20	4.36233E-01	-2.57754E-02	4.23240E-01	.00000E+00	.00000E+00	1.55009E-02	.00000E+00	2.95133E-01
21	1.18705E-01	-2.35238E-02	1.06422E-01	.00000E+00	.00000E+00	1.49508E-02	.00000E+00	7.68105E-02
22	2.13547E-01	-6.77078E-02	1.76253E-01	.00000E+00	.00000E+00	4.27190E-02	.00000E+00	1.31991E-01
23	7.31605E-01	-1.25645E-01	6.67572E-01	.00000E+00	.00000E+00	7.53704E-02	.00000E+00	4.78206E-01
24	5.50114E-01	-1.13917E-01	4.92030E-01	.00000E+00	.00000E+00	7.05000E-02	.00000E+00	3.55578E-01
25	2.34210E-01	-5.73766E-02	2.04347E-01	.00000E+00	.00000E+00	4.01535E-02	.00000E+00	1.49320E-01
26	1.52187E-01	-5.28068E-02	1.24118E-01	.00000E+00	.00000E+00	3.68822E-02	.00000E+00	9.35095E-02
27	2.47718E-02	-1.46389E-02	1.62895E-02	.00000E+00	.00000E+00	1.04036E-02	.00000E+00	1.35787E-02
28	2.32790E+01	6.06264E-02	2.32465E+01	.00000E+00	2.29558E-03	4.05807E-01	.00000E+00	1.60157E+01

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

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

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dv**2	total flux
1	1.73686E-01	1.12142E-02	1.74113E-01	1.12142E-02	.00000E+00	.00000E+00	.00000E+00	5.51864E-03
2	1.27745E+00	1.15429E-01	1.28154E+00	1.15429E-01	.00000E+00	.00000E+00	.00000E+00	4.06040E-02
3	1.61437E+00	1.45263E-01	1.61919E+00	1.45263E-01	.00000E+00	.00000E+00	.00000E+00	5.13074E-02
4	1.00167E+00	8.76483E-02	1.00434E+00	8.76483E-02	.00000E+00	.00000E+00	.00000E+00	3.18294E-02
5	1.51286E+00	1.33256E-01	1.51667E+00	1.33256E-01	.00000E+00	.00000E+00	.00000E+00	4.80596E-02
6	2.90970E+00	2.50985E-01	2.91654E+00	2.50985E-01	.00000E+00	.00000E+00	.00000E+00	9.24452E-02
7	2.85366E+00	1.42437E-01	2.85742E+00	1.42437E-01	.00000E+00	.00000E+00	.00000E+00	8.99845E-02
8	2.06849E+00	2.07712E-02	2.06925E+00	2.07712E-02	.00000E+00	.00000E+00	.00000E+00	6.56559E-02
9	1.60041E+00	-2.09041E-02	1.59968E+00	-2.09042E-02	.00000E+00	.00000E+00	.00000E+00	5.07775E-02
10	1.46106E+00	-2.55057E-02	1.46036E+00	-2.55057E-02	.00000E+00	.00000E+00	.00000E+00	4.63563E-02
11	1.33687E+00	-5.54615E-02	1.33536E+00	-5.54615E-02	.00000E+00	.00000E+00	.00000E+00	4.24023E-02
12	8.32192E-01	-6.52571E-02	8.30356E-01	-6.52571E-02	.00000E+00	.00000E+00	.00000E+00	2.63815E-02
13	7.01430E-01	-5.62217E-02	6.99845E-01	-5.62217E-02	.00000E+00	.00000E+00	.00000E+00	2.22356E-02
14	6.31199E-01	-8.47807E-02	6.28813E-01	-8.47806E-02	.00000E+00	.00000E+00	.00000E+00	1.99944E-02
15	3.73759E-01	-8.39745E-03	3.73518E-01	-8.39745E-03	.00000E+00	.00000E+00	.00000E+00	1.18562E-02
16	2.06170E-01	-5.95373E-03	2.06002E-01	-5.95372E-03	.00000E+00	.00000E+00	.00000E+00	6.53952E-03
17	8.62149E-02	-7.34180E-03	8.60092E-02	-7.34180E-03	.00000E+00	.00000E+00	.00000E+00	2.73258E-03
18	5.12922E-02	-2.28560E-02	5.06276E-02	-2.28560E-02	.00000E+00	.00000E+00	.00000E+00	1.61760E-03
19	1.28386E-01	-1.23063E-02	1.28051E-01	-1.23063E-02	.00000E+00	.00000E+00	.00000E+00	4.06868E-03
20	4.36949E-01	-2.57754E-02	4.36233E-01	-2.57754E-02	.00000E+00	.00000E+00	.00000E+00	1.38534E-02

21	1.19355E-01	-2.35238E-02	1.18705E-01	-2.35238E-02	.00000E+00	.00000E+00	.00000E+00	3.77798E-03
22	2.15431E-01	-6.77078E-02	2.13547E-01	-6.77078E-02	.00000E+00	.00000E+00	.00000E+00	6.80715E-03
23	7.34946E-01	-1.25645E-01	7.31605E-01	-1.25645E-01	.00000E+00	.00000E+00	.00000E+00	2.32732E-02
24	5.53091E-01	-1.13917E-01	5.50114E-01	-1.13917E-01	.00000E+00	.00000E+00	.00000E+00	1.75078E-02
25	2.35709E-01	-5.73766E-02	2.34210E-01	-5.73766E-02	.00000E+00	.00000E+00	.00000E+00	7.45765E-03
26	1.53530E-01	-5.28068E-02	1.52187E-01	-5.28068E-02	.00000E+00	.00000E+00	.00000E+00	4.85193E-03
27	2.51471E-02	-1.46389E-02	2.47718E-02	-1.46389E-02	.00000E+00	.00000E+00	.00000E+00	7.92306E-04
28	2.32750E+01	6.06267E-02	2.32790E+01	6.06264E-02	.00000E+00	.00000E+00	.00000E+00	7.38698E-01

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.82808E-03	2.86963E-03	1.47057E-05	-2.78198E-03	1.00002E+00
2	.00000E+00	.00000E+00	5.01174E-04	2.60298E-02	1.86776E-02	5.17125E-05	-1.82283E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.66108E-03	5.02160E-02	1.58777E-02	1.37344E-04	-1.33530E-02	9.99993E-01
4	.00000E+00	.00000E+00	5.14870E-03	4.21368E-02	5.45581E-03	1.03441E-04	-4.10140E-04	9.99996E-01
5	.00000E+00	.00000E+00	1.10940E-02	8.16685E-02	5.16491E-03	1.52147E-04	5.77670E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.85185E-02	2.35052E-01	3.21147E-03	3.20074E-04	1.49868E-02	1.00000E+00
7	.00000E+00	.00000E+00	1.23186E-02	2.35197E-01	1.18222E-03	3.44767E-04	1.07918E-02	9.99999E-01
8	.00000E+00	.00000E+00	2.16269E-03	1.58600E-01	7.63682E-03	2.94951E-04	-5.76968E-03	1.00003E+00
9	.00000E+00	.00000E+00	7.67018E-03	1.05245E-01	8.77329E-04	1.10978E-03	5.68321E-03	9.99994E-01
10	.00000E+00	.00000E+00	8.78509E-04	8.56440E-02	8.49737E-04	8.36365E-04	-8.07460E-04	9.99995E-01
11	.00000E+00	.00000E+00	8.49798E-04	7.71430E-02	8.71216E-04	1.33855E-03	-1.36004E-03	1.00000E+00
12	.00000E+00	.00000E+00	8.71222E-04	4.68372E-02	8.71390E-04	4.17006E-05	-4.19244E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.71392E-04	3.95021E-02	8.05815E-04	5.99755E-05	5.65872E-06	9.99999E-01
14	.00000E+00	.00000E+00	8.05816E-04	3.58004E-02	6.74662E-04	9.53558E-05	3.57777E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.18410E-04	2.05627E-02	8.41565E-04	8.25774E-05	-2.04980E-04	9.99919E-01
16	.00000E+00	.00000E+00	9.39685E-04	1.08649E-02	9.41247E-04	5.11980E-05	-5.23129E-05	9.99936E-01
17	.00000E+00	.00000E+00	1.00274E-03	3.98074E-03	9.79870E-04	2.40486E-05	-1.02259E-06	9.99981E-01
18	.00000E+00	.00000E+00	1.02744E-03	2.30066E-03	7.42873E-04	1.57548E-05	2.68904E-04	9.99996E-01
19	.00000E+00	.00000E+00	7.89713E-04	6.44297E-03	9.50602E-04	4.17416E-05	-2.02259E-04	9.99975E-01
20	.00000E+00	.00000E+00	1.13347E-03	2.40599E-02	1.02287E-03	1.78887E-04	-6.71484E-05	9.99958E-01
21	.00000E+00	.00000E+00	1.26780E-03	5.59527E-03	1.33651E-03	6.16428E-05	-1.30136E-04	9.99991E-01
22	.00000E+00	.00000E+00	1.68609E-03	1.11406E-02	1.48891E-03	1.29808E-04	6.77556E-05	9.99995E-01
23	.00000E+00	.00000E+00	2.20558E-03	3.96499E-02	2.91096E-03	6.00461E-04	-1.30585E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.59052E-03	2.82317E-02	3.87437E-03	6.57647E-04	-9.42275E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.49494E-03	1.09051E-02	2.80682E-03	3.70910E-04	3.16922E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.46077E-03	7.93862E-03	1.04911E-03	3.46649E-04	6.48983E-05	1.00000E+00
27	.00000E+00	.00000E+00	3.04206E-04	1.49458E-03	7.70061E-07	1.09315E-04	1.94094E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.39728E-02	1.39607E+00	8.39729E-02	7.57151E-03	-7.46604E-03	9.99974E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.72044E-01	8.43219E-03	1.73686E-01	1.12142E-02	1.02529E-04	.00000E+00	.00000E+00	3.74292E-02
2	1.25985E+00	9.72008E-02	1.27745E+00	1.15429E-01	.00000E+00	.00000E+00	.00000E+00	2.74684E-01
3	1.59127E+00	1.31910E-01	1.61437E+00	1.45263E-01	.00000E+00	.00000E+00	.00000E+00	3.47125E-01
4	9.87054E-01	8.72381E-02	1.00167E+00	8.76489E-02	.00000E+00	.00000E+00	.00000E+00	2.15423E-01
5	1.48980E+00	1.39033E-01	1.51285E+00	1.33256E-01	.00000E+00	.00000E+00	.00000E+00	3.25314E-01
6	2.86408E+00	2.65972E-01	2.90970E+00	2.50985E-01	.00000E+00	.00000E+00	.00000E+00	6.25598E-01
7	2.80740E+00	1.53229E-01	2.85366E+00	1.42437E-01	.00000E+00	.00000E+00	.00000E+00	6.11259E-01
8	2.06536E+00	1.50015E-02	2.06849E+00	2.07712E-02	.00000E+00	.00000E+00	.00000E+00	4.47877E-01
9	1.60362E+00	-1.52209E-02	1.60041E+00	-2.09041E-02	.00000E+00	.00000E+00	.00000E+00	3.47254E-01
10	1.46535E+00	-2.63132E-02	1.46106E+00	-2.55057E-02	.00000E+00	.00000E+00	.00000E+00	3.17128E-01
11	1.34605E+00	-5.68215E-02	1.33687E+00	-5.54615E-02	.00000E+00	.00000E+00	.00000E+00	2.90767E-01
12	8.42824E-01	-6.52990E-02	8.32192E-01	-6.52571E-02	.00000E+00	.00000E+00	.00000E+00	1.81571E-01
13	7.10628E-01	-5.62160E-02	7.01430E-01	-5.62217E-02	.00000E+00	.00000E+00	.00000E+00	1.53068E-01
14	6.45024E-01	-8.47449E-02	6.31199E-01	-8.47807E-02	.00000E+00	.00000E+00	.00000E+00	1.38377E-01
15	3.75235E-01	-8.60243E-03	3.73759E-01	-8.39745E-03	.00000E+00	.00000E+00	.00000E+00	8.11588E-02
16	2.07151E-01	-6.00604E-03	2.06170E-01	-5.95373E-03	.00000E+00	.00000E+00	.00000E+00	4.47889E-02
17	8.74088E-02	-7.34289E-03	8.62149E-02	-7.34180E-03	.00000E+00	.00000E+00	.00000E+00	1.88185E-02
18	5.50007E-02	-2.25871E-02	5.12922E-02	-2.28560E-02	.00000E+00	.00000E+00	.00000E+00	1.15461E-02
19	1.30398E-01	-1.25086E-02	1.28386E-01	-1.23068E-02	.00000E+00	.00000E+00	.00000E+00	2.80488E-02
20	4.41084E-01	-2.58426E-02	4.36949E-01	-2.57754E-02	.00000E+00	.00000E+00	.00000E+00	9.51558E-02
21	1.23088E-01	-2.36539E-02	1.19365E-01	-2.35238E-02	.00000E+00	.00000E+00	.00000E+00	2.62969E-02

22	2.26061E-01	-6.76401E-02	2.15431E-01	-6.77078E-02	.00000E+00	.00000E+00	.00000E+00	4.79124E-02
23	7.53847E-01	-1.26951E-01	7.34946E-01	-1.25645E-01	.00000E+00	.00000E+00	.00000E+00	1.61471E-01
24	5.69481E-01	-1.14859E-01	5.53091E-01	-1.13917E-01	.00000E+00	.00000E+00	.00000E+00	1.21788E-01
25	2.43582E-01	-5.70596E-02	2.35709E-01	-5.73766E-02	.00000E+00	.00000E+00	.00000E+00	5.20202E-02
26	1.60397E-01	-5.27419E-02	1.53530E-01	-5.28068E-02	.00000E+00	.00000E+00	.00000E+00	3.40977E-02
27	2.69670E-02	-1.44448E-02	2.51471E-02	-1.46389E-02	.00000E+00	.00000E+00	.00000E+00	5.67287E-03
28	2.32499E+01	5.31614E-02	2.32750E+01	6.06267E-02	1.02529E-04	.00000E+00	.00000E+00	5.04165E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	6.04869E-03	8.00695E-03	4.26681E-04	-8.43219E-03	9.99949E-01
2	.00000E+00	.00000E+00	4.59368E-03	7.66324E-02	1.00719E-01	1.07913E-03	-9.72008E-02	9.99962E-01
3	.00000E+00	.00000E+00	4.77980E-02	6.90679E-02	1.79701E-01	5.42865E-06	-1.31910E-01	9.99977E-01
4	.00000E+00	.00000E+00	7.04018E-02	4.58799E-02	1.57639E-01	3.25281E-06	-8.72381E-02	9.99987E-01
5	.00000E+00	.00000E+00	1.30068E-01	1.48535E-01	2.69100E-01	3.77607E-06	-1.39083E-01	9.99991E-01
6	.00000E+00	.00000E+00	2.75159E-01	4.55294E-01	5.41121E-01	1.14771E-05	-2.65972E-01	9.99998E-01
7	.00000E+00	.00000E+00	5.52875E-01	7.95209E-01	7.06087E-01	2.53526E-05	-1.55229E-01	9.99987E-01
8	.00000E+00	.00000E+00	7.35558E-01	1.00101E+00	7.50579E-01	4.70163E-05	-1.50015E-02	9.99911E-01
9	.00000E+00	.00000E+00	7.40850E-01	9.16288E-01	7.25615E-01	9.59307E-05	1.52209E-02	9.99890E-01
10	.00000E+00	.00000E+00	7.22315E-01	8.65882E-01	6.95865E-01	2.11574E-04	2.63131E-02	9.99896E-01
11	.00000E+00	.00000E+00	7.00804E-01	8.06109E-01	6.43566E-01	4.57768E-04	5.68216E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.60220E-01	4.20130E-01	4.94335E-01	5.97796E-04	6.52990E-02	9.99979E-01
13	.00000E+00	.00000E+00	4.90284E-01	3.37784E-01	4.33185E-01	8.97230E-04	5.62160E-02	9.99970E-01
14	.00000E+00	.00000E+00	4.70291E-01	3.21534E-01	3.84096E-01	1.45517E-03	8.47449E-02	9.99989E-01
15	.00000E+00	.00000E+00	2.50802E-01	1.28604E-01	2.40928E-01	1.28139E-03	8.57047E-03	1.00009E+00
16	.00000E+00	.00000E+00	1.66381E-01	5.41407E-02	1.59503E-01	8.76394E-04	5.98415E-03	1.00010E+00
17	.00000E+00	.00000E+00	8.55556E-02	1.49526E-02	7.77979E-02	4.17663E-04	7.33096E-03	1.00011E+00
18	.00000E+00	.00000E+00	7.56921E-02	9.66449E-03	5.28088E-02	2.95696E-04	2.25897E-02	9.99973E-01
19	.00000E+00	.00000E+00	1.25230E-01	3.31428E-02	1.09998E-01	7.26455E-04	1.26912E-02	1.00011E+00
20	.00000E+00	.00000E+00	3.00285E-01	2.40023E-01	2.71379E-01	3.07074E-03	2.57972E-02	1.00013E+00
21	.00000E+00	.00000E+00	1.40132E-01	4.43519E-02	1.16380E-01	1.09894E-03	2.36594E-02	9.99954E-01
22	.00000E+00	.00000E+00	2.64259E-01	1.24809E-01	1.94230E-01	2.37240E-03	6.76174E-02	1.00007E+00
23	.00000E+00	.00000E+00	6.20838E-01	7.35921E-01	4.83259E-01	1.06096E-02	1.26949E-01	1.00003E+00
24	.00000E+00	.00000E+00	6.30606E-01	6.52794E-01	5.03897E-01	1.18346E-02	1.14856E-01	1.00003E+00
25	.00000E+00	.00000E+00	4.06751E-01	2.66556E-01	3.42925E-01	6.76082E-03	5.70585E-02	1.00002E+00
26	.00000E+00	.00000E+00	3.21333E-01	2.83699E-01	2.62034E-01	6.55401E-03	5.27431E-02	1.00001E+00
27	.00000E+00	.00000E+00	1.06970E-01	5.92555E-02	9.02696E-02	2.25470E-03	1.44447E-02	1.00001E+00
28	.00000E+00	.00000E+00	8.99402E+00	8.91332E+00	8.99402E+00	5.34710E-02	-5.33086E-02	9.99982E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.71245E-01	3.02770E-09	1.72044E-01	8.43219E-03	4.42751E-10	.00000E+00	.00000E+00	1.95992E-01
2	1.24832E+00	-2.93830E-08	1.25985E+00	9.72008E-02	.00000E+00	.00000E+00	.00000E+00	1.42926E+00
3	1.57363E+00	3.10709E-09	1.59127E+00	1.31910E-01	.00000E+00	.00000E+00	.00000E+00	1.80228E+00
4	9.73905E-01	1.03098E-08	9.87054E-01	8.72381E-02	.00000E+00	.00000E+00	.00000E+00	1.11581E+00
5	1.46740E+00	-3.42338E-08	1.48980E+00	1.39033E-01	.00000E+00	.00000E+00	.00000E+00	1.68159E+00
6	2.82012E+00	1.26755E-07	2.86408E+00	2.65972E-01	.00000E+00	.00000E+00	.00000E+00	3.23183E+00
7	2.78208E+00	5.12217E-08	2.80740E+00	1.53229E-01	.00000E+00	.00000E+00	.00000E+00	3.18612E+00
8	2.06541E+00	3.82637E-08	2.06536E+00	1.50015E-02	.00000E+00	.00000E+00	.00000E+00	2.36521E+00
9	1.60561E+00	3.62845E-09	1.60352E+00	-1.52209E-02	.00000E+00	.00000E+00	.00000E+00	1.83755E+00
10	1.47005E+00	-6.61256E-08	1.46535E+00	-2.63132E-02	.00000E+00	.00000E+00	.00000E+00	1.68214E+00
11	1.35608E+00	3.56062E-08	1.34605E+00	-5.68215E-02	.00000E+00	.00000E+00	.00000E+00	1.55127E+00
12	8.54012E-01	5.04672E-08	8.42824E-01	-6.52990E-02	.00000E+00	.00000E+00	.00000E+00	9.76609E-01
13	7.19861E-01	2.93091E-09	7.10628E-01	-5.62160E-02	.00000E+00	.00000E+00	.00000E+00	8.23955E-01
14	6.59269E-01	3.15814E-08	6.45024E-01	-8.47449E-02	.00000E+00	.00000E+00	.00000E+00	7.53583E-01
15	3.75799E-01	-3.19654E-05	3.75235E-01	-8.60243E-03	.00000E+00	.00000E+00	.00000E+00	4.30335E-01
16	2.07880E-01	-2.18579E-05	2.07151E-01	-6.00604E-03	.00000E+00	.00000E+00	.00000E+00	2.37950E-01
17	8.86460E-02	-1.18636E-05	8.74038E-02	-7.34282E-03	.00000E+00	.00000E+00	.00000E+00	1.01357E-01
18	5.90139E-02	2.66675E-06	5.50007E-02	-2.25871E-02	.00000E+00	.00000E+00	.00000E+00	6.71999E-02
19	1.32432E-01	-1.74388E-05	1.30396E-01	-1.25086E-02	.00000E+00	.00000E+00	.00000E+00	1.51435E-01
20	4.44997E-01	-4.53686E-05	4.41084E-01	-2.58426E-02	.00000E+00	.00000E+00	.00000E+00	5.09107E-01
21	1.27394E-01	5.54501E-06	1.23088E-01	-2.36539E-02	.00000E+00	.00000E+00	.00000E+00	1.45437E-01
22	2.38680E-01	-2.27256E-05	2.26061E-01	-6.76401E-02	.00000E+00	.00000E+00	.00000E+00	2.71907E-01

23	7.80016E-01	-1.69919E-06	7.53847E-01	-1.26951E-01	.00000E+00	.00000E+00	.00000E+00	8.89738E-01
24	5.97130E-01	-3.49528E-06	5.69481E-01	-1.14859E-01	.00000E+00	.00000E+00	.00000E+00	6.79411E-01
25	2.58989E-01	-1.14040E-06	2.43582E-01	-5.70596E-02	.00000E+00	.00000E+00	.00000E+00	2.93856E-01
26	1.77498E-01	1.18289E-06	1.60397E-01	-5.27419E-02	.00000E+00	.00000E+00	.00000E+00	1.99827E-01
27	3.28238E-02	-1.16969E-07	2.69670E-02	-1.44448E-02	.00000E+00	.00000E+00	.00000E+00	3.62673E-02
28	2.32882E+01	-1.47938E-04	2.32499E+01	5.31614E-02	4.42751E-10	.00000E+00	.00000E+00	2.66444E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.27834E-02	.00000E+00	2.26603E-02	2.15153E-02	3.67863E-03	3.02770E-09	9.98831E-01
2	.00000E+00	1.93360E-01	7.44695E-03	2.70040E-01	1.86048E-01	1.47727E-02	-2.93830E-08	1.00002E+00
3	.00000E+00	2.15763E-01	7.68103E-02	2.80511E-01	2.76890E-01	1.56866E-02	3.10709E-09	9.99986E-01
4	.00000E+00	1.23897E-01	1.14597E-01	1.93451E-01	2.30981E-01	7.51277E-03	1.03098E-08	1.00000E+00
5	.00000E+00	1.64367E-01	2.09224E-01	4.89903E-01	3.69028E-01	4.56755E-03	-3.42338E-08	9.99989E-01
6	.00000E+00	1.77488E-01	4.28515E-01	1.34418E+00	5.98714E-01	7.27507E-03	1.26755E-07	1.00001E+00
7	.00000E+00	8.77626E-02	6.63681E-01	1.77523E+00	7.43604E-01	7.84762E-03	5.12217E-08	9.99989E-01
8	.00000E+00	1.35239E-02	7.80801E-01	1.79038E+00	7.79721E-01	1.41675E-02	3.82637E-08	9.99920E-01
9	.00000E+00	9.81536E-04	7.70248E-01	1.55708E+00	7.47182E-01	2.41303E-02	3.62845E-09	9.99893E-01
10	.00000E+00	7.29039E-05	7.43905E-01	1.41294E+00	7.07420E-01	3.66317E-02	-6.61256E-08	9.99900E-01
11	.00000E+00	5.73558E-06	7.12360E-01	1.30660E+00	6.52591E-01	5.98166E-02	3.56062E-08	9.99942E-01
12	.00000E+00	4.02915E-07	6.69244E-01	7.06538E-01	5.04583E-01	6.46765E-02	5.04672E-08	9.99974E-01
13	.00000E+00	6.39792E-08	5.00552E-01	5.55881E-01	4.40144E-01	6.04025E-02	2.98091E-09	9.99971E-01
14	.00000E+00	1.26790E-08	4.77250E-01	5.09542E-01	3.92155E-01	8.50995E-02	3.15814E-08	9.99989E-01
15	.00000E+00	1.43286E-09	2.58992E-01	2.33648E-01	2.50638E-01	8.30466E-03	-3.19654E-05	1.00031E+00
16	.00000E+00	4.20738E-10	1.76351E-01	1.07547E-01	1.69997E-01	6.31713E-03	-2.18879E-05	1.00033E+00
17	.00000E+00	1.35498E-10	9.42157E-02	3.33535E-02	8.61380E-02	8.06250E-03	-1.18636E-05	1.00029E+00
18	.00000E+00	9.70128E-11	8.37770E-02	2.05647E-02	5.77837E-02	2.59888E-02	2.66675E-06	1.00002E+00
19	.00000E+00	1.37155E-10	1.30506E-01	6.32176E-02	1.19618E-01	1.08726E-02	-1.74388E-05	1.00025E+00
20	.00000E+00	2.23029E-10	3.11284E-01	3.65203E-01	2.81966E-01	2.92599E-02	-4.53686E-05	1.00033E+00
21	.00000E+00	3.26442E-11	1.50377E-01	7.07734E-02	1.24810E-01	2.55542E-02	5.54501E-06	1.00005E+00
22	.00000E+00	3.78747E-11	2.77670E-01	1.76498E-01	2.04853E-01	7.27869E-02	-2.27256E-05	1.00019E+00
23	.00000E+00	3.62124E-11	6.37196E-01	9.38025E-01	5.04029E-01	1.33046E-01	-1.69919E-06	1.00019E+00
24	.00000E+00	9.85656E-12	6.55978E-01	7.93984E-01	5.29616E-01	1.26271E-01	-3.49528E-06	1.00015E+00
25	.00000E+00	2.88535E-12	4.28934E-01	3.20211E-01	3.59841E-01	6.90567E-02	-1.14040E-06	1.00009E+00
26	.00000E+00	2.02523E-12	3.31986E-01	3.21366E-01	2.69421E-01	6.25427E-02	1.18289E-06	1.00006E+00
27	.00000E+00	4.82146E-13	1.09259E-01	6.51904E-02	9.13518E-02	1.79040E-02	-1.16969E-07	1.00003E+00
28	.00000E+00	1.00000E+00	9.70064E+00	1.57242E+01	9.70064E+00	1.00223E+00	-1.48078E-04	1.00003E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.71245E-01	3.02770E-09	1.79086E-01	.00000E+00	2.38105E-03	2.65102E-03	.00000E+00	3.60897E-01
2	1.24852E+00	-2.93830E-08	1.33295E+00	.00000E+00	1.70654E-05	1.18697E-02	.00000E+00	2.64818E+00
3	1.57363E+00	3.10709E-09	1.68264E+00	.00000E+00	.00000E+00	1.45190E-02	.00000E+00	3.34159E+00
4	9.73905E-01	1.03098E-08	1.04218E+00	.00000E+00	.00000E+00	6.25975E-03	.00000E+00	2.06998E+00
5	1.46740E+00	-3.42338E-08	1.57586E+00	.00000E+00	.00000E+00	1.80747E-03	.00000E+00	3.12309E+00
6	2.82012E+00	1.26755E-07	3.03005E+00	.00000E+00	.00000E+00	1.54159E-03	.00000E+00	6.00311E+00
7	2.78208E+00	5.12217E-08	2.90495E+00	.00000E+00	.00000E+00	1.49123E-03	.00000E+00	5.86752E+00
8	2.06541E+00	3.82637E-08	2.08110E+00	.00000E+00	.00000E+00	1.50630E-03	.00000E+00	4.30604E+00
9	1.60561E+00	3.62845E-09	1.58788E+00	.00000E+00	.00000E+00	2.00510E-03	.00000E+00	3.33211E+00
10	1.47005E+00	-6.61256E-08	1.44731E+00	.00000E+00	.00000E+00	4.27114E-03	.00000E+00	3.04586E+00
11	1.35608E+00	3.56062E-08	1.30683E+00	.00000E+00	.00000E+00	9.09949E-03	.00000E+00	2.79248E+00
12	8.54012E-01	5.04672E-08	7.96471E-01	.00000E+00	.00000E+00	1.19534E-02	.00000E+00	1.74276E+00
13	7.19861E-01	2.93091E-09	6.71002E-01	.00000E+00	.00000E+00	1.31836E-02	.00000E+00	1.46901E+00
14	6.59269E-01	3.15814E-08	5.84819E-01	.00000E+00	.00000E+00	8.23038E-03	.00000E+00	1.32734E+00
15	3.75799E-01	-3.19654E-05	3.69026E-01	.00000E+00	.00000E+00	1.98407E-03	.00000E+00	7.78715E-01
16	2.07880E-01	-2.18879E-05	2.03057E-01	.00000E+00	.00000E+00	1.38096E-03	.00000E+00	4.29911E-01
17	8.86460E-02	-1.18536E-05	8.23378E-02	.00000E+00	.00000E+00	1.66006E-03	.00000E+00	1.80651E-01
18	5.90139E-02	2.66675E-06	3.69961E-02	.00000E+00	.00000E+00	1.28586E-03	.00000E+00	1.09625E-01
19	1.32432E-01	-1.74388E-05	1.21697E-01	.00000E+00	.00000E+00	2.62594E-03	.00000E+00	2.69198E-01
20	4.44997E-01	-4.53686E-05	4.23240E-01	.00000E+00	.00000E+00	1.55009E-02	.00000E+00	9.13249E-01
21	1.27394E-01	5.54501E-06	1.06422E-01	.00000E+00	.00000E+00	1.49508E-02	.00000E+00	2.52323E-01
22	2.38580E-01	-2.27256E-05	1.76253E-01	.00000E+00	.00000E+00	4.27190E-02	.00000E+00	4.58618E-01
23	7.80016E-01	-1.69919E-06	6.67572E-01	.00000E+00	.00000E+00	7.53704E-02	.00000E+00	1.55269E+00

24	5.97130E-01	-3.49528E-06	4.92030E-01	.00000E+00	.00000E+00	7.05000E-02	.00000E+00	1.17428E+00
25	2.58989E-01	-1.14040E-06	2.04347E-01	.00000E+00	.00000E+00	4.01535E-02	.00000E+00	5.02654E-01
26	1.77498E-01	1.18289E-06	1.24118E-01	.00000E+00	.00000E+00	3.68822E-02	.00000E+00	3.32287E-01
27	3.28238E-02	-1.16969E-07	1.62895E-02	.00000E+00	.00000E+00	1.04036E-02	.00000E+00	5.63112E-02
28	2.32882E+01	-1.47938E-04	2.32465E+01	.00000E+00	2.39811E-03	4.05807E-01	.00000E+00	4.84405E+01

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

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.40137E-03	2.49139E-02	3.15261E-02	1.90644E-02	2.91252E-02	5.56679E-02	3.16998E-02	4.64092E-03
2	3.76976E-03	3.88027E-02	4.88315E-02	2.94639E-02	4.47955E-02	8.43712E-02	4.78816E-02	6.98245E-03
3	3.06314E-03	3.31037E-02	4.31123E-02	2.71720E-02	4.22810E-02	8.02579E-02	4.58942E-02	5.58177E-03
4	1.05736E-03	1.21810E-02	1.65256E-02	1.09243E-02	1.74049E-02	3.32996E-02	1.92586E-02	2.00508E-03
5	1.75210E-03	1.89768E-02	2.47479E-02	1.59911E-02	2.42886E-02	4.63660E-02	2.65833E-02	3.32516E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.67877E-03	5.71553E-03	1.29953E-02	1.45285E-02	1.25215E-02	1.87644E-02	1.89986E-03	1.33233E-03
2	7.02718E-03	8.57400E-03	1.86440E-02	2.19568E-02	1.88995E-02	2.84999E-02	2.82255E-03	2.00118E-03
3	5.63552E-03	8.04784E-03	1.74386E-02	2.02830E-02	1.74684E-02	2.63376E-02	2.64021E-03	1.85765E-03
4	1.87183E-03	3.27522E-03	7.08272E-03	8.14569E-03	7.05052E-03	1.05898E-02	1.15375E-03	7.76181E-04
5	3.27072E-03	4.66002E-03	1.00944E-02	1.17308E-02	1.01255E-02	1.52063E-02	1.58075E-03	1.09141E-03

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.62874E-03	4.75050E-03	2.77254E-03	5.76883E-03	5.15258E-03	1.46018E-02	2.77568E-02	2.50357E-02
2	2.46775E-03	7.68379E-03	4.13657E-03	8.66324E-03	7.90828E-03	2.27590E-02	4.22387E-02	3.82970E-02
3	2.28112E-03	7.06078E-03	3.85465E-03	8.01808E-03	7.32915E-03	2.10258E-02	3.92398E-02	3.55407E-02
4	9.17635E-04	2.78623E-03	1.57718E-03	3.28855E-03	2.94274E-03	8.42024E-03	1.61109E-02	1.45536E-02
5	1.31844E-03	3.95566E-03	2.24870E-03	4.68331E-03	4.20601E-03	1.19959E-02	2.27694E-02	2.05671E-02

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.25471E-02	1.13855E-02	3.01230E-03	3.85284E-01
2	1.92889E-02	1.77526E-02	4.92127E-03	5.89421E-01
3	1.77815E-02	1.63991E-02	4.51963E-03	5.43224E-01
4	7.21140E-03	6.54629E-03	1.65655E-03	2.18613E-01
5	1.02609E-02	9.34362E-03	2.45286E-03	3.13195E-01

1 720 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.77150E-01	1.31256E+00	1.65719E+00	1.02683E+00	1.55150E+00	2.98244E+00	2.87629E+00	2.07613E+00
2	1.73898E-01	1.27946E+00	1.61673E+00	1.00297E+00	1.51471E+00	2.91301E+00	2.83548E+00	2.06887E+00
3	1.72705E-01	1.26744E+00	1.60169E+00	9.93999E-01	1.50105E+00	2.88661E+00	2.82045E+00	2.06658E+00
4	1.71241E-01	1.24877E+00	1.57468E+00	9.74900E-01	1.46923E+00	2.82369E+00	2.78578E+00	2.06477E+00
5	1.73388E-01	1.27228E+00	1.60542E+00	9.94492E-01	1.50044E+00	2.88411E+00	2.81897E+00	2.06878E+00

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59277E+00	1.45288E+00	1.31897E+00	8.10821E-01	6.85214E-01	6.03364E-01	3.70952E-01	2.04277E-01
2	1.60004E+00	1.46072E+00	1.33613E+00	8.31298E-01	7.00658E-01	6.30037E-01	3.73597E-01	2.06065E-01
3	1.60229E+00	1.46328E+00	1.34165E+00	8.37796E-01	7.06280E-01	6.38494E-01	3.74480E-01	2.06663E-01
4	1.60549E+00	1.46971E+00	1.35537E+00	8.53277E-01	7.19577E-01	6.58417E-01	3.75990E-01	2.07900E-01
5	1.60087E+00	1.46334E+00	1.34161E+00	8.37288E-01	7.05767E-01	6.37701E-01	3.74123E-01	2.06545E-01

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.38740E-02	4.25031E-02	1.24404E-01	4.28697E-01	1.11571E-01	1.91724E-01	6.94619E-01	5.16495E-01
2	8.61054E-02	5.09716E-02	1.28207E-01	4.36529E-01	1.19047E-01	2.14498E-01	7.33564E-01	5.51684E-01
3	8.68337E-02	5.32758E-02	1.29422E-01	4.39064E-01	1.21338E-01	2.21076E-01	7.45052E-01	5.61948E-01
4	8.85567E-02	5.87135E-02	1.32311E-01	4.44814E-01	1.27071E-01	2.37569E-01	7.77378E-01	5.93611E-01
5	8.67911E-02	5.26676E-02	1.29332E-01	4.38758E-01	1.21225E-01	2.20837E-01	7.45967E-01	5.64169E-01

0zone	grp. 25	grp. 26	grp. 27
1	2.16895E-01	1.35828E-01	1.97238E-02
2	2.34998E-01	1.52888E-01	2.49661E-02
3	2.40180E-01	1.57333E-01	2.61755E-02
4	2.56746E-01	1.74592E-01	3.16872E-02
5	2.41493E-01	1.59643E-01	2.70539E-02

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

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.02169E+00	1.03166E+00	1.03224E+00	1.03252E+00	1.03403E+00	1.03409E+00	1.02053E+00	1.00355E+00
2	1.00293E+00	1.00564E+00	1.00704E+00	1.00852E+00	1.00951E+00	1.01002E+00	1.00585E+00	1.00004E+00
3	9.96059E-01	9.96195E-01	9.97675E-01	9.99504E-01	1.00040E+00	1.00087E+00	1.00052E+00	9.98936E-01
4	9.87616E-01	9.81520E-01	9.80651E-01	9.80300E-01	9.79194E-01	9.79051E-01	9.87507E-01	9.98062E-01
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00
Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.94941E-01	9.92855E-01	9.83125E-01	9.68390E-01	9.68044E-01	9.46155E-01	9.91471E-01	9.89019E-01
2	9.99480E-01	9.98210E-01	9.95915E-01	9.92847E-01	9.92761E-01	9.87982E-01	9.98593E-01	9.97676E-01
3	1.00089E+00	9.99959E-01	1.00003E+00	1.00061E+00	1.00073E+00	1.00124E+00	1.00095E+00	1.00057E+00
4	1.00289E+00	1.00436E+00	1.01026E+00	1.01910E+00	1.01928E+00	1.03249E+00	1.00495E+00	1.00556E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00
Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.66390E-01	8.07006E-01	9.61893E-01	9.77068E-01	9.20366E-01	8.70141E-01	9.31166E-01	9.15498E-01
2	9.92095E-01	9.67797E-01	9.91300E-01	9.94921E-01	9.82051E-01	9.73501E-01	9.83094E-01	9.77871E-01
3	1.00049E+00	1.01155E+00	1.00069E+00	1.00070E+00	1.00093E+00	1.00335E+00	9.98772E-01	9.96064E-01
4	1.02034E+00	1.11479E+00	1.02303E+00	1.01380E+00	1.04822E+00	1.07821E+00	1.04211E+00	1.05219E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00
Ozone	grp. 25	grp. 26	grp. 27					
1	8.98143E-01	8.50826E-01	7.29057E-01					
2	9.73095E-01	9.57688E-01	9.22829E-01					
3	9.99940E-01	9.85530E-01	9.67532E-01					
4	1.06316E+00	1.09564E+00	1.17126E+00					
5	1.00000E+00	1.00000E+00	1.00000E+00					

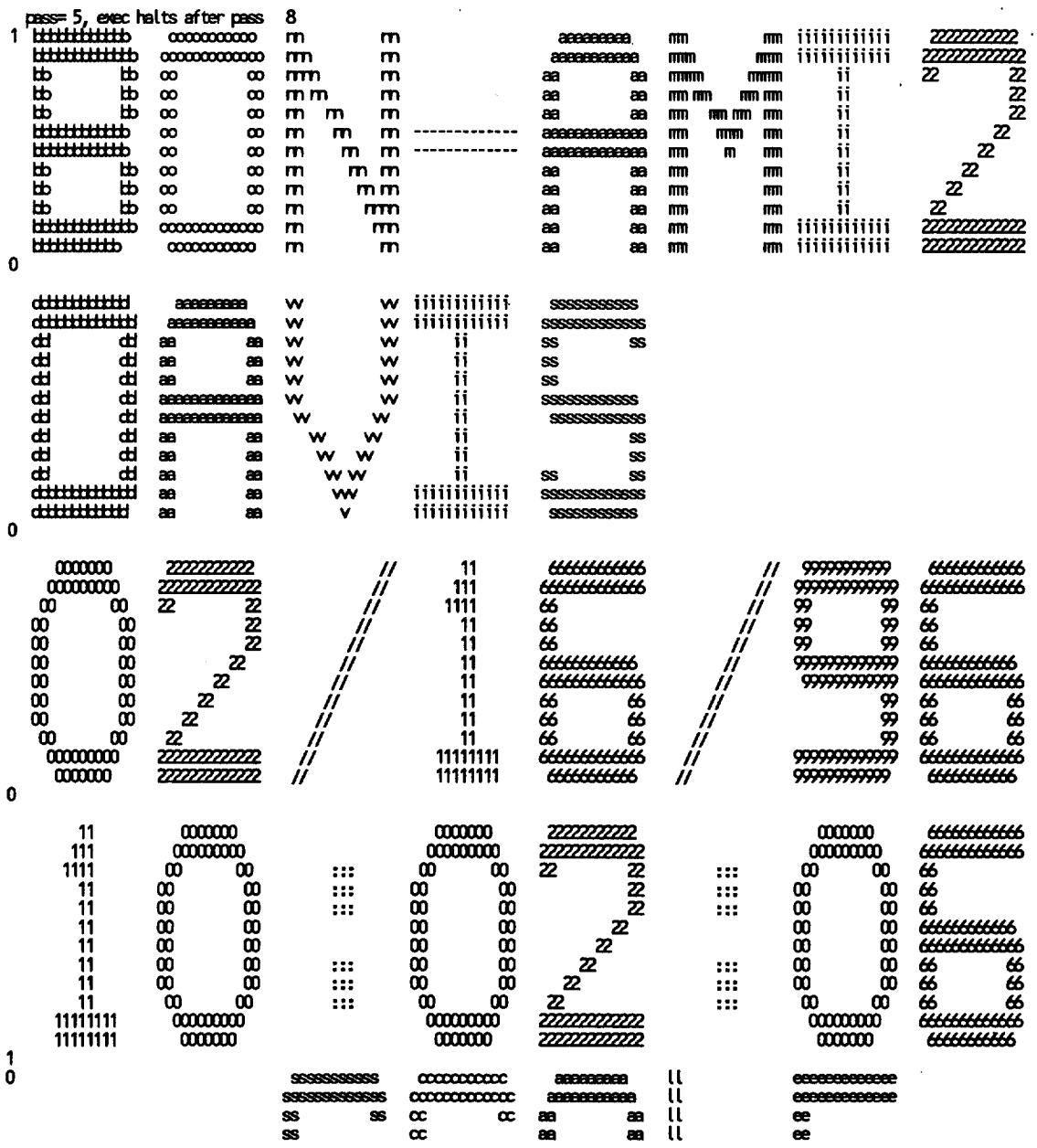
Ocell averaged currents

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.40137E-03	2.49138E-02	3.15261E-02	1.90644E-02	2.91232E-02	5.56679E-02	3.16998E-02	4.64092E-03
2	3.76976E-03	3.88027E-02	4.88315E-02	2.94639E-02	4.47955E-02	8.43712E-02	4.78816E-02	6.98245E-03
3	3.06314E-03	3.31037E-02	4.31123E-02	2.71720E-02	4.22810E-02	8.02579E-02	4.58942E-02	5.58177E-03
4	1.05736E-03	1.21810E-02	1.65256E-02	1.09243E-02	1.74049E-02	3.32998E-02	1.92586E-02	2.00508E-03
5	1.75210E-03	1.89768E-02	2.47479E-02	1.55911E-02	2.42886E-02	4.63660E-02	2.65833E-02	3.32516E-03
Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.67877E-03	5.71553E-03	1.23953E-02	1.45285E-02	1.25215E-02	1.87644E-02	1.89986E-03	1.33233E-03
2	7.02718E-03	8.57400E-03	1.86440E-02	2.19368E-02	1.88995E-02	2.84999E-02	2.82255E-03	2.00118E-03
3	5.63552E-03	8.04724E-03	1.74386E-02	2.02830E-02	1.74684E-02	2.63376E-02	2.64021E-03	1.85765E-03
4	1.87183E-03	3.27522E-03	7.08272E-03	8.14569E-03	7.05052E-03	1.05898E-02	1.15375E-03	7.76181E-04
5	3.27072E-03	4.66002E-03	1.00944E-02	1.17308E-02	1.01255E-02	1.52063E-02	1.58075E-03	1.09141E-03
Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.62874E-03	4.75050E-03	2.77254E-03	5.76883E-03	5.15238E-03	1.46018E-02	2.77568E-02	2.50357E-02
2	2.46775E-03	7.68379E-03	4.13637E-03	8.66324E-03	7.90826E-03	2.27590E-02	4.22387E-02	3.82970E-02
3	2.28112E-03	7.06078E-03	3.85466E-03	8.01808E-03	7.32915E-03	2.10258E-02	3.92398E-02	3.55407E-02
4	9.17635E-04	2.78623E-03	1.57718E-03	3.28855E-03	2.94274E-03	8.42024E-03	1.61109E-02	1.45536E-02
5	1.31844E-03	3.95566E-03	2.24870E-03	4.68331E-03	4.20601E-03	1.19959E-02	2.27894E-02	2.05671E-02
Ozone	grp. 25	grp. 26	grp. 27					
1	1.25471E-02	1.13855E-02	3.01250E-03					
2	1.92889E-02	1.77526E-02	4.92127E-03					
3	1.77815E-02	1.63991E-02	4.51963E-03					
4	7.21140E-03	6.54629E-03	1.65655E-03					
5	1.02609E-02	9.34362E-03	2.45286E-03					

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

- elapsed time .03 min.

Orequested parm=halt8,skipcellwt,skipshipdata


pass= 5, exec halts after pass 8

```
ss           cc           aa       aa  ll           ee
ssssssssssss cc           aaaaaaaaaaaa ll           eeeeeeeee
 ssssssssssss cc          aaaaaaaaaaaa ll           eeeeeeeee
        ss cc             aa       aa  ll           ee
        ss cc             aa       aa  ll           ee
ss      ss cc       cc    aa       aa  ll           ee
ssssssssssss ccccccccccc  aa       aa  lllllllllllll eeeeeeeeeeee
 ssssssssss   ccccccccc   aa       aa  lllllllllllll eeeeeeeeeeee
```

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

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

```
0issopt--dancoff factor option                                  0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has      70 entries.
0       4q array has      70 entries.
0       5q array has      70 entries.
0       6q array has       4 entries.
0       7q array has       4 entries.
0       8q array has       4 entries.
0       9q array has       4 entries.
0      10q array has      70 entries.
0      11q array has       4 entries.
0m i x i n g   t a b l e
0entry  mixture   isotope   number density   new identifier
    1        3      8016    2.09710E-02              201
    2        3      1001    4.19420E-02              202
    3        3      5010    3.81515E-06              203
    4        3      5011    1.54884E-05              204
    5        2     40302    4.25156E-02              205
    6        1     92235    1.47017E-04           200006
    7        1     92234    1.54011E-06           200007
    8        1     92236    1.58412E-05           200008
    9        1     92238    7.23470E-03           200009
   10        1      8016    1.50611E-02           200010
   11        1      8016    1.15315E-02           200011
   12        1     36083    4.00409E-07           200012
   13        1     36085    1.92753E-07           200013
   14        1     38090    4.36638E-06           200014
   15        1     39089    3.37449E-06           200015
   16        1     42095    4.35535E-06           200016
   17        1     40093    3.43072E-06           200017
   18        1     40094    5.36576E-06           200018
   19        1     40095    6.73357E-07           200019
   20        1     41094    2.49521E-12           200020
   21        1     43099    5.24059E-06           200021
   22        1     45103    2.81650E-06           200022
   23        1     45105    6.85117E-09           200023
   24        1     44101    4.70687E-06           200024
   25        1     44106    7.10825E-07           200025
   26        1     46105    1.74568E-06           200026
   27        1     46108    4.60857E-07           200027
   28        1     47109    3.27366E-07           200028
   29        1     51124    7.62183E-11           200029
   30        1     54131    2.41807E-06           200030
   31        1     54132    4.37452E-06           200031
   32        1     54135    2.20802E-09           200032
   33        1     54136    8.94972E-06           200033
   34        1     55134    2.21272E-07           200034
   35        1     55135    2.83459E-06           200035
   36        1     55137    5.58169E-06           200036
   37        1     56136    4.34868E-08           200037
   38        1     57139    5.53655E-06           200038
   39        1     59141    4.73417E-06           200039
   40        1     59143    1.24918E-07           200040
   41        1     58144    2.11613E-06           200041
   42        1     60143    4.42460E-06           200042
   43        1     60145    3.23179E-06           200043
   44        1     61147    1.20498E-06           200044
   45        1     61148    3.46153E-09           200045
   46        1     60147    4.32241E-08           200046
```

47	1	62147	3.37132E-07	200047
48	1	62149	2.77995E-08	200048
49	1	62150	1.11012E-06	200049
50	1	62151	1.22001E-07	200050
51	1	62152	5.39591E-07	200051
52	1	64155	5.41449E-10	200052
53	1	63153	2.98755E-07	200053
54	1	63154	5.42034E-08	200054
55	1	63155	3.27959E-08	200055
56	1	40302	4.42681E-03	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09787E-06	200058
59	1	5011	8.51673E-06	200059
60	1	55133	5.74632E-06	200060
61	1	95237	9.31923E-07	200061
62	1	94238	1.07908E-07	200062
63	1	94239	3.19267E-05	200063
64	1	94240	5.37093E-06	200064
65	1	94241	2.67558E-06	200065
66	1	94242	2.39572E-07	200066
67	1	95241	6.58791E-08	200067
68	1	95243	1.74582E-08	200068
69	1	96244	1.32132E-09	200069
70	1	999	3.30753E-21	200070

Ogeometry and material description

Ozone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	3	6.32460E-01	6.07600E+02	7.90564E-01	0
2	2	6.73100E-01	6.50000E+02	1.23052E+01	0
3	3	8.14000E-01	6.07600E+02	3.54862E+00	0
4	1	2.96100E+00	9.75000E+02	2.32883E-01	0

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

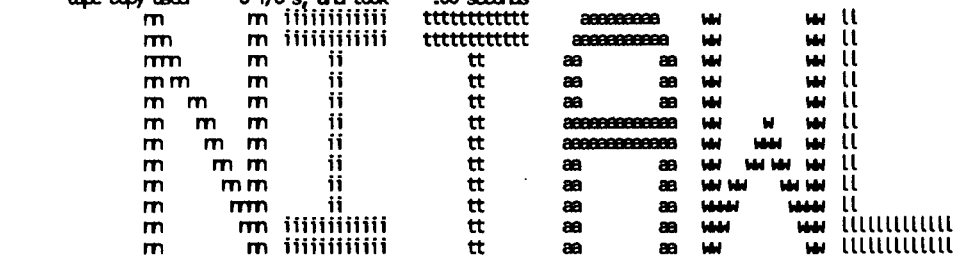
Ono nuclides in your problem have bondarenko factor data**bonami will copy from logical 12 to logical 1

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

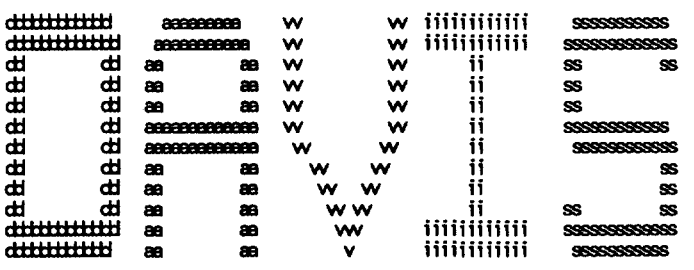
```
0copy    44106  ru-106          from lag 12 to lag  1   bondarenko trigger 0
0copy    45103  rh-103          from lag 12 to lag  1   bondarenko trigger 0
0copy    45105  rh-105          from lag 12 to lag  1   bondarenko trigger 0
0copy    46105  pd-105          from lag 12 to lag  1   bondarenko trigger 0
0copy    46108  pd-108          from lag 12 to lag  1   bondarenko trigger 0
0copy    47109  silver-109      from lag 12 to lag  1   bondarenko trigger 0
0copy    51124  sb-124          from lag 12 to lag  1   bondarenko trigger 0
0copy    54131  xe-131          from lag 12 to lag  1   bondarenko trigger 0
0copy    54132  xe-132          from lag 12 to lag  1   bondarenko trigger 0
0copy    54135  xenon-135       from lag 12 to lag  1   bondarenko trigger 0
0copy    54136  xe-136          from lag 12 to lag  1   bondarenko trigger 0
0copy    55133  cesium-133      from lag 12 to lag  1   bondarenko trigger 0
0copy    55134  cs-134          from lag 12 to lag  1   bondarenko trigger 0
0copy    55135  cs-135          from lag 12 to lag  1   bondarenko trigger 0
0copy    55137  cs-137          from lag 12 to lag  1   bondarenko trigger 0
0copy    56136  ba-136          from lag 12 to lag  1   bondarenko trigger 0
0copy    57139  la-139          from lag 12 to lag  1   bondarenko trigger 0
0copy    58144  ce-144          from lag 12 to lag  1   bondarenko trigger 0
0copy    59141  pr-141          from lag 12 to lag  1   bondarenko trigger 0
0copy    59143  pr-143          from lag 12 to lag  1   bondarenko trigger 0
0copy    60143  nd-143          from lag 12 to lag  1   bondarenko trigger 0
0copy    60145  nd-145          from lag 12 to lag  1   bondarenko trigger 0
0copy    60147  nd-147          from lag 12 to lag  1   bondarenko trigger 0
0copy    61147  pm-147          from lag 12 to lag  1   bondarenko trigger 0
0copy    61148  pm-148          from lag 12 to lag  1   bondarenko trigger 0
0copy    62147  sm-147          from lag 12 to lag  1   bondarenko trigger 0
0copy    62149  sm-149          from lag 12 to lag  1   bondarenko trigger 0
0copy    62150  sm-150          from lag 12 to lag  1   bondarenko trigger 0
0copy    62151  sm-151          from lag 12 to lag  1   bondarenko trigger 0
0copy    62152  sm-152          from lag 12 to lag  1   bondarenko trigger 0
0copy    63153  eu-153          from lag 12 to lag  1   bondarenko trigger 0
0copy    63154  eu-154          from lag 12 to lag  1   bondarenko trigger 0
0copy    63155  eu-155          from lag 12 to lag  1   bondarenko trigger 0
0copy    64155  gd-155          from lag 12 to lag  1   bondarenko trigger 0
0copy    92234  u-234 1043 sigc= from lag 12 to lag  1   bondarenko trigger 0
0copy    92235  uranium-235     from lag 12 to lag  1   bondarenko trigger 0
0copy    92236  u-236 1163 sigc= from lag 12 to lag  1   bondarenko trigger 0
0copy    92238  uranium-238     from lag 12 to lag  1   bondarenko trigger 0
0copy    93237  neptunium-237   from lag 12 to lag  1   bondarenko trigger 0
0copy    94238  pu-238 1050 sigc from lag 12 to lag  1   bondarenko trigger 0
0copy    94239  plutonium-239   from lag 12 to lag  1   bondarenko trigger 0
0copy    94240  plutonium-240   from lag 12 to lag  1   bondarenko trigger 0
0copy    94241  plutonium-241   from lag 12 to lag  1   bondarenko trigger 0
0copy    94242  plutonium-242   from lag 12 to lag  1   bondarenko trigger 0
0copy    95241  am-241 1056 sigc from lag 12 to lag  1   bondarenko trigger 0
0copy    95243  am-243 1057 218  from lag 12 to lag  1   bondarenko trigger 0
0copy    96244  curium-244      from lag 12 to lag  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
      based on endf-b version 4 data with endf-b version 5 fission products
        compiled for nrc      1/27/89
          last updated        9/16/93
            l.m.petrie  -  ornl
      tape id                          4321      number of nuclides          70
      number of neutron groups           27      number of gamma groups       0
      first thermal group                15      logical unit                 1
                              table of contents
     1/v cross sections normalized to 1.0 at 0.0253 ev                  id  200070
      hydrogen       endf/b-iv mat 1269/thrmf1002   updated 10/13/89    id     202
      hydrogen       endf/b-iv mat 1269/thrmf1002   updated 10/13/89    id  200057
     b-10 1273 218grp 042575 p-3 293k                                   id     203
```

```
b-10 1273 218ngp 042375 p-3 293k                                        id   200058
 boron-11      endf/b-iv mat 1160          updated 10/13/89             id      204
 boron-11      endf/b-iv mat 1160          updated 10/13/89             id   200059
 oxygen-16     endf/b-iv mat 1276          updated 10/13/89             id      201
 oxygen-16     endf/b-iv mat 1276          updated 10/13/89             id   200010
 oxygen-16     endf/b-iv mat 1276          updated 10/13/89             id   200011
 kr-83         mt=102,103,105,105,106,107  updated 10/13/89             id   200012
 kr-85           mt=  102                                               id   200013
 sr-90         mt=102                      updated 10/13/89             id   200014
  y-89         mt=102                      updated 10/13/89             id   200015
 zr-93           mt=  102                                               id   200017
 zr-94         mt=102                      updated 10/13/89             id   200018
 zr-95         mt=102                      updated 10/13/89             id   200019
 zircalloy     endf/b-iv mat 1284          updated 10/13/89             id      205
 zircalloy     endf/b-iv mat 1284          updated 10/13/89             id   200056
 nb-94         mt=102                      updated 10/13/89             id   200020
 mo-95         mt=102                      updated 10/13/89             id   200016
 tc-99         mt=102                      updated 10/13/89             id   200021
 ru-101        mt=102                      updated 10/13/89             id   200024
 ru-106        mt=102                      updated 10/13/89             id   200025
 rh-103        mt=102                      updated 10/13/89             id   200022
 rh-105          mt=  102                                               id   200023
 pd-105        mt=102                      updated 10/13/89             id   200026
 pd-108        mt=102                      updated 10/13/89             id   200027
 silver-109    endf/b-iv mat 1139          updated 10/13/89             id   200028
 sb-124        mt=102                      updated 10/13/89             id   200029
 xe-131        mt=102,103,104,105,106      updated 10/13/89             id   200030
 xe-132        mt=102,103,104,105,106      updated 10/13/89             id   200031
 xenon-135     endf/b-iv mat 1294          updated 10/13/89             id   200032
 xe-136          mt=  102, 103, 104, 105, 107                           id   200033
 cesium-133    endf/b-iv mat 1141          updated 10/13/89             id   200060
 cs-134        mt=102                      updated 10/13/89             id   200034
 cs-135          mt=  102                                               id   200035
 cs-137        mt=102                      updated 10/13/89             id   200036
 ba-136        mt=102                      updated 10/13/89             id   200037
 la-139        mt=102                      updated 10/13/89             id   200038
 ce-144          mt=  102                                               id   200041
 pr-141        mt=102,103,104,105,106,107  updated 10/13/89             id   200039
 pr-143        mt=102                      updated 10/13/89             id   200040
 nd-143        mt=102                      updated 10/13/89             id   200042
 nd-145        mt=102                      updated 10/13/89             id   200043
 nd-147        mt=102                      updated 10/13/89             id   200046
 pm-147        mt=102                      updated 10/13/89             id   200044
 pm-148          mt=  102                                               id   200045
 sm-147        endf/b-v fission product    updated 10/13/89             id   200047
 sm-149        mt=102,103,107              updated 10/13/89             id   200048
 sm-150        mt=102                      updated 10/13/89             id   200049
 sm-151        mt=102,103,104,105,106,107  updated 10/13/89             id   200050
 sm-152        mt=102,103,104,105,106,107  updated 10/13/89             id   200051
 eu-153        mt=102,103,104,105,106,107  updated 10/13/89             id   200053
 eu-154        mt=102,103,104,105,106,107  updated 10/13/89             id   200054
 eu-155        mt=102,103,104,105,106,107  updated 10/13/89             id   200055
 gd-155        mt=102                      updated 10/13/89             id   200052
u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                     id   200007
 uranium-235   endf/b-iv mat 1261          updated 10/13/89             id   200006
u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                     id   200008
 uranium-238   endf/b-iv mat 1262          updated 10/13/89             id   200009
 neptunium-237 endf/b-iv mat 1263          updated 10/13/89             id   200061
pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                    id   200062
 plutonium-239 endf/b-iv mat 1264          updated 10/13/89             id   200063
```

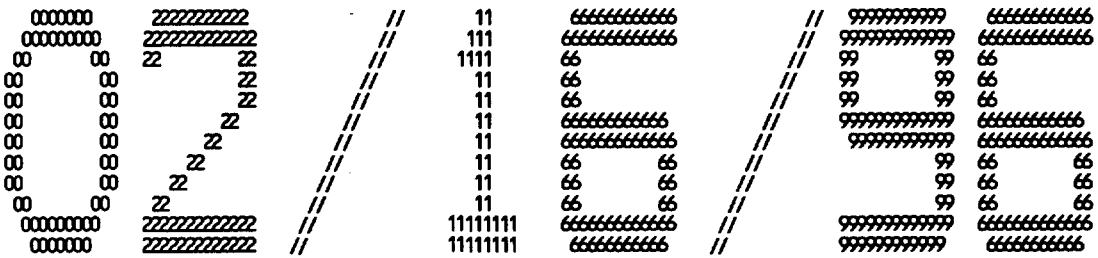
```
      plutonium-240  endf/b-iv mat 1265          updated 10/13/89          id   20064
      plutonium-241  endf/b-iv mat 1266          updated 10/13/89          id   20065
      plutonium-242  endf/b-iv mat 1161          updated 10/13/89          id   20066
     am-241 1056 sigp=5+4 newklacs 218ngp p-3 295k                         id   20067
     am-243 1057 218 gp wt f-1/e-m 090576 p3 295k                          id   20068
      curium-244     endf/b-iv mat 1162          updated 10/13/89          id   20069
0      tape copy used     0 i/o's, and took    .00 seconds
1
```



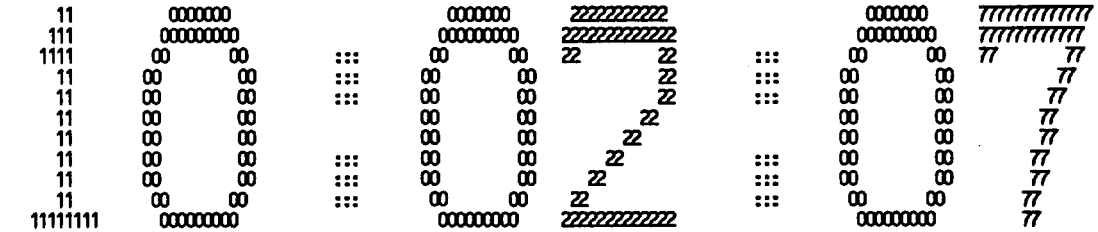
```
0
```



```
0
```



```
0
```



```
     11111111       0000000                  0000000     2222222222222                  0000000        77
1
0                          sssssssssss    ccccccccccc     aaaaaaaaa     ll             eeeeeeeeeeee
                          ssssssssssssss  ccccccccccccc   aaaaaaaaaaa   ll             eeeeeeeeeeee
                          ss         ss   cc          cc  aa         aa  ll             ee
                          ss              cc              aa         aa  ll             ee
                          ss              cc              aa         aa  ll             ee
                          sssssssssss     cc              aaaaaaaaaaaa  ll             eeeeeeeee
                           sssssssssss    cc              aaaaaaaaaaaa  ll             eeeeeeeee
                                    ss    cc              aa         aa  ll             ee
                                    ss    cc              aa         aa  ll             ee
                          ss        ss    cc          cc  aa         aa  ll             ee
                          ssssssssssssss  ccccccccccccc   aa         aa  lllllllllllll  eeeeeeeeeeee
                           sssssssssss     ccccccccccc    aa         aa  lllllllllllll  eeeeeeeeeeee
```

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

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

         1 resonance calculations have been requested
```

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

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



0 nuclides from xsdrn tape
     1     hydrogen        endf/b-iv mat 1269/thrml002    updated 10/13/89          202
     2    b-10 1273 218ngp 042375 p-3 293k                                          203
     3     boron-11        endf/b-iv mat 1160             updated 10/13/89          204
     4     oxygen-16       endf/b-iv mat 1276             updated 10/13/89          201
     5     zircalloy       endf/b-iv mat 1284             updated 10/13/89          205
0 nuclides from  work tape
     6     1/v cross sections normalized to 1.0 at 0.0253 ev                         999
     7     hydrogen        endf/b-iv mat 1269/thrml002    updated 10/13/89         1001
     8    b-10 1273 218ngp 042375 p-3 293k                                         5010
     9     boron-11        endf/b-iv mat 1160             updated 10/13/89         5011
    10     oxygen-16       endf/b-iv mat 1276             updated 10/13/89         8016
    11     oxygen-16       endf/b-iv mat 1276             updated 10/13/89            6
    12     kr-83           mt=102,103,103,105,106,107     updated 10/13/89        36083
    13     kr-85             mt=  102                                              36085
    14     sr-90           mt=102                         updated 10/13/89        38090
    15      y-89           mt=102                         updated 10/13/89        39089
    16     zr-93             mt=  102                                              40093
    17     zr-94           mt=102                         updated 10/13/89        40094
    18     zr-95           mt=102                         updated 10/13/89        40095
    19     zircalloy       endf/b-iv mat 1284             updated 10/13/89        40802
    20     nb-94           mt=102                         updated 10/13/89        41094
    21     mo-95           mt=102                         updated 10/13/89        42095
    22     tc-99           mt=102                         updated 10/13/89        43099
    23     ru-101          mt=102                         updated 10/13/89        44101
    24     ru-106          mt=102                         updated 10/13/89        44106
    25     rh-103          mt=102                         updated 10/13/89        45103
    26     rh-105            mt=  102                                              45105
    27     pd-105          mt=102                         updated 10/13/89        46105
    28     pd-108          mt=102                         updated 10/13/89        46108
    29     silver-109      endf/b-iv mat 1139             updated 10/13/89        47109
    30     sb-124          mt=102                         updated 10/13/89        51124
    31     xe-131          mt=102,103,104,105,106         updated 10/13/89        54131
    32     xe-132          mt=102,103,104,105,106         updated 10/13/89        54132
    33     xenon-135       endf/b-iv mat 1294             updated 10/13/89        54135
```

```
    34     xe-136          mt=  102, 103, 104, 105, 107                          54136
    35     cesium-133    endf/b-iv mat 1141            updated 10/13/89          55133
    36     cs-134        mt=102                        updated 10/13/89          55134
    37     cs-135          mt=  102                                              55135
    38     cs-137        mt=102                        updated 10/13/89          55137
    39     ba-136        mt=102                        updated 10/13/89          56136
    40     la-139        mt=102                        updated 10/13/89          57139
    41     ce-144          mt=  102                                              58144
    42     pr-141        mt=102,103,104,105,106,107    updated 10/13/89          59141
    43     pr-143        mt=102                        updated 10/13/89          59143
    44     nd-143        mt=102                        updated 10/13/89          60143
    45     nd-145        mt=102                        updated 10/13/89          60145
    46     nd-147        mt=102                        updated 10/13/89          60147
    47     pm-147        mt=102                        updated 10/13/89          61147
    48     pm-148          mt=  102                                              61148
    49     sm-147        endf/b-v fission product      updated 10/13/89          62147
    50     sm-149        mt=102,103,107                updated 10/13/89          62149
    51     sm-150        mt=102                        updated 10/13/89          62150
    52     sm-151        mt=102,103,104,105,106,107    updated 10/13/89          62151
    53     sm-152        mt=102,103,104,105,106,107    updated 10/13/89          62152
    54     eu-153        mt=102,103,104,105,106,107    updated 10/13/89          63153
    55     eu-154        mt=102,103,104,105,106,107    updated 10/13/89          63154
    56     eu-155        mt=102,103,104,105,106,107    updated 10/13/89          63155
    57     gd-155        mt=102                        updated 10/13/89          64155
    58    u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                     92234
    59     uranium-235   endf/b-iv mat 1261            updated 10/13/89          92235
    60    u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                     92236
    61     uranium-238   endf/b-iv mat 1262            updated 10/13/89          92238
    62     neptunium-237 endf/b-iv mat 1263            updated 10/13/89          93237
    63    pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                    94238
    64     plutonium-239 endf/b-iv mat 1264            updated 10/13/89          94239
    65     plutonium-240 endf/b-iv mat 1265            updated 10/13/89          94240
    66     plutonium-241 endf/b-iv mat 1266            updated 10/13/89          94241
    67     plutonium-242 endf/b-iv mat 1161            updated 10/13/89          94242
    68    am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                           95241
    69    am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                            95243
    70     curium-244    endf/b-iv mat 1162            updated 10/13/89          96244
0 hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89          202    temperature=  607.60
                                thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 042375 p-3 293k                                         203    temperature=  607.60
                                thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 boron-11        endf/b-iv mat 1160             updated 10/13/89          204    temperature=  607.60
                                thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16       endf/b-iv mat 1276             updated 10/13/89          201    temperature=  607.60
0 zircalloy       endf/b-iv mat 1284             updated 10/13/89          205    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =    90.436              temperature(kelvin)      =   650.000
0potential scatter sigma  =     6.385              lumped nuclear density   = 4.2515602E-02
0spin factor (g)          =     1.079              lump dimension (a-bar)   = 6.7309999E-01
0inner radius             = 6.3246000E-01          dancoff correction (c)   = 1.6805907E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   8      -1.156752E-03     .000000E+00   -7.806033E-01
   9      -4.625978E-02     .000000E+00   -2.073270E+00
  10      -5.962230E-02     .000000E+00   -1.351984E+00
  11      -1.761672E-01     .000000E+00   -7.350731E-01
0excess resonance integrals
0                 resolved
```

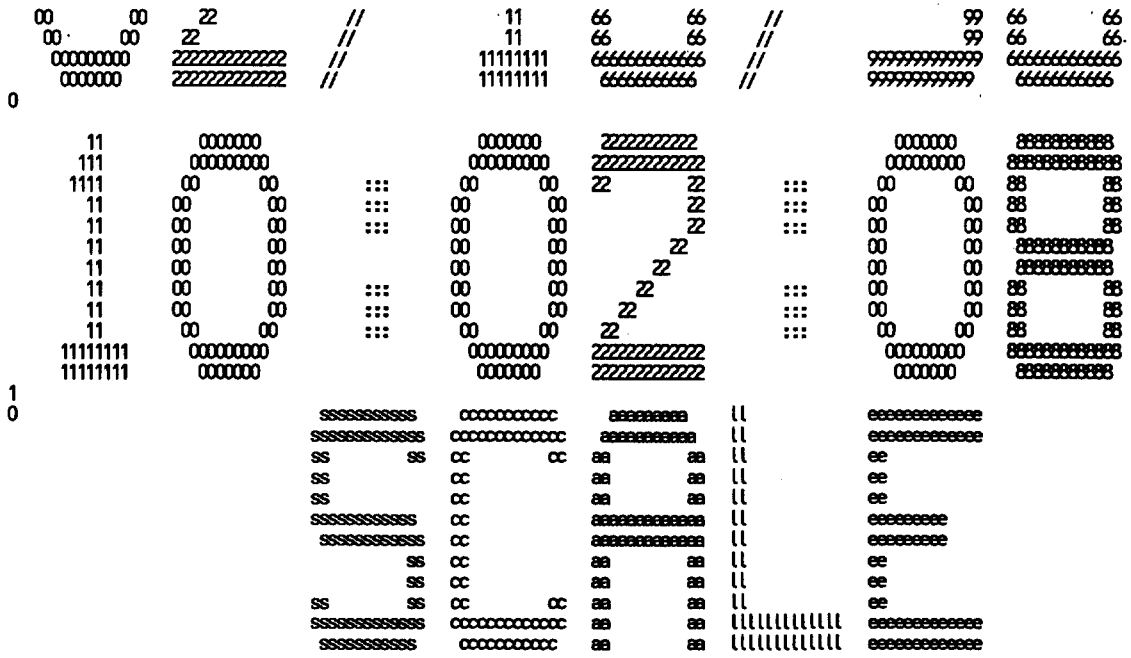
```
0absorption      2.92402E-01
 fission          .00000E+00
- elapsed time    .00 min.
- elapsed time    .02 min.
1     this xsdrn working tape was created 02/16/96 at 10:02:07
      the title of the parent case is as follows
      xsdrn weighted tape-parent case entitled--  720 d, sas2h: babcock wilcox 15x15,
       3.00wt%, 20gwd/mtu burn high temp

        tape id                          8670        number of nuclides              70
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     4
                                  table of contents
       hydrogen       endf/b-iv mat 1269/thrml002    updated 10/13/89          id   202
      b-10 1273 218ngp 042375 p-3 293k                                         id   203
       boron-11       endf/b-iv mat 1160             updated 10/13/89          id   204
       oxygen-16      endf/b-iv mat 1276             updated 10/13/89          id   201
       zircalloy      endf/b-iv mat 1284             updated 10/13/89          id   205
      1/v cross sections normalized to 1.0 at 0.0253 ev                        id   999
       hydrogen       endf/b-iv mat 1269/thrml002    updated 10/13/89          id  1001
      b-10 1273 218ngp 042375 p-3 293k                                         id  5010
       boron-11       endf/b-iv mat 1160             updated 10/13/89          id  5011
       oxygen-16      endf/b-iv mat 1276             updated 10/13/89          id  8016
       oxygen-16      endf/b-iv mat 1276             updated 10/13/89          id     6
       kr-83          mt=102,103,103,105,106,107     updated 10/13/89          id 36083
       kr-85            mt=  102                                               id 36085
       sr-90          mt=102                         updated 10/13/89          id 38090
        y-89          mt=102                         updated 10/13/89          id 39089
       zr-93            mt=  102                                               id 40093
       zr-94          mt=102                         updated 10/13/89          id 40094
       zr-95          mt=102                         updated 10/13/89          id 40095
       zircalloy      endf/b-iv mat 1284             updated 10/13/89          id 40302
       nb-94          mt=102                         updated 10/13/89          id 41094
       mo-95          mt=102                         updated 10/13/89          id 42095
       tc-99          mt=102                         updated 10/13/89          id 43099
       ru-101         mt=102                         updated 10/13/89          id 44101
       ru-106         mt=102                         updated 10/13/89          id 44106
       rh-103         mt=102                         updated 10/13/89          id 45103
       rh-105           mt=  102                                               id 45105
       pd-105         mt=102                         updated 10/13/89          id 46105
       pd-108         mt=102                         updated 10/13/89          id 46108
       silver-109     endf/b-iv mat 1139             updated 10/13/89          id 47109
       sb-124         mt=102                         updated 10/13/89          id 51124
       xe-131         mt=102,103,104,105,106         updated 10/13/89          id 54131
       xe-132         mt=102,103,104,105,106         updated 10/13/89          id 54132
       xenon-135      endf/b-iv mat 1294             updated 10/13/89          id 54135
       xe-136           mt=  102, 103, 104, 105, 107                           id 54136
       cesium-133     endf/b-iv mat 1141             updated 10/13/89          id 55133
       cs-134         mt=102                         updated 10/13/89          id 55134
       cs-135           mt=  102                                               id 55135
       cs-137         mt=102                         updated 10/13/89          id 55137
       ba-136         mt=102                         updated 10/13/89          id 56136
       la-139         mt=102                         updated 10/13/89          id 57139
       ce-144           mt=  102                                               id 58144
       pr-141         mt=102,103,104,105,106,107     updated 10/13/89          id 59141
       pr-143         mt=102                         updated 10/13/89          id 59143
       nd-143         mt=102                         updated 10/13/89          id 60143
       nd-145         mt=102                         updated 10/13/89          id 60145
       nd-147         mt=102                         updated 10/13/89          id 60147
       pm-147         mt=102                         updated 10/13/89          id 61147
```

```
        pm-148          mt=  102                                                id    61148
        sm-147          endf/b-v fission product      updated 10/13/89          id    62147
        sm-149          mt=102,103,107                updated 10/13/89          id    62149
        sm-150          mt=102                        updated 10/13/89          id    62150
        sm-151          mt=102,103,104,105,106,107    updated 10/13/89          id    62151
        sm-152          mt=102,103,104,105,106,107    updated 10/13/89          id    62152
        eu-153          mt=102,103,104,105,106,107    updated 10/13/89          id    63153
        eu-154          mt=102,103,104,105,106,107    updated 10/13/89          id    63154
        eu-155          mt=102,103,104,105,106,107    updated 10/13/89          id    63155
        gd-155          mt=102                        updated 10/13/89          id    64155
       u-234 1043 sigp=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                       id    92234
        uranium-235     endf/b-iv mat 1261            updated 10/13/89          id    92235
       u-236 1163 sigp=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                       id    92236
        uranium-238     endf/b-iv mat 1262            updated 10/13/89          id    92238
        neptunium-237   endf/b-iv mat 1263            updated 10/13/89          id    93237
       pu-238 1050 sigp=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                      id    94238
        plutonium-239   endf/b-iv mat 1264            updated 10/13/89          id    94239
        plutonium-240   endf/b-iv mat 1265            updated 10/13/89          id    94240
        plutonium-241   endf/b-iv mat 1266            updated 10/13/89          id    94241
        plutonium-242   endf/b-iv mat 1161            updated 10/13/89          id    94242
       am-241 1056 sigp=5+4 newxlacs 218hgp p-3 293k                             id    95241
       am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                              id    95243
        curium-244      endf/b-iv mat 1162            updated 10/13/89          id    96244
0        tape copy used      0 i/o's, and took     .00 seconds
1 xx         xx  sssssssssss  ddddddddddd  rrrrrrrrrr   mm         mm  pppppppppp   mm         mm
   xx       xx  sssssssssssss ddddddddddddd rrrrrrrrrrr  mm         mm  ppppppppppp  mmm       mmm
    xx     xx   ss          ss dd        dd  rr        rr  mmm       mm  pp        pp  mmmm     mmmm
     xx   xx    ss             dd        dd  rr        rr  mm mm     mm  pp        pp  mm mm   mm mm
      xx xx     ss             dd        dd  rr        rr  mm  mm    mm  pp        pp  mm  mm mm  mm
       xxx      sssssssssss    dd        dd  rrrrrrrrrrr   mm   mm   mm  ppppppppppp  mm   mmm   mm
       xxx       sssssssssss   dd        dd  rrrrrrrrrr    mm    mm  mm  ppppppppppp  mm    m    mm
      xx xx              ss    dd        dd  rr   rr       mm     mm mm  pp           mm         mm
     xx   xx             ss    dd        dd  rr    rr      mm      mmm  pp           mm         mm
    xx     xx   ss      ss    dd        dd  rr     rr     mm       mm  pp           mm         mm
   xx       xx  sssssssssss   ddddddddddd   rr      rr    mm       mm  pp           mm         mm
  xx         xx  sssssssssss  ddddddddddd   rr      rr    mm       mm  pp           mm         mm
0

  ddddddddddd     aaaaaaaa    w         w  iiiiiiiiiii    sssssssss
  ddddddddddd    aaaaaaaaaa   w         w  iiiiiiiiiii   sssssssssss
  dd        dd  aa        aa  w         w      ii        ss       ss
  dd        dd  aa        aa  w         w      ii        ss
  dd        dd  aa        aa  w         w      ii        ss
  dd        dd  aaaaaaaaaaaa  w         w      ii         sssssssss
  dd        dd  aaaaaaaaaaaa   w       w       ii          sssssssss
  dd        dd  aa        aa    w     w        ii                ss
  dd        dd  aa        aa     w   w         ii                ss
  dd        dd  aa        aa      w w          ii        ss      ss
  ddddddddddd   aa        aa       ww      iiiiiiiiiii   sssssssssss
  ddddddddddd   aa        aa        v      iiiiiiiiiii    sssssssss
0

    000000     2222222222          //      11     666666666          //  999999999   666666666
   00000000    22222222222        //      111     666666666        //   999999999   666666666
  00      00  22        22       //      1111     66              //    99      99  66
 00        00         22       //        11      66             //     99      99  66
 00        00        22       //         11      66            //      99      99  66
 00        00       22       //          11      666666666    //       999999999   666666666
 00        00      22       //           11      666666666   //         999999999   666666666
 00        00     22       //            11      66      66 //                99   66      66
```


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

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

 ige  1/2/3 = plane/cylinder/sphere      2       isn  quadrature order                  8
 izm  number of zones                    4       isct order of scattering               3
 im   number of special intervals       28       ievt 0/1/2/3/4/5/6=q/k/alpha/c/z/r/h   1
 ibl  0/1/2/3 = vacuum/refl/per/white    1       iim  inner iteration maximum          20
 ibr  right boundary condition           3       iom  outer iteration maximum          25
 mxx  number of mixtures                 3       iclc -1/0/n--flat res/sry/opt          0
 ms   mixing table length               70       ith  0/1 = forward/adjoint          0
 igm  number of energy groups           27       iflu not used(always wgtd)            0
 nrg  number of neutron groups          27       iprt -2/-1/0/n=mixture xsec print     -2
 ngg  number of gamma groups             0       idl  0/1/2/3=no/prt rd/pch r/both    14
 iftg number of first thermal group     15       ipbt -1/0/1=none/fine/all bal. prt     0
0                            special options

 ifg  0/1 = none/weighting calculation   1       ipn  0/1/2 diff. coef. param          0
 iqm  volumetric sources (0/n=no/yes)    0       idfm 0/1 = none/density factors 38*   0
 ipm  boundary sources (0/n=no/yes)      0       iaz  0/n = none/n activities by zone  0
 ifn  0/1/2 = input 33*/34*/use last    14       iai  0/1=none/activities by interval  0
 itmx maximum time (minutes)            10       ifct 0/1=no/yes upscatter scaling     0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0       ipvt 0/1/2=no/k/alpha parametric srch 0
 isx  broad group fluxes                 0       isen outer iteration acceleration     0
 ibln activity data unit                 0       nbnd band rebaln parameter            0
 jbkl 0/1/2 buckling geometry            0
0                          weighting data (ifg=1)

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

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

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

0	nuclides on tape	cccc identification	mixing table mixture	mixing table component	atom density	extra xsect id's
1	202		3	201	2.09710E-02	
2	203		3	202	4.19420E-02	
3	204		3	203	3.81515E-06	
4	201		3	204	1.54884E-05	
5	205		2	205	4.25156E-02	
6	999		1	92235	1.47017E-04	
7	1001		1	92234	1.54011E-06	
8	5010		1	92236	1.58412E-05	
9	5011		1	92238	7.23470E-03	
10	8016		1	8016	1.50611E-02	
11	6		1	6	1.15315E-02	
12	36083		1	36083	4.00409E-07	
13	36085		1	36085	1.92753E-07	
14	38090		1	38090	4.36638E-06	
15	39089		1	39089	3.37449E-06	
16	40093		1	42095	4.35535E-06	
17	40094		1	40093	3.43072E-06	
18	40095		1	40094	5.36576E-06	
19	40302		1	40095	6.73357E-07	
20	41094		1	41094	2.49821E-12	
21	42095		1	43099	5.24059E-06	
22	43099		1	45103	2.81650E-06	
23	44101		1	45105	6.85117E-09	
24	44106		1	44101	4.70687E-06	
25	45103		1	44106	7.10825E-07	
26	45105		1	46105	1.74568E-06	
27	46105		1	46108	4.60857E-07	
28	46108		1	47109	3.27366E-07	
29	47109		1	51124	7.62189E-11	
30	51124		1	54131	2.41807E-06	
31	54131		1	54132	4.37452E-06	
32	54132		1	54135	2.20802E-09	
33	54135		1	54136	8.94972E-06	
34	54136		1	55134	2.21272E-07	
35	55133		1	55135	2.83459E-06	
36	55134		1	55137	5.58169E-06	
37	55135		1	56136	4.34868E-08	
38	55137		1	57139	5.53655E-06	
39	56136		1	59141	4.73417E-06	
40	57139		1	59143	1.24918E-07	
41	58144		1	58144	2.11613E-06	
42	59141		1	60143	4.42460E-06	
43	59143		1	60145	3.23179E-06	
44	60143		1	61147	1.20498E-06	
45	60145		1	61148	3.46153E-09	
46	60147		1	60147	4.32241E-08	
47	61147		1	62147	3.37132E-07	
48	61148		1	62149	2.77995E-08	
49	62147		1	62150	1.11012E-06	
50	62149		1	62151	1.22001E-07	
51	62150		1	62152	5.39591E-07	
52	62151		1	64155	5.41449E-10	
53	62152		1	63153	2.98755E-07	

54	63153	1	63154	5.42034E-08
55	63154	1	63155	3.27959E-08
56	63155	1	40302	4.42681E-03
57	64155	1	1001	2.30630E-02
58	92234	1	5010	2.09787E-06
59	92235	1	5011	8.51673E-06
60	92236	1	55133	5.74632E-06
61	92238	1	95237	9.31923E-07
62	95237	1	94238	1.07908E-07
63	94238	1	94239	3.19267E-05
64	94239	1	94240	5.37095E-06
65	94240	1	94241	2.67558E-06
66	94241	1	94242	2.39372E-07
67	94242	1	95241	6.58791E-08
68	95241	1	95243	1.74582E-08
69	95243	1	96244	1.32132E-09
70	96244	1	999	3.30753E-21

- elapsed time .00 min.
0 24259 locations will be used
0 35q array has 29 entries.
0 36q array has 28 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 720 d, second part of sas2h pass to make library

0 neutron group parameters

gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	1	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	1	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	1	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	1	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	2	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	2	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72415E+08	2	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	2	0	9	1.00000E+00	
10	3.00000E+03	8.11173E+00	4.82126E+07	2	0	10	1.00000E+00	
11	5.50000E+02	9.80818E+00	2.05946E+07	2	0	11	1.00000E+00	
12	1.00000E+02	1.15129E+01	1.01036E+07	2	0	12	1.00000E+00	
13	3.00000E+01	1.27169E+01	5.69595E+06	2	0	13	1.00000E+00	
14	1.00000E+01	1.38155E+01	3.20957E+06	2	0	14	1.00000E+00	
15	3.04999E+00	1.50030E+01	2.10601E+06	2	0	15	1.00000E+00	
16	1.77000E+00	1.55471E+01	1.70522E+06	2	0	16	1.00000E+00	
17	1.29999E+00	1.58657E+01	1.52545E+06	2	0	17	1.00000E+00	
18	1.12999E+00	1.59959E+01	1.42867E+06	2	0	18	1.00000E+00	
19	1.00000E+00	1.61181E+01	1.31002E+06	2	0	19	1.00000E+00	
20	8.00000E-01	1.63412E+01	9.05898E+05	2	0	20	1.00000E+00	
21	4.00000E-01	1.70844E+01	8.17974E+05	3	0	21	1.00000E+00	
22	3.25000E-01	1.72420E+01	6.90070E+05	3	0	22	1.00000E+00	
23	2.25000E-01	1.76098E+01	4.86953E+05	3	0	23	1.00000E+00	
24	9.99999E-02	1.84207E+01	3.57766E+05	3	0	24	1.00000E+00	
25	5.00000E-02	1.91138E+01	2.71895E+05	3	0	25	1.00000E+00	
26	3.00000E-02	1.96247E+01	1.87283E+05	3	0	26	1.00000E+00	
27	1.00000E-02	2.07233E+01	8.88201E+04	3	0	27	1.00000E+00	
28	1.00000E-05	2.76310E+01						

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

0

	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos

1	3	3	0	-2.79004E-01	3	0
2	2	3	5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	3	3	5.06143E-02	1.97286E-01	2	9.98548E-03
4	1	3	0	-6.04419E-01	8	0
5			5.55953E-02	-5.58410E-01	8	-3.10450E-02
6			5.55953E-02	-2.31301E-01	7	-1.28593E-02
7			5.55953E-02	2.31301E-01	6	1.28593E-02
8			5.55953E-02	5.58410E-01	5	3.10450E-02
9			0	-8.50774E-01	15	0
10			5.22844E-02	-8.21784E-01	15	-4.29665E-02
11			5.22844E-02	-6.01588E-01	14	-3.14537E-02
12			5.22844E-02	-2.20196E-01	13	-1.15128E-02
13			5.22844E-02	2.20196E-01	12	1.15128E-02
14			5.22844E-02	6.01588E-01	11	3.14537E-02
15			5.22844E-02	8.21784E-01	10	4.29665E-02
16			0	-9.83052E-01	24	0
17			4.53365E-02	-9.64143E-01	24	-4.37099E-02
18			4.53365E-02	-8.17361E-01	23	-3.70655E-02
19			4.53365E-02	-5.46143E-01	22	-2.47597E-02
20			4.53365E-02	-1.91780E-01	21	-8.69444E-03
21			4.53365E-02	1.91780E-01	20	8.69444E-03
22			4.53365E-02	5.46143E-01	19	2.47597E-02
23			4.53365E-02	8.17361E-01	18	3.70655E-02
24			4.53365E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40330E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40330E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83052E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20862E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20862E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20862E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20862E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95287E-02	5.92931E-02	1	2.48366E-01	1.47264E-02		0	
3	7.90575E-02	1.18586E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81762E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98693E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48366E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53403E-01	5.73167E-01	1	3.47713E+00	1.42355E-01			

10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01
11	6.32460E-01	6.42620E-01	2	3.97386E+00	8.20460E-02
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46405E-02
13	6.73100E-01	6.96583E-01	3	4.22921E+00	2.05562E-01
14	7.20067E-01	7.43550E-01	3	4.52431E+00	2.19422E-01
15	7.67033E-01	7.90517E-01	3	4.81941E+00	2.33282E-01
16	8.14000E-01	8.62795E-01	4	5.11451E+00	5.29051E-01
17	9.11591E-01	9.60386E-01	4	5.72769E+00	5.88891E-01
18	1.00918E+00	1.10677E+00	4	6.34088E+00	1.35731E+00
19	1.20436E+00	1.30195E+00	4	7.56724E+00	1.59667E+00
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.83603E+00
21	1.59473E+00	1.69232E+00	4	1.00200E+01	2.07540E+00
22	1.78991E+00	1.88750E+00	4	1.12463E+01	2.31476E+00
23	1.98509E+00	2.08268E+00	4	1.24727E+01	2.55412E+00
24	2.18027E+00	2.27786E+00	4	1.36991E+01	2.79349E+00
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.03285E+00
26	2.57064E+00	2.66823E+00	4	1.61518E+01	3.27221E+00
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72587E+00
28	2.86341E+00	2.91220E+00	4	1.79913E+01	1.78571E+00
29	2.96100E+00			1.86045E+01	

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	186	2.48569E-05	1.05705E+00	-6.31734E-02	1.00000E+00	-1.95208E-02	.00000E+00	.0000
2	281	-1.32135E-05	1.06387E+00	-1.33080E-03	-7.88857E-03	-2.81310E-03	.00000E+00	.0000
3	354	1.01005E-05	1.06448E+00	-1.99520E-04	-1.05861E-03	-6.40909E-04	.00000E+00	.0167
4	409	-8.38361E-06	1.06490E+00	-4.26851E-05	-2.46785E-04	-1.43411E-04	.00000E+00	.0167
5	444	5.49109E-06	1.06478E+00	-9.70884E-06	-5.56824E-05	-3.16001E-05	.00000E+00	.0167

grp	to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	17	1.13149E-06	28	1.00000E+00	1
2	2	1	17	1.35454E-06	28	1.00000E+00	1
3	3	1	17	1.24975E-06	28	1.00000E+00	1
4	4	1	17	1.20728E-06	28	1.00000E+00	1
5	5	1	17	1.22270E-06	28	1.00000E+00	1
6	6	1	17	8.15168E-07	28	1.00000E+00	1
7	7	1	17	5.15490E-07	28	1.00000E+00	2
8	8	1	16	1.01462E-07	28	1.00000E+00	2
9	9	1	27	8.55716E-06	28	9.99992E-01	3
10	10	1	26	3.16370E-06	28	9.99997E-01	3
11	11	1	26	2.76400E-06	28	9.99997E-01	3
12	12	1	25	9.50851E-07	28	9.99999E-01	3
13	13	1	26	2.33163E-06	28	1.00000E+00	3
14	14	1	25	3.07860E-07	28	1.00000E+00	3
15	15	1	2	3.05769E-05	28	9.99966E-01	2
16	16	1	2	3.76252E-05	28	9.99969E-01	2
17	17	1	2	4.32990E-05	28	9.99892E-01	3
18	18	1	2	5.08065E-05	28	9.99962E-01	3
19	19	1	2	4.31020E-05	28	9.99916E-01	3
20	20	1	2	3.33729E-05	28	9.99936E-01	3
21	21	1	2	5.14854E-05	28	9.99954E-01	3
22	22	1	23	2.32014E-05	28	9.99976E-01	3
23	23	1	27	1.81769E-05	28	9.99976E-01	4
24	24	1	1	1.87144E-05	9	1.00001E+00	4
25	25	1	1	2.12591E-05	8	1.00001E+00	5
26	26	1	1	1.56697E-05	6	1.00001E+00	6
27	27	1	1	1.42699E-05	5	1.00001E+00	8

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

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

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

0 int.	zone number	radius	int. midpoint	area	volume	prod density
1	1	.00000E+00	1.97644E-02	.00000E+00	4.90881E-03	.00000E+00
2	1	3.95287E-02	5.92931E-02	2.48366E-01	1.47264E-02	.00000E+00
3	1	7.90575E-02	1.18586E-01	4.96733E-01	5.89057E-02	.00000E+00
4	1	1.58115E-01	1.97644E-01	9.93466E-01	9.81762E-02	.00000E+00
5	1	2.37172E-01	2.76701E-01	1.49020E+00	1.37447E-01	.00000E+00
6	1	3.16230E-01	3.55759E-01	1.98693E+00	1.76717E-01	.00000E+00
7	1	3.95288E-01	4.34816E-01	2.48366E+00	2.15988E-01	.00000E+00
8	1	4.74345E-01	5.13874E-01	2.98040E+00	2.55258E-01	.00000E+00
9	1	5.53403E-01	5.73167E-01	3.47713E+00	1.42355E-01	.00000E+00
10	1	5.92931E-01	6.12696E-01	3.72550E+00	1.52173E-01	.00000E+00
11	2	6.32460E-01	6.42620E-01	3.97386E+00	8.20460E-02	.00000E+00
12	2	6.52780E-01	6.62940E-01	4.10154E+00	8.46405E-02	.00000E+00
13	3	6.73100E-01	6.96583E-01	4.22921E+00	2.05562E-01	.00000E+00
14	3	7.20067E-01	7.43550E-01	4.52431E+00	2.19422E-01	.00000E+00
15	3	7.67033E-01	7.90517E-01	4.81941E+00	2.33282E-01	.00000E+00
16	4	8.14000E-01	8.62795E-01	5.11451E+00	5.29051E-01	2.42890E-02
17	4	9.11591E-01	9.60386E-01	5.72769E+00	5.88891E-01	2.64366E-02
18	4	1.00918E+00	1.10677E+00	6.34088E+00	1.35731E+00	5.96802E-02
19	4	1.20436E+00	1.30195E+00	7.56724E+00	1.59667E+00	6.87644E-02
20	4	1.39955E+00	1.49714E+00	8.79360E+00	1.83603E+00	7.78853E-02
21	4	1.59473E+00	1.69232E+00	1.00200E+01	2.07540E+00	8.71568E-02
22	4	1.78991E+00	1.88750E+00	1.12463E+01	2.31478E+00	9.64330E-02
23	4	1.98509E+00	2.08268E+00	1.24727E+01	2.55412E+00	1.05772E-01
24	4	2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.15189E-01
25	4	2.37545E+00	2.47305E+00	1.49254E+01	3.03285E+00	1.24702E-01
26	4	2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.34341E-01
27	4	2.76582E+00	2.81461E+00	1.73781E+01	1.72587E+00	7.08334E-02
28	4	2.86341E+00	2.91220E+00	1.79913E+01	1.78571E+00	7.33258E-02
29		2.96100E+00		1.86045E+01		

