-01	1.07E-01	1.07E-01
th229	8.15E-03	8.28E-03	8.42E-03	8.56E-03	8.70E-03	8.84E-03	8.98E-03
th230	5.67E+00	5.71E+00	5.76E+00	5.81E+00	5.85E+00	5.90E+00	5.95E+00
th232	2.93E-06	2.95E-06	2.97E-06	3.00E-06	3.02E-06	3.05E-06	3.07E-06
pa231	4.76E-01	4.80E-01	4.84E-01	4.88E-01	4.92E-01	4.96E-01	5.00E-01
u230	2.31E-12	9.09E-17	3.58E-21	1.41E-25	.00E+00	.00E+00	.00E+00
u231	1.49E-12	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
u232	1.01E-01	1.01E-01	1.01E-01	1.00E-01	1.00E-01	9.96E-02	9.90E-02
u233	1.62E+00	1.63E+00	1.65E+00	1.66E+00	1.68E+00	1.69E+00	1.71E+00
u234	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03	6.63E+03
u235	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.37E+02
u236	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03	1.04E+03
u238	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02	8.32E+02
np235	2.41E-08	1.42E-08	8.31E-09	4.88E-09	2.87E-09	1.68E-09	9.88E-10
np237	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03	3.35E+03
pu236	1.41E-01	1.16E-01	9.50E-02	7.78E-02	6.38E-02	5.23E-02	4.28E-02
pu237	1.26E-08	1.18E-10	1.10E-12	1.03E-14	9.68E-17	9.07E-19	8.49E-21
pu238	4.56E+04	4.53E+04	4.50E+04	4.47E+04	4.44E+04	4.41E+04	4.38E+04

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
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	5.03E+03	5.03E+03	5.03E+03	5.03E+03	5.03E+03	5.03E+03	5.03E+03
pu240	9.14E+00	9.14E+00	9.14E+00	9.14E+00	9.14E+00	9.14E+00	9.13E+00
pu241	2.24E-05	2.15E-05	2.06E-05	1.98E-05	1.91E-05	1.83E-05	1.76E-05
pu242	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08	1.08E-08
am239	6.85E-16	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am240	1.08E-15	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am241	6.56E-02	6.75E-02	6.92E-02	7.08E-02	7.24E-02	7.40E-02	7.54E-02
am242m	3.95E-08	3.93E-08	3.91E-08	3.90E-08	3.88E-08	3.87E-08	3.85E-08
am243	1.29E-10	1.29E-10	1.29E-10	1.29E-10	1.29E-10	1.29E-10	1.29E-10
cm241	8.45E-18	1.36E-20	2.19E-23	3.52E-26	5.66E-29	.00E+00	.00E+00
cm242	6.41E-04	1.85E-04	5.96E-05	2.51E-05	1.56E-05	1.30E-05	1.22E-05
cm243	8.38E-12	8.21E-12	8.05E-12	7.88E-12	7.73E-12	7.57E-12	7.42E-12
cm244	3.49E-12	3.38E-12	3.28E-12	3.18E-12	3.08E-12	2.98E-12	2.89E-12
cm245	9.03E-20	9.03E-20	9.03E-20	9.03E-20	9.03E-20	9.03E-20	9.03E-20
cm246	1.15E-23	1.15E-23	1.15E-23	1.15E-23	1.15E-23	1.15E-23	1.15E-23
0 total	6.26E+04	6.23E+04	6.20E+04	6.17E+04	6.14E+04	6.11E+04	6.08E+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
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	1.45E-04	1.47E-04	1.48E-04	1.49E-04	1.50E-04	1.51E-04	1.53E-04
pa231	5.97E-05	6.02E-05	6.07E-05	6.12E-05	6.17E-05	6.22E-05	6.27E-05
u232	6.20E-06	6.20E-06	6.19E-06	6.17E-06	6.14E-06	6.12E-06	6.08E-06
u234	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01	1.43E+01
u235	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00	1.67E+00
u236	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02	1.57E+02
u237	1.22E-09	7.87E-19	7.56E-19	7.26E-19	6.98E-19	6.70E-19	6.44E-19
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	7.39E-10	7.39E-10	7.39E-10	7.39E-10	7.39E-10	7.39E-10	7.39E-10
np238	2.02E-08	1.15E-20	1.15E-20	1.14E-20	1.14E-20	1.13E-20	1.13E-20
np239	1.98E-05	1.33E-21	1.33E-21	1.33E-21	1.33E-21	1.33E-21	1.33E-21
pu236	9.56E-03	7.84E-03	6.43E-03	5.27E-03	4.32E-03	3.54E-03	2.90E-03
pu238	8.41E+03	8.36E+03	8.30E+03	8.25E+03	8.20E+03	8.14E+03	8.09E+03
pu239	2.69E+00	2.69E+00	2.69E+00	2.69E+00	2.69E+00	2.69E+00	2.69E+00
pu240	6.08E+01	6.08E+01	6.07E+01	6.07E+01	6.07E+01	6.07E+01	6.07E+01
pu241	8.05E-07	7.73E-07	7.43E-07	7.14E-07	6.85E-07	6.58E-07	6.32E-07
pu242	8.44E-06	8.44E-06	8.44E-06	8.44E-06	8.44E-06	8.44E-06	8.44E-06
pu243	6.83E-19	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu244	2.24E-38	2.43E-38	2.62E-38	2.81E-38	3.00E-38	3.20E-38	3.39E-38
am241	2.53E-05	2.60E-05	2.66E-05	2.73E-05	2.79E-05	2.85E-05	2.90E-05
am242m	1.88E-07	1.87E-07	1.86E-07	1.85E-07	1.85E-07	1.84E-07	1.83E-07
am242	1.07E-08	2.03E-10	2.02E-10	2.01E-10	2.00E-10	2.00E-10	1.99E-10
am243	5.93E-13	5.93E-13	5.93E-13	5.93E-13	5.92E-13	5.92E-13	5.92E-13
am244	1.19E-20	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
cm242	3.20E-03	9.25E-04	2.97E-04	1.25E-04	7.79E-05	6.48E-05	6.10E-05
cm243	1.82E-13	1.78E-13	1.75E-13	1.71E-13	1.68E-13	1.64E-13	1.61E-13
cm244	4.56E-10	4.41E-10	4.28E-10	4.14E-10	4.01E-10	3.89E-10	3.76E-10
cm245	2.45E-20	2.45E-20	2.45E-20	2.45E-20	2.45E-20	2.45E-20	2.45E-20
cm246	4.14E-19	4.14E-19	4.14E-19	4.14E-19	4.14E-19	4.14E-19	4.14E-19
cm248	2.92E-29	2.92E-29	2.92E-29	2.92E-29	2.92E-29	2.92E-29	2.92E-29
cf249	1.92E-39	1.92E-39	1.92E-39	1.92E-39	1.92E-39	1.92E-39	1.92E-39
0 total	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05	1.26E+05

0	total	1.89E+05	1.88E+05	1.88E+05	1.88E+05	1.87E+05	1.87E+05	1.87E+05

1

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	1.212E+04	1.206E+04	1.201E+04	1.195E+04	1.189E+04	1.184E+04	1.178E+04
3	1.85E+00 - 3.00E+00	3.434E+04	3.418E+04	3.401E+04	3.385E+04	3.369E+04	3.353E+04	3.337E+04
4	1.40E+00 - 1.85E+00	9.222E+03	9.179E+03	9.135E+03	9.092E+03	9.049E+03	9.006E+03	8.963E+03
5	9.00E-01 - 1.40E+00	5.187E+03	5.163E+03	5.139E+03	5.114E+03	5.090E+03	5.066E+03	5.042E+03
6	4.00E-01 - 9.00E-01	1.507E+03	1.500E+03	1.493E+03	1.486E+03	1.478E+03	1.471E+03	1.464E+03
7	1.00E-01 - 4.00E-01	2.355E+02	2.344E+02	2.333E+02	2.322E+02	2.311E+02	2.300E+02	2.289E+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		6.261E+04	6.232E+04	6.202E+04	6.172E+04	6.143E+04	6.114E+04	6.085E+04

1

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	2.406E+03	2.405E+03	2.404E+03	2.403E+03	2.402E+03	2.401E+03	2.400E+03
2	3.00E+00 - 6.43E+00	2.637E+04	2.636E+04	2.635E+04	2.634E+04	2.633E+04	2.632E+04	2.631E+04
3	1.85E+00 - 3.00E+00	2.874E+04	2.873E+04	2.872E+04	2.870E+04	2.869E+04	2.868E+04	2.867E+04
4	1.40E+00 - 1.85E+00	1.629E+04	1.628E+04	1.627E+04	1.627E+04	1.626E+04	1.625E+04	1.625E+04
5	9.00E-01 - 1.40E+00	2.235E+04	2.235E+04	2.234E+04	2.233E+04	2.232E+04	2.231E+04	2.230E+04
6	4.00E-01 - 9.00E-01	2.491E+04	2.490E+04	2.489E+04	2.488E+04	2.487E+04	2.486E+04	2.485E+04
7	1.00E-01 - 4.00E-01	4.918E+03	4.916E+03	4.914E+03	4.912E+03	4.910E+03	4.907E+03	4.905E+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		1.260E+05	1.259E+05	1.259E+05	1.258E+05	1.258E+05	1.257E+05	1.257E+05

1

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	2.406E+03	2.405E+03	2.404E+03	2.403E+03	2.402E+03	2.401E+03	2.400E+03
2	3.00E+00	- 6.43E+00	3.850E+04	3.843E+04	3.836E+04	3.829E+04	3.822E+04	3.815E+04	3.809E+04
3	1.85E+00	- 3.00E+00	6.308E+04	6.290E+04	6.273E+04	6.256E+04	6.238E+04	6.221E+04	6.204E+04
4	1.40E+00	- 1.85E+00	2.551E+04	2.546E+04	2.541E+04	2.536E+04	2.531E+04	2.526E+04	2.521E+04
5	9.00E-01	- 1.40E+00	2.754E+04	2.751E+04	2.747E+04	2.744E+04	2.741E+04	2.737E+04	2.734E+04
6	4.00E-01	- 9.00E-01	2.642E+04	2.640E+04	2.638E+04	2.636E+04	2.635E+04	2.633E+04	2.631E+04
7	1.00E-01	- 4.00E-01	5.154E+03	5.150E+03	5.147E+03	5.144E+03	5.141E+03	5.137E+03	5.134E+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			1.886E+05	1.883E+05	1.879E+05	1.876E+05	1.872E+05	1.869E+05	1.865E+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