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

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.28271E-02	9.04508E-02	1.12336E-01	6.89895E-02	1.02675E-01	1.92730E-01	1.98048E-01	1.46974E-01
2	1.28219E-02	9.03997E-02	1.12271E-01	6.89013E-02	1.02623E-01	1.92643E-01	1.98009E-01	1.46968E-01
3	1.28225E-02	9.04126E-02	1.12293E-01	6.89192E-02	1.02657E-01	1.92713E-01	1.98062E-01	1.46979E-01
4	1.28292E-02	9.04930E-02	1.12405E-01	6.89978E-02	1.02787E-01	1.92956E-01	1.98218E-01	1.47008E-01
5	1.28414E-02	9.06344E-02	1.12601E-01	6.91305E-02	1.03003E-01	1.93355E-01	1.98466E-01	1.47052E-01
6	1.28580E-02	9.08285E-02	1.12869E-01	6.93138E-02	1.03301E-01	1.93903E-01	1.98805E-01	1.47108E-01
7	1.28789E-02	9.10778E-02	1.13215E-01	6.95517E-02	1.03689E-01	1.94620E-01	1.99246E-01	1.47178E-01
8	1.29042E-02	9.13887E-02	1.13664E-01	6.98589E-02	1.04194E-01	1.95556E-01	1.99823E-01	1.47261E-01
9	1.29255E-02	9.16622E-02	1.14048E-01	7.01408E-02	1.04662E-01	1.96424E-01	1.99359E-01	1.47330E-01
10	1.29400E-02	9.18766E-02	1.14377E-01	7.03889E-02	1.05083E-01	1.97210E-01	1.99846E-01	1.47379E-01
11	1.29522E-02	9.20543E-02	1.14652E-01	7.05972E-02	1.05437E-01	1.97886E-01	1.98264E-01	1.47423E-01
12	1.29654E-02	9.21865E-02	1.14825E-01	7.07055E-02	1.05606E-01	1.98229E-01	1.98466E-01	1.47467E-01
13	1.29931E-02	9.24275E-02	1.15095E-01	7.08430E-02	1.05796E-01	1.98563E-01	1.98658E-01	1.47536E-01
14	1.30339E-02	9.28113E-02	1.15548E-01	7.10982E-02	1.06170E-01	1.99222E-01	1.97038E-01	1.47627E-01
15	1.30819E-02	9.33052E-02	1.16173E-01	7.14847E-02	1.06767E-01	2.00295E-01	1.97666E-01	1.47728E-01
16	1.31565E-02	9.40962E-02	1.17188E-01	7.21295E-02	1.07782E-01	2.02136E-01	1.98758E-01	1.47898E-01
17	1.32300E-02	9.48836E-02	1.18204E-01	7.27777E-02	1.08812E-01	2.04029E-01	1.99901E-01	1.48095E-01
18	1.32885E-02	9.55219E-02	1.19036E-01	7.33133E-02	1.09678E-01	2.05666E-01	2.00918E-01	1.48299E-01
19	1.33395E-02	9.60887E-02	1.19784E-01	7.37979E-02	1.10470E-01	2.07194E-01	2.01885E-01	1.48511E-01
20	1.33694E-02	9.64294E-02	1.20242E-01	7.40969E-02	1.10964E-01	2.08177E-01	2.02523E-01	1.48666E-01
21	1.33882E-02	9.66485E-02	1.20541E-01	7.42936E-02	1.11293E-01	2.08849E-01	2.02969E-01	1.48782E-01
22	1.34002E-02	9.67916E-02	1.20739E-01	7.44250E-02	1.11516E-01	2.09314E-01	2.03283E-01	1.48869E-01
23	1.34077E-02	9.68836E-02	1.20869E-01	7.45114E-02	1.11663E-01	2.09631E-01	2.03501E-01	1.48931E-01
24	1.34121E-02	9.69385E-02	1.20948E-01	7.45642E-02	1.11755E-01	2.09833E-01	2.03642E-01	1.48973E-01
25	1.34140E-02	9.69637E-02	1.20986E-01	7.45895E-02	1.11799E-01	2.09937E-01	2.03716E-01	1.48994E-01

26	1.34136E-02	9.69606E-02	1.20984E-01	7.45883E-02	1.11799E-01	2.09944E-01	2.05722E-01	1.48995E-01
27	1.34118E-02	9.69405E-02	1.20957E-01	7.45708E-02	1.11771E-01	2.09889E-01	2.05685E-01	1.48981E-01
28	1.34094E-02	9.69109E-02	1.20918E-01	7.45443E-02	1.11726E-01	2.09799E-01	2.05622E-01	1.48961E-01
0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15922E-01	1.07136E-01	1.00898E-01	6.54265E-02	5.58852E-02	5.32915E-02	2.90548E-02	1.60960E-02
2	1.15922E-01	1.07136E-01	1.00902E-01	6.54314E-02	5.58901E-02	5.32985E-02	2.90571E-02	1.60970E-02
3	1.15920E-01	1.07127E-01	1.00881E-01	6.54075E-02	5.58676E-02	5.32656E-02	2.90506E-02	1.60935E-02
4	1.15916E-01	1.07106E-01	1.00832E-01	6.53500E-02	5.58136E-02	5.31864E-02	2.90348E-02	1.60848E-02
5	1.15909E-01	1.07073E-01	1.00756E-01	6.52624E-02	5.57315E-02	5.30659E-02	2.90112E-02	1.60719E-02
6	1.15900E-01	1.07028E-01	1.00654E-01	6.51433E-02	5.56205E-02	5.29024E-02	2.89801E-02	1.60547E-02
7	1.15887E-01	1.06969E-01	1.00518E-01	6.49871E-02	5.54758E-02	5.26886E-02	2.89409E-02	1.60328E-02
8	1.15874E-01	1.06890E-01	1.00339E-01	6.47814E-02	5.52861E-02	5.24076E-02	2.88915E-02	1.60047E-02
9	1.15864E-01	1.06815E-01	1.00171E-01	6.45895E-02	5.51101E-02	5.21457E-02	2.88471E-02	1.59790E-02
10	1.15864E-01	1.06745E-01	1.00015E-01	6.44146E-02	5.49508E-02	5.19080E-02	2.88085E-02	1.59561E-02
11	1.15870E-01	1.06690E-01	9.98917E-02	6.42774E-02	5.48243E-02	5.17202E-02	2.87745E-02	1.59369E-02
12	1.15885E-01	1.06670E-01	9.98457E-02	6.42238E-02	5.47724E-02	5.16450E-02	2.87557E-02	1.59275E-02
13	1.15820E-01	1.06643E-01	9.97829E-02	6.41417E-02	5.46979E-02	5.15331E-02	2.87400E-02	1.59180E-02
14	1.15750E-01	1.06580E-01	9.96395E-02	6.39636E-02	5.45407E-02	5.12933E-02	2.87143E-02	1.58999E-02
15	1.15674E-01	1.06475E-01	9.94047E-02	6.36834E-02	5.42947E-02	5.09168E-02	2.86757E-02	1.58717E-02
16	1.15569E-01	1.06302E-01	9.90157E-02	6.32219E-02	5.38884E-02	5.02928E-02	2.86047E-02	1.58252E-02
17	1.15474E-01	1.06131E-01	9.86268E-02	6.27606E-02	5.34769E-02	4.96657E-02	2.85196E-02	1.57702E-02
18	1.15407E-01	1.05986E-01	9.82943E-02	6.23667E-02	5.31167E-02	4.91287E-02	2.84276E-02	1.57179E-02
19	1.15354E-01	1.05852E-01	9.79861E-02	6.19998E-02	5.27759E-02	4.86276E-02	2.83299E-02	1.56646E-02
20	1.15329E-01	1.05768E-01	9.77859E-02	6.17629E-02	5.25511E-02	4.83029E-02	2.82563E-02	1.56260E-02
21	1.15317E-01	1.05710E-01	9.76441E-02	6.15983E-02	5.23925E-02	4.80766E-02	2.82001E-02	1.55970E-02
22	1.15311E-01	1.05669E-01	9.75449E-02	6.14811E-02	5.22783E-02	4.79150E-02	2.81573E-02	1.55752E-02
23	1.15307E-01	1.05641E-01	9.74743E-02	6.13978E-02	5.21966E-02	4.78001E-02	2.81257E-02	1.55592E-02
24	1.15305E-01	1.05621E-01	9.74263E-02	6.13411E-02	5.21408E-02	4.77218E-02	2.81040E-02	1.55482E-02
25	1.15303E-01	1.05610E-01	9.73977E-02	6.13073E-02	5.21079E-02	4.76753E-02	2.80919E-02	1.55421E-02
26	1.15301E-01	1.05606E-01	9.73885E-02	6.12964E-02	5.20983E-02	4.76612E-02	2.80900E-02	1.55411E-02
27	1.15298E-01	1.05607E-01	9.73959E-02	6.13052E-02	5.21052E-02	4.76713E-02	2.80954E-02	1.55437E-02
28	1.15296E-01	1.05613E-01	9.74094E-02	6.13216E-02	5.21257E-02	4.76979E-02	2.81052E-02	1.55486E-02
0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	7.06002E-03	5.39608E-03	1.07464E-02	3.56724E-02	1.11395E-02	2.29340E-02	7.73947E-02	6.34270E-02
2	7.06071E-03	5.39747E-03	1.07478E-02	3.56750E-02	1.11406E-02	2.29357E-02	7.73898E-02	6.34123E-02
3	7.05775E-03	5.38991E-03	1.07420E-02	3.56611E-02	1.11299E-02	2.29014E-02	7.72727E-02	6.32853E-02
4	7.05059E-03	5.37170E-03	1.07286E-02	3.56282E-02	1.11051E-02	2.28234E-02	7.70154E-02	6.30121E-02
5	7.03970E-03	5.34371E-03	1.07082E-02	3.55790E-02	1.10678E-02	2.27061E-02	7.66337E-02	6.26077E-02
6	7.02496E-03	5.30532E-03	1.06807E-02	3.55132E-02	1.10173E-02	2.25477E-02	7.61252E-02	6.20691E-02
7	7.00570E-03	5.25445E-03	1.06450E-02	3.54284E-02	1.09512E-02	2.23414E-02	7.54772E-02	6.13842E-02
8	6.98041E-03	5.18653E-03	1.05986E-02	3.53191E-02	1.08644E-02	2.20721E-02	7.46585E-02	6.05241E-02
9	6.95684E-03	5.12249E-03	1.05556E-02	3.52188E-02	1.07885E-02	2.18227E-02	7.39223E-02	5.97562E-02
10	6.93537E-03	5.06362E-03	1.05167E-02	3.51298E-02	1.07095E-02	2.15972E-02	7.32823E-02	5.90957E-02
11	6.91829E-03	5.01852E-03	1.04856E-02	3.50572E-02	1.06527E-02	2.14275E-02	7.28165E-02	5.86358E-02
12	6.91138E-03	5.00247E-03	1.04727E-02	3.50266E-02	1.06330E-02	2.13708E-02	7.26727E-02	5.85190E-02
13	6.90152E-03	4.97297E-03	1.04556E-02	3.49874E-02	1.06005E-02	2.12669E-02	7.23956E-02	5.82280E-02
14	6.88040E-03	4.90665E-03	1.04199E-02	3.49069E-02	1.05265E-02	2.10516E-02	7.17802E-02	5.75645E-02
15	6.84694E-03	4.80164E-03	1.03639E-02	3.47827E-02	1.04089E-02	2.06655E-02	7.08810E-02	5.66156E-02
16	6.79182E-03	4.62038E-03	1.02709E-02	3.45776E-02	1.02166E-02	2.00643E-02	6.94980E-02	5.52061E-02
17	6.73651E-03	4.44198E-03	1.01744E-02	3.43628E-02	1.00266E-02	1.94691E-02	6.80913E-02	5.37995E-02
18	6.68862E-03	4.30598E-03	1.00868E-02	3.41601E-02	9.86613E-03	1.89720E-02	6.67475E-02	5.24537E-02
19	6.64342E-03	4.18892E-03	1.00017E-02	3.39588E-02	9.71702E-03	1.85129E-02	6.53964E-02	5.10985E-02
20	6.61355E-03	4.12089E-03	9.94418E-03	3.38170E-02	9.62058E-03	1.82179E-02	6.44334E-02	5.01322E-02
21	6.59252E-03	4.07681E-03	9.90301E-03	3.37128E-02	9.55300E-03	1.80116E-02	6.37119E-02	4.94092E-02
22	6.57735E-03	4.04711E-03	9.87305E-03	3.36352E-02	9.50442E-03	1.78634E-02	6.31651E-02	4.88629E-02
23	6.56650E-03	4.02679E-03	9.85144E-03	3.35784E-02	9.46948E-03	1.77568E-02	6.27552E-02	4.84536E-02
24	6.55914E-03	4.01321E-03	9.83668E-03	3.35390E-02	9.44511E-03	1.76818E-02	6.24590E-02	4.81567E-02
25	6.55487E-03	4.00484E-03	9.82795E-03	3.35155E-02	9.43009E-03	1.76343E-02	6.22637E-02	4.79571E-02
26	6.55379E-03	4.00147E-03	9.82539E-03	3.35080E-02	9.42417E-03	1.76130E-02	6.21684E-02	4.78507E-02
27	6.55503E-03	4.00200E-03	9.82702E-03	3.35137E-02	9.42564E-03	1.76135E-02	6.21592E-02	4.78268E-02

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   28 6.55734E-03 4.00532E-03 9.83219E-03 3.35275E-02 9.43193E-03 1.76294E-02 6.22086E-02 4.78605E-02
0 int.  grp. 25    grp. 26    grp. 27
    1 2.86830E-02 2.06921E-02 3.98060E-03
    2 2.86721E-02 2.06800E-02 3.92767E-03
    3 2.86039E-02 2.06202E-02 3.91540E-03
    4 2.84588E-02 2.04937E-02 3.88939E-03
    5 2.82439E-02 2.03052E-02 3.85005E-03
    6 2.79572E-02 2.00516E-02 3.79617E-03
    7 2.75928E-02 1.97265E-02 3.72568E-03
    8 2.71372E-02 1.93167E-02 3.63471E-03
    9 2.67329E-02 1.89514E-02 3.55244E-03
   10 2.63901E-02 1.86394E-02 3.48169E-03
   11 2.61608E-02 1.84386E-02 3.43887E-03
   12 2.61117E-02 1.84081E-02 3.43602E-03
   13 2.59487E-02 1.82580E-02 3.39571E-03
   14 2.55769E-02 1.79012E-02 3.29847E-03
   15 2.50587E-02 1.73970E-02 3.15374E-03
   16 2.43080E-02 1.66761E-02 2.94211E-03
   17 2.35713E-02 1.59956E-02 2.76010E-03
   18 2.28718E-02 1.53839E-02 2.62526E-03
   19 2.21718E-02 1.47911E-02 2.50009E-03
   20 2.16783E-02 1.43917E-02 2.42542E-03
   21 2.13130E-02 1.41066E-02 2.37527E-03
   22 2.10401E-02 1.39002E-02 2.34061E-03
   23 2.08373E-02 1.37505E-02 2.31606E-03
   24 2.06909E-02 1.36443E-02 2.29900E-03
   25 2.05921E-02 1.35731E-02 2.28769E-03
   26 2.05368E-02 1.35320E-02 2.28118E-03
   27 2.05205E-02 1.35175E-02 2.27873E-03
   28 2.05312E-02 1.35206E-02 2.27852E-03
- elapsed time    .02 min.
1fine group summary for zone  1 by group including sum for all groups in line 28
0 grp.  fix source  fiss source  in scatter  slf scatter  out scatter  absorption   leakage    balance
    1  .00000E+00  .00000E+00  .00000E+00 4.99611E-04 6.61276E-04 5.50619E-05 -7.16304E-04 9.99952E-01
    2  .00000E+00  .00000E+00 3.79427E-04 6.14034E-03 8.07034E-03 1.75468E-04 -7.86608E-03 9.99963E-01
    3  .00000E+00  .00000E+00 3.83251E-03 5.45644E-03 1.41966E-02 9.26400E-05 -1.04564E-02 9.99978E-01
    4  .00000E+00  .00000E+00 5.57851E-03 3.59733E-03 1.23601E-02 4.19806E-05 -6.82338E-03 9.99988E-01
    5  .00000E+00  .00000E+00 1.02522E-02 1.15225E-02 2.08752E-02 4.96551E-05 -1.06725E-02 9.99991E-01
    6  .00000E+00  .00000E+00 2.14886E-02 3.44934E-02 4.09957E-02 8.42815E-05 -1.95913E-02 9.99998E-01
    7  .00000E+00  .00000E+00 4.22265E-02 6.09661E-02 5.41334E-02 6.12174E-05 -1.19675E-02 9.99988E-01
    8  .00000E+00  .00000E+00 5.63550E-02 7.83471E-02 5.87462E-02 3.64052E-05 -2.42234E-03 9.99912E-01
    9  .00000E+00  .00000E+00 5.77859E-02 7.26181E-02 5.75068E-02 2.92783E-05 2.56207E-04 9.99889E-01
   10  .00000E+00  .00000E+00 5.70853E-02 6.91811E-02 5.55973E-02 3.60679E-05 1.45793E-03 9.99895E-01
   11  .00000E+00  .00000E+00 5.58787E-02 6.56109E-02 5.25812E-02 5.51711E-05 3.44575E-03 9.99936E-01
   12  .00000E+00  .00000E+00 4.54186E-02 3.51057E-02 4.13062E-02 6.04664E-05 4.05294E-03 9.99978E-01
   13  .00000E+00  .00000E+00 4.05737E-02 2.85776E-02 3.66489E-02 8.46561E-05 3.84136E-03 9.99969E-01
   14  .00000E+00  .00000E+00 3.94761E-02 2.82151E-02 3.37050E-02 1.36166E-04 5.68539E-03 9.99988E-01
   15  .00000E+00  .00000E+00 2.16795E-02 1.08652E-02 2.08550E-02 1.12735E-04 1.21179E-03 9.99999E-01
   16  .00000E+00  .00000E+00 1.42523E-02 4.58254E-03 1.35006E-02 7.64217E-05 6.55321E-04 9.99998E-01
   17  .00000E+00  .00000E+00 7.30981E-03 1.29767E-03 6.75171E-03 3.71473E-05 5.20908E-04 1.00001E+00
   18  .00000E+00  .00000E+00 6.48216E-03 9.46521E-04 5.17198E-03 2.96170E-05 1.28057E-03 9.99999E-01
   19  .00000E+00  .00000E+00 1.07274E-02 2.92480E-03 9.70714E-03 6.55067E-05 9.54747E-04 1.00001E+00
   20  .00000E+00  .00000E+00 2.62842E-02 2.09761E-02 2.37163E-02 2.73573E-04 2.29415E-03 1.00001E+00
   21  .00000E+00  .00000E+00 1.26120E-02 4.18891E-03 1.08973E-02 1.05051E-04 1.60970E-03 9.99997E-01
   22  .00000E+00  .00000E+00 2.49792E-02 1.26515E-02 1.99998E-02 2.46844E-04 4.75237E-03 1.00001E+00
   23  .00000E+00  .00000E+00 6.47805E-02 7.82889E-02 5.14102E-02 1.13648E-03 1.22524E-02 1.00002E+00
   24  .00000E+00  .00000E+00 6.92269E-02 7.39258E-02 5.70640E-02 1.34493E-03 1.08166E-02 1.00002E+00
   25  .00000E+00  .00000E+00 4.61044E-02 3.13608E-02 4.08457E-02 7.97058E-04 4.96113E-03 1.00001E+00
   26  .00000E+00  .00000E+00 3.68318E-02 3.50569E-02 3.25797E-02 8.10747E-04 3.64108E-03 1.00001E+00
   27  .00000E+00  .00000E+00 1.24954E-02 7.60995E-03 1.15930E-02 2.89664E-04 6.12786E-04 1.00000E+00
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28	.00000E+00	.00000E+00	7.90077E-01	7.85207E-01	7.90076E-01	6.32429E-03	-6.30270E-03	9.99973E-01
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dv**2	total flux
1	1.29470E-02	-7.16304E-04	1.28313E-02	.00000E+00	3.65704E-11	.00000E+00	1.98189E-05	1.61886E-02
2	9.19899E-02	-7.86608E-03	9.04940E-02	.00000E+00	.00000E+00	.00000E+00	8.90010E-05	1.14523E-01
3	1.14556E-01	-1.04564E-02	1.12392E-01	.00000E+00	.00000E+00	.00000E+00	9.22112E-05	1.42382E-01
4	7.05289E-02	-6.82338E-03	6.89736E-02	.00000E+00	.00000E+00	.00000E+00	4.17271E-05	8.74880E-02
5	1.05323E-01	-1.06725E-02	1.02724E-01	.00000E+00	.00000E+00	.00000E+00	4.95622E-05	1.30448E-01
6	1.97660E-01	-1.95913E-02	1.92813E-01	.00000E+00	.00000E+00	.00000E+00	8.34119E-05	2.44845E-01
7	1.96125E-01	-1.19675E-02	1.95071E-01	.00000E+00	.00000E+00	.00000E+00	5.92757E-05	2.44269E-01
8	1.47403E-01	-2.42234E-03	1.46981E-01	.00000E+00	.00000E+00	.00000E+00	3.27253E-05	1.84963E-01
9	1.15867E-01	2.56207E-04	1.15921E-01	.00000E+00	.00000E+00	.00000E+00	2.16756E-05	1.45631E-01
10	1.06705E-01	1.45798E-03	1.07132E-01	.00000E+00	.00000E+00	.00000E+00	1.91638E-05	1.34398E-01
11	9.99250E-02	3.44575E-03	1.00890E-01	.00000E+00	.00000E+00	.00000E+00	1.79124E-05	1.26261E-01
12	6.43144E-02	4.05294E-03	6.54175E-02	.00000E+00	.00000E+00	.00000E+00	1.05151E-05	8.16046E-02
13	5.48596E-02	3.84136E-03	5.58766E-02	.00000E+00	.00000E+00	.00000E+00	8.74741E-06	6.96586E-02
14	5.17717E-02	5.63539E-03	5.32790E-02	.00000E+00	.00000E+00	.00000E+00	8.47287E-06	6.61280E-02
15	2.87870E-02	1.21179E-03	2.90520E-02	.00000E+00	.00000E+00	.00000E+00	4.47623E-06	3.63571E-02
16	1.59433E-02	6.55321E-04	1.60945E-02	.00000E+00	.00000E+00	.00000E+00	2.24256E-06	2.01404E-02
17	6.92311E-03	5.20908E-04	7.05892E-03	.00000E+00	.00000E+00	.00000E+00	9.00316E-07	8.79626E-03
18	5.02976E-03	1.28057E-03	5.39344E-03	.00000E+00	.00000E+00	.00000E+00	6.57154E-07	6.58142E-03
19	1.04946E-02	9.54747E-04	1.07443E-02	.00000E+00	.00000E+00	.00000E+00	1.39852E-06	1.33639E-02
20	3.50789E-02	2.29415E-03	3.56683E-02	.00000E+00	.00000E+00	.00000E+00	5.21483E-06	4.44918E-02
21	1.06670E-02	1.60970E-03	1.11366E-02	.00000E+00	.00000E+00	.00000E+00	1.25948E-06	1.37361E-02
22	2.14681E-02	4.75237E-03	2.29257E-02	.00000E+00	.00000E+00	.00000E+00	2.55950E-06	2.79982E-02
23	7.29195E-02	1.22524E-02	7.73747E-02	.00000E+00	.00000E+00	.00000E+00	7.80690E-06	9.46523E-02
24	5.87227E-02	1.08166E-02	6.34132E-02	.00000E+00	.00000E+00	.00000E+00	4.71613E-06	7.69401E-02
25	2.61979E-02	4.96113E-03	2.86785E-02	.00000E+00	.00000E+00	.00000E+00	1.65714E-06	3.45726E-02
26	1.84639E-02	3.64108E-03	2.06908E-02	.00000E+00	.00000E+00	.00000E+00	8.63529E-07	2.46928E-02
27	3.44191E-03	6.12786E-04	3.95083E-03	.00000E+00	.00000E+00	.00000E+00	1.01762E-07	4.65766E-03
28	1.74411E+00	-6.30267E-03	1.75098E+00	.00000E+00	3.65704E-11	.00000E+00	5.87850E-04	2.19577E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.20921E-04	1.65608E-04	2.48438E-06	-1.62186E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.89231E-05	1.45512E-03	1.04412E-03	1.40152E-05	-1.02922E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.49920E-04	2.76675E-03	8.74817E-04	2.02460E-05	-7.45096E-04	9.99996E-01
4	.00000E+00	.00000E+00	2.86528E-04	2.30853E-03	2.98258E-04	1.30902E-05	-2.47955E-05	9.99996E-01
5	.00000E+00	.00000E+00	6.16244E-04	4.41569E-03	2.79259E-04	1.68606E-05	3.20103E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.02177E-03	1.24040E-02	1.69473E-04	2.70655E-05	8.25221E-04	1.00000E+00
7	.00000E+00	.00000E+00	6.72146E-04	1.25943E-02	6.33056E-05	2.68151E-05	5.82024E-04	1.00000E+00
8	.00000E+00	.00000E+00	1.17399E-04	9.20787E-03	4.43573E-04	2.21119E-05	-3.48123E-04	1.00001E+00
9	.00000E+00	.00000E+00	4.45214E-04	6.36001E-03	5.30177E-05	7.67145E-05	3.15497E-04	9.99978E-01
10	.00000E+00	.00000E+00	5.30827E-05	4.98991E-03	4.94987E-05	5.95510E-05	-5.57626E-05	9.99997E-01
11	.00000E+00	.00000E+00	4.95020E-05	4.45642E-03	5.05287E-05	9.00528E-05	-9.08754E-05	9.99999E-01
12	.00000E+00	.00000E+00	5.05290E-05	2.76262E-03	5.13976E-05	5.67578E-06	-6.74604E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.13977E-05	2.35723E-03	4.80658E-05	6.31612E-06	-3.00305E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80658E-05	2.22876E-03	4.20013E-05	8.51155E-06	-2.42610E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.45952E-05	1.21481E-03	4.97182E-05	6.29121E-06	-1.13825E-05	9.99975E-01
16	.00000E+00	.00000E+00	5.57278E-05	6.44216E-04	5.58094E-05	3.81817E-06	-3.87826E-06	9.99970E-01
17	.00000E+00	.00000E+00	6.08344E-05	2.43808E-04	6.00140E-05	1.81234E-06	-9.82953E-07	9.99985E-01
18	.00000E+00	.00000E+00	6.30793E-05	1.66413E-04	5.37339E-05	1.38547E-06	7.96770E-06	9.99994E-01
19	.00000E+00	.00000E+00	5.54506E-05	4.01230E-04	5.91979E-05	3.11345E-06	-6.84586E-06	9.99985E-01
20	.00000E+00	.00000E+00	7.23071E-05	1.47688E-03	6.27873E-05	1.26972E-05	-3.12808E-06	9.99979E-01
21	.00000E+00	.00000E+00	8.29752E-05	3.77457E-04	9.01609E-05	4.67888E-06	-1.18467E-05	9.99989E-01
22	.00000E+00	.00000E+00	1.18953E-04	8.29573E-04	1.10843E-04	1.07088E-05	-2.60305E-06	9.99997E-01
23	.00000E+00	.00000E+00	1.70559E-04	2.97744E-03	2.18594E-04	4.86308E-05	-9.66787E-05	1.00000E+00
24	.00000E+00	.00000E+00	2.81397E-04	2.26338E-03	3.10615E-04	5.55581E-05	-8.48109E-05	1.00000E+00
25	.00000E+00	.00000E+00	2.87529E-04	9.13261E-04	2.35061E-04	3.23191E-05	2.01329E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.22313E-04	7.14961E-04	9.44859E-05	3.20961E-05	-4.27394E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.73967E-05	1.50956E-04	7.77779E-08	1.11996E-05	1.61172E-05	1.00000E+00
28	.00000E+00	.00000E+00	5.05364E-03	8.08963E-02	5.05363E-03	6.13620E-04	-6.07608E-04	9.99999E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.29734E-02	-8.78489E-04	1.29470E-02	-7.16304E-04	5.91701E-06	.00000E+00	1.63570E-06	2.16007E-03
2	9.22544E-02	-8.89530E-03	9.19859E-02	-7.86608E-03	.00000E+00	.00000E+00	1.11244E-05	1.53654E-02
3	1.14903E-01	-1.12015E-02	1.14556E-01	-1.04564E-02	.00000E+00	.00000E+00	1.26787E-05	1.91256E-02
4	7.07456E-02	-6.84818E-03	7.05289E-02	-6.82338E-03	.00000E+00	.00000E+00	7.43533E-06	1.17768E-02
5	1.05662E-01	-1.03524E-02	1.05323E-01	-1.06725E-02	.00000E+00	.00000E+00	8.63424E-06	1.75892E-02
6	1.98334E-01	-1.87661E-02	1.97660E-01	-1.99913E-02	.00000E+00	.00000E+00	1.01748E-05	3.30135E-02
7	1.96531E-01	-1.13854E-02	1.96125E-01	-1.19675E-02	.00000E+00	.00000E+00	8.35354E-06	3.27317E-02
8	1.47491E-01	-2.77046E-03	1.47403E-01	-2.42234E-03	.00000E+00	.00000E+00	5.27461E-06	2.45772E-02
9	1.15858E-01	5.71704E-04	1.15867E-01	2.56207E-04	.00000E+00	.00000E+00	4.58407E-06	1.93135E-02
10	1.06665E-01	1.40216E-03	1.06705E-01	1.45793E-03	.00000E+00	.00000E+00	4.91124E-06	1.77821E-02
11	9.98329E-02	3.35487E-03	9.99250E-02	3.44575E-03	.00000E+00	.00000E+00	4.76619E-06	1.66467E-02
12	6.42072E-02	4.04619E-03	6.43144E-02	4.05294E-03	.00000E+00	.00000E+00	3.21614E-06	1.07096E-02
13	5.47558E-02	3.83836E-03	5.48596E-02	3.84136E-03	.00000E+00	.00000E+00	2.73718E-06	9.13409E-03
14	5.16213E-02	5.63297E-03	5.17717E-02	5.63539E-03	.00000E+00	.00000E+00	2.57515E-06	8.61470E-03
15	2.87494E-02	1.20041E-03	2.87870E-02	1.21179E-03	.00000E+00	.00000E+00	1.41268E-06	4.79472E-03
16	1.59246E-02	6.51443E-04	1.59433E-02	6.55321E-04	.00000E+00	.00000E+00	7.82479E-07	2.65567E-03
17	6.90929E-03	5.19925E-04	6.92311E-03	5.20908E-04	.00000E+00	.00000E+00	3.39443E-07	1.15260E-03
18	4.99765E-03	1.28854E-03	5.02976E-03	1.28057E-03	.00000E+00	.00000E+00	2.45880E-07	8.35162E-04
19	1.04687E-02	9.47901E-04	1.04946E-02	9.54747E-04	.00000E+00	.00000E+00	5.14024E-07	1.74671E-03
20	3.50177E-02	2.29102E-03	3.50789E-02	2.29415E-03	.00000E+00	.00000E+00	1.71648E-06	5.84098E-03
21	1.06276E-02	1.59785E-03	1.06670E-02	1.60970E-03	.00000E+00	.00000E+00	5.20458E-07	1.77399E-03
22	2.13547E-02	4.72977E-03	2.14681E-02	4.73237E-03	.00000E+00	.00000E+00	1.04510E-06	3.56688E-03
23	7.26320E-02	1.21357E-02	7.29195E-02	1.22524E-02	.00000E+00	.00000E+00	3.54020E-06	1.21254E-02
24	5.84889E-02	1.07318E-02	5.87227E-02	1.08166E-02	.00000E+00	.00000E+00	2.85343E-06	9.76391E-03
25	2.60997E-02	4.98127E-03	2.61979E-02	4.96113E-03	.00000E+00	.00000E+00	1.25672E-06	4.35650E-03
26	1.84031E-02	3.63680E-03	1.84639E-02	3.64108E-03	.00000E+00	.00000E+00	8.76531E-07	3.07088E-03
27	3.43621E-03	6.28904E-04	3.44191E-03	6.12786E-04	.00000E+00	.00000E+00	1.58535E-07	5.72973E-04
28	1.74494E+00	-6.91036E-03	1.74411E+00	-6.30267E-03	5.91701E-06	.00000E+00	1.03343E-04	2.90787E-01

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.64875E-04	3.50584E-04	2.91918E-05	-3.79756E-04	9.99985E-01
2	.00000E+00	.00000E+00	2.01158E-04	3.27763E-03	4.30784E-03	9.36627E-05	-4.20018E-03	9.99888E-01
3	.00000E+00	.00000E+00	2.04538E-03	2.91687E-03	7.58913E-03	4.95230E-05	-5.59510E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.98111E-03	1.92598E-03	6.61731E-03	2.24755E-05	-3.65860E-03	9.99994E-01
5	.00000E+00	.00000E+00	5.48386E-03	6.17872E-03	1.11940E-02	2.66267E-05	-5.73663E-03	9.99995E-01
6	.00000E+00	.00000E+00	1.15107E-02	1.84911E-02	2.19768E-02	4.51813E-05	-1.05112E-02	9.99999E-01
7	.00000E+00	.00000E+00	2.26311E-02	3.23892E-02	2.87592E-02	3.25226E-05	-6.16029E-03	9.99991E-01
8	.00000E+00	.00000E+00	2.99914E-02	4.11648E-02	3.08662E-02	1.91268E-05	-8.91465E-04	9.99920E-01
9	.00000E+00	.00000E+00	3.04242E-02	3.79925E-02	3.00864E-02	1.53178E-05	3.25912E-04	9.99892E-01
10	.00000E+00	.00000E+00	2.98990E-02	3.61078E-02	2.90180E-02	1.88250E-05	8.65267E-04	9.99901E-01
11	.00000E+00	.00000E+00	2.91889E-02	3.40699E-02	2.72001E-02	2.86488E-05	1.95682E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.36104E-02	1.81009E-02	2.12979E-02	3.11771E-05	2.28181E-03	9.99981E-01
13	.00000E+00	.00000E+00	2.09746E-02	1.47187E-02	1.88758E-02	4.36015E-05	2.05585E-03	9.99974E-01
14	.00000E+00	.00000E+00	2.08586E-02	1.43900E-02	1.71899E-02	6.94463E-05	3.09950E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.10983E-02	5.64759E-03	1.05802E-02	5.85980E-05	4.59477E-04	1.00000E+00
16	.00000E+00	.00000E+00	7.33652E-03	2.38076E-03	7.01393E-03	3.97052E-05	2.82893E-04	9.99999E-01
17	.00000E+00	.00000E+00	3.77370E-03	6.67649E-04	3.47375E-03	1.91123E-05	2.80816E-04	1.00001E+00
18	.00000E+00	.00000E+00	3.34508E-03	4.62949E-04	2.52965E-03	1.44859E-05	8.00941E-04	1.00000E+00
19	.00000E+00	.00000E+00	5.49801E-03	1.49991E-03	4.97807E-03	3.35935E-05	4.86311E-04	1.00001E+00
20	.00000E+00	.00000E+00	1.34706E-02	1.08274E-02	1.22418E-02	1.41211E-04	1.08756E-03	1.00001E+00
21	.00000E+00	.00000E+00	6.44484E-03	2.10937E-03	5.48746E-03	5.28997E-05	9.04486E-04	9.99999E-01
22	.00000E+00	.00000E+00	1.26543E-02	6.33778E-03	9.86293E-03	1.21731E-04	2.66954E-03	1.00000E+00
23	.00000E+00	.00000E+00	3.20958E-02	3.90129E-02	2.56187E-02	5.66332E-04	5.91010E-03	1.00001E+00
24	.00000E+00	.00000E+00	3.40384E-02	3.63265E-02	2.80408E-02	6.60889E-04	5.33604E-03	1.00001E+00
25	.00000E+00	.00000E+00	2.25139E-02	1.52520E-02	1.95959E-02	3.87132E-04	2.53061E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.79080E-02	1.66668E-02	1.53940E-02	3.85446E-04	2.12847E-03	1.00000E+00
27	.00000E+00	.00000E+00	6.04364E-03	3.52504E-03	5.37003E-03	1.34177E-04	5.39428E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.05516E-01	4.02685E-01	4.05516E-01	3.14064E-03	-3.12908E-03	9.99972E-01

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

1	1.31088E-02	-1.25825E-03	1.29734E-02	-8.78489E-04	1.95883E-11	.00000E+00	1.05072E-05	8.58257E-03
2	9.35884E-02	-1.30955E-02	9.22544E-02	-8.89530E-03	.00000E+00	.00000E+00	4.75076E-05	6.11308E-02
3	1.16535E-01	-1.67946E-02	1.14903E-01	-1.12015E-02	.00000E+00	.00000E+00	4.92957E-05	7.61139E-02
4	7.17134E-02	-1.03068E-02	7.07456E-02	-6.84818E-03	.00000E+00	.00000E+00	2.23398E-05	4.68592E-02
5	1.07123E-01	-1.60891E-02	1.05662E-01	-1.03524E-02	.00000E+00	.00000E+00	2.66696E-05	6.99504E-02
6	2.00957E-01	-2.92773E-02	1.98334E-01	-1.87661E-02	.00000E+00	.00000E+00	4.47151E-05	1.31256E-01
7	1.98042E-01	-1.75457E-02	1.96531E-01	-1.13854E-02	.00000E+00	.00000E+00	3.14900E-05	1.29772E-01
8	1.47783E-01	-3.66163E-03	1.47491E-01	-2.77046E-03	.00000E+00	.00000E+00	1.71934E-05	9.71827E-02
9	1.15632E-01	8.97616E-04	1.15858E-01	5.71704E-04	.00000E+00	.00000E+00	1.13402E-05	7.61909E-02
10	1.06412E-01	2.26743E-03	1.06665E-01	1.40216E-03	.00000E+00	.00000E+00	1.00022E-05	7.01464E-02
11	9.92633E-02	5.31169E-03	9.98329E-02	3.35487E-03	.00000E+00	.00000E+00	9.30142E-06	6.55640E-02
12	6.35157E-02	6.32801E-03	6.42072E-02	4.04619E-03	.00000E+00	.00000E+00	5.42168E-06	4.20763E-02
13	5.41482E-02	5.89421E-03	5.47558E-02	3.83835E-03	.00000E+00	.00000E+00	4.50529E-06	3.58772E-02
14	5.08918E-02	8.73247E-03	5.16213E-02	5.63297E-03	.00000E+00	.00000E+00	4.32126E-06	3.37261E-02
15	2.86542E-02	1.65988E-03	2.87494E-02	1.20041E-03	.00000E+00	.00000E+00	2.32668E-06	1.88979E-02
16	1.58553E-02	9.34335E-04	1.59246E-02	6.51443E-04	.00000E+00	.00000E+00	1.16507E-06	1.04635E-02
17	6.82698E-03	8.00742E-04	6.90929E-03	5.19925E-04	.00000E+00	.00000E+00	4.63212E-07	4.52567E-03
18	4.75826E-03	2.08948E-03	4.99765E-03	1.28854E-03	.00000E+00	.00000E+00	3.21418E-07	3.21901E-03
19	1.03308E-02	1.43421E-03	1.04687E-02	9.47901E-04	.00000E+00	.00000E+00	7.17093E-07	6.85335E-03
20	3.47106E-02	3.37858E-03	3.50177E-02	2.29102E-03	.00000E+00	.00000E+00	2.69178E-06	2.29656E-02
21	1.03386E-02	2.50235E-03	1.06276E-02	1.59785E-03	.00000E+00	.00000E+00	6.34228E-07	6.91699E-03
22	2.04470E-02	7.39952E-03	2.13547E-02	4.72977E-03	.00000E+00	.00000E+00	1.26222E-06	1.38073E-02
23	7.08589E-02	1.80458E-02	7.26320E-02	1.21357E-02	.00000E+00	.00000E+00	3.89084E-06	4.71672E-02
24	5.60669E-02	1.60678E-02	5.84889E-02	1.07318E-02	.00000E+00	.00000E+00	2.31747E-06	3.78077E-02
25	2.47603E-02	7.51188E-03	2.60997E-02	4.98127E-03	.00000E+00	.00000E+00	7.95161E-07	1.67919E-02
26	1.71035E-02	5.76528E-03	1.84031E-02	3.63680E-03	.00000E+00	.00000E+00	4.10540E-07	1.17395E-02
27	3.06564E-03	1.16833E-03	3.43621E-03	6.28904E-04	.00000E+00	.00000E+00	4.71377E-08	2.15750E-03
28	1.74175E+00	-1.00393E-02	1.74494E+00	-6.91036E-03	1.95883E-11	.00000E+00	3.11451E-04	1.14772E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.30698E-02	.00000E+00	2.13994E-02	2.05181E-02	3.76974E-03	1.25824E-03	9.98904E-01
2	.00000E+00	1.94222E-01	7.03259E-03	2.50889E-01	1.72854E-01	1.53178E-02	1.30954E-02	1.00002E+00
3	.00000E+00	2.15915E-01	7.14098E-02	2.57622E-01	2.54297E-01	1.62366E-02	1.67945E-02	9.99888E-01
4	.00000E+00	1.23790E-01	1.05540E-01	1.76779E-01	2.11074E-01	7.74974E-03	1.05067E-02	1.00000E+00
5	.00000E+00	1.64063E-01	1.92055E-01	4.44539E-01	3.34856E-01	5.17673E-03	1.60890E-02	9.99990E-01
6	.00000E+00	1.76975E-01	3.91014E-01	1.19109E+00	5.30525E-01	8.17797E-03	2.92771E-02	1.00001E+00
7	.00000E+00	8.74405E-02	5.95420E-01	1.56413E+00	6.55180E-01	8.14086E-03	1.75452E-02	9.99991E-01
8	.00000E+00	1.34688E-02	6.89451E-01	1.57552E+00	6.86148E-01	1.31654E-02	3.66160E-03	9.99921E-01
9	.00000E+00	9.77432E-04	6.78245E-01	1.37218E+00	6.58457E-01	2.17362E-02	-9.02944E-04	9.99901E-01
10	.00000E+00	7.25977E-05	6.55483E-01	1.24851E+00	6.25092E-01	3.27972E-02	-2.26952E-03	9.99904E-01
11	.00000E+00	5.71148E-06	6.29133E-01	1.16298E+00	5.80859E-01	5.36285E-02	-5.31337E-03	9.99945E-01
12	.00000E+00	4.01221E-07	5.05927E-01	6.35521E-01	4.53866E-01	5.84032E-02	-6.32841E-03	9.99975E-01
13	.00000E+00	6.37102E-08	4.48520E-01	5.04448E-01	3.99419E-01	5.50084E-02	-5.89350E-03	9.99969E-01
14	.00000E+00	1.26257E-08	4.31160E-01	4.69287E-01	3.61316E-01	7.85815E-02	-8.73236E-03	9.99989E-01
15	.00000E+00	1.42684E-09	2.37079E-01	2.15271E-01	2.30924E-01	7.76238E-03	-1.66382E-03	1.00024E+00
16	.00000E+00	4.18970E-10	1.61924E-01	9.92824E-02	1.56953E-01	5.88910E-03	-9.37013E-04	1.00024E+00
17	.00000E+00	1.34929E-10	8.67034E-02	3.09696E-02	7.99813E-02	7.50783E-03	-8.08885E-04	1.00021E+00
18	.00000E+00	9.66050E-11	7.72340E-02	1.94689E-02	5.47047E-02	2.46136E-02	-2.09075E-03	1.00008E+00
19	.00000E+00	1.36579E-10	1.20703E-01	5.91474E-02	1.11916E-01	1.02057E-02	-1.43813E-03	1.00016E+00
20	.00000E+00	2.22091E-10	2.89027E-01	3.42904E-01	2.64750E-01	2.75970E-02	-3.38612E-03	1.00029E+00
21	.00000E+00	3.25070E-11	1.42263E-01	6.81095E-02	1.20112E-01	2.46187E-02	-2.50520E-03	1.00012E+00
22	.00000E+00	3.77155E-11	2.69524E-01	1.75990E-01	2.04269E-01	7.26250E-02	-7.40179E-03	1.00011E+00
23	.00000E+00	3.60602E-11	6.44472E-01	9.75073E-01	5.23958E-01	1.38468E-01	-1.80546E-02	1.00018E+00
24	.00000E+00	9.81512E-12	6.82119E-01	8.44898E-01	5.63620E-01	1.34479E-01	-1.60683E-02	1.00013E+00
25	.00000E+00	2.87322E-12	4.52194E-01	3.43159E-01	3.85629E-01	7.40404E-02	-7.51283E-03	1.00008E+00
26	.00000E+00	2.01472E-12	3.50698E-01	3.45044E-01	2.89272E-01	6.71679E-02	-5.76540E-03	1.00007E+00
27	.00000E+00	4.80119E-13	1.15788E-01	6.97818E-02	9.77859E-02	1.91668E-02	-1.16834E-03	1.00008E+00
28	.00000E+00	1.00000E+00	9.02810E+00	1.44640E+01	9.02810E+00	9.92031E-01	9.99158E-03	1.00002E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dx**2	total flux
1	1.34078E-02	-5.92210E-09	1.31088E-02	-1.25825E-03	2.24856E-03	2.50851E-03	2.95798E-04	3.40816E-01

2	9.68924E-02	-6.22408E-08	9.35884E-02	-1.30955E-02	1.58552E-05	1.10279E-02	1.59276E-03	2.46038E+00
3	1.20893E-01	-6.99422E-08	1.16535E-01	-1.67946E-02	.00000E+00	1.33342E-02	1.82999E-03	3.06893E+00
4	7.45277E-02	-6.03651E-08	7.17134E-02	-1.05068E-02	.00000E+00	5.72025E-03	8.84473E-04	1.89158E+00
5	1.11698E-01	-7.40120E-08	1.07123E-01	-1.60891E-02	.00000E+00	1.64010E-03	1.03213E-03	2.83390E+00
6	2.09742E-01	-1.39576E-07	2.00957E-01	-2.92773E-02	.00000E+00	1.36601E-03	1.73147E-03	5.31941E+00
7	2.03582E-01	-4.84922E-07	1.98042E-01	-1.75457E-02	.00000E+00	1.31390E-03	1.22643E-03	5.16980E+00
8	1.48948E-01	-3.07247E-08	1.47783E-01	-3.66163E-03	.00000E+00	1.32553E-03	6.98152E-04	3.78928E+00
9	1.15297E-01	-5.32790E-06	1.15632E-01	8.97816E-04	.00000E+00	1.76700E-03	4.71301E-04	2.93644E+00
10	1.05618E-01	-2.08661E-06	1.06412E-01	2.26743E-03	.00000E+00	3.77407E-03	4.28686E-04	2.69138E+00
11	9.74201E-02	-1.68307E-06	9.92633E-02	5.31169E-03	.00000E+00	8.09927E-03	3.86960E-04	2.48553E+00
12	6.13341E-02	-4.06185E-07	6.35157E-02	6.32801E-03	.00000E+00	1.07519E-02	2.27642E-04	1.56759E+00
13	5.21388E-02	7.11566E-07	5.41482E-02	5.89421E-03	.00000E+00	1.19638E-02	1.94784E-04	1.33309E+00
14	4.77156E-02	1.09731E-07	5.06918E-02	8.73247E-03	.00000E+00	7.58312E-03	1.74426E-04	1.22295E+00
15	2.81121E-02	-3.94108E-06	2.86542E-02	1.65988E-03	.00000E+00	1.82802E-03	1.10911E-04	7.17467E-01
16	1.55520E-02	-2.67725E-06	1.58553E-02	9.34335E-04	.00000E+00	1.27483E-03	5.74435E-05	3.96873E-01
17	6.55979E-03	-3.14314E-06	6.82698E-03	8.00742E-04	.00000E+00	1.54140E-03	2.16052E-05	1.67735E-01
18	4.00778E-03	-1.27534E-06	4.73826E-03	2.08948E-03	.00000E+00	1.21734E-03	9.67004E-06	1.05785E-01
19	9.83632E-03	-3.91489E-06	1.05308E-02	1.43421E-03	.00000E+00	2.45687E-03	3.31437E-05	2.51866E-01
20	3.35389E-02	-7.54179E-06	3.47106E-02	3.37868E-03	.00000E+00	1.45544E-02	1.25744E-04	8.57487E-01
21	9.43671E-03	-2.85095E-06	1.05385E-02	2.50235E-03	.00000E+00	1.43881E-02	2.64497E-05	2.42825E-01
22	1.76411E-02	-2.47474E-06	2.04470E-02	7.39932E-03	.00000E+00	4.25972E-02	4.57041E-05	4.57311E-01
23	6.22472E-02	-8.76875E-06	7.03589E-02	1.80458E-02	.00000E+00	7.83473E-02	1.66818E-04	1.61401E+00
24	4.78876E-02	-5.42101E-07	5.60669E-02	1.60678E-02	.00000E+00	7.50265E-02	1.01047E-04	1.24968E+00
25	2.05412E-02	-9.54369E-07	2.47603E-02	7.51188E-03	.00000E+00	4.30311E-02	3.46075E-05	5.38677E-01
26	1.35244E-02	-1.20504E-07	1.71035E-02	5.76528E-03	.00000E+00	3.95997E-02	1.70715E-05	3.56770E-01
27	2.27879E-03	-6.61264E-09	3.05664E-03	1.16833E-03	.00000E+00	1.11363E-02	1.75437E-06	6.02772E-02
28	1.73088E+00	-4.78184E-05	1.74175E+00	-1.00393E-02	2.26442E-03	4.09170E-01	1.19250E-02	4.41258E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.30698E-02	.00000E+00	2.23848E-02	2.14956E-02	3.85648E-03	-5.92210E-09	9.98902E-01
2	.00000E+00	1.94222E-01	7.64210E-03	2.61762E-01	1.86276E-01	1.56009E-02	-6.22403E-08	1.00002E+00
3	.00000E+00	2.15915E-01	7.74376E-02	2.68762E-01	2.76957E-01	1.63990E-02	-6.99422E-08	9.99987E-01
4	.00000E+00	1.23790E-01	1.14386E-01	1.84606E-01	2.30349E-01	7.82729E-03	-6.03651E-08	9.99999E-01
5	.00000E+00	1.64063E-01	2.08408E-01	4.66656E-01	3.67205E-01	5.26987E-03	-7.40120E-08	9.99990E-01
6	.00000E+00	1.76975E-01	4.25035E-01	1.25647E+00	5.98667E-01	8.33450E-03	-1.39578E-07	1.00001E+00
7	.00000E+00	8.74406E-02	6.58949E-01	1.67008E+00	7.38136E-01	8.26141E-03	-4.84922E-07	9.99990E-01
8	.00000E+00	1.34688E-02	7.75915E-01	1.70424E+00	7.76204E-01	1.32431E-02	-3.07247E-08	9.99920E-01
9	.00000E+00	9.77432E-04	7.66901E-01	1.48915E+00	7.46103E-01	2.18575E-02	-5.32790E-06	9.99900E-01
10	.00000E+00	7.25977E-05	7.42521E-01	1.35878E+00	7.09756E-01	3.29115E-02	-2.08661E-06	9.99902E-01
11	.00000E+00	5.71148E-06	7.14245E-01	1.26711E+00	6.60490E-01	5.38024E-02	-1.68307E-06	9.99944E-01
12	.00000E+00	4.01221E-07	5.75006E-01	6.91490E-01	5.16521E-01	5.85005E-02	-4.06185E-07	9.99975E-01
13	.00000E+00	6.37102E-08	5.10120E-01	5.50101E-01	4.54992E-01	5.51430E-02	7.11566E-07	9.99969E-01
14	.00000E+00	1.26257E-08	4.91043E-01	5.14121E-01	4.12253E-01	7.87956E-02	1.09731E-07	9.99989E-01
15	.00000E+00	1.42684E-09	2.69902E-01	2.32999E-01	2.61909E-01	7.94000E-03	-3.94108E-06	1.00021E+00
16	.00000E+00	4.18970E-10	1.88549E-01	1.06890E-01	1.77503E-01	6.00905E-03	-2.67725E-06	1.00021E+00
17	.00000E+00	1.34929E-10	9.78477E-02	3.31787E-02	9.02667E-02	7.56990E-03	-3.14314E-06	1.00019E+00
18	.00000E+00	9.66050E-11	8.71243E-02	2.10447E-02	6.24600E-02	2.46591E-02	-1.27534E-06	1.00007E+00
19	.00000E+00	1.36579E-10	1.36984E-01	6.39733E-02	1.26661E-01	1.03079E-02	-3.91489E-06	1.00014E+00
20	.00000E+00	2.22091E-10	3.28854E-01	3.76185E-01	3.00770E-01	2.80245E-02	-7.54179E-06	1.00020E+00
21	.00000E+00	3.25070E-11	1.61383E-01	7.47852E-02	1.36587E-01	2.47814E-02	-2.85095E-06	1.00011E+00
22	.00000E+00	3.77155E-11	3.07276E-01	1.96009E-01	2.34243E-01	7.30043E-02	-2.47474E-06	1.00010E+00
23	.00000E+00	3.60602E-11	7.41519E-01	1.09535E+00	6.01185E-01	1.40220E-01	-8.76875E-06	1.00017E+00
24	.00000E+00	9.81512E-12	7.85665E-01	9.57414E-01	6.49036E-01	1.36540E-01	-5.42101E-07	1.00011E+00
25	.00000E+00	2.87322E-12	5.21100E-01	3.90665E-01	4.45806E-01	7.52569E-02	-9.54369E-07	1.00007E+00
26	.00000E+00	2.01472E-12	4.05560E-01	3.97488E-01	3.37140E-01	6.83962E-02	-1.20504E-07	1.00005E+00
27	.00000E+00	4.80119E-13	1.34354E-01	8.10678E-02	1.14749E-01	1.96018E-02	-6.61264E-09	1.00003E+00
28	.00000E+00	1.00000E+00	1.02287E+01	1.57528E+01	1.02287E+01	1.00211E+00	-4.78217E-05	1.00002E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.34078E-02	-5.92210E-09	1.28313E-02	.00000E+00	2.25448E-03	2.50851E-03	3.27759E-04	3.67747E-01
2	9.68924E-02	-6.22408E-08	9.04940E-02	.00000E+00	1.58552E-05	1.10279E-02	1.74039E-03	2.65139E+00

3	1.20895E-01	-6.99422E-08	1.12392E-01	.00000E+00	.00000E+00	1.33342E-02	1.98418E-03	3.30655E+00
4	7.45277E-02	-6.03651E-08	6.89736E-02	.00000E+00	.00000E+00	5.72025E-03	9.55975E-04	2.03768E+00
5	1.11698E-01	-7.40120E-08	1.02724E-01	.00000E+00	.00000E+00	1.64010E-03	1.11659E-03	3.05188E+00
6	2.09742E-01	-1.39576E-07	1.92813E-01	.00000E+00	.00000E+00	1.36601E-03	1.86978E-03	5.72852E+00
7	2.03582E-01	-4.84922E-07	1.95091E-01	.00000E+00	.00000E+00	1.31390E-03	1.32555E-03	5.57667E+00
8	1.48948E-01	-3.07247E-08	1.46981E-01	.00000E+00	.00000E+00	1.32553E-03	7.53344E-04	4.09601E+00
9	1.15297E-01	-5.32790E-06	1.15921E-01	.00000E+00	.00000E+00	1.76700E-03	5.08901E-04	3.17757E+00
10	1.05618E-01	-2.08661E-06	1.07132E-01	.00000E+00	.00000E+00	3.77407E-03	4.62763E-04	2.91371E+00
11	9.74201E-02	-1.68307E-06	1.00890E-01	.00000E+00	.00000E+00	8.09927E-03	4.18940E-04	2.69400E+00
12	6.13341E-02	-4.06185E-07	6.54175E-02	.00000E+00	.00000E+00	1.07519E-02	2.46795E-04	1.70198E+00
13	5.21388E-02	7.11566E-07	5.58766E-02	.00000E+00	.00000E+00	1.19638E-02	2.10774E-04	1.44776E+00
14	4.77156E-02	1.09731E-07	5.32790E-02	.00000E+00	.00000E+00	7.58512E-03	1.89795E-04	1.33142E+00
15	2.81121E-02	-3.94108E-06	2.90520E-02	.00000E+00	.00000E+00	1.82802E-03	1.19127E-04	7.77517E-01
16	1.55520E-02	-2.67725E-06	1.60945E-02	.00000E+00	.00000E+00	1.27483E-03	6.16336E-05	4.30132E-01
17	6.55979E-03	-3.14314E-06	7.05892E-03	.00000E+00	.00000E+00	1.54140E-03	2.33061E-05	1.82213E-01
18	4.00778E-03	-1.27534E-06	5.39344E-03	.00000E+00	.00000E+00	1.21734E-03	1.08945E-05	1.14419E-01
19	9.83632E-03	-3.91489E-06	1.07443E-02	.00000E+00	.00000E+00	2.45687E-03	3.57731E-05	2.73829E-01
20	3.35383E-02	-7.54179E-06	3.56683E-02	.00000E+00	.00000E+00	1.45544E-02	1.33367E-04	9.30786E-01
21	9.43671E-03	-2.85095E-06	1.11366E-02	.00000E+00	.00000E+00	1.43881E-02	2.88638E-05	2.65252E-01
22	1.76411E-02	-2.47474E-06	2.29257E-02	.00000E+00	.00000E+00	4.25972E-02	5.05709E-05	5.02683E-01
23	6.22472E-02	-8.76875E-06	7.73747E-02	.00000E+00	.00000E+00	7.83473E-02	1.82056E-04	1.76796E+00
24	4.78876E-02	-5.42101E-07	6.34132E-02	.00000E+00	.00000E+00	7.50265E-02	1.10914E-04	1.37419E+00
25	2.05412E-02	-9.54369E-07	2.86786E-02	.00000E+00	.00000E+00	4.30311E-02	3.82565E-05	5.94398E-01
26	1.35244E-02	-1.20504E-07	2.06908E-02	.00000E+00	.00000E+00	3.95997E-02	1.92221E-05	3.96273E-01
27	2.27879E-03	-6.61264E-09	3.98083E-03	.00000E+00	.00000E+00	1.11363E-02	2.06181E-06	6.76653E-02
28	1.73088E+00	-4.78184E-05	1.75098E+00	.00000E+00	2.27033E-03	4.09170E-01	1.29276E-02	4.77601E+01

- elapsed time .02 min.

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

1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.14820E-03	5.05392E-03	5.29528E-03	2.50982E-03	3.18300E-03	5.52513E-03	3.71688E-03	1.74363E-03
2	6.99515E-04	4.99100E-03	5.79301E-03	3.44456E-03	4.29951E-03	6.15307E-03	4.33275E-03	2.14856E-03
3	1.17719E-03	5.47786E-03	5.87891E-03	2.91594E-03	3.86246E-03	6.77952E-03	4.37734E-03	1.82405E-03
4	8.08500E-04	4.30147E-03	4.95882E-03	2.38988E-03	2.82914E-03	4.80078E-03	3.32665E-03	1.79836E-03
5	8.32150E-04	4.36808E-03	4.98272E-03	2.41431E-03	2.87888E-03	4.88930E-03	3.37566E-03	1.79860E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11316E-03	1.01461E-03	1.09416E-03	8.74330E-04	7.94958E-04	1.04358E-03	3.18348E-04	1.64116E-04
2	1.79112E-03	1.95416E-03	2.04367E-03	1.60250E-03	1.42492E-03	1.70552E-03	6.27280E-04	3.45782E-04
3	1.12184E-03	1.05432E-03	1.29472E-03	1.22182E-03	1.12408E-03	1.58232E-03	3.81882E-04	2.04098E-04
4	1.19562E-03	1.09519E-03	1.08062E-03	6.78008E-04	6.01909E-04	6.42609E-04	3.11281E-04	1.61321E-04
5	1.19370E-03	1.09568E-03	1.04594E-03	7.05551E-04	6.28176E-04	6.89792E-04	3.15203E-04	1.63587E-04

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.96719E-05	2.09565E-04	1.77897E-04	4.81411E-04	2.74797E-04	7.95823E-04	2.12714E-03	1.85066E-03
2	1.83950E-04	3.27752E-04	3.07361E-04	8.75044E-04	4.41183E-04	1.22440E-03	3.27981E-03	2.85287E-03
3	1.47332E-04	3.58529E-04	2.62955E-04	6.59123E-04	4.39156E-04	1.29182E-03	3.25767E-03	2.86246E-03
4	7.14884E-05	7.86031E-05	1.19259E-04	3.84632E-04	1.37265E-04	3.42150E-04	1.06555E-03	8.42903E-04
5	7.52672E-05	9.27709E-05	1.26506E-04	3.98576E-04	1.52594E-04	3.90792E-04	1.17929E-03	9.49309E-04

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	8.38179E-04	5.92747E-04	9.03010E-05	4.21299E-02
2	1.30858E-03	9.51613E-04	1.63610E-04	5.52731E-02
3	1.33117E-03	9.96887E-04	1.86168E-04	5.20512E-02
4	3.52061E-04	2.13748E-04	2.65248E-05	3.45443E-02
5	4.08427E-04	2.54214E-04	3.40795E-05	3.54342E-02

1broad group parameters

grp	upper energy	mid energy	velocity	fiss spec
1	2.0000E+07	2.6557E+06	1.9685E+09	7.2106E-01
2	9.0000E+05	1.5134E+05	9.9806E+06	2.7894E-01
3	4.0000E-01	1.2556E-01	3.6564E+05	1.2147E-10
4	1.0000E-05			

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

0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3
1	3.90743E-01	1.13594E+00	2.20625E-01
2	3.95995E-01	1.13716E+00	2.11358E-01
3	3.98953E-01	1.13741E+00	2.07195E-01
4	4.16127E-01	1.13936E+00	1.77499E-01
5	4.14437E-01	1.13914E+00	1.80381E-01

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

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

0cell averaged currents

0zone	grp. 1	grp. 2	grp. 3
1	1.71902E-02	1.83715E-02	6.56766E-03
2	1.92276E-02	2.58234E-02	1.02221E-02
3	1.95123E-02	2.23957E-02	1.03451E-02
4	1.52678E-02	1.62963E-02	2.98020E-03
5	1.54761E-02	1.65943E-02	3.36371E-03

0zone	volume	vol. fraction
1	1.25665E+00	4.56236E-02
2	1.66687E-01	6.05165E-03
3	6.58266E-01	2.38987E-02
4	2.54624E+01	9.24426E-01
5	2.75440E+01	1.00000E+00

- elapsed time .03 min.

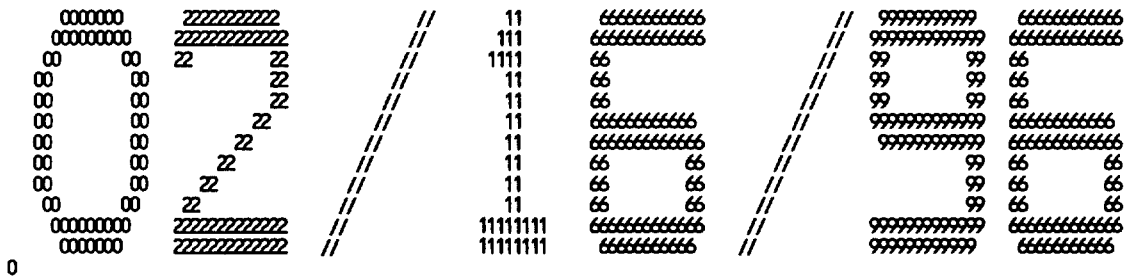
1

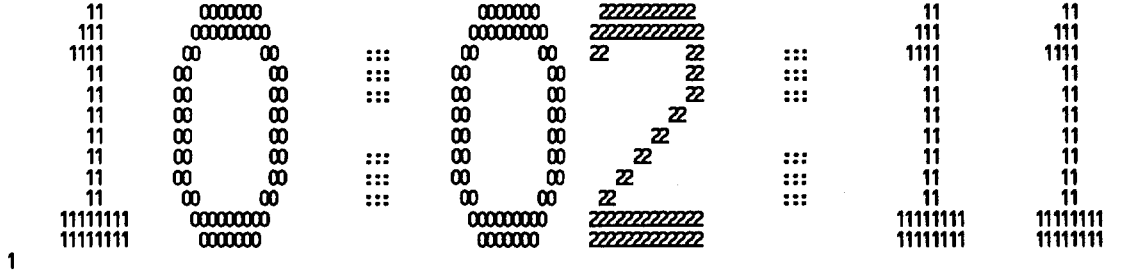
```
  cccccccccc    cccccccccc   ww        ww  pppppppppp   ll           eeeeeeeeeee
 cccccccccccc  cccccccccccc  ww        ww  pppppppppppp  ll           eeeeeeeeeee
 cc        cc  oo        oo  ww        ww  pp        pp  ll           ee
 cc            oo        oo  ww        ww  pp        pp  ll           ee
 cc            oo        oo  ww        ww  pp        pp  ll           ee
 cc            oo        oo  ww        ww  pppppppppppp  ll           eeeeeeee
 cc            oo        oo  ww        ww  pppppppppp    ll           eeeeeeee
 cc            oo        oo  ww        ww  pp            ll           ee
 cc            oo        oo  ww        ww  pp            ll           ee
 cc        cc  oo        oo  ww        ww  pp            ll           ee
 cccccccccccc  cccccccccccc  wwwwwwwwwwww  pp            llllllllllll eeeeeeeeeee
  cccccccccc    cccccccccc    wwwwwwwwww   pp            llllllllllll eeeeeeeeeee
```

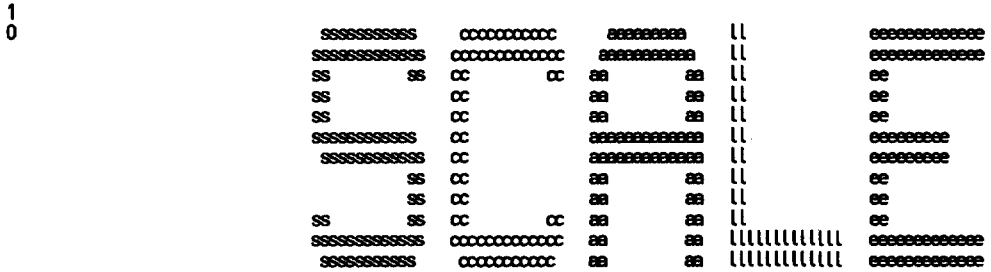
0

```
 ddddddddddd     aaaaaaaa    w        w  iiiiiiiiiii    sssssssss
 ddddddddddddd   aaaaaaaaaa  w        w  iiiiiiiiiii   sssssssssss
 dd        dd  aa        aa  w        w      ii        ss       ss
 dd        dd  aa        aa  w        w      ii        ss
 dd        dd  aa        aa  w        w      ii        ss
 dd        dd  aaaaaaaaaaaa  w        w      ii        sssssssssss
 dd        dd  aaaaaaaaaaaa   w      w       ii         sssssssssss
 dd        dd  aa        aa    w    w        ii                 ss
 dd        dd  aa        aa     w  w         ii                 ss
 dd        dd  aa        aa      ww          ii        ss       ss
 ddddddddddd   aa        aa      ww      iiiiiiiiiii  sssssssssss
 ddddddddddd   aa        aa       v      iiiiiiiiiii   sssssssss
```

0







```
**********************************************************************
**********************************************************************
**********************************************************************
******                                                          ******
******                program verification information          ******
******                                                          ******
******              code system:   scale  version:   4.2        ******
******                                                          ******
**********************************************************************
**********************************************************************
******                                                          ******
******                                                          ******
******                   program:  c0c005                       ******
******                                                          ******
******              creation date:  04/27/95                    ******
******                                                          ******
```

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

                          10010 to  10020  2.82969E-01
                          10010 tot-cap    2.82969E-01
                          50100 to  40100  2.38416E-02
                          50100 to  10010  2.38416E-02
                          50100 to  40090  3.63840E-03
                          50100 to  10020  3.63840E-03
                          50100 to  30070  3.25391E+03
                          50100 to  20040  3.25409E+03
                          50100 to  10030  8.94021E-02
                          50100 tot-cap    3.25408E+03
                          50110 to  50100  1.04597E-05
                          50110 to  50120  4.30798E-03
                          50110 to  40110  1.33476E-06
                          50110 to  10010  1.33476E-06
                          50110 to  40090  1.19114E-05
                          50110 to  10030  1.19114E-05
                          50110 to  30080  1.55497E-04
                          50110 to  20040  1.55497E-04
                          50110 tot-cap    4.48718E-03
                          80160 to  80170  1.51170E-04
                          80160 to  70160  9.15206E-05
                          80160 to  10010  9.15206E-05
                          80160 to  70150  1.72607E-05
                          80160 to  10020  1.72607E-05
                          80160 to  60130  2.55664E-02
```

80160	to 20040	2.55664E-02
80160	to 80161	4.01377E-03
80160	tot-cap	2.58263E-02
360830	to 360820	2.07788E-02
360830	to 360810	2.19372E-09
360830	to 360840	1.53668E+02
360830	to 350830	8.52333E-04
360830	to 10010	8.52333E-04
360830	to 350820	6.86267E-06
360830	to 10020	6.86267E-06
360830	to 350810	2.39863E-06
360830	to 10030	2.39863E-06
360830	to 340810	3.88199E-08
360830	to 20030	3.88199E-08
360830	to 340800	4.55954E-05
360830	to 20040	4.55954E-05
360830	tot-cap	1.53690E+02
360850	to 360860	1.39090E+00
360850	tot-cap	1.39090E+00
380900	to 380910	6.28261E-01
380900	tot-cap	6.28261E-01
390890	to 390900	9.85036E-01
390890	tot-cap	9.85036E-01
400930	to 400940	1.32457E+01
400930	tot-cap	1.32457E+01
400940	to 400950	1.83934E-01
400940	tot-cap	1.83934E-01
400950	to 400960	2.19813E+00
400950	tot-cap	2.19813E+00
410940	to 410950	3.81058E+01
410940	tot-cap	3.81058E+01
420950	to 420960	3.78526E+01
420950	tot-cap	3.78526E+01
430990	to 430980	6.30459E-03
430990	to 431000	8.84718E+01
430990	tot-cap	8.84781E+01
441010	to 441020	2.78753E+01
441010	tot-cap	2.78753E+01
441060	to 441070	8.55579E-01
441060	tot-cap	8.55579E-01
451080	to 451020	2.28329E-03
451080	to 451040	3.50381E+02
451080	tot-cap	3.50383E+02
451050	to 451060	8.14800E+03
451050	tot-cap	8.14800E+03
461060	to 461060	3.34766E+01
461060	tot-cap	3.34766E+01
461080	to 461090	6.75899E+01
461080	tot-cap	6.75899E+01
471090	to 471080	5.30964E-03
471090	to 471100	3.66216E+02
471090	to 461090	3.00810E-04
471090	to 10010	3.00810E-04
471090	to 451060	2.48970E-04
471090	to 20040	2.48970E-04
471090	to 471091	6.27952E-01
471090	tot-cap	3.66221E+02
511240	to 511250	1.19520E+01
511240	tot-cap	1.19520E+01
541310	to 541300	6.43812E-02

541310	to 541290	1.34622E-05
541310	to 541320	2.54120E+02
541310	to 531310	3.87292E-05
541310	to 10010	3.87292E-05
541310	to 531300	5.39901E-07
541310	to 10020	5.39901E-07
541310	to 531290	5.53614E-07
541310	to 10030	5.53614E-07
541310	to 521280	1.81271E-05
541310	to 20040	1.81271E-05
541310	tot-cap	2.54184E+02
541320	to 541310	1.04005E-02
541320	to 541300	2.20587E-05
541320	to 541330	9.16433E-01
541320	to 531320	7.93439E-06
541320	to 10010	7.93439E-06
541320	to 531310	3.35209E-07
541320	to 10020	3.35209E-07
541320	to 531300	4.51360E-08
541320	to 10030	4.51360E-08
541320	to 521290	9.77472E-07
541320	to 20040	9.77472E-07
541320	tot-cap	9.26866E-01
541350	to 541360	1.46510E+06
541350	tot-cap	1.46510E+06
541360	to 541350	1.77907E-02
541360	to 541340	5.43372E-05
541360	to 541370	1.22968E-01
541360	to 531360	3.28531E-07
541360	to 10010	3.28531E-07
541360	to 531350	1.22306E-07
541360	to 10020	1.22306E-07
541360	to 531340	2.76311E-08
541360	to 10030	2.76311E-08
541360	to 521330	2.75575E-07
541360	to 20040	2.75575E-07
541360	tot-cap	1.40814E-01
551330	to 551320	8.33107E-03
551330	to 551340	1.00417E+02
551330	to 541330	9.01970E-04
551330	to 10010	9.01970E-04
551330	to 531300	1.42343E-05
551330	to 20040	1.42343E-05
551330	tot-cap	1.00427E+02
551340	to 551350	1.28178E+02
551340	tot-cap	1.28178E+02
551350	to 551360	2.11933E+01
551350	tot-cap	2.11933E+01
551370	to 551380	2.27369E-01
551370	tot-cap	2.27369E-01
561360	to 561370	8.92118E-01
561360	tot-cap	8.92118E-01
571390	to 571400	7.91315E+00
571390	tot-cap	7.91315E+00
581440	to 581450	1.22858E+00
581440	tot-cap	1.22858E+00
591410	to 591400	5.96984E-03
591410	to 591390	1.71528E-06
591410	to 571370	2.56518E-06
591410	to 20040	5.29664E-05

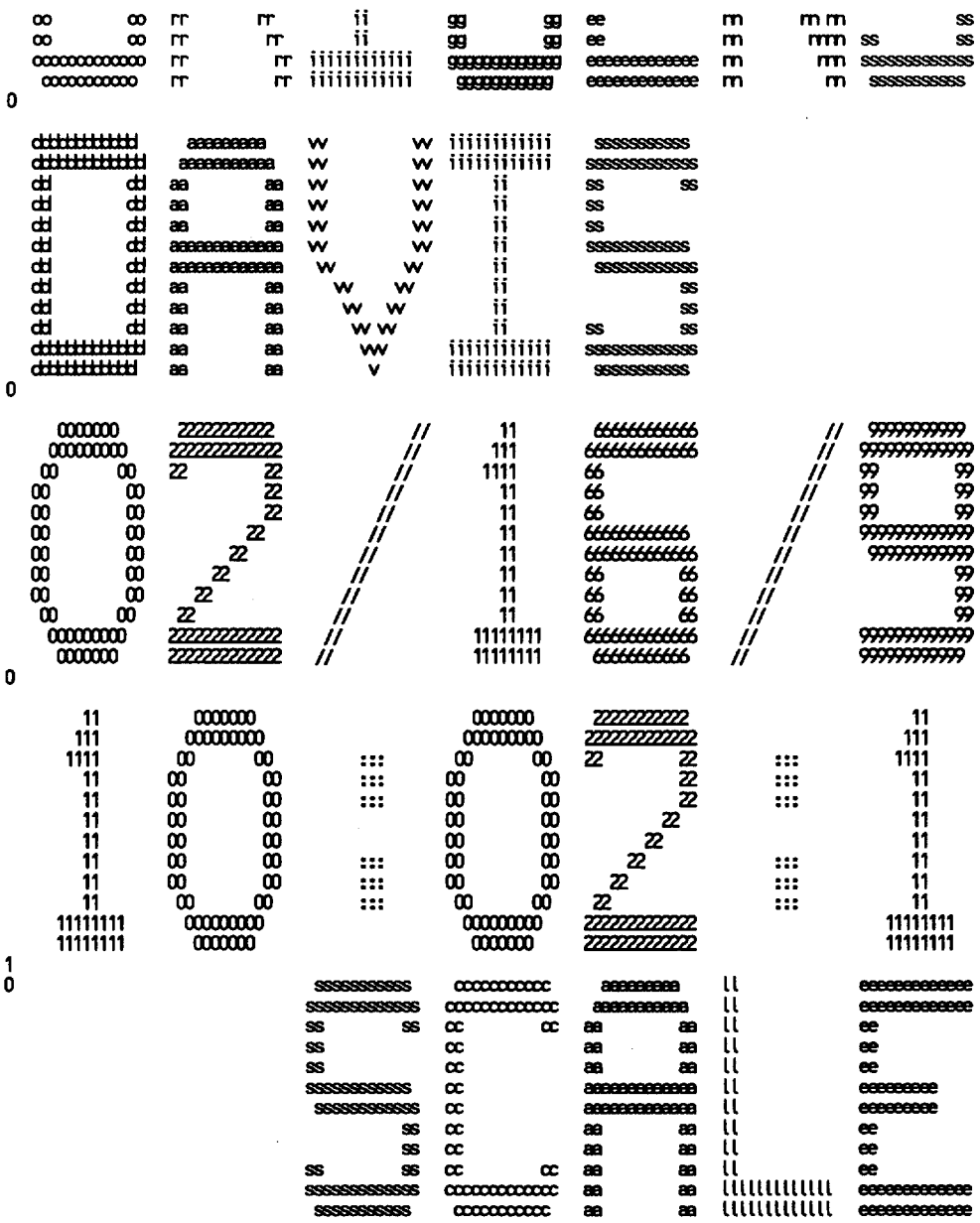
591410 to 581400 1.82016E-05
591410 to 10010 5.17872E-05
591410 to 591420 1.17725E+01
591410 to 581410 4.87956E-05
591410 to 10020 1.52100E-05
591410 to 581390 1.59511E-06
591410 to 10030 1.59511E-06
591410 to 571390 1.54048E-08
591410 to 20030 1.54048E-08
591410 to 571380 5.04013E-05
591410 tot-cap 1.17784E+01
591430 to 591440 9.73273E+01
591430 tot-cap 9.73273E+01
601430 to 601420 9.13524E-02
601430 to 601410 9.32257E-06
601430 to 581390 2.01613E-05
601430 to 20040 5.64097E-04
601430 to 591420 3.90241E-06
601430 to 10010 4.01248E-05
601430 to 601440 1.98700E+02
601430 to 591430 3.86546E-05
601430 to 10020 2.43219E-06
601430 to 591410 3.50478E-06
601430 to 10030 3.50478E-06
601430 to 581410 1.68390E-08
601430 to 20030 1.68390E-08
601430 to 581400 5.43935E-04
601430 tot-cap 1.98792E+02
601450 to 601440 1.17186E-01
601450 to 601430 1.19028E-04
601450 to 581410 8.41492E-06
601450 to 20040 2.10596E-04
601450 to 591440 2.23587E-06
601450 to 10010 1.45358E-05
601450 to 601460 7.77040E+01
601450 to 591450 1.36440E-05
601450 to 10020 1.34403E-06
601450 to 591430 2.11889E-06
601450 to 10030 2.11889E-06
601450 to 581430 4.31407E-09
601450 to 20030 4.31407E-09
601450 to 581420 2.02181E-04
601450 tot-cap 7.78215E+01
601470 to 601480 1.86601E+02
601470 tot-cap 1.86601E+02
611470 to 611460 3.20722E-02
611470 to 611450 1.00070E-04
611470 to 591430 8.87611E-06
611470 to 20040 8.22451E-05
611470 to 601460 1.22598E-05
611470 to 10010 2.79163E-05
611470 to 611480 5.75790E+02
611470 to 601470 2.48862E-05
611470 to 10020 9.22962E-06
611470 to 601450 3.48478E-06
611470 to 10030 3.48478E-06
611470 to 591450 5.23943E-09
611470 to 20030 5.23943E-09
611470 to 591440 7.33690E-05
611470 tot-cap 5.75823E+02

611480 to 611490 1.20170E+04
611480 tot-cap 1.20170E+04
621470 to 621460 8.36673E-02
621470 to 621450 7.53361E-03
621470 to 601430 6.50957E-05
621470 to 20040 1.24788E-03
621470 to 611460 1.51837E-04
621470 to 10010 2.16761E-04
621470 to 621480 2.30084E+02
621470 to 611470 1.91166E-04
621470 to 10020 1.26241E-04
621470 to 611450 1.35554E-04
621470 to 10030 1.35554E-04
621470 to 601450 6.23710E-06
621470 to 20030 6.23710E-06
621470 to 601440 1.18279E-03
621470 to 621471 1.64121E+00
621470 tot-cap 2.30176E+02
621490 to 621480 4.72877E-02
621490 to 621470 3.75517E-05
621490 to 621500 4.50644E+04
621490 to 611490 4.83152E-04
621490 to 10010 4.83152E-04
621490 to 601460 4.83152E-04
621490 to 20040 4.83152E-04
621490 tot-cap 4.50645E+04
621500 to 621510 1.33056E+02
621500 tot-cap 1.33056E+02
621510 to 621500 1.57778E-01
621510 to 621490 1.41304E-04
621510 to 601470 1.58432E-05
621510 to 20040 1.23404E-04
621510 to 611500 1.93487E-06
621510 to 10010 1.50424E-05
621510 to 621520 4.95300E+03
621510 to 611510 1.38603E-05
621510 to 10020 7.52736E-07
621510 to 611490 1.36805E-06
621510 to 10030 1.36805E-06
621510 to 601490 1.40935E-09
621510 to 20030 1.40935E-09
621510 to 601480 1.07561E-04
621510 tot-cap 4.95316E+03
621520 to 621510 1.89222E-02
621520 to 621500 1.27858E-04
621520 to 601480 2.85726E-06
621520 to 20040 1.18670E-05
621520 to 611510 8.19598E-07
621520 to 10010 2.41860E-06
621520 to 621530 7.25060E+02
621520 to 611520 2.14847E-06
621520 to 10020 5.49459E-07
621520 to 611500 1.42901E-07
621520 to 10030 1.42901E-07
621520 to 601500 4.33072E-10
621520 to 20030 4.33072E-10
621520 to 601490 9.00979E-06
621520 tot-cap 7.25079E+02
631530 to 631520 1.83779E-02
631530 to 631510 2.74439E-05

631530 to 611490 4.34008E-05
631530 to 20040 6.29487E-04
631530 to 621520 7.68614E-06
631530 to 10010 6.46952E-05
631530 to 631540 6.13434E+02
631530 to 621530 6.20694E-05
631530 to 10020 5.06233E-06
631530 to 621510 1.13456E-06
631530 to 10030 1.13456E-06
631530 to 611510 2.59366E-08
631530 to 20030 2.59366E-08
631530 to 611500 5.86087E-04
631530 tot-cap 6.13453E+02
631540 to 631530 2.93798E-02
631540 to 631520 1.05536E-05
631540 to 611500 1.08615E-10
631540 to 20040 7.55638E-04
631540 to 621530 2.31006E-06
631540 to 10010 1.23019E-03
631540 to 631550 1.06661E+03
631540 to 621540 1.23019E-03
631540 to 10020 2.30877E-06
631540 to 621520 3.91070E-06
631540 to 10030 3.91070E-06
631540 to 611520 1.65815E-08
631540 to 20030 1.65815E-08
631540 to 611510 7.55638E-04
631540 tot-cap 1.06664E+03
631550 to 631540 2.41215E-02
631550 to 631530 6.75456E-05
631550 to 611510 1.81798E-06
631550 to 20040 8.94714E-06
631550 to 621540 3.68314E-06
631550 to 10010 7.72990E-06
631550 to 631560 2.55123E+03
631550 to 621550 5.93780E-06
631550 to 10020 1.89104E-06
631550 to 621530 6.26000E-07
631550 to 10030 6.26000E-07
631550 to 611530 1.41886E-10
631550 to 20030 1.41886E-10
631550 to 611520 7.12918E-06
631550 tot-cap 2.55125E+03
641550 to 641560 1.69605E+04
641550 tot-cap 1.69605E+04
922340 to 922330 6.31950E-03
922340 fission 4.38696E+00
922340 nu-sigf 1.15326E+01
922340 to 922320 9.16290E-05
922340 to 922350 1.84139E+02
922340 to 922341 2.94188E+00
922340 tot-cap 1.88533E+02
922350 to 922340 2.88436E-02
922350 fission 3.60472E+02
922350 nu-sigf 8.72939E+02
922350 to 922330 2.76018E-05
922350 to 922360 8.53994E+01
922350 to 922351 8.36730E-02
922350 tot-cap 4.45900E+02
922360 to 922350 3.21928E-02

922360 fission 1.88166E+00
922360 nu-sigf 5.16657E+00
922360 to 922340 4.29024E-04
922360 to 922370 7.19085E+01
922360 to 922361 3.21845E+00
922360 tot-cap 7.38226E+01
922380 to 922370 6.42954E-02
922380 fission 9.43300E-01
922380 nu-sigf 2.65616E+00
922380 to 922360 4.15521E-04
922380 to 922390 8.38842E+00
922380 tot-cap 9.39644E+00
932370 to 932360 1.46575E-02
932370 fission 5.08698E+00
932370 nu-sigf 1.53206E+01
932370 to 932350 5.60749E-05
932370 to 932380 2.97595E+02
932370 to 932371 7.54349E-01
932370 tot-cap 3.02695E+02
942380 to 942370 2.35599E-03
942380 fission 2.20643E+01
942380 nu-sigf 6.25559E+01
942380 to 942360 1.31853E-05
942380 to 942390 2.64386E+02
942380 to 942381 2.95315E+00
942380 tot-cap 2.86453E+02
942390 to 942380 1.24739E-02
942390 fission 8.39238E+02
942390 nu-sigf 2.41301E+03
942390 to 942370 2.12276E-05
942390 to 942360 2.10432E-08
942390 to 942400 4.70661E+02
942390 tot-cap 1.30981E+03
942400 to 942390 5.86746E-03
942400 fission 5.78557E+00
942400 nu-sigf 1.81189E+01
942400 to 942380 5.72571E-05
942400 to 942410 1.49448E+03
942400 tot-cap 1.50027E+03
942410 to 942400 7.40039E-02
942410 fission 8.95401E+02
942410 nu-sigf 2.62727E+03
942410 to 942390 1.22514E-04
942410 to 942420 2.93008E+02
942410 tot-cap 1.18848E+03
942420 to 942410 2.39188E-02
942420 fission 4.40995E+00
942420 nu-sigf 1.38159E+01
942420 to 942400 2.90788E-04
942420 to 942430 3.28604E+02
942420 tot-cap 3.33038E+02
952410 fission 1.23494E+01
952410 nu-sigf 3.99002E+01
952410 to 952420 1.01244E+03
952410 tot-cap 1.02479E+03
952430 fission 3.40415E+00
952430 nu-sigf 1.14446E+01
952430 to 952440 4.16052E+02
952430 tot-cap 4.19456E+02
962440 to 962430 5.74828E-03

```
                962440 fission   1.51799E+01
                962440 nu-sigf   5.08679E+01
                962440 to 962420 5.73241E-05
                962440 to 962450 1.39783E+02
                962440 to 962441 3.76645E+00
                962440 tot-cap   1.54968E+02
0the reaction  50100 to  30070 was not used, because  50100 is not in library., (in subr pool)
                                    in the search of library number 3
0the reaction  50100 to  40090 was not used, because  50100 is not in library., (in subr pool)
                                    in the search of library number 3
0the reaction  50110 to  40090 was not used, because  50110 is not in library., (in subr pool)
                                    in the search of library number 3
0the reaction  50100 to  40100 was not used, because  50100 is not in library., (in subr pool)
                                    in the search of library number 3
0the reaction  80160 to  80161 was not used, because  80161 is not in library., (in subr pool)
0the reaction 621470 to 621471 was not used, because 621471 is not in library., (in subr pool)
0the fission product transitions for  922340 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction 922340 to 922341 was not used, because 922341 is not in library., (in subr pool)
0the reaction 922350 to 922351 was not used, because 922351 is not in library., (in subr pool)
0the fission product transitions for  922360 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction 922360 to 922361 was not used, because 922361 is not in library., (in subr pool)
0the fission product transitions for  952370 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction 952370 to 952371 was not used, because 952371 is not in library., (in subr pool)
0the fission product transitions for  942380 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction 942380 to 942381 was not used, because 942381 is not in library., (in subr pool)
0the fission product transitions for  942400 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  942420 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952410 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952430 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  962440 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction 962440 to 962441 was not used, because 962441 is not in library., (in subr pool)
1
0                          case completed.  date,   2/16/1996
0 * normal termination *
1   ooooooooo    rrrrrrrrrr   iiiiiiiiiii    ggggggggg    eeeeeeeeeee   m         m  sssssssss
   ooooooooooo   rrrrrrrrrrr  iiiiiiiiiii   ggggggggggg   eeeeeeeeeee   mm        m  sssssssssss
   oo       oo   rr       rr      ii       gg       gg   ee            mmm       m  ss       ss
   oo       oo   rr       rr      ii       gg            ee            m m       m  ss
   oo       oo   rr       rr      ii       gg            ee            m  m      m  ss
   oo       oo   rrrrrrrrrrr      ii       gg            eeeeeeeee     m   m     m  sssssssssss
   oo       oo   rrrrrrrrrrr      ii       gg   ggggggg  eeeeeeeee     m    m    m   sssssssssss
   oo       oo   rr     rr        ii       gg      gg    ee            m     m   m         ss
```



```
**********************************************************************
**********************************************************************
**********************************************************************
*****                                                            *****
*****                program verification information             *****
*****                                                            *****
*****              code system:   scale  version:   4.2          *****
*****                                                            *****
**********************************************************************
**********************************************************************
*****                                                            *****
*****                                                            *****
*****            program:  c0c004                                *****
*****                                                            *****
*****       creation date:  04/27/95                             *****
*****                                                            *****
*****            library:  /neutronics/scale/exe                 *****
*****                                                            *****
*****                                                            *****
*****   this is not a  scale  configuration controlled code      *****
*****                                                            *****
*****            jobname:  davis                                 *****
*****                                                            *****
*****   date of execution:  02/16/96                             *****
*****                                                            *****
*****   time of execution:  10:02:12                             *****
*****                                                            *****
*****                                                            *****
**********************************************************************
**********************************************************************
**********************************************************************
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0        dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0            short-lived split test fraction, qm =    9.1188E-04
0            half-norm of matrix used, anm =    7.0000E+00
0            4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

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

         pass  5
         pass  1
         pass  0
         *scale-system control module 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               2/16/1996    date library was produced
0                   1697    total number of nuclides in library
                     689    number of light-element nuclides
                     129    number of actinide nuclides
                     879    number of fission product nuclides
0                   7935    number of nonzero off-diagonal matrix elements
0       ************************************************************************
1
    sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp                  actinides       page    1
      power= 8.466E-05mw, burnup=2.0318E-02mwd, flux= 1.61E+13n/cm**2-sec
0                                          nuclide concentrations, gram atoms
                                           basis = converted to atoms/(barn-cm)
          charge   680.1 d   720.1 d   760.1 d   800.1 d   800.1 d   840.1 d   880.1 d
    he  4 1.27E-08 1.60E-08 2.00E-08 2.48E-08 3.05E-08 3.05E-08 3.70E-08 4.47E-08
    u230  4.38E-21 5.21E-21 6.05E-21 6.99E-21 7.96E-21 7.96E-21 9.05E-21 1.03E-20
    u231  9.04E-20 1.07E-19 1.23E-19 1.40E-19 1.59E-19 1.58E-19 1.79E-19 2.02E-19
    u232  1.21E-12 1.40E-12 1.61E-12 1.84E-12 2.10E-12 2.10E-12 2.38E-12 2.68E-12
    u233  3.07E-11 3.22E-11 3.36E-11 3.49E-11 3.62E-11 3.62E-11 3.75E-11 3.86E-11
    u234  4.75E-06 4.70E-06 4.65E-06 4.61E-06 4.56E-06 4.56E-06 4.51E-06 4.47E-06
    u235  4.67E-04 4.56E-04 4.44E-04 4.34E-04 4.23E-04 4.23E-04 4.13E-04 4.03E-04
    u236  4.40E-05 4.60E-05 4.75E-05 4.98E-05 5.16E-05 5.16E-05 5.34E-05 5.51E-05
    u237  6.02E-08 6.29E-08 6.49E-08 6.68E-08 6.87E-08 6.85E-08 7.06E-08 7.24E-08
    u238  2.19E-02 2.19E-02 2.19E-02 2.19E-02 2.19E-02 2.19E-02 2.18E-02 2.18E-02
    u239  1.97E-09 5.96E-09 5.97E-09 5.97E-09 5.98E-09 1.53E-09 5.99E-09 6.00E-09
    u240   .00E+00 1.34E-33 2.46E-33 4.35E-33 7.46E-33 7.46E-33 1.24E-32 2.02E-32
    u241   .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00  .00E+00
   np235 3.45E-14 3.97E-14 4.51E-14 5.09E-14 5.69E-14 5.69E-14 6.33E-14 6.99E-14
```

np236m	4.59E-14	5.28E-14	5.73E-14	6.19E-14	6.66E-14	6.50E-14	7.14E-14	7.63E-14
np236	3.15E-12	3.68E-12	4.25E-12	4.86E-12	5.53E-12	5.53E-12	6.25E-12	7.01E-12
np237	2.39E-06	2.60E-06	2.82E-06	3.04E-06	3.27E-06	3.27E-06	3.50E-06	3.73E-06
np238	2.94E-09	3.26E-09	3.54E-09	3.82E-09	4.11E-09	4.07E-09	4.41E-09	4.71E-09
np239	8.42E-07	8.61E-07	8.62E-07	8.62E-07	8.63E-07	8.60E-07	8.64E-07	8.66E-07
np240m	.00E+00	1.14E-35	2.10E-35	3.71E-35	6.36E-35	6.36E-35	1.06E-34	1.72E-34
np240	9.84E-12	1.55E-11	1.55E-11	1.56E-11	1.56E-11	9.30E-12	1.56E-11	1.57E-11
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	3.75E-12	4.34E-12	4.98E-12	5.66E-12	6.38E-12	6.38E-12	7.15E-12	7.96E-12
pu237	1.95E-13	2.13E-13	2.30E-13	2.46E-13	2.62E-13	2.62E-13	2.79E-13	2.96E-13
pu238	2.46E-07	2.85E-07	3.27E-07	3.73E-07	4.23E-07	4.23E-07	4.77E-07	5.35E-07
pu239	9.04E-05	9.38E-05	9.70E-05	1.00E-04	1.03E-04	1.03E-04	1.05E-04	1.08E-04
pu240	1.40E-05	1.52E-05	1.64E-05	1.76E-05	1.87E-05	1.87E-05	1.99E-05	2.10E-05
pu241	6.40E-06	7.13E-06	7.90E-06	8.72E-06	9.57E-06	9.57E-06	1.05E-05	1.14E-05
pu242	5.07E-07	6.08E-07	7.19E-07	8.41E-07	9.75E-07	9.75E-07	1.12E-06	1.28E-06
pu243	6.18E-11	8.22E-11	9.73E-11	1.14E-10	1.32E-10	1.19E-10	1.53E-10	1.75E-10
pu244	3.51E-23	6.67E-23	1.22E-22	2.16E-22	3.71E-22	3.72E-22	6.19E-22	1.01E-21
pu245	2.41E-29	4.76E-29	8.73E-29	1.55E-28	2.66E-28	2.53E-28	4.44E-28	7.23E-28
pu246	.00E+00	1.66E-31	3.21E-31	5.78E-31	1.00E-30	1.00E-30	1.70E-30	2.79E-30
am239	2.19E-18	2.78E-18	3.27E-18	3.80E-18	4.37E-18	4.18E-18	4.99E-18	5.65E-18
am240	9.75E-16	1.20E-15	1.41E-15	1.64E-15	1.89E-15	1.87E-15	2.16E-15	2.45E-15
am241	1.42E-07	1.69E-07	1.98E-07	2.30E-07	2.64E-07	2.64E-07	3.01E-07	3.41E-07
am242m	2.61E-09	3.21E-09	3.88E-09	4.64E-09	5.47E-09	5.47E-09	6.39E-09	7.39E-09
am242	1.56E-10	1.91E-10	2.24E-10	2.60E-10	2.99E-10	2.90E-10	3.42E-10	3.87E-10
am243	3.26E-08	4.20E-08	5.31E-08	6.60E-08	8.11E-08	8.11E-08	9.84E-08	1.18E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	1.07E-11	1.46E-11	1.85E-11	2.31E-11	2.84E-11	2.69E-11	3.45E-11	4.15E-11
am245	2.21E-27	4.21E-27	7.69E-27	1.35E-26	2.29E-26	2.29E-26	3.78E-26	6.09E-26
am246	.00E+00	4.15E-34	8.03E-34	1.44E-33	2.51E-33	2.51E-33	4.24E-33	6.97E-33
cm241	1.19E-18	1.65E-18	2.20E-18	2.87E-18	3.66E-18	3.66E-18	4.60E-18	5.69E-18
cm242	1.37E-08	1.70E-08	2.08E-08	2.51E-08	2.99E-08	2.99E-08	3.52E-08	4.10E-08
cm243	1.55E-10	2.06E-10	2.67E-10	3.41E-10	4.28E-10	4.28E-10	5.29E-10	6.45E-10
cm244	2.16E-09	2.98E-09	4.03E-09	5.34E-09	6.95E-09	6.95E-09	8.92E-09	1.13E-08
cm245	3.39E-11	4.98E-11	7.11E-11	9.92E-11	1.36E-10	1.36E-10	1.82E-10	2.41E-10
cm246	1.00E-12	1.57E-12	2.38E-12	3.53E-12	5.12E-12	5.12E-12	7.27E-12	1.01E-11
cm247	5.06E-15	8.48E-15	1.37E-14	2.15E-14	3.30E-14	3.30E-14	4.95E-14	7.22E-14

1

sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp actinides page 2

power= 8.466E-05mw, burnup=2.0318E-02mwd, flux= 1.61E+13n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = converted to atoms/(barn-cm)

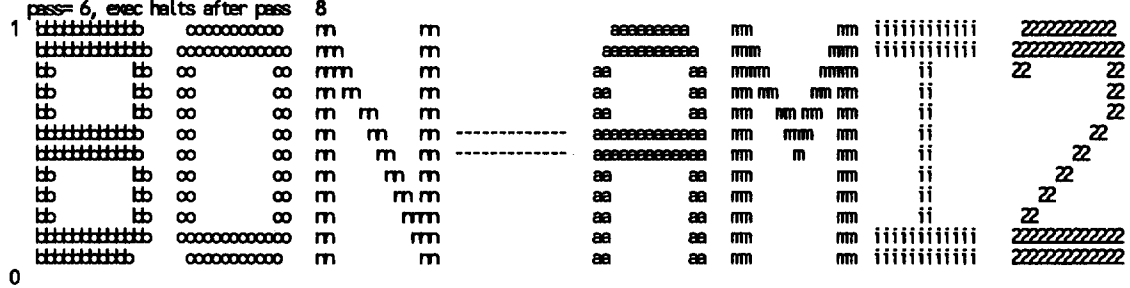
	charge	680.1 d	720.1 d	760.1 d	800.1 d	800.1 d	840.1 d	880.1 d
cm248	1.13E-16	2.03E-16	3.51E-16	5.87E-16	9.52E-16	9.52E-16	1.50E-15	2.32E-15
cm249	4.96E-22	1.34E-21	2.35E-21	3.93E-21	6.39E-21	3.88E-21	1.01E-20	1.56E-20
cm250	8.84E-26	1.70E-25	3.13E-25	5.58E-25	9.60E-25	9.60E-25	1.61E-24	2.62E-24
cm251	.00E+00	4.04E-33	7.46E-33	1.33E-32	2.29E-32	3.42E-33	3.84E-32	6.28E-32
totals	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.25E-02	2.24E-02
0 flux		1.60E+13	1.60E+13	1.60E+13	1.61E+13	.00E+00	1.61E+13	1.61E+13

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

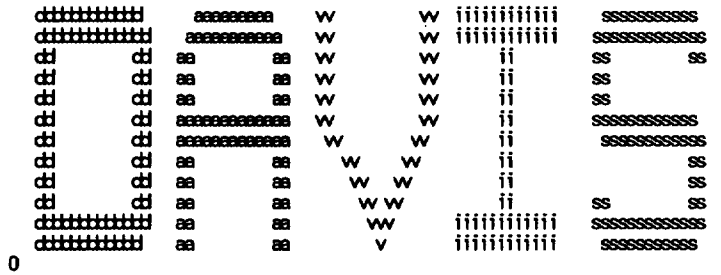
1 1