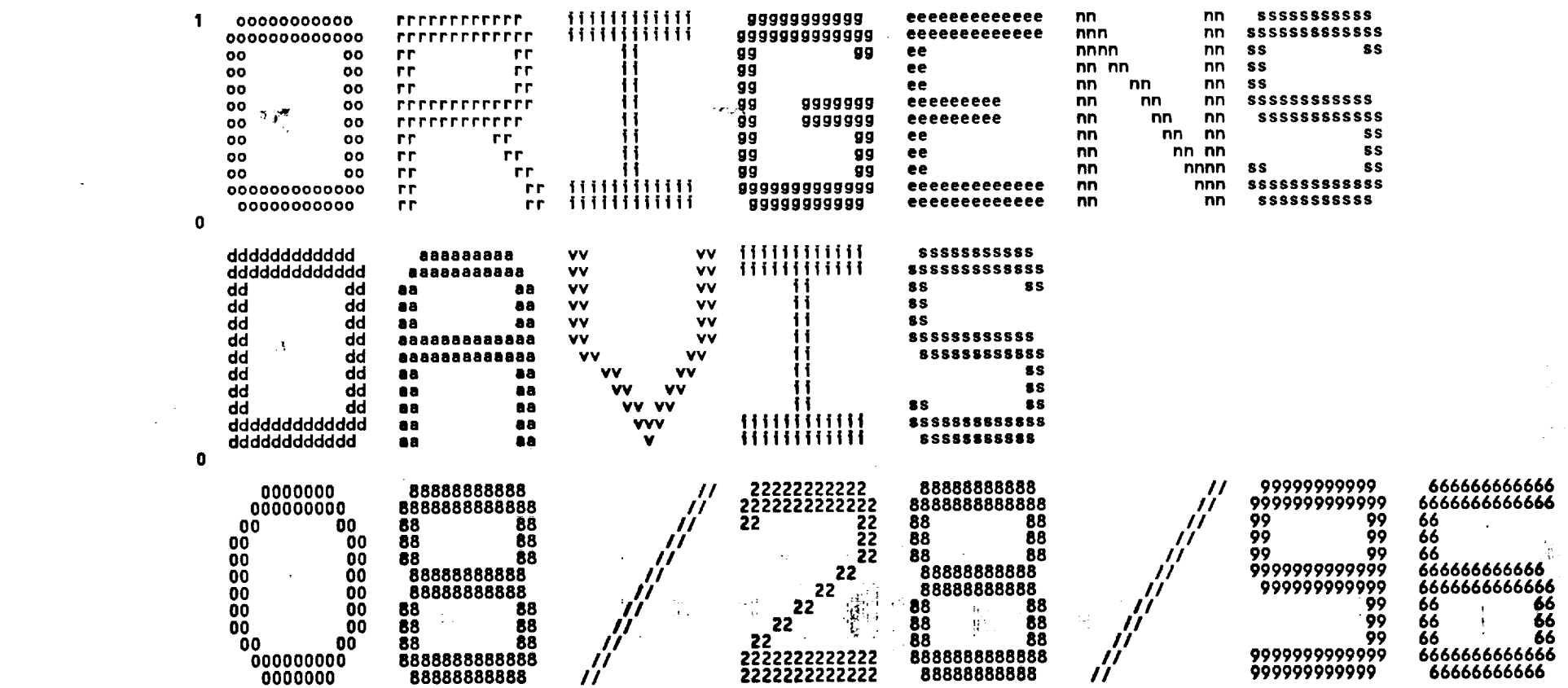
1 gamma source spectrum for gamma lines (sas2)
0 1826.25 day time of the requested nuclides
0

energy interval in mev			photons / second	mev / second
1.0000E-02	to	5.0000E-02	3.8302E+12	1.1491E+11
5.0000E-02	to	1.0000E-01	1.2026E+12	9.0196E+10
1.0000E-01	to	2.0000E-01	7.3628E+11	1.1044E+11
2.0000E-01	to	3.0000E-01	2.3336E+11	5.8341E+10
3.0000E-01	to	4.0000E-01	2.5637E+11	8.9730E+10
4.0000E-01	to	6.0000E-01	1.2042E+11	6.0208E+10
6.0000E-01	to	8.0000E-01	5.1131E+12	3.5792E+12
8.0000E-01	to	1.0000E+00	2.1239E+10	1.9115E+10
1.0000E+00	to	1.3300E+00	1.2983E+10	1.5125E+10
1.3300E+00	to	1.6600E+00	2.8176E+09	4.2123E+09
1.6600E+00	to	2.0000E+00	5.5369E+08	1.0133E+09
2.0000E+00	to	2.5000E+00	6.7003E+08	1.5076E+09
2.5000E+00	to	3.0000E+00	6.4986E+06	1.7871E+07
3.0000E+00	to	4.0000E+00	5.6448E+05	1.9757E+06
4.0000E+00	to	5.0000E+00	5.7240E+03	2.5758E+04
5.0000E+00	to	6.5000E+00	2.2820E+03	1.3122E+04
6.5000E+00	to	8.0000E+00	4.4500E+02	3.2262E+03
8.0000E+00	to	1.0000E+01	9.4093E+01	8.4683E+02
totals			1.1531E+13	4.1440E+12

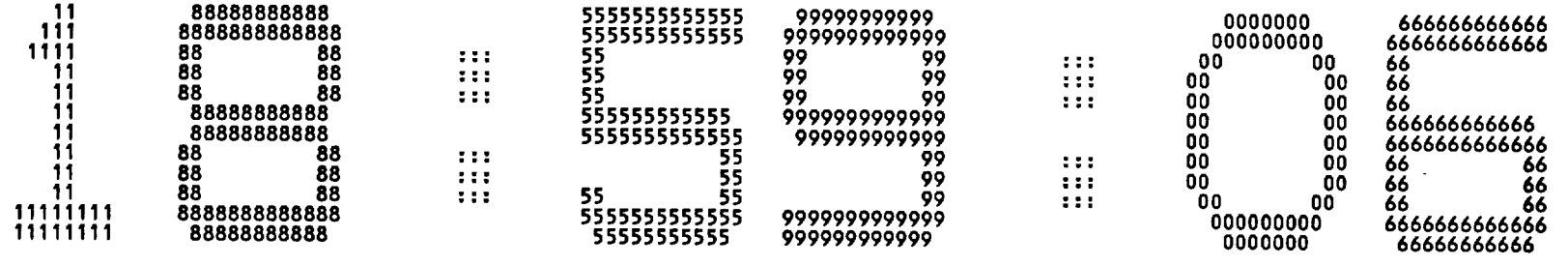
0
0 total energy from nuclides with spectrum data = 4.1440E+12
0 total energy from nuclides with no spectrum data = 5.5050E+05
1
0 .results on logical unit no. 71, position 2, for time step 6, subcase 7. (run position 1, case position 2)
title: sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 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=1 nlib/cyc=10 volfueltot=1.1494E7
printlevel=6 inplevel=0 end
power=0.004 burn=3.6525e5 down=1.82625e3
   end
```



0



1
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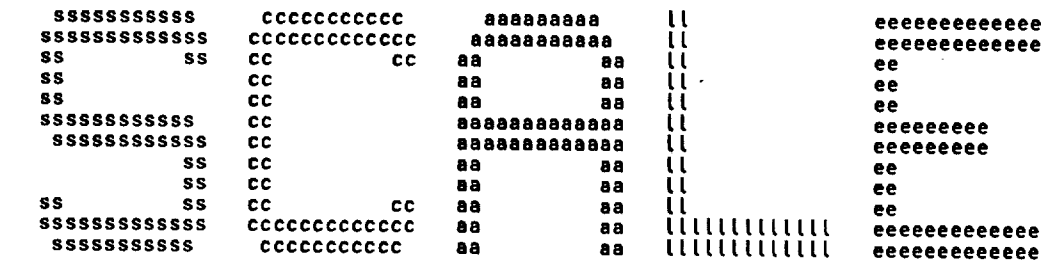

```
*********************************************************************************
*********************************************************************************
*********************************************************************************
*****                                                                       *****
*****                  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:  18:59:06                                      *****
*****                                                                       *****
```

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

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+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

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+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         ********************************************************************************
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

0 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
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

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	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

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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
```

nd144	4.50E-07	4.87E-07	5.25E-07	5.62E-07	5.99E-07	5.99E-07
mo 97	3.40E-07	3.68E-07	3.97E-07	4.25E-07	4.53E-07	4.53E-07
ag109	2.58E-07	2.81E-07	3.05E-07	3.29E-07	3.53E-07	3.53E-07
pm147	2.71E-07	2.71E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
zr 91	1.60E-07	1.73E-07	1.87E-07	2.00E-07	2.13E-07	2.13E-07
y 89	1.54E-07	1.67E-07	1.79E-07	1.92E-07	2.05E-07	2.05E-07
ru102	1.39E-07	1.50E-07	1.62E-07	1.73E-07	1.85E-07	1.85E-07
ce142	1.25E-07	1.35E-07	1.46E-07	1.56E-07	1.66E-07	1.66E-07
eu155	1.60E-07	1.60E-07	1.60E-07	1.60E-07	1.61E-07	1.61E-07
nd148	1.20E-07	1.30E-07	1.40E-07	1.50E-07	1.60E-07	1.60E-07
nd146	1.01E-07	1.09E-07	1.17E-07	1.26E-07	1.34E-07	1.34E-07
ba138	8.61E-08	9.33E-08	1.00E-07	1.08E-07	1.15E-07	1.15E-07
pd108	8.45E-08	9.19E-08	9.93E-08	1.07E-07	1.14E-07	1.14E-07
in115	8.31E-08	9.00E-08	9.69E-08	1.04E-07	1.11E-07	1.11E-07
ce140	8.07E-08	8.74E-08	9.41E-08	1.01E-07	1.07E-07	1.07E-07
xe132	7.22E-08	7.82E-08	8.42E-08	9.02E-08	9.62E-08	9.62E-08
pd107	4.96E-08	5.39E-08	5.82E-08	6.25E-08	6.68E-08	6.68E-08
mo 98	4.97E-08	5.38E-08	5.80E-08	6.21E-08	6.62E-08	6.62E-08
mo100	4.82E-08	5.22E-08	5.62E-08	6.02E-08	6.42E-08	6.42E-08
xe134	4.76E-08	5.15E-08	5.55E-08	5.94E-08	6.34E-08	6.34E-08
zr 92	3.86E-08	4.18E-08	4.50E-08	4.82E-08	5.14E-08	5.14E-08
i127	3.13E-08	3.40E-08	3.66E-08	3.92E-08	4.18E-08	4.18E-08