```
0ndset          33
          15          4          1         27          6          0          0          0          0          0
           0          0          0          0          0          0         -1       1698        690        130
         880       7935          0          5         99          2         16         96         18         18
          18          0         71
0       56q array has       2 entries.
0       56q array has       1 entries.
0       56q array has       1 entries.
0       56q array has       1 entries.
0       56q array has       1 entries.
0       56q array has       1 entries.
0       56q array has       1 entries.
0       57q array has       3 entries.
0        1q array has      20 entries.
0        1q array has      10 entries.
     l90   97376
     l116  60826
     l32   33663 nudata (library) storage size
     l44   33734
     l103  75953
0       58q array has       4 entries.
0       60q array has       7 entries.
0       58q array has       7 entries.
0       66q array has       1 entries.
0       73q array has    1697 entries.
0       74q array has    1697 entries.
0       75q array has    1697 entries.
     l140  66991
     used  101044 in size  200000
0jqpt           12
           0          0          0          0          0          0          0          0          0          0
           0          0
0therm          4
 5.109686E-01 4.317639E-01 3.331461E+00 1.000000E-31
0hcn            5
        7935         20          6         18       1697
0mm            19
           7          7          0          0          1          1          0          0          0          0
          21        100       1697          4          3         74          4          1          0
0tconst         5
 8.640000E+04 6.400641E+02  .000000E+00  .000000E+00 1.000000E-08
0mzero          4
           0        689        129        879
0pow            3
  .000000E+00  .000000E+00  .000000E+00
0 lirp          9
           6          0         51         26          2       3000       1000       1697         94
 n-gamma, fission and total mev/fission =          6.6274E+00 1.9620E+02 2.0283E+02
 start of interval flux =        1.59777E+13
 n-gamma, fission and total mev/fission =          6.7144E+00 1.9629E+02 2.0300E+02
 start of interval flux =        1.59963E+13
 n-gamma, fission and total mev/fission =          6.8126E+00 1.9637E+02 2.0319E+02
 start of interval flux =        1.60171E+13
 n-gamma, fission and total mev/fission =          6.9104E+00 1.9646E+02 2.0337E+02
 start of interval flux =        1.60416E+13
 start of interval flux =         .00000E+00
 n-gamma, fission and total mev/fission =          7.0227E+00 1.9654E+02 2.0356E+02
 start of interval flux =        1.60681E+13
 n-gamma, fission and total mev/fission =          7.1041E+00 1.9662E+02 2.0372E+02
 start of interval flux =        1.61008E+13
```

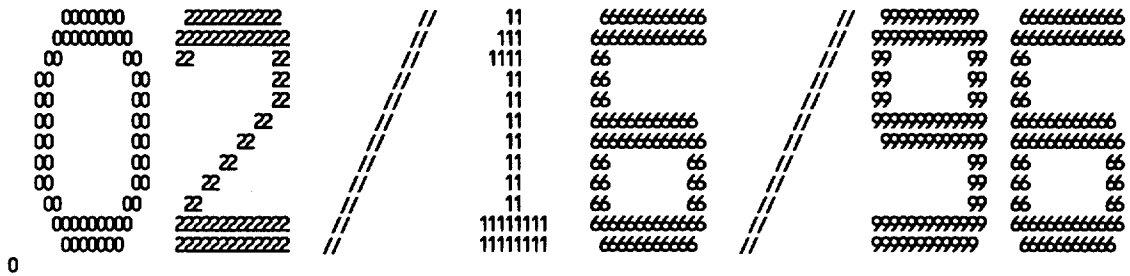
```
0 case or subcase    1  sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has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



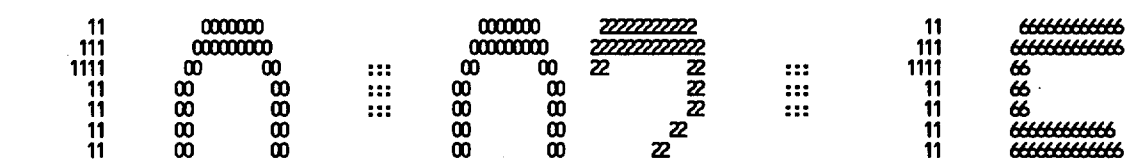
```
0
```

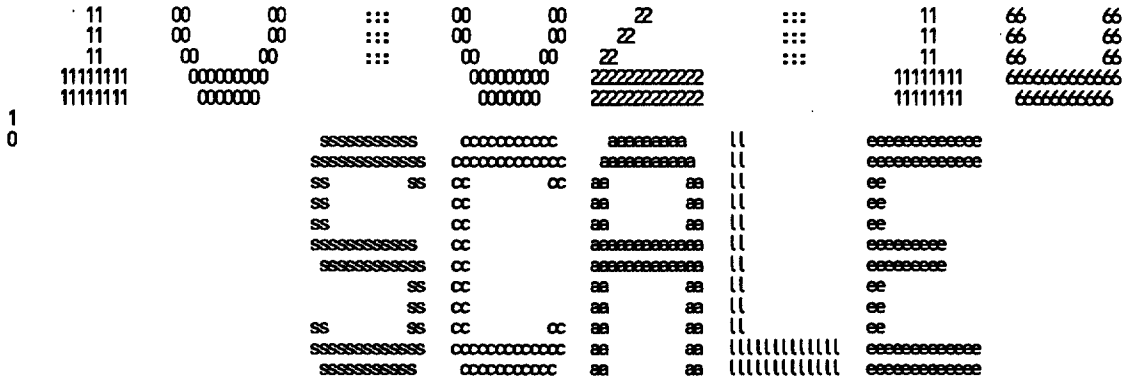


```
0
```



```
0
```





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

```
0master library   12
 working library   0
 scratch file      18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere                2
0izm--number of zones or material regions                       4
0ms--mixing table length                                       66
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0issopt--dancoff factor option                                  0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation 1.350E+00
0        3q array has      66 entries.
0        4q array has      66 entries.
0        5q array has      66 entries.
0        6q array has       4 entries.
0        7q array has       4 entries.
0        8q array has       4 entries.
0        9q array has       4 entries.
0       10q array has      66 entries.
0       11q array has       4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
    1        1    92235    4.02695E-04           92235
    2        1    92234    4.46803E-06           92234
    3        1    92236    5.51142E-05           92236
    4        1    92238    2.18274E-02           92238
    5        1     8016    4.55359E-02            8016
    6        3     8016    2.09710E-02               6
    7        1    36083    1.42718E-06           36083
    8        1    36085    6.86405E-07           36085
    9        1    38090    1.56265E-05           38090
   10        1    39089    1.23885E-05           39089
   11        1    42095    1.65579E-05           42095
   12        1    40093    1.24626E-05           40093
   13        1    40094    1.95879E-05           40094
   14        1    40095    1.99661E-06           40095
   15        1    41094    9.70965E-12           41094
   16        1    43099    1.91603E-05           43099
   17        1    45103    1.05084E-05           45103
   18        1    45105    2.23564E-08           45105
   19        1    44101    1.73887E-05           44101
   20        1    44106    2.62773E-06           44106
   21        1    46105    6.86049E-06           46105
   22        1    46108    1.92546E-06           46108
   23        1    47109    1.34572E-06           47109
   24        1    51124    3.04849E-10           51124
   25        1    54131    8.77608E-06           54131
   26        1    54132    1.64947E-05           54132
   27        1    54135    6.67715E-09           54135
   28        1    54136    3.30816E-05           54136
   29        1    55134    9.57401E-07           55134
   30        1    55135    1.05022E-05           55135
   31        1    55137    2.05236E-05           55137
   32        1    56136    1.95125E-07           56136
   33        1    57139    2.03240E-05           57139
   34        1    59141    1.75987E-05           59141
   35        1    59143    3.71186E-07           59143
   36        1    58144    6.70562E-06           58144
```

37	1	60143	1.59150E-05	60143
38	1	60145	1.17342E-05	60145
39	1	61147	4.02235E-06	61147
40	1	61148	1.17777E-08	61148
41	1	60147	1.29916E-07	60147
42	1	62147	1.40155E-06	62147
43	1	62149	8.69582E-08	62149
44	1	62150	4.18068E-06	62150
45	1	62151	4.01901E-07	62151
46	1	62152	2.00466E-06	62152
47	1	64155	2.18270E-09	64155
48	1	63153	1.20542E-06	63153
49	1	63154	2.52168E-07	63154
50	1	63155	1.30440E-07	63155
51	2	40802	4.25156E-02	40802
52	3	1001	4.19420E-02	1001
53	3	5010	3.81515E-06	5010
54	3	5011	1.54884E-05	5011
55	1	55133	2.10206E-05	55133
56	1	95237	3.73057E-06	95237
57	1	94238	5.34530E-07	94238
58	1	94239	1.07741E-04	94239
59	1	94240	2.09730E-05	94240
60	1	94241	1.13808E-05	94241
61	1	94242	1.27952E-06	94242
62	1	95241	3.40567E-07	95241
63	1	95243	1.18128E-07	95243
64	1	96244	1.12999E-08	96244
65	1	999	1.00000E-20	999
66	4	999	1.00000E-20	66

Ogeometry and material description

Ozone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	1	4.68122E-01	9.75000E+02	9.05844E-01	0
2	4	4.78790E-01	2.93000E+02	5.46010E-01	0
3	2	5.46100E-01	6.50000E+02	.00000E+00	0
4	3	8.13968E-01	6.07600E+02	.00000E+00	0

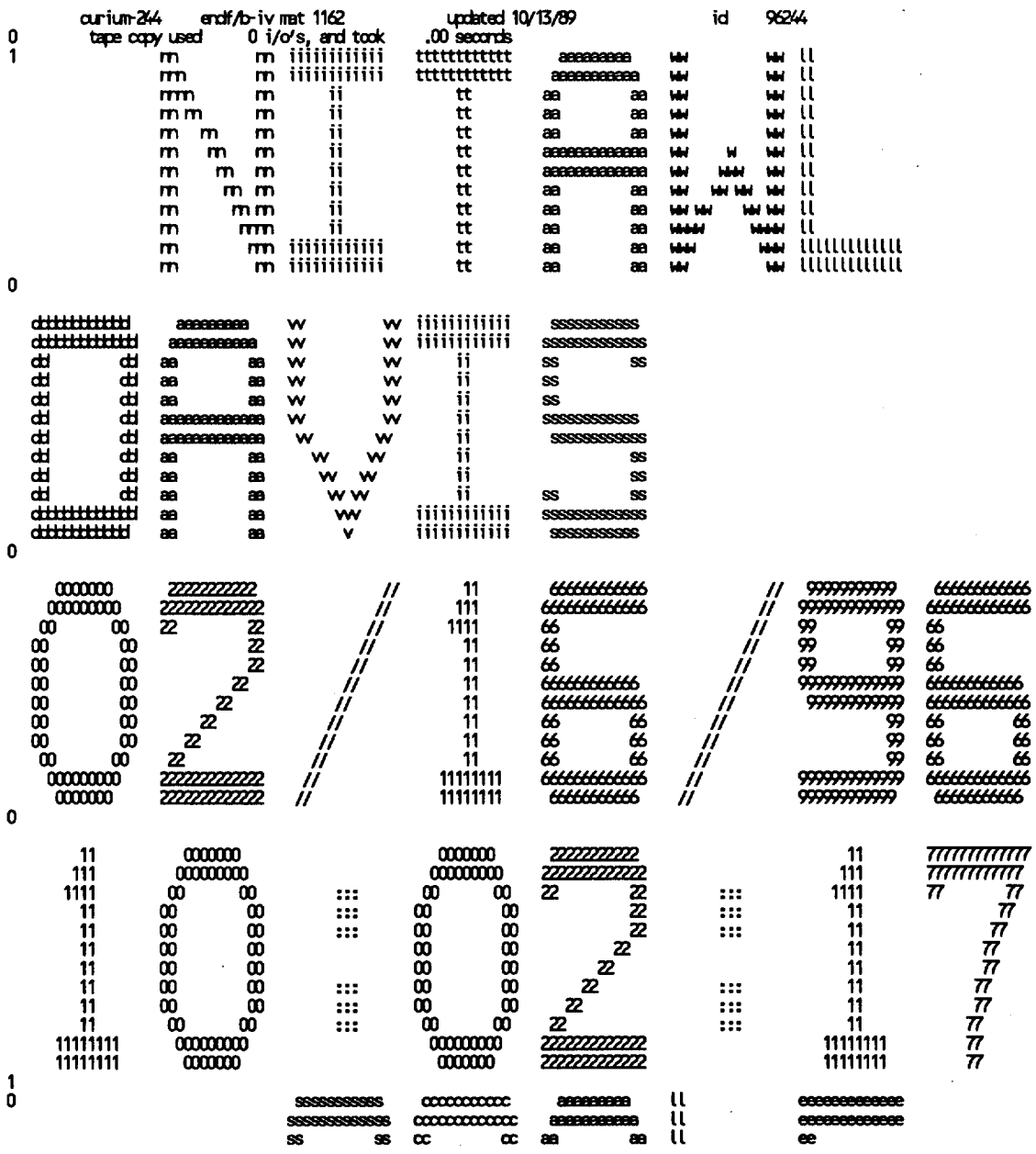
7711 locations of 200000 available are required to make a new master containing the self-shielded values

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

Ocopy	999	1/v cross sectio	from lag 12	to lag 18	bondarenko trigger 0
Ocopy	999	1/v cross sectio	from lag 18	to lag 1	bondarenko trigger 0
Ocopy	999	1/v cross sectio	from lag 18	to lag 1	bondarenko trigger 0
Ocopy	1001	hydrogen	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	5010	b-10 1273 218grp	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	5011	boron-11	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	8016	oxygen-16	from lag 12	to lag 18	bondarenko trigger 0
Ocopy	8016	oxygen-16	from lag 18	to lag 1	bondarenko trigger 0
Ocopy	8016	oxygen-16	from lag 18	to lag 1	bondarenko trigger 0
Ocopy	36083	kr-83	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	36085	kr-85	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	38090	sr-90	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	39089	y-89	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	40093	zr-93	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	40094	zr-94	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	40095	zr-95	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	40802	zircalloy	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	41094	nb-94	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	42095	mo-95	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	43099	tc-99	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	44101	ru-101	from lag 12	to lag 1	bondarenko trigger 0
Ocopy	44106	ru-106	from lag 12	to lag 1	bondarenko trigger 0

```
0copy    45103  rh-103          from log 12 to log  1   bondarenko trigger 0
0copy    45105  rh-105          from log 12 to log  1   bondarenko trigger 0
0copy    46105  pd-105          from log 12 to log  1   bondarenko trigger 0
0copy    46108  pd-108          from log 12 to log  1   bondarenko trigger 0
0copy    47109  silver-109      from log 12 to log  1   bondarenko trigger 0
0copy    51124  sb-124          from log 12 to log  1   bondarenko trigger 0
0copy    54131  xe-131          from log 12 to log  1   bondarenko trigger 0
0copy    54132  xe-132          from log 12 to log  1   bondarenko trigger 0
0copy    54135  xenon-135       from log 12 to log  1   bondarenko trigger 0
0copy    54136  xe-136          from log 12 to log  1   bondarenko trigger 0
0copy    55133  cesium-133      from log 12 to log  1   bondarenko trigger 0
0copy    55134  cs-134          from log 12 to log  1   bondarenko trigger 0
0copy    55135  cs-135          from log 12 to log  1   bondarenko trigger 0
0copy    55137  cs-137          from log 12 to log  1   bondarenko trigger 0
0copy    56136  ba-136          from log 12 to log  1   bondarenko trigger 0
0copy    57139  la-139          from log 12 to log  1   bondarenko trigger 0
0copy    58144  ce-144          from log 12 to log  1   bondarenko trigger 0
0copy    59141  pr-141          from log 12 to log  1   bondarenko trigger 0
0copy    59143  pr-143          from log 12 to log  1   bondarenko trigger 0
0copy    60143  nd-143          from log 12 to log  1   bondarenko trigger 0
0copy    60145  nd-145          from log 12 to log  1   bondarenko trigger 0
0copy    60147  nd-147          from log 12 to log  1   bondarenko trigger 0
0copy    61147  pm-147          from log 12 to log  1   bondarenko trigger 0
0copy    61148  pm-148          from log 12 to log  1   bondarenko trigger 0
0copy    62147  sm-147          from log 12 to log  1   bondarenko trigger 0
0copy    62149  sm-149          from log 12 to log  1   bondarenko trigger 0
0copy    62150  sm-150          from log 12 to log  1   bondarenko trigger 0
0copy    62151  sm-151          from log 12 to log  1   bondarenko trigger 0
0copy    62152  sm-152          from log 12 to log  1   bondarenko trigger 0
0copy    63153  eu-153          from log 12 to log  1   bondarenko trigger 0
0copy    63154  eu-154          from log 12 to log  1   bondarenko trigger 0
0copy    63155  eu-155          from log 12 to log  1   bondarenko trigger 0
0copy    64155  gd-155          from log 12 to log  1   bondarenko trigger 0
0copy    92234  u-234 1043 sigc= from log 12 to log  1   bondarenko trigger 0
0copy    92235  uranium-235     from log 12 to log  1   bondarenko trigger 0
0copy    92236  u-236 1163 sigc= from log 12 to log  1   bondarenko trigger 0
0copy    92238  uranium-238     from log 12 to log  1   bondarenko trigger 0
0copy    93237  neptunium-237   from log 12 to log  1   bondarenko trigger 0
0copy    94238  pu-238 1050 sigc from log 12 to log  1   bondarenko trigger 0
0copy    94239  plutonium-239   from log 12 to log  1   bondarenko trigger 0
0copy    94240  plutonium-240   from log 12 to log  1   bondarenko trigger 0
0copy    94241  plutonium-241   from log 12 to log  1   bondarenko trigger 0
0copy    94242  plutonium-242   from log 12 to log  1   bondarenko trigger 0
0copy    95241  am-241 1056 sigc from log 12 to log  1   bondarenko trigger 0
0copy    95243  am-243 1057 218  from log 12 to log  1   bondarenko trigger 0
0copy    96244  curium-244      from log 12 to log  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
      based on endf-b version 4 data with endf-b version 5 fission products
         compiled for nrc      1/27/89
           last updated        9/16/93
              l.m.petrie  -  ornl
      tape id                          4321      number of nuclides          66
      number of neutron groups           27      number of gamma groups       0
      first thermal group                15      logical unit                 1
                                table of contents
    1/v cross sections normalized to 1.0 at 0.0253 ev                    id   999
    1/v cross sections normalized to 1.0 at 0.0253 ev                    id    66
     hydrogen       endf/b-iv mat 1269/thrml002   updated 10/13/89      id  1001
    b-10 1273 218grp 042375 p-3 293k                                     id  5010
     boron-11       endf/b-iv mat 1160            updated 10/13/89      id  5011
```

```
 oxygen-16      endf/b-iv mat 1276              updated 10/13/89          id     8016
 oxygen-16      endf/b-iv mat 1276              updated 10/13/89          id        6
 kr-83          mt=102,103,103,105,106,107      updated 10/13/89          id    36083
 kr-85            mt=  102                                                id    36085
 sr-90          mt=102                          updated 10/13/89          id    38090
  y-89          mt=102                          updated 10/13/89          id    39089
 zr-93            mt=  102                                                id    40093
 zr-94          mt=102                          updated 10/13/89          id    40094
 zr-95          mt=102                          updated 10/13/89          id    40095
 zircalloy      endf/b-iv mat 1284              updated 10/13/89          id    40302
 rb-94          mt=102                          updated 10/13/89          id    41094
 mo-95          mt=102                          updated 10/13/89          id    42095
 tc-99          mt=102                          updated 10/13/89          id    43099
 ru-101         mt=102                          updated 10/13/89          id    44101
 ru-106         mt=102                          updated 10/13/89          id    44106
 rh-103         mt=102                          updated 10/13/89          id    45103
 rh-105           mt=  102                                                id    45105
 pd-105         mt=102                          updated 10/13/89          id    46105
 pd-108         mt=102                          updated 10/13/89          id    46108
 silver-109     endf/b-iv mat 1139              updated 10/13/89          id    47109
 sb-124         mt=102                          updated 10/13/89          id    51124
 xe-131         mt=102,103,104,105,106          updated 10/13/89          id    54131
 xe-132         mt=102,103,104,105,106          updated 10/13/89          id    54132
 xenon-135      endf/b-iv mat 1294              updated 10/13/89          id    54135
 xe-136           mt=  102, 103, 104, 105, 107                            id    54136
 cesium-133     endf/b-iv mat 1141              updated 10/13/89          id    55133
 cs-134         mt=102                          updated 10/13/89          id    55134
 cs-135           mt=  102                                                id    55135
 cs-137         mt=102                          updated 10/13/89          id    55137
 ba-136         mt=102                          updated 10/13/89          id    56136
 la-139         mt=102                          updated 10/13/89          id    57139
 ce-144           mt=  102                                                id    58144
 pr-141         mt=102,103,104,105,106,107      updated 10/13/89          id    59141
 pr-143         mt=102                          updated 10/13/89          id    59143
 nd-143         mt=102                          updated 10/13/89          id    60143
 nd-145         mt=102                          updated 10/13/89          id    60145
 nd-147         mt=102                          updated 10/13/89          id    60147
 pm-147         mt=102                          updated 10/13/89          id    61147
 pm-148           mt=  102                                                id    61148
 sm-147         endf/b-v fission product        updated 10/13/89          id    62147
 sm-149         mt=102,103,107                  updated 10/13/89          id    62149
 sm-150         mt=102                          updated 10/13/89          id    62150
 sm-151         mt=102,103,104,105,106,107      updated 10/13/89          id    62151
 sm-152         mt=102,103,104,105,106,107      updated 10/13/89          id    62152
 eu-153         mt=102,103,104,105,106,107      updated 10/13/89          id    63153
 eu-154         mt=102,103,104,105,106,107      updated 10/13/89          id    63154
 eu-155         mt=102,103,104,105,106,107      updated 10/13/89          id    63155
 gd-155         mt=102                          updated 10/13/89          id    64155
u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                       id    92234
 uranium-235    endf/b-iv mat 1261              updated 10/13/89          id    92235
u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                       id    92236
 uranium-238    endf/b-iv mat 1262              updated 10/13/89          id    92238
 neptunium-237  endf/b-iv mat 1263              updated 10/13/89          id    93237
pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                      id    94238
 plutonium-239  endf/b-iv mat 1264              updated 10/13/89          id    94239
 plutonium-240  endf/b-iv mat 1265              updated 10/13/89          id    94240
 plutonium-241  endf/b-iv mat 1266              updated 10/13/89          id    94241
 plutonium-242  endf/b-iv mat 1161              updated 10/13/89          id    94242
am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                             id    95241
am-243 1057 218 gp wt f-1/e-m 090876 p3 293k                              id    95243
```


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

```
 ss            cc            aa       aa  ll            ee
 ss            cc            aa       aa  ll            ee
 sssssssssss   cc            aaaaaaaaaaa  ll            eeeeeeeee
  sssssssssss  cc            aaaaaaaaaaa  ll            eeeeeeeee
        ss     cc            aa       aa  ll            ee
        ss     cc            aa       aa  ll            ee
 ss     ss     cc       cc   aa       aa  ll            ee
 sssssssssssss cccccccccccc  aa       aa  lllllllllllll eeeeeeeeeeee
  sssssssssss   cccccccccc   aa       aa  lllllllllllll eeeeeeeeeeee
```

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

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

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

```
0 general information concerning cross section library
    tape identification number                4321
    number of nuclides on tape                  66
    number of neutron energy groups             27
    first thermal neutron energy group          15
    number of gamma energy groups                0
0  direct access unit number  9 requires 117 blocks of length  1484 words
- xsdrn tape  4321
                        scale 4.2 - 27 group neutron burnup library
                          based on endf-b version 4 data with endf-b version 5 fission products
                            compiled for nrc      1/27/89
                              last updated        9/16/93
                                l.m.petrie   -    ornl
0 nuclides from xsdrn tape
     1    1/v cross sections normalized to 1.0 at 0.0253 ev                                  999
     2    hydrogen        endf/b-iv mat 1269/thrmn1002    updated 10/13/89                  1001
     3   b-10 1273 218ngp 042375 p-3 293k                                                   5010
     4    boron-11        endf/b-iv mat 1160              updated 10/13/89                  5011
     5    oxygen-16       endf/b-iv mat 1276              updated 10/13/89                  8016
     6    oxygen-16       endf/b-iv mat 1276              updated 10/13/89                     6
     7    kr-83           mt=102,103,103,105,106,107      updated 10/13/89                 36083
     8    kr-85             mt=  102                                                       36085
     9    sr-90           mt=102                          updated 10/13/89                 38090
    10     y-89           mt=102                          updated 10/13/89                 39089
    11    zr-93             mt=  102                                                       40093
    12    zr-94           mt=102                          updated 10/13/89                 40094
    13    zr-95           mt=102                          updated 10/13/89                 40095
    14    zircalloy       endf/b-iv mat 1284              updated 10/13/89                 40302
    15    nb-94           mt=102                          updated 10/13/89                 41094
    16    mo-95           mt=102                          updated 10/13/89                 42095
    17    tc-99           mt=102                          updated 10/13/89                 43099
    18    ru-101          mt=102                          updated 10/13/89                 44101
    19    ru-106          mt=102                          updated 10/13/89                 44106
    20    rh-103          mt=102                          updated 10/13/89                 45103
    21    rh-105            mt=  102                                                       45105
    22    pd-105          mt=102                          updated 10/13/89                 46105
    23    pd-108          mt=102                          updated 10/13/89                 46108
    24    silver-109      endf/b-iv mat 1139              updated 10/13/89                 47109
    25    sb-124          mt=102                          updated 10/13/89                 51124
    26    xe-131          mt=102,103,104,105,106          updated 10/13/89                 54131
    27    xe-132          mt=102,103,104,105,106          updated 10/13/89                 54132
    28    xenon-135       endf/b-iv mat 1294              updated 10/13/89                 54135
    29    xe-136            mt=  102, 103, 104, 105, 107                                   54136
    30    cesium-133      endf/b-iv mat 1141              updated 10/13/89                 55133
    31    cs-134          mt=102                          updated 10/13/89                 55134
    32    cs-135            mt=  102                                                       55135
    33    cs-137          mt=102                          updated 10/13/89                 55137
    34    ba-136          mt=102                          updated 10/13/89                 56136
    35    la-139          mt=102                          updated 10/13/89                 57139
    36    ce-144            mt=  102                                                       58144
    37    pr-141          mt=102,103,104,105,106,107      updated 10/13/89                 59141
    38    pr-143          mt=102                          updated 10/13/89                 59143
    39    nd-143          mt=102                          updated 10/13/89                 60143
    40    nd-145          mt=102                          updated 10/13/89                 60145
    41    nd-147          mt=102                          updated 10/13/89                 60147
    42    pm-147          mt=102                          updated 10/13/89                 61147
    43    pm-148            mt=  102                                                       61148
    44    sm-147          endf/b-v fission product        updated 10/13/89                 62147
    45    sm-149          mt=102,103,107                  updated 10/13/89                 62149
    46    sm-150          mt=102                          updated 10/13/89                 62150
```

```
    47    sm-151          mt=102,103,104,105,106,107    updated 10/13/89              62151
    48    sm-152          mt=102,103,104,105,106,107    updated 10/13/89              62152
    49    eu-153          mt=102,103,104,105,106,107    updated 10/13/89              63153
    50    eu-154          mt=102,103,104,105,106,107    updated 10/13/89              63154
    51    eu-155          mt=102,103,104,105,106,107    updated 10/13/89              63155
    52    gd-155          mt=102                        updated 10/13/89              64155
    53   u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          92234
    54    uranium-235     endf/b-iv mat 1261            updated 10/13/89              92235
    55   u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          92236
    56    uranium-238     endf/b-iv mat 1262            updated 10/13/89              92238
    57    neptunium-237   endf/b-iv mat 1263            updated 10/13/89              93237
    58   pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          94238
    59    plutonium-239   endf/b-iv mat 1264            updated 10/13/89              94239
    60    plutonium-240   endf/b-iv mat 1265            updated 10/13/89              94240
    61    plutonium-241   endf/b-iv mat 1266            updated 10/13/89              94241
    62    plutonium-242   endf/b-iv mat 1161            updated 10/13/89              94242
    63   am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                                95241
    64   am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                                 95243
    65    curium-244      endf/b-iv mat 1162            updated 10/13/89              96244
01/v cross sections normalized to 1.0 at 0.0253 ev                          999    temperature=  975.00
0 hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89            1001    temperature=  607.60
                        thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 042375 p-3 293k                                          5010    temperature=  607.60
                        thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 boron-11        endf/b-iv mat 1160             updated 10/13/89            5011    temperature=  607.60
                        thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16       endf/b-iv mat 1276             updated 10/13/89            8016    temperature=  975.00
0 oxygen-16       endf/b-iv mat 1276             updated 10/13/89               6    temperature=  607.60
0 kr-83           mt=102,103,103,105,106,107     updated 10/13/89           36083    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =    82.202          temperature(kelvin)      =   975.000
0potential scatter sigma  =     7.004          lumped nuclear density   = 1.4271768E-06
0spin factor (g)          =  4988.190          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.1964859E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 1.3349052E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11      -2.107455E-03     .0000000E+00   -2.665935E-03
  12       2.165458E-02     .0000000E+00    9.892334E-03
  13      -4.670784E-01     .0000000E+00   -1.406421E-01
  14       4.782960E-05     .0000000E+00   -1.722996E-05
0excess resonance integrals
0                 resolved
0absorption      1.4473SE+02
 fission          .0000E+00
 - elapsed time    .00 min.
0 kr-85            mt=  102                                          36085    temperature=  975.00
0 sr-90           mt=102                         updated 10/13/89    38090    temperature=  975.00
0  y-89           mt=102                         updated 10/13/89    39089    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =    88.142          temperature(kelvin)      =   975.000
0potential scatter sigma  =     3.644          lumped nuclear density   = 1.2388544E-05
0spin factor (g)          =    78.664          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
```

```
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.3785677E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 1.5378286E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   9      -3.386356E-06     .000000E+00   -2.525315E-04
  10      -7.546894E-05     .000000E+00   -2.128284E-04
0excess resonance integrals
0                resolved
0absorption     1.463964E-01
 fission         .00000E+00
- elapsed time    .00 min.
0 zr-93          mt= 102                                        40093     temperature=  975.00
0 zr-94         mt=102                    updated 10/13/89     40094     temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =   93.100          temperature(kelvin)      =   975.000
0potential scatter sigma =    3.779         lumped nuclear density   = 1.9587926E-05
0spin factor (g)        =  180.853          lump dimension (a-bar)   = 4.6812201E-01
0inner radius           = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 8.7175996E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953              sigma(per absorber atom)= 9.7261230E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   8      -1.205871E-06     .000000E+00   -1.136245E-03
   9      -3.808849E-05     .000000E+00   -3.369180E-03
0excess resonance integrals
0                resolved
0absorption     3.436964E-02
 fission         .00000E+00
- elapsed time    .00 min.
0 zr-95         mt=102                    updated 10/13/89     40095     temperature=  975.00
0 zircalloy     endf/b-iv mat 1284        updated 10/13/89     40302     temperature=  650.00
0resonance data for this nuclide
0mass number (a)        =   90.436          temperature(kelvin)      =   650.000
0potential scatter sigma =    6.385         lumped nuclear density   = 4.2515602E-02
0spin factor (g)        =    1.079          lump dimension (a-bar)   = 5.4610002E-01
0inner radius           = 4.7878999E-01     dancoff correction (c)   = 5.0364637E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   8      -1.780596E-03     .000000E+00   -1.286907E+00
   9      -5.895373E-02     .000000E+00   -2.695297E+00
  10      -6.959935E-02     .000000E+00   -1.601321E+00
  11      -1.889957E-01     .000000E+00   -7.920912E-01
0excess resonance integrals
0                resolved
0absorption     2.285396E-01
 fission         .00000E+00
- elapsed time    .02 min.
0 nb-94         mt=102                    updated 10/13/89     41094     temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =   93.101          temperature(kelvin)      =   975.000
0potential scatter sigma =    3.779         lumped nuclear density   = 9.7096506E-12
```

```
0spin factor (g)          = 43808.801              lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.7586594E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 1.9621155E+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  13      1.043254E-02     .000000E+00   9.253223E-04
  14      9.836713E-03     .000000E+00  -4.064852E-04
0excess resonance integrals
0                resolved
0absorption      9.15001E+01
 fission          .0000E+00
- elapsed time    .02 min.
0 mo-95          mt=102                   updated 10/13/89            42095     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   94.091               temperature(kelvin)       =   975.000
0potential scatter sigma  =    3.806               lumped nuclear density    = 1.6557906E-05
0spin factor (g)          =  607.724               lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.0312880E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 1.1505958E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  10     -3.530957E-03     .000000E+00  -2.099522E-02
  11     -6.524231E-03     .000000E+00  -1.080905E-02
  12     -4.589763E+00     .000000E+00  -5.280679E+00
  13      1.575622E-04     .000000E+00  -2.129488E-05
0excess resonance integrals
0                resolved
0absorption      9.75400E+01
 fission          .0000E+00
- elapsed time    .02 min.
0 tc-99          mt=102                   updated 10/13/89            43099     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   98.150               temperature(kelvin)       =   975.000
0potential scatter sigma  =    6.000               lumped nuclear density    = 1.9160281E-05
0spin factor (g)          = 4527.940               lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 8.9121709E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 9.9432041E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11     -2.489531E-02     .000000E+00  -1.163742E-02
  12     -6.508102E-03     .000000E+00  -2.280359E-04
  13     -4.011463E-01     .000000E+00  -2.111810E-02
  14     -8.568925E+00     .000000E+00  -2.732188E-01
  15      1.070115E-02     .000000E+00  -5.387696E-04
  16      4.836025E-03     .000000E+00  -2.802101E-04
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  17      2.074640E-04     .000000E+00   -1.192373E-05
0excess resonance integrals
0                resolved
0absorption      3.2346OE+02
 fission          .00000E+00
- elapsed time    .03 min.
0 ru-101        mt=102                    updated 10/13/89            44101     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   100.039          temperature(kelvin)      =   975.000
0potential scatter sigma =     3.965          lumped nuclear density   = 1.7388691E-05
0spin factor (g)         =  8785.290          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 9.8201582E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.933          sigma(per absorber atom)= 1.0956234E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11     -3.647632E-02     .000000E+00   -3.684222E-03
  12     -1.412914E-01     .000000E+00   -3.547577E-02
  13     -4.671092E-01     .000000E+00   -1.257778E-02
  14      2.371029E-04     .000000E+00   -4.152284E-05
0excess resonance integrals
0                resolved
0absorption      7.92385E+01
 fission          .00000E+00
- elapsed time    .03 min.
0 ru-106        mt=102                    updated 10/13/89            44106     temperature=  975.00
0 rh-103        mt=102                    updated 10/13/89            45103     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   102.021          temperature(kelvin)      =   975.000
0potential scatter sigma =     5.408          lumped nuclear density   = 1.0508395E-05
0spin factor (g)         =      .500          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 1.6249846E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.933          sigma(per absorber atom)= 1.8129760E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9      1.236941E-03     .000000E+00    1.889577E-03
  10     -4.028342E-03     .000000E+00   -5.558081E-03
  11     -2.109917E-02     .000000E+00   -1.854124E-02
  12     -3.399178E-04     .000000E+00   -2.380681E-05
  13       .000000E+00     .000000E+00     .000000E+00
  14       .000000E+00     .000000E+00     .000000E+00
  15      2.268889E-01     .000000E+00    3.244993E-03
  16      3.156197E+01     .000000E+00   -7.005092E-02
  17     -1.862040E+02     .000000E+00   -1.642171E-01
  18      8.690983E+01     .000000E+00    2.607519E-01
  19      1.145288E+01     .000000E+00   -1.386590E-03
  20      1.084406E+00     .000000E+00   -2.447915E-03
  21      2.165818E-01     .000000E+00    1.925102E-03
  22      2.583936E-01     .000000E+00    2.928526E-03
  23     -9.879520E-02     .000000E+00    1.798871E-03
0excess resonance integrals
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0                resolved
0absorption      1.14205E+03
 fission          .0000E+00
-  elapsed time    .07 min.
0 rh-105          mt=  102                                          45105     temperature=  975.00
0 pd-105       mt=102                          updated 10/13/89     46105     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   104.004          temperature(kelvin)      =   975.000
0potential scatter sigma =     4.069          lumped nuclear density   = 6.8604922E-06
0spin factor (g)         = 15210.000          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995             sigma(per absorber atom)= 2.4890299E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.953             sigma(per absorber atom)= 2.7769813E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  12      -5.988775E-02     .000000E+00   -1.650568E-03
  13      -3.455140E-02     .000000E+00   -1.053048E-03
  14       7.764513E-04     .000000E+00   -8.132564E-05
0excess resonance integrals
0                resolved
0absorption      6.12143E+01
 fission          .0000E+00
-  elapsed time    .07 min.
0 pd-108       mt=102                          updated 10/13/89     46108     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   106.977          temperature(kelvin)      =   975.000
0potential scatter sigma =     4.146          lumped nuclear density   = 1.9254592E-06
0spin factor (g)         = 21175.100          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995             sigma(per absorber atom)= 8.8685180E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.953             sigma(per absorber atom)= 9.8945008E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11       1.170138E-04     .000000E+00    3.531506E-04
  12      -1.744531E+00     .000000E+00   -1.284438E+00
  13       6.798671E-03     .000000E+00    1.857198E-03
  14       8.561140E-02     .000000E+00   -3.208624E-05
  15      -1.840957E-01     .000000E+00    8.083612E-05
  16       2.946577E-04     .000000E+00   -9.255595E-06
0excess resonance integrals
0                resolved
0absorption      2.11967E+02
 fission          .0000E+00
-  elapsed time    .07 min.
0 silver-109   endf/b-iv mat 1139          updated 10/13/89     47109     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   107.969          temperature(kelvin)      =   975.000
0potential scatter sigma =     4.988          lumped nuclear density   = 1.3457249E-06
0spin factor (g)         = 1441.870           lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995             sigma(per absorber atom)= 1.2689049E+05
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0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 1.4157022E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  10      -1.472962E-04     .000000E+00   -1.567339E-04
  11      -6.107400E-03     .000000E+00   -4.491020E-03
  12      -7.277893E-01     .000000E+00   -3.450912E-02
  13       7.669353E-01     .000000E+00    3.380737E-02
  14      -1.278932E+01     .000000E+00   -1.192197E+00
0excess resonance integrals
0                 resolved
0absorption      1.39632E+03
 fission          .0000E+00
- elapsed time    .07 min.
0 sb-124        mt=102                    updated 10/13/89          51124    temperature=   975.00
0 xe-131        mt=102,103,104,105,106    updated 10/13/89          54131    temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =   129.781          temperature(kelvin)      =   975.000
0potential scatter sigma =     4.301          lumped nuclear density   = 8.7760827E-06
0spin factor (g)         =   266.825          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.9457393E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933          sigma(per absorber atom)= 2.1708383E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9      -2.848403E-06     .000000E+00   -2.640883E-05
  10      -1.938772E-04     .000000E+00   -1.666874E-04
  11      -2.365111E-03     .000000E+00   -1.765685E-03
  12      -4.517101E-02     .000000E+00   -4.207236E-03
  13      -7.038969E+01     .000000E+00   -1.650054E+02
  14       1.061624E-02     .000000E+00    1.486984E-02
0excess resonance integrals
0                 resolved
0absorption      7.58385E+02
 fission          .0000E+00
- elapsed time    .08 min.
0 xe-132        mt=102,103,104,105,106    updated 10/13/89          54132    temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =   130.771          temperature(kelvin)      =   975.000
0potential scatter sigma =     4.301          lumped nuclear density   = 1.6494707E-05
0spin factor (g)         =   675.899          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995          sigma(per absorber atom)= 1.0852393E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933          sigma(per absorber atom)= 1.1550043E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9      -2.544256E-05     .000000E+00   -1.172795E-04
  10      -7.780082E-03     .000000E+00   -9.905657E-02
  11       3.338821E-08     .000000E+00   -9.229524E-07
0excess resonance integrals
```

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0                resolved
0absorption      9.71131E-01
 fission          .00000E+00
-  elapsed time    .08 min.
0 xenon-135      endf/b-iv mat 1294          updated 10/13/89            54135    temperature=  975.00
0 xe-136           mt=  102, 103, 104, 105, 107                         54136    temperature=  975.00
0 cesium-133     endf/b-iv mat 1141          updated 10/13/89            55133    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   131.764          temperature(kelvin)      =   975.000
0potential scatter sigma =     7.100          lumped nuclear density   = 2.1020622E-05
0spin factor (g)         =   374.437          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 8.1234366E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   238.051          sigma(per absorber atom)= 8.7134512E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
   9      -5.815313E-05      .000000E+00    -3.912479E-04
  10      -2.895950E-03      .000000E+00    -5.542378E-03
  11      -1.080677E-01      .000000E+00    -1.850162E-01
  12      -1.675589E-01      .000000E+00    -2.331297E-02
  13      -2.787342E-01      .000000E+00    -1.516813E-02
  14      -1.213135E+01      .000000E+00    -5.310487E-01
  15       5.621247E-03      .000000E+00    -4.047216E-04
  16       2.777834E-03      .000000E+00    -2.215200E-04
  17       2.352213E-03      .000000E+00    -1.830883E-04
  18       2.215043E-03      .000000E+00    -1.679331E-04
  19       1.317405E-03      .000000E+00    -9.678895E-05
0excess resonance integrals
0                resolved
0absorption      3.51131E+02
 fission          .00000E+00
-  elapsed time    .10 min.
0 cs-134         mt=102                      updated 10/13/89            55134    temperature=  975.00
0 cs-135           mt=  102                                              55135    temperature=  975.00
0 cs-137         mt=102                      updated 10/13/89            55137    temperature=  975.00
0 ba-136         mt=102                      updated 10/13/89            56136    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   134.737          temperature(kelvin)      =   975.000
0potential scatter sigma =     4.835          lumped nuclear density   = 1.9312503E-07
0spin factor (g)         =  1247.690          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 8.8419250E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.953          sigma(per absorber atom)= 9.8648313E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  10       1.097034E-06      .000000E+00     4.642062E-07
  11      -1.204376E-05      .000000E+00    -9.815700E-06
0excess resonance integrals
0                resolved
0absorption      1.38471E+00
 fission          .00000E+00
-  elapsed time    .10 min.
```

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0 la-139        mt=102                    updated 10/13/89          57139     temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =   137.713          temperature(kelvin)      =   975.000
Opotential scatter sigma  =     4.906          lumped nuclear density   = 2.0324025E-05
Ospin factor (g)          =   145.855          lump dimension (a-bar)   = 4.6812201E-01
Oinner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1      =    15.995          sigma(per absorber atom)= 8.4018643E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2      =   237.933          sigma(per absorber atom)= 9.3738604E+03
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup       res abs         res fiss        res scat
   9     -1.254866E-05     .000000E+00   -2.225172E-04
  10     -3.955710E-04     .000000E+00   -2.243899E-02
  11      .000000E+00      .000000E+00    .000000E+00
  12     -6.961611E-02     .000000E+00   -4.203025E-02
Oexcess resonance integrals
0                resolved
Oabsorption      8.06569E+00
 fission          .00000E+00
- elapsed time    .12 min.
0 ce-144         mt= 102                                                 58144     temperature=  975.00
0 pr-141        mt=102,103,104,105,106,107   updated 10/13/89           59141     temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =   139.697          temperature(kelvin)      =   975.000
Opotential scatter sigma  =     4.953          lumped nuclear density   = 1.7598717E-05
Ospin factor (g)          =  1026.500          lump dimension (a-bar)   = 4.6812201E-01
Oinner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1      =    15.995          sigma(per absorber atom)= 9.7029629E+03
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2      =   237.933          sigma(per absorber atom)= 1.0825481E+04
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup       res abs         res fiss        res scat
  10     -6.883339E-03     .000000E+00   -2.337946E-01
  11     -1.126897E-01     .000000E+00   -1.498527E+00
  12     -2.585426E-03     .000000E+00   -2.528515E-04
Oexcess resonance integrals
0                resolved
Oabsorption      1.20978E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 pr-143        mt=102                    updated 10/13/89          59143     temperature=  975.00
0 nd-143        mt=102                    updated 10/13/89          60143     temperature=  975.00
Oresonance data for this nuclide
Omass number (a)          =   141.682          temperature(kelvin)      =   975.000
Opotential scatter sigma  =     5.000          lumped nuclear density   = 1.5915050E-05
Ospin factor (g)          =  1964.850          lump dimension (a-bar)   = 4.6812201E-01
Oinner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1      =    15.995          sigma(per absorber atom)= 1.0729448E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2      =   237.933          sigma(per absorber atom)= 1.1970719E+04
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
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0group       res abs        res fiss       res scat
  10      -1.574946E-04    .000000E+00   -8.823005E-05
  11      -3.695361E-01    .000000E+00   -4.298528E+00
  12      -2.446570E-01    .000000E+00   -1.202315E-01
0excess resonance integrals
0                resolved
0absorption      5.07642E+01
 fission          .0000E+00
- elapsed time    .12 min.
0 nd-145        mt=102                    updated 10/13/89            60145     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   143.668          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.047          lumped nuclear density   = 1.1734181E-05
0spin factor (g)          =  1007.250          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.4552332E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 1.6235866E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  10      -4.781522E-03    .000000E+00   -7.507609E-02
  11      -7.203245E-02    .000000E+00   -2.180945E-01
  12      -1.733671E+00    .000000E+00   -1.090933E+01
  13       9.577876E-05    .000000E+00    2.044957E-04
  14      -1.591639E+00    .000000E+00   -4.183234E-02
  15       5.898307E-03    .000000E+00   -4.609054E-04
  16       1.326662E-03    .000000E+00   -1.451343E-04
  17       9.642444E-04    .000000E+00   -1.063907E-04
  18       8.539835E-04    .000000E+00   -9.314132E-05
  19       7.634249E-04    .000000E+00   -8.070523E-05
  20       2.839224E-05    .000000E+00   -2.919392E-06
0excess resonance integrals
0                resolved
0absorption      2.05973E+02
 fission          .0000E+00
- elapsed time    .13 min.
0 nd-147        mt=102                    updated 10/13/89            60147     temperature=   975.00
0 pm-147        mt=102                    updated 10/13/89            61147     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   145.653          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.093          lumped nuclear density   = 4.0223504E-06
0spin factor (g)          = 21589.500          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 4.2452715E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 4.7363992E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  12      -2.019935E-01    .000000E+00   -6.472971E-02
  13      -5.178917E-02    .000000E+00   -2.944189E-03
  14      -9.048184E+01    .000000E+00   -3.888611E+01
  15       4.127173E-02    .000000E+00    6.976340E-03
  16       1.697912E-02    .000000E+00    1.746667E-03
  17       1.369759E-02    .000000E+00    1.150427E-03
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  18       1.253775E-02      .000000E+00    9.649080E-04
  19       6.999401E-04      .000000E+00    5.068677E-05
0excess resonance integrals
0                  resolved
0absorption       2.00495E+03
 fission           .00000E+00
- elapsed time     .13 min.
0 pm-148           mt=  102                                          61148     temperature=  975.00
0 sm-147        endf/b-v fission product       updated 10/13/89       62147     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   145.653          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.093          lumped nuclear density   = 1.4015466E-06
0spin factor (g)          =      .000          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.2183662E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 1.3593167E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  11       2.691080E-01      .000000E+00    1.071706E+00
  12       8.990461E-01      .000000E+00   -1.596820E+00
  13      -3.912558E+00      .000000E+00   -2.295034E+00
  14      -4.358768E-01      .000000E+00   -5.141891E-03
  15       3.113323E-01      .000000E+00   -1.904650E-03
  16       7.287706E-03      .000000E+00   -3.738560E-04
  17       4.281466E-03      .000000E+00   -2.401682E-04
  18       3.510456E-03      .000000E+00   -1.997176E-04
  19       2.910619E-03      .000000E+00   -1.649500E-04
  20       8.435568E-04      .000000E+00   -4.628077E-05
0excess resonance integrals
0                  resolved
0absorption       7.21750E+02
 fission           .00000E+00
- elapsed time     .15 min.
                          thermal scattering matrix number   3 at a temperature of    900.03 was selected.
0 sm-149        mt=102,103,107                 updated 10/13/89       62149     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   147.638          temperature(kelvin)      =   975.000
0potential scatter sigma  =     3.260          lumped nuclear density   = 8.6958181E-08
0spin factor (g)          = 10407.900          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.9636990E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 2.1908758E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  11       8.546590E-03      .000000E+00    3.071159E-02
  12      -5.533293E-02      .000000E+00   -1.820874E-01
  13       2.289289E-02      .000000E+00    2.796631E-03
  14       2.746277E-03      .000000E+00   -7.935149E-03
0excess resonance integrals
0                  resolved
0absorption       8.04332E+02
 fission           .00000E+00
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- elapsed time    .15 min.
0 sm-150        mt=102                      updated 10/13/89            62150     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   148.629           temperature(kelvin)     =   975.000
Opotential scatter sigma  =     5.162           lumped nuclear density  = 4.1806816E-06
Ospin factor (g)          =  4376.420           lump dimension (a-bar)  = 4.6812201E-01
Oinner radius             =  .0000000E+00       dancoff correction (c)  = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1      =    15.995           sigma(per absorber atom)= 4.0844941E+04
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2      =   237.933           sigma(per absorber atom)= 4.5570219E+04
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup        res abs         res fiss        res scat
  10      -1.398363E-03     .000000E+00    -1.341212E-02
  11      -3.151566E-02     .000000E+00    -3.565074E-01
  12      -1.026808E-01     .000000E+00    -3.103027E-02
  13      -7.244654E+00     .000000E+00    -5.702447E+00
  14       1.065287E-04     .000000E+00    -6.390289E-05
Oexcess resonance integrals
0                 resolved
Oabsorption      2.86649E+02
 fission          .00000E+00
-  elapsed time    .15 min.
0 sm-151        mt=102,103,104,105,106,107  updated 10/13/89            62151     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   149.623           temperature(kelvin)     =   975.000
Opotential scatter sigma  =     5.185           lumped nuclear density  = 4.0190145E-07
Ospin factor (g)          = 75574.703           lump dimension (a-bar)  = 4.6812201E-01
Oinner radius             =  .0000000E+00       dancoff correction (c)  = 3.4269261E-01
Othe absorber will be treated by the nordheim integral method.
Omass of moderator-1      =    15.995           sigma(per absorber atom)= 4.2487953E+05
Omoderator-1 will be treated by the nordheim integral method.
Omass of moderator-2      =   237.953           sigma(per absorber atom)= 4.7403309E+05
Omoderator-2 will be treated by the nordheim integral method.
Othis resonance material will be treated as a 2-dimensional object.
Ovolume fraction of lump in cell used to account for spatial self-shielding=1.00000
Ogroup        res abs         res fiss        res scat
  14      -2.313706E-01     .000000E+00    -2.198228E-02
  15       1.486611E+01     .000000E+00     7.515553E-02
  16      -2.182088E+01     .000000E+00    -6.201120E-02
  17       1.735828E+02     .000000E+00     8.269866E-01
  18      -3.207103E+02     .000000E+00    -1.784223E+00
  19       6.253944E+01     .000000E+00     3.867666E-01
  20       1.141187E+00     .000000E+00    -1.395821E-04
  21      -7.117673E-02     .000000E+00     1.244103E-02
  22       6.952594E-02     .000000E+00     3.838923E-03
  23      -1.091910E-02     .000000E+00     3.374031E-04
Oexcess resonance integrals
0                 resolved
Oabsorption      2.05616E+03
 fission          .00000E+00
-  elapsed time    .15 min.
0 sm-152        mt=102,103,104,105,106,107  updated 10/13/89            62152     temperature=   975.00
Oresonance data for this nuclide
Omass number (a)          =   150.615           temperature(kelvin)     =   975.000
Opotential scatter sigma  =     5.208           lumped nuclear density  = 2.0046550E-06
Ospin factor (g)          =   863.594           lump dimension (a-bar)  = 4.6812201E-01
Oinner radius             =  .0000000E+00       dancoff correction (c)  = 3.4269261E-01
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0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 8.5181586E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 9.5036094E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   9       2.402706E-06     .000000E+00     1.158603E-04
  10      -1.613120E-03     .000000E+00    -2.503739E-02
  11      -2.328024E-02     .000000E+00    -8.863147E-02
  12      -1.561992E-01     .000000E+00    -4.954254E-01
  13       4.184015E-02     .000000E+00     1.017387E-01
  14      -1.368911E+02     .000000E+00    -2.642978E+02
0excess resonance integrals
0                 resolved
0absorption      2.73423E+03
 fission          .0000E+00
- elapsed time    .17 min.
0 eu-153        mt=102,103,104,105,106,107     updated 10/13/89              63153     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   151.607              temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.731              lumped nuclear density   = 1.2054246E-06
0spin factor (g)          = 12265.900              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00           dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.4165936E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 1.5804769E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  12      -2.948301E-01     .000000E+00    -5.761086E-02
  13      -1.746831E-01     .000000E+00    -6.441054E-03
  14      -9.135323E-01     .000000E+00    -1.894943E-03
  15       1.268074E+00     .000000E+00    -4.252725E-02
  16      -3.300676E+00     .000000E+00     8.155595E-03
  17       1.505586E-01     .000000E+00    -3.437673E-03
  18       7.726851E-02     .000000E+00    -2.231216E-03
  19       5.055454E-02     .000000E+00    -1.541080E-03
  20      -1.253804E-01     .000000E+00    -1.274997E-03
0excess resonance integrals
0                 resolved
0absorption      1.35389E+03
 fission          .0000E+00
- elapsed time    .17 min.
0 eu-154        mt=102,103,104,105,106,107     updated 10/13/89              63154     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   152.601              temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.731              lumped nuclear density   = 2.5216809E-07
0spin factor (g)          = 19135.801              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00           dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 6.7716613E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 7.5550625E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
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0group        res abs         res fiss        res scat
  12       -3.936354E-01     .000000E+00    -6.141107E-02
  13       -3.243814E-01     .000000E+00    -2.535959E-02
  14        3.137239E-01     .000000E+00     1.434408E-02
  15        1.216527E-01     .000000E+00     2.082218E-02
  16        7.156821E+00     .000000E+00     9.208286E-02
  17       -1.443276E+02     .000000E+00    -1.897852E+00
  18        1.134462E+02     .000000E+00     1.857145E+00
  19       -1.014757E+02     .000000E+00     1.187365E+00
0excess resonance integrals
0                 resolved
0absorption      2.136261E+03
 fission          .00000E+00
- elapsed time    .18 min.
0 eu-155        mt=102,103,104,105,106,107     updated 10/13/89          63155     temperature=  975.00
0 gd-155        mt=102                         updated 10/13/89          64155     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   153.592          temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.277          lumped nuclear density    = 2.1827047E-09
0spin factor (g)          = 12700.100          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 7.8233072E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 8.7285712E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  12       -1.439525E+00     .000000E+00    -1.839493E-01
  13        1.541064E+00     .000000E+00     1.984967E-01
  14        2.189140E-01     .000000E+00     9.804462E-03
  15       -3.353145E-01     .000000E+00    -1.141159E-04
  16        1.477358E+00     .000000E+00    -4.148867E-03
  17        1.568660E-01     .000000E+00    -1.479133E-03
  18        9.605134E-02     .000000E+00    -1.078060E-03
  19        6.295293E-02     .000000E+00    -8.026360E-04
  20        1.670391E-02     .000000E+00     1.627049E-04
  21         .000000E+00     .000000E+00      .000000E+00
  22         .000000E+00     .000000E+00      .000000E+00
  23         .000000E+00     .000000E+00      .000000E+00
  24         .000000E+00     .000000E+00      .000000E+00
  25       -2.127871E+03     .000000E+00    -1.622070E+00
  26       -5.205742E+03     .000000E+00     1.961503E+00
  27       -1.660003E+03     .000000E+00     7.392749E-01
0excess resonance integrals
0                 resolved
0absorption      3.970132E+04
 fission          .00000E+00
- elapsed time    .18 min.
0u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                        92234     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   232.029          temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.021          lumped nuclear density    = 4.4680287E-06
0spin factor (g)          =  6948.450          lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 3.8218129E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.985          sigma(per absorber atom)= 4.2626461E+04
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0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
  11      -2.135940E-02     .000000E+00   -6.230421E-02
  12      -1.742367E-01     .000000E+00   -7.295490E-02
  13       7.760282E-04     .000000E+00   -6.472778E-04
  14      -1.712841E+01     .000000E+00   -2.805241E+00
0excess resonance integrals
0                 resolved
0absorption      5.83639E+02
 fission          .00000E+00
- elapsed time    .20 min.
0 uranium-235   endf/b-iv mat 1261          updated 10/13/89              92235     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   233.025          temperature(kelvin)      =   975.000
0potential scatter sigma  =    11.500          lumped nuclear density   = 4.0269271E-04
0spin factor (g)          = 15171.100          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 4.2404468E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.049              sigma(per absorber atom)= 4.5507092E+02
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
  12      -1.700852E+00    -1.059361E+00   -3.985436E-02
  13      -6.016437E+00    -2.996939E+00   -1.303386E-01
  14      -4.839319E+00    -2.977209E+00   -3.309245E-02
0excess resonance integrals
0                 resolved
0absorption      2.13451E+02
 fission         1.27057E+02
- elapsed time    .22 min.
0u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                            92236     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   234.017          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.995          lumped nuclear density   = 5.5114171E-05
0spin factor (g)          =  6328.490          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 3.0982900E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.934              sigma(per absorber atom)= 3.4561223E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
  11      -2.655879E-01     .000000E+00   -6.672736E-01
  12      -1.435917E+00     .000000E+00   -9.749925E-01
  13      -6.729345E-02     .000000E+00   -3.511906E-03
  14      -4.638329E+01     .000000E+00   -4.057908E+00
0excess resonance integrals
0                 resolved
0absorption      2.73775E+02
 fission          .00000E+00
- elapsed time    .22 min.
0 uranium-238   endf/b-iv mat 1262          updated 10/13/89              92238     temperature=   975.00
0resonance data for this nuclide
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0mass number (a)          =  236.006          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.599          lumped nuclear density   = 2.1827353E-02
0spin factor (g)          =  656.527          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 7.8231969E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  235.041             sigma(per absorber atom)= 3.3684471E-01
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9     -3.931561E-02    .000000E+00   -4.039221E-01
  10     -1.024608E+00   -1.744971E-05   -6.475117E+00
  11     -9.704499E+00    .000000E+00   -2.689068E+01
  12     -4.304145E+01    .000000E+00   -4.998128E+01
  13     -5.400749E+01    .000000E+00   -1.768951E+01
  14     -1.044879E+02    .000000E+00   -6.059095E+00
0excess resonance integrals
0                resolved
0absorption     1.80464E+01
 fission        5.04065E-04
- elapsed time    .23 min.
0 neptunium-237  endf/b-iv mat 1263          updated 10/13/89          95237     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =  235.012          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.500          lumped nuclear density   = 3.7305724E-06
0spin factor (g)          = 10100.800         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 4.5773051E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 4.9097598E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11     -6.374864E-02   -2.167091E-06   -7.428924E-03
  12      1.776590E-02   -1.164552E-04    6.408805E-03
  13     -5.210491E-02    8.608940E-05   -2.513370E-03
  14     -1.046165E-01   -1.266708E-05   -1.750054E-03
0excess resonance integrals
0                resolved
0absorption     2.92956E+02
 fission        1.38539E-01
- elapsed time    .27 min.
0pu-238 1050 sigo=5+4 newklacs p-3 295k f-1/e-m(1.+5)          94238     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =  236.167          temperature(kelvin)      =  975.000
0potential scatter sigma  =   10.890          lumped nuclear density   = 5.3452993E-07
0spin factor (g)          = 13130.600         lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 3.1945766E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 3.4266022E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
```

```
  11      -3.282652E-03   -5.090203E-04   -3.151380E-03
  12      -2.240102E-03   -2.553125E-04   -1.062740E-03
  13       3.933082E-01    7.479770E-02   -1.106841E-02
  14      -3.827046E-01   -6.996343E-02    8.539104E-03
0excess resonance integrals
0                 resolved
0absorption      8.25191E+01
 fission         9.08318E+00
- elapsed time    .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89            94239     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.999          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.200          lumped nuclear density   = 1.0774087E-04
0spin factor (g)          =   6435.710          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995           sigma(per absorber atom)= 1.5849110E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051           sigma(per absorber atom)= 1.7000249E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
  11      -2.247174E-01   -9.051856E-02   -6.875905E-02
  12      -1.989344E+00   -7.468539E-01   -2.615587E-01
  13      -6.506670E+00   -3.828007E+00   -9.953720E-02
  14      -2.074125E+00   -1.103918E+00   -1.838425E-02
0excess resonance integrals
0                 resolved
0absorption      3.06743E+02
 fission         1.72348E+02
- elapsed time    .28 min.
0 plutonium-240  endf/b-iv mat 1265          updated 10/13/89            94240     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   237.992          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.599          lumped nuclear density   = 2.0973024E-05
0spin factor (g)          =   669.244          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995           sigma(per absorber atom)= 8.1418721E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051           sigma(per absorber atom)= 8.7332256E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss        res scat
   9      -5.648960E-05   -1.690455E-06   -2.566680E-04
  10      -5.007082E-03   -3.095440E-04   -2.286355E-02
  11      -1.592344E-01   -9.211631E-04   -2.116978E-01
  12      -2.199039E+00   -1.200747E-02   -2.108182E+00
  13      -2.726513E-01   -1.671806E-03   -1.987130E-02
  14       .000000E+00     .000000E+00     .000000E+00
  15       1.732440E-02    3.306438E-06    3.407707E-03
  16       2.825561E+00    5.392708E-04    3.514705E-01
  17       4.313114E+02    8.231768E-02    3.839495E+01
  18      -8.231488E+03   -1.571016E+00   -6.492285E+02
  19       5.877919E+02    1.121827E-01    4.667348E+01
  20      -9.384850E+01   -1.791142E-02    1.798124E+00
0excess resonance integrals
0                 resolved
```

```
0absorption       4.49037E+03
 fission          1.86623E+00
- elapsed time     .30 min.
0 plutonium-241  endf/b-iv mat 1266            updated 10/13/89              9424l     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   238.978              temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.939              lumped nuclear density    = 1.1380800E-05
0spin factor (g)          = 16402.100              lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995                  sigma(per absorber atom)= 1.5004189E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051                  sigma(per absorber atom)= 1.6093961E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  12      -3.737381E-03    -3.810023E-03     5.682180E-04
  13      -7.564958E-01    -5.802743E-01    -2.221067E-02
  14      -7.322109E-01    -5.134649E-01    -1.796299E-03
  15       1.786078E-02     1.600555E-02    -4.640525E-04
0excess resonance integrals
0                 resolved
0absorption       5.07453E+02
 fission          4.25525E+02
- elapsed time     .32 min.
0 plutonium-242  endf/b-iv mat 1161            updated 10/13/89              9424l     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   240.145              temperature(kelvin)       =   975.000
0potential scatter sigma  =    10.694              lumped nuclear density    = 1.2795216E-06
0spin factor (g)          =  6606.710              lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995                  sigma(per absorber atom)= 1.3345588E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051                  sigma(per absorber atom)= 1.4314892E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  11      -3.405954E-03     .000000E+00    -9.325526E-03
  12      -7.254744E-02     .000000E+00    -1.407043E-01
  13      -1.297766E-04     .000000E+00     2.430201E-06
  14       8.128826E-02     .000000E+00     1.520301E-02
  15      -2.541045E+01     .000000E+00    -2.064759E+00
  16       4.029600E-02     .000000E+00    -3.450822E-03
  17       1.550384E-02     .000000E+00    -1.848195E-03
  18       1.112555E-02     .000000E+00    -1.430695E-03
0excess resonance integrals
0                 resolved
0absorption       1.09547E+03
 fission           .00000E+00
- elapsed time     .32 min.
0am-241 1056 sigp=5+4 new+klacs 218rgp p-3 293k                                 9524l     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   238.950              temperature(kelvin)       =   975.000
0potential scatter sigma  =     9.511              lumped nuclear density    = 3.4056694E-07
0spin factor (g)          = 82058.203              lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
```

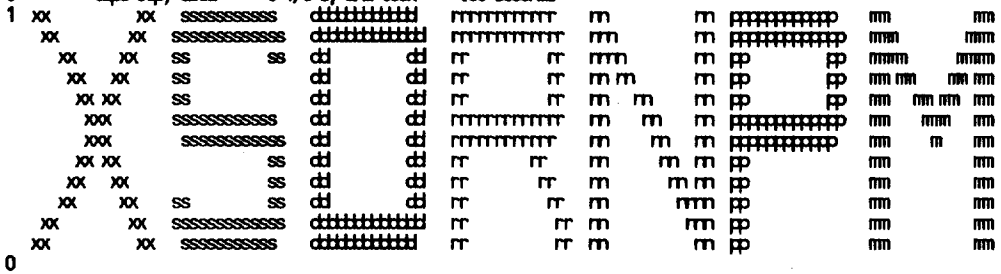
```
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 5.0139828E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 5.3781538E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  13      4.867330E-01    1.209541E-02    4.627123E-03
  14     -4.587215E-01   -1.130258E-02   -5.073899E-03
0excess resonance integrals
0                resolved
0absorption     1.93433E+02
 fission        1.07581E+00
-  elapsed time    .32 min.
0am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                                95243     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   240.940          temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.511          lumped nuclear density   = 1.1812765E-07
0spin factor (g)          = 82052.602          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.4455521E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 1.5505443E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  13     -7.920427E-03    .000000E+00    4.008657E-04
  14      1.597974E-02    .000000E+00    1.415215E-04
0excess resonance integrals
0                resolved
0absorption     1.60142E+02
 fission         .00000E+00
-  elapsed time    .32 min.
0 curium-244     endf/b-iv mat 1162          updated 10/13/89             96244     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   242.133          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.320          lumped nuclear density   = 1.1299980E-08
0spin factor (g)          =  5251.150          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 1.5111569E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 1.6209140E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11      2.241775E-04    6.144474E-06    2.592307E-04
  12      5.799049E-04    2.804284E-05    9.876156E-05
  13      2.536457E-03    1.259993E-04    7.055791E-04
  14      2.975255E-02    1.780067E-03    5.875189E-04
0excess resonance integrals
0                resolved
0absorption     6.13885E+02
 fission        3.54181E+01
-  elapsed time    .33 min.
-  elapsed time    .33 min.
1     this xsdrn working tape was created 02/16/96 at 10:02:17
```

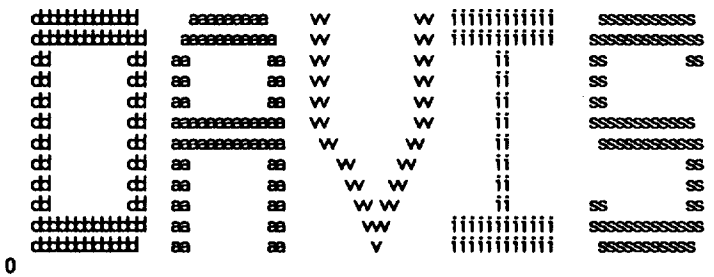
the title of the parent case is as follows
scale 4.2 - 27 group neutron burnup library
based on endf-b version 4 data with endf-b version 5 fission products
compiled for nrc 1/27/89

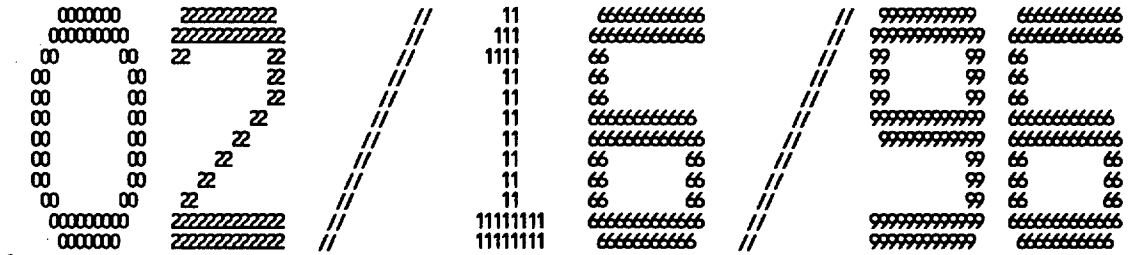
tape id	4321	number of nuclides	65
number of neutron groups	27	number of gamma groups	0
first thermal group	15	logical unit	4

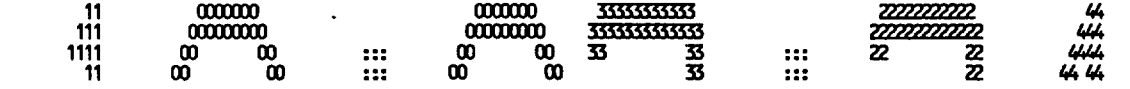
table of contents

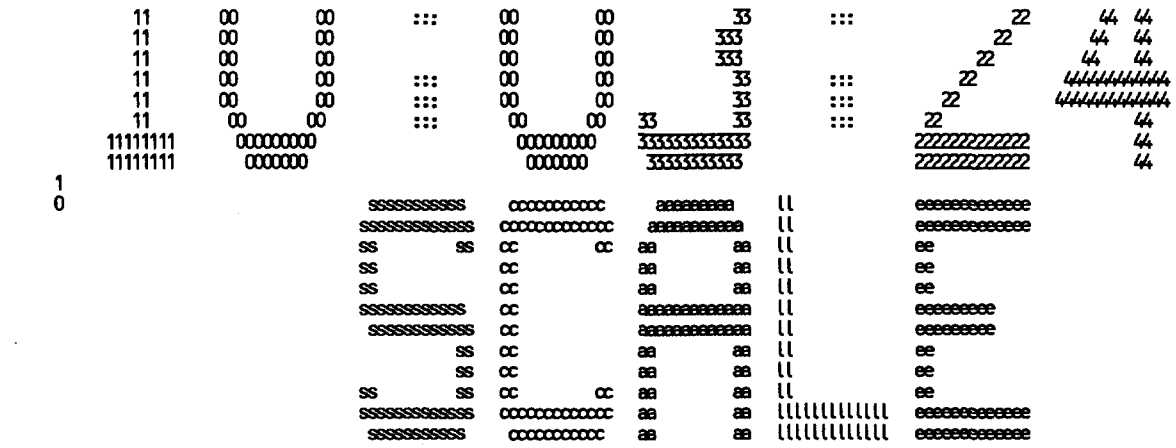
```
       u-234 1043 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                    id    92234
        uranium-235   endf/b-iv mat 1261          updated 10/13/89            id    92235
       u-236 1163 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                    id    92236
        uranium-238   endf/b-iv mat 1262          updated 10/13/89            id    92238
        neptunium-237 endf/b-iv mat 1263          updated 10/13/89            id    93237
       pu-238 1050 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                   id    94238
        plutonium-239 endf/b-iv mat 1264          updated 10/13/89            id    94239
        plutonium-240 endf/b-iv mat 1265          updated 10/13/89            id    94240
        plutonium-241 endf/b-iv mat 1266          updated 10/13/89            id    94241
        plutonium-242 endf/b-iv mat 1161          updated 10/13/89            id    94242
       am-241 1056 sigo=5+4 newxlacs 218ngp p-3 293k                          id    95241
       am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                           id    95243
        curium-244    endf/b-iv mat 1162          updated 10/13/89            id    96244
0       tape copy used     0 i/o's, and took     .00 seconds
```

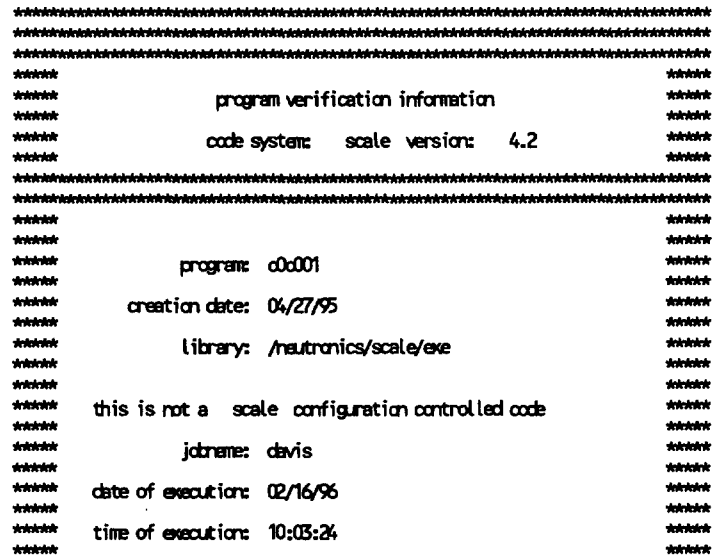












1

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

0 -1q array has 1 entries.

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

 ige  1/2/3 = plane/cylinder/sphere      2        isn  quadrature order                  8
 iam  number of zones                    4        isct order of scattering               3
 im   number of special intervals       24        ievt 0/1/2/3/4/5/6=q/k/alpha/c/z/r/h   1
 ibl  0/1/2/3 = vacuum/refl/per/white    1        iim  inner iteration maximum        20
 ibr  right boundary condition           3        iam  outer iteration maximum        25
 mx   number of mixtures                 3        iclc -1/0/n--flat res/sn/qpt           0
 ms   mixing table length               65        ith  0/1 = forward/adjoint          0
 igm  number of energy groups           27        iflu not used(always wgtd)            0
 nrg  number of neutron groups          27        iprt -2/-1/0/n=mixture xsec print     -2
 ngg  number of gamma groups             0        idl  0/1/2/3=no/prt nd/pch n/both    53
 iftg number of first thermal group     15        ipbt -1/0/1=none/fine/all bal. prt     0
0                              special options

 ifg  0/1 = none/weighting calculation   1        ipn  0/1/2 diff. coef. param       0
 iqm  volumetric sources (0/n=no/yes)    0        idfm 0/1 = none/density factors 38*    1
 ipm  boundary sources (0/n=no/yes)      0        iaz  0/n = none/n activities by zone    0
 ifn  0/1/2 = input 35*/34*/use last    53        iai  0/1=none/activities by interval   0
 itmx maximum time (minutes)            10        ifct 0/1=no/yes upscatter scaling      0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0        ipvt 0/1/2=no/k/alpha parametric srch  0
 isx  broad group fluxes                 0        isen outer iteration acceleration      0
 ibln activity data unit                 0        rbnd band rebaln parameter             0
 jbkl 0/1/2 buckling geometry            0
0                            weighting data (ifg=1)

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

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

5	8016	1	8016	4.55359E-02
6	6	3	6	2.09710E-02
7	36083	1	36083	1.42718E-06
8	36085	1	36085	6.86405E-07
9	38090	1	38090	1.56265E-05
10	39089	1	39089	1.23885E-05
11	40093	1	42095	1.65579E-05
12	40094	1	40093	1.24626E-05
13	40095	1	40094	1.95879E-05
14	40802	1	40095	1.99661E-06
15	41094	1	41094	9.70965E-12
16	42095	1	43099	1.91603E-05
17	43099	1	45103	1.05084E-05
18	44101	1	45105	2.23564E-08
19	44106	1	44101	1.73887E-05
20	45103	1	44106	2.62773E-06
21	45105	1	46105	6.86049E-06
22	46105	1	46108	1.92546E-06
23	46108	1	47109	1.34572E-06
24	47109	1	51124	3.04849E-10
25	51124	1	54131	8.77608E-06
26	54131	1	54132	1.64947E-05
27	54132	1	54135	6.67715E-09
28	54135	1	54136	3.30816E-05
29	54136	1	55134	9.57401E-07
30	55133	1	55135	1.05022E-05
31	55134	1	55137	2.05235E-05
32	55135	1	56136	1.93125E-07
33	55137	1	57139	2.03240E-05
34	56136	1	59141	1.75987E-05
35	57139	1	59143	3.71186E-07
36	58144	1	58144	6.70562E-06
37	59141	1	60143	1.59150E-05
38	59143	1	60145	1.17342E-05
39	60143	1	61147	4.02235E-06
40	60145	1	61148	1.17777E-08
41	60147	1	60147	1.29916E-07
42	61147	1	62147	1.40155E-06
43	61148	1	62149	8.69582E-08
44	62147	1	62150	4.18068E-06
45	62149	1	62151	4.01901E-07
46	62150	1	62152	2.00466E-06
47	62151	1	64155	2.18270E-09
48	62152	1	63153	1.20542E-06
49	63153	1	63154	2.52168E-07
50	63154	1	63155	1.30440E-07
51	63155	2	40802	4.25156E-02
52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	2.10206E-05
56	92238	1	95257	3.73057E-06
57	95257	1	94238	5.34530E-07
58	94238	1	94239	1.07741E-04
59	94239	1	94240	2.09730E-05
60	94240	1	94241	1.13808E-05
61	94241	1	94242	1.27952E-06
62	94242	1	95241	3.40567E-07
63	95241	1	95243	1.18128E-07
64	95243	1	96244	1.12999E-08

65 96244 1 999 1.00000E-20
- elapsed time .00 min.
0 21649 locations will be used
0 35q array has 25 entries.
0 36q array has 24 entries.
0 38q array has 24 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 880 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
neutron group parameters

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	2	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	3	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	4	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	5	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	6	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	7	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72415E+08	8	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	9	0	9	1.00000E+00	
10	3.00000E+03	8.11173E+00	4.82126E+07	10	0	10	1.00000E+00	
11	5.50000E+02	9.80818E+00	2.05946E+07	11	0	11	1.00000E+00	
12	1.00000E+02	1.15129E+01	1.01036E+07	12	0	12	1.00000E+00	
13	3.00000E+01	1.27169E+01	5.69595E+06	13	0	13	1.00000E+00	
14	1.00000E+01	1.38155E+01	3.20957E+06	14	0	14	1.00000E+00	
15	3.04999E+00	1.50030E+01	2.10601E+06	15	0	15	1.00000E+00	
16	1.77000E+00	1.55471E+01	1.70522E+06	16	0	16	1.00000E+00	
17	1.29999E+00	1.58557E+01	1.52545E+06	17	0	17	1.00000E+00	
18	1.12999E+00	1.59959E+01	1.42867E+06	18	0	18	1.00000E+00	
19	1.00000E+00	1.61181E+01	1.31002E+06	19	0	19	1.00000E+00	
20	8.00000E-01	1.63412E+01	9.05898E+05	20	0	20	1.00000E+00	
21	4.00000E-01	1.70344E+01	8.17974E+05	21	0	21	1.00000E+00	
22	3.25000E-01	1.72420E+01	6.90070E+05	22	0	22	1.00000E+00	
23	2.25000E-01	1.76098E+01	4.86953E+05	23	0	23	1.00000E+00	
24	9.99999E-02	1.84207E+01	3.57766E+05	24	0	24	1.00000E+00	
25	5.00000E-02	1.91138E+01	2.71895E+05	25	0	25	1.00000E+00	
26	3.00000E-02	1.96247E+01	1.87283E+05	26	0	26	1.00000E+00	
27	1.00000E-02	2.07233E+01	8.88201E+04	27	0	27	1.00000E+00	
28	1.00000E-05	2.76310E+01						

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0	mixture by zone	order p(l) by zone	activity table matl no.	activity table reaction	quadrature constants weights	quadrature constants directions	quadrature constants refl direc	quadrature constants wt x cos
1	1	3			0	-2.79004E-01	3	0
2	1	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	2	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	3	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28593E-02
7					5.55953E-02	2.31301E-01	6	1.28593E-02
8					5.55953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	15	0
10					5.22844E-02	-8.21784E-01	15	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-02
14					5.22844E-02	6.01588E-01	11	3.14537E-02
15					5.22844E-02	8.21784E-01	10	4.29665E-02

16					0	-9.83032E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17361E-01	23	-3.70655E-02
19					4.53355E-02	-5.46143E-01	22	-2.47597E-02
20					4.53355E-02	-1.91780E-01	21	-8.69444E-03
21					4.53355E-02	1.91780E-01	20	8.69444E-03
22					4.53355E-02	5.46143E-01	19	2.47597E-02
23					4.53355E-02	8.17361E-01	18	3.70655E-02
24					4.53355E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.85235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.85235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.85235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.25714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.25713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.25713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.25713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40330E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40330E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83082E-01	-4.49528E-01	8.36886E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59102E-02	4.33406E-02	1	1.62798E-01	9.49318E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81835E-01	2.94045E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.93967E-01	1	1.47065E+00	2.21259E-01	1.00000E+00		
6	3.53873E-01	3.80612E-01	1	2.22345E+00	1.27890E-01	1.00000E+00		
7	4.07351E-01	4.24781E-01	1	2.55946E+00	9.30429E-02	1.00000E+00		
8	4.42212E-01	4.55167E-01	1	2.77850E+00	7.41004E-02	1.00000E+00		
9	4.68122E-01	4.68814E-01	2	2.94130E+00	4.07946E-03	0		
10	4.69507E-01	4.71481E-01	2	2.95000E+00	1.16988E-02	0		
11	4.73456E-01	4.75431E-01	2	2.97481E+00	1.17968E-02	0		
12	4.77405E-01	4.78098E-01	2	2.99962E+00	4.16023E-03	0		
13	4.78790E-01	4.83159E-01	3	3.00833E+00	2.65268E-02	1.00000E+00		
14	4.87528E-01	4.99987E-01	3	3.06323E+00	7.82768E-02	1.00000E+00		
15	5.12445E-01	5.24903E-01	3	3.21979E+00	8.21777E-02	1.00000E+00		
16	5.37362E-01	5.41731E-01	3	3.37634E+00	2.97427E-02	1.00000E+00		
17	5.46100E-01	5.53513E-01	4	3.43125E+00	5.15631E-02	1.00000E+00		
18	5.60926E-01	5.70900E-01	4	3.52440E+00	7.15548E-02	1.00000E+00		
19	5.80874E-01	5.96175E-01	4	3.64974E+00	1.14628E-01	1.00000E+00		
20	6.11475E-01	6.45755E-01	4	3.84201E+00	2.78169E-01	1.00000E+00		
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07702E-01	1.00000E+00		
22	7.48592E-01	7.63893E-01	4	4.70354E+00	1.46875E-01	1.00000E+00		
23	7.79193E-01	7.89167E-01	4	4.89582E+00	9.89116E-02	1.00000E+00		
24	7.99141E-01	8.06554E-01	4	5.02115E+00	7.51357E-02	1.00000E+00		

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

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	124	-4.56957E-06	1.03027E+00	-3.30817E-02	1.00000E+00	-1.13682E-02	.00000E+00	.0000
2	190	1.53565E-05	1.03327E+00	-8.04118E-04	-3.40285E-03	-1.82550E-03	.00000E+00	.0000
3	243	-1.66574E-05	1.03412E+00	-1.36843E-04	-5.07636E-04	-4.35670E-04	.00000E+00	.0000
4	282	1.94148E-05	1.03386E+00	-3.16278E-05	-1.22508E-04	-1.00950E-04	.00000E+00	.0000

grp to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	7.38235E-08	24	1.00000E+00	1
2	1	1	8.32965E-08	24	1.00000E+00	1
3	1	1	7.61077E-08	24	1.00000E+00	1
4	1	1	7.19577E-08	24	1.00000E+00	1
5	1	1	6.73921E-08	24	1.00000E+00	1
6	1	1	4.05286E-08	24	1.00000E+00	1
7	1	1	2.43421E-08	24	1.00000E+00	1
8	1	1	5.59101E-09	24	1.00000E+00	1
9	1	2	5.01341E-09	24	1.00000E+00	1
10	1	2	4.61203E-09	24	1.00000E+00	1
11	1	24	5.02188E-09	24	1.00000E+00	1
12	1	24	1.19703E-08	24	1.00000E+00	1
13	1	24	1.49805E-08	24	1.00000E+00	1
14	1	24	1.43680E-08	24	1.00000E+00	1
15	1	19	2.97082E-05	24	9.99879E-01	1
16	1	19	3.59892E-05	24	9.99880E-01	1
17	1	20	5.24040E-05	24	9.99896E-01	1
18	1	20	7.00924E-05	24	9.99904E-01	1
19	1	20	5.16881E-05	24	9.99885E-01	1
20	1	19	3.66304E-05	24	9.99851E-01	1
21	1	19	7.03320E-05	24	9.99868E-01	1
22	1	19	3.63593E-05	24	9.99913E-01	1
23	1	24	7.99269E-06	24	1.00000E+00	1
24	1	24	3.68039E-05	24	1.00002E+00	1
25	1	24	3.99912E-05	24	1.00002E+00	1
26	1	21	4.11299E-05	24	9.99979E-01	2
27	1	24	2.27592E-05	19	1.00001E+00	2

5	309	-1.45963E-05	1.03425E+00	-7.58119E-06	-2.82615E-05	-2.13481E-05	.00000E+00	.0167

final monitor
lambda 1.03409E+00 production/absorption 1.03409E+00 angular flux on 16
- elapsed time .02 min.

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0 int.	zone	number	radius	int. midpoint	area	volume	prod density
1	1		.00000E+00	1.29551E-02	.00000E+00	2.10906E-03	3.02061E-05
2	1		2.59102E-02	4.33406E-02	1.62798E-01	9.49318E-03	1.35900E-02
3	1		6.07710E-02	8.75100E-02	3.81835E-01	2.94045E-02	4.21756E-02
4	1		1.14269E-01	1.74155E-01	7.17848E-01	1.31104E-01	1.89916E-01
5	1		2.34061E-01	2.93967E-01	1.47065E+00	2.21299E-01	3.28455E-01
6	1		3.53873E-01	3.80612E-01	2.22345E+00	1.27890E-01	1.94941E-01
7	1		4.07351E-01	4.24781E-01	2.55946E+00	9.30429E-02	1.44661E-01
8	1		4.42212E-01	4.55167E-01	2.77850E+00	7.41004E-02	1.17336E-01
9	2		4.68122E-01	4.68814E-01	2.94130E+00	4.07946E-03	.00000E+00
10	2		4.69507E-01	4.71481E-01	2.95000E+00	1.16988E-02	.00000E+00
11	2		4.73456E-01	4.75431E-01	2.97481E+00	1.17968E-02	.00000E+00
12	2		4.77405E-01	4.78098E-01	2.99962E+00	4.16023E-03	.00000E+00
13	3		4.78790E-01	4.83159E-01	3.00833E+00	2.65268E-02	.00000E+00
14	3		4.87528E-01	4.99987E-01	3.06323E+00	7.82768E-02	.00000E+00
15	3		5.12445E-01	5.24903E-01	3.21979E+00	8.21777E-02	.00000E+00
16	3		5.37362E-01	5.41731E-01	3.37634E+00	2.97427E-02	.00000E+00
17	4		5.46100E-01	5.53513E-01	3.43125E+00	5.15631E-02	.00000E+00

18	4	5.60926E-01	5.70900E-01	3.52440E+00	7.15548E-02	.00000E+00
19	4	5.80874E-01	5.96175E-01	3.64974E+00	1.14628E-01	.00000E+00
20	4	6.11475E-01	6.45755E-01	3.84201E+00	2.78169E-01	.00000E+00
21	4	6.80034E-01	7.14313E-01	4.27278E+00	3.07702E-01	.00000E+00
22	4	7.48592E-01	7.63893E-01	4.70354E+00	1.46875E-01	.00000E+00
23	4	7.79193E-01	7.89167E-01	4.89582E+00	9.89116E-02	.00000E+00
24	4	7.99141E-01	8.06554E-01	5.02115E+00	7.51357E-02	.00000E+00
25		8.13968E-01		5.11431E+00		

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0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.80843E-01	1.33844E+00	1.68610E+00	1.04357E+00	1.57719E+00	3.03165E+00	2.90595E+00	2.08175E+00
2	1.80908E-01	1.33908E+00	1.68694E+00	1.04407E+00	1.57789E+00	3.03296E+00	2.90660E+00	2.08182E+00
3	1.80851E-01	1.33846E+00	1.68617E+00	1.04360E+00	1.57711E+00	3.03135E+00	2.90558E+00	2.08162E+00
4	1.80448E-01	1.33419E+00	1.68073E+00	1.04029E+00	1.57185E+00	3.02090E+00	2.89928E+00	2.08057E+00
5	1.79401E-01	1.32321E+00	1.66691E+00	1.03194E+00	1.55864E+00	2.99499E+00	2.88378E+00	2.07795E+00
6	1.78192E-01	1.31068E+00	1.65133E+00	1.02258E+00	1.54395E+00	2.96660E+00	2.86688E+00	2.07506E+00
7	1.77226E-01	1.30084E+00	1.63930E+00	1.01544E+00	1.53288E+00	2.94563E+00	2.85450E+00	2.07288E+00
8	1.76266E-01	1.29124E+00	1.62774E+00	1.00869E+00	1.52256E+00	2.92648E+00	2.84330E+00	2.07083E+00
9	1.75740E-01	1.28604E+00	1.62153E+00	1.00510E+00	1.51713E+00	2.91650E+00	2.83751E+00	2.06974E+00
10	1.75630E-01	1.28499E+00	1.62029E+00	1.00441E+00	1.51613E+00	2.91471E+00	2.83652E+00	2.06955E+00
11	1.75470E-01	1.28347E+00	1.61850E+00	1.00342E+00	1.51472E+00	2.91218E+00	2.83513E+00	2.06926E+00
12	1.75364E-01	1.28247E+00	1.61732E+00	1.00278E+00	1.51380E+00	2.91055E+00	2.83424E+00	2.06907E+00
13	1.75167E-01	1.28060E+00	1.61510E+00	1.00154E+00	1.51199E+00	2.90712E+00	2.83231E+00	2.06869E+00
14	1.74631E-01	1.27532E+00	1.60857E+00	9.97701E-01	1.50619E+00	2.89586E+00	2.82590E+00	2.06764E+00
15	1.74031E-01	1.26890E+00	1.60016E+00	9.92381E-01	1.49780E+00	2.87924E+00	2.81632E+00	2.06650E+00
16	1.73737E-01	1.26536E+00	1.59513E+00	9.88909E-01	1.49208E+00	2.86770E+00	2.80961E+00	2.06598E+00
17	1.73596E-01	1.26333E+00	1.59201E+00	9.86678E-01	1.48810E+00	2.85975E+00	2.80495E+00	2.06584E+00
18	1.73411E-01	1.26069E+00	1.58801E+00	9.83604E-01	1.48304E+00	2.84978E+00	2.79909E+00	2.06570E+00
19	1.73179E-01	1.25757E+00	1.58339E+00	9.80238E-01	1.47736E+00	2.83864E+00	2.79253E+00	2.06546E+00
20	1.72869E-01	1.25352E+00	1.57750E+00	9.76020E-01	1.47029E+00	2.82480E+00	2.78439E+00	2.06512E+00
21	1.72657E-01	1.25070E+00	1.57335E+00	9.73034E-01	1.46526E+00	2.81499E+00	2.77871E+00	2.06502E+00
22	1.72658E-01	1.25057E+00	1.57305E+00	9.72751E-01	1.46474E+00	2.81398E+00	2.77826E+00	2.06524E+00
23	1.72736E-01	1.25143E+00	1.57418E+00	9.73480E-01	1.46591E+00	2.81627E+00	2.77974E+00	2.06553E+00
24	1.72826E-01	1.25245E+00	1.57554E+00	9.74378E-01	1.46737E+00	2.81912E+00	2.78154E+00	2.06580E+00

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.58851E+00	1.44832E+00	1.30795E+00	7.96783E-01	6.70388E-01	5.81640E-01	3.67597E-01	2.01547E-01
2	1.58864E+00	1.44822E+00	1.30775E+00	7.96652E-01	6.70177E-01	5.81351E-01	3.67564E-01	2.01521E-01
3	1.58862E+00	1.44843E+00	1.30821E+00	7.97102E-01	6.70644E-01	5.82072E-01	3.67645E-01	2.01572E-01
4	1.58965E+00	1.44964E+00	1.31083E+00	8.00192E-01	6.73299E-01	5.86083E-01	3.68092E-01	2.01869E-01
5	1.59221E+00	1.45259E+00	1.31729E+00	8.07825E-01	6.79853E-01	5.96038E-01	3.69171E-01	2.02596E-01
6	1.59507E+00	1.45582E+00	1.32436E+00	8.16225E-01	6.87061E-01	6.07065E-01	3.70333E-01	2.03389E-01
7	1.59723E+00	1.45818E+00	1.32956E+00	8.22454E-01	6.92398E-01	6.15301E-01	3.71170E-01	2.03970E-01
8	1.59929E+00	1.46033E+00	1.33430E+00	8.28173E-01	6.97295E-01	6.22900E-01	3.71917E-01	2.04499E-01
9	1.60088E+00	1.46144E+00	1.33675E+00	8.31145E-01	6.99836E-01	6.26852E-01	3.72300E-01	2.04774E-01
10	1.60057E+00	1.46162E+00	1.33714E+00	8.31622E-01	7.00251E-01	6.27480E-01	3.72365E-01	2.04821E-01
11	1.60085E+00	1.46187E+00	1.33771E+00	8.32304E-01	7.00843E-01	6.28377E-01	3.72457E-01	2.04888E-01
12	1.60104E+00	1.46204E+00	1.33807E+00	8.32745E-01	7.01227E-01	6.28959E-01	3.72517E-01	2.04931E-01
13	1.60141E+00	1.46238E+00	1.33882E+00	8.33645E-01	7.02010E-01	6.30146E-01	3.72640E-01	2.05020E-01
14	1.60242E+00	1.46347E+00	1.34119E+00	8.36462E-01	7.04461E-01	6.33860E-01	3.73034E-01	2.05298E-01
15	1.60365E+00	1.46508E+00	1.34453E+00	8.40847E-01	7.07842E-01	6.38978E-01	3.73591E-01	2.05683E-01
16	1.60408E+00	1.46606E+00	1.34674E+00	8.42853E-01	7.10022E-01	6.42269E-01	3.73961E-01	2.05931E-01
17	1.60436E+00	1.46684E+00	1.34839E+00	8.44696E-01	7.11592E-01	6.44669E-01	3.74162E-01	2.06095E-01
18	1.60479E+00	1.46789E+00	1.35064E+00	8.47215E-01	7.13719E-01	6.47940E-01	3.74387E-01	2.06303E-01
19	1.60533E+00	1.46909E+00	1.35320E+00	8.50114E-01	7.16173E-01	6.51711E-01	3.74651E-01	2.06548E-01
20	1.60607E+00	1.47060E+00	1.35646E+00	8.53808E-01	7.19299E-01	6.56514E-01	3.74974E-01	2.06856E-01
21	1.60664E+00	1.47169E+00	1.35879E+00	8.56441E-01	7.21500E-01	6.59916E-01	3.75137E-01	2.07052E-01
22	1.60669E+00	1.47179E+00	1.35901E+00	8.56675E-01	7.21647E-01	6.60181E-01	3.75047E-01	2.07034E-01
23	1.60654E+00	1.47152E+00	1.35842E+00	8.55989E-01	7.21026E-01	6.59263E-01	3.74894E-01	2.06946E-01
24	1.60635E+00	1.47118E+00	1.35770E+00	8.55145E-01	7.20276E-01	6.58142E-01	3.74740E-01	2.06850E-01

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.02422E-02	3.13534E-02	1.17498E-01	4.16060E-01	1.02445E-01	1.65894E-01	6.47045E-01	4.81091E-01
2	8.02111E-02	3.13567E-02	1.17447E-01	4.15954E-01	1.02378E-01	1.65780E-01	6.46640E-01	4.80762E-01
3	8.02754E-02	3.16152E-02	1.17563E-01	4.16166E-01	1.02584E-01	1.66430E-01	6.47674E-01	4.81681E-01
4	8.05466E-02	3.27844E-02	1.18221E-01	4.17393E-01	1.03694E-01	1.69681E-01	6.53408E-01	4.86708E-01
5	8.15678E-02	3.58212E-02	1.19831E-01	4.20408E-01	1.06476E-01	1.77883E-01	6.67628E-01	4.99208E-01
6	8.25864E-02	3.94368E-02	1.21587E-01	4.23699E-01	1.09991E-01	1.87224E-01	6.83373E-01	5.13091E-01
7	8.33457E-02	4.24003E-02	1.22869E-01	4.26114E-01	1.11949E-01	1.94434E-01	6.95126E-01	5.23508E-01
8	8.40464E-02	4.53694E-02	1.24028E-01	4.28513E-01	1.14149E-01	2.01280E-01	7.05968E-01	5.33172E-01
9	8.44114E-02	4.69621E-02	1.24625E-01	4.29452E-01	1.15298E-01	2.04878E-01	7.11600E-01	5.38204E-01
10	8.44710E-02	4.71529E-02	1.24721E-01	4.29641E-01	1.15472E-01	2.05381E-01	7.12466E-01	5.38959E-01
11	8.45562E-02	4.74265E-02	1.24858E-01	4.29911E-01	1.15720E-01	2.06101E-01	7.13700E-01	5.40034E-01
12	8.46113E-02	4.76041E-02	1.24946E-01	4.30085E-01	1.15881E-01	2.06566E-01	7.14498E-01	5.40726E-01
13	8.47239E-02	4.79645E-02	1.25129E-01	4.30442E-01	1.16209E-01	2.07514E-01	7.16124E-01	5.42140E-01
14	8.50759E-02	4.90748E-02	1.25706E-01	4.31559E-01	1.17253E-01	2.10455E-01	7.21188E-01	5.46502E-01
15	8.55597E-02	5.05683E-02	1.26515E-01	4.33093E-01	1.18636E-01	2.14442E-01	7.28061E-01	5.52333E-01
16	8.58700E-02	5.15061E-02	1.27045E-01	4.34075E-01	1.19533E-01	2.16961E-01	7.32395E-01	5.55942E-01
17	8.60982E-02	5.22101E-02	1.27426E-01	4.34760E-01	1.20222E-01	2.18922E-01	7.35961E-01	5.59044E-01
18	8.64112E-02	5.31899E-02	1.27940E-01	4.35682E-01	1.21194E-01	2.21720E-01	7.41271E-01	5.64449E-01
19	8.67721E-02	5.43152E-02	1.28533E-01	4.36760E-01	1.22320E-01	2.24974E-01	7.47610E-01	5.70736E-01
20	8.72520E-02	5.57433E-02	1.29289E-01	4.38141E-01	1.23763E-01	2.29163E-01	7.56034E-01	5.79223E-01
21	8.75593E-02	5.67633E-02	1.29821E-01	4.39089E-01	1.24804E-01	2.32197E-01	7.62391E-01	5.85846E-01
22	8.75877E-02	5.68644E-02	1.29865E-01	4.39110E-01	1.24914E-01	2.32526E-01	7.63527E-01	5.87108E-01
23	8.75029E-02	5.66151E-02	1.29705E-01	4.38797E-01	1.24662E-01	2.31802E-01	7.62041E-01	5.86052E-01
24	8.73986E-02	5.63034E-02	1.29523E-01	4.38431E-01	1.24347E-01	2.30889E-01	7.60348E-01	5.84555E-01

0 int.	grp. 25	grp. 26	grp. 27
1	2.00600E-01	1.22198E-01	1.61350E-02
2	2.00362E-01	1.22111E-01	1.61347E-02
3	2.00842E-01	1.22573E-01	1.62776E-02
4	2.03385E-01	1.24901E-01	1.69274E-02
5	2.09712E-01	1.30717E-01	1.85768E-02
6	2.16775E-01	1.37280E-01	2.05000E-02
7	2.22104E-01	1.42301E-01	2.20433E-02
8	2.27082E-01	1.47052E-01	2.35720E-02
9	2.29682E-01	1.49547E-01	2.43389E-02
10	2.30060E-01	1.49886E-01	2.44838E-02
11	2.30698E-01	1.50367E-01	2.46187E-02
12	2.30945E-01	1.50677E-01	2.47056E-02
13	2.31651E-01	1.51307E-01	2.48821E-02
14	2.33793E-01	1.53205E-01	2.54057E-02
15	2.36882E-01	1.55634E-01	2.60489E-02
16	2.38250E-01	1.57060E-01	2.64089E-02
17	2.39925E-01	1.58762E-01	2.69684E-02
18	2.42659E-01	1.61735E-01	2.79907E-02
19	2.46086E-01	1.65350E-01	2.91890E-02
20	2.50714E-01	1.70280E-01	3.07663E-02
21	2.54409E-01	1.74307E-01	3.20635E-02
22	2.55216E-01	1.75337E-01	3.24492E-02
23	2.54735E-01	1.74984E-01	3.24045E-02
24	2.53998E-01	1.74334E-01	3.22602E-02

- elapsed time .02 min.

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.29947E-02	.00000E+00	1.28935E-02	1.07384E-02	3.26098E-03	1.13208E-02	9.98838E-01
2	.00000E+00	1.93992E-01	2.37599E-03	1.67861E-01	6.68848E-02	1.36623E-02	1.15830E-01	1.00004E+00
3	.00000E+00	2.15874E-01	2.64680E-02	1.61415E-01	8.14233E-02	1.55286E-02	1.45389E-01	1.00000E+00
4	.00000E+00	1.23819E-01	3.91315E-02	1.05553E-01	6.79140E-02	7.39240E-03	8.76414E-02	1.00001E+00
5	.00000E+00	1.64144E-01	6.81671E-02	2.59856E-01	9.47590E-02	4.39442E-03	1.33160E-01	9.99992E-01
6	.00000E+00	1.77110E-01	1.34943E-01	6.53834E-01	5.43736E-02	6.89551E-03	2.50774E-01	1.00008E+00
7	.00000E+00	8.75260E-02	9.85133E-02	7.44613E-01	3.63352E-02	7.40472E-03	1.42298E-01	1.00001E+00

8	.00000E+00	1.34833E-02	4.25831E-02	6.30633E-01	2.15126E-02	1.37327E-02	2.08185E-02	1.00005E+00
9	.00000E+00	9.78514E-04	2.17359E-02	5.35740E-01	2.07052E-02	2.28072E-02	-2.07976E-02	9.99989E-01
10	.00000E+00	7.26783E-05	2.07272E-02	4.62262E-01	1.07205E-02	3.53954E-02	-2.53167E-02	1.00001E+00
11	.00000E+00	5.71782E-06	1.07219E-02	4.24562E-01	8.16514E-03	5.78533E-02	-5.52919E-02	1.00001E+00
12	.00000E+00	4.01667E-07	8.16519E-03	2.40330E-01	9.38591E-03	6.41184E-02	-6.53356E-02	9.99958E-01
13	.00000E+00	6.37810E-08	9.38592E-03	1.79474E-01	6.15266E-03	5.98476E-02	-5.66145E-02	1.00000E+00
14	.00000E+00	1.26397E-08	6.15266E-03	1.52049E-01	7.35414E-03	8.47368E-02	-8.59385E-02	1.00000E+00
15	.00000E+00	1.42843E-09	7.44018E-03	8.41441E-02	8.83603E-03	7.22145E-03	-8.69178E-03	1.00464E+00
16	.00000E+00	4.19435E-10	8.99353E-03	4.22499E-02	9.48904E-03	5.84705E-03	-6.39505E-03	1.00342E+00
17	.00000E+00	1.35078E-10	7.57841E-03	1.41545E-02	7.21129E-03	8.52735E-03	-8.18167E-03	1.00136E+00
18	.00000E+00	9.67122E-11	6.94410E-03	8.02218E-03	3.77596E-03	2.82589E-02	-2.50985E-02	1.00026E+00
19	.00000E+00	1.36730E-10	6.05006E-03	2.29525E-02	8.40648E-03	1.11651E-02	-1.35437E-02	1.00113E+00
20	.00000E+00	2.22338E-10	9.52379E-03	9.99966E-02	9.40806E-03	2.61904E-02	-2.61542E-02	1.00223E+00
21	.00000E+00	3.25431E-11	8.78140E-03	2.01075E-02	7.82429E-03	2.51524E-02	-2.42179E-02	1.00069E+00
22	.00000E+00	3.77574E-11	1.13989E-02	3.84634E-02	8.67412E-03	7.21888E-02	-6.95075E-02	1.00048E+00
23	.00000E+00	3.61002E-11	1.36216E-02	1.57540E-01	1.73339E-02	1.21121E-01	-1.24658E-01	1.00090E+00
24	.00000E+00	9.82602E-12	2.12274E-02	1.10800E-01	2.13618E-02	1.10601E-01	-1.10839E-01	1.00071E+00
25	.00000E+00	2.87641E-12	1.82965E-02	4.18787E-02	1.38470E-02	5.99759E-02	-5.56659E-02	1.00053E+00
26	.00000E+00	2.01696E-12	9.02276E-03	2.92122E-02	6.23720E-03	5.38595E-02	-5.10991E-02	1.00042E+00
27	.00000E+00	4.80652E-13	1.95433E-03	4.38097E-03	1.06862E-03	1.50777E-02	-1.41956E-02	1.00022E+00
28	.00000E+00	1.00000E+00	6.19898E-01	5.40388E+00	6.19898E-01	9.42216E-01	5.94982E-02	1.00057E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.75768E-01	1.13208E-02	1.80781E-01	.00000E+00	2.29600E-03	2.66921E-03	.00000E+00	1.23115E-01
2	1.28652E+00	1.15830E-01	1.33782E+00	.00000E+00	1.69692E-05	1.18841E-02	.00000E+00	9.06972E-01
3	1.62186E+00	1.45389E-01	1.68529E+00	.00000E+00	.00000E+00	1.45034E-02	.00000E+00	1.14272E+00
4	1.00529E+00	8.76414E-02	1.04308E+00	.00000E+00	.00000E+00	6.24659E-03	.00000E+00	7.07554E-01
5	1.51740E+00	1.33160E-01	1.57647E+00	.00000E+00	.00000E+00	1.79278E-03	.00000E+00	1.06858E+00
6	2.91698E+00	2.50774E-01	3.03080E+00	.00000E+00	.00000E+00	1.50139E-03	.00000E+00	2.05348E+00
7	2.85777E+00	1.42298E-01	2.90520E+00	.00000E+00	.00000E+00	1.42872E-03	.00000E+00	1.98057E+00
8	2.06979E+00	2.08185E-02	2.08166E+00	.00000E+00	.00000E+00	1.42930E-03	.00000E+00	1.42968E+00
9	1.60033E+00	-2.07976E-02	1.58861E+00	.00000E+00	.00000E+00	1.88846E-03	.00000E+00	1.09702E+00
10	1.46139E+00	-2.53167E-02	1.44844E+00	.00000E+00	.00000E+00	4.02264E-03	.00000E+00	1.00097E+00
11	1.33664E+00	-5.52919E-02	1.30820E+00	.00000E+00	.00000E+00	8.63481E-03	.00000E+00	9.08961E-01
12	8.31018E-01	-6.53356E-02	7.97077E-01	.00000E+00	.00000E+00	1.13917E-02	.00000E+00	5.58638E-01
13	6.99726E-01	-5.66145E-02	6.70649E-01	.00000E+00	.00000E+00	1.29779E-02	.00000E+00	4.70180E-01
14	6.26686E-01	-8.59385E-02	5.82013E-01	.00000E+00	.00000E+00	8.03307E-03	.00000E+00	4.13646E-01
15	3.72317E-01	-8.69178E-03	3.67673E-01	.00000E+00	.00000E+00	1.88096E-03	.00000E+00	2.54486E-01
16	2.04780E-01	-6.39505E-03	2.01597E-01	.00000E+00	.00000E+00	1.32236E-03	.00000E+00	1.39708E-01
17	8.44019E-02	-8.18167E-03	8.02866E-02	.00000E+00	.00000E+00	1.51080E-03	.00000E+00	5.64597E-02
18	4.69148E-02	-2.50985E-02	3.14037E-02	.00000E+00	.00000E+00	1.05237E-03	.00000E+00	2.58658E-02
19	1.24610E-01	-1.35437E-02	1.17572E-01	.00000E+00	.00000E+00	2.39214E-03	.00000E+00	8.30098E-02
20	4.29454E-01	-2.61542E-02	4.16236E-01	.00000E+00	.00000E+00	1.49907E-02	.00000E+00	2.90898E-01
21	1.15264E-01	-2.42179E-02	1.02549E-01	.00000E+00	.00000E+00	1.52027E-02	.00000E+00	7.42526E-02
22	2.04757E-01	-6.95075E-02	1.66122E-01	.00000E+00	.00000E+00	4.34837E-02	.00000E+00	1.25378E-01
23	7.11347E-01	-1.24958E-01	6.47548E-01	.00000E+00	.00000E+00	7.35685E-02	.00000E+00	4.64343E-01
24	5.37997E-01	-1.10830E-01	4.81509E-01	.00000E+00	.00000E+00	6.69890E-02	.00000E+00	3.47861E-01
25	2.29571E-01	-5.55659E-02	2.00695E-01	.00000E+00	.00000E+00	3.80996E-02	.00000E+00	1.46520E-01
26	1.49451E-01	-5.10991E-02	1.22354E-01	.00000E+00	.00000E+00	3.48944E-02	.00000E+00	9.20172E-02
27	2.43629E-02	-1.41956E-02	1.61634E-02	.00000E+00	.00000E+00	9.86634E-03	.00000E+00	1.34155E-02
28	2.32221E+01	5.94982E-02	2.31873E+01	.00000E+00	2.31297E-03	3.93568E-01	.00000E+00	1.59756E+01

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
2	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.45058E-09	1.00000E+00
3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
4	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
5	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
6	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.98023E-08	1.00000E+00
7	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.49012E-07	9.99999E-01
8	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.60770E-08	9.99999E-01

9	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.98023E-08	9.99999E-01
10	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.63685E-08	1.00000E+00
11	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
12	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
13	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.45058E-09	1.00000E+00
14	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
15	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.79397E-09	1.00000E+00
16	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
17	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	4.65661E-09	9.99999E-01
18	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.72529E-09	1.00000E+00
19	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-4.65661E-09	1.00000E+00
20	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.58794E-09	1.00000E+00
21	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.45058E-09	1.00000E+00
22	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
23	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
24	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-3.72529E-08	1.00000E+00
25	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
26	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
27	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-9.31323E-10	1.00000E+00
28	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	7.35745E-08	9.99998E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.75337E-01	1.13208E-02	1.75768E-01	1.13208E-02	.00000E+00	.00000E+00	.00000E+00	5.57112E-03
2	1.28222E+00	1.15830E-01	1.28632E+00	1.15830E-01	.00000E+00	.00000E+00	.00000E+00	4.07554E-02
3	1.61703E+00	1.45389E-01	1.62186E+00	1.45389E-01	.00000E+00	.00000E+00	.00000E+00	5.13918E-02
4	1.00262E+00	8.76414E-02	1.00529E+00	8.76414E-02	.00000E+00	.00000E+00	.00000E+00	3.18595E-02
5	1.51357E+00	1.33160E-01	1.51740E+00	1.33160E-01	.00000E+00	.00000E+00	.00000E+00	4.80925E-02
6	2.91015E+00	2.50774E-01	2.91698E+00	2.50774E-01	.00000E+00	.00000E+00	.00000E+00	9.24592E-02
7	2.83401E+00	1.42298E-01	2.83777E+00	1.42298E-01	.00000E+00	.00000E+00	.00000E+00	8.99958E-02
8	2.06903E+00	2.08186E-02	2.06979E+00	2.08186E-02	.00000E+00	.00000E+00	.00000E+00	6.56730E-02
9	1.60108E+00	-2.07975E-02	1.60053E+00	-2.07976E-02	.00000E+00	.00000E+00	.00000E+00	5.07989E-02
10	1.46208E+00	-2.53168E-02	1.46139E+00	-2.53167E-02	.00000E+00	.00000E+00	.00000E+00	4.63888E-02
11	1.33816E+00	-5.52919E-02	1.33664E+00	-5.52919E-02	.00000E+00	.00000E+00	.00000E+00	4.24435E-02
12	8.32656E-01	-6.53356E-02	8.31018E-01	-6.53356E-02	.00000E+00	.00000E+00	.00000E+00	2.64025E-02
13	7.01323E-01	-5.66145E-02	6.99726E-01	-5.66145E-02	.00000E+00	.00000E+00	.00000E+00	2.22520E-02
14	6.29104E-01	-8.59385E-02	6.26686E-01	-8.59385E-02	.00000E+00	.00000E+00	.00000E+00	1.99274E-02
15	3.72566E-01	-8.69178E-03	3.72317E-01	-8.69178E-03	.00000E+00	.00000E+00	.00000E+00	1.18185E-02
16	2.04960E-01	-6.39505E-03	2.04780E-01	-6.39505E-03	.00000E+00	.00000E+00	.00000E+00	6.50109E-03
17	8.46313E-02	-8.18167E-03	8.44019E-02	-8.18167E-03	.00000E+00	.00000E+00	.00000E+00	2.68205E-03
18	4.76518E-02	-2.50985E-02	4.69148E-02	-2.50985E-02	.00000E+00	.00000E+00	.00000E+00	1.50073E-03
19	1.24979E-01	-1.35437E-02	1.24610E-01	-1.35437E-02	.00000E+00	.00000E+00	.00000E+00	3.96020E-03
20	4.30180E-01	-2.61542E-02	4.29454E-01	-2.61542E-02	.00000E+00	.00000E+00	.00000E+00	1.36390E-02
21	1.15953E-01	-2.42179E-02	1.15264E-01	-2.42179E-02	.00000E+00	.00000E+00	.00000E+00	3.66846E-03
22	2.06694E-01	-6.95074E-02	2.04757E-01	-6.95075E-02	.00000E+00	.00000E+00	.00000E+00	6.52919E-03
23	7.14671E-01	-1.24958E-01	7.11347E-01	-1.24958E-01	.00000E+00	.00000E+00	.00000E+00	2.26298E-02
24	5.40872E-01	-1.10830E-01	5.37977E-01	-1.10830E-01	.00000E+00	.00000E+00	.00000E+00	1.71209E-02
25	2.31021E-01	-5.55659E-02	2.29571E-01	-5.55659E-02	.00000E+00	.00000E+00	.00000E+00	7.30950E-03
26	1.50749E-01	-5.10991E-02	1.49451E-01	-5.10991E-02	.00000E+00	.00000E+00	.00000E+00	4.76425E-03
27	2.47264E-02	-1.41956E-02	2.43629E-02	-1.41956E-02	.00000E+00	.00000E+00	.00000E+00	7.79127E-04
28	2.32182E+01	5.94983E-02	2.32221E+01	5.94982E-02	.00000E+00	.00000E+00	.00000E+00	7.36894E-01

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.86447E-03	2.89691E-03	1.48455E-05	-2.80842E-03	1.00001E+00
2	.00000E+00	.00000E+00	5.05989E-04	2.61268E-02	1.87473E-02	5.19052E-05	-1.82955E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.67471E-03	5.02989E-02	1.59040E-02	1.37571E-04	-1.33658E-02	9.99998E-01
4	.00000E+00	.00000E+00	5.16500E-03	4.21770E-02	5.46101E-03	1.03540E-04	-3.99187E-04	9.99996E-01
5	.00000E+00	.00000E+00	1.11266E-02	8.17082E-02	5.16743E-03	1.52221E-04	5.80660E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.85596E-02	2.35090E-01	3.21198E-03	3.20125E-04	1.50276E-02	1.00000E+00
7	.00000E+00	.00000E+00	1.23395E-02	2.35228E-01	1.18238E-03	3.44813E-04	1.08123E-02	1.00000E+00
8	.00000E+00	.00000E+00	2.16498E-03	1.58640E-01	7.63879E-03	2.95027E-04	-5.76940E-03	1.00002E+00
9	.00000E+00	.00000E+00	7.67222E-03	1.05288E-01	8.77692E-04	1.11024E-03	5.68445E-03	9.99998E-01

10	.00000E+00	.00000E+00	8.78875E-04	8.57028E-02	8.50321E-04	8.36940E-04	-8.08248E-04	9.99995E-01
11	.00000E+00	.00000E+00	8.50382E-04	7.72166E-02	8.72047E-04	1.33983E-03	-1.36135E-03	9.99997E-01
12	.00000E+00	.00000E+00	8.72053E-04	4.68747E-02	8.72088E-04	4.17339E-05	-4.18350E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.72090E-04	3.94980E-02	8.05731E-04	5.99695E-05	6.38142E-06	1.00000E+00
14	.00000E+00	.00000E+00	8.05752E-04	3.56885E-02	6.72555E-04	9.50579E-05	3.81470E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.16055E-04	2.04992E-02	8.38967E-04	8.23225E-05	-2.04809E-04	9.99956E-01
16	.00000E+00	.00000E+00	9.35383E-04	1.08036E-02	9.35984E-04	5.09090E-05	-5.12246E-05	9.99968E-01
17	.00000E+00	.00000E+00	9.90854E-04	3.91159E-03	9.62848E-04	2.36308E-05	4.47780E-06	9.99989E-01
18	.00000E+00	.00000E+00	1.00859E-03	2.15224E-03	6.94950E-04	1.47384E-05	2.98787E-04	9.99997E-01
19	.00000E+00	.00000E+00	7.46270E-04	6.27890E-03	9.26395E-04	4.06786E-05	-2.20582E-04	9.99985E-01
20	.00000E+00	.00000E+00	1.10380E-03	2.36919E-02	1.00723E-03	1.76151E-04	-7.88795E-05	9.99974E-01
21	.00000E+00	.00000E+00	1.23914E-03	5.43926E-03	1.29924E-03	5.99240E-05	-1.19807E-04	9.99991E-01
22	.00000E+00	.00000E+00	1.63948E-03	1.07085E-02	1.43115E-03	1.24773E-04	8.37594E-05	9.99997E-01
23	.00000E+00	.00000E+00	2.13846E-03	3.85675E-02	2.83150E-03	5.84069E-04	-1.27713E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.50208E-03	2.76051E-02	3.78838E-03	6.43050E-04	-9.29751E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.42011E-03	1.06857E-02	2.75035E-03	3.63448E-04	3.06137E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.43137E-03	7.79184E-03	1.02971E-03	3.40239E-04	6.12065E-05	1.00000E+00
27	.00000E+00	.00000E+00	2.98682E-04	1.46871E-03	7.56732E-07	1.07423E-04	1.90380E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.36576E-02	1.39801E+00	8.36576E-02	7.51517E-03	-7.40968E-03	9.99986E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.73679E-01	8.51234E-03	1.75337E-01	1.13208E-02	1.08504E-04	.00000E+00	.00000E+00	3.77851E-02
2	1.26455E+00	9.75369E-02	1.28222E+00	1.15830E-01	.00000E+00	.00000E+00	.00000E+00	2.75709E-01
3	1.59390E+00	1.32023E-01	1.61703E+00	1.45389E-01	.00000E+00	.00000E+00	.00000E+00	3.47698E-01
4	9.87999E-01	8.72422E-02	1.00262E+00	8.76414E-02	.00000E+00	.00000E+00	.00000E+00	2.15629E-01
5	1.49053E+00	1.38966E-01	1.51357E+00	1.33160E-01	.00000E+00	.00000E+00	.00000E+00	3.25472E-01
6	2.86455E+00	2.65802E-01	2.91015E+00	2.50774E-01	.00000E+00	.00000E+00	.00000E+00	6.25698E-01
7	2.80777E+00	1.53110E-01	2.83401E+00	1.42298E-01	.00000E+00	.00000E+00	.00000E+00	6.11338E-01
8	2.06589E+00	1.50492E-02	2.09003E+00	2.08186E-02	.00000E+00	.00000E+00	.00000E+00	4.47998E-01
9	1.60418E+00	-1.51131E-02	1.60108E+00	-2.07975E-02	.00000E+00	.00000E+00	.00000E+00	3.47398E-01
10	1.46634E+00	-2.61250E-02	1.46208E+00	-2.53168E-02	.00000E+00	.00000E+00	.00000E+00	3.17346E-01
11	1.34732E+00	-5.66532E-02	1.33816E+00	-5.52919E-02	.00000E+00	.00000E+00	.00000E+00	2.91044E-01
12	8.43501E-01	-6.53775E-02	8.32854E-01	-6.53356E-02	.00000E+00	.00000E+00	.00000E+00	1.81716E-01
13	7.10585E-01	-5.66082E-02	7.01323E-01	-5.66145E-02	.00000E+00	.00000E+00	.00000E+00	1.53052E-01
14	6.43118E-01	-8.59004E-02	6.29104E-01	-8.59386E-02	.00000E+00	.00000E+00	.00000E+00	1.37945E-01
15	3.74092E-01	-8.89669E-03	3.72566E-01	-8.69178E-03	.00000E+00	.00000E+00	.00000E+00	8.09085E-02
16	2.06013E-01	-6.44628E-03	2.04960E-01	-6.39506E-03	.00000E+00	.00000E+00	.00000E+00	4.45361E-02
17	8.59562E-02	-8.17719E-03	8.46313E-02	-8.18167E-03	.00000E+00	.00000E+00	.00000E+00	1.84920E-02
18	5.17481E-02	-2.47997E-02	4.76518E-02	-2.50985E-02	.00000E+00	.00000E+00	.00000E+00	1.08013E-02
19	1.27194E-01	-1.37643E-02	1.24979E-01	-1.35437E-02	.00000E+00	.00000E+00	.00000E+00	2.73345E-02
20	4.34379E-01	-2.62331E-02	4.30180E-01	-2.61542E-02	.00000E+00	.00000E+00	.00000E+00	9.37004E-02
21	1.19775E-01	-2.43377E-02	1.15983E-01	-2.42179E-02	.00000E+00	.00000E+00	.00000E+00	2.55657E-02
22	2.17614E-01	-6.94237E-02	2.06694E-01	-6.95074E-02	.00000E+00	.00000E+00	.00000E+00	4.60538E-02
23	7.33468E-01	-1.26235E-01	7.14671E-01	-1.24958E-01	.00000E+00	.00000E+00	.00000E+00	1.57063E-01
24	5.56812E-01	-1.11760E-01	5.40872E-01	-1.10830E-01	.00000E+00	.00000E+00	.00000E+00	1.19084E-01
25	2.39642E-01	-5.52597E-02	2.31021E-01	-5.55659E-02	.00000E+00	.00000E+00	.00000E+00	5.09735E-02
26	1.57392E-01	-5.10379E-02	1.50749E-01	-5.10991E-02	.00000E+00	.00000E+00	.00000E+00	3.34673E-02
27	2.64896E-02	-1.40052E-02	2.47264E-02	-1.41956E-02	.00000E+00	.00000E+00	.00000E+00	5.57467E-03
28	2.31955E+01	5.20885E-02	2.32182E+01	5.94983E-02	1.08504E-04	.00000E+00	.00000E+00	5.02938E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	6.10617E-03	8.08202E-03	4.30736E-04	-8.51234E-03	9.99951E-01
2	.00000E+00	.00000E+00	4.63731E-03	7.69188E-02	1.01095E-01	1.08315E-03	-9.75370E-02	9.99962E-01
3	.00000E+00	.00000E+00	4.79783E-02	6.91827E-02	1.80000E-01	5.43767E-06	-1.32023E-01	9.99977E-01
4	.00000E+00	.00000E+00	7.05502E-02	4.59242E-02	1.57791E-01	3.23593E-06	-8.72422E-02	9.99987E-01
5	.00000E+00	.00000E+00	1.30270E-01	1.48609E-01	2.69235E-01	3.77797E-06	-1.38966E-01	9.99990E-01
6	.00000E+00	.00000E+00	2.75423E-01	4.95374E-01	5.41215E-01	1.14791E-05	-2.65801E-01	9.99998E-01
7	.00000E+00	.00000E+00	5.53092E-01	7.95321E-01	7.06186E-01	2.53562E-05	-1.53111E-01	9.99988E-01
8	.00000E+00	.00000E+00	7.35700E-01	1.00127E+00	7.50768E-01	4.70281E-05	-1.50491E-02	9.99911E-01
9	.00000E+00	.00000E+00	7.41080E-01	9.16651E-01	7.25902E-01	9.59687E-05	1.51130E-02	9.99889E-01
10	.00000E+00	.00000E+00	7.22582E-01	8.66449E-01	6.96320E-01	2.11712E-04	2.61250E-02	9.99896E-01

11	.00000E+00	.00000E+00	7.01225E-01	8.06847E-01	6.44155E-01	4.58187E-04	5.66533E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.60698E-01	4.20470E-01	4.94735E-01	5.98279E-04	6.53774E-02	9.99979E-01
13	.00000E+00	.00000E+00	4.90687E-01	3.37795E-01	4.33197E-01	8.97254E-04	5.66081E-02	9.99969E-01
14	.00000E+00	.00000E+00	4.70437E-01	3.20692E-01	3.89091E-01	1.45136E-03	8.59003E-02	9.99989E-01
15	.00000E+00	.00000E+00	2.50396E-01	1.28231E-01	2.40229E-01	1.27767E-03	8.87064E-03	1.00007E+00
16	.00000E+00	.00000E+00	1.66003E-01	5.38644E-02	1.58689E-01	8.71922E-04	6.42820E-03	1.00008E+00
17	.00000E+00	.00000E+00	8.52379E-02	1.47323E-02	7.66513E-02	4.11508E-04	8.16897E-03	1.00007E+00
18	.00000E+00	.00000E+00	7.52768E-02	9.18684E-03	5.01988E-02	2.81082E-04	2.47980E-02	1.00005E+00
19	.00000E+00	.00000E+00	1.21976E-01	3.23915E-02	1.07505E-01	7.09988E-04	1.37523E-02	1.00008E+00
20	.00000E+00	.00000E+00	2.96567E-01	2.36429E-01	2.67314E-01	3.02475E-03	2.61975E-02	1.00010E+00
21	.00000E+00	.00000E+00	1.37852E-01	4.32250E-02	1.12448E-01	1.07102E-03	2.43225E-02	1.00008E+00
22	.00000E+00	.00000E+00	2.59266E-01	1.20520E-01	1.87556E-01	2.29087E-03	6.94045E-02	1.00006E+00
23	.00000E+00	.00000E+00	6.07051E-01	7.16451E-01	4.70474E-01	1.03289E-02	1.26234E-01	1.00002E+00
24	.00000E+00	.00000E+00	6.15921E-01	6.38135E-01	4.92582E-01	1.15689E-02	1.11756E-01	1.00002E+00
25	.00000E+00	.00000E+00	3.97665E-01	2.61008E-01	3.35781E-01	6.61997E-03	5.52596E-02	1.00001E+00
26	.00000E+00	.00000E+00	3.14313E-01	2.78086E-01	2.56849E-01	6.42434E-03	5.10286E-02	1.00003E+00
27	.00000E+00	.00000E+00	1.04722E-01	5.80976E-02	8.85057E-02	2.21064E-03	1.40051E-02	1.00000E+00
28	.00000E+00	.00000E+00	8.93656E+00	8.85795E+00	8.93655E+00	5.24145E-02	-5.22439E-02	9.99981E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.72873E-01	-5.88278E-09	1.73679E-01	8.51234E-03	4.46959E-10	.00000E+00	.00000E+00	1.97854E-01
2	1.25298E+00	-7.84505E-08	1.26455E+00	9.75369E-02	.00000E+00	.00000E+00	.00000E+00	1.43460E+00
3	1.57625E+00	4.51767E-08	1.59390E+00	1.32023E-01	.00000E+00	.00000E+00	.00000E+00	1.80528E+00
4	9.74847E-01	4.47741E-08	9.87999E-01	8.72422E-02	.00000E+00	.00000E+00	.00000E+00	1.11689E+00
5	1.46813E+00	3.21072E-08	1.49063E+00	1.38966E-01	.00000E+00	.00000E+00	.00000E+00	1.68243E+00
6	2.82061E+00	1.48563E-07	2.86455E+00	2.65802E-01	.00000E+00	.00000E+00	.00000E+00	3.23239E+00
7	2.78247E+00	-1.55781E-07	2.80777E+00	1.53110E-01	.00000E+00	.00000E+00	.00000E+00	3.18656E+00
8	2.05593E+00	2.50965E-08	2.06589E+00	1.50492E-02	.00000E+00	.00000E+00	.00000E+00	2.36381E+00
9	1.60625E+00	-3.31722E-08	1.60418E+00	-1.51131E-02	.00000E+00	.00000E+00	.00000E+00	1.83828E+00
10	1.47101E+00	2.56478E-08	1.46634E+00	-2.61250E-02	.00000E+00	.00000E+00	.00000E+00	1.68324E+00
11	1.35732E+00	3.41550E-08	1.34732E+00	-5.66532E-02	.00000E+00	.00000E+00	.00000E+00	1.55269E+00
12	8.54703E-01	-2.95514E-08	8.43501E-01	-6.53775E-02	.00000E+00	.00000E+00	.00000E+00	9.77399E-01
13	7.19884E-01	-1.49502E-08	7.10685E-01	-5.66082E-02	.00000E+00	.00000E+00	.00000E+00	8.23377E-01
14	6.57556E-01	-1.79083E-08	6.43118E-01	-8.59004E-02	.00000E+00	.00000E+00	.00000E+00	7.51611E-01
15	3.74697E-01	-2.59454E-05	3.74092E-01	-8.89689E-03	.00000E+00	.00000E+00	.00000E+00	4.29087E-01
16	2.06820E-01	-1.80713E-05	2.06013E-01	-6.44628E-03	.00000E+00	.00000E+00	.00000E+00	2.36736E-01
17	8.73505E-02	-8.21982E-06	8.59562E-02	-8.17719E-03	.00000E+00	.00000E+00	.00000E+00	9.98628E-02
18	5.61431E-02	-6.76165E-06	5.17481E-02	-2.47997E-02	.00000E+00	.00000E+00	.00000E+00	6.38786E-02
19	1.29439E-01	-1.19516E-05	1.27194E-01	-1.37643E-02	.00000E+00	.00000E+00	.00000E+00	1.48008E-01
20	4.38295E-01	-3.56484E-05	4.34379E-01	-2.62331E-02	.00000E+00	.00000E+00	.00000E+00	5.01482E-01
21	1.24194E-01	-1.51265E-05	1.19775E-01	-2.43377E-02	.00000E+00	.00000E+00	.00000E+00	1.41742E-01
22	2.30421E-01	-1.91623E-05	2.17614E-01	-6.94237E-02	.00000E+00	.00000E+00	.00000E+00	2.62563E-01
23	7.59424E-01	-1.40479E-06	7.33468E-01	-1.26235E-01	.00000E+00	.00000E+00	.00000E+00	8.66199E-01
24	5.85718E-01	-3.49594E-06	5.56812E-01	-1.11780E-01	.00000E+00	.00000E+00	.00000E+00	6.64155E-01
25	2.53578E-01	-1.09521E-07	2.38642E-01	-5.52597E-02	.00000E+00	.00000E+00	.00000E+00	2.87734E-01
26	1.73964E-01	-9.33473E-06	1.57392E-01	-5.10379E-02	.00000E+00	.00000E+00	.00000E+00	1.95874E-01
27	3.21713E-02	-1.21519E-07	2.64896E-02	-1.40052E-02	.00000E+00	.00000E+00	.00000E+00	3.55586E-02
28	2.32310E+01	-1.55436E-04	2.31985E+01	5.20885E-02	4.46959E-10	.00000E+00	.00000E+00	2.65795E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.29947E-02	.00000E+00	2.28642E-02	2.17173E-02	3.70656E-03	-5.88278E-09	9.98833E-01
2	.00000E+00	1.93992E-01	7.51923E-03	2.70906E-01	1.86727E-01	1.47973E-02	-7.84505E-08	1.00002E+00
3	.00000E+00	2.15874E-01	7.71209E-02	2.80897E-01	2.77527E-01	1.56716E-02	4.51767E-08	9.99986E-01
4	.00000E+00	1.23819E-01	1.14847E-01	1.93654E-01	2.31166E-01	7.49917E-03	4.47741E-08	1.00000E+00
5	.00000E+00	1.64144E-01	2.09563E-01	4.90174E-01	3.69161E-01	4.55042E-03	3.21072E-08	9.99989E-01
6	.00000E+00	1.77110E-01	4.28926E-01	1.34430E+00	5.98800E-01	7.22711E-03	1.48563E-07	1.00001E+00
7	.00000E+00	8.75260E-02	6.63945E-01	1.77516E+00	7.43704E-01	7.77489E-03	-1.55781E-07	9.99990E-01
8	.00000E+00	1.34833E-02	7.80448E-01	1.79054E+00	7.79920E-01	1.40748E-02	2.50965E-08	9.99920E-01
9	.00000E+00	9.78514E-04	7.70438E-01	1.55788E+00	7.47485E-01	2.40136E-02	-3.31722E-08	9.99858E-01
10	.00000E+00	7.26783E-05	7.44188E-01	1.41441E+00	7.07891E-01	3.64441E-02	2.56478E-08	9.99900E-01
11	.00000E+00	5.71782E-06	7.12797E-01	1.30862E+00	6.53192E-01	5.96513E-02	3.41550E-08	9.99942E-01

12	.00000E+00	4.01667E-07	5.69736E-01	7.07675E-01	5.04995E-01	6.47584E-02	-2.95514E-08	9.99974E-01
13	.00000E+00	6.37810E-08	5.00945E-01	5.56785E-01	4.40155E-01	6.08048E-02	-1.49502E-08	9.99970E-01
14	.00000E+00	1.26397E-08	4.77396E-01	5.08430E-01	3.91118E-01	8.62832E-02	-1.79083E-08	9.99989E-01
15	.00000E+00	1.42843E-09	2.58652E-01	2.32875E-01	2.49904E-01	8.58145E-03	-2.59454E-05	1.00036E+00
16	.00000E+00	4.19435E-10	1.75952E-01	1.06918E-01	1.69114E-01	6.76988E-03	-1.80713E-05	1.00038E+00
17	.00000E+00	1.35078E-10	9.38072E-02	3.27984E-02	8.48255E-02	8.96249E-03	-8.21982E-06	1.00029E+00
18	.00000E+00	9.67122E-11	8.32293E-02	1.93613E-02	5.46697E-02	2.85541E-02	-6.76165E-06	1.00015E+00
19	.00000E+00	1.36730E-10	1.28773E-01	6.16230E-02	1.16838E-01	1.19157E-02	-1.19516E-05	1.00024E+00
20	.00000E+00	2.22338E-10	3.07195E-01	3.59517E-01	2.77730E-01	2.93913E-02	-3.56484E-05	1.00036E+00
21	.00000E+00	3.25431E-11	1.47873E-01	6.87718E-02	1.21572E-01	2.62833E-02	-1.51266E-05	1.00022E+00
22	.00000E+00	3.77574E-11	2.72300E-01	1.69692E-01	1.97661E-01	7.46044E-02	-1.91628E-05	1.00020E+00
23	.00000E+00	3.61002E-11	6.22811E-01	9.12599E-01	4.90640E-01	1.32033E-01	-1.40479E-06	1.00022E+00
24	.00000E+00	9.82602E-12	6.40650E-01	7.76039E-01	5.17752E-01	1.22813E-01	-3.49594E-06	1.00017E+00
25	.00000E+00	2.87641E-12	4.19381E-01	3.13568E-01	3.52579E-01	6.69594E-02	-1.09521E-07	1.00010E+00
26	.00000E+00	2.01696E-12	3.24767E-01	3.15090E-01	2.64116E-01	6.06259E-02	-9.33473E-06	1.00011E+00
27	.00000E+00	4.80652E-13	1.06975E-01	6.39472E-02	8.95751E-02	1.73958E-02	-1.21519E-07	1.00004E+00
28	.00000E+00	1.00000E+00	9.64011E+00	1.56548E+01	9.64011E+00	1.00215E+00	-1.55334E-04	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dv**2	total flux
1	1.72673E-01	-5.88278E-09	1.80781E-01	.00000E+00	2.39950E-03	2.66921E-03	.00000E+00	3.64326E-01
2	1.25298E+00	-7.84505E-08	1.33782E+00	.00000E+00	1.69692E-05	1.18841E-02	.00000E+00	2.65808E+00
3	1.57625E+00	4.51767E-08	1.68529E+00	.00000E+00	.00000E+00	1.45034E-02	.00000E+00	3.34709E+00
4	9.74847E-01	4.47741E-08	1.04308E+00	.00000E+00	.00000E+00	6.24659E-03	.00000E+00	2.07195E+00
5	1.46813E+00	3.21072E-08	1.57647E+00	.00000E+00	.00000E+00	1.79278E-03	.00000E+00	3.12458E+00
6	2.82061E+00	1.48563E-07	3.08080E+00	.00000E+00	.00000E+00	1.50139E-03	.00000E+00	6.00408E+00
7	2.78247E+00	-1.55781E-07	2.90520E+00	.00000E+00	.00000E+00	1.42872E-03	.00000E+00	5.86827E+00
8	2.06593E+00	2.50965E-08	2.08166E+00	.00000E+00	.00000E+00	1.42930E-03	.00000E+00	4.30715E+00
9	1.60625E+00	-3.31722E-08	1.58861E+00	.00000E+00	.00000E+00	1.88846E-03	.00000E+00	3.33349E+00
10	1.47101E+00	2.56478E-08	1.44844E+00	.00000E+00	.00000E+00	4.02264E-03	.00000E+00	3.04795E+00
11	1.35732E+00	3.41550E-08	1.30820E+00	.00000E+00	.00000E+00	8.63481E-03	.00000E+00	2.79514E+00
12	8.54703E-01	-2.95514E-08	7.97077E-01	.00000E+00	.00000E+00	1.13917E-02	.00000E+00	1.74416E+00
13	7.19884E-01	-1.49502E-08	6.70649E-01	.00000E+00	.00000E+00	1.29779E-02	.00000E+00	1.46884E+00
14	6.57556E-01	-1.79083E-08	5.82013E-01	.00000E+00	.00000E+00	8.05307E-03	.00000E+00	1.32313E+00
15	3.74697E-01	-2.59454E-05	3.67673E-01	.00000E+00	.00000E+00	1.88096E-03	.00000E+00	7.76300E-01
16	2.06820E-01	-1.80713E-05	2.01597E-01	.00000E+00	.00000E+00	1.32236E-03	.00000E+00	4.27481E-01
17	8.73505E-02	-8.21982E-06	8.02856E-02	.00000E+00	.00000E+00	1.51080E-03	.00000E+00	1.77497E-01
18	5.61431E-02	-6.76165E-06	3.14057E-02	.00000E+00	.00000E+00	1.05237E-03	.00000E+00	1.02050E-01
19	1.29439E-01	-1.19516E-05	1.17572E-01	.00000E+00	.00000E+00	2.39214E-03	.00000E+00	2.62307E-01
20	4.38295E-01	-3.56484E-05	4.16236E-01	.00000E+00	.00000E+00	1.49907E-02	.00000E+00	8.99214E-01
21	1.24194E-01	-1.51265E-05	1.02549E-01	.00000E+00	.00000E+00	1.52027E-02	.00000E+00	2.45227E-01
22	2.30421E-01	-1.91628E-05	1.66122E-01	.00000E+00	.00000E+00	4.34857E-02	.00000E+00	4.40525E-01
23	7.59424E-01	-1.40479E-06	6.47548E-01	.00000E+00	.00000E+00	7.35685E-02	.00000E+00	1.51023E+00
24	5.85718E-01	-3.49594E-06	4.81509E-01	.00000E+00	.00000E+00	6.69890E-02	.00000E+00	1.14822E+00
25	2.53578E-01	-1.09521E-07	2.00695E-01	.00000E+00	.00000E+00	3.80096E-02	.00000E+00	4.92537E-01
26	1.73964E-01	-9.33473E-06	1.22354E-01	.00000E+00	.00000E+00	3.48944E-02	.00000E+00	3.26122E-01
27	3.21713E-02	-1.21519E-07	1.61634E-02	.00000E+00	.00000E+00	9.86634E-03	.00000E+00	5.53279E-02
28	2.32310E+01	-1.55436E-04	2.31873E+01	.00000E+00	2.41647E-03	3.93568E-01	.00000E+00	4.85211E+01

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

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.42234E-03	2.49847E-02	3.15362E-02	1.90531E-02	2.90892E-02	5.56074E-02	3.16623E-02	4.65054E-03
2	3.80559E-03	3.89376E-02	4.88739E-02	2.94615E-02	4.47630E-02	8.43003E-02	4.78349E-02	6.99836E-03
3	3.09226E-03	3.32185E-02	4.31495E-02	2.71715E-02	4.22554E-02	8.01985E-02	4.58541E-02	5.59651E-03
4	1.06741E-03	1.22231E-02	1.65398E-02	1.09248E-02	1.73966E-02	3.32783E-02	1.92438E-02	2.01088E-03
5	1.76814E-03	1.90374E-02	2.47636E-02	1.55875E-02	2.42695E-02	4.65270E-02	2.65579E-02	3.33334E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.65498E-03	5.67328E-03	1.23578E-02	1.45458E-02	1.26081E-02	1.90154E-02	1.96588E-03	1.43062E-03
2	6.99132E-03	8.51047E-03	1.85869E-02	2.19632E-02	1.90316E-02	2.88891E-02	2.92157E-03	2.14957E-03
3	5.60218E-03	7.98864E-03	1.73860E-02	2.03074E-02	1.75904E-02	2.66971E-02	2.73171E-03	1.99466E-03
4	1.85839E-03	3.25174E-03	7.06161E-03	8.15520E-03	7.09909E-03	1.07334E-02	1.19044E-03	8.30491E-04

5	3.25144E-03	4.62607E-03	1.00640E-02	1.17448E-02	1.01955E-02	1.54116E-02	1.63379E-03	1.17031E-03

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.81256E-03	5.11151E-03	3.04944E-03	5.85532E-03	5.29495E-03	1.49373E-02	2.75943E-02	2.43594E-02
2	2.75015E-03	8.43657E-03	4.55246E-03	8.79097E-03	8.14025E-03	2.33643E-02	4.20072E-02	3.72584E-02
3	2.54130E-03	7.75198E-03	4.24208E-03	8.13795E-03	7.54199E-03	2.15829E-02	3.90215E-02	3.45789E-02
4	1.02016E-03	3.05944E-03	1.73356E-03	3.34197E-03	3.02967E-03	8.64090E-03	1.60191E-02	1.41650E-02
5	1.46701E-03	4.30875E-03	2.47297E-03	4.75571E-03	4.32667E-03	1.22955E-02	2.26389E-02	2.00145E-02

Ozone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.21560E-02	1.10255E-02	2.92634E-03	3.85380E-01
2	1.86799E-02	1.71781E-02	4.77216E-03	5.89949E-01
3	1.72202E-02	1.58685E-02	4.38236E-03	5.43704E-01
4	6.98616E-03	6.33737E-03	1.60628E-03	2.18805E-01
5	9.94000E-03	9.04568E-03	2.38022E-03	3.13388E-01

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

Ocell averaged fluxes

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.78831E-01	1.31743E+00	1.65986E+00	1.02776E+00	1.55217E+00	2.98279E+00	2.87659E+00	2.07668E+00
2	1.75550E-01	1.28423E+00	1.61935E+00	1.00392E+00	1.51543E+00	2.91346E+00	2.85583E+00	2.06940E+00
3	1.76344E-01	1.27217E+00	1.60434E+00	9.94946E-01	1.50178E+00	2.88707E+00	2.82082E+00	2.06711E+00
4	1.72868E-01	1.25343E+00	1.57730E+00	9.75843E-01	1.46996E+00	2.82418E+00	2.78415E+00	2.06529E+00
5	1.75035E-01	1.27702E+00	1.60806E+00	9.95431E-01	1.50116E+00	2.88455E+00	2.81953E+00	2.06931E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59348E+00	1.45397E+00	1.32031E+00	8.11451E-01	6.82961E-01	6.00842E-01	3.69655E-01	2.02934E-01
2	1.60071E+00	1.46175E+00	1.33742E+00	8.31961E-01	7.00545E-01	6.27927E-01	3.72410E-01	2.04854E-01
3	1.60295E+00	1.46428E+00	1.34293E+00	8.38467E-01	7.06206E-01	6.36499E-01	3.73524E-01	2.05497E-01
4	1.60613E+00	1.47067E+00	1.35661E+00	8.53967E-01	7.19396E-01	6.56693E-01	3.74899E-01	2.06839E-01
5	1.60153E+00	1.46435E+00	1.34289E+00	8.37955E-01	7.05684E-01	6.35679E-01	3.72963E-01	2.05377E-01

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.20107E-02	3.75765E-02	1.20576E-01	4.21811E-01	1.07856E-01	1.82119E-01	6.74483E-01	5.05287E-01
2	8.45134E-02	4.72892E-02	1.24789E-01	4.29775E-01	1.15596E-01	2.05739E-01	7.13080E-01	5.39495E-01
3	8.53252E-02	4.98389E-02	1.26126E-01	4.32349E-01	1.17955E-01	2.12500E-01	7.24712E-01	5.49475E-01
4	8.72515E-02	5.58117E-02	1.29312E-01	4.38152E-01	1.23842E-01	2.29405E-01	7.56810E-01	5.80281E-01
5	8.52758E-02	4.90285E-02	1.26022E-01	4.32015E-01	1.17816E-01	2.11644E-01	7.25572E-01	5.51647E-01

Ozone	grp. 25	grp. 26	grp. 27
1	2.12828E-01	1.33660E-01	1.94868E-02
2	2.30327E-01	1.50125E-01	2.45508E-02
3	2.35200E-01	1.54424E-01	2.57225E-02
4	2.51397E-01	1.71137E-01	3.10680E-02
5	2.36633E-01	1.56681E-01	2.65815E-02

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

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.02169E+00	1.03164E+00	1.03221E+00	1.03248E+00	1.03398E+00	1.03405E+00	1.02031E+00	1.00856E+00
2	1.00294E+00	1.00565E+00	1.00705E+00	1.00852E+00	1.00951E+00	1.01002E+00	1.00586E+00	1.00004E+00
3	9.98065E-01	9.96202E-01	9.97683E-01	9.99513E-01	1.00041E+00	1.00087E+00	1.00053E+00	9.98957E-01
4	9.87619E-01	9.81529E-01	9.80869E-01	9.80322E-01	9.79218E-01	9.79072E-01	9.87521E-01	9.98057E-01
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

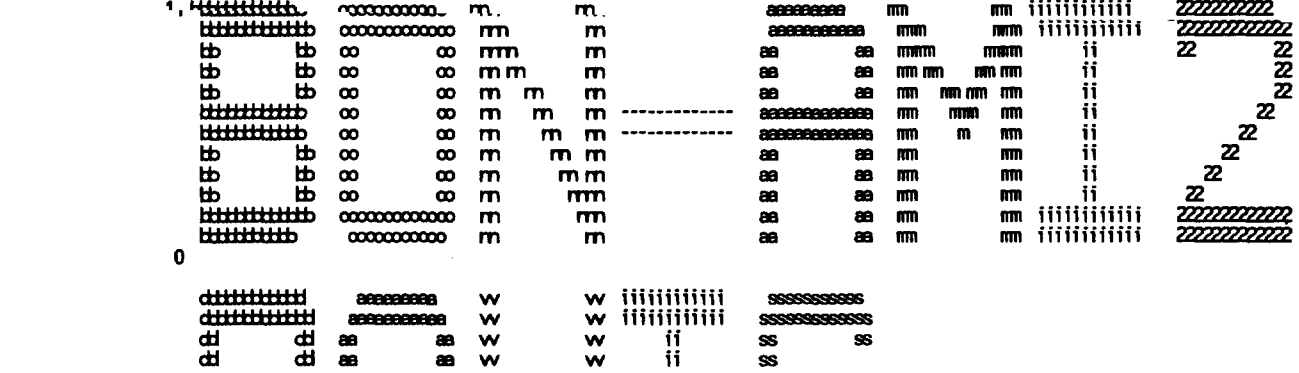
Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.94970E-01	9.92912E-01	9.83190E-01	9.68570E-01	9.67799E-01	9.45198E-01	9.91131E-01	9.88101E-01
2	9.99486E-01	9.98224E-01	9.95952E-01	9.92847E-01	9.92718E-01	9.87805E-01	9.98520E-01	9.97452E-01
3	1.00089E+00	9.99958E-01	1.00005E+00	1.00061E+00	1.00074E+00	1.00129E+00	1.00097E+00	1.00058E+00
4	1.00287E+00	1.00432E+00	1.01022E+00	1.01911E+00	1.01943E+00	1.03306E+00	1.00519E+00	1.00712E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.61711E-01	7.66422E-01	9.56787E-01	9.76381E-01	9.15461E-01	8.60496E-01	9.29589E-01	9.15960E-01
2	9.91060E-01	9.64525E-01	9.90215E-01	9.94816E-01	9.81155E-01	9.72101E-01	9.82783E-01	9.77968E-01
3	1.00058E+00	1.01653E+00	1.00083E+00	1.00077E+00	1.00118E+00	1.00404E+00	9.98816E-01	9.96052E-01
4	1.02317E+00	1.13835E+00	1.02611E+00	1.01420E+00	1.05115E+00	1.08392E+00	1.04305E+00	1.05191E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

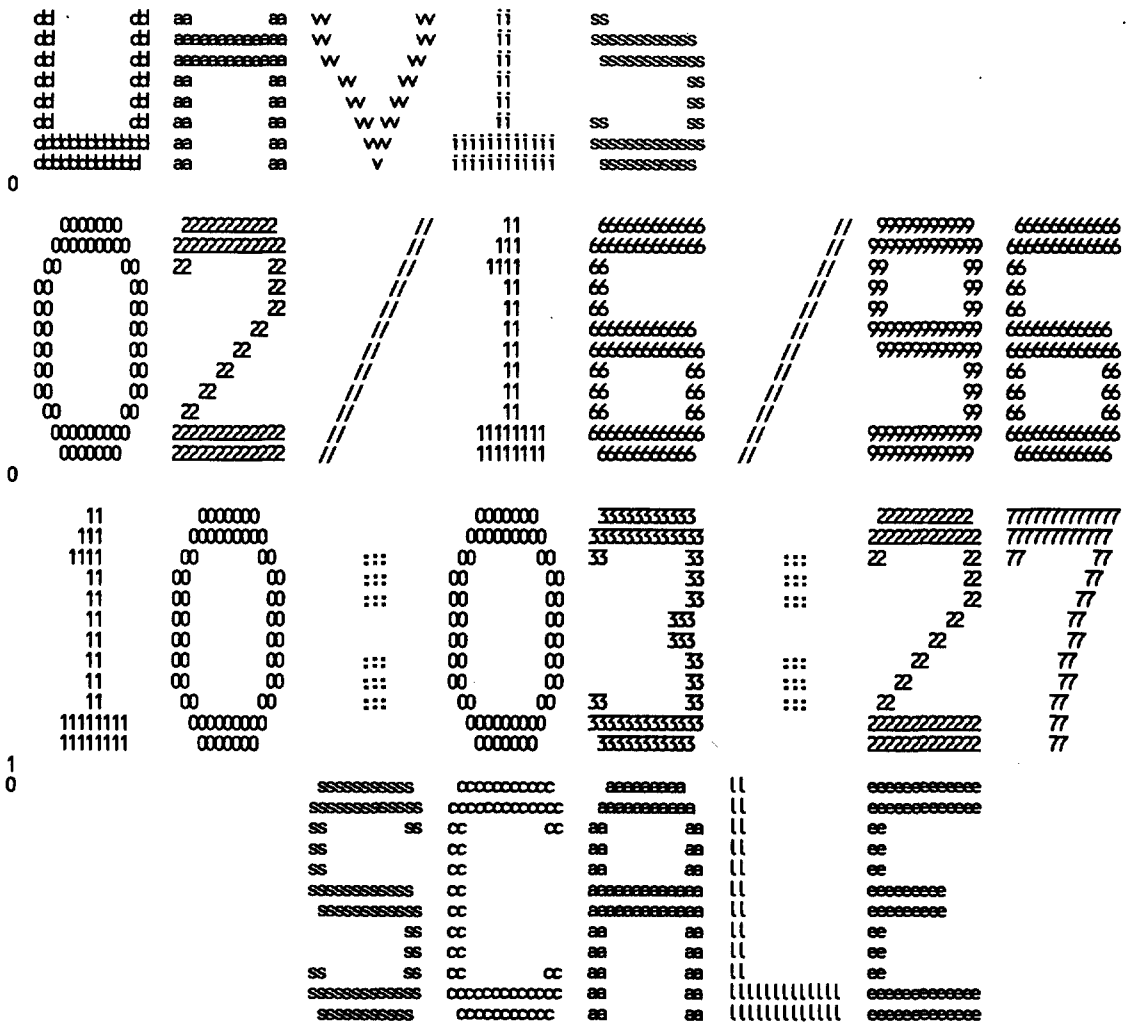
```
Ozone   grp. 25      grp. 26      grp. 27
    1  8.99401E-01  8.53071E-01  7.33094E-01
    2  9.73355E-01  9.58156E-01  9.23606E-01
    3  9.93947E-01  9.85592E-01  9.67682E-01
    4  1.06240E+00  1.09227E+00  1.16878E+00
    5  1.00000E+00  1.00000E+00  1.00000E+00
Ocell averaged currents

Ozone   grp. 1      grp. 2      grp. 3      grp. 4      grp. 5      grp. 6      grp. 7      grp. 8
    1  2.42234E-03  2.49847E-02  3.15362E-02  1.90531E-02  2.90892E-02  5.56074E-02  3.16623E-02  4.65054E-03
    2  3.80559E-03  3.89578E-02  4.88739E-02  2.94615E-02  4.47630E-02  8.43008E-02  4.78349E-02  6.99836E-03
    3  3.09226E-03  3.32185E-02  4.31495E-02  2.71715E-02  4.22554E-02  8.01985E-02  4.58541E-02  5.59651E-03
    4  1.06741E-03  1.22231E-02  1.65398E-02  1.09248E-02  1.73966E-02  3.32783E-02  1.92438E-02  2.01088E-03
    5  1.76814E-03  1.90374E-02  2.47636E-02  1.55875E-02  2.42695E-02  4.63270E-02  2.65579E-02  3.33334E-03
Ozone   grp. 9      grp. 10     grp. 11     grp. 12     grp. 13     grp. 14     grp. 15     grp. 16
    1  4.65498E-03  5.67328E-03  1.23576E-02  1.45458E-02  1.26081E-02  1.90154E-02  1.96588E-03  1.43062E-03
    2  6.99152E-03  8.51047E-03  1.85865E-02  2.19632E-02  1.90516E-02  2.88891E-02  2.92157E-03  2.14957E-03
    3  5.60218E-03  7.98864E-03  1.73860E-02  2.08074E-02  1.75904E-02  2.66971E-02  2.73171E-03  1.99465E-03
    4  1.85839E-03  3.25174E-03  7.06161E-03  8.15520E-03  7.09509E-03  1.07334E-02  1.19044E-03  8.30491E-04
    5  3.25144E-03  4.62607E-03  1.00640E-02  1.17448E-02  1.01955E-02  1.54116E-02  1.63579E-03  1.17031E-03
Ozone   grp. 17     grp. 18     grp. 19     grp. 20     grp. 21     grp. 22     grp. 23     grp. 24
    1  1.81256E-03  5.11151E-03  3.04944E-03  5.86532E-03  5.29495E-03  1.49373E-02  2.75943E-02  2.43594E-02
    2  2.75015E-03  8.43657E-03  4.55246E-03  8.79097E-03  8.14025E-03  2.33643E-02  4.20072E-02  3.72584E-02
    3  2.54130E-03  7.75198E-03  4.26208E-03  8.13795E-03  7.54199E-03  2.15829E-02  3.90215E-02  3.45789E-02
    4  1.02016E-03  3.05944E-03  1.73356E-03  3.34197E-03  3.02967E-03  8.64090E-03  1.60191E-02  1.41650E-02
    5  1.46701E-03  4.30875E-03  2.47297E-03  4.75571E-03  4.32667E-03  1.22955E-02  2.26389E-02  2.00145E-02
Ozone   grp. 25     grp. 26     grp. 27
    1  1.21560E-02  1.10255E-02  2.92636E-03
    2  1.86799E-02  1.71781E-02  4.77216E-03
    3  1.72202E-02  1.58685E-02  4.38236E-03
    4  6.98616E-03  6.33737E-03  1.60628E-03
    5  9.94000E-03  9.04568E-03  2.38022E-03
Ozone      volume     vol. fraction

    1    6.88443E-01    3.30753E-01
    2    3.17352E-02    1.52468E-02
    3    2.16724E-01    1.04122E-01
    4    1.14454E+00    5.49878E-01
    5    2.08144E+00    1.00000E+00
 - elapsed time    .02 min.
Orequested parm=halt8,skipcellwt,skipshipdata
  pass= 6, exec halts after pass  8
```



```
 0
```


program verification information

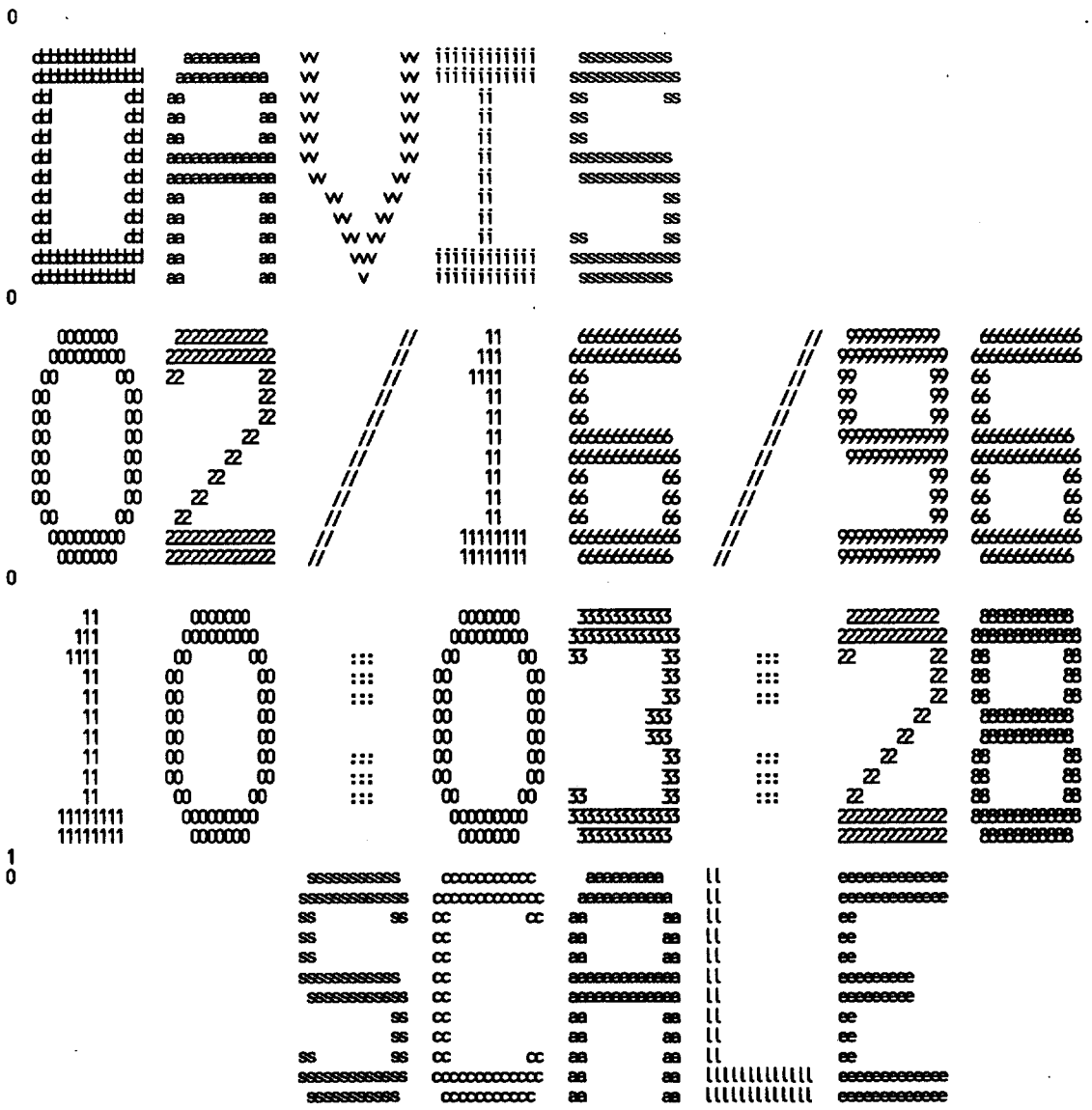
```
                  *****                code system:    scale  version:    4.2             *****
                  *****                                                                   *****
                  ************************************************************************
                  ************************************************************************
                  *****                                                                   *****
                  *****                                                                   *****
                  *****              program:  c0c008                                     *****
                  *****                                                                   *****
                  *****         creation date:  04/27/95                                  *****
                  *****                                                                   *****
                  *****              library:  /neutronics/scale/exe                      *****
                  *****                                                                   *****
                  *****                                                                   *****
                  *****     this is not a   scale  configuration controlled code         *****
                  *****                                                                   *****
                  *****              jobname:  davis                                      *****
                  *****                                                                   *****
                  *****     date of execution:  02/16/96                                  *****
                  *****                                                                   *****
                  *****     time of execution:  10:03:27                                  *****
                  *****                                                                   *****
                  *****                                                                   *****
                  ************************************************************************
                  ************************************************************************
                  ************************************************************************
1
0       -1q array has       1 entries.
0        0q array has       4 entries.
0        1q array has       6 entries.
0        2q array has       2 entries.
1logical assignments
0master library   12
 working library  17
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere                2
0izm--number of zones or material regions                       4
0ms--mixing table length                                       70
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0issopt--dancoff factor option                                  0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0        3q array has      70 entries.
0        4q array has      70 entries.
0        5q array has      70 entries.
0        6q array has       4 entries.
0        7q array has       4 entries.
0        8q array has       4 entries.
0        9q array has       4 entries.
0       10q array has      70 entries.
0       11q array has       4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
    1        3     8016    2.09710E-02             201
    2        3     1001    4.19420E-02             202
    3        3     5010    3.81515E-06             203
    4        3     5011    1.54884E-05             204
    5        2    40302    4.25156E-02             205
```

6	1	92235	1.33192E-04	200006
7	1	92234	1.47781E-06	200007
8	1	92236	1.82292E-05	200008
9	1	92238	7.21946E-03	200009
10	1	8016	1.50611E-02	200010
11	1	8016	1.15315E-02	200011
12	1	36083	4.72043E-07	200012
13	1	36085	2.27030E-07	200013
14	1	38090	5.16852E-06	200014
15	1	39089	4.09755E-06	200015
16	1	42095	5.47657E-06	200016
17	1	40093	4.12203E-06	200017
18	1	40094	6.47876E-06	200018
19	1	40095	6.60385E-07	200019
20	1	41094	3.21149E-12	200020
21	1	43099	6.33732E-06	200021
22	1	45103	3.47568E-06	200022
23	1	45105	7.39443E-09	200023
24	1	44101	5.75136E-06	200024
25	1	44106	8.69130E-07	200025
26	1	46105	2.26913E-06	200026
27	1	46108	6.36851E-07	200027
28	1	47109	4.45102E-07	200028
29	1	51124	1.00830E-10	200029
30	1	54131	2.90271E-06	200030
31	1	54132	5.45567E-06	200031
32	1	54135	2.20848E-09	200032
33	1	54136	1.09418E-05	200033
34	1	55134	3.16663E-07	200034
35	1	55135	3.47362E-06	200035
36	1	55137	6.78821E-06	200036
37	1	56136	6.38766E-08	200037
38	1	57139	6.72223E-06	200038
39	1	59141	5.82082E-06	200039
40	1	59143	1.22771E-07	200040
41	1	58144	2.21790E-06	200041
42	1	60143	5.26395E-06	200042
43	1	60145	3.88111E-06	200043
44	1	61147	1.33040E-06	200044
45	1	61148	3.89552E-09	200045
46	1	60147	4.29701E-08	200046
47	1	62147	4.63566E-07	200047
48	1	62149	2.87617E-08	200048
49	1	62150	1.38277E-06	200049
50	1	62151	1.32930E-07	200050
51	1	62152	6.63045E-07	200051
52	1	64155	7.21936E-10	200052
53	1	63153	3.98698E-07	200053
54	1	63154	8.34053E-08	200054
55	1	63155	4.31432E-08	200055
56	1	40302	4.42681E-03	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09787E-06	200058
59	1	5011	8.51673E-06	200059
60	1	55133	6.95263E-06	200060
61	1	93237	1.23390E-06	200061
62	1	94238	1.76797E-07	200062
63	1	94239	3.56356E-05	200063
64	1	94240	6.93689E-06	200064
65	1	94241	3.76423E-06	200065

```
   66      1        94242    4.23205E-07          200066
   67      1        95241    1.12643E-07          200067
   68      1        95243    3.90711E-08          200068
   69      1        96244    3.73748E-09          200069
   70      1          999    3.30753E-21          200070
0geometry and material description
0zone   mixture   outer dimension   temperature      extra xs   type (0/1--fuel/mod)
    1         3      6.32460E-01    6.07600E+02   7.90564E-01                     0
    2         2      6.73100E-01    6.50000E+02   1.23032E+01                     0
    3         3      8.14000E-01    6.07600E+02   3.54852E+00                     0
    4         1      2.96100E+00    9.75000E+02   2.32883E-01                     0
     8067 locations of   200000 available are required to make a new master containing the self-shielded values
0no nuclides in your problem have bondarenko factor data**bonami will copy from logical 12 to logical  1
0copy      999  1/v cross sectio from log 12 to log  1   bondarenko trigger 0
0copy     1001  hydrogen         from log 12 to log 18   bondarenko trigger 0
0copy     1001  hydrogen         from log 18 to log  1   bondarenko trigger 0
0copy     1001  hydrogen         from log 18 to log  1   bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 12 to log 18   bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 18 to log  1   bondarenko trigger 0
0copy     5010  b-10 1273 218ngp from log 18 to log  1   bondarenko trigger 0
0copy     5011  boron-11         from log 12 to log 18   bondarenko trigger 0
0copy     5011  boron-11         from log 18 to log  1   bondarenko trigger 0
0copy     5011  boron-11         from log 18 to log  1   bondarenko trigger 0
0copy     8016  oxygen-16        from log 12 to log 18   bondarenko trigger 0
0copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
0copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
0copy     8016  oxygen-16        from log 18 to log  1   bondarenko trigger 0
0copy    36083  kr-83            from log 12 to log  1   bondarenko trigger 0
0copy    36085  kr-85            from log 12 to log  1   bondarenko trigger 0
0copy    38090  sr-90            from log 12 to log  1   bondarenko trigger 0
0copy    39089   y-89            from log 12 to log  1   bondarenko trigger 0
0copy    40093  zr-93            from log 12 to log  1   bondarenko trigger 0
0copy    40094  zr-94            from log 12 to log  1   bondarenko trigger 0
0copy    40095  zr-95            from log 12 to log  1   bondarenko trigger 0
0copy    40302  zircalloy        from log 12 to log 18   bondarenko trigger 0
0copy    40302  zircalloy        from log 18 to log  1   bondarenko trigger 0
0copy    40302  zircalloy        from log 18 to log  1   bondarenko trigger 0
0copy    41094  rb-94            from log 12 to log  1   bondarenko trigger 0
0copy    42095  mo-95            from log 12 to log  1   bondarenko trigger 0
0copy    43099  tc-99            from log 12 to log  1   bondarenko trigger 0
0copy    44101  ru-101           from log 12 to log  1   bondarenko trigger 0
0copy    44106  ru-106           from log 12 to log  1   bondarenko trigger 0
0copy    45103  rh-103           from log 12 to log  1   bondarenko trigger 0
0copy    45105  rh-105           from log 12 to log  1   bondarenko trigger 0
0copy    46105  pd-105           from log 12 to log  1   bondarenko trigger 0
0copy    46108  pd-108           from log 12 to log  1   bondarenko trigger 0
0copy    47109  silver-109       from log 12 to log  1   bondarenko trigger 0
0copy    51124  sb-124           from log 12 to log  1   bondarenko trigger 0
0copy    54131  xe-131           from log 12 to log  1   bondarenko trigger 0
0copy    54132  xe-132           from log 12 to log  1   bondarenko trigger 0
0copy    54135  xenon-135        from log 12 to log  1   bondarenko trigger 0
0copy    54136  xe-136           from log 12 to log  1   bondarenko trigger 0
0copy    55133  cesium-133       from log 12 to log  1   bondarenko trigger 0
0copy    55134  cs-134           from log 12 to log  1   bondarenko trigger 0
0copy    55135  cs-135           from log 12 to log  1   bondarenko trigger 0
0copy    55137  cs-137           from log 12 to log  1   bondarenko trigger 0
0copy    56136  ba-136           from log 12 to log  1   bondarenko trigger 0
0copy    57139  la-139           from log 12 to log  1   bondarenko trigger 0
0copy    58144  ce-144           from log 12 to log  1   bondarenko trigger 0
0copy    59141  pr-141           from log 12 to log  1   bondarenko trigger 0
```

```
0copy    59143  pr-143           from log 12 to log  1   bondarenko trigger 0
0copy    60143  nd-143           from log 12 to log  1   bondarenko trigger 0
0copy    60145  nd-145           from log 12 to log  1   bondarenko trigger 0
0copy    60147  nd-147           from log 12 to log  1   bondarenko trigger 0
0copy    61147  pm-147           from log 12 to log  1   bondarenko trigger 0
0copy    61148  pm-148           from log 12 to log  1   bondarenko trigger 0
0copy    62147  sm-147           from log 12 to log  1   bondarenko trigger 0
0copy    62149  sm-149           from log 12 to log  1   bondarenko trigger 0
0copy    62150  sm-150           from log 12 to log  1   bondarenko trigger 0
0copy    62151  sm-151           from log 12 to log  1   bondarenko trigger 0
0copy    62152  sm-152           from log 12 to log  1   bondarenko trigger 0
0copy    63153  eu-153           from log 12 to log  1   bondarenko trigger 0
0copy    63154  eu-154           from log 12 to log  1   bondarenko trigger 0
0copy    63155  eu-155           from log 12 to log  1   bondarenko trigger 0
0copy    64155  gd-155           from log 12 to log  1   bondarenko trigger 0
0copy    92234  u-234 1043 sigo= from log 12 to log  1   bondarenko trigger 0
0copy    92235  uranium-235      from log 12 to log  1   bondarenko trigger 0
0copy    92236  u-236 1163 sigo= from log 12 to log  1   bondarenko trigger 0
0copy    92238  uranium-238      from log 12 to log  1   bondarenko trigger 0
0copy    93237  neptunium-237    from log 12 to log  1   bondarenko trigger 0
0copy    94238  pu-238 1050 sigo from log 12 to log  1   bondarenko trigger 0
0copy    94239  plutonium-239    from log 12 to log  1   bondarenko trigger 0
0copy    94240  plutonium-240    from log 12 to log  1   bondarenko trigger 0
0copy    94241  plutonium-241    from log 12 to log  1   bondarenko trigger 0
0copy    94242  plutonium-242    from log 12 to log  1   bondarenko trigger 0
0copy    95241  am-241 1056 sigo from log 12 to log  1   bondarenko trigger 0
0copy    95243  am-243 1057 218  from log 12 to log  1   bondarenko trigger 0
0copy    96244  curium-244       from log 12 to log  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
      based on endf-b version 4 data with endf-b version 5 fission products
        compiled for nrc     1/27/89
          last updated       9/16/93
            l.m.petrie  -  ornl
      tape id                          4321        number of nuclides          70
      number of neutron groups           27        number of gamma groups       0
      first thermal group                15        logical unit                 1
                              table of contents
    1/v cross sections normalized to 1.0 at 0.0253 ev                        id  200070
     hydrogen       endf/b-iv mat 1269/thrml002   updated 10/13/89           id     202
     hydrogen       endf/b-iv mat 1269/thrml002   updated 10/13/89           id  200057
    b-10 1273 218grp 042375 p-3 293k                                         id     203
    b-10 1273 218grp 042375 p-3 293k                                         id  200058
     boron-11       endf/b-iv mat 1160            updated 10/13/89           id     204
     boron-11       endf/b-iv mat 1160            updated 10/13/89           id  200059
     oxygen-16      endf/b-iv mat 1276            updated 10/13/89           id     201
     oxygen-16      endf/b-iv mat 1276            updated 10/13/89           id  200010
     oxygen-16      endf/b-iv mat 1276            updated 10/13/89           id  200011
     kr-85          mt=102,103,103,105,106,107    updated 10/13/89           id  200012
     kr-85            mt=  102                                                id  200013
     sr-90          mt=102                        updated 10/13/89           id  200014
      y-89          mt=102                        updated 10/13/89           id  200015
     zr-93            mt=  102                                                id  200017
     zr-94          mt=102                        updated 10/13/89           id  200018
     zr-95          mt=102                        updated 10/13/89           id  200019
     zircalloy      endf/b-iv mat 1284            updated 10/13/89           id     205
     zircalloy      endf/b-iv mat 1284            updated 10/13/89           id  200056
     nb-94          mt=102                        updated 10/13/89           id  200020
     mo-95          mt=102                        updated 10/13/89           id  200016
     tc-99          mt=102                        updated 10/13/89           id  200021
     ru-101         mt=102                        updated 10/13/89           id  200024
```

```
        ru-106        mt=102                          updated 10/13/89              id   200025
        rh-103        mt=102                          updated 10/13/89              id   200022
        rh-105          mt=  102                                                    id   200023
        pd-105        mt=102                          updated 10/13/89              id   200026
        pd-108        mt=102                          updated 10/13/89              id   200027
        silver-109    endf/b-iv mat 1139              updated 10/13/89              id   200028
        sb-124        mt=102                          updated 10/13/89              id   200029
        xe-131        mt=102,103,104,105,106          updated 10/13/89              id   200030
        xe-132        mt=102,103,104,105,106          updated 10/13/89              id   200031
        xenon-135     endf/b-iv mat 1294              updated 10/13/89              id   200032
        xe-136          mt=  102, 103, 104, 105, 107                                id   200033
        cesium-133    endf/b-iv mat 1141              updated 10/13/89              id   200060
        cs-134        mt=102                          updated 10/13/89              id   200034
        cs-135          mt=  102                                                    id   200035
        cs-137        mt=102                          updated 10/13/89              id   200036
        ba-136        mt=102                          updated 10/13/89              id   200037
        la-139        mt=102                          updated 10/13/89              id   200038
        ce-144          mt=  102                                                    id   200041
        pr-141        mt=102,103,104,105,106,107      updated 10/13/89              id   200039
        pr-143        mt=102                          updated 10/13/89              id   200040
        nd-143        mt=102                          updated 10/13/89              id   200042
        nd-145        mt=102                          updated 10/13/89              id   200043
        nd-147        mt=102                          updated 10/13/89              id   200046
        pm-147        mt=102                          updated 10/13/89              id   200044
        pm-148          mt=  102                                                    id   200045
        sm-147        endf/b-v fission product        updated 10/13/89              id   200047
        sm-149        mt=102,103,107                  updated 10/13/89              id   200048
        sm-150        mt=102                          updated 10/13/89              id   200049
        sm-151        mt=102,103,104,105,106,107      updated 10/13/89              id   200050
        sm-152        mt=102,103,104,105,106,107      updated 10/13/89              id   200051
        eu-153        mt=102,103,104,105,106,107      updated 10/13/89              id   200053
        eu-154        mt=102,103,104,105,106,107      updated 10/13/89              id   200054
        eu-155        mt=102,103,104,105,106,107      updated 10/13/89              id   200055
        gd-155        mt=102                          updated 10/13/89              id   200052
       u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          id   200007
        uranium-235   endf/b-iv mat 1261              updated 10/13/89              id   200006
       u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          id   200008
        uranium-238   endf/b-iv mat 1262              updated 10/13/89              id   200009
        neptunium-237 endf/b-iv mat 1263              updated 10/13/89              id   200061
       pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                         id   200062
        plutonium-239 endf/b-iv mat 1264              updated 10/13/89              id   200063
        plutonium-240 endf/b-iv mat 1265              updated 10/13/89              id   200064
        plutonium-241 endf/b-iv mat 1266              updated 10/13/89              id   200065
        plutonium-242 endf/b-iv mat 1161              updated 10/13/89              id   200066
       am-241 1056 sigo=5+4 newklacs 218hgp p-3 293k                                id   200067
       am-243 1057 218 gp wt f-1/e-m 090876 p3 293k                                 id   200068
        curium-244    endf/b-iv mat 1162              updated 10/13/89              id   200069
0        tape copy used      0 i/o's, and took     .00 seconds
1                 m          m  iiiiiiiiiiii   ttttttttttttt     eeeeeeeee     ww         ww  ll
                  mm         m  iiiiiiiiiiii   ttttttttttttt    eeeeeeeeee     ww         ww  ll
                  mmm        m       ii            tt         ee         ee     ww         ww  ll
                  m m        m       ii            tt         ee         ee     ww         ww  ll
                  m  m       m       ii            tt         ee         ee     ww         ww  ll
                  m   m      m       ii            tt         eeeeeeeeeeee     ww    w    ww  ll
                  m    m     m       ii            tt         eeeeeeeeeeee     ww   www   ww  ll
                  m     m m  m       ii            tt         ee         ee     ww  ww ww  ww  ll
                  m      m m m       ii            tt         ee         ee     ww ww   ww ww  ll
                  m       mmm        ii            tt         ee         ee     wwww     wwww  ll
                  m        mm  iiiiiiiiiiii       tt         ee         ee     www       www  llllllllllll
                  m         m  iiiiiiiiiiii       tt         ee         ee     ww         ww  llllllllllll
```



```
                  ********************************************************************************
                  ********************************************************************************
                  ********************************************************************************
                  *****                                                                      *****
                  *****                  program verification information                   *****
                  *****                                                                      *****
                  *****                  code system:    scale  version:    4.2             *****
                  *****                                                                      *****
                  ********************************************************************************
                  ********************************************************************************
                  *****                                                                      *****
                  *****                                                                      *****
                  *****              program:  c0c002                                        *****
                  *****                                                                      *****
                  *****         creation date:  04/27/95                                     *****
                  *****                                                                      *****
                  *****              library:  /neutronics/scale/exe                         *****
                  *****                                                                      *****
                  *****                                                                      *****
                  *****     this is not a   scale  configuration controlled code             *****
                  *****                                                                      *****
                  *****              jobname:  davis                                         *****
                  *****                                                                      *****
                  *****     date of execution:  02/16/96                                     *****
                  *****                                                                      *****
                  *****     time of execution:  10:03:28                                     *****
                  *****                                                                      *****
                  *****                                                                      *****
                  ********************************************************************************
                  ********************************************************************************
                  ********************************************************************************
1
0       -1q array has       1 entries.
0        0q array has       4 entries.
0        1q array has      12 entries.
0select  5 nuclides from the master  library on logical  1
        65 nuclides from the working library on logical  3
         0 nuclides from the working library on logical  0
           to create the new working library on logical  4

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

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

0 nuclides from xsdrn tape				
1	hydrogen	endf/b-iv mat 1269/thrm1002	updated 10/13/89	202
2	b-10 1273 218ngp 042375 p-3 295k			203
3	boron-11	endf/b-iv mat 1160	updated 10/13/89	204
4	oxygen-16	endf/b-iv mat 1276	updated 10/13/89	201
5	zircalloy	endf/b-iv mat 1284	updated 10/13/89	205
0 nuclides from work tape				
6	1/v cross sections normalized to 1.0 at 0.0253 ev			999
7	hydrogen	endf/b-iv mat 1269/thrm1002	updated 10/13/89	1001
8	b-10 1273 218ngp 042375 p-3 295k			5010
9	boron-11	endf/b-iv mat 1160	updated 10/13/89	5011
10	oxygen-16	endf/b-iv mat 1276	updated 10/13/89	8016
11	oxygen-16	endf/b-iv mat 1276	updated 10/13/89	6
12	kr-83	mt=102,103,103,105,106,107	updated 10/13/89	36083
13	kr-85	mt= 102		36085
14	sr-90	mt=102	updated 10/13/89	38090
15	y-89	mt=102	updated 10/13/89	39089
16	zr-93	mt= 102		40093
17	zr-94	mt=102	updated 10/13/89	40094
18	zr-95	mt=102	updated 10/13/89	40095
19	zircalloy	endf/b-iv mat 1284	updated 10/13/89	40302
20	nb-94	mt=102	updated 10/13/89	41094
21	mo-95	mt=102	updated 10/13/89	42095
22	tc-99	mt=102	updated 10/13/89	43099
23	ru-101	mt=102	updated 10/13/89	44101
24	ru-106	mt=102	updated 10/13/89	44106
25	rh-103	mt=102	updated 10/13/89	45103
26	rh-105	mt= 102		45105
27	pd-105	mt=102	updated 10/13/89	46105
28	pd-108	mt=102	updated 10/13/89	46108
29	silver-109	endf/b-iv mat 1139	updated 10/13/89	47109
30	sb-124	mt=102	updated 10/13/89	51124
31	xe-131	mt=102,103,104,105,106	updated 10/13/89	54131
32	xe-132	mt=102,103,104,105,106	updated 10/13/89	54132
33	xenon-135	endf/b-iv mat 1294	updated 10/13/89	54135
34	xe-136	mt= 102, 103, 104, 105, 107		54136
35	cesium-133	endf/b-iv mat 1141	updated 10/13/89	55133
36	cs-134	mt=102	updated 10/13/89	55134
37	cs-135	mt= 102		55135
38	cs-137	mt=102	updated 10/13/89	55137
39	ba-136	mt=102	updated 10/13/89	56136
40	la-139	mt=102	updated 10/13/89	57139
41	ce-144	mt= 102		58144
42	pr-141	mt=102,103,104,105,106,107	updated 10/13/89	59141
43	pr-143	mt=102	updated 10/13/89	59143
44	nd-143	mt=102	updated 10/13/89	60143
45	nd-145	mt=102	updated 10/13/89	60145
46	nd-147	mt=102	updated 10/13/89	60147
47	pm-147	mt=102	updated 10/13/89	61147
48	pm-148	mt= 102		61148
49	sm-147	endf/b-v fission product	updated 10/13/89	62147
50	sm-149	mt=102,103,107	updated 10/13/89	62149
51	sm-150	mt=102	updated 10/13/89	62150
52	sm-151	mt=102,103,104,105,106,107	updated 10/13/89	62151

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    53    sm-152          mt=102,103,104,105,106,107     updated 10/13/89              62152
    54    eu-153          mt=102,103,104,105,106,107     updated 10/13/89              63153
    55    eu-154          mt=102,103,104,105,106,107     updated 10/13/89              63154
    56    eu-155          mt=102,103,104,105,106,107     updated 10/13/89              63155
    57    gd-155          mt=102                         updated 10/13/89              64155
    58    u-234 1043 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                          92234
    59    uranium-235     endf/b-iv mat 1261             updated 10/13/89              92235
    60    u-236 1163 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                          92236
    61    uranium-238     endf/b-iv mat 1262             updated 10/13/89              92238
    62    neptunium-237   endf/b-iv mat 1263             updated 10/13/89              93237
    63    pu-238 1050 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                         94238
    64    plutonium-239   endf/b-iv mat 1264             updated 10/13/89              94239
    65    plutonium-240   endf/b-iv mat 1265             updated 10/13/89              94240
    66    plutonium-241   endf/b-iv mat 1266             updated 10/13/89              94241
    67    plutonium-242   endf/b-iv mat 1161             updated 10/13/89              94242
    68    am-241 1056 sigo=5+4 newxlacs 218ngp p-3 293k                                95241
    69    am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                                 95243
    70    curium-244      endf/b-iv mat 1162             updated 10/13/89              96244
0 hydrogen        endf/b-iv mat 1269/thrmf1002    updated 10/13/89          202    temperature=   607.60
                            thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 042375 p-3 293k                                           203    temperature=   607.60
                            thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 boron-11        endf/b-iv mat 1160            updated 10/13/89            204    temperature=   607.60
                            thermal scattering matrix number   2 at a temperature of   550.00 was selected.
0 oxygen-16       endf/b-iv mat 1276            updated 10/13/89            201    temperature=   607.60
0 zircalloy       endf/b-iv mat 1284            updated 10/13/89            205    temperature=   650.00
0resonance data for this nuclide
0mass number (a)          =    90.436              temperature(kelvin)      =   650.000
0potential scatter sigma  =     6.385              lumped nuclear density   = 4.251560E-02
0spin factor (g)          =     1.079              lump dimension (a-bar)   = 6.730999E-01
0inner radius             = 6.324600E-01           dancoff correction (c)   = 1.680590E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss         res scat
   8     -1.156752E-03     .000000E+00    -7.806033E-01
   9     -4.625978E-02     .000000E+00    -2.073270E+00
  10     -5.962230E-02     .000000E+00    -1.351984E+00
  11     -1.761672E-01     .000000E+00    -7.350731E-01
0excess resonance integrals
0                 resolved
0absorption      2.92402E-01
 fission          .00000E+00
-  elapsed time    .00 min.
-  elapsed time    .02 min.
1     this xsdrn working tape was created 02/16/96 at 10:03:28
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled--  880 d, sas2h: babcock wilcox 15x15,
       3.00wt%, 20gwd/mtu burn high temp

         tape id                          8670        number of nuclides              70
         number of neutron groups           27        number of gamma groups           0
         first thermal group                15        logical unit                     4
                                  table of contents
        hydrogen       endf/b-iv mat 1269/thrmf1002   updated 10/13/89          id    202
       b-10 1273 218ngp 042375 p-3 293k                                          id    203
        boron-11       endf/b-iv mat 1160             updated 10/13/89          id    204
        oxygen-16      endf/b-iv mat 1276             updated 10/13/89          id    201
        zircalloy      endf/b-iv mat 1284             updated 10/13/89          id    205
       1/v cross sections normalized to 1.0 at 0.0253 ev                         id    999
```

hydrogen	endf/b-iv mat 1269/thrm1002	updated 10/13/89	id 1001
b-10 1273 218grp 042375 p-3 293k			id 5010
boron-11	endf/b-iv mat 1160	updated 10/13/89	id 5011
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	id 8016
oxygen-16	endf/b-iv mat 1276	updated 10/13/89	id 6
kr-83	mt=102,103,103,105,106,107	updated 10/13/89	id 36083
kr-85	mt= 102		id 36085
sr-90	mt=102	updated 10/13/89	id 38090
y-89	mt=102	updated 10/13/89	id 39089
zr-93	mt= 102		id 40093
zr-94	mt=102	updated 10/13/89	id 40094
zr-95	mt=102	updated 10/13/89	id 40095
zircalloy	endf/b-iv mat 1284	updated 10/13/89	id 40302
rb-94	mt=102	updated 10/13/89	id 41094
mo-95	mt=102	updated 10/13/89	id 42095
tc-99	mt=102	updated 10/13/89	id 43099
ru-101	mt=102	updated 10/13/89	id 44101
ru-106	mt=102	updated 10/13/89	id 44106
rh-103	mt=102	updated 10/13/89	id 45103
rh-105	mt= 102		id 45105
pd-105	mt=102	updated 10/13/89	id 46105
pd-108	mt=102	updated 10/13/89	id 46108
silver-109	endf/b-iv mat 1139	updated 10/13/89	id 47109
sb-124	mt=102	updated 10/13/89	id 51124
xe-131	mt=102,103,104,105,106	updated 10/13/89	id 54131
xe-132	mt=102,103,104,105,106	updated 10/13/89	id 54132
xenon-135	endf/b-iv mat 1294	updated 10/13/89	id 54135
xe-136	mt= 102, 103, 104, 105, 107		id 54136
cesium-133	endf/b-iv mat 1141	updated 10/13/89	id 55133
cs-134	mt=102	updated 10/13/89	id 55134
cs-135	mt= 102		id 55135
cs-137	mt=102	updated 10/13/89	id 55137
ba-136	mt=102	updated 10/13/89	id 56136
la-139	mt=102	updated 10/13/89	id 57139
ce-144	mt= 102		id 58144
pr-141	mt=102,103,104,105,106,107	updated 10/13/89	id 59141
pr-143	mt=102	updated 10/13/89	id 59143
nd-143	mt=102	updated 10/13/89	id 60143
nd-145	mt=102	updated 10/13/89	id 60145
nd-147	mt=102	updated 10/13/89	id 60147
pm-147	mt=102	updated 10/13/89	id 61147
pm-148	mt= 102		id 61148
sm-147	endf/b-v fission product	updated 10/13/89	id 62147
sm-149	mt=102,103,107	updated 10/13/89	id 62149
sm-150	mt=102	updated 10/13/89	id 62150
sm-151	mt=102,103,104,105,106,107	updated 10/13/89	id 62151
sm-152	mt=102,103,104,105,106,107	updated 10/13/89	id 62152
eu-153	mt=102,103,104,105,106,107	updated 10/13/89	id 63153
eu-154	mt=102,103,104,105,106,107	updated 10/13/89	id 63154
eu-155	mt=102,103,104,105,106,107	updated 10/13/89	id 63155
gd-155	mt=102	updated 10/13/89	id 64155
u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)			id 92234
uranium-235	endf/b-iv mat 1261	updated 10/13/89	id 92235
u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)			id 92236
uranium-238	endf/b-iv mat 1262	updated 10/13/89	id 92238
neptunium-237	endf/b-iv mat 1263	updated 10/13/89	id 93237
pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)			id 94238
plutonium-239	endf/b-iv mat 1264	updated 10/13/89	id 94239
plutonium-240	endf/b-iv mat 1265	updated 10/13/89	id 94240
plutonium-241	endf/b-iv mat 1266	updated 10/13/89	id 94241

```
      plutonium-242  endf/b-iv mat 1161          updated 10/13/89              id    94242
      am-241 1056 sig=5+4 newxlacs 218ngp p-3 293k                             id    95241
      am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                             id    95243
      curium-244     endf/b-iv mat 1162          updated 10/13/89              id    96244
0       tape copy used      0 i/o's, and took     .00 seconds
1 xx         xx  sssssssssss   ddddddddddd  rrrrrrrrrrr  mm         mm  ppppppppppp   mm         mm
   xx       xx  sssssssssssss  ddddddddddd  rrrrrrrrrrrr mm         mm  ppppppppppp   mmm       mmm
    xx     xx   ss          ss dd        dd rr        rr mmm       mm  pp        pp   mmmm     mmmm
     xx   xx    ss             dd        dd rr        rr mm mm     mm  pp        pp   mm mm   mm mm
      xx xx     ss             dd        dd rr        rr mm  mm    mm  pp        pp   mm  mm mm  mm
       xxx      sssssssssss    dd        dd rrrrrrrrrrr  mm   mm   mm  ppppppppppp   mm   mmm   mm
       xxx       sssssssssss   dd        dd rrrrrrrrrrr  mm    mm  mm  ppppppppppp   mm    m    mm
      xx xx              ss    dd        dd rr       rr  mm     mm mm  pp             mm         mm
     xx   xx             ss    dd        dd rr        rr mm      mmm  pp             mm         mm
    xx     xx    ss     ss    dd        dd rr         rr mm      mmm  pp             mm         mm
   xx       xx   sssssssssss   ddddddddddd  rr         rr mm       m  pp             mm         mm
  xx         xx   sssssssssss  ddddddddddd  rr         rr mm       m  pp             mm         mm
0

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

    0000000    2222222222          //      11      666666666666          //  9999999999  666666666666
   00000000    2222222222222      //      111      666666666666        //  9999999999999 666666666666
  00      00   22          22    //      1111      66                  //  99         99  66
 00        00            22     //       11       66                 //   99         99  66
 00        00            22    //        11       66                //    99         99  66
 00        00          22     //         11       666666666666     //     9999999999999 666666666666
 00        00        22      //          11       666666666666    //      9999999999999 666666666666
 00        00      22       //           11       66        66   //                99  66        66
 00        00    22        //            11       66        66  //                 99  66        66
  00      00   22         //             11       66        66 //                  99  66        66
   00000000   2222222222  //            11111111  666666666666//                   9999999999  666666666666
    000000    2222222222  //            11111111   66666666666//                    999999999   66666666666
0

      11        0000000                    0000000   3333333333                      2222222222  9999999999
     111       00000000                   00000000  33333333333                     2222222222  99999999999
    1111      00      00      :::        00      00 33        33      :::          22        22  99        99
      11      00      00      :::        00      00         33 33      :::                  22  99        99
      11      00      00      :::        00      00         33 33      :::                  22  99        99
      11      00      00                 00      00       333  33                         22  99999999999
      11      00      00                 00      00       333  33                       22    99999999999
      11      00      00      :::        00      00         33 33      :::             22              99
      11      00      00      :::        00      00         33 33      :::            22               99
      11      00      00      :::        00      00 33      33 33      :::           22                99
   11111111    00000000                   00000000  33333333333                     2222222222  9999999999
   11111111     0000000                    0000000   3333333333                      2222222222  9999999999
1
```

0

```
 ssssssssss    cccccccccc     aaaaaaaa    ll           eeeeeeeeeeee
ssssssssssss  cccccccccccc   aaaaaaaaaa   ll           eeeeeeeeeeee
ss        ss  cc        cc  aa        aa  ll           ee
ss            cc            aa        aa  ll           ee
ss            cc            aa        aa  ll           ee
ssssssssssss  cc            aaaaaaaaaaaa  ll           eeeeeeeee
 ssssssssssss cc            aaaaaaaaaaaa  ll           eeeeeeeee
        ss    cc            aa        aa  ll           ee
        ss    cc            aa        aa  ll           ee
ss      ss    cc        cc  aa        aa  ll           ee
ssssssssssss  cccccccccccc  aa        aa  llllllllllll eeeeeeeeeeee
 ssssssssss    cccccccccc   aa        aa  llllllllllll eeeeeeeeeeee
```

```
**********************************************************************
**********************************************************************
**********************************************************************
*****                                                            *****
*****                program verification information             *****
*****                                                            *****
*****              code system:   scale  version:   4.2          *****
*****                                                            *****
**********************************************************************
**********************************************************************
*****                                                            *****
*****                                                            *****
*****            program:  c0c001                                *****
*****                                                            *****
*****       creation date:  04/27/95                             *****
*****                                                            *****
*****            library:  /neutronics/scale/exe                 *****
*****                                                            *****
*****                                                            *****
*****   this is not a  scale  configuration controlled code      *****
*****                                                            *****
*****            jobname:  davis                                 *****
*****                                                            *****
*****   date of execution:  02/16/96                             *****
*****                                                            *****
*****   time of execution:  10:03:29                             *****
*****                                                            *****
*****                                                            *****
**********************************************************************
**********************************************************************
**********************************************************************
```

```
1
                 880 d, second part of sas2h pass to make library
0      -1q array has     1 entries.
0       0q array has    11 entries.
0       1q array has    15 entries.
0       2q array has    10 entries.
0       3q array has    12 entries.
0       4q array has     9 entries.
0       5q array has    12 entries.
0direct access unit  9 requires    12 blocks of length  704 for cross section mixing.
1                 880 d, second part of sas2h pass to make library
0general problem description data block
```

0 general problem data

ige	1/2/3 = plane/cylinder/sphere	2	isn	quadrature order	8
izm	number of zones	4	isct	order of scattering	3
im	number of special intervals	28	ievt	0/1/2/3/4/5/6=q/k/alpha/c/z/r/h	1
ibl	0/1/2/3 = vacuum/refl/per/white	1	iim	inner iteration maximum	20
ibr	right boundary condition	3	iom	outer iteration maximum	25
mx	number of mixtures	3	iclc	-1/0/n--flat res/sn/cpt	0
ms	mixing table length	70	ith	0/1 = forward/adjoint	0
igm	number of energy groups	27	iflu	not used(always wgtd)	0
nng	number of neutron groups	27	iprt	-2/-1/0/n=mixture xsec print	-2
ngg	number of gamma groups	0	idl	0/1/2/3=no/prt nd/pch n/both	14
iftg	number of first thermal group	15	ipbt	-1/0/1=none/fine/all bal. prt	0

0 special options

ifg	0/1 = none/weighting calculation	1	ipn	0/1/2 diff. coef. param	0
iqm	volumetric sources (0/n=no/yes)	0	idfm	0/1 = none/density factors 39*	0
ipm	boundary sources (0/n=no/yes)	0	iaz	0/n = none/n activities by zone	0
ifn	0/1/2 = input 33*/34*/use last	14	iai	0/1=none/activities by interval	0
itmx	maximum time (minutes)	10	ifct	0/1=no/yes upscatter scaling	0
idt1	0/1/2/3=no/xsect/srce/flux--out	0	ipvt	0/1/2=no/k/alpha parametric srch	0
isx	broad group fluxes	0	isen	outer iteration acceleration	0
ibln	activity data unit	0	nbnd	band rebaln parameter	0
jbkl	0/1/2 buckling geometry	0			

0 weighting data (ifg=1)

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

0 floating point parameters

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

this case will require 2611 locations for mixing
this case has been allocated 200000 locations

1 880 d, second part of sas2h pass to make library
0 13q array has 70 entries.
0 14q array has 70 entries.
0 15q array has 70 entries.