1 sas2h: far-field crit based on b&w 15x15, 3.00wt%, 20gwd/mtu 40% h2o/ 8% uo2 fission products page 32
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

zr 96	3.02E-08	3.27E-08	3.52E-08	3.77E-08	4.02E-08	4.02E-08
ru104	2.97E-08	3.22E-08	3.47E-08	3.72E-08	3.96E-08	3.96E-08
nd150	2.66E-08	2.88E-08	3.10E-08	3.32E-08	3.54E-08	3.54E-08
xe136	2.57E-08	2.79E-08	3.00E-08	3.21E-08	3.43E-08	3.43E-08
br 81	1.92E-08	2.08E-08	2.24E-08	2.40E-08	2.56E-08	2.56E-08
rb 85	1.86E-08	2.02E-08	2.17E-08	2.33E-08	2.48E-08	2.48E-08
zr 94	1.63E-08	1.76E-08	1.90E-08	2.03E-08	2.17E-08	2.17E-08
zr 90	1.31E-08	1.44E-08	1.56E-08	1.69E-08	1.81E-08	1.81E-08
cd111	1.28E-08	1.39E-08	1.50E-08	1.61E-08	1.72E-08	1.72E-08
sr 90	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08	1.71E-08
te130	1.17E-08	1.27E-08	1.36E-08	1.46E-08	1.56E-08	1.56E-08
eu152	9.87E-09	1.12E-08	1.25E-08	1.39E-08	1.52E-08	1.52E-08
sm154	1.14E-08	1.23E-08	1.33E-08	1.42E-08	1.52E-08	1.52E-08
rb 87	1.09E-08	1.18E-08	1.27E-08	1.36E-08	1.45E-08	1.45E-08
gd152	5.25E-09	6.47E-09	7.84E-09	9.36E-09	1.10E-08	1.10E-08
se 77	7.75E-09	8.39E-09	9.04E-09	9.68E-09	1.03E-08	1.03E-08
rh105	8.45E-09	8.48E-09	8.49E-09	8.50E-09	8.51E-09	8.47E-09
pd106	5.54E-09	6.01E-09	6.48E-09	6.96E-09	7.43E-09	7.43E-09
kr 84	5.12E-09	5.55E-09	5.97E-09	6.39E-09	6.82E-09	6.82E-09
se 79	3.97E-09	4.30E-09	4.63E-09	4.96E-09	5.29E-09	5.29E-09
sb121	3.77E-09	4.08E-09	4.40E-09	4.71E-09	5.03E-09	5.03E-09
sb123	3.07E-09	3.32E-09	3.58E-09	3.83E-09	4.09E-09	4.09E-09
kr 86	2.87E-09	3.11E-09	3.34E-09	3.58E-09	3.82E-09	3.82E-09
cs137	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09	3.76E-09
te128	2.56E-09	2.77E-09	2.98E-09	3.19E-09	3.41E-09	3.41E-09
gd156	2.32E-09	2.55E-09	2.78E-09	3.01E-09	3.25E-09	3.25E-09
pr143	2.67E-09	2.67E-09	2.67E-09	2.66E-09	2.66E-09	2.66E-09
se 80	1.85E-09	2.00E-09	2.16E-09	2.31E-09	2.47E-09	2.47E-09
dy161	1.73E-09	1.88E-09	2.04E-09	2.19E-09	2.35E-09	2.35E-09
te125	1.60E-09	1.74E-09	1.87E-09	2.01E-09	2.14E-09	2.14E-09
xe133	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09	2.02E-09
ce141	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09	1.60E-09
tb159	1.12E-09	1.22E-09	1.31E-09	1.41E-09	1.51E-09	1.51E-09

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

1

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.
 library 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

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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

1

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                 .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
```

power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec

basis =

(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

	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

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

fraction of total absorption rate

power= .00mw, burnup= 1023.mwd, flux= 2.69E+08n/cm**2-sec

	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

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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
```

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

1

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

1

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	
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

1

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
1						

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

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     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
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	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

1

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

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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+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
					time after discharge		
kr 85	4.64E+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
					time after discharge		
kr 85	1.35E+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

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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	8.28E+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

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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 (6.04E+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	4.15E+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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	2.50E+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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.99E+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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
kr 85	1.20E+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

1
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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.73E+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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	2.26E+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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	2.88E+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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.72E+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