0 data block 2 (mixing table, etc.)

	nuclides on tape	cccc identification	mixing table mixture	mixing table component	atom density	extra xsect id's
1	202		3	201	2.09710E-02	
2	203		3	202	4.19420E-02	
3	204		3	203	3.81515E-06	
4	201		3	204	1.54884E-05	
5	205		2	205	4.25156E-02	
6	999		1	92235	1.33192E-04	
7	1001		1	92234	1.47781E-06	
8	5010		1	92236	1.82292E-05	
9	5011		1	92238	7.21946E-03	
10	8016		1	8016	1.50611E-02	
11	6		1	6	1.15315E-02	
12	36083		1	36083	4.72043E-07	

13	36085	1	36085	2.27030E-07
14	38090	1	38090	5.16852E-06
15	39089	1	39089	4.09755E-06
16	40093	1	42095	5.47657E-06
17	40094	1	40093	4.12203E-06
18	40095	1	40094	6.47876E-06
19	40302	1	40095	6.60385E-07
20	41094	1	41094	3.21149E-12
21	42095	1	43099	6.33732E-06
22	43099	1	45103	3.47568E-06
23	44101	1	45105	7.39443E-09
24	44106	1	44101	5.75136E-06
25	45103	1	44106	8.69130E-07
26	45105	1	46105	2.26913E-06
27	46105	1	46108	6.36851E-07
28	46108	1	47109	4.45102E-07
29	47109	1	51124	1.00830E-10
30	51124	1	54131	2.90271E-06
31	54131	1	54132	5.45567E-06
32	54132	1	54135	2.20848E-09
33	54135	1	54136	1.09418E-05
34	54136	1	55134	3.16663E-07
35	55133	1	55135	3.47362E-06
36	55134	1	55137	6.78821E-06
37	55135	1	56136	6.38766E-08
38	55137	1	57139	6.72223E-06
39	56136	1	59141	5.82082E-06
40	57139	1	59143	1.22771E-07
41	58144	1	58144	2.21790E-06
42	59141	1	60143	5.26395E-06
43	59143	1	60145	3.88111E-06
44	60143	1	61147	1.33040E-06
45	60145	1	61148	3.89552E-09
46	60147	1	60147	4.29701E-08
47	61147	1	62147	4.63565E-07
48	61148	1	62149	2.87617E-08
49	62147	1	62150	1.38277E-06
50	62149	1	62151	1.32930E-07
51	62150	1	62152	6.63045E-07
52	62151	1	64155	7.21936E-10
53	62152	1	63153	3.98698E-07
54	63153	1	63154	8.34053E-08
55	63154	1	63155	4.31432E-08
56	63155	1	40302	4.42681E-03
57	64155	1	1001	2.30630E-02
58	92234	1	5010	2.09787E-06
59	92235	1	5011	8.51673E-06
60	92236	1	55133	6.95263E-06
61	92238	1	95237	1.23390E-06
62	95237	1	94238	1.76797E-07
63	94238	1	94239	3.56356E-05
64	94239	1	94240	6.93689E-06
65	94240	1	94241	3.76423E-06
66	94241	1	94242	4.23205E-07
67	94242	1	95241	1.12643E-07
68	95241	1	95243	3.90711E-08
69	95243	1	96244	3.73748E-09
70	96244	1	999	3.30753E-21

- elapsed time .00 min.
0 24259 locations will be used

0 35q array has 29 entries.
0 36q array has 28 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 880 d, second part of sas2h pass to make library

neutron group parameters

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	1	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	1	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	1	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	1	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	2	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	2	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72415E+08	2	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	2	0	9	1.00000E+00	
10	3.00000E+03	8.11173E+00	4.82126E+07	2	0	10	1.00000E+00	
11	5.50000E+02	9.80818E+00	2.05946E+07	2	0	11	1.00000E+00	
12	1.00000E+02	1.15129E+01	1.01036E+07	2	0	12	1.00000E+00	
13	3.00000E+01	1.27169E+01	5.69595E+06	2	0	13	1.00000E+00	
14	1.00000E+01	1.38155E+01	3.20957E+06	2	0	14	1.00000E+00	
15	3.04999E+00	1.50030E+01	2.10601E+06	2	0	15	1.00000E+00	
16	1.77000E+00	1.55471E+01	1.70522E+06	2	0	16	1.00000E+00	
17	1.29999E+00	1.58657E+01	1.52545E+06	2	0	17	1.00000E+00	
18	1.12999E+00	1.59959E+01	1.42867E+06	2	0	18	1.00000E+00	
19	1.00000E+00	1.61181E+01	1.31002E+06	2	0	19	1.00000E+00	
20	8.00000E-01	1.63412E+01	9.05898E+05	2	0	20	1.00000E+00	
21	4.00000E-01	1.70344E+01	8.17974E+05	3	0	21	1.00000E+00	
22	3.25000E-01	1.72420E+01	6.90070E+05	3	0	22	1.00000E+00	
23	2.25000E-01	1.76098E+01	4.86953E+05	3	0	23	1.00000E+00	
24	9.99999E-02	1.84207E+01	3.57766E+05	3	0	24	1.00000E+00	
25	5.00000E-02	1.91138E+01	2.71895E+05	3	0	25	1.00000E+00	
26	3.00000E-02	1.96247E+01	1.87283E+05	3	0	26	1.00000E+00	
27	1.00000E-02	2.07233E+01	8.88201E+04	3	0	27	1.00000E+00	
28	1.00000E-05	2.76310E+01						

1 880 d, second part of sas2h pass to make library

0	mixture by zone	order p(l) by zone	activity table matl no.	activity table reaction	quadrature constants weights	quadrature constants directions	quadrature constants refl direc	quadrature constants wt x cos
1	3	3			0	-2.79004E-01	3	0
2	2	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	3	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	1	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28593E-02
7					5.55953E-02	2.31301E-01	6	1.28593E-02
8					5.55953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	15	0
10					5.22844E-02	-8.21784E-01	15	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-02
14					5.22844E-02	6.01588E-01	11	3.14537E-02
15					5.22844E-02	8.21784E-01	10	4.29665E-02
16					0	-9.83032E-01	24	0
17					4.53359E-02	-9.64143E-01	24	-4.37099E-02
18					4.53359E-02	-8.17361E-01	23	-3.70655E-02
19					4.53359E-02	-5.46143E-01	22	-2.47597E-02

	20				4.53355E-02	-1.91780E-01	21	-8.69444E-03
	21				4.53355E-02	1.91780E-01	20	8.69444E-03
	22				4.53355E-02	5.46143E-01	19	2.47597E-02
	23				4.53355E-02	8.17361E-01	18	3.70555E-02
	24				4.53355E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40330E-01	3.44244E-01
12	-2.20194E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20194E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40330E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83032E-01	-4.49528E-01	8.36886E-01	5.00703E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95287E-02	5.92931E-02	1	2.48366E-01	1.47264E-02		0	
3	7.90575E-02	1.18586E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81762E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98693E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48366E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53403E-01	5.73167E-01	1	3.47713E+00	1.42355E-01			
10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01			
11	6.32460E-01	6.42620E-01	2	3.97386E+00	8.20460E-02			
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46405E-02			
13	6.73100E-01	6.96588E-01	3	4.22921E+00	2.05562E-01			
14	7.20067E-01	7.43550E-01	3	4.52431E+00	2.19422E-01			
15	7.67033E-01	7.90517E-01	3	4.81941E+00	2.33282E-01			
16	8.14000E-01	8.62795E-01	4	5.11451E+00	5.29051E-01			
17	9.11591E-01	9.60886E-01	4	5.72769E+00	5.88891E-01			
18	1.00918E+00	1.10677E+00	4	6.34088E+00	1.35731E+00			
19	1.20436E+00	1.30195E+00	4	7.56724E+00	1.59657E+00			
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.88603E+00			
21	1.59473E+00	1.69232E+00	4	1.00200E+01	2.07540E+00			
22	1.78991E+00	1.88750E+00	4	1.12463E+01	2.31476E+00			
23	1.98509E+00	2.08268E+00	4	1.24727E+01	2.55412E+00			
24	2.18027E+00	2.27786E+00	4	1.36991E+01	2.79349E+00			
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.03285E+00			
26	2.57064E+00	2.66823E+00	4	1.61518E+01	3.27221E+00			
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72587E+00			
28	2.86341E+00	2.91220E+00	4	1.79913E+01	1.78571E+00			

29 2.96100E+00 1.86045E+01
- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	172	-8.63675E-06	1.03791E+00	-4.15808E-02	1.00000E+00	-1.29586E-02	.00000E+00	.0000
2	251	5.65640E-06	1.04195E+00	-9.95511E-04	-5.16134E-03	-2.02897E-03	.00000E+00	.0000
3	314	-3.70457E-07	1.04265E+00	-1.59963E-04	-7.56361E-04	-4.78393E-04	.00000E+00	.0167
4	361	-1.31994E-06	1.04280E+00	-3.61601E-05	-1.80436E-04	-1.10090E-04	.00000E+00	.0167

grp	to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	17	1.37238E-06	28	1.00000E+00	1
2	2	1	17	1.66839E-06	28	1.00000E+00	1
3	3	1	17	1.54704E-06	28	1.00000E+00	1
4	4	1	17	1.51222E-06	28	1.00000E+00	1
5	5	1	17	1.59874E-06	28	1.00000E+00	1
6	6	1	17	1.09976E-06	28	1.00000E+00	1
7	7	1	24	1.17530E-06	28	1.00000E+00	2
8	8	1	23	7.98909E-08	20	1.00000E+00	2
9	9	1	27	1.50382E-05	28	9.99986E-01	3
10	10	1	28	9.83594E-07	28	1.00000E+00	3
11	11	1	26	4.76753E-06	28	9.99996E-01	3
12	12	1	25	8.77948E-07	28	9.99999E-01	3
13	13	1	26	4.85440E-06	28	9.99995E-01	3
14	14	1	25	8.47489E-07	28	9.99999E-01	3
15	15	2	28	3.36890E-05	28	1.00000E+00	2
16	16	2	28	4.08855E-05	28	1.00001E+00	2
17	17	2	26	9.14355E-05	28	1.00010E+00	3
18	18	2	28	4.33017E-05	28	1.00002E+00	3
19	19	2	26	8.20417E-05	28	1.00009E+00	3
20	20	2	25	2.21060E-05	28	1.00002E+00	3
21	21	2	28	5.23587E-05	28	1.00001E+00	3
22	22	1	14	8.38734E-05	28	9.99920E-01	3
23	23	1	27	4.27573E-05	28	1.00004E+00	4
24	24	1	1	3.70277E-05	9	1.00003E+00	4
25	25	1	1	4.36447E-05	28	1.00003E+00	5
26	26	1	1	3.11986E-05	6	1.00002E+00	6
27	27	1	1	2.80956E-05	5	1.00002E+00	8

5 395 1.90825E-06 1.04280E+00 -8.50867E-06 -4.18172E-05 -2.48051E-05 .00000E+00 .0167

final monitor
lambda 1.04283E+00 production/absorption 1.05648E+00 angular flux on 16
- elapsed time .02 min.

1 880 d, second part of sas2h pass to make library

0 int.	zone number	radius	int. midpoint	area	volume	prod density
1	1	.00000E+00	1.97644E-02	.00000E+00	4.90881E-03	.00000E+00
2	1	3.95287E-02	5.92931E-02	2.48366E-01	1.47264E-02	.00000E+00
3	1	7.90575E-02	1.18586E-01	4.96733E-01	5.89057E-02	.00000E+00
4	1	1.58115E-01	1.97644E-01	9.93466E-01	9.81762E-02	.00000E+00
5	1	2.37172E-01	2.76701E-01	1.49020E+00	1.37447E-01	.00000E+00
6	1	3.16230E-01	3.55759E-01	1.98693E+00	1.76717E-01	.00000E+00
7	1	3.95288E-01	4.34816E-01	2.48366E+00	2.15988E-01	.00000E+00
8	1	4.74345E-01	5.13874E-01	2.98040E+00	2.55258E-01	.00000E+00
9	1	5.53403E-01	5.73167E-01	3.47713E+00	1.42355E-01	.00000E+00
10	1	5.92931E-01	6.12696E-01	3.72550E+00	1.52173E-01	.00000E+00
11	2	6.32460E-01	6.42620E-01	3.97386E+00	8.20460E-02	.00000E+00
12	2	6.52780E-01	6.62940E-01	4.10154E+00	8.46405E-02	.00000E+00
13	3	6.73100E-01	6.96583E-01	4.22921E+00	2.05562E-01	.00000E+00
14	3	7.20067E-01	7.43550E-01	4.52431E+00	2.19422E-01	.00000E+00
15	3	7.67033E-01	7.90517E-01	4.81941E+00	2.33282E-01	.00000E+00
16	4	8.14000E-01	8.62795E-01	5.11451E+00	5.29051E-01	2.38059E-02
17	4	9.11591E-01	9.60386E-01	5.72769E+00	5.88891E-01	2.59056E-02

18	4	1.00918E+00	1.10677E+00	6.34088E+00	1.35731E+00	5.84708E-02
19	4	1.20436E+00	1.30195E+00	7.56724E+00	1.59667E+00	6.73591E-02
20	4	1.39955E+00	1.49714E+00	8.79360E+00	1.83603E+00	7.63332E-02
21	4	1.59473E+00	1.69232E+00	1.00200E+01	2.07540E+00	8.53572E-02
22	4	1.78991E+00	1.88750E+00	1.12463E+01	2.31478E+00	9.44350E-02
23	4	1.98509E+00	2.08268E+00	1.24727E+01	2.55412E+00	1.03575E-01
24	4	2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.12792E-01
25	4	2.37545E+00	2.47305E+00	1.49254E+01	3.03285E+00	1.22103E-01
26	4	2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.31540E-01
27	4	2.76582E+00	2.81461E+00	1.73781E+01	1.72587E+00	6.93567E-02
28	4	2.86341E+00	2.91220E+00	1.79913E+01	1.78571E+00	7.17984E-02
29		2.96100E+00		1.86045E+01		

1 880 d, second part of sas2h pass to make library

0 total flux

0 int.	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.29528E-02	9.08020E-02	1.12533E-01	6.90100E-02	1.02732E-01	1.92768E-01	1.93076E-01	1.47004E-01
2	1.29478E-02	9.07508E-02	1.12468E-01	6.89718E-02	1.02679E-01	1.92681E-01	1.93036E-01	1.46998E-01
3	1.29483E-02	9.07638E-02	1.12489E-01	6.89898E-02	1.02714E-01	1.92751E-01	1.93089E-01	1.47009E-01
4	1.29550E-02	9.08445E-02	1.12602E-01	6.90692E-02	1.02843E-01	1.92994E-01	1.93245E-01	1.47038E-01
5	1.29673E-02	9.09864E-02	1.12798E-01	6.92011E-02	1.03059E-01	1.93392E-01	1.93493E-01	1.47082E-01
6	1.29841E-02	9.11817E-02	1.13067E-01	6.93844E-02	1.03357E-01	1.93941E-01	1.93832E-01	1.47138E-01
7	1.30052E-02	9.14316E-02	1.13413E-01	6.96224E-02	1.03745E-01	1.94657E-01	1.94273E-01	1.47208E-01
8	1.30307E-02	9.17437E-02	1.13853E-01	6.99297E-02	1.04250E-01	1.95595E-01	1.94849E-01	1.47291E-01
9	1.30523E-02	9.20182E-02	1.14267E-01	7.02116E-02	1.04718E-01	1.96461E-01	1.95385E-01	1.47360E-01
10	1.30669E-02	9.22335E-02	1.14578E-01	7.04598E-02	1.05139E-01	1.97246E-01	1.95871E-01	1.47409E-01
11	1.30792E-02	9.24118E-02	1.14851E-01	7.06682E-02	1.05492E-01	1.97922E-01	1.96289E-01	1.47454E-01
12	1.30925E-02	9.25446E-02	1.15025E-01	7.07765E-02	1.05662E-01	1.98259E-01	1.96492E-01	1.47497E-01
13	1.31206E-02	9.27865E-02	1.15295E-01	7.09140E-02	1.05851E-01	1.98598E-01	1.96683E-01	1.47566E-01
14	1.31618E-02	9.31719E-02	1.15749E-01	7.11692E-02	1.06225E-01	1.99256E-01	1.97062E-01	1.47658E-01
15	1.32102E-02	9.36678E-02	1.16374E-01	7.15558E-02	1.06822E-01	2.00328E-01	1.97690E-01	1.47759E-01
16	1.32856E-02	9.44619E-02	1.17391E-01	7.22008E-02	1.07836E-01	2.02168E-01	1.98781E-01	1.47925E-01
17	1.33599E-02	9.52521E-02	1.18407E-01	7.28489E-02	1.08866E-01	2.04060E-01	1.99922E-01	1.48126E-01
18	1.34189E-02	9.58923E-02	1.19240E-01	7.33843E-02	1.09731E-01	2.05695E-01	2.00938E-01	1.48330E-01
19	1.34703E-02	9.64605E-02	1.19988E-01	7.38685E-02	1.10521E-01	2.07221E-01	2.01904E-01	1.48542E-01
20	1.35004E-02	9.68017E-02	1.20445E-01	7.41670E-02	1.11015E-01	2.08208E-01	2.02542E-01	1.48697E-01
21	1.35193E-02	9.70209E-02	1.20743E-01	7.43634E-02	1.11344E-01	2.08873E-01	2.02986E-01	1.48813E-01
22	1.35314E-02	9.71639E-02	1.20942E-01	7.44944E-02	1.11566E-01	2.09338E-01	2.03300E-01	1.48900E-01
23	1.35389E-02	9.72558E-02	1.21071E-01	7.45805E-02	1.11712E-01	2.09654E-01	2.03517E-01	1.48962E-01
24	1.35433E-02	9.73106E-02	1.21150E-01	7.46331E-02	1.11803E-01	2.09855E-01	2.03658E-01	1.49004E-01
25	1.35452E-02	9.73356E-02	1.21187E-01	7.46582E-02	1.11848E-01	2.09959E-01	2.03732E-01	1.49025E-01
26	1.35448E-02	9.73324E-02	1.21185E-01	7.46570E-02	1.11848E-01	2.09966E-01	2.03738E-01	1.49025E-01
27	1.35430E-02	9.73123E-02	1.21159E-01	7.46395E-02	1.11819E-01	2.09911E-01	2.03701E-01	1.49012E-01
28	1.35405E-02	9.72826E-02	1.21119E-01	7.46130E-02	1.11775E-01	2.09821E-01	2.03638E-01	1.48992E-01

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15956E-01	1.07187E-01	1.00969E-01	6.54718E-02	5.58986E-02	5.32164E-02	2.89961E-02	1.60417E-02
2	1.15957E-01	1.07189E-01	1.00973E-01	6.54768E-02	5.59035E-02	5.32236E-02	2.89984E-02	1.60428E-02
3	1.15955E-01	1.07180E-01	1.00952E-01	6.54529E-02	5.58809E-02	5.31902E-02	2.89919E-02	1.60391E-02
4	1.15951E-01	1.07159E-01	1.00903E-01	6.53954E-02	5.58266E-02	5.31100E-02	2.89757E-02	1.60301E-02
5	1.15944E-01	1.07126E-01	1.00828E-01	6.53077E-02	5.57441E-02	5.29880E-02	2.89516E-02	1.60166E-02
6	1.15935E-01	1.07082E-01	1.00726E-01	6.51885E-02	5.56325E-02	5.28225E-02	2.89198E-02	1.59986E-02
7	1.15923E-01	1.07023E-01	1.00591E-01	6.50323E-02	5.54868E-02	5.26060E-02	2.88797E-02	1.59756E-02
8	1.15909E-01	1.06944E-01	1.00412E-01	6.48263E-02	5.52961E-02	5.23214E-02	2.88292E-02	1.59461E-02
9	1.15900E-01	1.06870E-01	1.00244E-01	6.46342E-02	5.51190E-02	5.20662E-02	2.87838E-02	1.59191E-02
10	1.15901E-01	1.06800E-01	1.00089E-01	6.44593E-02	5.49588E-02	5.18154E-02	2.87442E-02	1.58950E-02
11	1.15906E-01	1.06746E-01	9.99662E-02	6.43221E-02	5.48316E-02	5.16254E-02	2.87095E-02	1.58748E-02
12	1.15902E-01	1.06726E-01	9.99203E-02	6.42684E-02	5.47795E-02	5.15493E-02	2.86904E-02	1.58651E-02
13	1.15857E-01	1.06699E-01	9.98577E-02	6.41862E-02	5.47045E-02	5.14358E-02	2.86743E-02	1.58550E-02
14	1.15787E-01	1.06637E-01	9.97149E-02	6.40080E-02	5.45462E-02	5.11929E-02	2.86477E-02	1.58357E-02
15	1.15711E-01	1.06532E-01	9.94808E-02	6.37275E-02	5.42986E-02	5.08112E-02	2.86078E-02	1.58055E-02
16	1.15607E-01	1.06361E-01	9.90950E-02	6.32655E-02	5.38895E-02	5.01786E-02	2.85346E-02	1.57538E-02

17	1.15513E-01	1.06191E-01	9.87054E-02	6.28037E-02	5.34751E-02	4.95426E-02	2.84473E-02	1.56977E-02
18	1.15447E-01	1.06047E-01	9.85739E-02	6.24095E-02	5.31127E-02	4.89984E-02	2.83531E-02	1.56427E-02
19	1.15394E-01	1.05915E-01	9.80647E-02	6.20423E-02	5.27697E-02	4.84907E-02	2.82532E-02	1.55869E-02
20	1.15370E-01	1.05831E-01	9.78648E-02	6.18052E-02	5.25436E-02	4.81621E-02	2.81784E-02	1.55468E-02
21	1.15357E-01	1.05773E-01	9.77259E-02	6.16405E-02	5.23862E-02	4.79331E-02	2.81211E-02	1.55167E-02
22	1.15351E-01	1.05733E-01	9.76270E-02	6.15239E-02	5.22694E-02	4.77697E-02	2.80775E-02	1.54941E-02
23	1.15348E-01	1.05705E-01	9.75567E-02	6.14400E-02	5.21873E-02	4.76534E-02	2.80453E-02	1.54775E-02
24	1.15346E-01	1.05686E-01	9.75089E-02	6.13832E-02	5.21312E-02	4.75742E-02	2.80233E-02	1.54662E-02
25	1.15344E-01	1.05674E-01	9.74803E-02	6.13494E-02	5.20982E-02	4.75272E-02	2.80108E-02	1.54598E-02
26	1.15342E-01	1.05670E-01	9.74712E-02	6.13385E-02	5.20885E-02	4.75128E-02	2.80088E-02	1.54587E-02
27	1.15340E-01	1.05672E-01	9.74764E-02	6.13452E-02	5.20962E-02	4.75230E-02	2.80141E-02	1.54613E-02
28	1.15337E-01	1.05677E-01	9.74919E-02	6.13637E-02	5.21158E-02	4.75497E-02	2.80239E-02	1.54662E-02

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	6.99978E-03	5.26373E-03	1.05900E-02	3.52499E-02	1.09386E-02	2.23971E-02	7.57244E-02	6.21490E-02
2	7.00052E-03	5.26524E-03	1.05913E-02	3.52526E-02	1.09396E-02	2.23989E-02	7.57195E-02	6.21346E-02
3	6.99729E-03	5.25695E-03	1.05852E-02	3.52383E-02	1.09286E-02	2.23638E-02	7.56031E-02	6.20099E-02
4	6.98948E-03	5.23696E-03	1.05706E-02	3.52044E-02	1.09031E-02	2.22840E-02	7.53472E-02	6.17416E-02
5	6.97759E-03	5.20623E-03	1.05484E-02	3.51538E-02	1.08647E-02	2.21640E-02	7.49676E-02	6.13446E-02
6	6.96147E-03	5.16406E-03	1.05185E-02	3.50860E-02	1.08126E-02	2.20018E-02	7.44619E-02	6.08158E-02
7	6.94088E-03	5.10817E-03	1.04796E-02	3.49988E-02	1.07446E-02	2.17906E-02	7.38175E-02	6.01437E-02
8	6.91264E-03	5.03350E-03	1.04289E-02	3.48866E-02	1.06553E-02	2.15148E-02	7.30052E-02	5.92999E-02
9	6.88676E-03	4.96309E-03	1.03819E-02	3.47857E-02	1.05720E-02	2.12598E-02	7.22709E-02	5.85468E-02
10	6.86317E-03	4.89835E-03	1.03395E-02	3.46919E-02	1.04958E-02	2.10282E-02	7.16342E-02	5.78998E-02
11	6.84447E-03	4.84881E-03	1.03056E-02	3.46180E-02	1.04374E-02	2.08542E-02	7.11707E-02	5.74485E-02
12	6.83698E-03	4.83123E-03	1.02915E-02	3.45864E-02	1.0417OE-02	2.07961E-02	7.10275E-02	5.73339E-02
13	6.82606E-03	4.79869E-03	1.02729E-02	3.45462E-02	1.03835E-02	2.06894E-02	7.07517E-02	5.70489E-02
14	6.80256E-03	4.72549E-03	1.02336E-02	3.44644E-02	1.03072E-02	2.04477E-02	7.01395E-02	5.63993E-02
15	6.76534E-03	4.60961E-03	1.01721E-02	3.43384E-02	1.01860E-02	2.00716E-02	6.92446E-02	5.54712E-02
16	6.70403E-03	4.40664E-03	1.00698E-02	3.41300E-02	9.98748E-03	1.94515E-02	6.78671E-02	5.40931E-02
17	6.64270E-03	4.20615E-03	9.96401E-03	3.39106E-02	9.79105E-03	1.88370E-02	6.64655E-02	5.27168E-02
18	6.59002E-03	4.05544E-03	9.86791E-03	3.37022E-02	9.62549E-03	1.83261E-02	6.51270E-02	5.13972E-02
19	6.54066E-03	3.92709E-03	9.77531E-03	3.34945E-02	9.47172E-03	1.78557E-02	6.37816E-02	5.00666E-02
20	6.50834E-03	3.85355E-03	9.71287E-03	3.33482E-02	9.37240E-03	1.75547E-02	6.28230E-02	4.91165E-02
21	6.48561E-03	3.80636E-03	9.66831E-03	3.32408E-02	9.30286E-03	1.73448E-02	6.21049E-02	4.84048E-02
22	6.46927E-03	3.77483E-03	9.63594E-03	3.31598E-02	9.25290E-03	1.71943E-02	6.15611E-02	4.78666E-02
23	6.45760E-03	3.75339E-03	9.61264E-03	3.31007E-02	9.21697E-03	1.70857E-02	6.11532E-02	4.74630E-02
24	6.44964E-03	3.73911E-03	9.59663E-03	3.30596E-02	9.19215E-03	1.70102E-02	6.08584E-02	4.71701E-02
25	6.44496E-03	3.73041E-03	9.58707E-03	3.30350E-02	9.17665E-03	1.69621E-02	6.06639E-02	4.69733E-02
26	6.44361E-03	3.72671E-03	9.58407E-03	3.30282E-02	9.17047E-03	1.69405E-02	6.05687E-02	4.68682E-02
27	6.44524E-03	3.72705E-03	9.58669E-03	3.30337E-02	9.17174E-03	1.69409E-02	6.05585E-02	4.68445E-02
28	6.44800E-03	3.73028E-03	9.59197E-03	3.30477E-02	9.17816E-03	1.69569E-02	6.06100E-02	4.68777E-02

0 int.	grp. 25	grp. 26	grp. 27
1	2.81217E-02	2.02933E-02	3.85498E-03
2	2.81110E-02	2.02814E-02	3.85212E-03
3	2.80442E-02	2.02229E-02	3.84012E-03
4	2.79023E-02	2.00998E-02	3.81469E-03
5	2.76920E-02	1.99151E-02	3.77623E-03
6	2.74114E-02	1.96672E-02	3.72358E-03
7	2.70550E-02	1.93497E-02	3.65472E-03
8	2.66095E-02	1.89496E-02	3.56592E-03
9	2.62144E-02	1.85931E-02	3.48563E-03
10	2.58796E-02	1.82889E-02	3.41665E-03
11	2.56557E-02	1.80930E-02	3.37492E-03
12	2.56077E-02	1.80533E-02	3.37213E-03
13	2.54485E-02	1.79169E-02	3.35282E-03
14	2.50658E-02	1.75694E-02	3.29808E-03
15	2.45809E-02	1.70788E-02	3.09726E-03
16	2.38500E-02	1.63782E-02	2.89161E-03
17	2.31323E-02	1.57165E-02	2.71461E-03
18	2.24490E-02	1.51197E-02	2.58104E-03

19	2.17641E-02	1.45404E-02	2.46055E-03
20	2.12802E-02	1.41490E-02	2.38726E-03
21	2.09215E-02	1.38691E-02	2.33791E-03
22	2.06531E-02	1.36661E-02	2.30372E-03
23	2.04535E-02	1.35186E-02	2.27948E-03
24	2.03094E-02	1.34140E-02	2.26261E-03
25	2.02119E-02	1.33437E-02	2.25142E-03
26	2.01574E-02	1.33052E-02	2.24497E-03
27	2.01415E-02	1.32888E-02	2.24254E-03
28	2.01520E-02	1.32919E-02	2.24244E-03

- elapsed time .02 min.

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	5.04510E-04	6.67761E-04	5.56019E-05	-7.23328E-04	9.99953E-01
2	.00000E+00	.00000E+00	3.83148E-04	6.16418E-03	8.10169E-03	1.76150E-04	-7.89438E-03	9.99963E-01
3	.00000E+00	.00000E+00	3.84799E-03	5.46596E-03	1.42214E-02	9.28018E-05	-1.04659E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.59085E-03	3.60098E-03	1.25726E-02	4.20252E-05	-6.82364E-03	9.99988E-01
5	.00000E+00	.00000E+00	1.02689E-02	1.15287E-02	2.08865E-02	4.96820E-05	-1.06671E-02	9.99992E-01
6	.00000E+00	.00000E+00	2.15106E-02	3.45000E-02	4.10034E-02	8.42975E-05	-1.95771E-02	9.99995E-01
7	.00000E+00	.00000E+00	4.22446E-02	6.09745E-02	5.41408E-02	6.12258E-05	-1.19568E-02	9.99988E-01
8	.00000E+00	.00000E+00	5.63661E-02	7.83630E-02	5.87581E-02	3.64106E-05	-2.42525E-03	9.99912E-01
9	.00000E+00	.00000E+00	5.77976E-02	7.26404E-02	5.75244E-02	2.92873E-05	2.50246E-04	9.99890E-01
10	.00000E+00	.00000E+00	5.71018E-02	6.92160E-02	5.56253E-02	3.60861E-05	1.44639E-03	9.99894E-01
11	.00000E+00	.00000E+00	5.59047E-02	6.56589E-02	5.24190E-02	5.52110E-05	3.43382E-03	9.99939E-01
12	.00000E+00	.00000E+00	4.54492E-02	3.51301E-02	4.13349E-02	6.05084E-05	4.05481E-03	9.99978E-01
13	.00000E+00	.00000E+00	4.06014E-02	2.85832E-02	3.66561E-02	8.46726E-05	3.85204E-03	9.99970E-01
14	.00000E+00	.00000E+00	3.94906E-02	2.81708E-02	3.36515E-02	1.35950E-04	5.70361E-03	9.99888E-01
15	.00000E+00	.00000E+00	2.16591E-02	1.08422E-02	2.03118E-02	1.12496E-04	1.23565E-03	9.99961E-01
16	.00000E+00	.00000E+00	1.42107E-02	4.56608E-03	1.34521E-02	7.61473E-05	6.82897E-04	9.99972E-01
17	.00000E+00	.00000E+00	7.29140E-03	1.28544E-03	6.68810E-03	3.67973E-05	5.66708E-04	9.99972E-01
18	.00000E+00	.00000E+00	6.45842E-03	9.19768E-04	5.02580E-03	2.87800E-05	1.40390E-03	9.99990E-01
19	.00000E+00	.00000E+00	1.06562E-02	2.87901E-03	9.55519E-03	6.44814E-05	1.03678E-03	9.99977E-01
20	.00000E+00	.00000E+00	2.60612E-02	2.07213E-02	2.34283E-02	2.70250E-04	2.36309E-03	9.99986E-01
21	.00000E+00	.00000E+00	1.24522E-02	4.10951E-03	1.06907E-02	1.03060E-04	1.65858E-03	9.99983E-01
22	.00000E+00	.00000E+00	2.45964E-02	1.25329E-02	1.95039E-02	2.40724E-04	4.85135E-03	1.00002E+00
23	.00000E+00	.00000E+00	6.35782E-02	7.65646E-02	5.02779E-02	1.11145E-03	1.21889E-02	1.00005E+00
24	.00000E+00	.00000E+00	6.78364E-02	7.24320E-02	5.59109E-02	1.31776E-03	1.06050E-02	1.00004E+00
25	.00000E+00	.00000E+00	4.51868E-02	3.07501E-02	3.95600E-02	7.81536E-04	4.84419E-03	1.00002E+00
26	.00000E+00	.00000E+00	3.61064E-02	3.43883E-02	3.17622E-02	7.95286E-04	3.54856E-03	1.00002E+00
27	.00000E+00	.00000E+00	1.22538E-02	7.46532E-03	1.13726E-02	2.84159E-04	5.97017E-04	1.00000E+00
28	.00000E+00	.00000E+00	7.84903E-01	7.79957E-01	7.84903E-01	6.22283E-03	-6.20259E-03	9.99975E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.30740E-02	-7.23328E-04	1.29571E-02	.00000E+00	3.69291E-11	.00000E+00	2.00132E-05	1.63473E-02
2	9.23472E-02	-7.89438E-03	9.08455E-02	.00000E+00	.00000E+00	.00000E+00	8.95467E-05	1.14968E-01
3	1.14755E-01	-1.04659E-02	1.12588E-01	.00000E+00	.00000E+00	.00000E+00	9.25722E-05	1.42631E-01
4	7.05999E-02	-6.82364E-03	6.90441E-02	.00000E+00	.00000E+00	.00000E+00	4.17695E-05	8.75769E-02
5	1.05379E-01	-1.06671E-02	1.02781E-01	.00000E+00	.00000E+00	.00000E+00	4.98889E-05	1.30518E-01
6	1.97698E-01	-1.95771E-02	1.92851E-01	.00000E+00	.00000E+00	.00000E+00	8.34278E-05	2.44892E-01
7	1.96151E-01	-1.19568E-02	1.93118E-01	.00000E+00	.00000E+00	.00000E+00	5.92818E-05	2.44303E-01
8	1.47433E-01	-2.42525E-03	1.47011E-01	.00000E+00	.00000E+00	.00000E+00	3.27300E-05	1.85001E-01
9	1.15904E-01	2.50246E-04	1.15956E-01	.00000E+00	.00000E+00	.00000E+00	2.16822E-05	1.45675E-01
10	1.06760E-01	1.44639E-03	1.07184E-01	.00000E+00	.00000E+00	.00000E+00	1.91735E-05	1.34465E-01
11	9.99994E-02	3.43382E-03	1.00961E-01	.00000E+00	.00000E+00	.00000E+00	1.79254E-05	1.26353E-01
12	6.43590E-02	4.05481E-03	6.54629E-02	.00000E+00	.00000E+00	.00000E+00	1.05224E-05	8.16613E-02
13	5.48671E-02	3.85204E-03	5.58900E-02	.00000E+00	.00000E+00	.00000E+00	8.74912E-06	6.96722E-02
14	5.16774E-02	5.70361E-03	5.32088E-02	.00000E+00	.00000E+00	.00000E+00	8.45942E-06	6.60231E-02
15	2.87205E-02	1.23565E-03	2.89915E-02	.00000E+00	.00000E+00	.00000E+00	4.46673E-06	3.62800E-02
16	1.58805E-02	6.82897E-04	1.60393E-02	.00000E+00	.00000E+00	.00000E+00	2.23451E-06	2.00681E-02
17	6.84927E-03	5.66708E-04	6.99815E-03	.00000E+00	.00000E+00	.00000E+00	8.91834E-07	8.71339E-03
18	4.86091E-03	1.40390E-03	5.26061E-03	.00000E+00	.00000E+00	.00000E+00	6.38581E-07	6.39540E-03

19	1.03147E-02	1.03678E-03	1.05871E-02	.00000E+00	.00000E+00	.00000E+00	1.37643E-06	1.31547E-02
20	3.46379E-02	2.36309E-03	3.52432E-02	.00000E+00	.00000E+00	.00000E+00	5.15148E-06	4.39514E-02
21	1.04515E-02	1.65858E-03	1.07349E-02	.00000E+00	.00000E+00	.00000E+00	1.23561E-06	1.34758E-02
22	2.08960E-02	4.85135E-03	2.23888E-02	.00000E+00	.00000E+00	.00000E+00	2.49604E-06	2.73040E-02
23	7.12707E-02	1.21839E-02	7.57016E-02	.00000E+00	.00000E+00	.00000E+00	7.63495E-06	9.25676E-02
24	5.75309E-02	1.06050E-02	6.21325E-02	.00000E+00	.00000E+00	.00000E+00	4.62083E-06	7.53854E-02
25	2.56907E-02	4.84419E-03	2.81161E-02	.00000E+00	.00000E+00	.00000E+00	1.60526E-06	3.38993E-02
26	1.81170E-02	3.54856E-03	2.02911E-02	.00000E+00	.00000E+00	.00000E+00	8.47061E-07	2.42219E-02
27	3.37776E-03	5.97017E-04	3.85506E-03	.00000E+00	.00000E+00	.00000E+00	9.98282E-08	4.56914E-03
28	1.73960E+00	-6.20296E-03	1.74639E+00	.00000E+00	3.69291E-11	.00000E+00	5.88141E-04	2.19007E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.23088E-04	1.67253E-04	2.50875E-06	-1.63776E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.92068E-05	1.46077E-03	1.04817E-03	1.40696E-05	-1.03305E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.50721E-04	2.77156E-03	8.76337E-04	2.02812E-05	-7.45839E-04	9.99995E-01
4	.00000E+00	.00000E+00	2.87481E-04	2.30586E-03	2.98658E-04	1.31034E-05	-2.41627E-05	9.99997E-01
5	.00000E+00	.00000E+00	6.18142E-04	4.41802E-03	2.79406E-04	1.68695E-05	3.21851E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.02416E-03	1.24062E-02	1.69503E-04	2.70703E-05	8.27594E-04	1.00000E+00
7	.00000E+00	.00000E+00	6.73362E-04	1.25960E-02	6.33138E-05	2.68186E-05	5.85230E-04	1.00000E+00
8	.00000E+00	.00000E+00	1.17530E-04	9.20975E-03	4.43464E-04	2.21164E-05	-3.48079E-04	1.00001E+00
9	.00000E+00	.00000E+00	4.45309E-04	6.36202E-03	5.30344E-05	7.67387E-05	3.15545E-04	9.99987E-01
10	.00000E+00	.00000E+00	5.30996E-05	4.99152E-03	4.95246E-05	5.93821E-05	-5.58123E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.95279E-05	4.45974E-03	5.03662E-05	9.01200E-05	-9.09623E-05	1.00000E+00
12	.00000E+00	.00000E+00	5.03665E-05	2.76454E-03	5.14333E-05	5.67973E-06	-6.74743E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.14334E-05	2.35753E-03	4.80920E-05	6.31695E-06	-2.97604E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80921E-05	2.22465E-03	4.19238E-05	8.49585E-06	-2.32784E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.45076E-05	1.21206E-03	4.96056E-05	6.27696E-06	-1.13790E-05	1.00000E+00
16	.00000E+00	.00000E+00	5.55508E-05	6.41699E-04	5.55914E-05	3.80325E-06	-3.84630E-06	1.00000E+00
17	.00000E+00	.00000E+00	6.03665E-05	2.41195E-04	5.95707E-05	1.79292E-06	-7.95196E-07	9.99994E-01
18	.00000E+00	.00000E+00	6.23429E-05	1.60750E-04	5.19055E-05	1.33832E-06	9.10077E-06	9.99999E-01
19	.00000E+00	.00000E+00	5.37654E-05	3.94315E-04	5.81776E-05	3.05978E-06	-7.46769E-06	9.99996E-01
20	.00000E+00	.00000E+00	7.09930E-05	1.45834E-03	6.19994E-05	1.25378E-05	-3.53763E-06	9.99997E-01
21	.00000E+00	.00000E+00	8.15146E-05	3.69810E-04	8.83341E-05	4.58408E-06	-1.13980E-05	9.99997E-01
22	.00000E+00	.00000E+00	1.16403E-04	8.07124E-04	1.07869E-04	1.04215E-05	-1.82679E-06	9.99988E-01
23	.00000E+00	.00000E+00	1.66569E-04	2.91009E-03	2.13649E-04	4.75308E-05	-9.46401E-05	1.00000E+00
24	.00000E+00	.00000E+00	2.75410E-04	2.21755E-03	3.04325E-04	5.44330E-05	-8.34102E-05	1.00001E+00
25	.00000E+00	.00000E+00	2.81808E-04	8.95630E-04	2.30523E-04	3.16952E-05	1.95573E-05	1.00001E+00
26	.00000E+00	.00000E+00	1.19951E-04	7.01566E-04	9.27138E-05	3.14948E-05	-4.27151E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.68834E-05	1.48149E-04	7.63316E-08	1.09913E-05	1.58114E-05	1.00001E+00
28	.00000E+00	.00000E+00	5.01450E-03	8.07095E-02	5.01450E-03	6.09531E-04	-6.03612E-04	1.00001E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dv**2	total flux
1	1.31006E-02	-8.87104E-04	1.30740E-02	-7.23528E-04	5.97506E-06	.00000E+00	1.65175E-06	2.18126E-03
2	9.26127E-02	-8.92743E-03	9.23472E-02	-7.89438E-03	.00000E+00	.00000E+00	1.11676E-05	1.54150E-02
3	1.15103E-01	-1.12117E-02	1.14755E-01	-1.04659E-02	.00000E+00	.00000E+00	1.27008E-05	1.91588E-02
4	7.08166E-02	-6.84780E-03	7.05999E-02	-6.82364E-03	.00000E+00	.00000E+00	7.44280E-06	1.17885E-02
5	1.05718E-01	-1.03452E-02	1.05379E-01	-1.06671E-02	.00000E+00	.00000E+00	8.63880E-06	1.75985E-02
6	1.98369E-01	-1.87495E-02	1.97869E-01	-1.95771E-02	.00000E+00	.00000E+00	1.01766E-05	3.30194E-02
7	1.96556E-01	-1.13736E-02	1.96151E-01	-1.19568E-02	.00000E+00	.00000E+00	8.35461E-06	3.27359E-02
8	1.47521E-01	-2.77132E-03	1.47433E-01	-2.42525E-03	.00000E+00	.00000E+00	5.27569E-06	2.45822E-02
9	1.15894E-01	5.65790E-04	1.15904E-01	2.50246E-04	.00000E+00	.00000E+00	4.58652E-06	1.93196E-02
10	1.06721E-01	1.39058E-03	1.06760E-01	1.44639E-03	.00000E+00	.00000E+00	4.91381E-06	1.77914E-02
11	9.99075E-02	3.34286E-03	9.99994E-02	3.43382E-03	.00000E+00	.00000E+00	4.76975E-06	1.66591E-02
12	6.42518E-02	4.04806E-03	6.43590E-02	4.05481E-03	.00000E+00	.00000E+00	3.21858E-06	1.07171E-02
13	5.47628E-02	3.85906E-03	5.48671E-02	3.86204E-03	.00000E+00	.00000E+00	2.73753E-06	9.13528E-03
14	5.15252E-02	5.70129E-03	5.16774E-02	5.70861E-03	.00000E+00	.00000E+00	2.57040E-06	8.59881E-03
15	2.86823E-02	1.22427E-03	2.87205E-02	1.23566E-03	.00000E+00	.00000E+00	1.40948E-06	4.78387E-03
16	1.58612E-02	6.79050E-04	1.58805E-02	6.82897E-04	.00000E+00	.00000E+00	7.79422E-07	2.64530E-03
17	6.83429E-03	5.65915E-04	6.84927E-03	5.66708E-04	.00000E+00	.00000E+00	3.35805E-07	1.14025E-03
18	4.82575E-03	1.41300E-03	4.86091E-03	1.40890E-03	.00000E+00	.00000E+00	2.37513E-07	8.06744E-04
19	1.02866E-02	1.02951E-03	1.03147E-02	1.03678E-03	.00000E+00	.00000E+00	5.05165E-07	1.71661E-03

20	3.45746E-02	2.35955E-03	3.46379E-02	2.36309E-03	.00000E+00	.00000E+00	1.69494E-06	5.76768E-03
21	1.04109E-02	1.64718E-03	1.04515E-02	1.65858E-03	.00000E+00	.00000E+00	5.09913E-07	1.73805E-03
22	2.07798E-02	4.84952E-03	2.08960E-02	4.85135E-03	.00000E+00	.00000E+00	1.01706E-06	3.47119E-03
23	7.09843E-02	1.20892E-02	7.12707E-02	1.21839E-02	.00000E+00	.00000E+00	3.46012E-06	1.18511E-02
24	5.73016E-02	1.05216E-02	5.75309E-02	1.06050E-02	.00000E+00	.00000E+00	2.77605E-06	9.56620E-03
25	2.55947E-02	4.86374E-03	2.56907E-02	4.84419E-03	.00000E+00	.00000E+00	1.25246E-06	4.27240E-03
26	1.80577E-02	3.54429E-03	1.81170E-02	3.54856E-03	.00000E+00	.00000E+00	8.60109E-07	3.01335E-03
27	3.37218E-03	6.12828E-04	3.37776E-03	5.97017E-04	.00000E+00	.00000E+00	1.55587E-07	5.62318E-04
28	1.74042E+00	-6.80663E-03	1.73960E+00	-6.20296E-03	5.97506E-06	.00000E+00	1.03178E-04	2.90036E-01

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.67474E-04	3.54023E-04	2.94782E-05	-3.85484E-04	9.99986E-01
2	.00000E+00	.00000E+00	2.03132E-04	3.29036E-03	4.32458E-03	9.40265E-05	-4.21532E-03	9.99988E-01
3	.00000E+00	.00000E+00	2.05364E-03	2.92198E-03	7.60229E-03	4.96089E-05	-5.59809E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.98767E-03	1.92786E-03	6.62392E-03	2.24979E-05	-3.65867E-03	9.99994E-01
5	.00000E+00	.00000E+00	5.49275E-03	6.18193E-03	1.11998E-02	2.66405E-05	-5.73358E-03	9.99996E-01
6	.00000E+00	.00000E+00	1.15223E-02	1.84943E-02	2.19806E-02	4.51890E-05	-1.05035E-02	1.00000E+00
7	.00000E+00	.00000E+00	2.26403E-02	3.23952E-02	2.87627E-02	3.25267E-05	-6.15459E-03	9.99991E-01
8	.00000E+00	.00000E+00	2.99969E-02	4.11733E-02	3.08725E-02	1.91308E-05	-8.92048E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04304E-02	3.80044E-02	3.00960E-02	1.53227E-05	3.22407E-04	9.99895E-01
10	.00000E+00	.00000E+00	2.99079E-02	3.61271E-02	2.90335E-02	1.88350E-05	8.58774E-04	9.99900E-01
11	.00000E+00	.00000E+00	2.91981E-02	3.40957E-02	2.72207E-02	2.86705E-05	1.95049E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.36271E-02	1.81134E-02	2.13127E-02	3.11988E-05	2.28369E-03	9.99982E-01
13	.00000E+00	.00000E+00	2.09892E-02	1.47201E-02	1.88776E-02	4.36057E-05	2.06864E-03	9.99974E-01
14	.00000E+00	.00000E+00	2.03649E-02	1.43616E-02	1.71560E-02	6.93090E-05	3.13989E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.10848E-02	5.63445E-03	1.05556E-02	5.84617E-05	4.71196E-04	9.99962E-01
16	.00000E+00	.00000E+00	7.32352E-03	2.37109E-03	6.98545E-03	3.95420E-05	2.98753E-04	9.99972E-01
17	.00000E+00	.00000E+00	3.76259E-03	6.60052E-04	3.43412E-03	1.88942E-05	3.09684E-04	9.99975E-01
18	.00000E+00	.00000E+00	3.33065E-03	4.45638E-04	2.43506E-03	1.39442E-05	8.81677E-04	9.99994E-01
19	.00000E+00	.00000E+00	5.45331E-03	1.47294E-03	4.88858E-03	3.29896E-05	5.31881E-04	9.99979E-01
20	.00000E+00	.00000E+00	1.33362E-02	1.06900E-02	1.20864E-02	1.39420E-04	1.11058E-03	9.99985E-01
21	.00000E+00	.00000E+00	6.35607E-03	2.06524E-03	5.37266E-03	5.17980E-05	9.31733E-04	9.99986E-01
22	.00000E+00	.00000E+00	1.24484E-02	6.16087E-03	9.58764E-03	1.18334E-04	2.74224E-03	1.00001E+00
23	.00000E+00	.00000E+00	3.14738E-02	3.81199E-02	2.50323E-02	5.53369E-04	5.88688E-03	1.00008E+00
24	.00000E+00	.00000E+00	3.33394E-02	3.55915E-02	2.74734E-02	6.47516E-04	5.21732E-03	1.00008E+00
25	.00000E+00	.00000E+00	2.20632E-02	1.49598E-02	1.92201E-02	3.79707E-04	2.46298E-03	1.00002E+00
26	.00000E+00	.00000E+00	1.75554E-02	1.63585E-02	1.51095E-02	3.78317E-04	2.06758E-03	1.00001E+00
27	.00000E+00	.00000E+00	5.92781E-03	3.46074E-03	5.27208E-03	1.31729E-04	5.23982E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.02870E-01	4.00043E-01	4.02870E-01	3.09006E-03	-3.07884E-03	9.99973E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dv**2	total flux
1	1.32375E-02	-1.27069E-03	1.31006E-02	-8.87104E-04	1.95785E-11	.00000E+00	1.06108E-05	8.66678E-03
2	9.39521E-02	-1.31427E-02	9.26127E-02	-8.92743E-03	.00000E+00	.00000E+00	4.76921E-05	6.13683E-02
3	1.16737E-01	-1.68098E-02	1.15103E-01	-1.12117E-02	.00000E+00	.00000E+00	4.95792E-05	7.62459E-02
4	7.17864E-02	-1.05065E-02	7.08166E-02	-6.84780E-03	.00000E+00	.00000E+00	2.23621E-05	4.68850E-02
5	1.07178E-01	-1.60788E-02	1.05718E-01	-1.03452E-02	.00000E+00	.00000E+00	2.64834E-05	6.99857E-02
6	2.00970E-01	-2.92530E-02	1.98369E-01	-1.87495E-02	.00000E+00	.00000E+00	4.47228E-05	1.31278E-01
7	1.98066E-01	-1.75281E-02	1.96556E-01	-1.13736E-02	.00000E+00	.00000E+00	3.14939E-05	1.29788E-01
8	1.47814E-01	-3.66337E-03	1.47521E-01	-2.77132E-03	.00000E+00	.00000E+00	1.71969E-05	9.72027E-02
9	1.15670E-01	8.88198E-04	1.15894E-01	5.65790E-04	.00000E+00	.00000E+00	1.13438E-05	7.62153E-02
10	1.06469E-01	2.24935E-03	1.06721E-01	1.39058E-03	.00000E+00	.00000E+00	1.00076E-05	7.01838E-02
11	9.93399E-02	5.29335E-03	9.99075E-02	3.34286E-03	.00000E+00	.00000E+00	9.30847E-06	6.56136E-02
12	6.35597E-02	6.33178E-03	6.42518E-02	4.04806E-03	.00000E+00	.00000E+00	5.42544E-06	4.21054E-02
13	5.41511E-02	5.92770E-03	5.47628E-02	3.85906E-03	.00000E+00	.00000E+00	4.50573E-06	3.58807E-02
14	5.05852E-02	8.84118E-03	5.15252E-02	5.70129E-03	.00000E+00	.00000E+00	4.31272E-06	3.36594E-02
15	2.85838E-02	1.69546E-03	2.86823E-02	1.22427E-03	.00000E+00	.00000E+00	2.32126E-06	1.88539E-02
16	1.57870E-02	9.77803E-04	1.58612E-02	6.79050E-04	.00000E+00	.00000E+00	1.16034E-06	1.04210E-02
17	6.74270E-03	8.75598E-04	6.83429E-03	5.69915E-04	.00000E+00	.00000E+00	4.57927E-07	4.47404E-03
18	4.53947E-03	2.29468E-03	4.82575E-03	1.41300E-03	.00000E+00	.00000E+00	3.09399E-07	3.09864E-03
19	1.01351E-02	1.56119E-03	1.02866E-02	1.02931E-03	.00000E+00	.00000E+00	7.04202E-07	6.73015E-03
20	3.42629E-02	3.47013E-03	3.45746E-02	2.35955E-03	.00000E+00	.00000E+00	2.65761E-06	2.26742E-02

21	1.01129E-02	2.57891E-03	1.04109E-02	1.64718E-03	.00000E+00	.00000E+00	6.20959E-07	6.77228E-03
22	1.98472E-02	7.59177E-03	2.07798E-02	4.84952E-03	.00000E+00	.00000E+00	1.22699E-06	1.34220E-02
23	6.87225E-02	1.79761E-02	7.09843E-02	1.20892E-02	.00000E+00	.00000E+00	3.80129E-06	4.60875E-02
24	5.49320E-02	1.57389E-02	5.73016E-02	1.05216E-02	.00000E+00	.00000E+00	2.27057E-06	3.70427E-02
25	2.42893E-02	7.32672E-03	2.55947E-02	4.86374E-03	.00000E+00	.00000E+00	7.79912E-07	1.64699E-02
26	1.67928E-02	5.61187E-03	1.80577E-02	3.54429E-03	.00000E+00	.00000E+00	4.02947E-07	1.15223E-02
27	3.01148E-03	1.13681E-03	3.37218E-03	6.12828E-04	.00000E+00	.00000E+00	4.62779E-08	2.11814E-03
28	1.73727E+00	-9.88547E-03	1.74042E+00	-6.80663E-03	1.95785E-11	.00000E+00	3.11604E-04	1.14477E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.32907E-02	.00000E+00	2.15981E-02	2.05148E-02	3.79999E-03	1.27058E-03	9.98905E-01
2	.00000E+00	1.94883E-01	7.10288E-03	2.51726E-01	1.73507E-01	1.53486E-02	1.31427E-02	1.00002E+00
3	.00000E+00	2.16031E-01	7.17082E-02	2.57985E-01	2.54706E-01	1.62264E-02	1.68097E-02	9.99989E-01
4	.00000E+00	1.23708E-01	1.05777E-01	1.76962E-01	2.11241E-01	7.73803E-03	1.05064E-02	1.00000E+00
5	.00000E+00	1.63830E-01	1.92574E-01	4.44771E-01	3.34967E-01	5.16145E-03	1.60787E-02	9.99990E-01
6	.00000E+00	1.76584E-01	3.91392E-01	1.19114E+00	5.30580E-01	8.13540E-03	2.92529E-02	1.00001E+00
7	.00000E+00	8.71931E-02	5.93645E-01	1.56400E+00	6.55240E-01	8.07672E-03	1.75290E-02	9.99989E-01
8	.00000E+00	1.34264E-02	6.89554E-01	1.57558E+00	6.86290E-01	1.30835E-02	3.66342E-03	9.99920E-01
9	.00000E+00	9.74272E-04	6.78380E-01	1.37263E+00	6.58684E-01	2.16321E-02	-8.97595E-04	9.99906E-01
10	.00000E+00	7.23618E-05	6.55693E-01	1.24970E+00	6.25453E-01	3.26288E-02	-2.24891E-03	9.99898E-01
11	.00000E+00	5.69290E-06	6.29467E-01	1.16465E+00	5.81327E-01	5.34754E-02	-5.29615E-03	9.99947E-01
12	.00000E+00	3.99916E-07	5.06309E-01	6.36473E-01	4.54183E-01	5.84704E-02	-6.33213E-03	9.99975E-01
13	.00000E+00	6.35080E-08	4.48841E-01	5.05227E-01	3.99411E-01	5.53707E-02	-5.92953E-03	9.99974E-01
14	.00000E+00	1.25846E-08	4.31262E-01	4.68528E-01	3.60423E-01	7.96850E-02	-8.84148E-03	9.99991E-01
15	.00000E+00	1.42220E-09	2.36696E-01	2.14619E-01	2.30314E-01	8.01925E-03	-1.69317E-03	1.00024E+00
16	.00000E+00	4.17607E-10	1.61569E-01	9.87491E-02	1.56194E-01	6.30966E-03	-9.76291E-04	1.00026E+00
17	.00000E+00	1.34490E-10	8.63537E-02	3.04912E-02	7.88587E-02	8.35307E-03	-8.71588E-04	1.00016E+00
18	.00000E+00	9.62907E-11	7.67666E-02	1.83898E-02	5.19267E-02	2.71299E-02	-2.29389E-03	1.00005E+00
19	.00000E+00	1.36134E-10	1.19175E-01	5.77618E-02	1.09517E-01	1.12012E-02	-1.55591E-03	1.00010E+00
20	.00000E+00	2.21369E-10	2.85464E-01	3.38005E-01	2.61112E-01	2.77545E-02	-3.46472E-03	1.00022E+00
21	.00000E+00	3.24012E-11	1.40025E-01	6.63100E-02	1.17220E-01	2.53680E-02	-2.57710E-03	1.00010E+00
22	.00000E+00	3.75928E-11	2.64641E-01	1.69624E-01	1.97581E-01	7.46177E-02	-7.59884E-03	1.00015E+00
23	.00000E+00	3.59429E-11	6.30940E-01	9.50573E-01	5.11078E-01	1.37696E-01	-1.79617E-02	1.00020E+00
24	.00000E+00	9.78520E-12	6.67393E-01	8.27379E-01	5.51983E-01	1.31037E-01	-1.57348E-02	1.00016E+00
25	.00000E+00	2.86388E-12	4.42915E-01	3.36617E-01	3.78280E-01	7.19151E-02	-7.32404E-03	1.00010E+00
26	.00000E+00	2.00817E-12	3.43672E-01	3.38860E-01	2.84041E-01	6.52141E-02	-5.61219E-03	1.00008E+00
27	.00000E+00	4.78557E-13	1.13558E-01	6.85610E-02	9.60378E-02	1.86526E-02	-1.13682E-03	1.00004E+00
28	.00000E+00	1.00000E+00	8.97067E+00	1.43969E+01	8.97067E+00	9.92100E-01	9.90674E-03	1.00003E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dv**2	total flux
1	1.35389E-02	-7.77195E-09	1.32575E-02	-1.27059E-03	2.26664E-03	2.52141E-03	2.98574E-04	3.44153E-01
2	9.72642E-02	-6.45417E-08	9.39521E-02	-1.31427E-02	1.57678E-05	1.10427E-02	1.59890E-03	2.46984E+00
3	1.21094E-01	-9.77021E-08	1.16737E-01	-1.68098E-02	.00000E+00	1.33204E-02	1.85308E-03	3.07408E+00
4	7.45965E-02	-8.01678E-08	7.17846E-02	-1.05065E-02	.00000E+00	5.70815E-03	8.85254E-04	1.89534E+00
5	1.11747E-01	-8.22780E-08	1.07178E-01	-1.60788E-02	.00000E+00	1.62672E-03	1.08252E-03	2.83516E+00
6	2.09764E-01	-6.88761E-08	2.00970E-01	-2.92530E-02	.00000E+00	1.33034E-03	1.73166E-03	5.32001E+00
7	2.08598E-01	8.54238E-07	1.98066E-01	-1.75281E-02	.00000E+00	1.25877E-03	1.22666E-03	5.17023E+00
8	1.48979E-01	5.02141E-08	1.47814E-01	-3.66337E-03	.00000E+00	1.25771E-03	6.98434E-04	3.79007E+00
9	1.15338E-01	-9.39736E-06	1.15670E-01	8.88198E-04	.00000E+00	1.66411E-03	4.71514E-04	2.95747E+00
10	1.05681E-01	4.43340E-07	1.06469E-01	2.24935E-03	.00000E+00	3.55418E-03	4.28867E-04	2.69300E+00
11	9.75028E-02	-2.80511E-06	9.95399E-02	5.29535E-03	.00000E+00	7.68478E-03	3.87139E-04	2.48761E+00
12	6.13761E-02	-3.70699E-07	6.35597E-02	6.33178E-03	.00000E+00	1.02455E-02	2.27859E-04	1.56867E+00
13	5.21291E-02	-1.63153E-06	5.41511E-02	5.92770E-03	.00000E+00	1.17766E-02	1.94428E-04	1.33287E+00
14	4.75676E-02	-3.01591E-07	5.05852E-02	8.84118E-03	.00000E+00	7.40263E-03	1.73396E-04	1.21929E+00
15	2.80289E-02	2.29467E-06	2.85688E-02	1.69546E-03	.00000E+00	1.73351E-03	1.10520E-04	7.15444E-01
16	1.54686E-02	1.51225E-06	1.57870E-02	9.77808E-04	.00000E+00	1.22133E-03	5.70208E-05	3.94820E-01
17	6.44890E-03	4.01001E-06	6.74270E-03	8.75598E-04	.00000E+00	1.40452E-03	2.10229E-05	1.65011E-01
18	3.73240E-03	7.91146E-07	4.53947E-03	2.29468E-03	.00000E+00	9.99567E-04	8.52702E-06	9.69296E-02
19	9.59424E-03	5.28060E-06	1.01351E-02	1.56119E-03	.00000E+00	2.24225E-03	3.20494E-05	2.45872E-01
20	3.30550E-02	5.40600E-06	3.42629E-02	3.47013E-03	.00000E+00	1.40957E-02	1.21869E-04	8.45408E-01
21	9.18212E-03	1.81122E-06	1.01129E-02	2.57891E-03	.00000E+00	1.46585E-02	2.55299E-05	2.36449E-01

22	1.69691E-02	-7.07403E-06	1.98472E-02	7.59177E-03	.00000E+00	4.34662E-02	4.33671E-05	4.40348E-01
23	6.06425E-02	1.43647E-05	6.87225E-02	1.79761E-02	.00000E+00	7.66330E-02	1.62200E-04	1.57315E+00
24	4.69019E-02	4.10178E-06	5.49320E-02	1.57389E-02	.00000E+00	7.14206E-02	9.90671E-05	1.22418E+00
25	2.01605E-02	2.68412E-06	2.42895E-02	7.32672E-03	.00000E+00	4.08034E-02	3.40254E-05	5.28740E-01
26	1.32954E-02	-3.23816E-07	1.67928E-02	5.61187E-03	.00000E+00	3.75268E-02	1.68204E-05	3.50725E-01
27	2.24254E-03	-9.92357E-09	3.01148E-03	1.13681E-03	.00000E+00	1.05782E-02	1.73149E-06	5.95197E-02
28	1.72590E+00	2.13532E-05	1.73727E+00	-9.88547E-03	2.28240E-03	3.97176E-01	1.19219E-02	4.40122E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.32907E-02	.00000E+00	2.25932E-02	2.17088E-02	3.88758E-03	-7.77195E-09	9.98903E-01
2	.00000E+00	1.94883E-01	7.71857E-03	2.62641E-01	1.86981E-01	1.56328E-02	-6.45417E-08	1.00002E+00
3	.00000E+00	2.16031E-01	7.77606E-02	2.69145E-01	2.77406E-01	1.63891E-02	-9.77021E-08	9.99987E-01
4	.00000E+00	1.23708E-01	1.14643E-01	1.84797E-01	2.30636E-01	7.81565E-03	-8.01678E-08	9.99999E-01
5	.00000E+00	1.63830E-01	2.08753E-01	4.66899E-01	3.67333E-01	5.25464E-03	-8.22760E-08	9.99990E-01
6	.00000E+00	1.76584E-01	4.25450E-01	1.25654E+00	5.95734E-01	8.29196E-03	-6.88761E-08	1.00001E+00
7	.00000E+00	8.71931E-02	6.59208E-01	1.66997E+00	7.39207E-01	8.19729E-03	8.54239E-07	9.99988E-01
8	.00000E+00	1.34264E-02	7.76035E-01	1.70439E+00	7.76364E-01	1.31612E-02	5.02141E-08	9.99919E-01
9	.00000E+00	9.74272E-04	7.67053E-01	1.48963E+00	7.46357E-01	2.17535E-02	-9.39736E-06	9.99904E-01
10	.00000E+00	7.23618E-05	7.42756E-01	1.36003E+00	7.10161E-01	3.27431E-02	4.43340E-07	9.99898E-01
11	.00000E+00	5.69290E-06	7.14619E-01	1.26886E+00	6.61017E-01	5.36494E-02	-2.80511E-06	9.99945E-01
12	.00000E+00	3.99916E-07	5.75435E-01	6.92481E-01	5.16882E-01	5.85678E-02	-3.70699E-07	9.99975E-01
13	.00000E+00	6.35030E-08	5.10483E-01	5.50888E-01	4.54993E-01	5.55053E-02	-1.63153E-06	9.99973E-01
14	.00000E+00	1.25846E-08	4.91166E-01	5.13284E-01	4.11272E-01	7.98988E-02	-3.01591E-07	9.99990E-01
15	.00000E+00	1.42220E-09	2.69486E-01	2.32308E-01	2.61231E-01	8.19648E-03	2.29467E-06	1.00020E+00
16	.00000E+00	4.17607E-10	1.83159E-01	1.06328E-01	1.76687E-01	6.42916E-03	1.51225E-06	1.00022E+00
17	.00000E+00	1.34490E-10	9.74680E-02	3.26779E-02	8.90402E-02	8.41055E-03	4.01001E-06	1.00014E+00
18	.00000E+00	9.62907E-11	8.66180E-02	1.99160E-02	5.94394E-02	2.71739E-02	7.91146E-07	1.00004E+00
19	.00000E+00	1.36134E-10	1.35338E-01	6.25080E-02	1.24019E-01	1.13017E-02	5.28060E-06	1.00009E+00
20	.00000E+00	2.21369E-10	3.24982E-01	3.70875E-01	2.96688E-01	2.81767E-02	5.40600E-06	1.00019E+00
21	.00000E+00	3.24012E-11	1.58915E-01	7.28546E-02	1.33372E-01	2.55274E-02	1.81122E-06	1.00009E+00
22	.00000E+00	3.75928E-11	3.01803E-01	1.89125E-01	2.26781E-01	7.49872E-02	-7.07403E-06	1.00014E+00
23	.00000E+00	3.59429E-11	7.26157E-01	1.06817E+00	5.86602E-01	1.39408E-01	1.43647E-05	1.00018E+00
24	.00000E+00	9.78520E-12	7.68844E-01	9.37620E-01	6.35671E-01	1.33057E-01	4.10178E-06	1.00015E+00
25	.00000E+00	2.86388E-12	5.10446E-01	3.85202E-01	4.37291E-01	7.31081E-02	2.68412E-06	1.00009E+00
26	.00000E+00	2.00817E-12	3.97454E-01	3.90309E-01	3.31005E-01	6.64192E-02	-3.23816E-07	1.00007E+00
27	.00000E+00	4.78557E-13	1.31766E-01	7.96352E-02	1.12683E-01	1.90795E-02	-9.92357E-09	1.00003E+00
28	.00000E+00	1.00000E+00	1.01635E+01	1.56576E+01	1.01635E+01	1.00202E+00	2.12889E-05	1.00002E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.35389E-02	-7.77195E-09	1.29571E-02	.00000E+00	2.27261E-03	2.52141E-03	3.30949E-04	3.71348E-01
2	9.72642E-02	-6.45417E-08	9.08455E-02	.00000E+00	1.57678E-05	1.10427E-02	1.74711E-03	2.66159E+00
3	1.21094E-01	-9.77021E-08	1.12588E-01	.00000E+00	.00000E+00	1.33204E-02	1.98748E-03	3.31211E+00
4	7.45965E-02	-8.01678E-08	6.90441E-02	.00000E+00	.00000E+00	5.70815E-03	9.56828E-04	2.03959E+00
5	1.11747E-01	-8.22760E-08	1.02781E-01	.00000E+00	.00000E+00	1.62672E-03	1.11703E-03	3.05326E+00
6	2.09764E-01	-6.88761E-08	1.92851E-01	.00000E+00	.00000E+00	1.33034E-03	1.86999E-03	5.72920E+00
7	2.08598E-01	8.54238E-07	1.95118E-01	.00000E+00	.00000E+00	1.25877E-03	1.32579E-03	5.57705E+00
8	1.48979E-01	5.02141E-08	1.47011E-01	.00000E+00	.00000E+00	1.25771E-03	7.53636E-04	4.09685E+00
9	1.15338E-01	-9.39736E-06	1.15954E-01	.00000E+00	.00000E+00	1.66411E-03	5.09126E-04	3.17868E+00
10	1.05681E-01	4.43340E-07	1.07184E-01	.00000E+00	.00000E+00	3.55418E-03	4.62962E-04	2.91544E+00
11	9.75028E-02	-2.80511E-06	1.00961E-01	.00000E+00	.00000E+00	7.68478E-03	4.19143E-04	2.69624E+00
12	6.13761E-02	-3.70699E-07	6.54629E-02	.00000E+00	.00000E+00	1.02455E-02	2.46826E-04	1.70315E+00
13	5.21291E-02	-1.63153E-06	5.58900E-02	.00000E+00	.00000E+00	1.17766E-02	2.10421E-04	1.44756E+00
14	4.75676E-02	-3.01591E-07	5.32038E-02	.00000E+00	.00000E+00	7.40263E-03	1.88738E-04	1.32757E+00
15	2.80285E-02	2.29467E-06	2.89915E-02	.00000E+00	.00000E+00	1.73351E-03	1.18718E-04	7.75362E-01
16	1.54685E-02	1.51225E-06	1.60393E-02	.00000E+00	.00000E+00	1.22133E-03	6.11950E-05	4.27955E-01
17	6.44890E-03	4.01001E-06	6.99815E-03	.00000E+00	.00000E+00	1.40452E-03	2.27084E-05	1.79539E-01
18	3.75240E-03	7.91146E-07	5.26051E-03	.00000E+00	.00000E+00	9.99567E-04	9.71251E-06	1.07230E-01
19	9.59424E-03	5.28060E-06	1.05871E-02	.00000E+00	.00000E+00	2.24225E-03	3.46352E-05	2.67473E-01
20	3.30550E-02	5.40600E-06	3.52432E-02	.00000E+00	.00000E+00	1.40957E-02	1.31373E-04	9.17802E-01
21	9.18212E-03	1.81122E-06	1.09349E-02	.00000E+00	.00000E+00	1.46585E-02	2.78964E-05	2.58435E-01
22	1.69691E-02	-7.07403E-06	2.23888E-02	.00000E+00	.00000E+00	4.34662E-02	4.81072E-05	4.84545E-01

23	6.06425E-02	1.43647E-05	7.57016E-02	.00000E+00	.00000E+00	7.66330E-02	1.77097E-04	1.72365E+00
24	4.69019E-02	4.10178E-06	6.21325E-02	.00000E+00	.00000E+00	7.14206E-02	1.08735E-04	1.34618E+00
25	2.01606E-02	2.68412E-06	2.81161E-02	.00000E+00	.00000E+00	4.08034E-02	3.76430E-05	5.83382E-01
26	1.32954E-02	-3.23816E-07	2.02911E-02	.00000E+00	.00000E+00	3.75268E-02	1.89305E-05	3.89482E-01
27	2.24254E-03	-9.92357E-09	3.85506E-03	.00000E+00	.00000E+00	1.05782E-02	2.03318E-06	6.65693E-02
28	1.72590E+00	2.13532E-05	1.74639E+00	.00000E+00	2.28838E-03	3.97176E-01	1.29248E-02	4.76371E+01

- elapsed time .02 min.
0direct access unit 9 requires 556 blocks of length 216 for cross section weighting.
1 transport cross section weighting function

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.15946E-03	5.07344E-03	5.30400E-03	2.51188E-03	3.18361E-03	5.52432E-03	3.71621E-03	1.74400E-03
2	7.06377E-04	5.01016E-03	5.80210E-03	3.44720E-03	4.30006E-03	6.15070E-03	4.33126E-03	2.14902E-03
3	1.18874E-03	5.49886E-03	5.88786E-03	2.91764E-03	3.86205E-03	6.77676E-03	4.37541E-03	1.82449E-03
4	8.16349E-04	4.31790E-03	4.94671E-03	2.39173E-03	2.82972E-03	4.80048E-03	3.32678E-03	1.79906E-03
5	8.40237E-04	4.38478E-03	4.99068E-03	2.41617E-03	2.87944E-03	4.88891E-03	3.37567E-03	1.79928E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11347E-03	1.01459E-03	1.09362E-03	8.74774E-04	7.97770E-04	1.05334E-03	3.20856E-04	1.67139E-04
2	1.79161E-03	1.95466E-03	2.04376E-03	1.60347E-03	1.42855E-03	1.71786E-03	6.28955E-04	3.47885E-04
3	1.12197E-03	1.05346E-03	1.29292E-03	1.22251E-03	1.12987E-03	1.60017E-03	3.86691E-04	2.10153E-04
4	1.19615E-03	1.09545E-03	1.03072E-03	6.78067E-04	6.01933E-04	6.43761E-04	3.11356E-04	1.61377E-04
5	1.19421E-03	1.09597E-03	1.04598E-03	7.05653E-04	6.28474E-04	6.91805E-04	3.15511E-04	1.63934E-04

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.06031E-04	2.28736E-04	1.89850E-04	4.89852E-04	2.82306E-04	8.12105E-04	2.11711E-03	1.81547E-03
2	1.90842E-04	3.55880E-04	3.20524E-04	8.79474E-04	4.49999E-04	1.24829E-03	3.25621E-03	2.79885E-03
3	1.59395E-04	3.92917E-04	2.84024E-04	6.73691E-04	4.52227E-04	1.32436E-03	3.22447E-03	2.80521E-03
4	7.23362E-05	8.06545E-05	1.21360E-04	3.84672E-04	1.38295E-04	3.43057E-04	1.05510E-03	8.28649E-04
5	7.66712E-05	9.65388E-05	1.29577E-04	3.99372E-04	1.54254E-04	3.95387E-04	1.16872E-03	9.32820E-04

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	8.19043E-04	5.78185E-04	8.80722E-05	4.21792E-02
2	1.27854E-03	9.28284E-04	1.99586E-04	5.52779E-02
3	1.29911E-03	9.70769E-04	1.81268E-04	5.21167E-02
4	3.45441E-04	2.09615E-04	2.60354E-05	3.45528E-02
5	3.95487E-04	2.48970E-04	3.33838E-05	3.54459E-02

1broad group parameters

grp	upper energy	mid energy	velocity	fiss spec
1	2.0000E+07	2.6694E+06	1.9694E+09	7.2174E-01
2	9.0000E+05	1.5150E+05	1.0065E+07	2.7826E-01
3	4.0000E-01	1.2516E-01	3.6498E+05	1.2107E-10
4	1.0000E-05			

1 880 d, second part of sas2h pass to make library
0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3
1	3.91548E-01	1.13524E+00	2.15989E-01
2	3.96806E-01	1.13638E+00	2.06823E-01
3	3.99768E-01	1.13659E+00	2.02707E-01
4	4.16951E-01	1.13826E+00	1.73311E-01
5	4.15260E-01	1.13807E+00	1.76163E-01

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

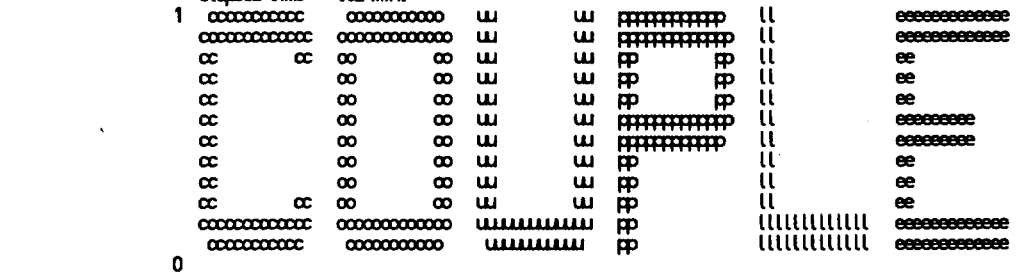
0zone	grp. 1	grp. 2	grp. 3
1	9.42899E-01	9.97518E-01	1.22607E+00
2	9.55560E-01	9.98517E-01	1.17404E+00
3	9.62694E-01	9.98703E-01	1.15067E+00
4	1.00407E+00	1.00017E+00	9.83808E-01
5	1.00000E+00	1.00000E+00	1.00000E+00

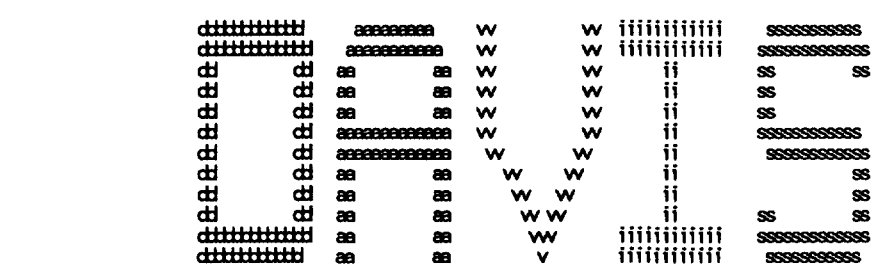
0cell averaged currents

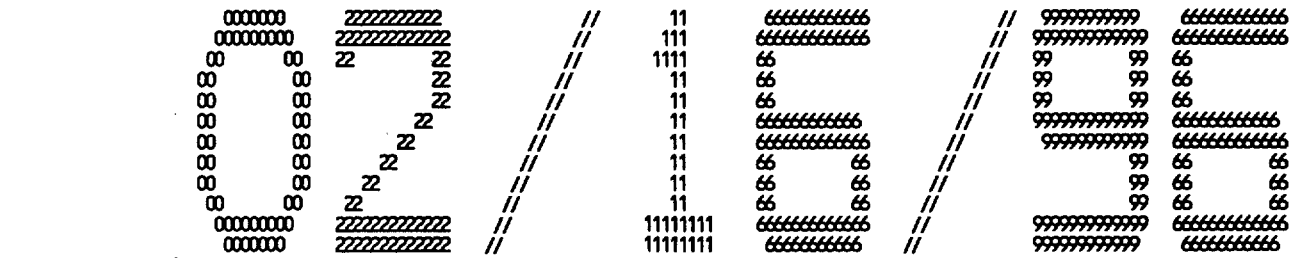
0zone	grp. 1	grp. 2	grp. 3
1	1.72323E-02	1.84346E-02	6.51229E-03

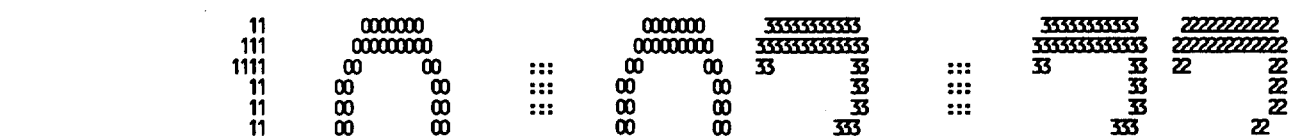
```
    2  1.92659E-02  2.58942E-02  1.01178E-02
    3  1.93552E-02  2.25041E-02  1.02574E-02
    4  1.53024E-02  1.63041E-02  2.94620E-03
    5  1.55113E-02  1.66075E-02  3.32702E-03
Ozone      volume     vol. fraction

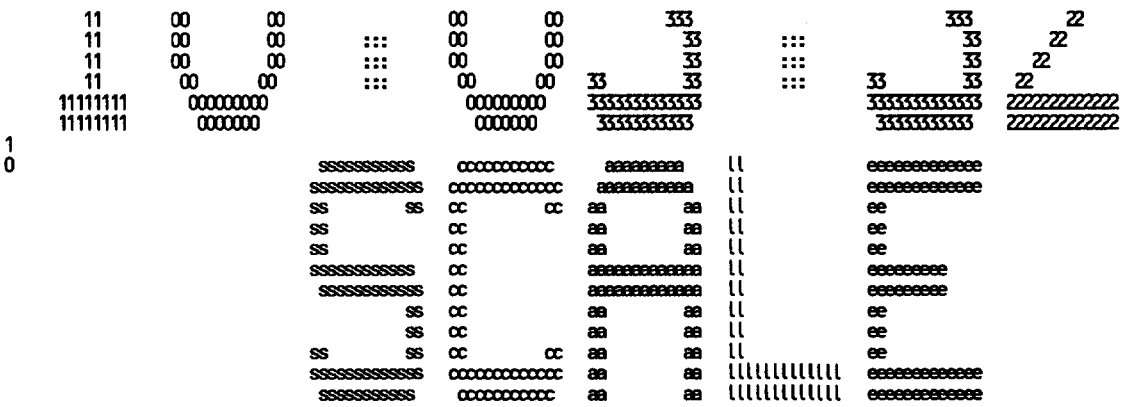
    1    1.25665E+00     4.56236E-02
    2    1.66687E-01     6.05165E-03
    3    6.58266E-01     2.38987E-02
    4    2.54624E+01     9.24426E-01
    5    2.75440E+01     1.00000E+00
-  elapsed time    .02 min.
```












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

```
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       1q array has      1 entries.
0       2q array has      1 entries.
0        * core allocated to array-data (by -1$$ or default) was   200000 words. *
1         * broad 3-group flux weighting factors *
0
0                 therm =    .5118
0                 res   =    .4417
0                 fast  =   3.4180
0 user requested (see jaeri) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from ampx (normalized to thermal flux), barns

                    10010 to  10020  2.84440E-01
                    10010 tot-cap    2.84440E-01
                    50100 to  40100  2.44839E-02
                    50100 to  10010  2.44839E-02
                    50100 to  40090  3.75530E-03
                    50100 to  10020  3.75530E-03
                    50100 to  30070  3.27073E+03
                    50100 to  20040  3.27091E+03
                    50100 to  10030  9.18802E-02
                    50100 tot-cap    3.27085E+03
                    50110 to  50100  1.08152E-05
                    50110 to  50120  4.33124E-03
                    50110 to  40110  1.38013E-06
                    50110 to  10010  1.38013E-06
                    50110 to  40090  1.23162E-05
                    50110 to  10030  1.23162E-05
                    50110 to  30080  1.60782E-04
                    50110 to  20040  1.60782E-04
                    50110 tot-cap    4.51653E-03
                    80160 to  80170  1.51959E-04
                    80160 to  70160  9.46311E-05
                    80160 to  10010  9.46311E-05
                    80160 to  70150  1.78473E-05
                    80160 to  10020  1.78473E-05
                    80160 to  60130  2.63247E-02
                    80160 to  20040  2.63247E-02
                    80160 to  80161  4.15019E-03
                    80160 tot-cap    2.65891E-02
                   360830 to 360820  2.14844E-02
                   360830 to 360810  2.26822E-09
                   360830 to 360840  1.54886E+02
                   360830 to 350830  8.78859E-04
                   360830 to  10010  8.78859E-04
                   360830 to 350820  7.09573E-06
                   360830 to  10020  7.09573E-06
                   360830 to 350810  2.48009E-06
                   360830 to  10030  2.48009E-06
                   360830 to 340810  4.01382E-08
                   360830 to  20030  4.01382E-08
                   360830 to 340800  4.71372E-05
                   360830 to  20040  4.71372E-05
                   360830 tot-cap    1.54908E+02
                   360850 to 360860  1.40838E+00
                   360850 tot-cap    1.40838E+00
                   380900 to 380910  6.31932E-01
```

380900	tot-cap	6.31932E-01
390890	to 390900	9.92494E-01
390890	tot-cap	9.92494E-01
400930	to 400940	1.35410E+01
400930	tot-cap	1.35410E+01
400940	to 400950	1.87693E-01
400940	tot-cap	1.87693E-01
400950	to 400960	2.24580E+00
400950	tot-cap	2.24580E+00
410940	to 410950	3.88374E+01
410940	tot-cap	3.88374E+01
420950	to 420960	3.82943E+01
420950	tot-cap	3.82943E+01
430990	to 430980	6.51869E-03
430990	to 431000	8.97106E+01
430990	tot-cap	8.97171E+01
441010	to 441020	2.84705E+01
441010	tot-cap	2.84705E+01
441060	to 441070	8.74631E-01
441060	tot-cap	8.74631E-01
451030	to 451020	2.36088E-03
451030	to 451040	3.50676E+02
451030	tot-cap	3.50679E+02
451050	to 451060	8.18578E+03
451050	tot-cap	8.18578E+03
461050	to 461060	3.40965E+01
461050	tot-cap	3.40965E+01
461080	to 461090	6.89271E+01
461080	tot-cap	6.89271E+01
471090	to 471080	5.48996E-03
471090	to 471100	3.71689E+02
471090	to 461090	3.10426E-04
471090	to 10010	3.10426E-04
471090	to 451060	2.57311E-04
471090	to 20040	2.57311E-04
471090	to 471091	6.43386E-01
471090	tot-cap	3.71695E+02
511240	to 511250	1.21394E+01
511240	tot-cap	1.21394E+01
541310	to 541300	6.65678E-02
541310	to 541290	1.39194E-05
541310	to 541320	2.55972E+02
541310	to 531310	3.99220E-05
541310	to 10010	3.99220E-05
541310	to 531300	5.58236E-07
541310	to 10020	5.58236E-07
541310	to 531290	5.72415E-07
541310	to 10030	5.72415E-07
541310	to 521280	1.87034E-05
541310	to 20040	1.87034E-05
541310	tot-cap	2.56038E+02
541320	to 541310	1.07537E-02
541320	to 541300	2.28078E-05
541320	to 541330	9.32093E-01
541320	to 531320	8.19490E-06
541320	to 10010	8.19490E-06
541320	to 531310	3.46595E-07
541320	to 10020	3.46595E-07
541320	to 531300	4.66688E-08
541320	to 10030	4.66688E-08