1
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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
y 90	1.01E+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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
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	time after discharge						
	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d

```
     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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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
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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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	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

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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

1

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

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page 132

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

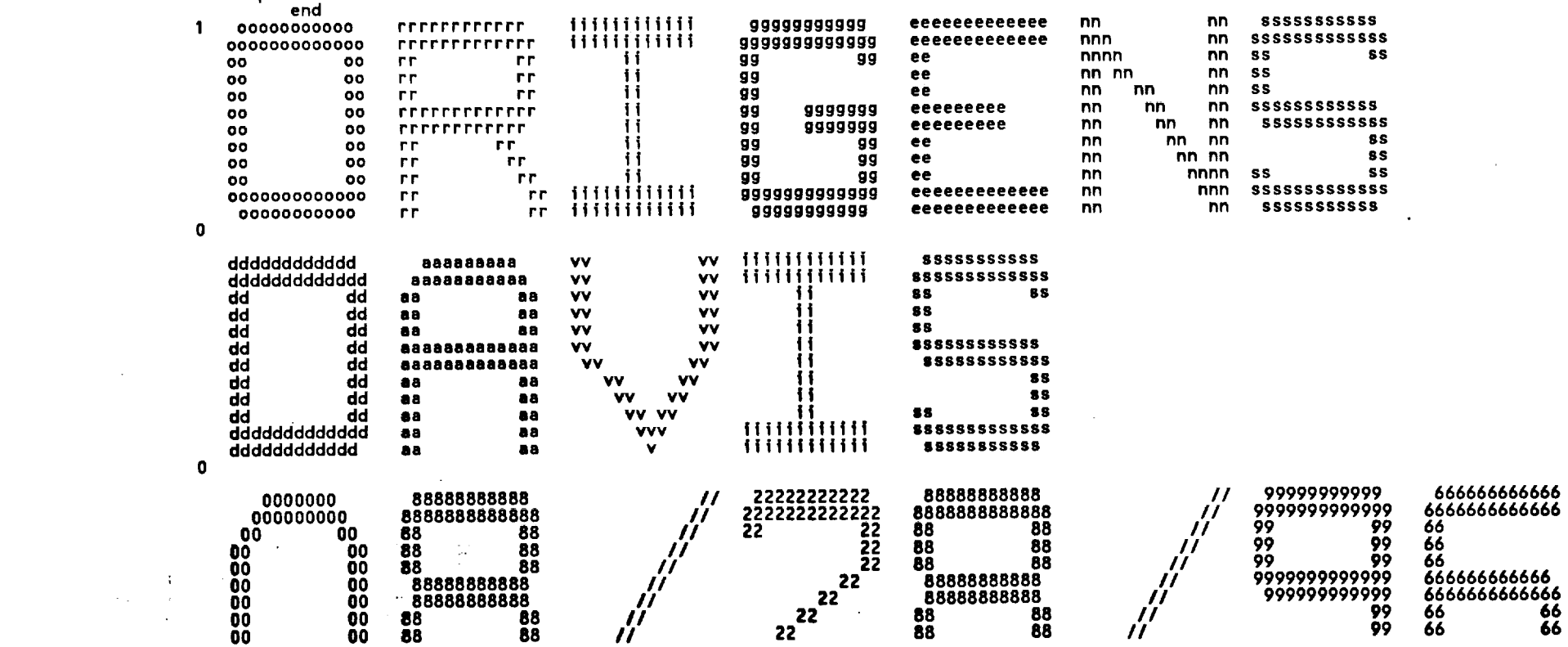
0	energy interval in mev		photons / second	mev / second
0				
	1.0000E-02 to	5.0000E-02	4.2926E+12	1.2878E+11
	5.0000E-02 to	1.0000E-01	1.2905E+12	9.6789E+10
	1.0000E-01 to	2.0000E-01	7.9924E+11	1.1989E+11
	2.0000E-01 to	3.0000E-01	2.5376E+11	6.3439E+10
	3.0000E-01 to	4.0000E-01	2.7579E+11	9.6525E+10
	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

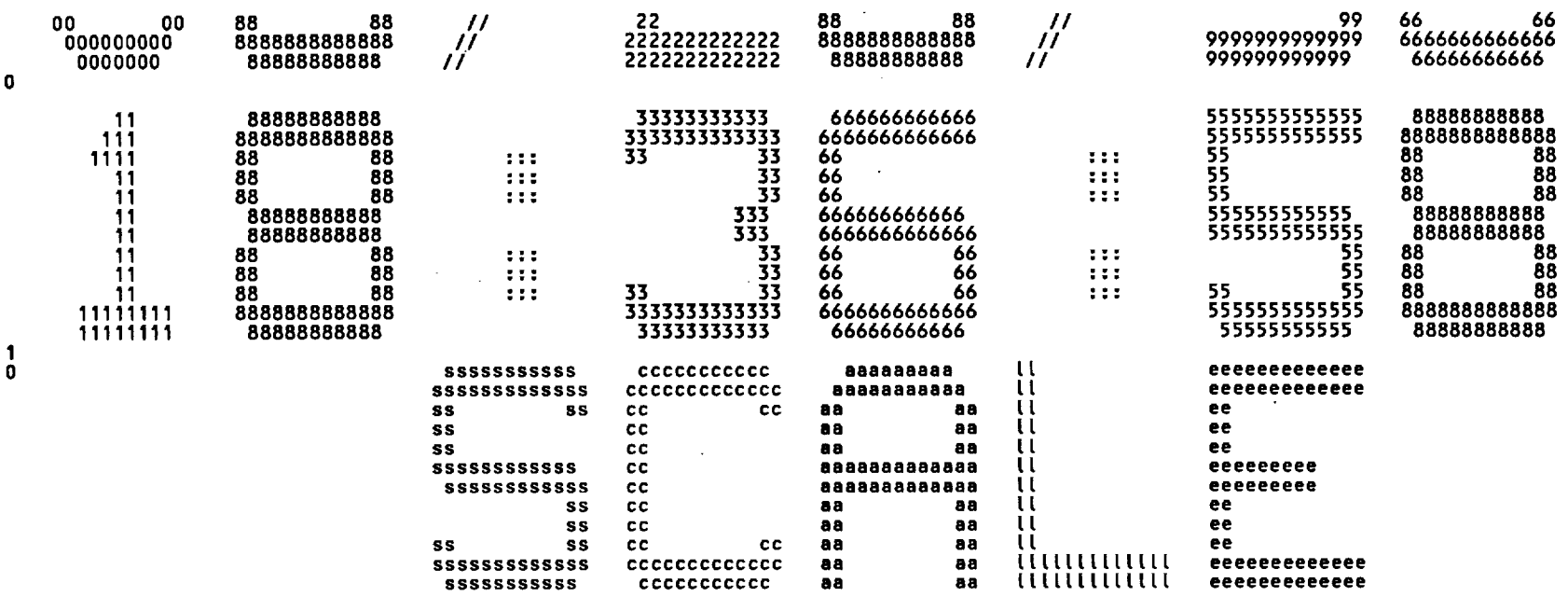
0

```
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
```




00 00 88 88 // 22 88 88 // 99 66 66
000000000 8888888888888 // 2222222222222 8888888888888 // 9999999999999 6666666666666
0000000 88888888888 // 2222222222222 88888888888 // 999999999999 66666666666
11 88888888888 33333333333 666666666666 5555555555555 88888888888
111 8888888888888 3333333333333 6666666666666 5555555555555 8888888888888
1111 88 88 ::: 33 33 66 ::: 55 88 88
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11111111 8888888888888 3333333333333 6666666666666 5555555555555 8888888888888
11111111 88888888888 33333333333 66666666666 55555555555 88888888888
sssssssssss ccccccccccc aaaaaaaaa ll eeeeeeeeeeeee
ssssssssssss ccccccccccccc aaaaaaaaaaa ll eeeeeeeeeeeee
ss ss cc cc aa aa ll ee
ss cc aa aa ll ee
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sssssssssss cc aaaaaaaaaaaaa ll eeeeeeeee
ssssssssssss cc aaaaaaaaaaaaa ll eeeeeeeee
ss cc aa aa ll ee
ss cc aa aa ll ee
ss ss cc cc aa aa ll ee
ssssssssssss ccccccccccccc aa aa lllllllllllll eeeeeeeeeeeee
sssssssssss ccccccccccc aa aa lllllllllllll eeeeeeeeeeeee
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         ************************************************************************
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
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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

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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+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

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

	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

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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

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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+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

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
```

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

1

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

1

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
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
1
      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

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

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

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

1 actinides page 64

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

1 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

1 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

1

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	time after discharge 304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
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	time after discharge 304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
1.00E-02	1.29E+06	1.42E-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	time after discharge 304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d

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 (mev)	time after discharge: 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

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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	1.31E+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	8.06E+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	4.03E+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	2.43E+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

	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	1.93E+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
kr 85	1.17E+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
y 90	1.67E+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
y 90	2.18E+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	initial	304.4 d	608.8 d	913.1 d	1217.5 d	1521.9 d	1826.3 d
				time after discharge			
y 90	2.79E+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

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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

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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 (mev)	time after discharge						
	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
0	total	2.94E+14	2.47E+12	2.46E+12	2.46E+12	2.45E+12	2.45E+12	2.45E+12
0	mev/sec	2.51E+13	1.15E+11	1.15E+11	1.15E+11	1.15E+11	1.15E+11	1.15E+11

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	3.36E+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
0	total	6.27E+09	2.88E+07	2.87E+07	2.87E+07	2.87E+07	2.87E+07	2.87E+07
0	gamma watts	4.02E+00	1.84E-02	1.84E-02	1.84E-02	1.84E-02	1.84E-02	1.84E-02

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
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

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
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

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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	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

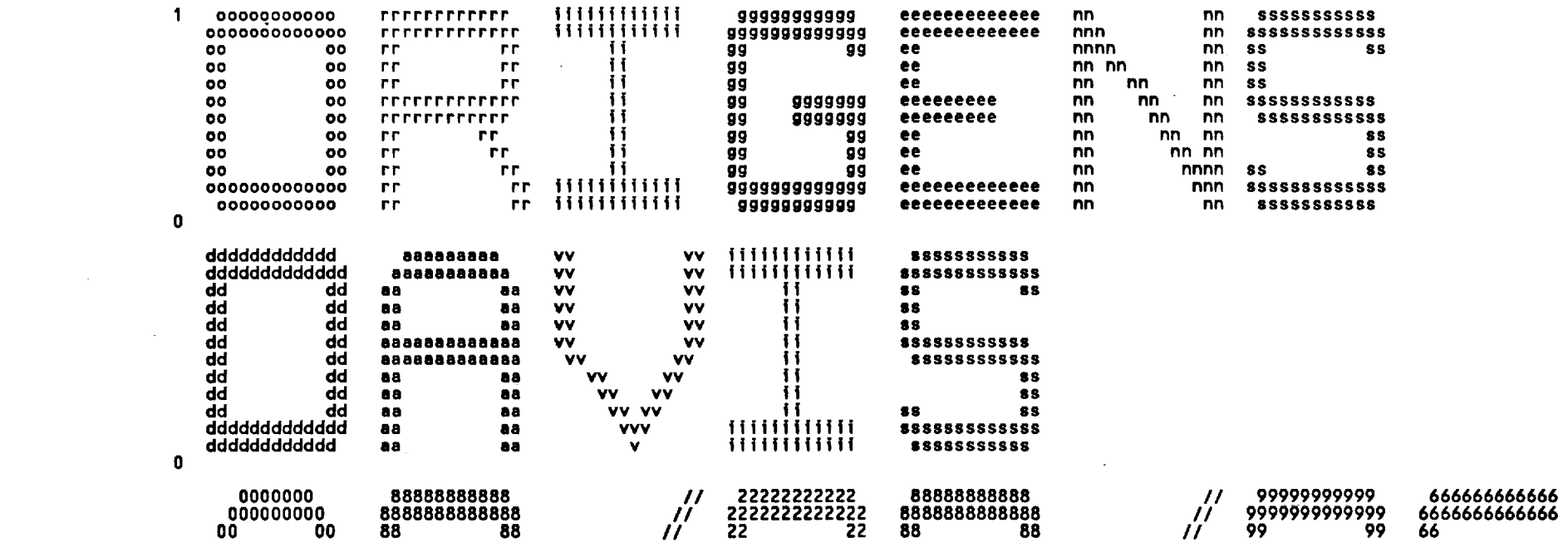
1 gamma source spectrum for gamma lines (sas2)
0 1826.25 day time of the requested nuclides
0 energy interval in mev photons / second mev / second
0