541320 to 521290	1.01067E-06
541320 to 20040	1.01067E-06
541320 tot-cap	9.42879E-01
541350 to 541360	1.47045E+06
541350 tot-cap	1.47045E+06
541360 to 541350	1.83949E-02
541360 to 541340	5.61825E-05
541360 to 541370	1.23898E-01
541360 to 531360	3.39678E-07
541360 to 10010	3.39678E-07
541360 to 531350	1.26459E-07
541360 to 10020	1.26459E-07
541360 to 531340	2.85694E-08
541360 to 10080	2.85694E-08
541360 to 521330	2.84934E-07
541360 to 20040	2.84934E-07
541360 tot-cap	1.42350E-01
551330 to 551320	8.61399E-03
551330 to 551340	1.01647E+02
551330 to 541330	9.29567E-04
551330 to 10010	9.29567E-04
551330 to 531300	1.47174E-05
551330 to 20040	1.47174E-05
551330 tot-cap	1.01656E+02
551340 to 551350	1.29469E+02
551340 tot-cap	1.29469E+02
551350 to 551360	2.15946E+01
551350 tot-cap	2.15946E+01
551370 to 551380	2.31515E-01
551370 tot-cap	2.31515E-01
561360 to 561370	9.08765E-01
561360 tot-cap	9.08765E-01
571390 to 571400	7.98602E+00
571390 tot-cap	7.98602E+00
581440 to 581450	1.24572E+00
581440 tot-cap	1.24572E+00
591410 to 591400	6.17258E-03
591410 to 591390	1.77353E-06
591410 to 571370	2.64952E-06
591410 to 20040	5.46942E-05
591410 to 581400	1.88146E-05
591410 to 10010	5.34694E-05
591410 to 591420	1.19000E+01
591410 to 581410	5.03813E-05
591410 to 10020	1.57265E-05
591410 to 581390	1.64928E-06
591410 to 10080	1.64928E-06
591410 to 571390	1.59280E-08
591410 to 20080	1.59280E-08
591410 to 571380	5.20447E-05
591410 tot-cap	1.19063E+01
591430 to 591440	9.85435E+01
591430 tot-cap	9.85435E+01
601430 to 601420	9.44140E-02
601430 to 601410	9.63916E-06
601430 to 581390	2.07491E-05
601430 to 20040	5.80742E-04
601430 to 591420	4.03494E-06
601430 to 10010	4.14371E-05
601430 to 601440	1.99531E+02

601430 to 591430 3.99169E-05
601430 to 10020 2.51478E-06
601430 to 591410 3.62380E-06
601430 to 10030 3.62380E-06
601430 to 581410 1.74109E-08
601430 to 20030 1.74109E-08
601430 to 581400 5.59995E-04
601430 tot-cap 1.99626E+02
601450 to 601440 1.21123E-01
601450 to 601430 1.23070E-04
601450 to 581410 8.67977E-06
601450 to 20040 2.17027E-04
601450 to 591440 2.31180E-06
601450 to 10010 1.50213E-05
601450 to 601460 7.87674E+01
601450 to 591450 1.40992E-05
601450 to 10020 1.38968E-06
601450 to 591430 2.19085E-06
601450 to 10030 2.19085E-06
601450 to 581430 4.46058E-09
601450 to 20030 4.46058E-09
601450 to 581420 2.08348E-04
601450 tot-cap 7.88889E+01
601470 to 601480 1.90249E+02
601470 tot-cap 1.90249E+02
611470 to 611460 3.31614E-02
611470 to 611450 1.03469E-04
611470 to 591430 9.16700E-06
611470 to 20040 8.48670E-05
611470 to 601460 1.26718E-05
611470 to 10010 2.88523E-05
611470 to 611480 5.83713E+02
611470 to 601470 2.57036E-05
611470 to 10020 9.54306E-06
611470 to 601450 3.60310E-06
611470 to 10030 3.60310E-06
611470 to 591450 5.41737E-09
611470 to 20030 5.41737E-09
611470 to 591440 7.57000E-05
611470 tot-cap 5.83746E+02
611480 to 611490 1.20692E+04
611480 tot-cap 1.20692E+04
621470 to 621460 8.65070E-02
621470 to 621450 7.78945E-03
621470 to 601430 6.70743E-05
621470 to 20040 1.28160E-03
621470 to 611460 1.56994E-04
621470 to 10010 2.23820E-04
621470 to 621480 2.34443E+02
621470 to 611470 1.97355E-04
621470 to 10020 1.30528E-04
621470 to 611450 1.40158E-04
621470 to 10030 1.40158E-04
621470 to 601450 6.44892E-06
621470 to 20030 6.44892E-06
621470 to 601440 1.21453E-03
621470 to 621471 1.68099E+00
621470 tot-cap 2.34539E+02
621490 to 621480 4.88893E-02
621490 to 621470 3.88270E-05

621490 to 621500 4.51610E+04
621490 to 611490 4.98298E-04
621490 to 10010 4.98298E-04
621490 to 601460 4.98298E-04
621490 to 20040 4.98298E-04
621490 tot-cap 4.51611E+04
621500 to 621510 1.34636E+02
621500 tot-cap 1.34636E+02
621510 to 621500 1.62978E-01
621510 to 621490 1.46103E-04
621510 to 601470 1.63534E-05
621510 to 20040 1.27238E-04
621510 to 611500 2.00058E-06
621510 to 10010 1.55395E-05
621510 to 621520 4.96056E+03
621510 to 611510 1.43172E-05
621510 to 10020 7.78299E-07
621510 to 611490 1.41451E-06
621510 to 10080 1.41451E-06
621510 to 601490 1.45722E-09
621510 to 20080 1.45722E-09
621510 to 601480 1.10885E-04
621510 tot-cap 4.96073E+03
621520 to 621510 1.95648E-02
621520 to 621500 1.32200E-04
621520 to 601480 2.95398E-06
621520 to 20040 1.22679E-05
621520 to 611510 8.47430E-07
621520 to 10010 2.50074E-06
621520 to 621530 7.31195E+02
621520 to 611520 2.22143E-06
621520 to 10020 5.68119E-07
621520 to 611500 1.47754E-07
621520 to 10080 1.47754E-07
621520 to 601500 4.47780E-10
621520 to 20080 4.47780E-10
621520 to 601490 9.31394E-06
621520 tot-cap 7.31215E+02
631530 to 631520 1.90020E-02
631530 to 631510 2.83759E-05
631530 to 611490 4.44449E-05
631530 to 20040 6.46822E-04
631530 to 621520 7.94486E-06
631530 to 10010 6.67364E-05
631530 to 631540 6.22530E+02
631530 to 621530 6.40248E-05
631530 to 10020 5.23328E-06
631530 to 621510 1.17306E-06
631530 to 10080 1.17306E-06
631530 to 611510 2.68175E-08
631530 to 20080 2.68175E-08
631530 to 611500 6.02377E-04
631530 tot-cap 6.22550E+02
631540 to 631530 3.03770E-02
631540 to 631520 1.09120E-05
631540 to 611500 1.06100E-10
631540 to 20040 7.77437E-04
631540 to 621530 2.38844E-06
631540 to 10010 1.26831E-03
631540 to 631550 1.07363E+03

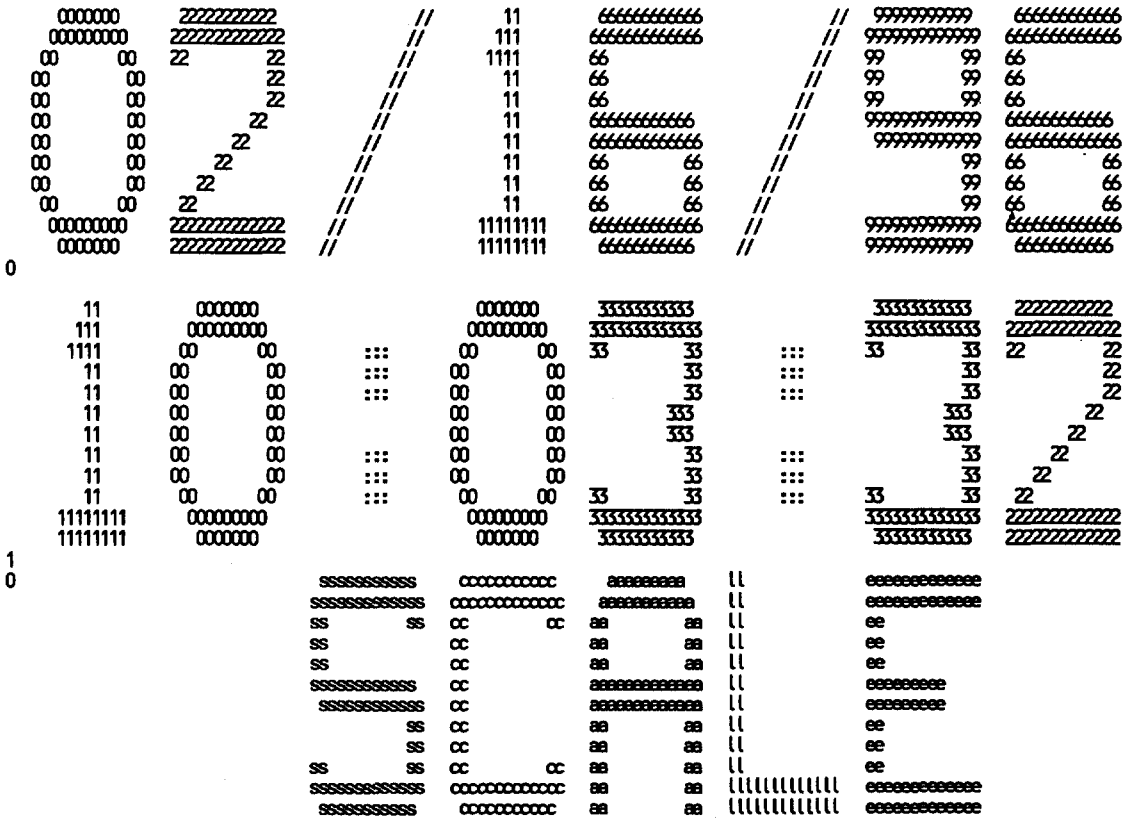
631540	to 621540	1.26831E-03
631540	to 10020	2.38712E-06
631540	to 621520	4.04318E-06
631540	to 10030	4.04318E-06
631540	to 611520	1.71447E-08
631540	to 20030	1.71447E-08
631540	to 611510	7.77436E-04
631540	tot-cap	1.07366E+03
631550	to 631540	2.49407E-02
631550	to 631530	6.98394E-05
631550	to 611510	1.87941E-06
631550	to 20040	9.24945E-06
631550	to 621540	3.80822E-06
631550	to 10010	7.98825E-06
631550	to 631560	2.56117E+03
631550	to 621550	6.13529E-06
631550	to 10020	1.95526E-06
631550	to 621530	6.47259E-07
631550	to 10030	6.47259E-07
631550	to 611530	1.46704E-10
631550	to 20030	1.46704E-10
631550	to 611520	7.37004E-06
631550	tot-cap	2.56119E+03
641550	to 641560	1.70609E+04
641550	tot-cap	1.70609E+04
922340	to 922330	6.53411E-03
922340	fission	4.49894E+00
922340	nu-sigf	1.18286E+01
922340	to 922320	9.47408E-05
922340	to 922350	1.87219E+02
922340	to 922341	3.01266E+00
922340	tot-cap	1.91725E+02
922350	to 922340	2.97957E-02
922350	fission	3.62536E+02
922350	nu-sigf	8.77960E+02
922350	to 922330	2.85392E-05
922350	to 922360	8.63216E+01
922350	to 922351	8.56857E-02
922350	tot-cap	4.48887E+02
922360	to 922350	3.32861E-02
922360	fission	1.93115E+00
922360	nu-sigf	5.30249E+00
922360	to 922340	4.43594E-04
922360	to 922370	7.20576E+01
922360	to 922361	3.29586E+00
922360	tot-cap	7.40225E+01
922380	to 922370	6.64767E-02
922380	fission	9.68614E-01
922380	nu-sigf	2.72801E+00
922380	to 922360	4.29632E-04
922380	to 922390	8.55442E+00
922380	tot-cap	9.58994E+00
952370	to 952360	1.51552E-02
952370	fission	5.21673E+00
952370	nu-sigf	1.57137E+01
952370	to 952350	5.79792E-05
952370	to 952380	3.01354E+02
952370	to 952371	7.72498E-01
952370	tot-cap	3.06586E+02
942380	to 942370	2.43600E-03

```
                942380 fission   2.24679E+01
                942380 nu-sigf   6.37163E+01
                942380 to 942360 1.36331E-05
                942380 to 942390 2.66029E+02
                942380 to 942381 3.02734E+00
                942380 tot-cap   2.88499E+02
                942390 to 942380 1.28918E-02
                942390 fission   8.36078E+02
                942390 nu-sigf   2.40898E+03
                942390 to 942370 2.19485E-05
                942390 to 942360 2.17579E-08
                942390 to 942400 4.67858E+02
                942390 tot-cap   1.30895E+03
                942400 to 942390 6.06672E-03
                942400 fission   5.90498E+00
                942400 nu-sigf   1.85024E+01
                942400 to 942380 5.92015E-05
                942400 to 942410 1.39534E+03
                942400 tot-cap   1.39925E+03
                942410 to 942400 7.63800E-02
                942410 fission   8.96700E+02
                942410 nu-sigf   2.63112E+03
                942410 to 942390 1.26675E-04
                942410 to 942420 2.92817E+02
                942410 tot-cap   1.18959E+03
                942420 to 942410 2.47305E-02
                942420 fission   4.52350E+00
                942420 nu-sigf   1.41737E+01
                942420 to 942400 3.00558E-04
                942420 to 942430 3.33458E+02
                942420 tot-cap   3.38006E+02
                952410 fission   1.24977E+01
                952410 nu-sigf   4.04062E+01
                952410 to 952420 1.01282E+03
                952410 tot-cap   1.02531E+03
                952430 fission   3.49225E+00
                952430 nu-sigf   1.17422E+01
                952430 to 952440 4.22109E+02
                952430 tot-cap   4.25601E+02
                962440 to 962430 5.94350E-05
                962440 fission   1.55149E+01
                962440 nu-sigf   5.19995E+01
                962440 to 962420 5.92708E-05
                962440 to 962450 1.42507E+02
                962440 to 962441 3.86081E+00
                962440 tot-cap   1.58028E+02
0the reaction  50100 to  30070 was not used, because  50100 is not in library., (in subr pool)
                                    in the search of library number 3
0the reaction  50100 to  40090 was not used, because  50100 is not in library., (in subr pool)
                                    in the search of library number 3
0the reaction  50110 to  40090 was not used, because  50110 is not in library., (in subr pool)
                                    in the search of library number 3
0the reaction  50100 to  40100 was not used, because  50100 is not in library., (in subr pool)
                                    in the search of library number 3
0the reaction  80160 to  80161 was not used, because  80161 is not in library., (in subr pool)
0the reaction 621470 to 621471 was not used, because 621471 is not in library., (in subr pool)
0the fission product transitions for  922340 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  922340 to 922341 was not used, because  922341 is not in library., (in subr pool)
```

```
0the reaction  922350 to 922351 was not used, because  922351 is not in library., (in subr pool)
0the fission product transitions for  922360 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  922360 to 922361 was not used, because  922361 is not in library., (in subr pool)
0the fission product transitions for  932370 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  932370 to 932371 was not used, because  932371 is not in library., (in subr pool)
0the fission product transitions for  942380 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  942380 to 942381 was not used, because  942381 is not in library., (in subr pool)
0the fission product transitions for  942400 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  942420 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952410 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952430 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  962440 were not used.  library fissile nuclides are
   922330   922350   942410   922380   942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the reaction  962440 to 962441 was not used, because  962441 is not in library., (in subr pool)
1
0                        case completed.  date,   2/16/1996
0 * normal termination *
```

```
1   ccccccccccc    rrrrrrrrrrr    iiiiiiiiiiii     gggggggggg    eeeeeeeeeeee   mm          mm   sssssssssss
    ccccccccccccc  rrrrrrrrrrrr   iiiiiiiiiiii    gggggggggggg   eeeeeeeeeeee   mmm         mm  sssssssssssss
    cc         cc  rr         rr       ii        gg        gg   ee             mmmm        mm  ss         ss
    cc         cc  rr         rr       ii        gg             ee             mm mm       mm  ss
    cc         cc  rr         rr       ii        gg             ee             mm  mm      mm  ss
    cc         cc  rrrrrrrrrrrr        ii        gg    gggggg   eeeeeeeee      mm   mm     mm   sssssssssss
    cc         cc  rrrrrrrrrrr         ii        gg    gggggg   eeeeeeeee      mm    mm    mm    sssssssssss
    cc         cc  rr       rr         ii        gg         gg   ee             mm     mm   mm           ss
    cc         cc  rr        rr        ii        gg         gg   ee             mm      mm  mm           ss
    cc         cc  rr         rr       ii        gg         gg   ee             mm       mmm  ss         ss
    ccccccccccccc  rr          rr  iiiiiiiiiiii   gggggggggggg   eeeeeeeeeeee   mm        mm  sssssssssssss
     ccccccccccc   rr          rr  iiiiiiiiiiii    gggggggggg    eeeeeeeeeeee   mm         m   sssssssssss
0
```

```
   ddddddddddd      aaaaaaaa     w         w  iiiiiiiiiii     sssssssssss
   ddddddddddddd   aaaaaaaaaa    w         w  iiiiiiiiiii    sssssssssssss
   dd         dd  aa        aa   w         w      ii         ss         ss
   dd         dd  aa        aa   w         w      ii         ss
   dd         dd  aa        aa   w         w      ii         ss
   dd         dd  aaaaaaaaaaaa   w         w      ii         sssssssssss
   dd         dd  aaaaaaaaaaaa    w       w       ii          sssssssssss
   dd         dd  aa        aa     w   w  w       ii                   ss
   dd         dd  aa        aa      w w   w       ii                   ss
   dd         dd  aa        aa       w w  w       ii         ss        ss
   ddddddddddddd  aa        aa        ww    iiiiiiiiiii    sssssssssssss
   ddddddddddd    aa        aa         v     iiiiiiiiiii     sssssssssss
0
```


program verification information
code system: scale version: 4.2
program: d0c004
creation date: 04/27/95

```
                    *****          library:  /neutronics/scale/exe                  *****
                    *****                                                           *****
                    *****                                                           *****
                    *****   this is not a   scale  configuration controlled code   *****
                    *****                                                           *****
                    *****          jobname:  davis                                  *****
                    *****                                                           *****
                    *****   date of execution:  02/16/96                            *****
                    *****                                                           *****
                    *****   time of execution:  10:03:32                            *****
                    *****                                                           *****
                    *****                                                           *****
                    ********************************************************************
                    ********************************************************************
                    ********************************************************************
1
0      -1q array has      1 entries.
0       0q array has      1 entries.
0       0q array has      1 entries.
0       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, qpn =    9.1188E-04
0            half-norm of matrix used, axn =    7.0000E+00
0            4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

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

         pass   6
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         pass   1
         pass   0
         *scale-system control module sas2 library*
         used a time-dependent neutron spectrum, for each of the above passes
           pass 0 applies start-up fuel densiities
           pass n applies mid time densities of nth library interval
         first library updated was...
         ********************************************************************
         *                                                                  *
         *          prelim lwr origen-s binary working library--id = 1143   *
         *        made from modified card-image origen-s libraries of scale 4.2 *
         *      data from the light element, actinide, and fission product libraries *
         *        decay data, including gamma and total energy, are from endf/b-vi *
         *                                                                  *
         *      neutron flux spectrum factors and cross sections were produced from *
         *     the "presas2" case updating all nuclides on the scale "burnup" library *
         *                                                                  *
```

```
      *                  fission product yields are from endf/b-v                  *
      *                                                                            *
      *              photon libraries use an 18-energy-group structure             *
      *             the photon data are from the master photon data base,          *
      *              produced to include bremsstrahlung from uo2 matrix            *
      *                                                                            *
      *        see information above this box (if present) for later updates       *
      *                                                                            *
      ******************************************************************************
      *                                                                            *
0     ******************************************************************************
0              .other identification and sizes of library.
0               data set name:  ft15f001
0             2/16/1996    date library was produced
0                1697    total number of nuclides in library
                  689    number of light-element nuclides
                  129    number of actinide nuclides
                  879    number of fission product nuclides
0                7955    number of nonzero off-diagonal matrix elements
0     ******************************************************************************
1
```

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

power= 8.466E-05mw, burnup=2.0318E-02mwd, flux= 1.61E+13n/cm**2-sec

0 nuclide concentrations, gram atoms

basis = converted to atoms/(barn-cm)

	charge	840.1 d	880.1 d	920.1 d	960.1 d	960.1 d	1000.1 d	1040.1 d
he 4	3.05E-08	3.70E-08	4.46E-08	5.34E-08	6.33E-08	6.33E-08	7.46E-08	8.72E-08
u230	7.98E-21	9.22E-21	1.05E-20	1.19E-20	1.33E-20	1.33E-20	1.49E-20	1.67E-20
u231	1.58E-19	1.84E-19	2.07E-19	2.32E-19	2.59E-19	2.58E-19	2.89E-19	3.21E-19
u232	2.10E-12	2.38E-12	2.68E-12	3.02E-12	3.37E-12	3.37E-12	3.76E-12	4.17E-12
u233	3.62E-11	3.75E-11	3.87E-11	3.99E-11	4.10E-11	4.10E-11	4.21E-11	4.31E-11
u234	4.56E-06	4.51E-06	4.47E-06	4.42E-06	4.37E-06	4.37E-06	4.33E-06	4.28E-06
u235	4.23E-04	4.13E-04	4.03E-04	3.93E-04	3.83E-04	3.83E-04	3.74E-04	3.64E-04
u236	5.16E-05	5.34E-05	5.51E-05	5.68E-05	5.84E-05	5.84E-05	6.00E-05	6.16E-05
u237	6.85E-08	7.10E-08	7.28E-08	7.46E-08	7.64E-08	7.61E-08	7.81E-08	7.98E-08
u238	2.19E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02
u239	1.53E-09	6.08E-09	6.09E-09	6.10E-09	6.11E-09	1.19E-09	6.12E-09	6.13E-09
u240	.00E+00	1.25E-32	2.03E-32	3.23E-32	5.04E-32	5.04E-32	7.71E-32	1.16E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	5.69E-14	6.36E-14	7.05E-14	7.77E-14	8.52E-14	8.52E-14	9.30E-14	1.01E-13
np236m	6.50E-14	7.35E-14	7.86E-14	8.37E-14	8.90E-14	8.65E-14	9.44E-14	9.98E-14
np236	5.53E-12	6.27E-12	7.05E-12	7.90E-12	8.79E-12	8.79E-12	9.74E-12	1.07E-11
np237	3.27E-06	3.50E-06	3.73E-06	3.97E-06	4.21E-06	4.21E-06	4.45E-06	4.70E-06
np238	4.07E-09	4.45E-09	4.75E-09	5.07E-09	5.39E-09	5.32E-09	5.71E-09	6.04E-09
np239	8.60E-07	8.78E-07	8.79E-07	8.80E-07	8.82E-07	8.77E-07	8.83E-07	8.85E-07
np240m	.00E+00	1.06E-34	1.73E-34	2.76E-34	4.30E-34	4.30E-34	6.58E-34	9.88E-34
np240	9.30E-12	1.61E-11	1.62E-11	1.62E-11	1.63E-11	8.77E-12	1.64E-11	1.64E-11
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	6.38E-12	7.18E-12	8.02E-12	8.91E-12	9.84E-12	9.84E-12	1.08E-11	1.19E-11
pu237	2.62E-13	2.83E-13	3.02E-13	3.22E-13	3.41E-13	3.41E-13	3.61E-13	3.82E-13
pu238	4.23E-07	4.77E-07	5.35E-07	5.98E-07	6.64E-07	6.64E-07	7.34E-07	8.09E-07
pu239	1.03E-04	1.06E-04	1.08E-04	1.11E-04	1.13E-04	1.13E-04	1.15E-04	1.17E-04
pu240	1.87E-05	2.00E-05	2.12E-05	2.23E-05	2.35E-05	2.35E-05	2.46E-05	2.57E-05
pu241	9.57E-06	1.04E-05	1.12E-05	1.20E-05	1.29E-05	1.29E-05	1.38E-05	1.48E-05
pu242	9.75E-07	1.12E-06	1.27E-06	1.44E-06	1.62E-06	1.62E-06	1.81E-06	2.01E-06
pu243	1.19E-10	1.54E-10	1.76E-10	1.99E-10	2.24E-10	1.97E-10	2.51E-10	2.79E-10
pu244	3.72E-22	6.20E-22	1.01E-21	1.61E-21	2.51E-21	2.51E-21	3.84E-21	5.76E-21
pu245	2.53E-28	4.44E-28	7.24E-28	1.16E-27	1.81E-27	1.70E-27	2.77E-27	4.17E-27
pu246	1.00E-30	1.69E-30	2.80E-30	4.51E-30	7.12E-30	7.11E-30	1.10E-29	1.67E-29
am239	4.18E-18	5.09E-18	5.76E-18	6.46E-18	7.21E-18	6.83E-18	8.00E-18	8.82E-18

am240	1.87E-15	2.20E-15	2.49E-15	2.80E-15	3.12E-15	3.08E-15	3.46E-15	3.82E-15
am241	2.64E-07	3.01E-07	3.40E-07	3.80E-07	4.23E-07	4.23E-07	4.69E-07	5.16E-07
am242m	5.47E-09	6.38E-09	7.36E-09	8.42E-09	9.56E-09	9.56E-09	1.08E-08	1.20E-08
am242	2.90E-10	3.40E-10	3.85E-10	4.32E-10	4.82E-10	4.63E-10	5.34E-10	5.90E-10
am243	8.11E-08	9.86E-08	1.18E-07	1.41E-07	1.66E-07	1.66E-07	1.94E-07	2.25E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	2.69E-11	3.49E-11	4.21E-11	5.01E-11	5.92E-11	5.56E-11	6.94E-11	8.07E-11
am245	2.29E-26	3.82E-26	6.20E-26	9.81E-26	1.52E-25	1.52E-25	2.30E-25	3.42E-25
am246	.00E+00	4.24E-33	6.99E-33	1.13E-32	1.78E-32	1.78E-32	2.75E-32	4.17E-32
cm241	3.66E-18	4.67E-18	5.82E-18	7.14E-18	8.65E-18	8.64E-18	1.03E-17	1.23E-17
cm242	2.99E-08	3.51E-08	4.09E-08	4.72E-08	5.40E-08	5.40E-08	6.13E-08	6.92E-08
cm243	4.28E-10	5.30E-10	6.48E-10	7.83E-10	9.35E-10	9.35E-10	1.11E-09	1.29E-09
cm244	6.95E-09	8.95E-09	1.14E-08	1.42E-08	1.78E-08	1.78E-08	2.16E-08	2.62E-08
cm245	1.36E-10	1.83E-10	2.43E-10	3.17E-10	4.09E-10	4.09E-10	5.20E-10	6.54E-10
cm246	5.12E-12	7.28E-12	1.02E-11	1.40E-11	1.90E-11	1.90E-11	2.53E-11	3.34E-11
cm247	3.30E-14	4.96E-14	7.30E-14	1.05E-13	1.49E-13	1.49E-13	2.08E-13	2.85E-13

1

sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp actinides page 2

power= 8.466E-05mw, burnup=2.0318E-02mwd, flux= 1.61E+13r/cm**2-sec

0 nuclide concentrations, gram atoms

basis = converted to atoms/(barn-cm)

	charge	840.1 d	880.1 d	920.1 d	960.1 d	960.1 d	1000.1 d	1040.1 d
cm248	9.52E-16	1.52E-15	2.35E-15	3.58E-15	5.32E-15	5.32E-15	7.78E-15	1.12E-14
cm249	3.88E-21	1.04E-20	1.61E-20	2.46E-20	3.66E-20	2.02E-20	5.37E-20	7.74E-20
cm250	9.60E-25	1.62E-24	2.66E-24	4.26E-24	6.68E-24	6.68E-24	1.03E-23	1.55E-23
cm251	.00E+00	3.86E-32	6.35E-32	1.02E-31	1.60E-31	1.63E-32	2.46E-31	3.73E-31
totals	2.25E-02	2.25E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02	2.24E-02
0 flux		1.60E+13	1.61E+13	1.61E+13	1.61E+13	.00E+00	1.62E+13	1.62E+13

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

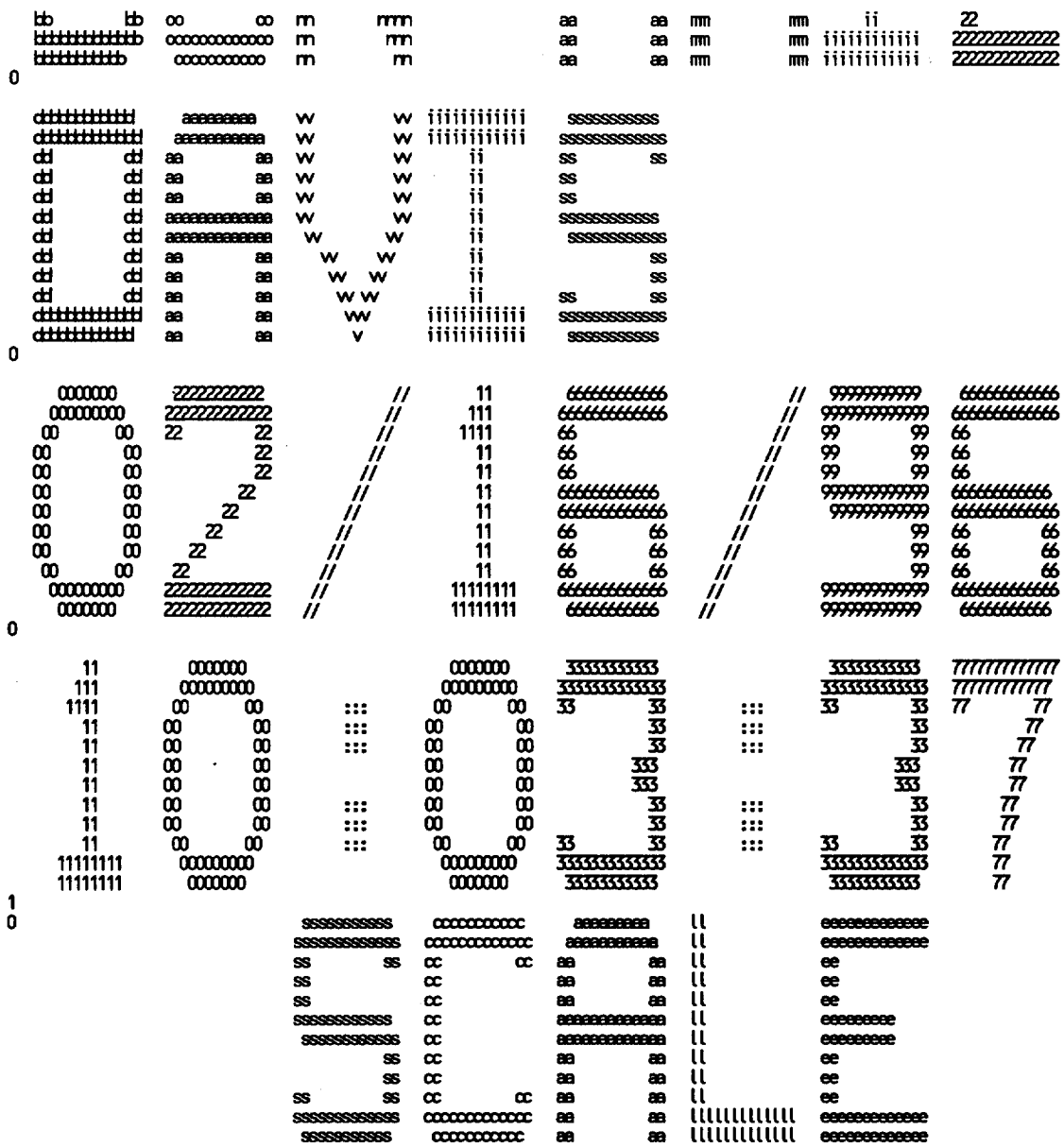
1 1

Ondset 33

15	4	1	27	6	0	0	0	0	0
0	0	0	0	0	0	-1	1698	690	130
880	7985	0	5	99	2	16	96	18	18
18	0	71							

0 56q array has 2 entries.
0 56q array has 1 entries.
0 56q array has 1 entries.
0 56q array has 1 entries.
0 56q array has 1 entries.
0 56q array has 1 entries.
0 56q array has 1 entries.
0 57q array has 3 entries.
0 1q array has 20 entries.
0 1q array has 10 entries.
l90 97376
l116 60826
l32 33663 nudata (library) storage size
l44 33734
l103 75953

```
0      58q array has      4 entries.
0      60q array has      7 entries.
0      58q array has      7 entries.
0      66q array has      1 entries.
0      73q array has   1697 entries.
0      74q array has   1697 entries.
0      75q array has   1697 entries.
    l140  66991
    used  101044 in size  200000
0jqpt          12
          0          0          0          0          0          0          0          0          0          0
          0          0
0therm          4
 5.117607E-01 4.416862E-01 3.418002E+00 1.000000E-31
0non            5
       7935         20          6         18       1697
0mm            19
          7          7          0          0          1          1          0          0          0          0
         21        100       1697          4          3         74          4          1          0
0tconst         5
 8.640000E+04 8.000961E+02  .000000E+00  .000000E+00 1.000000E-08
0mzero          4
          0        689        129        879
0pow            3
  .000000E+00  .000000E+00  .000000E+00
0 lirp          9
          6          0         51         26          2       3000       1000       1697         94
 n-gamma, fission and total mev/fission =          7.0320E+00 1.9653E+02 2.0356E+02
 start of interval flux =        1.60012E+13
 n-gamma, fission and total mev/fission =          7.1140E+00 1.9661E+02 2.0372E+02
 start of interval flux =        1.60313E+13
 n-gamma, fission and total mev/fission =          7.2102E+00 1.9669E+02 2.0390E+02
 start of interval flux =        1.60621E+13
 n-gamma, fission and total mev/fission =          7.3057E+00 1.9677E+02 2.0407E+02
 start of interval flux =        1.60956E+13
 start of interval flux =         .00000E+00
 n-gamma, fission and total mev/fission =          7.4184E+00 1.9684E+02 2.0426E+02
 start of interval flux =        1.61296E+13
 n-gamma, fission and total mev/fission =          7.4947E+00 1.9692E+02 2.0441E+02
 start of interval flux =        1.61696E+13
0 case or subcase    1  sas2h: babcock wilcox 15x15, 3.00wt%, 20gd/mtu burn high temp
0      56q array has     20 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has     20 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has     20 entries.
0      56q array has     20 entries.
0requested parm=halt8,skipcellwt,skipshipdata
  pass= 7, exec halts after pass   8
1  bbbbbbbbbb    cccccccccc   mm        mm              aaaaaaaa    mm        mm iiiiiiiiiii    2222222222
   bbbbbbbbbbb  ccccccccccc  mmm       mm             aaaaaaaaaa   mmm      mmm iiiiiiiiiii   22222222222
   bb       bb  oo       oo  mmm       mm            aa      aa   mmmm    mmmm      ii       22       22
   bb       bb  oo       oo  mm mm     mm            aa      aa   mm mm  mm mm      ii                22
   bb       bb  oo       oo  mm  mm    mm            aa      aa   mm  mmmm  mm      ii               22
   bbbbbbbbbb   oo       oo  mm   mm   mm ----------  aaaaaaaaaa   mm   mm   mm      ii             22
   bbbbbbbbbb   oo       oo  mm    mm  mm ----------  aaaaaaaaaa   mm    m   mm      ii           22
   bb       bb  oo       oo  mm     mm mm            aa      aa   mm        mm      ii         22
   bb       bb  oo       oo  mm      mmm            aa      aa   mm        mm      ii       22
```



```
*********************************************************************
*********************************************************************
*********************************************************************
*****                                                           *****
*****                 program verification information           *****
*****                                                           *****
*****                 code system:    scale  version:   4.2     *****
*****                                                           *****
*********************************************************************
*********************************************************************
*****                                                           *****
*****                                                           *****
*****             program:  c0c008                              *****
*****                                                           *****
*****        creation date:  04/27/95                           *****
*****                                                           *****
*****             library:  /neutronics/scale/exe               *****
*****                                                           *****
*****                                                           *****
*****    this is not a   scale  configuration controlled code   *****
*****                                                           *****
*****             jobname:  davis                               *****
*****                                                           *****
*****    date of execution:  02/16/96                           *****
*****                                                           *****
*****    time of execution:  10:03:37                           *****
*****                                                           *****
*****                                                           *****
*********************************************************************
*********************************************************************
*********************************************************************
1
0      -1q array has      1 entries.
0       0q array has      4 entries.
0       1q array has      6 entries.
0       2q array has      2 entries.
1logical assignments
0master library   12
 working library   0
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere              2
0izm--number of zones or material regions                     4
0ms--mixing table length                                     66
0ibl--shielded cross section edit option (0/1--no/yes)        0
0ibr--bondarenko factor edit option (0/1--no/yes)             0
0isscpt--dancoff factor option                                0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has     66 entries.
0       4q array has     66 entries.
0       5q array has     66 entries.
0       6q array has      4 entries.
0       7q array has      4 entries.
0       8q array has      4 entries.
0       9q array has      4 entries.
```

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

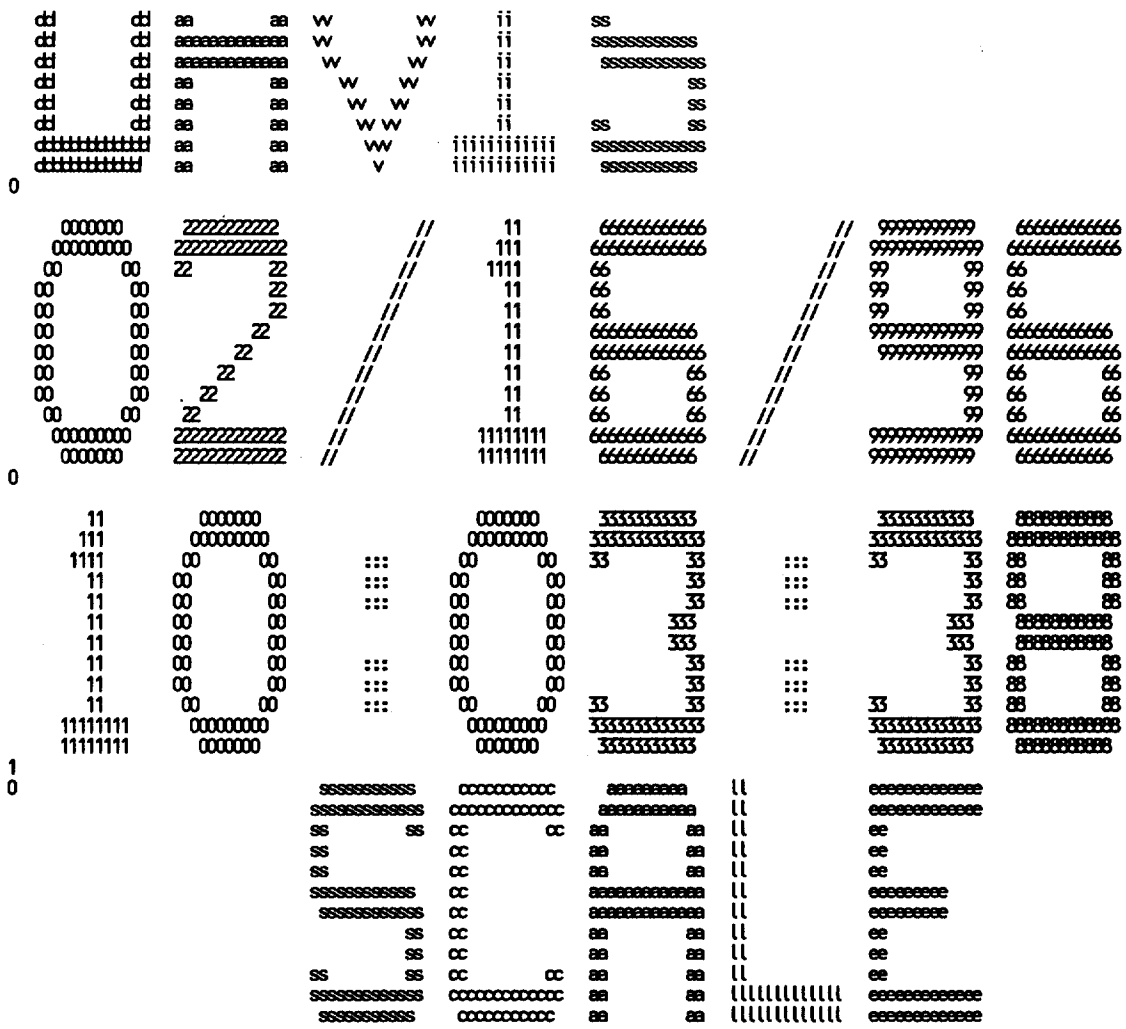
0entry	mixture	isotope	number density	new identifier
1	1	92235	3.64452E-04	92235
2	1	92234	4.28462E-06	92234
3	1	92236	6.15586E-05	92236
4	1	92238	2.17808E-02	92238
5	1	8016	4.55359E-02	8016
6	3	8016	2.09710E-02	6
7	1	36083	1.62790E-06	36083
8	1	36085	7.82545E-07	36085
9	1	38090	1.79089E-05	38090
10	1	39089	1.44715E-05	39089
11	1	42095	1.98509E-05	42095
12	1	40093	1.44900E-05	40093
13	1	40094	2.28864E-05	40094
14	1	40095	1.96022E-06	40095
15	1	41094	1.19775E-11	41094
16	1	43099	2.23951E-05	43099
17	1	45103	1.24431E-05	45103
18	1	45105	2.38399E-08	45105
19	1	44101	2.05378E-05	44101
20	1	44106	3.08150E-06	44106
21	1	46105	8.54907E-06	46105
22	1	46108	2.52052E-06	46108
23	1	47109	1.72855E-06	47109
24	1	51124	3.84646E-10	51124
25	1	54131	1.01675E-05	54131
26	1	54132	1.98610E-05	54132
27	1	54135	6.66399E-09	54135
28	1	54136	3.91142E-05	54136
29	1	55134	1.27988E-06	55134
30	1	55135	1.24307E-05	55135
31	1	55137	2.41337E-05	55137
32	1	56136	2.66545E-07	56136
33	1	57139	2.38740E-05	57139
34	1	59141	2.08456E-05	59141
35	1	59143	3.65349E-07	59143
36	1	58144	6.86967E-06	58144
37	1	60143	1.82864E-05	60143
38	1	60145	1.36331E-05	60145
39	1	61147	4.30510E-06	61147
40	1	61148	1.28358E-08	61148
41	1	60147	1.29256E-07	60147
42	1	62147	1.79999E-06	62147
43	1	62149	8.91136E-08	62149
44	1	62150	5.01098E-06	62150
45	1	62151	4.32635E-07	62151
46	1	62152	2.36311E-06	62152
47	1	64155	2.88530E-09	64155
48	1	63153	1.53061E-06	63153
49	1	63154	3.59468E-07	63154
50	1	63155	1.67707E-07	63155
51	2	40302	4.25156E-02	40302
52	3	1001	4.19420E-02	1001
53	3	5010	3.81515E-06	5010
54	3	5011	1.54884E-05	5011
55	1	55133	2.45710E-05	55133
56	1	95237	4.70039E-06	95237

```
   57      1        94238   8.09288E-07          94238
   58      1        94239   1.16852E-04          94239
   59      1        94240   2.56808E-05          94240
   60      1        94241   1.47624E-05          94241
   61      1        94242   2.01045E-06          94242
   62      1        95241   5.15913E-07          95241
   63      1        95243   2.25204E-07          95243
   64      1        96244   2.62419E-08          96244
   65      1          999   1.00000E-20            999
   66      4          999   1.00000E-20             66
0geometry and material description
0zone   mixture   outer dimension   temperature      extra xs   type (0/1--fuel/mod)
    1         1      4.68122E-01    9.75000E+02   9.05844E-01                     0
    2         4      4.78790E-01    2.93000E+02   5.49010E-01                     0
    3         2      5.46100E-01    6.50000E+02    .00000E+00                     0
    4         3      8.13968E-01    6.07600E+02    .00000E+00                     0
     7711 locations of   200000 available are required to make a new master containing the self-shielded values
0no nuclides in your problem have bondarenko factor data**bonami will copy from logical 12 to logical  1
0copy       999  1/v cross sectio from lag 12 to lag 18    bondarenko trigger 0
0copy       999  1/v cross sectio from lag 18 to lag  1    bondarenko trigger 0
0copy       999  1/v cross sectio from lag 18 to lag  1    bondarenko trigger 0
0copy      1001   hydrogen        from lag 12 to lag  1    bondarenko trigger 0
0copy      5010  b-10 1273 218ngp from lag 12 to lag  1    bondarenko trigger 0
0copy      5011   boron-11        from lag 12 to lag  1    bondarenko trigger 0
0copy      8016   oxygen-16       from lag 12 to lag 18    bondarenko trigger 0
0copy      8016   oxygen-16       from lag 18 to lag  1    bondarenko trigger 0
0copy      8016   oxygen-16       from lag 18 to lag  1    bondarenko trigger 0
0copy     36083   kr-83           from lag 12 to lag  1    bondarenko trigger 0
0copy     36085   kr-85           from lag 12 to lag  1    bondarenko trigger 0
0copy     38090   sr-90           from lag 12 to lag  1    bondarenko trigger 0
0copy     39089    y-89           from lag 12 to lag  1    bondarenko trigger 0
0copy     40093   zr-93           from lag 12 to lag  1    bondarenko trigger 0
0copy     40094   zr-94           from lag 12 to lag  1    bondarenko trigger 0
0copy     40095   zr-95           from lag 12 to lag  1    bondarenko trigger 0
0copy     40302   zircalloy       from lag 12 to lag  1    bondarenko trigger 0
0copy     41094   nb-94           from lag 12 to lag  1    bondarenko trigger 0
0copy     42095   mo-95           from lag 12 to lag  1    bondarenko trigger 0
0copy     43099   tc-99           from lag 12 to lag  1    bondarenko trigger 0
0copy     44101   ru-101          from lag 12 to lag  1    bondarenko trigger 0
0copy     44106   ru-106          from lag 12 to lag  1    bondarenko trigger 0
0copy     45103   rh-103          from lag 12 to lag  1    bondarenko trigger 0
0copy     45105   rh-105          from lag 12 to lag  1    bondarenko trigger 0
0copy     46105   pd-105          from lag 12 to lag  1    bondarenko trigger 0
0copy     46108   pd-108          from lag 12 to lag  1    bondarenko trigger 0
0copy     47109   silver-109      from lag 12 to lag  1    bondarenko trigger 0
0copy     51124   sb-124          from lag 12 to lag  1    bondarenko trigger 0
0copy     54131   xe-131          from lag 12 to lag  1    bondarenko trigger 0
0copy     54132   xe-132          from lag 12 to lag  1    bondarenko trigger 0
0copy     54135   xenon-135       from lag 12 to lag  1    bondarenko trigger 0
0copy     54136   xe-136          from lag 12 to lag  1    bondarenko trigger 0
0copy     55133   cesium-133      from lag 12 to lag  1    bondarenko trigger 0
0copy     55134   cs-134          from lag 12 to lag  1    bondarenko trigger 0
0copy     55135   cs-135          from lag 12 to lag  1    bondarenko trigger 0
0copy     55137   cs-137          from lag 12 to lag  1    bondarenko trigger 0
0copy     56136   ba-136          from lag 12 to lag  1    bondarenko trigger 0
0copy     57139   la-139          from lag 12 to lag  1    bondarenko trigger 0
0copy     58144   ce-144          from lag 12 to lag  1    bondarenko trigger 0
0copy     59141   pr-141          from lag 12 to lag  1    bondarenko trigger 0
0copy     59143   pr-143          from lag 12 to lag  1    bondarenko trigger 0
0copy     60143   nd-143          from lag 12 to lag  1    bondarenko trigger 0
```

```
0copy    60145  nd-145          from log 12 to log  1   bondarenko trigger 0
0copy    60147  nd-147          from log 12 to log  1   bondarenko trigger 0
0copy    61147  pm-147          from log 12 to log  1   bondarenko trigger 0
0copy    61148  pm-148          from log 12 to log  1   bondarenko trigger 0
0copy    62147  sm-147          from log 12 to log  1   bondarenko trigger 0
0copy    62149  sm-149          from log 12 to log  1   bondarenko trigger 0
0copy    62150  sm-150          from log 12 to log  1   bondarenko trigger 0
0copy    62151  sm-151          from log 12 to log  1   bondarenko trigger 0
0copy    62152  sm-152          from log 12 to log  1   bondarenko trigger 0
0copy    63153  eu-153          from log 12 to log  1   bondarenko trigger 0
0copy    63154  eu-154          from log 12 to log  1   bondarenko trigger 0
0copy    63155  eu-155          from log 12 to log  1   bondarenko trigger 0
0copy    64155  gd-155          from log 12 to log  1   bondarenko trigger 0
0copy    92234  u-234 1043 sigc= from log 12 to log  1   bondarenko trigger 0
0copy    92235  uranium-235     from log 12 to log  1   bondarenko trigger 0
0copy    92236  u-236 1163 sigc= from log 12 to log  1   bondarenko trigger 0
0copy    92238  uranium-238     from log 12 to log  1   bondarenko trigger 0
0copy    93237  neptunium-237   from log 12 to log  1   bondarenko trigger 0
0copy    94238  pu-238 1050 sigc from log 12 to log  1   bondarenko trigger 0
0copy    94239  plutonium-239   from log 12 to log  1   bondarenko trigger 0
0copy    94240  plutonium-240   from log 12 to log  1   bondarenko trigger 0
0copy    94241  plutonium-241   from log 12 to log  1   bondarenko trigger 0
0copy    94242  plutonium-242   from log 12 to log  1   bondarenko trigger 0
0copy    95241  am-241 1056 sigc from log 12 to log  1   bondarenko trigger 0
0copy    95243  am-243 1057 218  from log 12 to log  1   bondarenko trigger 0
0copy    96244  curium-244      from log 12 to log  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
      based on endf-b version 4 data with endf-b version 5 fission products
         compiled for nrc     1/27/89
            last updated      9/16/93
               l.m.petrie  -  ornl
      tape id                          4321        number of nuclides          66
      number of neutron groups           27        number of gamma groups       0
      first thermal group                15        logical unit                 1
                              table of contents
    1/v cross sections normalized to 1.0 at 0.0253 ev                    id    999
    1/v cross sections normalized to 1.0 at 0.0253 ev                    id     66
     hydrogen       endf/b-iv mat 1269/thrmf1002   updated 10/13/89     id   1001
    b-10 1273 218ngp 042375 p-3 293k
     boron-11       endf/b-iv mat 1160             updated 10/13/89     id   5011
     oxygen-16      endf/b-iv mat 1276             updated 10/13/89     id   8016
     oxygen-16      endf/b-iv mat 1276             updated 10/13/89     id      6
     kr-83          mt=102,103,105,105,106,107     updated 10/13/89     id  36083
     kr-85            mt=  102                                           id  36085
     sr-90          mt=102                         updated 10/13/89     id  38090
      y-89          mt=102                         updated 10/13/89     id  39089
     zr-93            mt=  102                                           id  40093
     zr-94          mt=102                         updated 10/13/89     id  40094
     zr-95          mt=102                         updated 10/13/89     id  40095
     zircalloy      endf/b-iv mat 1284             updated 10/13/89     id  40302
     nb-94          mt=102                         updated 10/13/89     id  41094
     mo-95          mt=102                         updated 10/13/89     id  42095
     tc-99          mt=102                         updated 10/13/89     id  43099
     ru-101         mt=102                         updated 10/13/89     id  44101
     ru-106         mt=102                         updated 10/13/89     id  44106
     rh-103         mt=102                         updated 10/13/89     id  45103
     rh-105           mt=  102                                           id  45105
     pd-105         mt=102                         updated 10/13/89     id  46105
     pd-108         mt=102                         updated 10/13/89     id  46108
     silver-109     endf/b-iv mat 1139             updated 10/13/89     id  47109
```

```
        sb-124          mt=102                          updated 10/13/89                id    51124
        xe-131          mt=102,103,104,105,106          updated 10/13/89                id    54131
        xe-132          mt=102,103,104,105,106          updated 10/13/89                id    54132
        xenon-135       endf/b-iv mat 1294              updated 10/13/89                id    54135
        xe-136            mt=  102, 103,  104,  105,  107                               id    54136
        cesium-133      endf/b-iv mat 1141              updated 10/13/89                id    55133
        cs-134          mt=102                          updated 10/13/89                id    55134
        cs-135            mt=  102                                                      id    55135
        cs-137          mt=102                          updated 10/13/89                id    55137
        ba-136          mt=102                          updated 10/13/89                id    56136
        la-139          mt=102                          updated 10/13/89                id    57139
        ce-144            mt=  102                                                      id    58144
        pr-141          mt=102,103,104,105,106,107      updated 10/13/89                id    59141
        pr-143          mt=102                          updated 10/13/89                id    59143
        nd-143          mt=102                          updated 10/13/89                id    60143
        nd-145          mt=102                          updated 10/13/89                id    60145
        nd-147          mt=102                          updated 10/13/89                id    60147
        pm-147          mt=102                          updated 10/13/89                id    61147
        pm-148            mt=  102                                                      id    61148
        sm-147          endf/b-v fission product        updated 10/13/89                id    62147
        sm-149          mt=102,103,107                  updated 10/13/89                id    62149
        sm-150          mt=102                          updated 10/13/89                id    62150
        sm-151          mt=102,103,104,105,106,107      updated 10/13/89                id    62151
        sm-152          mt=102,103,104,105,106,107      updated 10/13/89                id    62152
        eu-153          mt=102,103,104,105,106,107      updated 10/13/89                id    63153
        eu-154          mt=102,103,104,105,106,107      updated 10/13/89                id    63154
        eu-155          mt=102,103,104,105,106,107      updated 10/13/89                id    63155
        gd-155          mt=102                          updated 10/13/89                id    64155
       u-234 1043 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                              id    92234
        uranium-235     endf/b-iv mat 1261              updated 10/13/89                id    92235
       u-236 1163 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                              id    92236
        uranium-238     endf/b-iv mat 1262              updated 10/13/89                id    92238
        neptunium-237   endf/b-iv mat 1263              updated 10/13/89                id    93237
       pu-238 1050 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                             id    94238
        plutonium-239   endf/b-iv mat 1264              updated 10/13/89                id    94239
        plutonium-240   endf/b-iv mat 1265              updated 10/13/89                id    94240
        plutonium-241   endf/b-iv mat 1266              updated 10/13/89                id    94241
        plutonium-242   endf/b-iv mat 1161              updated 10/13/89                id    94242
       am-241 1056 sigo=5+4 newxlacs 218ngp p-3 293k                                    id    95241
       am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                                     id    95243
        curium-244      endf/b-iv mat 1162              updated 10/13/89                id    96244
0        tape copy used       0 i/o's, and took      .00 seconds
1                m         m  iiiiiiiiiiii   ttttttttttt     aaaaaaaa     ww         ww  ll
                 mm        m  iiiiiiiiiiii   ttttttttttt    aaaaaaaaaa    ww         ww  ll
                 mmm       m       ii            tt       aa        aa    ww         ww  ll
                 m mm      m       ii            tt       aa        aa    ww         ww  ll
                 m  m      m       ii            tt       aa        aa    ww         ww  ll
                 m   m     m       ii            tt       aaaaaaaaaaaa    ww    w    ww  ll
                 m    m    m       ii            tt       aaaaaaaaaaaa    ww   www   ww  ll
                 m     m   m       ii            tt       aa        aa    ww  www ww  ww  ll
                 m.     mm         ii            tt       aa        aa    ww ww    ww ww  ll
                 m       mmm       ii            tt       aa        aa    wwww     wwww  ll
                 m         m  iiiiiiiiiiii       tt       aa        aa    www       www  llllllllllll
                 m         m  iiiiiiiiiiii       tt       aa        aa    ww         ww  llllllllllll
0

  ddddddddddd     aaaaaaaa    w         w  iiiiiiiiiii    sssssssssss
  ddddddddddddd  aaaaaaaaaa   w         w  iiiiiiiiiii   sssssssssssss
  dd        dd  aa        aa  w         w      ii        ss         ss
  dd        dd  aa        aa  w         w      ii        ss
```


program verification information

```
                    *****              code system:    scale  version:    4.2             *****
                    *****                                                                 *****
                    ***********************************************************************
                    ***********************************************************************
                    *****                                                                 *****
                    *****                                                                 *****
                    *****             program:  c0c002                                    *****
                    *****                                                                 *****
                    *****          creation date:  04/27/95                               *****
                    *****                                                                 *****
                    *****             library:  /neutronics/scale/exe                     *****
                    *****                                                                 *****
                    *****                                                                 *****
                    *****     this is not a   scale  configuration controlled code        *****
                    *****                                                                 *****
                    *****             jobname:  davis                                     *****
                    *****                                                                 *****
                    *****     date of execution:  02/16/96                                *****
                    *****                                                                 *****
                    *****     time of execution:  10:03:38                                *****
                    *****                                                                 *****
                    *****                                                                 *****
                    ***********************************************************************
                    ***********************************************************************
                    ***********************************************************************
1
0       -1q array has       1 entries.
0        0q array has       9 entries.
0        1q array has      12 entries.
0select 65 nuclides from the master  library on logical  1
         0 nuclides from the working library on logical  2
         0 nuclides from the working library on logical  3
           to create the new working library on logical  4

        61 resonance calculations have been requested
         0 output option for ampx formatted cross section data
0the storage allocated for this case is 200000 words
0        2q array has      65 entries.
0        3q array has     915 entries.
0        4q array has      65 entries.
0 general information concerning cross section library
     tape identification number                  4321
     number of nuclides on tape                    66
     number of neutron energy groups               27
     first thermal neutron energy group            15
     number of gamma energy groups                  0
0   direct access unit number  9 requires 117 blocks of length  1484 words
- xsdrn tape   4321
                        scale 4.2 - 27 group neutron burnup library
                           based on endf-b version 4 data with endf-b version 5 fission products
                              compiled for nrc      1/27/89
                                 last updated       9/16/93
                                    l.m.petrie   -   ornl
0 nuclides from xsdrn tape
     1     1/v cross sections normalized to 1.0 at 0.0253 ev                                999
     2     hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89                 1001
     3    b-10 1273 218ngp 042375 p-3 293k                                                 5010
     4     boron-11        endf/b-iv mat 1160             updated 10/13/89                 5011
     5     oxygen-16       endf/b-iv mat 1276             updated 10/13/89                 8016
     6     oxygen-16       endf/b-iv mat 1276             updated 10/13/89                    6
```

```
  7    kr-83          mt=102,103,105,105,106,107     updated 10/13/89          36083
  8    kr-85            mt=  102                                              36085
  9    sr-90          mt=102                         updated 10/13/89          38090
 10     y-89          mt=102                         updated 10/13/89          39089
 11    zr-93            mt=  102                                              40093
 12    zr-94          mt=102                         updated 10/13/89          40094
 13    zr-95          mt=102                         updated 10/13/89          40095
 14    zircalloy      endf/b-iv mat 1284             updated 10/13/89          40302
 15    nb-94          mt=102                         updated 10/13/89          41094
 16    mo-95          mt=102                         updated 10/13/89          42095
 17    tc-99          mt=102                         updated 10/13/89          43099
 18    ru-101         mt=102                         updated 10/13/89          44101
 19    ru-106         mt=102                         updated 10/13/89          44106
 20    rh-103         mt=102                         updated 10/13/89          45103
 21    rh-105           mt=  102                                              45105
 22    pd-105         mt=102                         updated 10/13/89          46105
 23    pd-108         mt=102                         updated 10/13/89          46108
 24    silver-109     endf/b-iv mat 1139             updated 10/13/89          47109
 25    sb-124         mt=102                         updated 10/13/89          51124
 26    xe-131         mt=102,103,104,105,106         updated 10/13/89          54131
 27    xe-132         mt=102,103,104,105,106         updated 10/13/89          54132
 28    xenon-135      endf/b-iv mat 1294             updated 10/13/89          54135
 29    xe-136           mt=  102, 103, 104, 105, 107                            54136
 30    cesium-133     endf/b-iv mat 1141             updated 10/13/89          55133
 31    cs-134         mt=102                         updated 10/13/89          55134
 32    cs-135           mt=  102                                              55135
 33    cs-137         mt=102                         updated 10/13/89          55137
 34    ba-136         mt=102                         updated 10/13/89          56136
 35    la-139         mt=102                         updated 10/13/89          57139
 36    ce-144           mt=  102                                              58144
 37    pr-141         mt=102,103,104,105,106,107     updated 10/13/89          59141
 38    pr-143         mt=102                         updated 10/13/89          59143
 39    nd-143         mt=102                         updated 10/13/89          60143
 40    nd-145         mt=102                         updated 10/13/89          60145
 41    nd-147         mt=102                         updated 10/13/89          60147
 42    pm-147         mt=102                         updated 10/13/89          61147
 43    pm-148           mt=  102                                              61148
 44    sm-147         endf/b-v fission product       updated 10/13/89          62147
 45    sm-149         mt=102,103,107                 updated 10/13/89          62149
 46    sm-150         mt=102                         updated 10/13/89          62150
 47    sm-151         mt=102,103,104,105,106,107     updated 10/13/89          62151
 48    sm-152         mt=102,103,104,105,106,107     updated 10/13/89          62152
 49    eu-153         mt=102,103,104,105,106,107     updated 10/13/89          63153
 50    eu-154         mt=102,103,104,105,106,107     updated 10/13/89          63154
 51    eu-155         mt=102,103,104,105,106,107     updated 10/13/89          63155
 52    gd-155         mt=102                         updated 10/13/89          64155
 53   u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                       92234
 54    uranium-235    endf/b-iv mat 1261             updated 10/13/89          92235
 55   u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                       92236
 56    uranium-238    endf/b-iv mat 1262             updated 10/13/89          92238
 57    neptunium-237  endf/b-iv mat 1263             updated 10/13/89          93237
 58   pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                      94238
 59    plutonium-239  endf/b-iv mat 1264             updated 10/13/89          94239
 60    plutonium-240  endf/b-iv mat 1265             updated 10/13/89          94240
 61    plutonium-241  endf/b-iv mat 1266             updated 10/13/89          94241
 62    plutonium-242  endf/b-iv mat 1161             updated 10/13/89          94242
 63   am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                             95241
 64   am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                              95243
 65    curium-244     endf/b-iv mat 1162             updated 10/13/89          96244
01/v cross sections normalized to 1.0 at 0.0253 ev                    999    temperature=  975.00
```

```
0 hydrogen       endf/b-iv mat 1269/thrm1002    updated 10/13/89            1001     temperature=  607.60
                              thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0b-10 1273 218rgp 042375 p-3 293k                                          5010     temperature=  607.60
                              thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 boron-11       endf/b-iv mat 1160             updated 10/13/89            5011     temperature=  607.60
                              thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16      endf/b-iv mat 1276             updated 10/13/89            8016     temperature=  975.00
0 oxygen-16      endf/b-iv mat 1276             updated 10/13/89               6     temperature=  607.60
0 kr-83          mt=102,103,103,105,106,107     updated 10/13/89           36083     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   82.202              temperature(kelvin)      =   975.000
0potential scatter sigma  =    7.004              lumped nuclear density   = 1.6278995E-06
0spin factor (g)          =  4988.190             lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00         dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995              sigma(per absorber atom)= 1.0489573E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.933              sigma(per absorber atom)= 1.1708092E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11      -2.429425E-03     .000000E+00   -3.070467E-03
  12       2.164846E-02     .000000E+00    9.887995E-03
  13      -5.318041E-01     .000000E+00   -1.595370E-01
  14       4.783232E-05     .000000E+00   -1.725491E-05
0excess resonance integrals
0                 resolved
0absorption      1.44660E+02
 fission         .00000E+00
- elapsed time    .00 min.
0 kr-85           mt=  102                                                 36085     temperature=  975.00
0 sr-90          mt=102                         updated 10/13/89           38090     temperature=  975.00
0  y-89          mt=102                         updated 10/13/89           39089     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   88.142              temperature(kelvin)      =   975.000
0potential scatter sigma  =    3.644              lumped nuclear density   = 1.4471508E-05
0spin factor (g)          =   78.664              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00         dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995              sigma(per absorber atom)= 1.1799717E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  237.933              sigma(per absorber atom)= 1.3164805E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9      -4.184804E-06     .000000E+00   -3.315778E-04
  10      -8.859182E-05     .000000E+00   -2.498568E-04
0excess resonance integrals
0                 resolved
0absorption      1.46374E-01
 fission         .00000E+00
- elapsed time    .00 min.
0 zr-93           mt=  102                                                 40093     temperature=  975.00
0 zr-94          mt=102                         updated 10/13/89           40094     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   93.100              temperature(kelvin)      =   975.000
0potential scatter sigma  =    3.779              lumped nuclear density   = 2.2886412E-05
0spin factor (g)          =  180.853              lump dimension (a-bar)   = 4.6812201E-01
```

```
0inner radius            = .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995              sigma(per absorber atom)= 7.4611826E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.933              sigma(per absorber atom)= 8.3243535E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   8      -1.463173E-06     .000000E+00   -1.371799E-03
   9      -4.468161E-05     .000000E+00   -3.950986E-03
0excess resonance integrals
0                 resolved
0absorption      3.43578E-02
 fission          .0000E+00
- elapsed time    .00 min.
0 zr-95          mt=102                  updated 10/13/89          40095     temperature=  975.00
0 zircalloy      endf/b-iv mat 1284      updated 10/13/89          40302     temperature=  650.00
0resonance data for this nuclide
0mass number (a)         =   90.436          temperature(kelvin)      =  650.000
0potential scatter sigma =    6.385          lumped nuclear density   = 4.2515602E-02
0spin factor (g)         =    1.079          lump dimension (a-bar)   = 5.4610002E-01
0inner radius            = 4.7878999E-01     dancoff correction (c)   = 5.0364637E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   8      -1.780596E-03     .000000E+00   -1.286907E+00
   9      -5.895373E-02     .000000E+00   -2.695297E+00
  10      -6.959935E-02     .000000E+00   -1.601321E+00
  11      -1.883937E-01     .000000E+00   -7.920912E-01
0excess resonance integrals
0                 resolved
0absorption      2.28539E-01
 fission          .0000E+00
- elapsed time    .02 min.
0 rb-94          mt=102                  updated 10/13/89          41094     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   93.101          temperature(kelvin)      =  975.000
0potential scatter sigma =    3.779          lumped nuclear density   = 1.1977532E-11
0spin factor (g)         = 43808.801          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995              sigma(per absorber atom)= 1.4256668E+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.933              sigma(per absorber atom)= 1.5905996E+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  13       1.043531E-02     .000000E+00    9.253882E-04
  14       9.836712E-03     .000000E+00   -4.064814E-04
0excess resonance integrals
0                 resolved
0absorption      9.15001E+01
 fission          .0000E+00
- elapsed time    .02 min.
0 mo-95          mt=102                  updated 10/13/89          42095     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   94.091          temperature(kelvin)      =  975.000
```

```
0potential scatter sigma =    3.806          lumped nuclear density   = 1.9850915E-05
0spin factor (g)         =  607.724          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 8.6021064E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.953          sigma(per absorber atom)= 9.5972686E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  10     -4.213186E-03    .000000E+00   -2.519524E-02
  11     -7.851104E-03    .000000E+00   -1.294423E-02
  12     -5.421113E+00    .000000E+00   -6.236665E+00
  13      1.567912E-04    .000000E+00   -2.000911E-05
0excess resonance integrals
0                resolved
0absorption     9.65135E+01
 fission         .00000E+00
- elapsed time    .02 min.
0 tc-99        mt=102                updated 10/13/89          43099     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =   98.150          temperature(kelvin)      =  975.000
0potential scatter sigma =    6.000          lumped nuclear density   = 2.2955130E-05
0spin factor (g)         = 4527.940          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 7.6248579E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.953          sigma(per absorber atom)= 8.5069639E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  11     -2.889046E-02    .000000E+00   -1.360966E-02
  12     -7.652462E-03    .000000E+00   -2.696194E-04
  13     -4.684640E-01    .000000E+00   -2.465246E-02
  14     -9.945614E+00    .000000E+00   -3.170968E-01
  15      1.069754E-02    .000000E+00   -5.383165E-04
  16      4.835994E-03    .000000E+00   -2.802093E-04
  17      2.074365E-04    .000000E+00   -1.191927E-05
0excess resonance integrals
0                resolved
0absorption     3.21540E+02
 fission         .00000E+00
- elapsed time    .03 min.
0 ru-101       mt=102                updated 10/13/89          44101     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =  100.089          temperature(kelvin)      =  975.000
0potential scatter sigma =    3.965          lumped nuclear density   = 2.0537844E-05
0spin factor (g)         = 8785.290          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 8.3143926E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.953          sigma(per absorber atom)= 9.2762695E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
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  11      -3.670937E-02     .000000E+00   -3.695435E-03
  12      -1.758472E-01     .000000E+00   -4.277066E-02
  13      -5.516006E-01     .000000E+00   -1.485083E-02
  14       2.369341E-04     .000000E+00   -4.143942E-05
0excess resonance integrals
0                 resolved
0absorption      7.90961E+01
 fission          .00000E+00
- elapsed time    .03 min.
0 ru-106        mt=102                    updated 10/13/89            44106    temperature=  975.00
0 rh-103        mt=102                    updated 10/13/89            45103    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   102.021          temperature(kelvin)      =   975.000
0potential scatter sigma =     5.408          lumped nuclear density   = 1.2443061E-05
0spin factor (g)         =      .500          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 1.3725287E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.953          sigma(per absorber atom)= 1.5310909E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
   9      1.220378E-03     .000000E+00    1.838315E-03
  10     -4.532174E-03     .000000E+00   -6.215322E-03
  11     -2.501817E-02     .000000E+00   -2.197417E-02
  12     -4.149507E-04     .000000E+00   -2.594820E-05
  13       .000000E+00     .000000E+00     .000000E+00
  14       .000000E+00     .000000E+00     .000000E+00
  15      2.257050E-01     .000000E+00    3.206996E-03
  16      2.989958E+01     .000000E+00   -7.773024E-02
  17     -1.871487E+02     .000000E+00   -1.707123E-01
  18      8.668073E+01     .000000E+00    2.604877E-01
  19      1.142152E+01     .000000E+00   -1.308896E-03
  20      1.081809E+00     .000000E+00   -2.425992E-03
  21      2.165767E-01     .000000E+00    1.925245E-03
  22      2.583950E-01     .000000E+00    2.928540E-03
  23     -9.878896E-02     .000000E+00    1.798803E-03
0excess resonance integrals
0                 resolved
0absorption      1.13757E+03
 fission          .00000E+00
- elapsed time    .07 min.
0 rh-105          mt=  102                                              45105    temperature=  975.00
0 pd-105        mt=102                    updated 10/13/89            46105    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   104.004          temperature(kelvin)      =   975.000
0potential scatter sigma =     4.069          lumped nuclear density   = 8.5490719E-06
0spin factor (g)         = 15210.000          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 1.9974063E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.953          sigma(per absorber atom)= 2.2284826E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  12     -6.388361E-02     .000000E+00   -1.985388E-03
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  13      -5.664188E-02     .000000E+00   -1.451314E-03
  14       7.759710E-04     .000000E+00   -8.119541E-05
0excess resonance integrals
0                 resolved
0absorption      6.11833E+01
 fission          .00000E+00
-  elapsed time    .07 min.
0 pd-108        mt=102                    updated 10/13/89            46108     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   106.977          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.146          lumped nuclear density   = 2.5203244E-06
0spin factor (g)          = 21175.100          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995             sigma(per absorber atom)= 6.7753055E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953             sigma(per absorber atom)= 7.5591289E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11      1.169935E-04     .000000E+00    3.530870E-04
  12     -2.278071E+00     .000000E+00   -1.677253E+00
  13      6.742267E-03     .000000E+00    1.870996E-03
  14      8.561006E-02     .000000E+00   -3.209501E-05
  15     -1.841239E-01     .000000E+00    8.083533E-05
  16      2.946561E-04     .000000E+00   -9.255422E-06
0excess resonance integrals
0                 resolved
0absorption      2.11309E+02
 fission          .00000E+00
-  elapsed time    .07 min.
0 silver-109    endf/b-iv mat 1139          updated 10/13/89            47109     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   107.969          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.988          lumped nuclear density   = 1.7285453E-06
0spin factor (g)          =  1441.870          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =   15.995             sigma(per absorber atom)= 9.8788094E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =  237.953             sigma(per absorber atom)= 1.1021671E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  10     -2.004977E-04     .000000E+00   -2.261492E-04
  11     -8.000466E-03     .000000E+00   -5.863405E-03
  12     -7.368214E-01     .000000E+00   -3.566231E-02
  13      7.668183E-01     .000000E+00    3.380727E-02
  14     -1.647373E+01     .000000E+00   -1.531124E+00
0excess resonance integrals
0                 resolved
0absorption      1.38134E+03
 fission          .00000E+00
-  elapsed time    .07 min.
0 sb-124        mt=102                    updated 10/13/89            51124     temperature=   975.00
0 xe-131        mt=102,103,104,105,106    updated 10/13/89            54131     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   129.781          temperature(kelvin)      =   975.000
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0potential scatter sigma =    4.301          lumped nuclear density    = 1.0167540E-05
0spin factor (g)         =  246.825          lump dimension (a-bar)    = 4.6812201E-01
0inner radius            = .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 1.6794592E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.933          sigma(per absorber atom)= 1.8737529E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
   9     -3.357824E-06   .000000E+00   -3.102342E-05
  10     -2.273006E-04   .000000E+00   -1.970430E-04
  11     -2.755318E-03   .000000E+00   -2.060894E-03
  12     -5.243095E-02   .000000E+00   -4.881767E-03
  13     -7.980322E+01   .000000E+00   -1.870293E+02
  14      1.050233E-02   .000000E+00    1.471501E-02
0excess resonance integrals
0              resolved
0absorption   7.4744E+02
 fission       .0000E+00
- elapsed time   .08 min.
0 xe-132      mt=102,103,104,105,106      updated 10/13/89          54132    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =  130.771          temperature(kelvin)       =  975.000
0potential scatter sigma =    4.301          lumped nuclear density    = 1.9860965E-05
0spin factor (g)         =  675.899          lump dimension (a-bar)    = 4.6812201E-01
0inner radius            = .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 8.5977539E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.933          sigma(per absorber atom)= 9.5926121E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
   9     -3.071550E-05   .000000E+00   -1.421780E-04
  10     -9.333992E-03   .000000E+00   -1.188144E-01
  11      3.337750E-08   .000000E+00   -9.213736E-07
0excess resonance integrals
0              resolved
0absorption   9.6848E-01
 fission       .0000E+00
- elapsed time   .08 min.
0 xenon-135   endf/b-iv mat 1294        updated 10/13/89          54135    temperature=  975.00
0 xe-136        mt=  102, 103, 104, 105, 107                    54136    temperature=  975.00
0 cesium-133  endf/b-iv mat 1141        updated 10/13/89          55133    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =  131.764          temperature(kelvin)       =  975.000
0potential scatter sigma =    7.100          lumped nuclear density    = 2.4571029E-05
0spin factor (g)         =  374.437          lump dimension (a-bar)    = 4.6812201E-01
0inner radius            = .0000000E+00      dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995          sigma(per absorber atom)= 6.9496348E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  238.051          sigma(per absorber atom)= 7.4543945E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
```

```
   9      -6.734279E-05     .000000E+00   -4.651886E-04
  10      -3.395013E-03     .000000E+00   -6.490357E-03
  11      -1.260395E-01     .000000E+00   -2.208344E-01
  12      -1.956238E-01     .000000E+00   -2.720965E-02
  13      -3.254609E-01     .000000E+00   -1.770940E-02
  14      -1.403704E+01     .000000E+00   -6.143198E-01
  15       5.619422E-03     .000000E+00   -4.043774E-04
  16       2.777897E-03     .000000E+00   -2.215109E-04
  17       2.352275E-03     .000000E+00   -1.830948E-04
  18       2.215023E-03     .000000E+00   -1.679522E-04
  19       1.317540E-03     .000000E+00   -9.683846E-05
0excess resonance integrals
0                resolved
0absorption      3.48530E+02
 fission          .00000E+00
- elapsed time    .10 min.
0 cs-134        mt=102                    updated 10/13/89            55134    temperature=  975.00
0 cs-135          mt=  102                                          55135    temperature=  975.00
0 cs-137        mt=102                    updated 10/13/89            55137    temperature=  975.00
0 ba-136        mt=102                    updated 10/13/89            56136    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   134.737          temperature(kelvin)     =   975.000
0potential scatter sigma =     4.835          lumped nuclear density  = 2.6654541E-07
0spin factor (g)         =  1247.690          lump dimension (a-bar)  = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 6.4064013E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.933          sigma(per absorber atom)= 7.1475463E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  10      9.818274E-07     .000000E+00    4.101368E-07
  11     -2.649077E-05     .000000E+00   -2.197935E-05
0excess resonance integrals
0                resolved
0absorption      1.38468E+00
 fission          .00000E+00
- elapsed time    .10 min.
0 la-139        mt=102                    updated 10/13/89            57139    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   137.713          temperature(kelvin)     =   975.000
0potential scatter sigma =     4.906          lumped nuclear density  = 2.3873978E-05
0spin factor (g)         =   145.855          lump dimension (a-bar)  = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 7.1525449E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.933          sigma(per absorber atom)= 7.9800098E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
   9     -2.480891E-05     .000000E+00   -1.666073E-03
  10     -4.548107E-04     .000000E+00   -2.495017E-02
  11       .000000E+00     .000000E+00     .000000E+00
  12     -8.164303E-02     .000000E+00   -4.928368E-02
0excess resonance integrals
0                resolved
```

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0absorption      8.05083E+00
 fission          .00000E+00
- elapsed time    .12 min.
0 ce-144          mt= 102                                              58144    temperature=  975.00
0 pr-141        mt=102,103,104,105,106,107    updated 10/13/89         59141    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   139.697          temperature(kelvin)     =  975.000
0potential scatter sigma  =     4.953          lumped nuclear density  = 2.0845648E-05
0spin factor (g)          =  1026.500          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 8.1916235E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 9.1392979E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  10      -8.135539E-03     .000000E+00    -2.763613E-01
  11      -1.326336E-01     .000000E+00    -1.765402E+00
  12      -3.073294E-03     .000000E+00    -3.009180E-04
0excess resonance integrals
0                 resolved
0absorption      1.20611E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 pr-143        mt=102                    updated 10/13/89         59143    temperature=  975.00
0 nd-143        mt=102                    updated 10/13/89         60143    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   141.682          temperature(kelvin)     =  975.000
0potential scatter sigma  =     5.000          lumped nuclear density  = 1.8286411E-05
0spin factor (g)          =  1964.860          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 9.3380645E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.0418368E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  10      -1.801388E-04     .000000E+00    -1.069724E-04
  11      -4.224906E-01     .000000E+00    -4.906454E+00
  12      -2.802144E-01     .000000E+00    -1.378043E-01
0excess resonance integrals
0                 resolved
0absorption      5.06298E+01
 fission          .00000E+00
- elapsed time    .12 min.
0 nd-145        mt=102                    updated 10/13/89         60145    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   143.668          temperature(kelvin)     =  975.000
0potential scatter sigma  =     5.047          lumped nuclear density  = 1.3633058E-05
0spin factor (g)          =  1007.250          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.2525414E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.3974456E+04
0moderator-2 will be treated by the nordheim integral method.
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0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  10       -5.566130E-03     .000000E+00     -8.732536E-02
  11       -8.355895E-02     .000000E+00     -2.531122E-01
  12       -1.992898E+00     .000000E+00     -1.253801E+01
  13        9.566028E-05     .000000E+00      2.045997E-04
  14       -1.849842E+00     .000000E+00     -4.860699E-02
  15        5.895222E-03     .000000E+00     -4.604220E-04
  16        1.326667E-03     .000000E+00     -1.451281E-04
  17        9.642541E-04     .000000E+00     -1.063925E-04
  18        8.539588E-04     .000000E+00     -9.313388E-05
  19        7.634191E-04     .000000E+00     -8.069647E-05
  20        2.839438E-05     .000000E+00     -2.920866E-06
0excess resonance integrals
0                  resolved
0absorption       2.05303E+02
 fission           .00000E+00
- elapsed time     .13 min.
0 rd-147          mt=102                    updated 10/13/89              60147     temperature=   975.00
0 pm-147          mt=102                    updated 10/13/89              61147     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   145.653          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.093          lumped nuclear density   = 4.3050986E-06
0spin factor (g)          = 21589.500          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 3.9664523E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 4.4253242E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  12       -2.166141E-01     .000000E+00     -6.936160E-02
  13       -5.553136E-02     .000000E+00     -3.134629E-03
  14       -9.633698E+01     .000000E+00     -4.139169E+01
  15        4.126164E-02     .000000E+00      6.974615E-03
  16        1.697905E-02     .000000E+00      1.746689E-03
  17        1.369750E-02     .000000E+00      1.150443E-03
  18        1.253758E-02     .000000E+00      9.649043E-04
  19        6.999389E-04     .000000E+00      5.070706E-05
0excess resonance integrals
0                  resolved
0absorption       1.99739E+03
 fission           .00000E+00
- elapsed time     .13 min.
0 pm-148           mt=  102                                                 61148     temperature=   975.00
0 sm-147          endf/b-v fission product  updated 10/13/89              62147     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   145.653          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.093          lumped nuclear density   = 1.7999949E-06
0spin factor (g)          =      .000          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 9.4866766E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 1.0584173E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
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0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11       2.611994E-01     .000000E+00    1.049366E+00
  12       7.963288E-01     .000000E+00   -1.698698E+00
  13      -4.507339E+00     .000000E+00   -2.825725E+00
  14      -5.416480E-01     .000000E+00   -7.173979E-03
  15       3.110962E-01     .000000E+00   -1.897057E-03
  16       7.287653E-03     .000000E+00   -3.738571E-04
  17       4.281464E-03     .000000E+00   -2.401531E-04
  18       3.510412E-03     .000000E+00   -1.997157E-04
  19       2.910591E-03     .000000E+00   -1.649537E-04
  20       8.434759E-04     .000000E+00   -4.626545E-05
0excess resonance integrals
0                 resolved
0absorption      7.20794E+02
 fission          .00000E+00
- elapsed time    .15 min.
                          thermal scattering matrix number  3 at a temperature of    900.03 was selected.
0 sm-149        mt=102,103,107          updated 10/13/89          62149     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   147.638          temperature(kelvin)      =   975.000
0potential scatter sigma  =     3.260          lumped nuclear density   = 8.9113627E-08
0spin factor (g)          = 10407.900          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.9162018E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 2.1378838E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11       8.546577E-03     .000000E+00    3.071155E-02
  12      -5.576071E-02     .000000E+00   -1.828570E-01
  13       2.267975E-02     .000000E+00    2.764212E-03
  14       5.020254E-04     .000000E+00   -8.204340E-03
0excess resonance integrals
0                 resolved
0absorption      8.04328E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-150        mt=102                  updated 10/13/89          62150     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   148.629          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.162          lumped nuclear density   = 5.0109784E-06
0spin factor (g)          =  4376.420          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 3.4077117E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 3.8019438E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  10      -1.657741E-03     .000000E+00   -1.602149E-02
  11      -3.778702E-02     .000000E+00   -4.268902E-01
  12      -1.252369E-01     .000000E+00   -3.724020E-02
  13      -8.618197E+00     .000000E+00   -6.782185E+00
  14       1.064539E-04     .000000E+00   -6.370252E-05
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0excess resonance integrals
0                resolved
0absorption      2.85057E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-151        mt=102,103,104,105,106,107     updated 10/13/89            62151     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   149.623            temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.185            lumped nuclear density   = 4.3263481E-07
0spin factor (g)          = 75574.703            lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00        dancoff correction(c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 3.9469706E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 4.4035888E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  14     -2.494376E-01     .000000E+00    -2.305733E-02
  15      1.483919E+01     .000000E+00     7.504037E-02
  16     -2.183372E+01     .000000E+00    -6.208440E-02
  17      1.734993E+02     .000000E+00     8.262178E-01
  18     -3.207909E+02     .000000E+00    -1.785116E+00
  19      6.253349E+01     .000000E+00     3.867444E-01
  20      1.141094E+00     .000000E+00    -1.387528E-04
  21     -7.117627E-02     .000000E+00     1.244099E-02
  22      6.952599E-02     .000000E+00     3.838917E-03
  23     -1.091933E-02     .000000E+00     3.374087E-04
0excess resonance integrals
0                resolved
0absorption      2.05598E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 sm-152        mt=102,103,104,105,106,107     updated 10/13/89            62152     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   150.615            temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.208            lumped nuclear density   = 2.3631060E-06
0spin factor (g)          =   863.594            lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00        dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 7.2260695E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933              sigma(per absorber atom)= 8.0620406E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9      2.402629E-06     .000000E+00     1.158523E-04
  10     -1.917727E-03     .000000E+00    -2.963686E-02
  11     -2.752391E-02     .000000E+00    -1.047432E-01
  12     -1.840857E-01     .000000E+00    -5.836282E-01
  13      4.164582E-02     .000000E+00     1.012530E-01
  14     -1.591912E+02     .000000E+00    -3.072400E+02
0excess resonance integrals
0                resolved
0absorption      2.70562E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 eu-153        mt=102,103,104,105,106,107     updated 10/13/89            63153     temperature=   975.00
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0resonance data for this nuclide
0mass number (a)          =   151.607          temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.731          lumped nuclear density   = 1.530614E-06
0spin factor (g)          = 12265.900          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.1156282E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.2446952E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  12     -3.047509E-01     .000000E+00   -5.960166E-02
  13     -2.161284E-01     .000000E+00   -8.911429E-03
  14     -1.044091E+00     .000000E+00   -3.930978E-03
  15      6.289871E-01     .000000E+00   -5.131698E-02
  16     -3.304040E+00     .000000E+00    8.154124E-03
  17      1.505573E-01     .000000E+00   -3.437618E-03
  18      7.726830E-02     .000000E+00   -2.231212E-03
  19      5.055436E-02     .000000E+00   -1.541073E-03
  20     -1.253806E-01     .000000E+00   -1.274959E-03
0excess resonance integrals
0                 resolved
0absorption      1.35315E+03
 fission          .00000E+00
-  elapsed time    .18 min.
0 eu-154       mt=102,103,104,105,106,107     updated 10/13/89          63154     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   152.601          temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.731          lumped nuclear density   = 3.5946826E-07
0spin factor (g)          = 19135.801          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 4.7503416E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 5.2999000E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  12     -3.975526E-01     .000000E+00   -6.197735E-02
  13     -3.375991E-01     .000000E+00   -2.584699E-02
  14      2.958449E-01     .000000E+00    1.397187E-02
  15      7.538726E-02     .000000E+00    2.063046E-02
  16      7.086454E+00     .000000E+00    9.177127E-02
  17     -1.446384E+02     .000000E+00   -1.899228E+00
  18      1.132616E+02     .000000E+00    1.855863E+00
  19     -1.014847E+02     .000000E+00    1.187440E+00
0excess resonance integrals
0                 resolved
0absorption      2.13582E+03
 fission          .00000E+00
-  elapsed time    .18 min.
0 eu-155       mt=102,103,104,105,106,107     updated 10/13/89          63155     temperature=   975.00
0 gd-155       mt=102                         updated 10/13/89          64155     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   153.592          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.277          lumped nuclear density   = 2.8352998E-09
0spin factor (g)          = 12700.100          lump dimension (a-bar)   = 4.6812201E-01
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0inner radius            =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995               sigma(per absorber atom)= 6.0226324E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.953               sigma(per absorber atom)= 6.7193800E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  12      -1.439346E+00    .000000E+00   -1.839517E-01
  13       1.540958E+00    .000000E+00    1.984828E-01
  14       2.188145E-01    .000000E+00    9.802756E-03
  15      -3.373435E-01    .000000E+00   -1.646314E-04
  16       1.477357E+00    .000000E+00   -4.148866E-03
  17       1.568662E-01    .000000E+00   -1.479115E-03
  18       9.605145E-02    .000000E+00   -1.078055E-03
  19       6.295369E-02    .000000E+00   -8.026906E-04
  20       1.670350E-02    .000000E+00    1.627252E-04
  21        .000000E+00    .000000E+00     .000000E+00
  22        .000000E+00    .000000E+00     .000000E+00
  23        .000000E+00    .000000E+00     .000000E+00
  24        .000000E+00    .000000E+00     .000000E+00
  25      -2.127942E+03    .000000E+00   -1.622130E+00
  26      -5.205795E+03    .000000E+00    1.961528E+00
  27      -1.660027E+03    .000000E+00    7.392855E-01
0excess resonance integrals
0                resolved
0absorption     3.97015E+04
 fission         .00000E+00
-  elapsed time    .20 min.
0u-234 1043 sigo=5+4 new+lacs p-3 293k f-1/e-m(1.+5)                    92234     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =  232.029            temperature(kelvin)       =  975.000
0potential scatter sigma =   10.021            lumped nuclear density    = 4.2846223E-06
0spin factor (g)         = 6948.450            lump dimension (a-bar)    = 4.6812201E-01
0inner radius            =  .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995            sigma(per absorber atom)= 3.9854086E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.955            sigma(per absorber atom)= 4.4451117E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  11      -2.047309E-02    .000000E+00   -5.972941E-02
  12      -1.670759E-01    .000000E+00   -6.992950E-02
  13       7.760423E-04    .000000E+00   -6.473117E-04
  14      -1.645193E+01    .000000E+00   -2.694678E+00
0excess resonance integrals
0                resolved
0absorption     5.84496E+02
 fission         .00000E+00
-  elapsed time    .20 min.
0 uranium-235   endf/b-iv mat 1261          updated 10/13/89            92235     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =  233.025            temperature(kelvin)       =  975.000
0potential scatter sigma =   11.500            lumped nuclear density    = 3.6445219E-04
0spin factor (g)         = 15171.100           lump dimension (a-bar)    = 4.6812201E-01
0inner radius            =  .0000000E+00       dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
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0mass of moderator-1    =    15.995              sigma(per absorber atom)= 4.6853799E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.049              sigma(per absorber atom)= 5.0281970E+02
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  12      -1.548013E+00   -9.642565E-01   -3.629514E-02
  13      -5.519265E+00   -2.750468E+00   -1.197143E-01
  14      -4.442442E+00   -2.737241E+00   -3.041829E-02
0excess resonance integrals
0                 resolved
0absorption      2.14703E+02
 fission         1.27737E+02
-  elapsed time    .22 min.
0u-236 1163 sigo=5+4 newxlacs p-3 293k f-1/e-m(1.+5)                    92236     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   234.017              temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.995              lumped nuclear density   = 6.1558632E-05
0spin factor (g)          =  6528.490              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 2.7739358E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.934              sigma(per absorber atom)= 3.0943074E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11      -2.948038E-01    .000000E+00   -7.413376E-01
  12      -1.598138E+00    .000000E+00   -1.081784E+00
  13      -6.908284E-02    .000000E+00   -3.552606E-03
  14      -5.045822E+01    .000000E+00   -4.414418E+00
0excess resonance integrals
0                 resolved
0absorption      2.68511E+02
 fission          .00000E+00
-  elapsed time    .22 min.
0 uranium-238    endf/b-iv mat 1262          updated 10/13/89            92238     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.006              temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.599              lumped nuclear density   = 2.1780336E-02
0spin factor (g)          =   656.527              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 7.8400850E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   235.041              sigma(per absorber atom)= 3.3757189E-01
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   9      -3.927211E-02    .000000E+00   -4.035209E-01
  10      -1.023942E+00   -1.742067E-05   -6.471693E+00
  11      -9.702673E+00    .000000E+00   -2.688686E+01
  12      -4.303799E+01    .000000E+00   -4.997792E+01
  13      -5.400405E+01    .000000E+00   -1.768848E+01
  14      -1.044813E+02    .000000E+00   -6.058750E+00
0excess resonance integrals
0                 resolved
```

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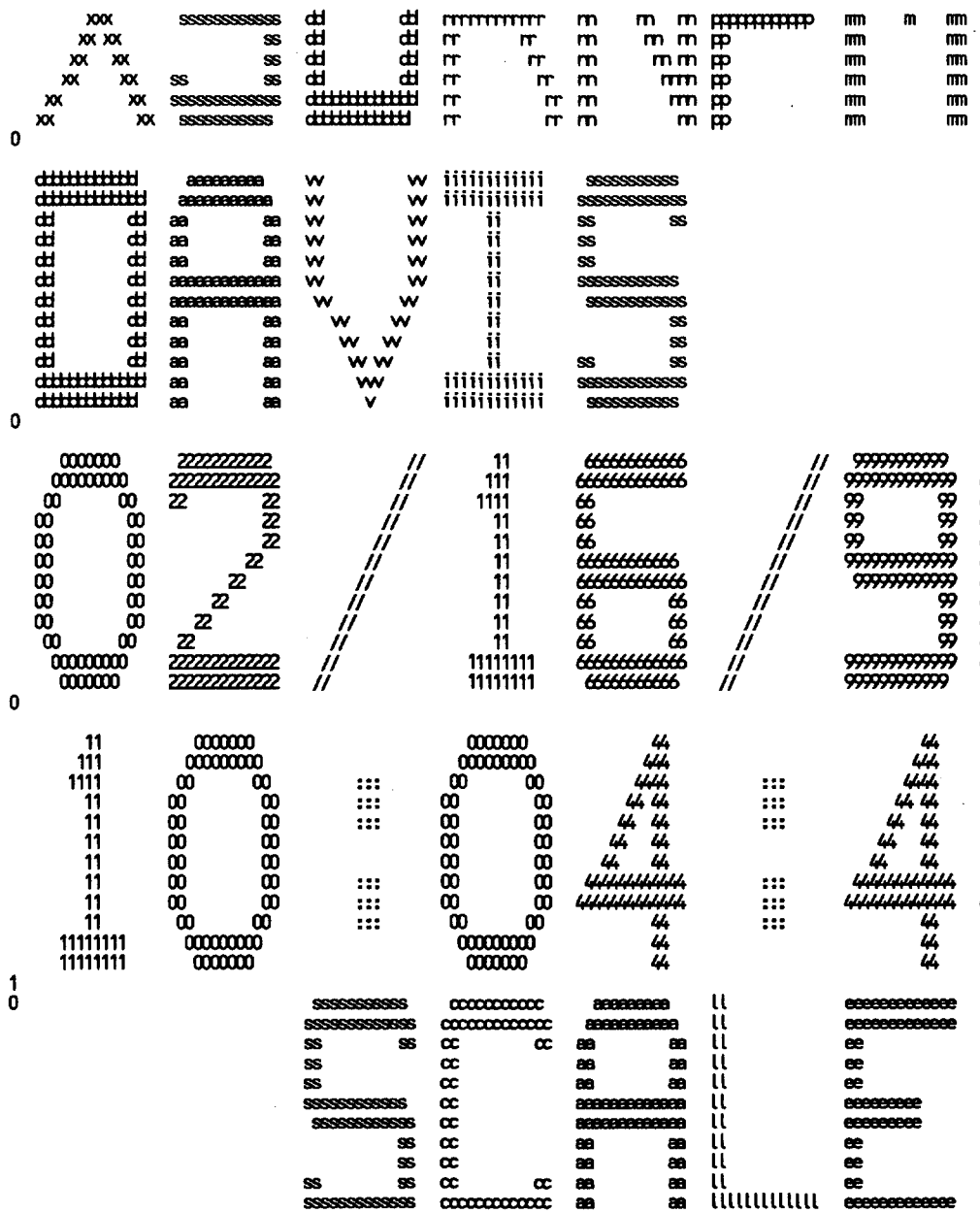
0absorption       1.80663E+01
 fission          5.04115E-04
- elapsed time     .25 min.
0 neptunium-237  endf/b-iv mat 1263          updated 10/13/89          93237     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   235.012          temperature(kelvin)     =   975.000
0potential scatter sigma  =    10.500          lumped nuclear density  = 4.7003864E-06
0spin factor (g)          = 10100.800          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 3.6328859E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   238.051          sigma(per absorber atom)= 3.8967465E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11      -6.394980E-02   -2.252332E-06   -7.444753E-03
  12       1.017181E-02   -1.263774E-04    5.530881E-03
  13      -7.820910E-02    8.428399E-05   -3.659707E-03
  14      -1.376659E-01   -1.646240E-05   -2.075727E-03
0excess resonance integrals
0                resolved
0absorption       2.92875E+02
 fission          1.38520E-01
- elapsed time     .27 min.
0pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                       94238     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   236.167          temperature(kelvin)     =   975.000
0potential scatter sigma  =    10.890          lumped nuclear density  = 8.0928805E-07
0spin factor (g)          = 13130.600          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 2.1099988E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   238.051          sigma(per absorber atom)= 2.2652503E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11      -5.186105E-03   -8.081063E-04   -4.934089E-03
  12      -3.566360E-03   -4.077103E-04   -1.670922E-03
  13       3.811535E-01    7.427578E-02   -1.213191E-02
  14      -3.829654E-01   -7.001112E-02    8.539177E-03
0excess resonance integrals
0                resolved
0absorption       8.25002E+01
 fission          9.08183E+00
- elapsed time     .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89          94239     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   236.999          temperature(kelvin)     =   975.000
0potential scatter sigma  =    10.200          lumped nuclear density  = 1.1685169E-04
0spin factor (g)          =  6435.710          lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.4613369E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   238.051          sigma(per absorber atom)= 1.5674755E+03
0moderator-2 will be treated by the nordheim integral method.
```

```
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11      -2.433271E-01   -9.805850E-02   -7.439817E-02
  12      -2.148567E+00   -8.067330E-01   -2.823401E-01
  13      -7.017735E+00   -4.128114E+00   -1.074359E-01
  14      -2.236326E+00   -1.190446E+00   -1.976972E-02
0excess resonance integrals
0                resolved
0absorption     3.05723E+02
 fission        1.71805E+02
- elapsed time    .28 min.
0 plutonium-240  endf/b-iv mat 1265          updated 10/13/89          9424O     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   237.992          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.599          lumped nuclear density   = 2.5680782E-05
0spin factor (g)          =   669.244          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 6.6493179E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051            sigma(per absorber atom)= 7.1322651E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   9      -6.711484E-05   -2.113045E-06   -3.290113E-04
  10      -6.139901E-03   -3.795295E-04   -2.802343E-02
  11      -1.941598E-01   -1.123520E-03   -2.580330E-01
  12      -2.667729E+00   -1.456635E-02   -2.554550E+00
  13      -3.328218E-01   -2.040751E-03   -2.425588E-02
  14       .000000E+00     .000000E+00     .000000E+00
  15       1.726114E-02    3.294365E-06    3.385407E-03
  16       2.701083E+00    5.155136E-04    3.333627E-01
  17       4.039492E+02    7.709549E-02    3.576860E+01
  18      -8.924690E+03   -1.703316E+00   -7.052175E+02
  19       5.111380E+02    9.755294E-02    4.121003E+01
  20      -9.411130E+01   -1.796156E-02    1.798258E+00
0excess resonance integrals
0                resolved
0absorption     4.12001E+03
 fission        1.79168E+00
- elapsed time    .32 min.
0 plutonium-241  endf/b-iv mat 1266          updated 10/13/89          9424l     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   238.978          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.939          lumped nuclear density   = 1.4762393E-05
0spin factor (g)          = 16402.100          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.1567209E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051            sigma(per absorber atom)= 1.2407349E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  12      -8.929748E-03   -8.586234E-03    5.350622E-04
  13      -9.712595E-01   -7.429292E-01   -2.818558E-02
  14      -9.685243E-01   -6.832704E-01   -2.741366E-03
```

```
  15      1.781677E-02   1.596397E-02  -4.625220E-04
0excess resonance integrals
0                resolved
0absorption      5.06839E+02
 fission         4.25058E+02
- elapsed time    .32 min.
0 plutonium-242  endf/b-iv mat 1161          updated 10/13/89            9424?     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =   240.145          temperature(kelvin)      =   975.000
0potential scatter sigma =    10.694          lumped nuclear density   = 2.0104515E-06
0spin factor (g)         =  6606.710          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995           sigma(per absorber atom)= 8.4935984E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  238.051           sigma(per absorber atom)= 9.1104984E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss        res scat
  11     -5.444955E-03    .000000E+00   -1.480576E-02
  12     -1.144884E-01    .000000E+00   -2.216890E-01
  13     -2.757552E-04    .000000E+00    9.763985E-07
  14      8.116283E-02    .000000E+00    1.516041E-02
  15     -3.984634E+01    .000000E+00   -3.216101E+00
  16      4.027087E-02    .000000E+00   -3.445925E-03
  17      1.550369E-02    .000000E+00   -1.848117E-03
  18      1.112546E-02    .000000E+00   -1.430697E-03
0excess resonance integrals
0                resolved
0absorption      1.08606E+03
 fission          .00000E+00
- elapsed time    .32 min.
0am-241 1056 sigp=5+4 new klacs 218grp p-3 293k                                 95241     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =   238.950          temperature(kelvin)      =   975.000
0potential scatter sigma =     9.511          lumped nuclear density   = 5.1591286E-07
0spin factor (g)         = 82058.203          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995           sigma(per absorber atom)= 3.3098653E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  238.051           sigma(per absorber atom)= 3.5502538E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss        res scat
  13      4.837694E-01    1.207759E-02    4.451498E-03
  14     -4.743611E-01   -1.142380E-02   -5.411783E-03
0excess resonance integrals
0                resolved
0absorption      1.95410E+02
 fission         1.07564E+00
- elapsed time    .33 min.
0am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                                   95243     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =   240.940          temperature(kelvin)      =   975.000
0potential scatter sigma =     9.511          lumped nuclear density   = 2.2520386E-07
0spin factor (g)         = 82052.602          lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
```

```
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 7.582449E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 8.1331713E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  13      -9.115445E-03     .000000E+00    3.664919E-04
  14       1.020618E-02     .000000E+00    5.452318E-05
0excess resonance integrals
0                  resolved
0absorption       1.60134E+02
 fission           .0000E+00
-  elapsed time     .33 min.
0 curium-244     endf/b-iv mat 1162          updated 10/13/89          9624     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   242.133          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.320          lumped nuclear density   = 2.6241886E-08
0spin factor (g)          =  5251.150          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 6.5071425E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 6.9797635E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11       1.785135E-04    4.906880E-06    1.973946E-04
  12       4.277681E-04    2.202040E-05    4.707649E-05
  13       2.291097E-03    1.158380E-04    6.961012E-04
  14      -4.282206E-02   -2.562004E-03   -1.985917E-02
0excess resonance integrals
0                  resolved
0absorption       6.13745E+02
 fission          3.54127E+01
-  elapsed time     .33 min.
-  elapsed time     .33 min.
1     this xsdrn working tape was created 02/16/96 at 10:03:38
      the title of the parent case is as follows
      scale 4.2 - 27 group neutron burnup library
        based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc     1/27/89
         tape id                        4321        number of nuclides          65
         number of neutron groups         27        number of gamma groups       0
         first thermal group              15        logical unit                 4
                                table of contents
       1/v cross sections normalized to 1.0 at 0.0253 ev                    id    999
        hydrogen       endf/b-iv mat 1269/thrm1002   updated 10/13/89      id   1001
       b-10 1273 218ngp 042375 p-3 295k                                    id   5010
        boron-11       endf/b-iv mat 1160            updated 10/13/89      id   5011
        oxygen-16      endf/b-iv mat 1276            updated 10/13/89      id   8016
        oxygen-16      endf/b-iv mat 1276            updated 10/13/89      id      6
        kr-83          mt=102,103,105,105,106,107    updated 10/13/89      id  36083
        kr-85            mt=  102                                          id  36085
        sr-90          mt=102                        updated 10/13/89      id  38090
         y-89          mt=102                        updated 10/13/89      id  39089
        zr-93            mt=  102                                          id  40093
        zr-94          mt=102                        updated 10/13/89      id  40094
```

```
        zr-95          mt=102                          updated 10/13/89              id    40095
        zircalloy      endf/b-iv mat 1284              updated 10/13/89              id    40302
        nb-94          mt=102                          updated 10/13/89              id    41094
        mo-95          mt=102                          updated 10/13/89              id    42095
        tc-99          mt=102                          updated 10/13/89              id    43099
        ru-101         mt=102                          updated 10/13/89              id    44101
        ru-106         mt=102                          updated 10/13/89              id    44106
        rh-103         mt=102                          updated 10/13/89              id    45103
        rh-105           mt=  102                                                    id    45105
        pd-105         mt=102                          updated 10/13/89              id    46105
        pd-108         mt=102                          updated 10/13/89              id    46108
        silver-109     endf/b-iv mat 1139              updated 10/13/89              id    47109
        sb-124         mt=102                          updated 10/13/89              id    51124
        xe-131         mt=102,103,104,105,106          updated 10/13/89              id    54131
        xe-132         mt=102,103,104,105,106          updated 10/13/89              id    54132
        xenon-135      endf/b-iv mat 1294              updated 10/13/89              id    54135
        xe-136           mt=  102,  103,  104,  105,  107                            id    54136
        cesium-133     endf/b-iv mat 1141              updated 10/13/89              id    55133
        cs-134         mt=102                          updated 10/13/89              id    55134
        cs-135           mt=  102                                                    id    55135
        cs-137         mt=102                          updated 10/13/89              id    55137
        ba-136         mt=102                          updated 10/13/89              id    56136
        la-139         mt=102                          updated 10/13/89              id    57139
        ce-144           mt=  102                                                    id    58144
        pr-141         mt=102,103,104,105,106,107      updated 10/13/89              id    59141
        pr-143         mt=102                          updated 10/13/89              id    59143
        nd-143         mt=102                          updated 10/13/89              id    60143
        nd-145         mt=102                          updated 10/13/89              id    60145
        nd-147         mt=102                          updated 10/13/89              id    60147
        pm-147         mt=102                          updated 10/13/89              id    61147
        pm-148           mt=  102                                                    id    61148
        sm-147         endf/b-v fission product        updated 10/13/89              id    62147
        sm-149         mt=102,103,107                  updated 10/13/89              id    62149
        sm-150         mt=102                          updated 10/13/89              id    62150
        sm-151         mt=102,103,104,105,106,107      updated 10/13/89              id    62151
        sm-152         mt=102,103,104,105,106,107      updated 10/13/89              id    62152
        eu-153         mt=102,103,104,105,106,107      updated 10/13/89              id    63153
        eu-154         mt=102,103,104,105,106,107      updated 10/13/89              id    63154
        eu-155         mt=102,103,104,105,106,107      updated 10/13/89              id    63155
        gd-155         mt=102                          updated 10/13/89              id    64155
       u-234 1043 sigo=5+4 new+lacs p-3 295k f-1/e-m(1.+5)                           id    92234
        uranium-235    endf/b-iv mat 1261              updated 10/13/89              id    92235
       u-236 1163 sigo=5+4 new+lacs p-3 295k f-1/e-m(1.+5)                           id    92236
        uranium-238    endf/b-iv mat 1262              updated 10/13/89              id    92238
        neptunium-237  endf/b-iv mat 1263              updated 10/13/89              id    93237
       pu-238 1050 sigo=5+4 new+lacs p-3 295k f-1/e-m(1.+5)                          id    94238
        plutonium-239  endf/b-iv mat 1264              updated 10/13/89              id    94239
        plutonium-240  endf/b-iv mat 1265              updated 10/13/89              id    94240
        plutonium-241  endf/b-iv mat 1266              updated 10/13/89              id    94241
        plutonium-242  endf/b-iv mat 1161              updated 10/13/89              id    94242
       am-241 1056 sigo=5+4 new+lacs 218ngp p-3 295k                                 id    95241
       am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                                  id    95243
        curium-244     endf/b-iv mat 1162              updated 10/13/89              id    96244
0        tape copy used      0 i/o's, and took     .00 seconds
1 xx         xx   sssssssssss    ddddddddddd   rrrrrrrrrr   rr       rr ppppppppp    rrr         rrr
   xx       xx  sssssssssssss   ddddddddddddd  rrrrrrrrrrr  rrr      rr pppppppppp   rrrr       rrrr
    xx     xx   ss         ss   dd        dd   rr       rr  rrrr     rr pp      pp   rrrrrr     rrrrrr
     xx   xx    ss              dd        dd   rr       rr  rr rr    rr pp      pp   rr  rrr   rrr  rr
      xx xx     ss              dd        dd   rr       rr  rr  rr   rr pp      pp   rr   rrr rrr   rr
       xxx       sssssssssssss  dd        dd   rrrrrrrrrrr  rr   rr  rr ppppppppp    rr    rrrr    rr
```



sssssssssss ccccccccccc aa aa llllllllllll eeeeeeeeeeee

```
*********************************************************************
*********************************************************************
*********************************************************************
*****                                                           *****
*****                program verification information           *****
*****                                                           *****
*****                code system:   scale  version:   4.2       *****
*****                                                           *****
*********************************************************************
*********************************************************************
*****                                                           *****
*****                                                           *****
*****             program:  c0c001                              *****
*****                                                           *****
*****          creation date:  04/27/95                         *****
*****                                                           *****
*****             library:  /neutronics/scale/exe               *****
*****                                                           *****
*****                                                           *****
*****    this is not a  scale  configuration controlled code    *****
*****                                                           *****
*****             jobname:  davis                               *****
*****                                                           *****
*****    date of execution:  02/16/96                           *****
*****                                                           *****
*****    time of execution:  10:04:44                           *****
*****                                                           *****
*****                                                           *****
*********************************************************************
*********************************************************************
*********************************************************************
```

```
1
                  1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0      -1q array has      1 entries.
0       1q array has     15 entries.
0       2q array has     10 entries.
0       3q array has     12 entries.
0       4q array has      9 entries.
0       5q array has     12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                  1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0general problem description data block
0                          general problem data

 ige  1/2/3 = plane/cylinder/sphere      2      isn  quadrature order                  8
 izm  number of zones                    4      isct order of scattering               3
 im   number of special intervals       24      ievt 0/1/2/3/4/5/6=q/k/alpha/c/z/r/h   1
 ibl  0/1/2/3 = vacuum/refl/per/white    1      iim  inner iteration maximum         20
 ibr  right boundary condition           3      iom  outer iteration maximum         25
 mxx  number of mixtures                 3      iclc -1/0/n--flat res/sn/cpt           0
 ms   mixing table length               65      ith  0/1 = forward/adjoint           0
 igm  number of energy groups           27      iflu not used(always wgtd)             0
 nng  number of neutron groups          27      iprt -2/-1/0/n=mixture xsec print     -2
 ngg  number of gamma groups             0      idl  0/1/2/3=no/prt nd/pch n/both     53
```

```
 iftg number of first thermal group      15       ipbt -1/0/1=none/fine/all bal. prt      0
0                                 special options

 ifg  0/1 = none/weighting calculation    1       ipn  0/1/2 diff. coef. param            0
 iqm  volumetric sources (0/n=no/yes)     0       idfm 0/1 = none/density factors 38*     1
 ipn  boundary sources (0/n=no/yes)       0       iaz  0/n = none/n activities by zone    0
 ifn  0/1/2 = input 35*/34*/use last     53       iai  0/1=none/activities by interval    0
 itmx maximum time (minutes)             10       ifct 0/1=no/yes upscatter scaling       0
 idt1 0/1/2/3=no/xsect/srce/flux--out     0       ipvt 0/1/2=no/k/alpha parametric srch   0
 isx  broad group fluxes                  0       isen outer iteration acceleration       0
 ibln activity data unit                  0       nbnd band rebaln parameter              0
 jbkl 0/1/2 buckling geometry             0
0                              weighting data (ifg=1)

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

 eps  overall convergence       1.00000E-04       dy   cyl/pla ht for buckling    .00000E+00
 ptc  point convergence         1.00000E-04       dz   plane depth for buckling   .00000E+00
 xnf  normalization factor      1.00000E+00       vsc  void streaming correction  .00000E+00
 ev   eigenvalue guess           .00000E+00       pv   ipvt=1/2--k/alpha          1.00000E+00
 evm  eigenvalue modifier        .00000E+00       eql  ev change eps for search   1.00000E-03
 bf   buckling factor=1.420892  1.42089E+00       xnpm new param mod for search   7.50000E-01
     this case will require       2535 locations for mixing
     this case has been allocated 200000 locations
1                  1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0      13q array has      65 entries.
0      14q array has      65 entries.
0      15q array has      65 entries.
0                              data block 2 (mixing table, etc.)
0     nuclides       cccc                          mixing table                          extra
       on tape   identification              mixture   component   atom density      xsect id's
     1     999                                    1       92235   3.64452E-04
     2    1001                                    1       92234   4.28462E-06
     3    5010                                    1       92236   6.15586E-05
     4    5011                                    1       92238   2.17803E-02
     5    8016                                    1        8016   4.55359E-02
     6       6                                    3           6   2.09710E-02
     7   36083                                    1       36083   1.62790E-06
     8   36085                                    1       36085   7.82545E-07
     9   38090                                    1       38090   1.79089E-05
    10   39089                                    1       39089   1.44715E-05
    11   40093                                    1       42095   1.98509E-05
    12   40094                                    1       40093   1.44900E-05
    13   40095                                    1       40094   2.28864E-05
    14   40302                                    1       40095   1.96022E-06
    15   41094                                    1       41094   1.19775E-11
    16   42095                                    1       43099   2.29951E-05
    17   43099                                    1       45103   1.24431E-05
    18   44101                                    1       45105   2.38399E-08
    19   44106                                    1       44101   2.05378E-05
    20   45103                                    1       44106   3.08150E-06
    21   45105                                    1       46105   8.54907E-06
    22   46105                                    1       46108   2.52032E-06
    23   46108                                    1       47109   1.72855E-06
    24   47109                                    1       51124   3.84646E-10
```

25	51124	1	54131	1.01675E-05
26	54131	1	54132	1.98610E-05
27	54132	1	54135	6.66399E-09
28	54135	1	54136	3.91142E-05
29	54136	1	55134	1.27988E-06
30	55133	1	55135	1.24307E-05
31	55134	1	55137	2.41337E-05
32	55135	1	56136	2.66545E-07
33	55137	1	57139	2.38740E-05
34	56136	1	59141	2.08456E-05
35	57139	1	59143	3.65349E-07
36	58144	1	58144	6.86967E-06
37	59141	1	60143	1.82864E-05
38	59143	1	60145	1.36331E-05
39	60143	1	61147	4.30510E-06
40	60145	1	61148	1.28358E-08
41	60147	1	60147	1.29256E-07
42	61147	1	62147	1.79999E-06
43	61148	1	62149	8.91136E-08
44	62147	1	62150	5.01098E-06
45	62149	1	62151	4.32635E-07
46	62150	1	62152	2.36311E-06
47	62151	1	64155	2.83530E-09
48	62152	1	63153	1.53061E-06
49	63153	1	63154	3.59468E-07
50	63154	1	63155	1.67707E-07
51	63155	2	40302	4.25156E-02
52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	2.45710E-05
56	92238	1	95237	4.70039E-06
57	95237	1	94238	8.09288E-07
58	94238	1	94239	1.16852E-04
59	94239	1	94240	2.56808E-05
60	94240	1	94241	1.47624E-05
61	94241	1	94242	2.01045E-06
62	94242	1	95241	5.15913E-07
63	95241	1	95243	2.25204E-07
64	95243	1	96244	2.62419E-08
65	96244	1	999	1.00000E-20

- elapsed time .00 min.
0 21649 locations will be used
0 35q array has 25 entries.
0 36q array has 24 entries.
0 38q array has 24 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 1040 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gvd/mtu burn high temp

neutron group parameters

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	2	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	3	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	4	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	5	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	6	0	6	1.00000E+00	

7	4.00000E+05	3.21888E+00	6.07557E+08	7	0	7	1.00000E+00
8	1.00000E+05	4.60517E+00	2.72415E+08	8	0	8	1.00000E+00
9	1.70000E+04	6.37713E+00	1.13526E+08	9	0	9	1.00000E+00
10	3.00000E+03	8.11173E+00	4.82126E+07	10	0	10	1.00000E+00
11	5.50000E+02	9.80818E+00	2.05946E+07	11	0	11	1.00000E+00
12	1.00000E+02	1.15129E+01	1.01036E+07	12	0	12	1.00000E+00
13	3.00000E+01	1.27169E+01	5.69595E+06	13	0	13	1.00000E+00
14	1.00000E+01	1.38155E+01	3.20957E+06	14	0	14	1.00000E+00
15	3.04999E+00	1.50030E+01	2.10601E+06	15	0	15	1.00000E+00
16	1.77000E+00	1.55471E+01	1.70522E+06	16	0	16	1.00000E+00
17	1.29999E+00	1.58557E+01	1.52545E+06	17	0	17	1.00000E+00
18	1.12999E+00	1.59959E+01	1.42867E+06	18	0	18	1.00000E+00
19	1.00000E+00	1.61181E+01	1.31002E+06	19	0	19	1.00000E+00
20	8.00000E-01	1.63412E+01	9.05898E+05	20	0	20	1.00000E+00
21	4.00000E-01	1.70344E+01	8.17974E+05	21	0	21	1.00000E+00
22	3.25000E-01	1.72420E+01	6.90070E+05	22	0	22	1.00000E+00
23	2.25000E-01	1.76098E+01	4.86953E+05	23	0	23	1.00000E+00
24	9.99999E-02	1.84207E+01	3.57766E+05	24	0	24	1.00000E+00
25	5.00000E-02	1.91138E+01	2.71895E+05	25	0	25	1.00000E+00
26	3.00000E-02	1.96247E+01	1.87283E+05	26	0	26	1.00000E+00
27	1.00000E-02	2.07233E+01	8.88201E+04	27	0	27	1.00000E+00
28	1.00000E-05	2.76310E+01					

1 1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

0	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	1	3			0	-2.79004E-01	3	0
2	1	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	2	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	3	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28593E-02
7					5.55953E-02	2.31301E-01	6	1.28593E-02
8					5.55953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	15	0
10					5.22844E-02	-8.21784E-01	15	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-02
14					5.22844E-02	6.01588E-01	11	3.14537E-02
15					5.22844E-02	8.21784E-01	10	4.29665E-02
16					0	-9.89032E-01	24	0
17					4.53365E-02	-9.64143E-01	24	-4.37099E-02
18					4.53365E-02	-8.17361E-01	23	-3.70555E-02
19					4.53365E-02	-5.46143E-01	22	-2.47597E-02
20					4.53365E-02	-1.91780E-01	21	-8.69444E-03
21					4.53365E-02	1.91780E-01	20	8.69444E-03
22					4.53365E-02	5.46143E-01	19	2.47597E-02
23					4.53365E-02	8.17361E-01	18	3.70555E-02
24					4.53365E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83256E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83256E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83256E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01

10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40830E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83032E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20262E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20262E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20262E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20262E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59102E-02	4.33406E-02	1	1.62798E-01	9.49518E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81835E-01	2.94045E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	
5	2.34061E-01	2.93967E-01	1	1.47065E+00	2.21259E-01	1.00000E+00		
6	3.53873E-01	3.80612E-01	1	2.22345E+00	1.27890E-01	1.00000E+00		
7	4.07351E-01	4.24781E-01	1	2.55946E+00	9.30429E-02	1.00000E+00		
8	4.42212E-01	4.55167E-01	1	2.77850E+00	7.41004E-02	1.00000E+00		
9	4.68122E-01	4.68814E-01	2	2.94130E+00	4.07946E-03	0		
10	4.69507E-01	4.71481E-01	2	2.95000E+00	1.16988E-02	0		
11	4.73456E-01	4.75431E-01	2	2.97481E+00	1.17968E-02	0		
12	4.77406E-01	4.78098E-01	2	2.99962E+00	4.16023E-03	0		
13	4.78790E-01	4.83159E-01	3	3.00833E+00	2.65268E-02	1.00000E+00		
14	4.87528E-01	4.99987E-01	3	3.06323E+00	7.82768E-02	1.00000E+00		
15	5.12445E-01	5.24908E-01	3	3.21979E+00	8.21777E-02	1.00000E+00		
16	5.37362E-01	5.41731E-01	3	3.37634E+00	2.97427E-02	1.00000E+00		
17	5.46100E-01	5.53513E-01	4	3.43125E+00	5.15631E-02	1.00000E+00		
18	5.60926E-01	5.70900E-01	4	3.52440E+00	7.15548E-02	1.00000E+00		
19	5.80874E-01	5.96175E-01	4	3.64974E+00	1.14628E-01	1.00000E+00		
20	6.11475E-01	6.45755E-01	4	3.84201E+00	2.78169E-01	1.00000E+00		
21	6.80034E-01	7.14313E-01	4	4.27278E+00	3.07702E-01	1.00000E+00		
22	7.48592E-01	7.63893E-01	4	4.70354E+00	1.46875E-01	1.00000E+00		
23	7.79193E-01	7.89167E-01	4	4.89582E+00	9.89116E-02	1.00000E+00		
24	7.99141E-01	8.06554E-01	4	5.02115E+00	7.51357E-02	1.00000E+00		
25	8.13968E-01			5.11431E+00				

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	119	-2.23657E-05	1.01176E+00	-1.25636E-02	1.00000E+00	-4.22462E-03	.00000E+00	.0000
2	185	8.53298E-06	1.01259E+00	-3.16202E-04	-1.23238E-03	-8.13098E-04	.00000E+00	.0000
3	232	3.91929E-06	1.01286E+00	-6.28068E-05	-2.22519E-04	-2.08430E-04	.00000E+00	.0000
4	265	-1.24623E-05	1.01309E+00	-1.67925E-05	-5.70544E-05	-4.65967E-05	.00000E+00	.0000

grp	to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	1	1	5.78574E-08	24	1.00000E+00	1
2	2	1	1	6.59902E-08	24	1.00000E+00	1
3	3	1	1	5.81585E-08	24	1.00000E+00	1
4	4	1	1	5.37730E-08	24	1.00000E+00	1
5	5	1	1	4.50401E-08	24	1.00000E+00	1
6	6	1	1	2.47275E-08	24	1.00000E+00	1
7	7	1	1	1.02080E-08	24	1.00000E+00	1
8	8	1	24	1.38611E-08	24	1.00000E+00	1
9	9	1	1	2.17652E-08	24	1.00000E+00	1
10	10	1	1	1.88806E-08	24	1.00000E+00	1

11	11	1	1	1.91079E-08	24	1.00000E+00	1
12	12	1	24	4.32918E-09	24	1.00000E+00	1
13	13	1	24	1.11999E-08	24	1.00000E+00	1
14	14	1	24	1.24675E-08	24	1.00000E+00	1
15	15	1	24	4.54743E-05	24	9.99967E-01	1
16	16	1	24	5.61643E-05	24	9.99974E-01	1
17	17	1	18	2.29550E-05	24	9.99947E-01	1
18	18	1	22	2.51828E-05	24	9.99879E-01	2
19	19	1	19	2.14472E-05	24	9.99942E-01	1
20	20	1	24	5.17553E-05	24	9.99955E-01	1
21	21	1	18	3.11258E-05	24	9.99933E-01	1
22	22	1	24	5.35801E-05	24	9.99984E-01	1
23	23	1	24	4.10872E-06	24	1.00000E+00	1
24	24	1	2	1.24449E-05	24	1.00001E+00	1
25	25	1	24	2.19474E-05	24	1.00001E+00	1
26	26	1	21	1.67941E-05	24	1.00003E+00	2
27	27	1	2	6.65707E-06	24	1.00001E+00	2

5 292 -1.38947E-06 1.01298E+00 -3.34742E-06 -1.28063E-05 -1.06925E-05 .00000E+00 .0167

final monitor

lambda 1.01297E+00 production/absorption 1.01297E+00 angular flux on 16

- elapsed time .02 min.

1 1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

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

1	1	.00000E+00	1.29551E-02	.00000E+00	2.10906E-03	2.95670E-03
2	1	2.59102E-02	4.33406E-02	1.62798E-01	9.49318E-03	1.33025E-02
3	1	6.07710E-02	8.75100E-02	3.81835E-01	2.94045E-02	4.12845E-02
4	1	1.14249E-01	1.74155E-01	7.17848E-01	1.31104E-01	1.85931E-01
5	1	2.34061E-01	2.98967E-01	1.47065E+00	2.21299E-01	3.21681E-01
6	1	3.53873E-01	3.80612E-01	2.22345E+00	1.27890E-01	1.90999E-01
7	1	4.07351E-01	4.24781E-01	2.55946E+00	9.30429E-02	1.41781E-01
8	1	4.42212E-01	4.55167E-01	2.77850E+00	7.41004E-02	1.15033E-01
9	2	4.68122E-01	4.68814E-01	2.94130E+00	4.07946E-03	.00000E+00
10	2	4.69507E-01	4.71481E-01	2.95000E+00	1.16988E-02	.00000E+00
11	2	4.73456E-01	4.75431E-01	2.97481E+00	1.17968E-02	.00000E+00
12	2	4.77405E-01	4.78098E-01	2.99962E+00	4.16023E-03	.00000E+00
13	3	4.78790E-01	4.83159E-01	3.00833E+00	2.65268E-02	.00000E+00
14	3	4.87528E-01	4.99987E-01	3.06329E+00	7.82768E-02	.00000E+00
15	3	5.12445E-01	5.24903E-01	3.21979E+00	8.21777E-02	.00000E+00
16	3	5.37362E-01	5.41731E-01	3.37634E+00	2.97427E-02	.00000E+00
17	4	5.46100E-01	5.53513E-01	3.43125E+00	5.15631E-02	.00000E+00
18	4	5.60926E-01	5.70900E-01	3.52440E+00	7.15548E-02	.00000E+00
19	4	5.80874E-01	5.96175E-01	3.64974E+00	1.14628E-01	.00000E+00
20	4	6.11475E-01	6.45755E-01	3.84201E+00	2.78169E-01	.00000E+00
21	4	6.80034E-01	7.14313E-01	4.27278E+00	3.07702E-01	.00000E+00
22	4	7.48592E-01	7.63893E-01	4.70354E+00	1.46875E-01	.00000E+00
23	4	7.79195E-01	7.89167E-01	4.89582E+00	9.89116E-02	.00000E+00
24	4	7.99141E-01	8.06554E-01	5.02115E+00	7.51357E-02	.00000E+00
25		8.13968E-01		5.11431E+00		

1 1040 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

0 total flux

0 int. grp. 1 grp. 2 grp. 3 grp. 4 grp. 5 grp. 6 grp. 7 grp. 8

1	1.82381E-01	1.34291E+00	1.68857E+00	1.04435E+00	1.57780E+00	3.05195E+00	2.90620E+00	2.08230E+00
2	1.82446E-01	1.34355E+00	1.68941E+00	1.04495E+00	1.57850E+00	3.05325E+00	2.90686E+00	2.08236E+00
3	1.82389E-01	1.34298E+00	1.68864E+00	1.04447E+00	1.57772E+00	3.05165E+00	2.90584E+00	2.08217E+00
4	1.81984E-01	1.33966E+00	1.68321E+00	1.04117E+00	1.57268E+00	3.02121E+00	2.89956E+00	2.08111E+00
5	1.80980E-01	1.32767E+00	1.66940E+00	1.03282E+00	1.55929E+00	2.99534E+00	2.88408E+00	2.07849E+00
6	1.79713E-01	1.31511E+00	1.65383E+00	1.02348E+00	1.54463E+00	2.96659E+00	2.86721E+00	2.07560E+00
7	1.78740E-01	1.30525E+00	1.64179E+00	1.01635E+00	1.53357E+00	2.94605E+00	2.85485E+00	2.07341E+00
8	1.77771E-01	1.29562E+00	1.63023E+00	1.00960E+00	1.52326E+00	2.92691E+00	2.84365E+00	2.07136E+00
9	1.77241E-01	1.29041E+00	1.62401E+00	1.00601E+00	1.51784E+00	2.91694E+00	2.83787E+00	2.07027E+00

10	1.77130E-01	1.28936E+00	1.62277E+00	1.00532E+00	1.51684E+00	2.91516E+00	2.83688E+00	2.07007E+00
11	1.76969E-01	1.28788E+00	1.62097E+00	1.00433E+00	1.51542E+00	2.91262E+00	2.83549E+00	2.06979E+00
12	1.76852E-01	1.28692E+00	1.61980E+00	1.00368E+00	1.51451E+00	2.91100E+00	2.83460E+00	2.06960E+00
13	1.76663E-01	1.28495E+00	1.61757E+00	1.00244E+00	1.51270E+00	2.90757E+00	2.83267E+00	2.06922E+00
14	1.76123E-01	1.27964E+00	1.61103E+00	9.98605E-01	1.50690E+00	2.89632E+00	2.82627E+00	2.06817E+00
15	1.75517E-01	1.27321E+00	1.60262E+00	9.95285E-01	1.49851E+00	2.87971E+00	2.81670E+00	2.06702E+00
16	1.75221E-01	1.26965E+00	1.59758E+00	9.89811E-01	1.49279E+00	2.86817E+00	2.80999E+00	2.06650E+00
17	1.75078E-01	1.26761E+00	1.59446E+00	9.87479E-01	1.48881E+00	2.86022E+00	2.80534E+00	2.06636E+00
18	1.74891E-01	1.26497E+00	1.59046E+00	9.84505E-01	1.48376E+00	2.85026E+00	2.79948E+00	2.06621E+00
19	1.74657E-01	1.26188E+00	1.58583E+00	9.81138E-01	1.47808E+00	2.83912E+00	2.79292E+00	2.06597E+00
20	1.74345E-01	1.25778E+00	1.57993E+00	9.76919E-01	1.47101E+00	2.82529E+00	2.78479E+00	2.06563E+00
21	1.74130E-01	1.25494E+00	1.57578E+00	9.73952E-01	1.46598E+00	2.81548E+00	2.77910E+00	2.06553E+00
22	1.74132E-01	1.25482E+00	1.57549E+00	9.73649E-01	1.46546E+00	2.81447E+00	2.77866E+00	2.06575E+00
23	1.74211E-01	1.25568E+00	1.57661E+00	9.74378E-01	1.46663E+00	2.81676E+00	2.78014E+00	2.06608E+00
24	1.74301E-01	1.25670E+00	1.57798E+00	9.75276E-01	1.46809E+00	2.81961E+00	2.78193E+00	2.06631E+00

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.58921E+00	1.44857E+00	1.30922E+00	7.97525E-01	6.70089E-01	5.79053E-01	3.66093E-01	2.00079E-01
2	1.58914E+00	1.44927E+00	1.30902E+00	7.97092E-01	6.69877E-01	5.78762E-01	3.66058E-01	2.00050E-01
3	1.58852E+00	1.44948E+00	1.30948E+00	7.97644E-01	6.70348E-01	5.79495E-01	3.66142E-01	2.00105E-01
4	1.59034E+00	1.45068E+00	1.31210E+00	8.00739E-01	6.73022E-01	5.83560E-01	3.66607E-01	2.00422E-01
5	1.59289E+00	1.45362E+00	1.31854E+00	8.08382E-01	6.79621E-01	5.93649E-01	3.67730E-01	2.01200E-01
6	1.59573E+00	1.45682E+00	1.32559E+00	8.16797E-01	6.86881E-01	6.04828E-01	3.68941E-01	2.02049E-01
7	1.59789E+00	1.45917E+00	1.33078E+00	8.23036E-01	6.92256E-01	6.13181E-01	3.69813E-01	2.02672E-01
8	1.59993E+00	1.46130E+00	1.33550E+00	8.28765E-01	6.97186E-01	6.20889E-01	3.70593E-01	2.03239E-01
9	1.60102E+00	1.46240E+00	1.33795E+00	8.31742E-01	6.99748E-01	6.24898E-01	3.70992E-01	2.03533E-01
10	1.60121E+00	1.46258E+00	1.33834E+00	8.32220E-01	7.00165E-01	6.25534E-01	3.71060E-01	2.03583E-01
11	1.60149E+00	1.46289E+00	1.33890E+00	8.32908E-01	7.00761E-01	6.26443E-01	3.71156E-01	2.03655E-01
12	1.60168E+00	1.46300E+00	1.33926E+00	8.33345E-01	7.01147E-01	6.27032E-01	3.71219E-01	2.03702E-01
13	1.60205E+00	1.46334E+00	1.34001E+00	8.34246E-01	7.01935E-01	6.28233E-01	3.71347E-01	2.03797E-01
14	1.60306E+00	1.46442E+00	1.34257E+00	8.37065E-01	7.04402E-01	6.31994E-01	3.71758E-01	2.04095E-01
15	1.60418E+00	1.46597E+00	1.34571E+00	8.40956E-01	7.07803E-01	6.37174E-01	3.72340E-01	2.04507E-01
16	1.60470E+00	1.46700E+00	1.34791E+00	8.43464E-01	7.09996E-01	6.40507E-01	3.72724E-01	2.04772E-01
17	1.60499E+00	1.46777E+00	1.34956E+00	8.45309E-01	7.11576E-01	6.42957E-01	3.72957E-01	2.04948E-01
18	1.60541E+00	1.46881E+00	1.35180E+00	8.47852E-01	7.13717E-01	6.46249E-01	3.73175E-01	2.05175E-01
19	1.60594E+00	1.47000E+00	1.35436E+00	8.50735E-01	7.16187E-01	6.50067E-01	3.73455E-01	2.05440E-01
20	1.60668E+00	1.47151E+00	1.35761E+00	8.54433E-01	7.19332E-01	6.54930E-01	3.73798E-01	2.05773E-01
21	1.60724E+00	1.47258E+00	1.35993E+00	8.57070E-01	7.21546E-01	6.58373E-01	3.73974E-01	2.05987E-01
22	1.60730E+00	1.47269E+00	1.36015E+00	8.57303E-01	7.21694E-01	6.58641E-01	3.73883E-01	2.05970E-01
23	1.60715E+00	1.47242E+00	1.35957E+00	8.56618E-01	7.21070E-01	6.57712E-01	3.73725E-01	2.05877E-01
24	1.60696E+00	1.47208E+00	1.35884E+00	8.55773E-01	7.20315E-01	6.56577E-01	3.73565E-01	2.05775E-01

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	7.82863E-02	2.69570E-02	1.13867E-01	4.10013E-01	9.95276E-02	1.57997E-01	6.31219E-01	4.73088E-01
2	7.82533E-02	2.69523E-02	1.13813E-01	4.09906E-01	9.92614E-02	1.57891E-01	6.30820E-01	4.72764E-01
3	7.85247E-02	2.72522E-02	1.13940E-01	4.10122E-01	9.94738E-02	1.58559E-01	6.31851E-01	4.73661E-01
4	7.87325E-02	2.84738E-02	1.14653E-01	4.11368E-01	1.00609E-01	1.61872E-01	6.37561E-01	4.78570E-01
5	7.97463E-02	3.17233E-02	1.16400E-01	4.14425E-01	1.03452E-01	1.70245E-01	6.51725E-01	4.90771E-01
6	8.08692E-02	3.56440E-02	1.18308E-01	4.17768E-01	1.06642E-01	1.79806E-01	6.67412E-01	5.04329E-01
7	8.17081E-02	3.89239E-02	1.19704E-01	4.20212E-01	1.09059E-01	1.87209E-01	6.79125E-01	5.14496E-01
8	8.24852E-02	4.22680E-02	1.20966E-01	4.22441E-01	1.11319E-01	1.94259E-01	6.89985E-01	5.23925E-01
9	8.28871E-02	4.40729E-02	1.21615E-01	4.23596E-01	1.12499E-01	1.97970E-01	6.95551E-01	5.28835E-01
10	8.29525E-02	4.42786E-02	1.21719E-01	4.23788E-01	1.12678E-01	1.98482E-01	6.96413E-01	5.29573E-01
11	8.30460E-02	4.45735E-02	1.21867E-01	4.24060E-01	1.12930E-01	1.99216E-01	6.97641E-01	5.30622E-01
12	8.31056E-02	4.47651E-02	1.21963E-01	4.24237E-01	1.13094E-01	1.99691E-01	6.98433E-01	5.31298E-01
13	8.32302E-02	4.51538E-02	1.22160E-01	4.24598E-01	1.13429E-01	2.00657E-01	7.00053E-01	5.32679E-01
14	8.36166E-02	4.63501E-02	1.22786E-01	4.25725E-01	1.14474E-01	2.03655E-01	7.05094E-01	5.36958E-01
15	8.41472E-02	4.79545E-02	1.23660E-01	4.27288E-01	1.15906E-01	2.07717E-01	7.11953E-01	5.42633E-01
16	8.44875E-02	4.89584E-02	1.24252E-01	4.28278E-01	1.16820E-01	2.10281E-01	7.16246E-01	5.46157E-01
17	8.47383E-02	4.97102E-02	1.24646E-01	4.28969E-01	1.17523E-01	2.12276E-01	7.19791E-01	5.49382E-01
18	8.50828E-02	5.07558E-02	1.25202E-01	4.29897E-01	1.18513E-01	2.15121E-01	7.25068E-01	5.54466E-01
19	8.54797E-02	5.19561E-02	1.25845E-01	4.30982E-01	1.19658E-01	2.18430E-01	7.31367E-01	5.60608E-01

20	8.59855E-02	5.34785E-02	1.26663E-01	4.32570E-01	1.21128E-01	2.22687E-01	7.39738E-01	5.68903E-01
21	8.63460E-02	5.45636E-02	1.27238E-01	4.33319E-01	1.22187E-01	2.25765E-01	7.46050E-01	5.75376E-01
22	8.63782E-02	5.46656E-02	1.27277E-01	4.33332E-01	1.22294E-01	2.26093E-01	7.46975E-01	5.76605E-01
23	8.62857E-02	5.43984E-02	1.27114E-01	4.33010E-01	1.22089E-01	2.25354E-01	7.45693E-01	5.75577E-01
24	8.61717E-02	5.40651E-02	1.26918E-01	4.32637E-01	1.21716E-01	2.24422E-01	7.44007E-01	5.74114E-01

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

1	1.97809E-01	1.20966E-01	1.60694E-02
2	1.97673E-01	1.20879E-01	1.60684E-02
3	1.98139E-01	1.21327E-01	1.62073E-02
4	2.00612E-01	1.23589E-01	1.68403E-02
5	2.06762E-01	1.29239E-01	1.84460E-02
6	2.13626E-01	1.35609E-01	2.03164E-02
7	2.18803E-01	1.40479E-01	2.18147E-02
8	2.23634E-01	1.45084E-01	2.32969E-02
9	2.26160E-01	1.47501E-01	2.40895E-02
10	2.26528E-01	1.47831E-01	2.41809E-02
11	2.27051E-01	1.48299E-01	2.43123E-02
12	2.27389E-01	1.48600E-01	2.43969E-02
13	2.28075E-01	1.49212E-01	2.45686E-02
14	2.30159E-01	1.51057E-01	2.50764E-02
15	2.32871E-01	1.53420E-01	2.57046E-02
16	2.34493E-01	1.54804E-01	2.60551E-02
17	2.36123E-01	1.56460E-01	2.66003E-02
18	2.38822E-01	1.59353E-01	2.75966E-02
19	2.42120E-01	1.62871E-01	2.87646E-02
20	2.46627E-01	1.67670E-01	3.03020E-02
21	2.50227E-01	1.71590E-01	3.15666E-02
22	2.51013E-01	1.72598E-01	3.19426E-02
23	2.50546E-01	1.72255E-01	3.18991E-02
24	2.49827E-01	1.71622E-01	3.17584E-02

- elapsed time .02 min.

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.31854E-02	.00000E+00	1.29920E-02	1.08272E-02	3.28173E-03	1.14174E-02	9.98839E-01
2	.00000E+00	1.94563E-01	2.39775E-03	1.68290E-01	6.70948E-02	1.36782E-02	1.16197E-01	1.00004E+00
3	.00000E+00	2.15975E-01	2.65706E-02	1.61584E-01	8.15227E-02	1.55117E-02	1.45510E-01	1.00000E+00
4	.00000E+00	1.23748E-01	3.92102E-02	1.05664E-01	6.79576E-02	7.37861E-03	8.76398E-02	1.00001E+00
5	.00000E+00	1.63943E-01	6.82620E-02	2.60003E-01	9.47533E-02	4.37817E-03	1.33075E-01	9.99992E-01
6	.00000E+00	1.76773E-01	1.35034E-01	6.53824E-01	5.43663E-02	6.84980E-03	2.50581E-01	1.00003E+00
7	.00000E+00	8.73119E-02	9.85313E-02	7.44390E-01	3.63357E-02	7.33608E-03	1.42170E-01	1.00001E+00
8	.00000E+00	1.34466E-02	4.25851E-02	6.30482E-01	2.15198E-02	1.36461E-02	2.08633E-02	1.00005E+00
9	.00000E+00	9.75775E-04	2.17433E-02	5.35903E-01	2.07200E-02	2.26987E-02	-2.06991E-02	9.99980E-01
10	.00000E+00	7.24738E-05	2.07420E-02	4.63053E-01	1.07345E-02	3.52242E-02	-2.51446E-02	1.00001E+00
11	.00000E+00	5.70172E-06	1.07355E-02	4.25674E-01	8.17623E-03	5.77065E-02	-5.51421E-02	1.00001E+00
12	.00000E+00	4.00535E-07	8.17628E-03	2.41038E-01	9.39423E-03	6.42022E-02	-6.54166E-02	9.99958E-01
13	.00000E+00	6.36013E-08	9.39424E-03	1.80290E-01	6.15279E-03	6.02052E-02	-5.69640E-02	1.00000E+00
14	.00000E+00	1.26041E-08	6.15280E-03	1.52071E-01	7.32639E-03	8.58341E-02	-8.70078E-02	1.00000E+00
15	.00000E+00	1.42440E-09	7.41172E-03	8.37812E-02	8.80050E-03	7.59718E-03	-9.07206E-03	1.00525E+00
16	.00000E+00	4.18253E-10	8.95337E-03	4.19522E-02	9.42420E-03	6.31422E-03	-6.84555E-03	1.00384E+00
17	.00000E+00	1.34698E-10	7.50465E-03	1.39004E-02	7.06917E-03	9.38662E-03	-8.97564E-03	1.00149E+00
18	.00000E+00	9.64398E-11	6.83582E-03	7.55428E-03	3.41334E-03	3.01750E-02	-2.67613E-02	1.00026E+00
19	.00000E+00	1.36345E-10	5.69446E-03	2.23549E-02	8.17551E-03	1.21377E-02	-1.46440E-02	1.00124E+00
20	.00000E+00	2.21711E-10	9.23074E-03	9.78938E-02	9.27267E-03	2.63381E-02	-2.64888E-02	1.00249E+00
21	.00000E+00	3.24514E-11	8.61736E-03	1.95256E-02	7.60776E-03	2.56944E-02	-2.47096E-02	1.00074E+00
22	.00000E+00	3.76510E-11	1.11111E-02	3.68291E-02	8.31380E-03	7.35241E-02	-7.07850E-02	1.00047E+00
23	.00000E+00	3.59985E-11	1.32075E-02	1.53627E-01	1.69174E-02	1.20497E-01	-1.24354E-01	1.00107E+00
24	.00000E+00	9.79834E-12	2.07954E-02	1.08286E-01	2.09913E-02	1.07959E-01	-1.08266E-01	1.00087E+00
25	.00000E+00	2.86831E-12	1.79975E-02	4.12148E-02	1.36521E-02	5.83624E-02	-5.40646E-02	1.00066E+00
26	.00000E+00	2.01128E-12	8.89672E-03	2.88298E-02	6.16425E-03	5.23895E-02	-4.96861E-02	1.00050E+00
27	.00000E+00	4.79298E-13	1.98224E-03	4.33982E-03	1.06015E-03	1.47001E-02	-1.38526E-02	1.00029E+00

28	.00000E+00	1.00000E+00	6.17724E-01	5.39535E+00	6.17724E-01	9.43006E-01	5.86340E-02	1.00043E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.77270E-01	1.14174E-02	1.82319E-01	.00000E+00	2.31132E-03	2.68495E-03	.00000E+00	1.24165E-01
2	1.29068E+00	1.16197E-01	1.34229E+00	.00000E+00	1.68904E-05	1.18944E-02	.00000E+00	9.10031E-01
3	1.62434E+00	1.45510E-01	1.68776E+00	.00000E+00	.00000E+00	1.44862E-02	.00000E+00	1.14443E+00
4	1.00619E+00	8.76398E-02	1.04395E+00	.00000E+00	.00000E+00	6.23335E-03	.00000E+00	7.08168E-01
5	1.51810E+00	1.33075E-01	1.57709E+00	.00000E+00	.00000E+00	1.77908E-03	.00000E+00	1.06904E+00
6	2.91742E+00	2.50681E-01	3.03060E+00	.00000E+00	.00000E+00	1.46332E-03	.00000E+00	2.05374E+00
7	2.85813E+00	1.42170E-01	2.90647E+00	.00000E+00	.00000E+00	1.36962E-03	.00000E+00	1.98058E+00
8	2.07052E+00	2.08633E-02	2.08220E+00	.00000E+00	.00000E+00	1.35758E-03	.00000E+00	1.43005E+00
9	1.60097E+00	-2.06991E-02	1.58931E+00	.00000E+00	.00000E+00	1.78092E-03	.00000E+00	1.09748E+00
10	1.46235E+00	-2.51446E-02	1.44949E+00	.00000E+00	.00000E+00	3.79831E-03	.00000E+00	1.00167E+00
11	1.33784E+00	-5.51421E-02	1.30947E+00	.00000E+00	.00000E+00	8.20207E-03	.00000E+00	9.09815E-01
12	8.31615E-01	-6.54166E-02	7.97617E-01	.00000E+00	.00000E+00	1.08575E-02	.00000E+00	5.59027E-01
13	6.99638E-01	-5.69640E-02	6.70851E-01	.00000E+00	.00000E+00	1.27581E-02	.00000E+00	4.70036E-01
14	6.24730E-01	-8.70078E-02	5.79429E-01	.00000E+00	.00000E+00	7.86777E-03	.00000E+00	4.12048E-01
15	3.70981E-01	-9.07206E-03	3.66144E-01	.00000E+00	.00000E+00	1.78316E-03	.00000E+00	2.53509E-01
16	2.08522E-01	-6.84555E-03	2.00115E-01	.00000E+00	.00000E+00	1.26621E-03	.00000E+00	1.38764E-01
17	8.28729E-02	-8.97564E-03	7.85296E-02	.00000E+00	.00000E+00	1.37635E-03	.00000E+00	5.52578E-02
18	4.40207E-02	-2.67613E-02	2.69833E-02	.00000E+00	.00000E+00	8.73139E-04	.00000E+00	2.31790E-02
19	1.21593E-01	-1.46440E-02	1.13940E-01	.00000E+00	.00000E+00	2.18628E-03	.00000E+00	8.06934E-02
20	4.23559E-01	-2.64688E-02	4.10153E-01	.00000E+00	.00000E+00	1.44888E-02	.00000E+00	2.86288E-01
21	1.12658E-01	-2.47096E-02	9.94272E-02	.00000E+00	.00000E+00	1.53465E-02	.00000E+00	7.21953E-02
22	1.97834E-01	-7.07650E-02	1.58213E-01	.00000E+00	.00000E+00	4.39663E-02	.00000E+00	1.20200E-01
23	6.95310E-01	-1.24354E-01	6.31728E-01	.00000E+00	.00000E+00	7.19866E-02	.00000E+00	4.53379E-01
24	5.28625E-01	-1.08266E-01	4.73507E-01	.00000E+00	.00000E+00	6.39583E-02	.00000E+00	3.41955E-01
25	2.26057E-01	-5.40646E-02	1.98004E-01	.00000E+00	.00000E+00	3.61555E-02	.00000E+00	1.44427E-01
26	1.47409E-01	-4.96861E-02	1.21120E-01	.00000E+00	.00000E+00	3.31709E-02	.00000E+00	9.09579E-02
27	2.40635E-02	-1.38526E-02	1.60976E-02	.00000E+00	.00000E+00	9.39899E-03	.00000E+00	1.33072E-02
28	2.31779E+01	5.86341E-02	2.31411E+01	.00000E+00	2.32821E-03	3.82485E-01	.00000E+00	1.59444E+01

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
2	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-3.72529E-08	1.00000E+00
3	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.49012E-08	1.00000E+00
4	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.21541E-08	1.00000E+00
5	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
6	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.98023E-08	1.00000E+00
7	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-5.96046E-08	1.00000E+00
8	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-4.09782E-08	1.00000E+00
9	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-4.65661E-08	1.00000E+00
10	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	3.35276E-08	9.99999E-01
11	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.11759E-08	1.00000E+00
12	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
13	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
14	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
15	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.32831E-08	9.99997E-01
16	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-1.86265E-09	1.00000E+00
17	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
18	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.58794E-09	1.00000E+00
19	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.11759E-08	9.99999E-01
20	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	5.58794E-09	1.00000E+00
21	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.86265E-09	1.00000E+00
22	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	2.23517E-08	1.00000E+00
23	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-7.45058E-09	1.00000E+00
24	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.49012E-08	1.00000E+00
25	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.00000E+00
26	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	1.11759E-08	1.00000E+00
27	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	9.31323E-10	1.00000E+00
28	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	-2.33762E-07	1.00001E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.76835E-01	1.14174E-02	1.77270E-01	1.14174E-02	.00000E+00	.00000E+00	.00000E+00	5.61870E-03
2	1.28657E+00	1.16197E-01	1.29068E+00	1.16197E-01	.00000E+00	.00000E+00	.00000E+00	4.08957E-02
3	1.61950E+00	1.45510E-01	1.62434E+00	1.45510E-01	.00000E+00	.00000E+00	.00000E+00	5.14705E-02
4	1.00852E+00	8.76397E-02	1.00619E+00	8.76398E-02	.00000E+00	.00000E+00	.00000E+00	3.18883E-02
5	1.51428E+00	1.33075E-01	1.51810E+00	1.33075E-01	.00000E+00	.00000E+00	.00000E+00	4.81149E-02
6	2.91059E+00	2.50581E-01	2.91742E+00	2.50581E-01	.00000E+00	.00000E+00	.00000E+00	9.24733E-02
7	2.83438E+00	1.42170E-01	2.83813E+00	1.42170E-01	.00000E+00	.00000E+00	.00000E+00	9.00073E-02
8	2.06955E+00	2.08632E-02	2.07052E+00	2.08633E-02	.00000E+00	.00000E+00	.00000E+00	6.56897E-02
9	1.60173E+00	-2.06992E-02	1.60097E+00	-2.06991E-02	.00000E+00	.00000E+00	.00000E+00	5.08193E-02
10	1.46304E+00	-2.51446E-02	1.46235E+00	-2.51446E-02	.00000E+00	.00000E+00	.00000E+00	4.64195E-02
11	1.33936E+00	-5.51421E-02	1.33784E+00	-5.51421E-02	.00000E+00	.00000E+00	.00000E+00	4.24815E-02
12	8.33455E-01	-6.54166E-02	8.31615E-01	-6.54166E-02	.00000E+00	.00000E+00	.00000E+00	2.64215E-02
13	7.01244E-01	-5.69640E-02	6.99638E-01	-5.69640E-02	.00000E+00	.00000E+00	.00000E+00	2.22295E-02
14	6.27179E-01	-8.70078E-02	6.24730E-01	-8.70078E-02	.00000E+00	.00000E+00	.00000E+00	1.98658E-02
15	3.71241E-01	-9.07204E-03	3.70981E-01	-9.07206E-03	.00000E+00	.00000E+00	.00000E+00	1.17772E-02
16	2.03716E-01	-6.84555E-03	2.03522E-01	-6.84555E-03	.00000E+00	.00000E+00	.00000E+00	6.46190E-03
17	8.31248E-02	-8.97564E-03	8.28729E-02	-8.97564E-03	.00000E+00	.00000E+00	.00000E+00	2.63399E-03
18	4.48153E-02	-2.67613E-02	4.40207E-02	-2.67613E-02	.00000E+00	.00000E+00	.00000E+00	1.40986E-03
19	1.21993E-01	-1.46440E-02	1.21593E-01	-1.46440E-02	.00000E+00	.00000E+00	.00000E+00	3.86513E-03
20	4.24294E-01	-2.64688E-02	4.23659E-01	-2.64688E-02	.00000E+00	.00000E+00	.00000E+00	1.34533E-02
21	1.13141E-01	-2.47096E-02	1.12458E-01	-2.47096E-02	.00000E+00	.00000E+00	.00000E+00	3.57981E-03
22	1.99810E-01	-7.07650E-02	1.97834E-01	-7.07650E-02	.00000E+00	.00000E+00	.00000E+00	6.31047E-03
23	6.98619E-01	-1.24354E-01	6.95310E-01	-1.24354E-01	.00000E+00	.00000E+00	.00000E+00	2.21202E-02
24	5.31452E-01	-1.08266E-01	5.28625E-01	-1.08266E-01	.00000E+00	.00000E+00	.00000E+00	1.68227E-02
25	2.27468E-01	-5.40646E-02	2.26057E-01	-5.40646E-02	.00000E+00	.00000E+00	.00000E+00	7.19716E-03
26	1.48671E-01	-4.96861E-02	1.47409E-01	-4.96861E-02	.00000E+00	.00000E+00	.00000E+00	4.69882E-03
27	2.44175E-02	-1.38526E-02	2.40655E-02	-1.38526E-02	.00000E+00	.00000E+00	.00000E+00	7.69458E-04
28	2.31740E+01	5.86336E-02	2.31779E+01	5.86341E-02	.00000E+00	.00000E+00	.00000E+00	7.35495E-01

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	3.89747E-03	2.92165E-03	1.49722E-05	-2.85240E-03	1.00001E+00
2	.00000E+00	.00000E+00	5.10259E-04	2.62155E-02	1.88109E-02	5.20813E-05	-1.85530E-02	1.00000E+00
3	.00000E+00	.00000E+00	2.68711E-03	5.03761E-02	1.59284E-02	1.37782E-04	-1.33780E-02	9.99993E-01
4	.00000E+00	.00000E+00	5.17993E-03	4.22153E-02	5.46597E-03	1.03634E-04	-3.89203E-04	9.99995E-01
5	.00000E+00	.00000E+00	1.11564E-02	8.17470E-02	5.16988E-03	1.52295E-04	5.85398E-03	1.00000E+00
6	.00000E+00	.00000E+00	1.85975E-02	2.35127E-01	3.21249E-03	3.20176E-04	1.50649E-02	1.00000E+00
7	.00000E+00	.00000E+00	1.23587E-02	2.35259E-01	1.18253E-03	3.44858E-04	1.08316E-02	9.99998E-01
8	.00000E+00	.00000E+00	2.16705E-03	1.58680E-01	7.64071E-03	2.95102E-04	-5.76934E-03	1.00008E+00
9	.00000E+00	.00000E+00	7.67421E-03	1.05330E-01	8.78040E-04	1.11068E-03	5.68567E-03	9.99992E-01
10	.00000E+00	.00000E+00	8.79224E-04	8.57581E-02	8.50869E-04	8.37479E-04	-8.09178E-04	1.00000E+00
11	.00000E+00	.00000E+00	8.50931E-04	7.72845E-02	8.72815E-04	1.34101E-03	-1.36291E-03	1.00000E+00
12	.00000E+00	.00000E+00	8.72821E-04	4.69086E-02	8.72719E-04	4.17641E-05	-4.17754E-05	1.00000E+00
13	.00000E+00	.00000E+00	8.72720E-04	3.94952E-02	8.05675E-04	5.99651E-05	7.15256E-06	9.99999E-01
14	.00000E+00	.00000E+00	8.05678E-04	3.55857E-02	6.70617E-04	9.47841E-05	4.02629E-05	1.00000E+00
15	.00000E+00	.00000E+00	7.13866E-04	2.04299E-02	8.36128E-04	8.20439E-05	-2.03717E-04	9.99941E-01
16	.00000E+00	.00000E+00	9.30922E-04	1.07411E-02	9.30516E-04	5.06144E-05	-4.98118E-05	9.99949E-01
17	.00000E+00	.00000E+00	9.80393E-04	3.84579E-03	9.46652E-04	2.32333E-05	1.05482E-05	9.99996E-01
18	.00000E+00	.00000E+00	9.90550E-04	2.03699E-03	6.57734E-04	1.39492E-05	3.18820E-04	1.00000E+00
19	.00000E+00	.00000E+00	7.12318E-04	6.13518E-04	9.05190E-04	3.97476E-05	-2.32544E-04	9.99995E-01
20	.00000E+00	.00000E+00	1.07841E-03	2.33730E-02	9.93670E-04	1.73780E-04	-8.82145E-05	9.99970E-01
21	.00000E+00	.00000E+00	1.21549E-03	5.31273E-03	1.26902E-03	5.85300E-05	-1.11971E-04	9.99997E-01
22	.00000E+00	.00000E+00	1.60204E-03	1.03677E-02	1.38561E-03	1.20802E-04	9.59337E-05	9.99996E-01
23	.00000E+00	.00000E+00	2.08594E-03	3.77100E-02	2.76855E-03	5.71084E-04	-1.25364E-03	1.00000E+00
24	.00000E+00	.00000E+00	3.43304E-03	2.71211E-02	3.72196E-03	6.31776E-04	-9.20956E-04	1.00000E+00
25	.00000E+00	.00000E+00	3.36262E-03	1.05188E-02	2.70740E-03	3.57771E-04	2.97349E-04	1.00000E+00
26	.00000E+00	.00000E+00	1.40900E-03	7.68174E-03	1.01516E-03	3.35432E-04	5.84389E-05	9.99999E-01
27	.00000E+00	.00000E+00	2.94362E-04	1.44954E-03	7.46856E-07	1.06021E-04	1.87586E-04	1.00000E+00
28	.00000E+00	.00000E+00	8.34216E-02	1.39060E+00	8.34216E-02	7.47136E-03	-7.36431E-03	9.99977E-01

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

1	1.75162E-01	8.58500E-03	1.76835E-01	1.14174E-02	1.04387E-04	.00000E+00	.00000E+00	3.81077E-02
2	1.26884E+00	9.78441E-02	1.28657E+00	1.16197E-01	.00000E+00	.00000E+00	.00000E+00	2.76644E-01
3	1.59635E+00	1.32132E-01	1.61950E+00	1.45510E-01	.00000E+00	.00000E+00	.00000E+00	3.48232E-01
4	9.88902E-01	8.72505E-02	1.00352E+00	8.76397E-02	.00000E+00	.00000E+00	.00000E+00	2.15825E-01
5	1.49125E+00	1.38909E-01	1.51428E+00	1.33075E-01	.00000E+00	.00000E+00	.00000E+00	3.25626E-01
6	2.85502E+00	2.65646E-01	2.91059E+00	2.50581E-01	.00000E+00	.00000E+00	.00000E+00	6.25798E-01
7	2.80816E+00	1.53002E-01	2.83438E+00	1.42170E-01	.00000E+00	.00000E+00	.00000E+00	6.11420E-01
8	2.06641E+00	1.50939E-02	2.08955E+00	2.08632E-02	.00000E+00	.00000E+00	.00000E+00	4.48106E-01
9	1.60480E+00	-1.50135E-02	1.60173E+00	-2.06992E-02	.00000E+00	.00000E+00	.00000E+00	3.47536E-01
10	1.46727E+00	-2.59538E-02	1.46304E+00	-2.51446E-02	.00000E+00	.00000E+00	.00000E+00	3.17550E-01
11	1.34849E+00	-5.65051E-02	1.33936E+00	-5.51421E-02	.00000E+00	.00000E+00	.00000E+00	2.91301E-01
12	8.44113E-01	-6.54584E-02	8.33455E-01	-6.54166E-02	.00000E+00	.00000E+00	.00000E+00	1.81847E-01
13	7.10562E-01	-5.69569E-02	7.01264E-01	-5.69640E-02	.00000E+00	.00000E+00	.00000E+00	1.53041E-01
14	6.41366E-01	-8.69675E-02	6.27175E-01	-8.70078E-02	.00000E+00	.00000E+00	.00000E+00	1.37547E-01
15	3.72852E-01	-9.27576E-03	3.71241E-01	-9.07204E-03	.00000E+00	.00000E+00	.00000E+00	8.06345E-02
16	2.04843E-01	-6.89536E-03	2.03716E-01	-6.84555E-03	.00000E+00	.00000E+00	.00000E+00	4.42783E-02
17	8.45783E-02	-8.96509E-03	8.31248E-02	-8.97564E-03	.00000E+00	.00000E+00	.00000E+00	1.81810E-02
18	4.92158E-02	-2.64424E-02	4.48153E-02	-2.67613E-02	.00000E+00	.00000E+00	.00000E+00	1.02229E-02
19	1.24387E-01	-1.48766E-02	1.21993E-01	-1.46440E-02	.00000E+00	.00000E+00	.00000E+00	2.67089E-02
20	4.28547E-01	-2.65570E-02	4.24294E-01	-2.64688E-02	.00000E+00	.00000E+00	.00000E+00	9.24392E-02
21	1.17061E-01	-2.48216E-02	1.13141E-01	-2.47095E-02	.00000E+00	.00000E+00	.00000E+00	2.49690E-02
22	2.10954E-01	-7.06690E-02	1.99810E-01	-7.07650E-02	.00000E+00	.00000E+00	.00000E+00	4.45882E-02
23	7.17324E-01	-1.25608E-01	6.98619E-01	-1.24354E-01	.00000E+00	.00000E+00	.00000E+00	1.53571E-01
24	5.47018E-01	-1.09187E-01	5.31452E-01	-1.08266E-01	.00000E+00	.00000E+00	.00000E+00	1.16997E-01
25	2.34880E-01	-5.37672E-02	2.27468E-01	-5.40646E-02	.00000E+00	.00000E+00	.00000E+00	5.01775E-02
26	1.55127E-01	-4.96277E-02	1.48671E-01	-4.98861E-02	.00000E+00	.00000E+00	.00000E+00	3.29944E-02
27	2.61341E-02	-1.36450E-02	2.44175E-02	-1.38326E-02	.00000E+00	.00000E+00	.00000E+00	5.50192E-03
28	2.31496E+01	5.12699E-02	2.31740E+01	5.86336E-02	1.04387E-04	.00000E+00	.00000E+00	5.01984E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	6.15830E-03	8.15102E-03	4.34413E-04	-8.58500E-03	9.99950E-01
2	.00000E+00	.00000E+00	4.67689E-03	7.71794E-02	1.01438E-01	1.08683E-03	-9.78441E-02	9.99961E-01
3	.00000E+00	.00000E+00	4.81474E-02	6.92896E-02	1.80278E-01	5.44607E-06	-1.32132E-01	9.99978E-01
4	.00000E+00	.00000E+00	7.06872E-02	4.59665E-02	1.57936E-01	3.23892E-06	-8.72505E-02	9.99988E-01
5	.00000E+00	.00000E+00	1.30458E-01	1.48682E-01	2.69367E-01	3.77982E-06	-1.38909E-01	9.99991E-01
6	.00000E+00	.00000E+00	2.75673E-01	4.55453E-01	5.41308E-01	1.14811E-05	-2.65646E-01	9.99998E-01
7	.00000E+00	.00000E+00	5.53301E-01	7.95434E-01	7.06287E-01	2.53598E-05	-1.53002E-01	9.99987E-01
8	.00000E+00	.00000E+00	7.35840E-01	1.00151E+00	7.50953E-01	4.70397E-05	-1.50957E-02	9.99912E-01
9	.00000E+00	.00000E+00	7.41206E-01	9.16999E-01	7.26178E-01	9.60052E-05	1.50135E-02	9.99886E-01
10	.00000E+00	.00000E+00	7.22838E-01	8.66981E-01	6.96747E-01	2.11842E-04	2.59538E-02	9.99896E-01
11	.00000E+00	.00000E+00	7.01622E-01	8.07529E-01	6.44700E-01	4.58575E-04	5.65050E-02	9.99940E-01
12	.00000E+00	.00000E+00	5.61142E-01	4.20778E-01	4.95097E-01	5.98718E-04	6.54584E-02	9.99979E-01
13	.00000E+00	.00000E+00	4.91056E-01	3.37808E-01	4.33217E-01	8.97295E-04	5.69569E-02	9.99970E-01
14	.00000E+00	.00000E+00	4.70578E-01	3.19919E-01	3.82167E-01	1.44786E-03	8.69675E-02	9.99989E-01
15	.00000E+00	.00000E+00	2.50024E-01	1.27829E-01	2.39475E-01	1.27366E-03	9.27523E-03	9.99999E-01
16	.00000E+00	.00000E+00	1.65622E-01	5.35826E-02	1.57869E-01	8.67361E-04	6.89527E-03	9.99997E-01
17	.00000E+00	.00000E+00	8.49281E-02	1.45222E-02	7.55588E-02	4.05641E-04	8.96078E-03	1.00004E+00
18	.00000E+00	.00000E+00	7.48727E-02	8.81425E-03	4.81629E-02	2.69682E-04	2.64364E-02	1.00005E+00
19	.00000E+00	.00000E+00	1.20894E-01	3.17342E-02	1.05323E-01	6.95580E-04	1.48701E-02	1.00004E+00
20	.00000E+00	.00000E+00	2.95333E-01	2.33311E-01	2.65790E-01	2.98487E-03	2.65563E-02	1.00001E+00
21	.00000E+00	.00000E+00	1.35923E-01	4.23052E-02	1.10055E-01	1.04823E-03	2.48134E-02	1.00004E+00
22	.00000E+00	.00000E+00	2.55156E-01	1.17117E-01	1.82259E-01	2.22618E-03	7.05708E-02	9.99999E-01
23	.00000E+00	.00000E+00	5.96057E-01	7.01015E-01	4.60338E-01	1.01064E-02	1.25608E-01	1.00001E+00
24	.00000E+00	.00000E+00	6.04357E-01	6.26760E-01	4.83801E-01	1.13627E-02	1.09190E-01	1.00000E+00
25	.00000E+00	.00000E+00	3.90581E-01	2.56743E-01	3.30301E-01	6.51192E-03	5.37661E-02	1.00001E+00
26	.00000E+00	.00000E+00	3.08856E-01	2.73811E-01	2.52900E-01	6.32557E-03	4.96356E-02	9.99981E-01
27	.00000E+00	.00000E+00	1.02984E-01	5.72154E-02	8.71618E-02	2.17708E-03	1.36453E-02	9.99998E-01
28	.00000E+00	.00000E+00	8.89081E+00	8.81445E+00	8.89081E+00	5.15827E-02	-5.12840E-02	9.99967E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dd**2	total flux
1	1.74348E-01	3.18745E-09	1.75162E-01	8.58500E-03	4.50774E-10	.00000E+00	.00000E+00	1.99543E-01

2	1.25723E+00	-1.07280E-03	1.26884E+00	9.78441E-02	.00000E+00	.00000E+00	.00000E+00	1.43947E+00
3	1.57869E+00	-1.82101E-07	1.59635E+00	1.32132E-01	.00000E+00	.00000E+00	.00000E+00	1.80807E+00
4	9.75745E-01	-1.69666E-08	9.88902E-01	8.72505E-02	.00000E+00	.00000E+00	.00000E+00	1.11792E+00
5	1.46885E+00	-6.87630E-10	1.49125E+00	1.38909E-01	.00000E+00	.00000E+00	.00000E+00	1.68525E+00
6	2.82110E+00	1.04633E-07	2.86502E+00	2.65646E-01	.00000E+00	.00000E+00	.00000E+00	3.23295E+00
7	2.78287E+00	-5.72649E-08	2.80816E+00	1.53002E-01	.00000E+00	.00000E+00	.00000E+00	3.18702E+00
8	2.06644E+00	1.45577E-07	2.06641E+00	1.50939E-02	.00000E+00	.00000E+00	.00000E+00	2.36439E+00
9	1.60886E+00	-2.25194E-08	1.60480E+00	-1.50135E-02	.00000E+00	.00000E+00	.00000E+00	1.83898E+00
10	1.47191E+00	4.32910E-08	1.46727E+00	-2.59538E-02	.00000E+00	.00000E+00	.00000E+00	1.68428E+00
11	1.35846E+00	-1.14983E-08	1.34849E+00	-5.65051E-02	.00000E+00	.00000E+00	.00000E+00	1.55401E+00
12	8.55330E-01	1.09428E-08	8.44113E-01	-6.54584E-02	.00000E+00	.00000E+00	.00000E+00	9.78115E-01
13	7.19921E-01	-4.60423E-09	7.10562E-01	-5.69569E-02	.00000E+00	.00000E+00	.00000E+00	8.23415E-01
14	6.55984E-01	8.07822E-09	6.41366E-01	-8.69675E-02	.00000E+00	.00000E+00	.00000E+00	7.49799E-01
15	3.73492E-01	-5.27418E-07	3.72832E-01	-9.27576E-03	.00000E+00	.00000E+00	.00000E+00	4.27740E-01
16	2.05725E-01	-8.87998E-08	2.04863E-01	-6.89536E-03	.00000E+00	.00000E+00	.00000E+00	2.35497E-01
17	8.61152E-02	-4.30856E-06	8.45783E-02	-8.96509E-03	.00000E+00	.00000E+00	.00000E+00	9.84392E-02
18	5.38955E-02	-6.05269E-06	4.92158E-02	-2.64424E-02	.00000E+00	.00000E+00	.00000E+00	6.12879E-02
19	1.26821E-01	-6.40948E-06	1.24387E-01	-1.48766E-02	.00000E+00	.00000E+00	.00000E+00	1.44999E-01
20	4.32457E-01	-6.47404E-07	4.28547E-01	-2.65570E-02	.00000E+00	.00000E+00	.00000E+00	4.94870E-01
21	1.21553E-01	-8.18020E-06	1.17061E-01	-2.48216E-02	.00000E+00	.00000E+00	.00000E+00	1.38726E-01
22	2.23952E-01	1.60042E-06	2.10934E-01	-7.06690E-02	.00000E+00	.00000E+00	.00000E+00	2.55149E-01
23	7.43099E-01	-1.16484E-07	7.17324E-01	-1.25608E-01	.00000E+00	.00000E+00	.00000E+00	8.47536E-01
24	5.73308E-01	3.00304E-06	5.47018E-01	-1.09187E-01	.00000E+00	.00000E+00	.00000E+00	6.52316E-01
25	2.49426E-01	-1.13063E-06	2.34880E-01	-5.37672E-02	.00000E+00	.00000E+00	.00000E+00	2.83037E-01
26	1.71255E-01	7.89560E-06	1.55127E-01	-4.96277E-02	.00000E+00	.00000E+00	.00000E+00	1.92862E-01
27	3.16723E-02	3.10201E-07	2.61341E-02	-1.36450E-02	.00000E+00	.00000E+00	.00000E+00	3.50186E-02
28	2.31866E+01	-1.47269E-05	2.31496E+01	5.12699E-02	4.50774E-10	.00000E+00	.00000E+00	2.65287E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.31854E-02	.00000E+00	2.30478E-02	2.18999E-02	3.73111E-03	3.18745E-09	9.98834E-01
2	.00000E+00	1.94563E-01	7.58490E-03	2.71685E-01	1.87344E-01	1.48171E-02	-1.07280E-08	1.00002E+00
3	.00000E+00	2.15975E-01	7.74051E-02	2.81250E-01	2.77729E-01	1.56549E-02	-1.82101E-07	9.99987E-01
4	.00000E+00	1.23748E-01	1.15077E-01	1.93846E-01	2.31340E-01	7.48549E-03	-1.69666E-08	1.00000E+00
5	.00000E+00	1.63943E-01	2.09877E-01	4.90432E-01	3.69290E-01	4.53424E-03	-6.87630E-10	9.99989E-01
6	.00000E+00	1.76773E-01	4.29305E-01	1.34440E+00	5.98887E-01	7.18146E-03	1.04633E-07	1.00001E+00
7	.00000E+00	8.73119E-02	6.64191E-01	1.77508E+00	7.43805E-01	7.70625E-03	-5.72649E-08	9.99990E-01
8	.00000E+00	1.34466E-02	7.80592E-01	1.79067E+00	7.80114E-01	1.39882E-02	1.45577E-07	9.99920E-01
9	.00000E+00	9.75775E-04	7.70623E-01	1.55823E+00	7.47778E-01	2.39053E-02	-2.25194E-08	9.99898E-01
10	.00000E+00	7.24738E-05	7.44459E-01	1.41579E+00	7.08333E-01	3.62735E-02	4.32910E-08	9.99900E-01
11	.00000E+00	5.70172E-06	7.13208E-01	1.31049E+00	6.53749E-01	5.95061E-02	-1.14983E-08	9.99942E-01
12	.00000E+00	4.00535E-07	5.70191E-01	7.08725E-01	5.05364E-01	6.48427E-02	1.09428E-08	9.99974E-01
13	.00000E+00	6.36013E-08	5.01323E-01	5.57594E-01	4.40175E-01	6.11625E-02	-4.60423E-09	9.99971E-01
14	.00000E+00	1.26041E-08	4.77536E-01	5.07576E-01	3.90164E-01	8.73767E-02	8.07822E-09	9.99989E-01
15	.00000E+00	1.42440E-09	2.58149E-01	2.32040E-01	2.49112E-01	8.95289E-03	-5.27418E-07	1.00033E+00
16	.00000E+00	4.18253E-10	1.75506E-01	1.06276E-01	1.68214E-01	7.23219E-03	-8.87998E-08	1.00034E+00
17	.00000E+00	1.34698E-10	9.34131E-02	3.22685E-02	8.35744E-02	9.81550E-03	-4.30856E-06	1.00029E+00
18	.00000E+00	9.64398E-11	8.26991E-02	1.84056E-02	5.22340E-02	3.04586E-02	-6.05269E-06	1.00015E+00
19	.00000E+00	1.36345E-10	1.27300E-01	6.02243E-02	1.14404E-01	1.28730E-02	-6.40948E-06	1.00024E+00
20	.00000E+00	2.21711E-10	3.03643E-01	3.54578E-01	2.74056E-01	2.94967E-02	-6.47404E-07	1.00030E+00
21	.00000E+00	3.24514E-11	1.45756E-01	6.71435E-02	1.18852E-01	2.68012E-02	-8.18020E-06	1.00021E+00
22	.00000E+00	3.76510E-11	2.67869E-01	1.64314E-01	1.91959E-01	7.58710E-02	1.60042E-06	1.00014E+00
23	.00000E+00	3.59985E-11	6.11351E-01	8.92352E-01	4.80024E-01	1.31174E-01	-1.16484E-07	1.00025E+00
24	.00000E+00	9.79834E-12	6.28586E-01	7.62166E-01	5.08515E-01	1.19953E-01	3.00304E-06	1.00018E+00
25	.00000E+00	2.86831E-12	4.11941E-01	3.08477E-01	3.46660E-01	6.52321E-02	-1.13063E-06	1.00012E+00
26	.00000E+00	2.01128E-12	3.19162E-01	3.10322E-01	2.60080E-01	5.90505E-02	7.89560E-06	1.00007E+00
27	.00000E+00	4.79298E-13	1.05211E-01	6.30048E-02	8.82227E-02	1.69852E-02	3.10201E-07	1.00004E+00
28	.00000E+00	1.00000E+00	9.59196E+00	1.56004E+01	9.59196E+00	1.00206E+00	-1.46431E-05	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*db**2	total flux
1	1.74348E-01	3.18745E-09	1.82319E-01	.00000E+00	2.41571E-03	2.68493E-03	.00000E+00	3.67435E-01
2	1.25723E+00	-1.07280E-03	1.34229E+00	.00000E+00	1.68906E-05	1.18944E-02	.00000E+00	2.66704E+00

3	1.57869E+00	-1.82101E-07	1.68776E+00	.00000E+00	.00000E+00	1.44862E-02	.00000E+00	3.35220E+00
4	9.75745E-01	-1.69666E-08	1.04395E+00	.00000E+00	.00000E+00	6.23335E-03	.00000E+00	2.07380E+00
5	1.46885E+00	-6.87630E-10	1.57709E+00	.00000E+00	.00000E+00	1.77908E-03	.00000E+00	3.12603E+00
6	2.82110E+00	1.04633E-07	3.03060E+00	.00000E+00	.00000E+00	1.46332E-03	.00000E+00	6.00496E+00
7	2.78287E+00	-5.72649E-08	2.90547E+00	.00000E+00	.00000E+00	1.36962E-03	.00000E+00	5.86903E+00
8	2.06644E+00	1.45577E-07	2.08220E+00	.00000E+00	.00000E+00	1.35758E-03	.00000E+00	4.30823E+00
9	1.60686E+00	-2.25194E-08	1.58931E+00	.00000E+00	.00000E+00	1.78092E-03	.00000E+00	3.33482E+00
10	1.47191E+00	4.32910E-08	1.44949E+00	.00000E+00	.00000E+00	3.79531E-03	.00000E+00	3.04992E+00
11	1.35846E+00	-1.14983E-08	1.30947E+00	.00000E+00	.00000E+00	8.20207E-03	.00000E+00	2.79760E+00
12	8.55330E-01	1.09428E-08	7.97617E-01	.00000E+00	.00000E+00	1.08575E-02	.00000E+00	1.74541E+00
13	7.19921E-01	-4.60423E-09	6.70851E-01	.00000E+00	.00000E+00	1.27581E-02	.00000E+00	1.46872E+00
14	6.55984E-01	8.07822E-09	5.79429E-01	.00000E+00	.00000E+00	7.86777E-03	.00000E+00	1.31926E+00
15	3.73492E-01	-5.27418E-07	3.66144E-01	.00000E+00	.00000E+00	1.78516E-03	.00000E+00	7.73660E-01
16	2.05725E-01	-8.87998E-08	2.00115E-01	.00000E+00	.00000E+00	1.26621E-03	.00000E+00	4.25001E-01
17	8.61152E-02	-4.30856E-06	7.85296E-02	.00000E+00	.00000E+00	1.37635E-03	.00000E+00	1.74492E-01
18	5.38955E-02	-6.05269E-06	2.69833E-02	.00000E+00	.00000E+00	8.73135E-04	.00000E+00	9.60996E-02
19	1.26821E-01	-6.40948E-06	1.13940E-01	.00000E+00	.00000E+00	2.18628E-03	.00000E+00	2.56267E-01
20	4.32457E-01	-6.47404E-07	4.10153E-01	.00000E+00	.00000E+00	1.44888E-02	.00000E+00	8.87060E-01
21	1.21553E-01	-8.18020E-06	9.94272E-02	.00000E+00	.00000E+00	1.53465E-02	.00000E+00	2.39470E-01
22	2.23952E-01	1.60042E-06	1.58213E-01	.00000E+00	.00000E+00	4.39663E-02	.00000E+00	4.26248E-01
23	7.43099E-01	-1.16484E-07	6.31728E-01	.00000E+00	.00000E+00	7.19866E-02	.00000E+00	1.47661E+00
24	5.73308E-01	3.00304E-06	4.73507E-01	.00000E+00	.00000E+00	6.39583E-02	.00000E+00	1.12809E+00
25	2.49426E-01	-1.13063E-06	1.98004E-01	.00000E+00	.00000E+00	3.61555E-02	.00000E+00	4.84839E-01
26	1.71255E-01	7.89560E-06	1.21120E-01	.00000E+00	.00000E+00	3.31709E-02	.00000E+00	3.21493E-01
27	3.16723E-02	3.10201E-07	1.60976E-02	.00000E+00	.00000E+00	9.39899E-03	.00000E+00	5.45972E-02
28	2.31865E+01	-1.47269E-05	2.31411E+01	.00000E+00	2.43260E-03	3.82485E-01	.00000E+00	4.82284E+01

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

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.44142E-03	2.50505E-02	3.15479E-02	1.90445E-02	2.90898E-02	5.55530E-02	3.16283E-02	4.65972E-03
2	3.83808E-03	3.90608E-02	4.89146E-02	2.94610E-02	4.47346E-02	8.42353E-02	4.77920E-02	7.01338E-03
3	3.11865E-03	3.33234E-02	4.31853E-02	2.71725E-02	4.22334E-02	8.01441E-02	4.58173E-02	5.61041E-03
4	1.07652E-03	1.22616E-02	1.65535E-02	1.09259E-02	1.73895E-02	3.32588E-02	1.92301E-02	2.01638E-03
5	1.78270E-03	1.90952E-02	2.47795E-02	1.55854E-02	2.42532E-02	4.62917E-02	2.65346E-02	3.34108E-03

0zone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.63308E-03	5.63482E-03	1.25243E-02	1.45637E-02	1.26850E-02	1.92469E-02	2.05110E-03	1.53102E-03
2	6.95824E-03	8.45264E-03	1.85366E-02	2.19905E-02	1.91490E-02	2.92486E-02	3.04961E-03	2.30118E-03
3	5.57143E-03	7.93529E-03	1.73397E-02	2.03325E-02	1.76989E-02	2.70290E-02	2.84990E-03	2.13457E-03
4	1.84599E-03	3.23037E-03	7.04299E-03	8.16503E-03	7.14230E-03	1.08660E-02	1.23569E-03	8.84530E-04
5	3.23366E-03	4.59516E-03	1.00371E-02	1.17591E-02	1.02578E-02	1.56012E-02	1.70112E-03	1.25011E-03

0zone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	1.98569E-03	5.33941E-03	3.29442E-03	5.92742E-03	5.39561E-03	1.51634E-02	2.74520E-02	2.38003E-02
2	3.01714E-03	8.99564E-03	4.92252E-03	8.89748E-03	8.30597E-03	2.37884E-02	4.18057E-02	3.63958E-02
3	2.78715E-03	8.26566E-03	4.58600E-03	8.23783E-03	7.69397E-03	2.19730E-02	3.88298E-02	3.37803E-02
4	1.11695E-03	3.26190E-03	1.87188E-03	3.38996E-03	3.08957E-03	8.79571E-03	1.59383E-02	1.38418E-02
5	1.60716E-03	4.55747E-03	2.67149E-03	4.81468E-03	4.41125E-03	1.25014E-02	2.25243E-02	1.95555E-02

0zone	grp. 25	grp. 26	grp. 27	grp. 28
1	1.18321E-02	1.07284E-02	2.85632E-03	3.85430E-01
2	1.81747E-02	1.67030E-02	4.65005E-03	5.90891E-01
3	1.67546E-02	1.54299E-02	4.26991E-03	5.44104E-01
4	6.79941E-03	6.16208E-03	1.56605E-03	2.18950E-01
5	9.67400E-03	8.79807E-03	2.32082E-03	3.13532E-01

1 1040 d, sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp
0cell averaged fluxes

0zone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.80156E-01	1.32187E+00	1.66235E+00	1.02865E+00	1.55283E+00	2.98316E+00	2.87690E+00	2.07722E+00
2	1.77049E-01	1.28859E+00	1.62187E+00	1.00482E+00	1.51614E+00	2.91390E+00	2.83619E+00	2.06993E+00
3	1.75835E-01	1.27648E+00	1.60680E+00	9.95850E-01	1.50249E+00	2.88754E+00	2.82119E+00	2.05763E+00

4	1.74344E-01	1.25768E+00	1.57973E+00	9.76742E-01	1.47068E+00	2.82468E+00	2.78454E+00	2.06580E+00
5	1.76529E-01	1.28134E+00	1.61052E+00	9.96328E-01	1.50186E+00	2.88500E+00	2.81969E+00	2.06983E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.59415E+00	1.45498E+00	1.32155E+00	8.12016E-01	6.82752E-01	5.98522E-01	3.68235E-01	2.01562E-01
2	1.60135E+00	1.46271E+00	1.33862E+00	8.32560E-01	7.00462E-01	6.25986E-01	3.71108E-01	2.03619E-01
3	1.60359E+00	1.46525E+00	1.34411E+00	8.39073E-01	7.06158E-01	6.34666E-01	3.72061E-01	2.04307E-01
4	1.60674E+00	1.47158E+00	1.35776E+00	8.54595E-01	7.19430E-01	6.55110E-01	3.73722E-01	2.05757E-01
5	1.60217E+00	1.46529E+00	1.34407E+00	8.38659E-01	7.05627E-01	6.33821E-01	3.71695E-01	2.04186E-01

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	8.02358E-02	3.36687E-02	1.17211E-01	4.15848E-01	1.04868E-01	1.74597E-01	6.58658E-01	4.96708E-01
2	8.29991E-02	4.44255E-02	1.21795E-01	4.23923E-01	1.12802E-01	1.98847E-01	6.97023E-01	5.30094E-01
3	8.38900E-02	4.71700E-02	1.23239E-01	4.26529E-01	1.15211E-01	2.05738E-01	7.08601E-01	5.39841E-01
4	8.60077E-02	5.35481E-02	1.26688E-01	4.32375E-01	1.21207E-01	2.22927E-01	7.40504E-01	5.69939E-01
5	8.38323E-02	4.61697E-02	1.23120E-01	4.26171E-01	1.15050E-01	2.04785E-01	7.09415E-01	5.41976E-01

Ozone	grp. 25	grp. 26	grp. 27
1	2.09788E-01	1.32092E-01	1.98294E-02
2	2.26788E-01	1.48063E-01	2.42462E-02
3	2.31527E-01	1.52241E-01	2.53868E-02
4	2.47294E-01	1.68506E-01	3.05963E-02
5	2.32934E-01	1.54457E-01	2.62305E-02

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

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.02168E+00	1.03163E+00	1.03218E+00	1.03244E+00	1.03394E+00	1.03402E+00	1.02029E+00	1.00357E+00
2	1.00295E+00	1.00566E+00	1.00705E+00	1.00853E+00	1.00951E+00	1.01002E+00	1.00585E+00	1.00005E+00
3	9.96069E-01	9.96209E-01	9.97689E-01	9.99520E-01	1.00042E+00	1.00088E+00	1.00063E+00	9.98938E-01
4	9.87622E-01	9.81536E-01	9.80885E-01	9.80341E-01	9.79241E-01	9.75090E-01	9.87533E-01	9.98053E-01
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	9.94997E-01	9.92963E-01	9.85248E-01	9.68347E-01	9.67581E-01	9.44308E-01	9.90692E-01	9.87149E-01
2	9.99479E-01	9.98236E-01	9.95946E-01	9.92846E-01	9.92680E-01	9.87640E-01	9.98422E-01	9.97223E-01
3	1.00089E+00	9.99958E-01	1.00003E+00	1.00061E+00	1.00075E+00	1.00133E+00	1.00099E+00	1.00069E+00
4	1.00286E+00	1.00429E+00	1.01018E+00	1.01912E+00	1.01956E+00	1.03359E+00	1.00546E+00	1.00769E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	9.57099E-01	7.29257E-01	9.52011E-01	9.75778E-01	9.11495E-01	8.52587E-01	9.28310E-01	9.16477E-01
2	9.90061E-01	9.62222E-01	9.89223E-01	9.94726E-01	9.80465E-01	9.71005E-01	9.82532E-01	9.78077E-01
3	1.00069E+00	1.02166E+00	1.00097E+00	1.00084E+00	1.00140E+00	1.00465E+00	9.98852E-01	9.96062E-01
4	1.02595E+00	1.15981E+00	1.02898E+00	1.01456E+00	1.05351E+00	1.08859E+00	1.04382E+00	1.05159E+00
5	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00	1.00000E+00

Ozone	grp. 25	grp. 26	grp. 27
1	9.00633E-01	8.55204E-01	7.36906E-01
2	9.73612E-01	9.58604E-01	9.24351E-01
3	9.95958E-01	9.85655E-01	9.67835E-01
4	1.06165E+00	1.09096E+00	1.16644E+00
5	1.00000E+00	1.00000E+00	1.00000E+00

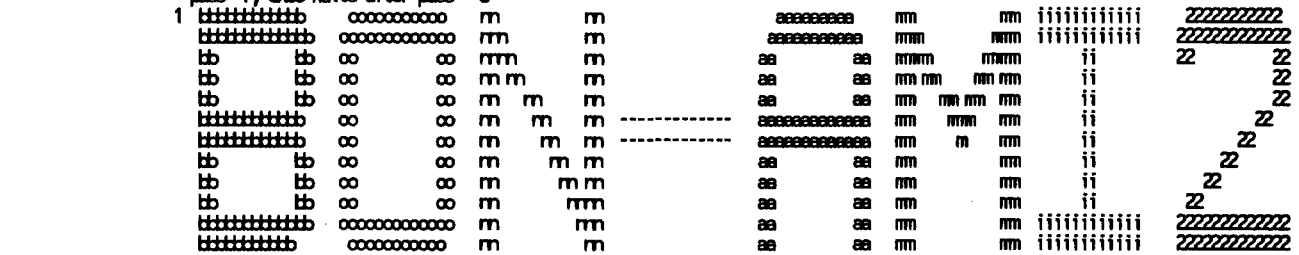
Ocell averaged currents

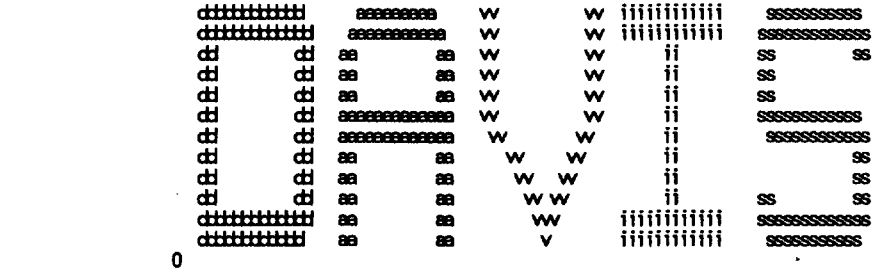
Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	2.44142E-03	2.50505E-02	3.15479E-02	1.90445E-02	2.90598E-02	5.55530E-02	3.16283E-02	4.65972E-03
2	3.85808E-03	3.90608E-02	4.89146E-02	2.94610E-02	4.47346E-02	8.42353E-02	4.77920E-02	7.01338E-03
3	3.11865E-03	3.33234E-02	4.31853E-02	2.71725E-02	4.22334E-02	8.01441E-02	4.58173E-02	5.61041E-03
4	1.07652E-03	1.22616E-02	1.65535E-02	1.09259E-02	1.73895E-02	3.32588E-02	1.92301E-02	2.01638E-03
5	1.78270E-03	1.90952E-02	2.47795E-02	1.55854E-02	2.42532E-02	4.62917E-02	2.65346E-02	3.34108E-03