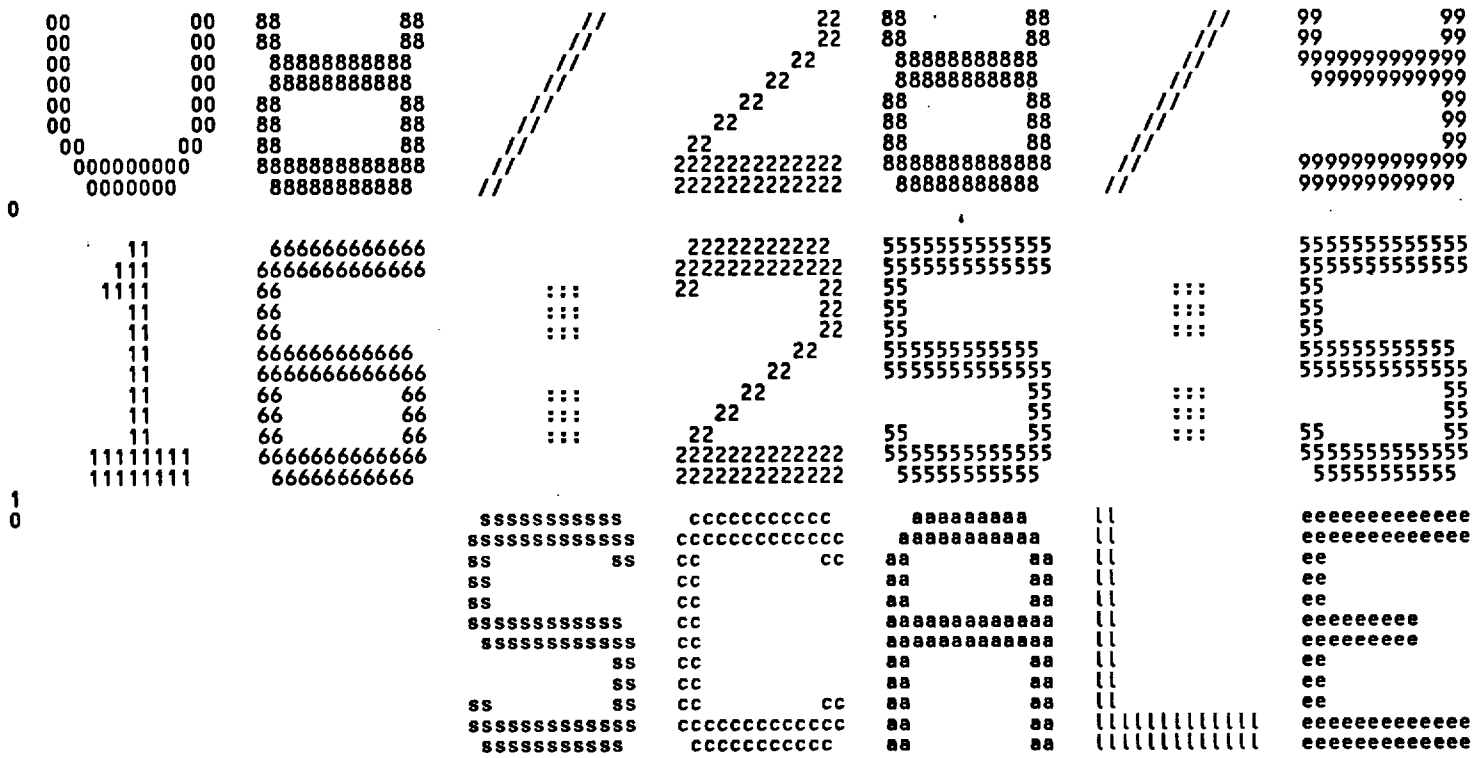
	1.0000E-02 to	5.0000E-02	4.5456E+12	1.3637E+11
	5.0000E-02 to	1.0000E-01	1.3084E+12	9.8128E+10
	1.0000E-01 to	2.0000E-01	8.0297E+11	1.2045E+11
	2.0000E-01 to	3.0000E-01	2.5946E+11	6.4865E+10
	3.0000E-01 to	4.0000E-01	2.9989E+11	1.0496E+11
	4.0000E-01 to	6.0000E-01	1.4630E+11	7.3149E+10
	6.0000E-01 to	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
0	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
```




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 densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          pass   1
          pass   0
          *scale-system control module sas2 library*
          used a time-dependent neutron spectrum, for each of the above passes
            pass 0 applies start-up fuel densities
            pass n applies mid time densities of nth library interval
          first library updated was...
          ****************************************************************************
          *                                                                          *
          *          prelim lwr origen-s binary working library--id = 1143           *
          *        made from modified card-image origen-s libraries of scale 4.2     *
          *     data from the light element, actinide, and fission product libraries *
          *       decay data, including gamma and total energy, are from endf/b-vi   *
          *                                                                          *
          *     neutron flux spectrum factors and cross sections were produced from  *
          *    the "presas2" case updating all nuclides on the scale "burnup" library *
          *                                                                          *
          *                fission product yields are from endf/b-v                  *
```

```
*                                                                              *
*             photon libraries use an 18-energy-group structure                *
*            the photon data are from the master photon data base,             *
*             produced to include bremsstrahlung from uo2 matrix               *
*                                                                              *
*       see information above this box (if present) for later updates          *
*                                                                              *
********************************************************************************
*                                                                              *
********************************************************************************
0
0              .other identification and sizes of library.
0               data set name:  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

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

```
         *       see information above this box (if present) for later updates       *
         *                                                                           *
         *****************************************************************************
         *                                                                           *
         *****************************************************************************
0                 .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
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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

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

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
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
1
     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 .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
0 689 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.)

	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

	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

	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	******* 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

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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

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     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
```

7993 number of nonzero off-diagonal matrix elements

****

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

basis =

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

	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

	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

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	******* 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
nd148	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

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	******* 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

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= 2.67E+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

1

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