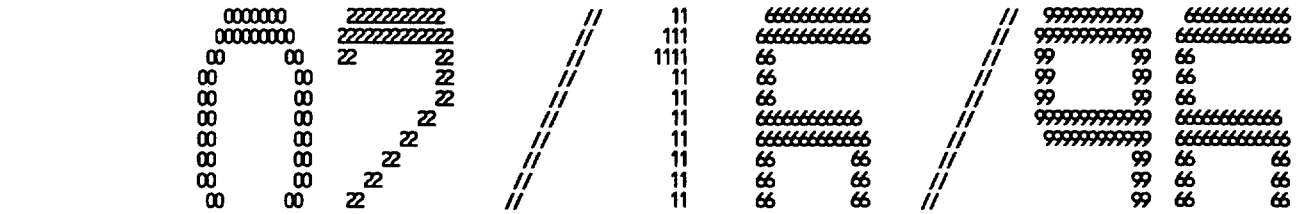
Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	4.63308E-03	5.63482E-03	1.25243E-02	1.45637E-02	1.26850E-02	1.92469E-02	2.05110E-03	1.53102E-03
2	6.95824E-03	8.45264E-03	1.85366E-02	2.19906E-02	1.91490E-02	2.92486E-02	3.04961E-03	2.30118E-03
3	5.57143E-03	7.95529E-03	1.73397E-02	2.03325E-02	1.76989E-02	2.70290E-02	2.84990E-03	2.13457E-03
4	1.84599E-03	3.23037E-03	7.04299E-03	8.16508E-03	7.14230E-03	1.08660E-02	1.25569E-03	8.86530E-04
5	3.23366E-03	4.59516E-03	1.00371E-02	1.17591E-02	1.02578E-02	1.56012E-02	1.70112E-03	1.25011E-03

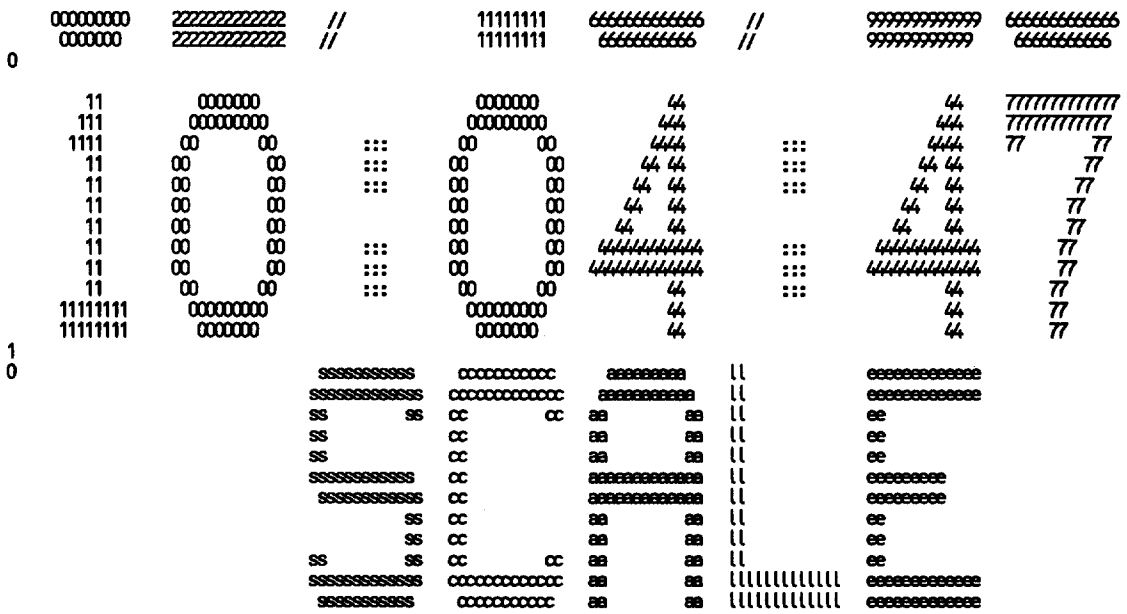
```
Ozone  grp. 17     grp. 18     grp. 19     grp. 20     grp. 21     grp. 22     grp. 23     grp. 24
    1 1.98569E-03 5.33941E-03 3.29442E-03 5.92742E-03 5.39561E-03 1.51634E-02 2.74520E-02 2.38003E-02
    2 3.01714E-03 8.99564E-03 4.92252E-03 8.89748E-03 8.30597E-03 2.37884E-02 4.18057E-02 3.63958E-02
    3 2.78715E-03 8.26565E-03 4.58600E-03 8.25783E-03 7.69397E-03 2.19730E-02 3.88298E-02 3.37803E-02
    4 1.11695E-03 3.26190E-03 1.87189E-03 3.38396E-03 3.08957E-03 8.79571E-03 1.59383E-02 1.38418E-02
    5 1.60716E-03 4.55747E-03 2.67149E-03 4.81468E-03 4.41125E-03 1.25014E-02 2.25243E-02 1.95555E-02
Ozone  grp. 25     grp. 26     grp. 27
    1 1.18321E-02 1.07284E-02 2.85632E-03
    2 1.81747E-02 1.67030E-02 4.65005E-03
    3 1.67546E-02 1.54299E-02 4.26991E-03
    4 6.79941E-03 6.16208E-03 1.56605E-03
    5 9.67400E-03 8.79807E-03 2.32082E-03
Ozone       volume      vol. fraction

    1    6.88443E-01    3.30753E-01
    2    3.17352E-02    1.52468E-02
    3    2.16724E-01    1.04122E-01
    4    1.14454E+00    5.49878E-01
    5    2.08144E+00    1.00000E+00
 - elapsed time    .03 min.
 0requested parm=halt8,skipcellwt,skipshipdata
   pass= 7, exec halts after pass  8
```









program verification information

code system: scale version: 4.2

program: c0c008

creation date: 04/27/95

library: /nautronics/scale/exe

this is not a scale configuration controlled code

jobname: davis

date of execution: 02/16/96

time of execution: 10:04:47

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

1
0      -1q array has      1 entries.
0       0q array has      4 entries.
0       1q array has      6 entries.
0       2q array has      2 entries.
1logical assignments
0master library   12
 working library  17
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere                2
0izm--number of zones or material regions                       4
0ms--mixing table length                                       70
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0issopt--dancoff factor option                                  0
0convergence criterion    1.00000E-03
0geometry correction factor for wigner rational approximation 1.350E+00
0       3q array has     70 entries.
0       4q array has     70 entries.
0       5q array has     70 entries.
0       6q array has      4 entries.
0       7q array has      4 entries.
0       8q array has      4 entries.
0       9q array has      4 entries.
0      10q array has     70 entries.
0      11q array has      4 entries.
0m i x i n g   t a b l e
0entry  mixture  isotope  number density  new identifier
    1        3     8016     2.09710E-02             201
    2        3     1001     4.19420E-02             202
    3        3     5010     3.81515E-06             203
    4        3     5011     1.54884E-05             204
    5        2    40302     4.25156E-02             205
    6        1    92235     1.20544E-04          200006
    7        1    92234     1.41715E-06          200007
    8        1    92236     2.03607E-05          200008
    9        1    92238     7.20891E-03          200009
   10        1     8016     1.50611E-02          200010
   11        1     8016     1.15315E-02          200011
   12        1    36083     5.38432E-07          200012
   13        1    36085     2.58829E-07          200013
   14        1    38090     5.92341E-06          200014
   15        1    39089     4.78649E-06          200015
   16        1    42095     6.56575E-06          200016
   17        1    40093     4.79260E-06          200017
   18        1    40094     7.56974E-06          200018
   19        1    40095     6.48349E-07          200019
   20        1    41094     3.96160E-12          200020
   21        1    43099     7.40725E-06          200021
   22        1    45103     4.11558E-06          200022
   23        1    45105     7.88511E-09          200023
   24        1    44101     6.79295E-06          200024
   25        1    44106     1.01922E-06          200025
```

26	1	46105	2.82763E-06	200026
27	1	46108	8.33604E-07	200027
28	1	47109	5.71721E-07	200028
29	1	51124	1.27223E-10	200029
30	1	54131	3.36294E-06	200030
31	1	54132	6.56907E-06	200031
32	1	54135	2.20413E-09	200032
33	1	54136	1.29371E-05	200033
34	1	55134	4.23524E-07	200034
35	1	55135	4.11148E-06	200035
36	1	55137	7.98225E-06	200036
37	1	56136	8.81605E-08	200037
38	1	57139	7.89638E-06	200038
39	1	59141	6.89476E-06	200039
40	1	59143	1.20840E-07	200040
41	1	58144	2.27216E-06	200041
42	1	60143	6.04828E-06	200042
43	1	60145	4.50917E-06	200043
44	1	61147	1.42392E-06	200044
45	1	61148	4.24549E-09	200045
46	1	60147	4.27517E-08	200046
47	1	62147	5.95353E-07	200047
48	1	62149	2.94746E-08	200048
49	1	62150	1.65740E-06	200049
50	1	62151	1.43095E-07	200050
51	1	62152	7.81604E-07	200051
52	1	64155	9.37783E-10	200052
53	1	63153	5.06255E-07	200053
54	1	63154	1.18895E-07	200054
55	1	63155	5.54695E-08	200055
56	1	40302	4.42681E-05	200056
57	1	1001	2.30630E-02	200057
58	1	5010	2.09787E-06	200058
59	1	5011	8.51673E-06	200059
60	1	55133	8.12694E-06	200060
61	1	95237	1.55467E-06	200061
62	1	94238	2.67674E-07	200062
63	1	94239	3.86490E-05	200063
64	1	94240	8.49899E-06	200064
65	1	94241	4.88270E-06	200065
66	1	94242	6.64962E-07	200066
67	1	95241	1.70640E-07	200067
68	1	95243	7.44868E-08	200068
69	1	96244	8.67958E-09	200069
70	1	999	3.30753E-21	200070

0geometry and material description

0zone	mixture	outer dimension	temperature	extra xs	type (0/1--fuel/mod)
1	3	6.32460E-01	6.07600E+02	7.90564E-01	0
2	2	6.73100E-01	6.50000E+02	1.23052E+01	0
3	3	8.14000E-01	6.07600E+02	3.54862E+00	0
4	1	2.96100E+00	9.75000E+02	2.32883E-01	0

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

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

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

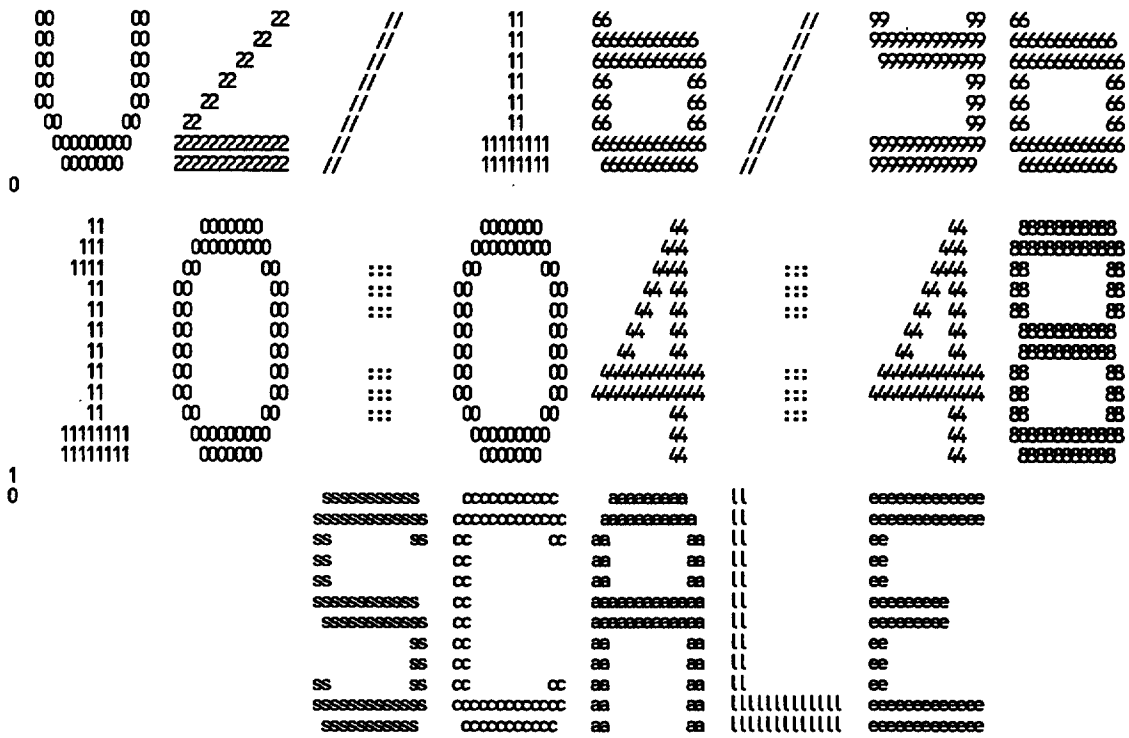
```
Ocopy    5011  boron-11          from lag 12 to lag 18  bondarenko trigger 0
Ocopy    5011  boron-11          from lag 18 to lag  1  bondarenko trigger 0
Ocopy    5011  boron-11          from lag 18 to lag  1  bondarenko trigger 0
Ocopy    8016  oxygen-16         from lag 12 to lag 18  bondarenko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

```
0copy    94238  pu-238 1050 sigp from log 12 to log  1   bondarenko trigger 0
0copy    94239   plutonium-239   from log 12 to log  1   bondarenko trigger 0
0copy    94240   plutonium-240   from log 12 to log  1   bondarenko trigger 0
0copy    94241   plutonium-241   from log 12 to log  1   bondarenko trigger 0
0copy    94242   plutonium-242   from log 12 to log  1   bondarenko trigger 0
0copy    95241  am-241 1056 sigp from log 12 to log  1   bondarenko trigger 0
0copy    95243  am-243 1057 218  from log 12 to log  1   bondarenko trigger 0
0copy    96244   curium-244      from log 12 to log  1   bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
       based on endf-b version 4 data with endf-b version 5 fission products
          compiled for nrc      1/27/89
            last updated       9/16/93
               l.m.petrie   -   ornl
       tape id                          4321        number of nuclides          70
       number of neutron groups           27        number of gamma groups       0
       first thermal group                15        logical unit                 1
                                table of contents
     1/v cross sections normalized to 1.0 at 0.0253 ev                    id   200070
      hydrogen       endf/b-iv mat 1269/thnm1002   updated 10/13/89      id      202
      hydrogen       endf/b-iv mat 1269/thnm1002   updated 10/13/89      id   200057
     b-10 1273 218ngp 042575 p-3 293k                                    id      203
     b-10 1273 218ngp 042575 p-3 293k                                    id   200058
      boron-11       endf/b-iv mat 1160            updated 10/13/89      id      204
      boron-11       endf/b-iv mat 1160            updated 10/13/89      id   200059
      oxygen-16      endf/b-iv mat 1276            updated 10/13/89      id      201
      oxygen-16      endf/b-iv mat 1276            updated 10/13/89      id   200010
      oxygen-16      endf/b-iv mat 1276            updated 10/13/89      id   200011
      kr-83          mt=102,103,103,105,106,107    updated 10/13/89      id   200012
      kr-85            mt=  102                                          id   200013
      sr-90          mt=102                        updated 10/13/89      id   200014
       y-89          mt=102                        updated 10/13/89      id   200015
      zr-93            mt=  102                                          id   200017
      zr-94          mt=102                        updated 10/13/89      id   200018
      zr-95          mt=102                        updated 10/13/89      id   200019
      zircalloy      endf/b-iv mat 1284            updated 10/13/89      id      205
      zircalloy      endf/b-iv mat 1284            updated 10/13/89      id   200056
      rb-94          mt=102                        updated 10/13/89      id   200020
      mo-95          mt=102                        updated 10/13/89      id   200016
      tc-99          mt=102                        updated 10/13/89      id   200021
      ru-101         mt=102                        updated 10/13/89      id   200024
      ru-106         mt=102                        updated 10/13/89      id   200025
      rh-103         mt=102                        updated 10/13/89      id   200022
      rh-105           mt=  102                                          id   200023
      pd-105         mt=102                        updated 10/13/89      id   200026
      pd-108         mt=102                        updated 10/13/89      id   200027
      silver-109     endf/b-iv mat 1139            updated 10/13/89      id   200028
      sb-124         mt=102                        updated 10/13/89      id   200029
      xe-131         mt=102,103,104,105,106        updated 10/13/89      id   200030
      xe-132         mt=102,103,104,105,106        updated 10/13/89      id   200031
      xenon-135      endf/b-iv mat 1294            updated 10/13/89      id   200032
      xe-136           mt=  102, 103, 104, 105, 107                      id   200033
      cesium-133     endf/b-iv mat 1141            updated 10/13/89      id   200060
      cs-134         mt=102                        updated 10/13/89      id   200034
      cs-135           mt=  102                                          id   200035
      cs-137         mt=102                        updated 10/13/89      id   200036
      ba-136         mt=102                        updated 10/13/89      id   200037
      la-139         mt=102                        updated 10/13/89      id   200038
      ce-144           mt=  102                                          id   200041
      pr-141         mt=102,103,104,105,106,107    updated 10/13/89      id   200039
      pr-143         mt=102                        updated 10/13/89      id   200040
```

```
        nd-143        mt=102                          updated 10/13/89              id   20042
        nd-145        mt=102                          updated 10/13/89              id   20043
        nd-147        mt=102                          updated 10/13/89              id   20046
        pm-147        mt=102                          updated 10/13/89              id   20044
        pm-148          mt=  102                                                    id   20045
        sm-147        endf/b-v fission product        updated 10/13/89              id   20047
        sm-149        mt=102,103,107                  updated 10/13/89              id   20048
        sm-150        mt=102                          updated 10/13/89              id   20049
        sm-151        mt=102,103,104,105,106,107      updated 10/13/89              id   20050
        sm-152        mt=102,103,104,105,106,107      updated 10/13/89              id   20051
        eu-153        mt=102,103,104,105,106,107      updated 10/13/89              id   20053
        eu-154        mt=102,103,104,105,106,107      updated 10/13/89              id   20054
        eu-155        mt=102,103,104,105,106,107      updated 10/13/89              id   20055
        gd-155        mt=102                          updated 10/13/89              id   20052
       u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          id   200007
        uranium-235   endf/b-iv mat 1261              updated 10/13/89              id   20006
       u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          id   200008
        uranium-238   endf/b-iv mat 1262              updated 10/13/89              id   20009
        neptunium-237 endf/b-iv mat 1263              updated 10/13/89              id   200061
       pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                         id   200062
        plutonium-239 endf/b-iv mat 1264              updated 10/13/89              id   200063
        plutonium-240 endf/b-iv mat 1265              updated 10/13/89              id   200064
        plutonium-241 endf/b-iv mat 1266              updated 10/13/89              id   200065
        plutonium-242 endf/b-iv mat 1161              updated 10/13/89              id   200066
       am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                                id   200067
       am-243 1057 218 gp wt f-1/e-m 090876 p3 293k                                 id   200068
        curium-244    endf/b-iv mat 1162              updated 10/13/89              id   200069
0       tape copy used      0 i/o's, and took     .00 seconds
1                m         m  iiiiiiiiiiii   ttttttttttt     aaaaaaaa    ww         ww  ll
                 mm        m  iiiiiiiiiiii   ttttttttttt    aaaaaaaaaa   ww         ww  ll
                 mmm       m      ii             tt        aa        aa   ww         ww  ll
                 m mm      m      ii             tt        aa        aa   ww         ww  ll
                 m  m      m      ii             tt        aa        aa   ww         ww  ll
                 m   m     m      ii             tt        aaaaaaaaaaaa   ww    w    ww  ll
                 m    m    m      ii             tt        aaaaaaaaaaaa   ww   www   ww  ll
                 m     m   m      ii             tt        aa        aa   ww  ww ww  ww  ll
                 m      mm m      ii             tt        aa        aa   ww ww    ww ww  ll
                 m       mmm      ii             tt        aa        aa   wwww     wwww  ll
                 m        m  iiiiiiiiiiii       tt        aa        aa   www       www  llllllllllll
                 m        m  iiiiiiiiiiii       tt        aa        aa   ww         ww  llllllllllll
0

   ddddddddddd    aaaaaaaa    w         w  iiiiiiiiiii    sssssssss
   ddddddddddd   aaaaaaaaaa   w         w  iiiiiiiiiii   ssssssssssss
   dd       dd  aa        aa  w         w      ii        ss      ss
   dd       dd  aa        aa  w         w      ii        ss
   dd       dd  aa        aa  w         w      ii        ss
   dd       dd  aaaaaaaaaaaa  w         w      ii        sssssssssss
   dd       dd  aaaaaaaaaaaa   w       w       ii         sssssssssss
   dd       dd  aa        aa    w     w        ii                 ss
   dd       dd  aa        aa     w   w         ii                 ss
   dd       dd  aa        aa      w w          ii        ss       ss
   ddddddddddd  aa        aa       ww      iiiiiiiiiii   ssssssssssss
   ddddddddddd  aa        aa        v      iiiiiiiiiii    sssssssss
0

     000000     2222222222          //      11      6666666666          //  9999999999   6666666666
   00000000    22222222222          //     111     66666666666         //  99999999999  66666666666
  00      00  22        22          //    1111     66                  //  99       99  66
  00      00          22            //      11     66                  //  99       99  66
```




```
*********************************************************************
*********************************************************************
*********************************************************************
******                                                         ******
******                program verification information         ******
******                                                         ******
******              code system:   scale  version:   4.2       ******
******                                                         ******
*********************************************************************
*********************************************************************
******                                                         ******
******                                                         ******
******           program:  c0c002                              ******
******                                                         ******
******      creation date:  04/27/95                           ******
******                                                         ******
******           library:  /nsutronics/scale/exe               ******
******                                                         ******
******                                                         ******
******   this is not a  scale  configuration controlled code   ******
```

```
                    *****                                                   *****
                    *****            jobname:  davis                        *****
                    *****                                                   *****
                    *****   date of execution:  02/16/96                    *****
                    *****                                                   *****
                    *****   time of execution:  10:04:48                    *****
                    *****                                                   *****
                    *****                                                   *****
                    ********************************************************************
                    ********************************************************************
                    ********************************************************************

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

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

 xsdrn weighted tape--parent case entitled-- 1040 d, sas2h: babcock wilcox 15x15,
  3.00wt%, 20gwd/mtu burn high temp



0 nuclides from xsdrn tape
     1     hydrogen        endf/b-iv mat 1269/thrml002    updated 10/13/89          202
     2    b-10 1273 218ngp 042375 p-3 293k                                          203
     3     boron-11        endf/b-iv mat 1160             updated 10/13/89          204
     4     oxygen-16       endf/b-iv mat 1276             updated 10/13/89          201
     5     zircalloy       endf/b-iv mat 1284             updated 10/13/89          205
0 nuclides from  work tape
     6    1/v cross sections normalized to 1.0 at 0.0253 ev                          999
     7     hydrogen        endf/b-iv mat 1269/thrml002    updated 10/13/89         1001
     8    b-10 1273 218ngp 042375 p-3 293k                                         5010
     9     boron-11        endf/b-iv mat 1160             updated 10/13/89         5011
    10     oxygen-16       endf/b-iv mat 1276             updated 10/13/89         8016
    11     oxygen-16       endf/b-iv mat 1276             updated 10/13/89            6
    12     kr-83           mt=102,103,103,105,106,107     updated 10/13/89        36083
```

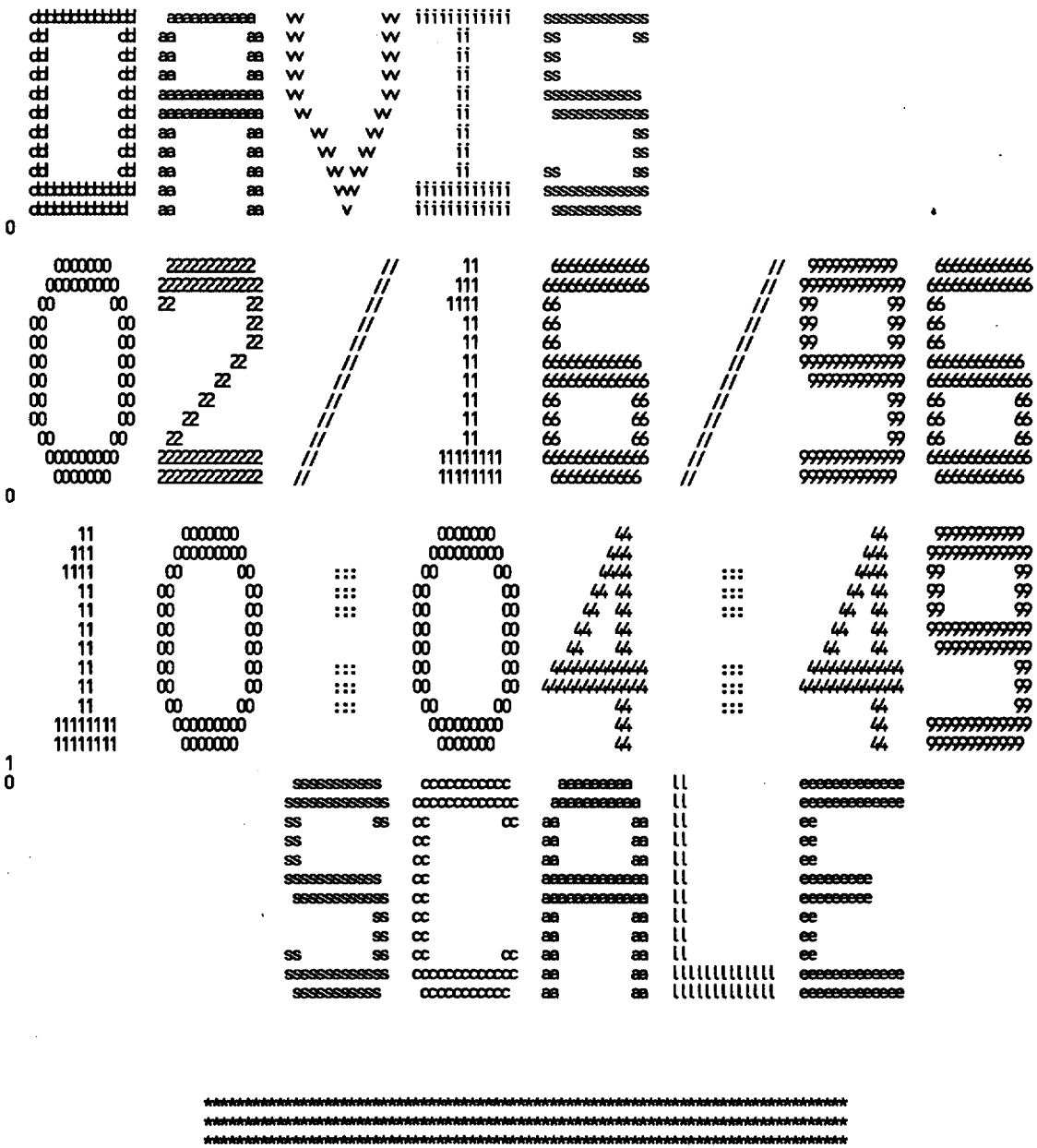
```
 13   kr-85          mt=  102                                          36085
 14   sr-90          mt=102                        updated 10/13/89    38090
 15    y-89          mt=102                        updated 10/13/89    39089
 16   zr-93          mt=  102                                          40093
 17   zr-94          mt=102                        updated 10/13/89    40094
 18   zr-95          mt=102                        updated 10/13/89    40095
 19   zircalloy      endf/b-iv mat 1284            updated 10/13/89    40802
 20   nb-94          mt=102                        updated 10/13/89    41094
 21   mo-95          mt=102                        updated 10/13/89    42095
 22   tc-99          mt=102                        updated 10/13/89    43099
 23   ru-101         mt=102                        updated 10/13/89    44101
 24   ru-106         mt=102                        updated 10/13/89    44106
 25   rh-103         mt=102                        updated 10/13/89    45103
 26   rh-105         mt=  102                                          45105
 27   pd-105         mt=102                        updated 10/13/89    46105
 28   pd-108         mt=102                        updated 10/13/89    46108
 29   silver-109     endf/b-iv mat 1139            updated 10/13/89    47109
 30   sb-124         mt=102                        updated 10/13/89    51124
 31   xe-131         mt=102,103,104,105,106        updated 10/13/89    54131
 32   xe-132         mt=102,103,104,105,106        updated 10/13/89    54132
 33   xenon-135      endf/b-iv mat 1294            updated 10/13/89    54135
 34   xe-136         mt=  102, 103, 104, 105, 107                      54136
 35   cesium-133     endf/b-iv mat 1141            updated 10/13/89    55133
 36   cs-134         mt=102                        updated 10/13/89    55134
 37   cs-135         mt=  102                                          55135
 38   cs-137         mt=102                        updated 10/13/89    55137
 39   ba-136         mt=102                        updated 10/13/89    56136
 40   la-139         mt=102                        updated 10/13/89    57139
 41   ce-144         mt=  102                                          58144
 42   pr-141         mt=102,103,104,105,106,107    updated 10/13/89    59141
 43   pr-143         mt=102                        updated 10/13/89    59143
 44   nd-143         mt=102                        updated 10/13/89    60143
 45   nd-145         mt=102                        updated 10/13/89    60145
 46   nd-147         mt=102                        updated 10/13/89    60147
 47   pm-147         mt=102                        updated 10/13/89    61147
 48   pm-148         mt=  102                                          61148
 49   sm-147         endf/b-v fission product      updated 10/13/89    62147
 50   sm-149         mt=102,103,107                updated 10/13/89    62149
 51   sm-150         mt=102                        updated 10/13/89    62150
 52   sm-151         mt=102,103,104,105,106,107    updated 10/13/89    62151
 53   sm-152         mt=102,103,104,105,106,107    updated 10/13/89    62152
 54   eu-153         mt=102,103,104,105,106,107    updated 10/13/89    63153
 55   eu-154         mt=102,103,104,105,106,107    updated 10/13/89    63154
 56   eu-155         mt=102,103,104,105,106,107    updated 10/13/89    63155
 57   gd-155         mt=102                        updated 10/13/89    64155
 58   u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)               92234
 59    uranium-235   endf/b-iv mat 1261            updated 10/13/89    92235
 60   u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)               92236
 61    uranium-238   endf/b-iv mat 1262            updated 10/13/89    92238
 62    neptunium-237 endf/b-iv mat 1263            updated 10/13/89    93237
 63   pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)              94238
 64    plutonium-239 endf/b-iv mat 1264            updated 10/13/89    94239
 65    plutonium-240 endf/b-iv mat 1265            updated 10/13/89    94240
 66    plutonium-241 endf/b-iv mat 1266            updated 10/13/89    94241
 67    plutonium-242 endf/b-iv mat 1161            updated 10/13/89    94242
 68   am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                     95241
 69   am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                      95243
 70    curium-244    endf/b-iv mat 1162            updated 10/13/89    96244
0 hydrogen      endf/b-iv mat 1269/thrm1002   updated 10/13/89          202   temperature=  607.60
                      thermal scattering matrix number  2 at a temperature of   550.00 was selected.
```

```
0b-10 1273 218grp 042375 p-3 293k                                    203    temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of  550.00 was selected.
0 boron-11      endf/b-iv mat 1160          updated 10/13/89         204    temperature=  607.60
                          thermal scattering matrix number  2 at a temperature of  550.00 was selected.
0 oxygen-16     endf/b-iv mat 1276          updated 10/13/89         201    temperature=  607.60
0 zircalloy     endf/b-iv mat 1284          updated 10/13/89         205    temperature=  650.00
0resonance data for this nuclide
0mass number (a)          =   90.436          temperature(kelvin)      =   650.000
0potential scatter sigma  =    6.385          lumped nuclear density   = 4.251560E-02
0spin factor (g)          =    1.079          lump dimension (a-bar)   = 6.730999E-01
0inner radius             = 6.324600E-01      dancoff correction (c)   = 1.680590E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
   8     -1.156752E-03    .000000E+00   -7.806083E-01
   9     -4.625978E-02    .000000E+00   -2.073270E+00
  10     -5.962230E-02    .000000E+00   -1.351984E+00
  11     -1.761672E-01    .000000E+00   -7.350731E-01
0excess resonance integrals
0                resolved
0absorption     2.92402E-01
 fission         .00000E+00
-  elapsed time    .00 min.
-  elapsed time    .02 min.
1     this xsdrn working tape was created 02/16/96 at 10:04:48
      the title of the parent case is as follows
      xsdrn weighted tape--parent case entitled-- 1040 d, sas2h: babcock wilcox 15x15,
       3.00wt%, 20gwd/mtu burn high temp

        tape id                          8670        number of nuclides              70
        number of neutron groups           27        number of gamma groups           0
        first thermal group                15        logical unit                     4
                                  table of contents
       hydrogen      endf/b-iv mat 1269/thrm1002   updated 10/13/89          id    202
      b-10 1273 218grp 042375 p-3 293k                                       id    203
       boron-11      endf/b-iv mat 1160            updated 10/13/89          id    204
       oxygen-16     endf/b-iv mat 1276            updated 10/13/89          id    201
       zircalloy     endf/b-iv mat 1284            updated 10/13/89          id    205
      1/v cross sections normalized to 1.0 at 0.0253 ev                      id    999
       hydrogen      endf/b-iv mat 1269/thrm1002   updated 10/13/89          id   1001
      b-10 1273 218grp 042375 p-3 293k                                       id   5010
       boron-11      endf/b-iv mat 1160            updated 10/13/89          id   5011
       oxygen-16     endf/b-iv mat 1276            updated 10/13/89          id   8016
       oxygen-16     endf/b-iv mat 1276            updated 10/13/89          id      6
       kr-83         mt=102,103,103,105,106,107    updated 10/13/89          id  36083
       kr-85           mt=  102                                             id  36085
       sr-90         mt=102                        updated 10/13/89          id  38090
        y-89         mt=102                        updated 10/13/89          id  39089
       zr-93           mt=  102                                             id  40093
       zr-94         mt=102                        updated 10/13/89          id  40094
       zr-95         mt=102                        updated 10/13/89          id  40095
       zircalloy     endf/b-iv mat 1284            updated 10/13/89          id  40302
       nb-94         mt=102                        updated 10/13/89          id  41094
       mo-95         mt=102                        updated 10/13/89          id  42095
       tc-99         mt=102                        updated 10/13/89          id  43099
       ru-101        mt=102                        updated 10/13/89          id  44101
       ru-106        mt=102                        updated 10/13/89          id  44106
       rh-103        mt=102                        updated 10/13/89          id  45103
       rh-105          mt=  102                                             id  45105
```

```
        pd-105        mt=102                          updated 10/13/89              id    46105
        pd-108        mt=102                          updated 10/13/89              id    46108
        silver-109    endf/b-iv mat 1139              updated 10/13/89              id    47109
        sb-124        mt=102                          updated 10/13/89              id    51124
        xe-131        mt=102,103,104,105,106          updated 10/13/89              id    54131
        xe-132        mt=102,103,104,105,106          updated 10/13/89              id    54132
        xenon-135     endf/b-iv mat 1294              updated 10/13/89              id    54135
        xe-136          mt=  102, 103, 104, 105, 107                                id    54136
        cesium-133    endf/b-iv mat 1141              updated 10/13/89              id    55133
        cs-134        mt=102                          updated 10/13/89              id    55134
        cs-135          mt=  102                                                    id    55135
        cs-137        mt=102                          updated 10/13/89              id    55137
        ba-136        mt=102                          updated 10/13/89              id    56136
        la-139        mt=102                          updated 10/13/89              id    57139
        ce-144          mt=  102                                                    id    58144
        pr-141        mt=102,103,104,105,106,107      updated 10/13/89              id    59141
        pr-143        mt=102                          updated 10/13/89              id    59143
        nd-143        mt=102                          updated 10/13/89              id    60143
        nd-145        mt=102                          updated 10/13/89              id    60145
        nd-147        mt=102                          updated 10/13/89              id    60147
        pm-147        mt=102                          updated 10/13/89              id    61147
        pm-148          mt=  102                                                    id    61148
        sm-147        endf/b-v fission product        updated 10/13/89              id    62147
        sm-149        mt=102,103,107                  updated 10/13/89              id    62149
        sm-150        mt=102                          updated 10/13/89              id    62150
        sm-151        mt=102,103,104,105,106,107      updated 10/13/89              id    62151
        sm-152        mt=102,103,104,105,106,107      updated 10/13/89              id    62152
        eu-153        mt=102,103,104,105,106,107      updated 10/13/89              id    63153
        eu-154        mt=102,103,104,105,106,107      updated 10/13/89              id    63154
        eu-155        mt=102,103,104,105,106,107      updated 10/13/89              id    63155
        gd-155        mt=102                          updated 10/13/89              id    64155
       u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          id    92234
        uranium-235   endf/b-iv mat 1261              updated 10/13/89              id    92235
       u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                          id    92236
        uranium-238   endf/b-iv mat 1262              updated 10/13/89              id    92238
        neptunium-237 endf/b-iv mat 1263              updated 10/13/89              id    93237
       pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                         id    94238
        plutonium-239 endf/b-iv mat 1264              updated 10/13/89              id    94239
        plutonium-240 endf/b-iv mat 1265              updated 10/13/89              id    94240
        plutonium-241 endf/b-iv mat 1266              updated 10/13/89              id    94241
        plutonium-242 endf/b-iv mat 1161              updated 10/13/89              id    94242
       am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                                id    95241
       am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                                 id    95243
        curium-244    endf/b-iv mat 1162              updated 10/13/89              id    96244
0         tape copy used      0 i/o's, and took     .00 seconds
1 xx         xx  sssssssssss  ddddddddddd  rrrrrrrrrr   m         m  ppppppppp    mm          mm
   xx       xx  sssssssssssss ddddddddddddd rrrrrrrrrrr  mm        m  pppppppppp   mmm        mmm
     xx     xx  ss        ss  dd        dd  rr        rr  mmm       m  pp       pp  mmmm      mmmm
      xx   xx   ss            dd        dd  rr        rr  m mm     m  pp       pp  mm mm    mm mm
       xx xx    ss            dd        dd  rr        rr  m  m    m  pp       pp  mm  mm   mm mm
        xxx     sssssssssss   dd        dd  rrrrrrrrrrr  m   m   m  ppppppppp   mm   mmm  mm
        xxx      sssssssssss  dd        dd  rrrrrrrrrr   m    m  m  ppppppppp   mm    m   mm
       xx xx            ss   dd        dd  rr      rr   m     m m  pp          mm        mm
      xx   xx           ss   dd        dd  rr       rr  m      mm  pp          mm        mm
     xx     xx  ss        ss  dd        dd  rr        rr  m      mm  pp          mm        mm
   xx         xx  sssssssssssss ddddddddddddd rr        rr  m      mm  pp          mm        mm
  xx           xx  sssssssssss  ddddddddddd  rr        rr  m      mm  pp          mm        mm
0

  ddddddddddd     aaaaaaaa    w         w  iiiiiiiiiii    sssssssssss
```



```
                    ******                                                      ******
                    ******          program verification information             ******
                    ******                                                      ******
                    ******          code system:  scale  version:  4.2          ******
                    ******                                                      ******
                    ********************************************************************
                    ********************************************************************
                    ******                                                      ******
                    ******                                                      ******
                    ******          program:  c0c001                            ******
                    ******                                                      ******
                    ******       creation date:  04/27/95                       ******
                    ******                                                      ******
                    ******          library:  /neutronics/scale/exe             ******
                    ******                                                      ******
                    ******                                                      ******
                    ******   this is not a  scale  configuration controlled code******
                    ******                                                      ******
                    ******          jobname:  davis                             ******
                    ******                                                      ******
                    ******   date of execution:  02/16/96                       ******
                    ******                                                      ******
                    ******   time of execution:  10:04:49                       ******
                    ******                                                      ******
                    ******                                                      ******
                    ********************************************************************
                    ********************************************************************
                    ********************************************************************
1
                    1040 d, second part of sas2h pass to make library
0       -1q array has      1 entries.
0        0q array has     11 entries.
0        1q array has     15 entries.
0        2q array has     10 entries.
0        3q array has     12 entries.
0        4q array has      9 entries.
0        5q array has     12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                    1040 d, second part of sas2h pass to make library
0general problem description data block
0                              general problem data

 ige  1/2/3 = plane/cylinder/sphere      2       isn  quadrature order                 8
 izm  number of zones                    4       isct order of scattering              3
 im   number of special intervals       28       ievt 0/1/2/3/4/5/6=q/k/alpha/c/z/r/h  1
 ibl  0/1/2/3 = vacuum/refl/per/white    1       iim  inner iteration maximum         20
 ibr  right boundary condition           3       iom  outer iteration maximum         25
 mxx  number of mixtures                 3       iclc -1/0/n--flat res/sn/cpt          0
 ms   mixing table length               70       ith  0/1 = forward/adjoint          0
 igm  number of energy groups           27       iflu not used(always wgtd)            0
 nng  number of neutron groups          27       iprt -2/-1/0/n=mixture xsec print    -2
 ngg  number of gamma groups             0       idl  0/1/2/3=no/prt nd/pch n/both   14
 iftg number of first thermal group     15       ipbt -1/0/1=none/fine/all bal. prt    0
0                             special options

 ifg  0/1 = none/weighting calculation   1       ipn  0/1/2 diff. coef. param          0
 iqm  volumetric sources (0/n=no/yes)    0       idfm 0/1 = none/density factors 39*   0
 ipm  boundary sources (0/n=no/yes)      0       iaz  0/n = none/n activities by zone  0
 ifn  0/1/2 = input 33*/34*/use last    14       iai  0/1=none/activities by interval  0
 itmx maximum time (minutes)            10       ifct 0/1=no/yes upscatter scaling     0
```

```
 idt1 0/1/2/3=no/xsect/srce/flux--out     0        ipvt 0/1/2=no/k/alpha parametric srch    0
 isx  broad group fluxes                  0        isen outer iteration acceleration        0
 ibln activity data unit                  0        nbnd band rebaln parameter               0
 jtkl 0/1/2 buckling geometry             0
0                              weighting data (ifg=1)

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

 eps  overall convergence       1.00000E-04        dy   cyl/pla ht for buckling     .00000E+00
 ptc  point convergence         1.00000E-04        dz   plane depth for buckling   2.00000E+02
 xnf  normalization factor      1.00000E+00        vsc  void streaming correction   .00000E+00
 ev   eigenvalue guess           .00000E+00        pv   ipvt=1/2--k/alpha           1.00000E+00
 evm  eigenvalue modifier        .00000E+00        eql  ev change eps for search   1.00000E-03
 bf   buckling factor=1.420892  1.42089E+00        xnpm new param mod for search   7.50000E-01
     this case will require      2611 locations for mixing
     this case has been allocated 200000 locations
1                        1040 d, second part of sas2h pass to make library
0       13q array has     70 entries.
0       14q array has     70 entries.
0       15q array has     70 entries.
0                              data block 2 (mixing table, etc.)
0     nuclides          cccc                          mixing table                              extra
       on tape    identification                mixture  component   atom density          xsect id's
     1     202                                        3        201   2.09710E-02
     2     203                                        3        202   4.19420E-02
     3     204                                        3        203   3.81515E-06
     4     201                                        3        204   1.54884E-05
     5     205                                        2        205   4.25156E-02
     6     999                                        1      92235   1.20544E-04
     7    1001                                        1      92234   1.41715E-06
     8    5010                                        1      92236   2.03607E-05
     9    5011                                        1      92238   7.20891E-03
    10    8016                                        1       8016   1.50611E-02
    11       6                                        1          6   1.15315E-02
    12   36083                                        1      36083   5.38432E-07
    13   36085                                        1      36085   2.58829E-07
    14   38090                                        1      38090   5.92341E-06
    15   39089                                        1      39089   4.78649E-06
    16   40093                                        1      42095   6.56575E-06
    17   40094                                        1      40093   4.79260E-06
    18   40095                                        1      40094   7.56974E-06
    19   40802                                        1      40095   6.48349E-07
    20   41094                                        1      41094   3.96160E-12
    21   42095                                        1      43099   7.40725E-06
    22   43099                                        1      45103   4.11558E-06
    23   44101                                        1      45105   7.88511E-09
    24   44106                                        1      44101   6.79295E-06
    25   45103                                        1      44106   1.01922E-06
    26   45105                                        1      46105   2.82763E-06
    27   46105                                        1      46108   8.33604E-07
    28   46108                                        1      47109   5.71721E-07
    29   47109                                        1      51124   1.27225E-10
    30   51124                                        1      54131   3.36294E-06
    31   54131                                        1      54132   6.56907E-06
    32   54132                                        1      54135   2.20413E-09
```

33	54135	1	54136	1.29571E-05
34	54136	1	55134	4.23524E-07
35	55133	1	55135	4.11148E-06
36	55134	1	55137	7.98229E-06
37	55135	1	56136	8.81606E-08
38	55137	1	57139	7.89638E-06
39	56136	1	59141	6.89476E-06
40	57139	1	59143	1.20840E-07
41	58144	1	58144	2.27216E-06
42	59141	1	60143	6.04828E-06
43	59143	1	60145	4.50917E-06
44	60143	1	61147	1.42392E-06
45	60145	1	61148	4.24549E-09
46	60147	1	60147	4.27517E-08
47	61147	1	62147	5.95353E-07
48	61148	1	62149	2.94746E-08
49	62147	1	62150	1.65740E-06
50	62149	1	62151	1.43095E-07
51	62150	1	62152	7.81604E-07
52	62151	1	64155	9.37783E-10
53	62152	1	63153	5.06255E-07
54	63153	1	63154	1.18895E-07
55	63154	1	63155	5.54695E-08
56	63155	1	40302	4.42681E-03
57	64155	1	1001	2.30630E-02
58	92234	1	5010	2.09787E-06
59	92235	1	5011	8.51673E-06
60	92236	1	55133	8.12694E-06
61	92238	1	95237	1.55467E-06
62	95237	1	94238	2.67674E-07
63	94238	1	94239	3.86490E-05
64	94239	1	94240	8.49359E-06
65	94240	1	94241	4.88270E-06
66	94241	1	94242	6.64962E-07
67	94242	1	95241	1.70640E-07
68	95241	1	95243	7.44868E-08
69	95243	1	96244	8.67958E-09
70	96244	1	999	3.30753E-21

- elapsed time .00 min.
0 24259 locations will be used
0 35q array has 29 entries.
0 36q array has 28 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 1040 d, second part of ses2h pass to make library

neutron group parameters

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

11	5.50000E+02	9.80818E+00	2.05946E+07	2	0	11	1.00000E+00
12	1.00000E+02	1.15129E+01	1.01036E+07	2	0	12	1.00000E+00
13	3.00000E+01	1.27169E+01	5.69595E+06	2	0	13	1.00000E+00
14	1.00000E+01	1.38155E+01	3.20957E+06	2	0	14	1.00000E+00
15	3.04999E+00	1.50030E+01	2.10601E+06	2	0	15	1.00000E+00
16	1.77000E+00	1.55471E+01	1.70522E+06	2	0	16	1.00000E+00
17	1.29999E+00	1.58557E+01	1.52545E+06	2	0	17	1.00000E+00
18	1.12999E+00	1.59959E+01	1.42867E+06	2	0	18	1.00000E+00
19	1.00000E+00	1.61181E+01	1.31002E+06	2	0	19	1.00000E+00
20	8.00000E-01	1.63412E+01	9.05898E+05	2	0	20	1.00000E+00
21	4.00000E-01	1.70344E+01	8.17974E+05	3	0	21	1.00000E+00
22	3.25000E-01	1.72420E+01	6.90070E+05	3	0	22	1.00000E+00
23	2.25000E-01	1.76098E+01	4.86953E+05	3	0	23	1.00000E+00
24	9.99999E-02	1.84207E+01	3.57766E+05	3	0	24	1.00000E+00
25	5.00000E-02	1.91138E+01	2.71895E+05	3	0	25	1.00000E+00
26	3.00000E-02	1.96247E+01	1.87283E+05	3	0	26	1.00000E+00
27	1.00000E-02	2.07233E+01	8.88201E+04	3	0	27	1.00000E+00
28	1.00000E-05	2.76310E+01					

1 1040 d, second part of sas2h pass to make library

0

	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	3	3			0	-2.79004E-01	3	0
2	2	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	3	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	1	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28593E-02
7					5.55953E-02	2.31301E-01	6	1.28593E-02
8					5.55953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	15	0
10					5.22844E-02	-8.21784E-01	15	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-02
14					5.22844E-02	6.01588E-01	11	3.14537E-02
15					5.22844E-02	8.21784E-01	10	4.29665E-02
16					0	-9.83052E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17361E-01	23	-3.70655E-02
19					4.53355E-02	-5.46143E-01	22	-2.47597E-02
20					4.53355E-02	-1.91780E-01	21	-8.69444E-03
21					4.53355E-02	1.91780E-01	20	8.69444E-03
22					4.53355E-02	5.46143E-01	19	2.47597E-02
23					4.53355E-02	8.17361E-01	18	3.70655E-02
24					4.53355E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0argl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.85235E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.85235E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.85235E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61278E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61278E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40830E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01

14	6.01588E-01	-8.57235E-02	.00000E+00	1.40330E-01	-3.44245E-01	
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01	
16	-9.83032E-01	-4.49528E-01	8.36885E-01	5.00703E-01	-7.51005E-01	
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01	
18	-8.17361E-01	-4.49528E-01	3.20862E-01	4.16320E-01	1.46514E-01	
19	-5.46143E-01	-4.49528E-01	-3.20862E-01	2.78176E-01	7.36575E-01	
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17256E-01	
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17256E-01	
22	5.46143E-01	-4.49528E-01	-3.20862E-01	-2.78176E-01	-7.36575E-01	
23	8.17361E-01	-4.49528E-01	3.20862E-01	-4.16320E-01	-1.46514E-01	
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01	

1 int	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.97644E-02	1	0	4.90881E-03		0	
2	3.95287E-02	5.92931E-02	1	2.48566E-01	1.47764E-02		0	
3	7.90575E-02	1.18586E-01	1	4.96733E-01	5.89057E-02		0	
4	1.58115E-01	1.97644E-01	1	9.93466E-01	9.81762E-02		0	
5	2.37172E-01	2.76701E-01	1	1.49020E+00	1.37447E-01			
6	3.16230E-01	3.55759E-01	1	1.98693E+00	1.76717E-01			
7	3.95288E-01	4.34816E-01	1	2.48566E+00	2.15988E-01			
8	4.74345E-01	5.13874E-01	1	2.98040E+00	2.55258E-01			
9	5.53408E-01	5.73167E-01	1	3.47713E+00	1.42359E-01			
10	5.92931E-01	6.12696E-01	1	3.72550E+00	1.52173E-01			
11	6.32460E-01	6.42620E-01	2	3.97386E+00	8.20460E-02			
12	6.52780E-01	6.62940E-01	2	4.10154E+00	8.46405E-02			
13	6.73100E-01	6.96588E-01	3	4.22921E+00	2.05562E-01			
14	7.20057E-01	7.43550E-01	3	4.52431E+00	2.19422E-01			
15	7.67053E-01	7.90517E-01	3	4.81941E+00	2.33282E-01			
16	8.14000E-01	8.62795E-01	4	5.11451E+00	5.29051E-01			
17	9.11591E-01	9.60886E-01	4	5.72769E+00	5.88891E-01			
18	1.00918E+00	1.10677E+00	4	6.34088E+00	1.35731E+00			
19	1.20436E+00	1.30195E+00	4	7.56724E+00	1.59667E+00			
20	1.39955E+00	1.49714E+00	4	8.79360E+00	1.83603E+00			
21	1.59473E+00	1.69232E+00	4	1.00200E+01	2.07540E+00			
22	1.78991E+00	1.88750E+00	4	1.12463E+01	2.31476E+00			
23	1.98509E+00	2.08268E+00	4	1.24727E+01	2.55412E+00			
24	2.18027E+00	2.27786E+00	4	1.36991E+01	2.79349E+00			
25	2.37545E+00	2.47305E+00	4	1.49254E+01	3.03285E+00			
26	2.57064E+00	2.66823E+00	4	1.61518E+01	3.27221E+00			
27	2.76582E+00	2.81461E+00	4	1.73781E+01	1.72587E+00			
28	2.86341E+00	2.91220E+00	4	1.79913E+01	1.78571E+00			
29	2.96100E+00			1.86045E+01				

- elapsed time .00 min.

1 outer iter	inner iters	1 - balance	eigenvalue	1 - source ratio	1 - scatter ratio	1 - upscat ratio	search parameter	time (min)
1	158	-1.38670E-05	1.01990E+00	-2.16600E-02	1.00000E+00	-6.74411E-03	.00000E+00	.0000
2	253	-3.84269E-07	1.02189E+00	-5.59663E-04	-2.64721E-03	-1.18196E-03	.00000E+00	.0000
3	290	-1.95462E-06	1.02227E+00	-9.94730E-05	-4.33499E-04	-2.89140E-04	.00000E+00	.0167
4	331	3.72298E-06	1.02230E+00	-2.39066E-05	-1.07205E-04	-6.81095E-05	.00000E+00	.0167

grp to grp	inner iters	mfd int.	max. flux difference	msf int.	max. scale factor	coarse mesh
1	1	17	5.45690E-07	28	1.00000E+00	1
2	1	17	6.50441E-07	28	1.00000E+00	1
3	1	17	6.09149E-07	28	1.00000E+00	1
4	1	17	5.95387E-07	28	1.00000E+00	1
5	1	17	6.33868E-07	28	1.00000E+00	1
6	1	17	4.42394E-07	28	1.00000E+00	1
7	1	24	1.34014E-06	28	9.99999E-01	2
8	1	28	2.25154E-07	28	1.00000E+00	2
9	1	27	1.43450E-05	28	1.00001E+00	3
10	1	26	1.70372E-06	28	9.99999E-01	3

11	11	1	26	3.75121E-06	28	9.99996E-01	3
12	12	1	25	1.61102E-06	28	9.99999E-01	3
13	13	1	26	3.67547E-06	28	1.00000E+00	3
14	14	1	28	2.95231E-07	28	1.00000E+00	3
15	15	1	2	6.39406E-05	28	9.99929E-01	2
16	16	1	2	7.64618E-05	28	9.99938E-01	2
17	17	1	2	9.14770E-05	28	9.99858E-01	3
18	18	2	28	3.36478E-05	28	1.00001E+00	3
19	19	2	2	4.54975E-06	28	1.00000E+00	3
20	20	1	2	6.84650E-05	28	9.99872E-01	3
21	21	2	28	3.42746E-05	28	1.00001E+00	3
22	22	1	6	5.43675E-05	28	9.99950E-01	3
23	23	1	27	7.16428E-06	28	1.00001E+00	4
24	24	1	28	2.38330E-05	9	1.00002E+00	4
25	25	1	26	3.35758E-05	8	1.00001E+00	5
26	26	1	28	1.49048E-05	6	1.00001E+00	6
27	27	1	1	1.15270E-05	5	1.00001E+00	8

5 361 -2.95269E-06 1.02239E+00 -5.86852E-06 -2.53599E-05 -1.54551E-05 .00000E+00 .0167

final monitor

lambda 1.02236E+00 production/absorption 1.08575E+00 angular flux on 16

- elapsed time .02 min.

1 1040 d, second part of sas2h pass to make library

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

1	1	.00000E+00	1.97644E-02	.00000E+00	4.90881E-03	.00000E+00
2	1	3.95287E-02	5.92931E-02	2.48366E-01	1.47264E-02	.00000E+00
3	1	7.90575E-02	1.18586E-01	4.96733E-01	5.89057E-02	.00000E+00
4	1	1.58115E-01	1.97644E-01	9.93466E-01	9.81762E-02	.00000E+00
5	1	2.37172E-01	2.76701E-01	1.49020E+00	1.37447E-01	.00000E+00
6	1	3.16230E-01	3.55759E-01	1.98693E+00	1.76717E-01	.00000E+00
7	1	3.95288E-01	4.34816E-01	2.48366E+00	2.15988E-01	.00000E+00
8	1	4.74345E-01	5.13874E-01	2.98040E+00	2.55258E-01	.00000E+00
9	1	5.53403E-01	5.73167E-01	3.47713E+00	1.42365E-01	.00000E+00
10	1	5.92931E-01	6.12696E-01	3.72550E+00	1.52173E-01	.00000E+00
11	2	6.32460E-01	6.42620E-01	3.97386E+00	8.20460E-02	.00000E+00
12	2	6.52780E-01	6.62940E-01	4.10154E+00	8.46405E-02	.00000E+00
13	3	6.73100E-01	6.96583E-01	4.22921E+00	2.05562E-01	.00000E+00
14	3	7.20067E-01	7.43550E-01	4.52431E+00	2.19422E-01	.00000E+00
15	3	7.67033E-01	7.90517E-01	4.81941E+00	2.33282E-01	.00000E+00
16	4	8.14000E-01	8.62795E-01	5.11451E+00	5.29051E-01	2.33536E-02
17	4	9.11591E-01	9.60386E-01	5.72769E+00	5.88891E-01	2.54094E-02
18	4	1.00918E+00	1.10677E+00	6.34088E+00	1.35731E+00	5.73426E-02
19	4	1.20436E+00	1.30195E+00	7.56724E+00	1.59667E+00	6.60501E-02
20	4	1.39955E+00	1.49714E+00	8.79360E+00	1.83603E+00	7.48427E-02
21	4	1.59473E+00	1.69232E+00	1.00200E+01	2.07540E+00	8.36843E-02
22	4	1.78991E+00	1.88750E+00	1.12463E+01	2.31478E+00	9.25790E-02
23	4	1.98509E+00	2.08268E+00	1.24727E+01	2.55412E+00	1.01535E-01
24	4	2.18027E+00	2.27786E+00	1.36991E+01	2.79349E+00	1.10567E-01
25	4	2.37545E+00	2.47305E+00	1.49254E+01	3.05285E+00	1.19692E-01
26	4	2.57064E+00	2.66823E+00	1.61518E+01	3.27221E+00	1.28942E-01
27	4	2.76582E+00	2.81461E+00	1.73781E+01	1.72587E+00	6.79867E-02
28	4	2.86341E+00	2.91220E+00	1.79913E+01	1.78571E+00	7.03808E-02
29		2.96100E+00		1.86045E+01		

1 1040 d, second part of sas2h pass to make library

0 total flux

0 int. grp. 1 grp. 2 grp. 3 grp. 4 grp. 5 grp. 6 grp. 7 grp. 8

1	1.30631E-02	9.11126E-02	1.12710E-01	6.90754E-02	1.02785E-01	1.92805E-01	1.93104E-01	1.47053E-01
2	1.30578E-02	9.10612E-02	1.12645E-01	6.90372E-02	1.02733E-01	1.92719E-01	1.93065E-01	1.47028E-01
3	1.30586E-02	9.10743E-02	1.12667E-01	6.90552E-02	1.02767E-01	1.92789E-01	1.93117E-01	1.47039E-01
4	1.30653E-02	9.11553E-02	1.12780E-01	6.91335E-02	1.02897E-01	1.93031E-01	1.93273E-01	1.47068E-01
5	1.30777E-02	9.12977E-02	1.12975E-01	6.92665E-02	1.03113E-01	1.93430E-01	1.93521E-01	1.47112E-01

6	1.30946E-02	9.14936E-02	1.13245E-01	6.94499E-02	1.03410E-01	1.93978E-01	1.93859E-01	1.47168E-01
7	1.31160E-02	9.17443E-02	1.13591E-01	6.96879E-02	1.03798E-01	1.94694E-01	1.94300E-01	1.47238E-01
8	1.31417E-02	9.20575E-02	1.14031E-01	6.99953E-02	1.04303E-01	1.95629E-01	1.94877E-01	1.47321E-01
9	1.31634E-02	9.23330E-02	1.14426E-01	7.02773E-02	1.04771E-01	1.96496E-01	1.95411E-01	1.47391E-01
10	1.31782E-02	9.25485E-02	1.14755E-01	7.05256E-02	1.05192E-01	1.97282E-01	1.95898E-01	1.47439E-01
11	1.31906E-02	9.27279E-02	1.15031E-01	7.07340E-02	1.05545E-01	1.97957E-01	1.96315E-01	1.47484E-01
12	1.32041E-02	9.28611E-02	1.15205E-01	7.08424E-02	1.05715E-01	1.98294E-01	1.96518E-01	1.47528E-01
13	1.32324E-02	9.31038E-02	1.15475E-01	7.09799E-02	1.05904E-01	1.98632E-01	1.96709E-01	1.47596E-01
14	1.32739E-02	9.34906E-02	1.15930E-01	7.12352E-02	1.06278E-01	1.99290E-01	1.97088E-01	1.47688E-01
15	1.33228E-02	9.39882E-02	1.16555E-01	7.16218E-02	1.06874E-01	2.00361E-01	1.97715E-01	1.47790E-01
16	1.33988E-02	9.47851E-02	1.17573E-01	7.22669E-02	1.07888E-01	2.02200E-01	1.98805E-01	1.47960E-01
17	1.34738E-02	9.55779E-02	1.18590E-01	7.29151E-02	1.08917E-01	2.04091E-01	1.99946E-01	1.48157E-01
18	1.35332E-02	9.62197E-02	1.19424E-01	7.34503E-02	1.09782E-01	2.05724E-01	2.00960E-01	1.48361E-01
19	1.35850E-02	9.67892E-02	1.20172E-01	7.39342E-02	1.10571E-01	2.07248E-01	2.01925E-01	1.48573E-01
20	1.36154E-02	9.71309E-02	1.20628E-01	7.42324E-02	1.11064E-01	2.08229E-01	2.02562E-01	1.48728E-01
21	1.36343E-02	9.73503E-02	1.20927E-01	7.44284E-02	1.11392E-01	2.08899E-01	2.03006E-01	1.48844E-01
22	1.36464E-02	9.74953E-02	1.21125E-01	7.45592E-02	1.11613E-01	2.09362E-01	2.03319E-01	1.48931E-01
23	1.36540E-02	9.75851E-02	1.21254E-01	7.46450E-02	1.11760E-01	2.09678E-01	2.03536E-01	1.48993E-01
24	1.36584E-02	9.76397E-02	1.21332E-01	7.46975E-02	1.11851E-01	2.09879E-01	2.03676E-01	1.49035E-01
25	1.36608E-02	9.76647E-02	1.21369E-01	7.47225E-02	1.11895E-01	2.09982E-01	2.03749E-01	1.49056E-01
26	1.36598E-02	9.76614E-02	1.21367E-01	7.47212E-02	1.11895E-01	2.09990E-01	2.03756E-01	1.49057E-01
27	1.36581E-02	9.76412E-02	1.21341E-01	7.47037E-02	1.11866E-01	2.09935E-01	2.03719E-01	1.49043E-01
28	1.36555E-02	9.76115E-02	1.21301E-01	7.46772E-02	1.11822E-01	2.09844E-01	2.03656E-01	1.49023E-01

0 int.	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.15991E-01	1.07237E-01	1.01086E-01	6.55136E-02	5.59119E-02	5.31478E-02	2.89329E-02	1.59856E-02
2	1.15991E-01	1.07239E-01	1.01089E-01	6.55185E-02	5.59168E-02	5.31550E-02	2.89353E-02	1.59868E-02
3	1.15989E-01	1.07230E-01	1.01019E-01	6.54946E-02	5.58941E-02	5.31213E-02	2.89285E-02	1.59829E-02
4	1.15986E-01	1.07209E-01	1.00970E-01	6.54371E-02	5.58395E-02	5.30402E-02	2.89120E-02	1.59735E-02
5	1.15979E-01	1.07176E-01	1.00895E-01	6.53495E-02	5.57566E-02	5.29168E-02	2.88873E-02	1.59594E-02
6	1.15969E-01	1.07132E-01	1.00795E-01	6.52301E-02	5.56444E-02	5.27494E-02	2.88548E-02	1.59406E-02
7	1.15958E-01	1.07074E-01	1.00658E-01	6.50737E-02	5.54981E-02	5.25305E-02	2.88136E-02	1.59165E-02
8	1.15945E-01	1.06996E-01	1.00480E-01	6.48677E-02	5.53064E-02	5.22426E-02	2.87618E-02	1.58856E-02
9	1.15926E-01	1.06922E-01	1.00313E-01	6.46753E-02	5.51283E-02	5.19744E-02	2.87152E-02	1.58573E-02
10	1.15936E-01	1.06853E-01	1.00158E-01	6.45008E-02	5.49672E-02	5.17308E-02	2.86745E-02	1.58320E-02
11	1.15942E-01	1.06799E-01	1.00036E-01	6.43630E-02	5.48394E-02	5.15385E-02	2.86386E-02	1.58108E-02
12	1.15938E-01	1.06779E-01	9.99898E-02	6.43094E-02	5.47870E-02	5.14616E-02	2.86194E-02	1.58008E-02
13	1.15893E-01	1.06753E-01	9.99274E-02	6.42270E-02	5.47117E-02	5.13468E-02	2.86027E-02	1.57901E-02
14	1.15823E-01	1.06690E-01	9.97850E-02	6.40486E-02	5.45524E-02	5.11008E-02	2.85751E-02	1.57695E-02
15	1.15748E-01	1.06587E-01	9.95517E-02	6.37679E-02	5.43084E-02	5.07145E-02	2.85335E-02	1.57373E-02
16	1.15644E-01	1.06416E-01	9.91649E-02	6.33054E-02	5.38918E-02	5.00737E-02	2.84578E-02	1.56825E-02
17	1.15551E-01	1.06248E-01	9.87784E-02	6.28431E-02	5.34749E-02	4.94298E-02	2.83675E-02	1.56230E-02
18	1.15485E-01	1.06105E-01	9.84479E-02	6.24484E-02	5.31103E-02	4.88787E-02	2.82707E-02	1.55654E-02
19	1.15433E-01	1.05973E-01	9.81396E-02	6.20809E-02	5.27655E-02	4.83651E-02	2.81684E-02	1.55071E-02
20	1.15409E-01	1.05890E-01	9.79408E-02	6.18437E-02	5.25383E-02	4.80528E-02	2.80916E-02	1.54651E-02
21	1.15397E-01	1.05833E-01	9.78018E-02	6.16789E-02	5.23780E-02	4.78013E-02	2.80332E-02	1.54339E-02
22	1.15391E-01	1.05798E-01	9.77031E-02	6.15616E-02	5.22627E-02	4.76362E-02	2.79888E-02	1.54106E-02
23	1.15388E-01	1.05786E-01	9.76331E-02	6.14782E-02	5.21802E-02	4.75187E-02	2.79560E-02	1.53935E-02
24	1.15386E-01	1.05746E-01	9.75854E-02	6.14214E-02	5.21239E-02	4.74387E-02	2.79336E-02	1.53818E-02
25	1.15384E-01	1.05734E-01	9.75569E-02	6.13876E-02	5.20906E-02	4.73912E-02	2.79210E-02	1.53752E-02
26	1.15381E-01	1.05730E-01	9.75478E-02	6.13767E-02	5.20808E-02	4.73765E-02	2.79191E-02	1.53741E-02
27	1.15379E-01	1.05732E-01	9.75531E-02	6.13834E-02	5.20887E-02	4.73867E-02	2.79264E-02	1.53769E-02
28	1.15378E-01	1.05738E-01	9.75685E-02	6.14018E-02	5.21083E-02	4.74137E-02	2.79347E-02	1.53820E-02

0 int.	grp. 17	grp. 18	grp. 19	grp. 20	grp. 21	grp. 22	grp. 23	grp. 24
1	6.94169E-03	5.15677E-03	1.04522E-02	3.48803E-02	1.07715E-02	2.19647E-02	7.43973E-02	6.11483E-02
2	6.94248E-03	5.15838E-03	1.04537E-02	3.48831E-02	1.07726E-02	2.19666E-02	7.43925E-02	6.11342E-02
3	6.93900E-03	5.14651E-03	1.04471E-02	3.48684E-02	1.07613E-02	2.19809E-02	7.42767E-02	6.10113E-02
4	6.93057E-03	5.12816E-03	1.04314E-02	3.48337E-02	1.07353E-02	2.18498E-02	7.40220E-02	6.07472E-02
5	6.91774E-03	5.09532E-03	1.04077E-02	3.47818E-02	1.06961E-02	2.17278E-02	7.36443E-02	6.03563E-02
6	6.90032E-03	5.05026E-03	1.03756E-02	3.47125E-02	1.06429E-02	2.15630E-02	7.31411E-02	5.98358E-02
7	6.87751E-03	4.99051E-03	1.03339E-02	3.46238E-02	1.05735E-02	2.13482E-02	7.24998E-02	5.91743E-02

8	6.84746E-03	4.91067E-03	1.02795E-02	3.45086E-02	1.04822E-02	2.10576E-02	7.16894E-02	5.83441E-02
9	6.81942E-03	4.88538E-03	1.02291E-02	3.44036E-02	1.03971E-02	2.08076E-02	7.09605E-02	5.76034E-02
10	6.79384E-03	4.86615E-03	1.01835E-02	3.43099E-02	1.03194E-02	2.05725E-02	7.03268E-02	5.69669E-02
11	6.77361E-03	4.71321E-03	1.01471E-02	3.42345E-02	1.02598E-02	2.03954E-02	6.98653E-02	5.65237E-02
12	6.76557E-03	4.69444E-03	1.01321E-02	3.42020E-02	1.02390E-02	2.03362E-02	6.97226E-02	5.64109E-02
13	6.75366E-03	4.65958E-03	1.01120E-02	3.41611E-02	1.02047E-02	2.02276E-02	6.94480E-02	5.61308E-02
14	6.72790E-03	4.58115E-03	1.00696E-02	3.40782E-02	1.01267E-02	1.99813E-02	6.88385E-02	5.54928E-02
15	6.68714E-03	4.45700E-03	1.00052E-02	3.39507E-02	1.00029E-02	1.95979E-02	6.79476E-02	5.45820E-02
16	6.61995E-03	4.23675E-03	9.89262E-03	3.37396E-02	9.79978E-03	1.89639E-02	6.65751E-02	5.32303E-02
17	6.55290E-03	4.01852E-03	9.77843E-03	3.35165E-02	9.59862E-03	1.83353E-02	6.51780E-02	5.18793E-02
18	6.49571E-03	3.85638E-03	9.67505E-03	3.33034E-02	9.42917E-03	1.78142E-02	6.38443E-02	5.05816E-02
19	6.44216E-03	3.71947E-03	9.57562E-03	3.30901E-02	9.27190E-03	1.73356E-02	6.25040E-02	4.92716E-02
20	6.40747E-03	3.64195E-03	9.50892E-03	3.29598E-02	9.17041E-03	1.70303E-02	6.15494E-02	4.83350E-02
21	6.38321E-03	3.59261E-03	9.46147E-03	3.28287E-02	9.09941E-03	1.68178E-02	6.08343E-02	4.76327E-02
22	6.36584E-03	3.55988E-03	9.42710E-03	3.27459E-02	9.04842E-03	1.66657E-02	6.02929E-02	4.71011E-02
23	6.35348E-03	3.53776E-03	9.40240E-03	3.26851E-02	9.01177E-03	1.65563E-02	5.98869E-02	4.67023E-02
24	6.34510E-03	3.52311E-03	9.38546E-03	3.26429E-02	8.98642E-03	1.64800E-02	5.95956E-02	4.64128E-02
25	6.34021E-03	3.51411E-03	9.37535E-03	3.26178E-02	8.97069E-03	1.64315E-02	5.94000E-02	4.62181E-02
26	6.33895E-03	3.51021E-03	9.37219E-03	3.26092E-02	8.96424E-03	1.64095E-02	5.93053E-02	4.61142E-02
27	6.33966E-03	3.51041E-03	9.37432E-03	3.26153E-02	8.96549E-03	1.64098E-02	5.92958E-02	4.60909E-02
28	6.34271E-03	3.51357E-03	9.37994E-03	3.26301E-02	8.97200E-03	1.64256E-02	5.93455E-02	4.61238E-02

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

1	2.76841E-02	1.99823E-02	3.79587E-03
2	2.76737E-02	1.99707E-02	3.79306E-03
3	2.76081E-02	1.99133E-02	3.78129E-03
4	2.74687E-02	1.97921E-02	3.75634E-03
5	2.72622E-02	1.96114E-02	3.71861E-03
6	2.69868E-02	1.93684E-02	3.66698E-03
7	2.66370E-02	1.90571E-02	3.59948E-03
8	2.62000E-02	1.86651E-02	3.51247E-03
9	2.58125E-02	1.83160E-02	3.43384E-03
10	2.54844E-02	1.80181E-02	3.36633E-03
11	2.52650E-02	1.78264E-02	3.32550E-03
12	2.52179E-02	1.77973E-02	3.32276E-03
13	2.50619E-02	1.76540E-02	3.28428E-03
14	2.47058E-02	1.73142E-02	3.19161E-03
15	2.42130E-02	1.68350E-02	3.05401E-03
16	2.34987E-02	1.61513E-02	2.85330E-03
17	2.27967E-02	1.55051E-02	2.68047E-03
18	2.21269E-02	1.49207E-02	2.54960E-03
19	2.14546E-02	1.43525E-02	2.43131E-03
20	2.09787E-02	1.39678E-02	2.35915E-03
21	2.06254E-02	1.36921E-02	2.31045E-03
22	2.03608E-02	1.34919E-02	2.27665E-03
23	2.01638E-02	1.33463E-02	2.25264E-03
24	2.00215E-02	1.32429E-02	2.23593E-03
25	1.99253E-02	1.31734E-02	2.22483E-03
26	1.98715E-02	1.31333E-02	2.21844E-03
27	1.98655E-02	1.31191E-02	2.21603E-03
28	1.98661E-02	1.31221E-02	2.21593E-03

- elapsed time .02 min.

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	5.08807E-04	6.73448E-04	5.60754E-05	-7.29488E-04	9.99952E-01
2	.00000E+00	.00000E+00	3.86411E-04	6.18527E-03	8.12940E-03	1.76752E-04	-7.91942E-03	9.99961E-01
3	.00000E+00	.00000E+00	3.86166E-03	5.47456E-03	1.42437E-02	9.29477E-05	-1.04747E-02	9.99978E-01
4	.00000E+00	.00000E+00	5.60190E-03	3.60437E-03	1.23842E-02	4.20627E-05	-6.82427E-03	9.99988E-01
5	.00000E+00	.00000E+00	1.02841E-02	1.15346E-02	2.08972E-02	4.97074E-05	-1.06226E-02	9.99991E-01
6	.00000E+00	.00000E+00	2.15307E-02	3.45064E-02	4.10111E-02	8.43132E-05	-1.95646E-02	9.99988E-01
7	.00000E+00	.00000E+00	4.22615E-02	6.09831E-02	5.41484E-02	6.12344E-05	-1.19475E-02	9.99989E-01

8	.00000E+00	.00000E+00	5.63771E-02	7.83791E-02	5.87701E-02	3.64181E-05	-2.42432E-03	9.99912E-01
9	.00000E+00	.00000E+00	5.78094E-02	7.26623E-02	5.75418E-02	2.92961E-05	2.44917E-04	9.99885E-01
10	.00000E+00	.00000E+00	5.71180E-02	6.92491E-02	5.56520E-02	3.61033E-05	1.43595E-03	9.99895E-01
11	.00000E+00	.00000E+00	5.59294E-02	6.57025E-02	5.24543E-02	5.52482E-05	3.42326E-03	9.99939E-01
12	.00000E+00	.00000E+00	4.54778E-02	3.51525E-02	4.13612E-02	6.05469E-05	4.05705E-03	9.99979E-01
13	.00000E+00	.00000E+00	4.06273E-02	2.85889E-02	3.66633E-02	8.46895E-05	3.88059E-03	9.99968E-01
14	.00000E+00	.00000E+00	3.95045E-02	2.81294E-02	3.36026E-02	1.35753E-04	5.76659E-03	9.99988E-01
15	.00000E+00	.00000E+00	2.16405E-02	1.08173E-02	2.02651E-02	1.12237E-04	1.26324E-03	9.99998E-01
16	.00000E+00	.00000E+00	1.41888E-02	4.54909E-03	1.34020E-02	7.58638E-05	7.10851E-04	1.00000E+00
17	.00000E+00	.00000E+00	7.27320E-03	1.27368E-03	6.62690E-03	3.64606E-05	6.09795E-04	1.00001E+00
18	.00000E+00	.00000E+00	6.43510E-03	8.98264E-04	4.90850E-03	2.81071E-05	1.49873E-03	9.99994E-01
19	.00000E+00	.00000E+00	1.05953E-02	2.83870E-03	9.42141E-03	6.35785E-05	1.10845E-03	9.99990E-01
20	.00000E+00	.00000E+00	2.58651E-02	2.04986E-02	2.31765E-02	2.67345E-04	2.42103E-03	1.00001E+00
21	.00000E+00	.00000E+00	1.23161E-02	4.04375E-03	1.05197E-02	1.01411E-04	1.69514E-03	9.99988E-01
22	.00000E+00	.00000E+00	2.42796E-02	1.22770E-02	1.91057E-02	2.35809E-04	4.95791E-03	1.00001E+00
23	.00000E+00	.00000E+00	6.26124E-02	7.51956E-02	4.95789E-02	1.09158E-03	1.21405E-02	1.00002E+00
24	.00000E+00	.00000E+00	6.67371E-02	7.12650E-02	5.50100E-02	1.29652E-03	1.04295E-02	1.00002E+00
25	.00000E+00	.00000E+00	4.44664E-02	3.02755E-02	3.89495E-02	7.69476E-04	4.74715E-03	1.00001E+00
26	.00000E+00	.00000E+00	3.55385E-02	3.38693E-02	3.12828E-02	7.85284E-04	3.47208E-03	1.00001E+00
27	.00000E+00	.00000E+00	1.20651E-02	7.35278E-03	1.12012E-02	2.79875E-04	5.84006E-04	1.00000E+00
28	.00000E+00	.00000E+00	7.80781E-01	7.75815E-01	7.80781E-01	6.14270E-03	-6.12034E-03	9.99972E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*db**2	total flux
1	1.31853E-02	-7.29488E-04	1.30674E-02	.00000E+00	3.72436E-11	.00000E+00	2.01837E-05	1.64865E-02
2	9.26630E-02	-7.91942E-03	9.11561E-02	.00000E+00	.00000E+00	.00000E+00	8.98523E-05	1.15361E-01
3	1.14955E-01	-1.04747E-02	1.12766E-01	.00000E+00	.00000E+00	.00000E+00	9.25174E-05	1.42856E-01
4	7.06657E-02	-6.82427E-03	6.91094E-02	.00000E+00	.00000E+00	.00000E+00	4.18087E-05	8.76592E-02
5	1.05432E-01	-1.06626E-02	1.02834E-01	.00000E+00	.00000E+00	.00000E+00	4.94142E-05	1.30585E-01
6	1.97731E-01	-1.95644E-02	1.92888E-01	.00000E+00	.00000E+00	.00000E+00	8.34434E-05	2.44938E-01
7	1.96177E-01	-1.94752E-02	1.93146E-01	.00000E+00	.00000E+00	.00000E+00	5.92902E-05	2.44337E-01
8	1.47464E-01	-2.42632E-03	1.47040E-01	.00000E+00	.00000E+00	.00000E+00	3.27367E-05	1.85039E-01
9	1.15989E-01	2.44917E-04	1.15990E-01	.00000E+00	.00000E+00	.00000E+00	2.16887E-05	1.45719E-01
10	1.06813E-01	1.43595E-03	1.07234E-01	.00000E+00	.00000E+00	.00000E+00	1.91827E-05	1.34530E-01
11	1.00069E-01	3.42326E-03	1.01028E-01	.00000E+00	.00000E+00	.00000E+00	1.79374E-05	1.26438E-01
12	6.44000E-02	4.05705E-03	6.55044E-02	.00000E+00	.00000E+00	.00000E+00	1.05291E-05	8.17133E-02
13	5.48750E-02	3.88059E-03	5.59031E-02	.00000E+00	.00000E+00	.00000E+00	8.75085E-06	6.96860E-02
14	5.15911E-02	5.76659E-03	5.31350E-02	.00000E+00	.00000E+00	.00000E+00	8.44713E-06	6.59272E-02
15	2.86524E-02	1.26324E-03	2.89305E-02	.00000E+00	.00000E+00	.00000E+00	4.45646E-06	3.61966E-02
16	1.58179E-02	7.10851E-04	1.59863E-02	.00000E+00	.00000E+00	.00000E+00	2.22619E-06	1.99934E-02
17	6.77923E-03	6.09795E-04	6.94042E-03	.00000E+00	.00000E+00	.00000E+00	8.83672E-07	8.63365E-03
18	4.72622E-03	1.49873E-03	5.15355E-03	.00000E+00	.00000E+00	.00000E+00	6.23650E-07	6.24587E-03
19	1.01572E-02	1.10845E-03	1.04495E-02	.00000E+00	.00000E+00	.00000E+00	1.35716E-06	1.29705E-02
20	3.42582E-02	2.42103E-03	3.48768E-02	.00000E+00	.00000E+00	.00000E+00	5.09612E-06	4.34790E-02
21	1.02744E-02	1.69514E-03	1.07680E-02	.00000E+00	.00000E+00	.00000E+00	1.21584E-06	1.32601E-02
22	2.04379E-02	4.95791E-03	2.19562E-02	.00000E+00	.00000E+00	.00000E+00	2.44508E-06	2.67465E-02
23	6.99665E-02	1.21406E-02	7.43764E-02	.00000E+00	.00000E+00	.00000E+00	7.49844E-06	9.09125E-02
24	5.66064E-02	1.04295E-02	6.11340E-02	.00000E+00	.00000E+00	.00000E+00	4.54638E-06	7.41708E-02
25	2.53000E-02	4.74715E-03	2.76795E-02	.00000E+00	.00000E+00	.00000E+00	1.58049E-06	3.33762E-02
26	1.78504E-02	3.47208E-03	1.99808E-02	.00000E+00	.00000E+00	.00000E+00	8.34278E-07	2.38563E-02
27	3.32885E-03	5.84006E-04	3.79604E-03	.00000E+00	.00000E+00	.00000E+00	9.83253E-08	4.50026E-03
28	1.73609E+00	-6.12038E-03	1.74283E+00	.00000E+00	3.72436E-11	.00000E+00	5.88445E-04	2.18562E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.24988E-04	1.68657E-04	2.53012E-06	-1.65172E-04	1.00001E+00
2	.00000E+00	.00000E+00	2.94556E-05	1.46578E-03	1.05178E-03	1.41177E-05	-1.03644E-03	1.00000E+00
3	.00000E+00	.00000E+00	1.51427E-04	2.77590E-03	8.77709E-04	2.03129E-05	-7.46537E-04	9.99995E-01
4	.00000E+00	.00000E+00	2.88526E-04	2.30800E-03	2.98836E-04	1.31156E-05	-2.35979E-05	9.99996E-01
5	.00000E+00	.00000E+00	6.19828E-04	4.42024E-03	2.79546E-04	1.68779E-05	3.25387E-04	1.00000E+00
6	.00000E+00	.00000E+00	1.02631E-03	1.24084E-02	1.69533E-04	2.70751E-05	8.29713E-04	9.99999E-01
7	.00000E+00	.00000E+00	6.74451E-04	1.25976E-02	6.33222E-05	2.68222E-05	5.84320E-04	9.99999E-01
8	.00000E+00	.00000E+00	1.17649E-04	9.21166E-03	4.43556E-04	2.21210E-05	-3.48074E-04	1.00002E+00

9	.00000E+00	.00000E+00	4.45404E-04	6.36399E-03	5.30509E-05	7.67624E-05	3.15607E-04	9.99976E-01
10	.00000E+00	.00000E+00	5.31162E-05	4.99400E-03	4.95492E-05	5.94116E-05	-5.58461E-05	1.00000E+00
11	.00000E+00	.00000E+00	4.95526E-05	4.46284E-03	5.04012E-05	9.01826E-05	-9.10230E-05	9.99998E-01
12	.00000E+00	.00000E+00	5.04015E-05	2.76630E-03	5.14660E-05	5.68334E-06	-6.75069E-06	1.00000E+00
13	.00000E+00	.00000E+00	5.14661E-05	2.35786E-03	4.80988E-05	6.31783E-06	-2.94857E-06	1.00000E+00
14	.00000E+00	.00000E+00	4.80988E-05	2.22089E-03	4.18529E-05	8.48148E-06	-2.23611E-06	1.00000E+00
15	.00000E+00	.00000E+00	4.44262E-05	1.20907E-03	4.94833E-05	6.26148E-06	-1.12508E-05	9.99948E-01
16	.00000E+00	.00000E+00	5.53666E-05	6.39105E-04	5.53666E-05	3.78787E-06	-3.74473E-06	9.99944E-01
17	.00000E+00	.00000E+00	5.99443E-05	2.38686E-04	5.87533E-05	1.77427E-06	-5.64032E-07	9.99971E-01
18	.00000E+00	.00000E+00	6.16488E-05	1.56226E-04	5.04447E-05	1.30066E-06	9.90450E-06	9.99999E-01
19	.00000E+00	.00000E+00	5.24101E-05	3.88229E-04	5.72797E-05	3.01256E-06	-7.88085E-06	9.99999E-01
20	.00000E+00	.00000E+00	6.98617E-05	1.44216E-03	6.13114E-05	1.23987E-05	-3.75649E-06	9.99963E-01
21	.00000E+00	.00000E+00	8.02968E-05	3.63502E-04	8.68274E-05	4.50589E-06	-1.10328E-05	9.99998E-01
22	.00000E+00	.00000E+00	1.14353E-04	7.89522E-04	1.05490E-04	1.01916E-05	-1.28942E-06	9.99998E-01
23	.00000E+00	.00000E+00	1.63415E-04	2.85667E-03	2.09727E-04	4.66582E-05	-9.29758E-05	1.00000E+00
24	.00000E+00	.00000E+00	2.70704E-04	2.18185E-03	2.99426E-04	5.35567E-05	-8.23066E-05	1.00000E+00
25	.00000E+00	.00000E+00	2.77361E-04	8.81998E-04	2.27013E-04	3.12126E-05	1.91191E-05	1.00000E+00
26	.00000E+00	.00000E+00	1.18124E-04	6.91231E-04	9.13480E-05	3.10308E-05	-4.26173E-06	1.00000E+00
27	.00000E+00	.00000E+00	2.64874E-05	1.45979E-04	7.52139E-08	1.08304E-05	1.55798E-05	1.00000E+00
28	.00000E+00	.00000E+00	4.99988E-03	8.05625E-02	4.99988E-03	6.06334E-04	-6.00056E-04	9.99976E-01

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*adj**2	total flux
1	1.32122E-02	-8.94660E-04	1.31853E-02	-7.29488E-04	6.02595E-06	.00000E+00	1.66582E-06	2.19984E-03
2	9.29294E-02	-8.95586E-03	9.26630E-02	-7.91942E-03	.00000E+00	.00000E+00	1.12058E-05	1.54678E-02
3	1.15283E-01	-1.12212E-02	1.14955E-01	-1.04747E-02	.00000E+00	.00000E+00	1.27206E-05	1.91888E-02
4	7.08824E-02	-6.84786E-03	7.06657E-02	-6.88427E-03	.00000E+00	.00000E+00	7.44974E-06	1.17996E-02
5	1.05770E-01	-1.03592E-02	1.05432E-01	-1.06626E-02	.00000E+00	.00000E+00	8.64313E-06	1.76073E-02
6	1.98404E-01	-1.87349E-02	1.97731E-01	-1.95646E-02	.00000E+00	.00000E+00	1.01784E-05	3.30253E-02
7	1.96582E-01	-1.13632E-02	1.96177E-01	-1.19475E-02	.00000E+00	.00000E+00	8.35573E-06	3.27403E-02
8	1.47551E-01	-2.77239E-03	1.47464E-01	-2.42432E-03	.00000E+00	.00000E+00	5.27678E-06	2.45873E-02
9	1.15930E-01	5.60524E-04	1.15959E-01	2.44917E-04	.00000E+00	.00000E+00	4.58694E-06	1.95256E-02
10	1.06774E-01	1.38010E-03	1.06813E-01	1.43695E-03	.00000E+00	.00000E+00	4.91625E-06	1.78002E-02
11	9.99771E-02	3.33223E-03	1.00069E-01	3.42526E-03	.00000E+00	.00000E+00	4.77306E-06	1.66707E-02
12	6.42927E-02	4.05029E-03	6.44000E-02	4.05705E-03	.00000E+00	.00000E+00	3.22043E-06	1.07239E-02
13	5.47702E-02	3.87764E-03	5.48750E-02	3.88059E-03	.00000E+00	.00000E+00	2.73792E-06	9.13656E-03
14	5.14373E-02	5.76435E-03	5.15911E-02	5.76659E-03	.00000E+00	.00000E+00	2.56605E-06	8.58426E-03
15	2.86134E-02	1.25199E-03	2.86524E-02	1.26324E-03	.00000E+00	.00000E+00	1.40600E-06	4.77207E-03
16	1.57978E-02	7.07106E-04	1.58179E-02	7.10851E-04	.00000E+00	.00000E+00	7.76270E-07	2.63460E-03
17	6.76315E-03	6.09231E-04	6.77923E-03	6.09795E-04	.00000E+00	.00000E+00	3.32513E-07	1.12839E-03
18	4.68868E-03	1.50864E-03	4.72622E-03	1.49873E-03	.00000E+00	.00000E+00	2.30829E-07	7.84039E-04
19	1.01271E-02	1.10057E-03	1.01572E-02	1.10845E-03	.00000E+00	.00000E+00	4.97368E-07	1.69012E-03
20	3.41952E-02	2.41728E-03	3.42582E-02	2.42108E-03	.00000E+00	.00000E+00	1.67613E-06	5.70367E-03
21	1.02528E-02	1.68411E-03	1.02744E-02	1.69514E-03	.00000E+00	.00000E+00	5.01216E-07	1.70840E-03
22	2.03196E-02	4.93662E-03	2.04379E-02	4.93791E-03	.00000E+00	.00000E+00	9.94652E-07	3.39463E-03
23	6.96812E-02	1.20478E-02	6.99665E-02	1.21406E-02	.00000E+00	.00000E+00	3.39660E-06	1.16335E-02
24	5.63807E-02	1.03470E-02	5.66064E-02	1.04295E-02	.00000E+00	.00000E+00	2.75136E-06	9.41220E-03
25	2.52058E-02	4.76627E-03	2.53000E-02	4.74715E-03	.00000E+00	.00000E+00	1.21369E-06	4.20734E-03
26	1.77922E-02	3.46782E-03	1.78504E-02	3.47208E-03	.00000E+00	.00000E+00	8.47439E-07	2.96896E-03
27	3.32867E-03	5.99586E-04	3.32855E-03	5.84006E-04	.00000E+00	.00000E+00	1.53309E-07	5.54084E-04
28	1.73691E+00	-6.72040E-03	1.73609E+00	-6.12038E-03	6.02595E-06	.00000E+00	1.08054E-04	2.89446E-01

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	.00000E+00	.00000E+00	2.69753E-04	3.57040E-04	2.97295E-05	-3.86751E-04	9.99985E-01
2	.00000E+00	.00000E+00	2.04862E-04	3.30162E-03	4.33957E-03	9.43482E-05	-4.22868E-03	9.99987E-01
3	.00000E+00	.00000E+00	2.06094E-03	2.92649E-03	7.61417E-03	4.96864E-05	-5.60274E-03	9.99991E-01
4	.00000E+00	.00000E+00	2.99355E-03	1.92964E-03	6.63005E-03	2.25188E-05	-3.65894E-03	9.99994E-01
5	.00000E+00	.00000E+00	5.50080E-03	6.18498E-03	1.12053E-02	2.66537E-05	-5.73107E-03	9.99995E-01
6	.00000E+00	.00000E+00	1.15329E-02	1.84974E-02	2.19843E-02	4.51967E-05	-1.04966E-02	9.99999E-01
7	.00000E+00	.00000E+00	2.26490E-02	3.23973E-02	2.87664E-02	3.25309E-05	-6.14985E-03	9.99992E-01
8	.00000E+00	.00000E+00	3.00023E-02	4.11818E-02	3.08789E-02	1.91347E-05	-8.92589E-04	9.99919E-01
9	.00000E+00	.00000E+00	3.04366E-02	3.80164E-02	3.01055E-02	1.53275E-05	3.19259E-04	9.99888E-01

10	.00000E+00	.00000E+00	2.99168E-02	3.61453E-02	2.90481E-02	1.88445E-05	8.52902E-04	9.99900E-01
11	.00000E+00	.00000E+00	2.92117E-02	3.41197E-02	2.72399E-02	2.86907E-05	1.94490E-03	9.99946E-01
12	.00000E+00	.00000E+00	2.36427E-02	1.81249E-02	2.13262E-02	3.12186E-05	2.28573E-03	9.99982E-01
13	.00000E+00	.00000E+00	2.10027E-02	1.47218E-02	1.88797E-02	4.36105E-05	2.08006E-03	9.99973E-01
14	.00000E+00	.00000E+00	2.05710E-02	1.43355E-02	1.71348E-02	6.91833E-05	3.17721E-03	9.99991E-01
15	.00000E+00	.00000E+00	1.10725E-02	5.62012E-03	1.05287E-02	5.83130E-05	4.85421E-04	1.00000E+00
16	.00000E+00	.00000E+00	7.31027E-03	2.36113E-03	6.95609E-03	3.95758E-05	3.14775E-04	1.00000E+00
17	.00000E+00	.00000E+00	3.75166E-03	6.52729E-04	3.39612E-03	1.86851E-05	3.36823E-04	1.00001E+00
18	.00000E+00	.00000E+00	3.31651E-03	4.31850E-04	2.35972E-03	1.35128E-05	9.43299E-04	9.99997E-01
19	.00000E+00	.00000E+00	5.41422E-03	1.44921E-03	4.80975E-03	3.24579E-05	5.72027E-04	9.99998E-01
20	.00000E+00	.00000E+00	1.32184E-02	1.05701E-02	1.19509E-02	1.37856E-04	1.12952E-03	1.00001E+00
21	.00000E+00	.00000E+00	6.28064E-03	2.02893E-03	5.27818E-03	5.08822E-05	9.51661E-04	9.99990E-01
22	.00000E+00	.00000E+00	1.22782E-02	6.01960E-03	9.36780E-03	1.15620E-04	2.79469E-03	1.00000E+00
23	.00000E+00	.00000E+00	3.09776E-02	3.74119E-02	2.45674E-02	5.43090E-04	5.86650E-03	1.00001E+00
24	.00000E+00	.00000E+00	3.27886E-02	3.50198E-02	2.70321E-02	6.37115E-04	5.11886E-03	1.00001E+00
25	.00000E+00	.00000E+00	2.17112E-02	1.47145E-02	1.89302E-02	3.73979E-04	2.40684E-03	1.00001E+00
26	.00000E+00	.00000E+00	1.72806E-02	1.61215E-02	1.48904E-02	3.72836E-04	2.01724E-03	1.00001E+00
27	.00000E+00	.00000E+00	5.85787E-03	3.41129E-03	5.19675E-03	1.29847E-04	5.11274E-04	1.00000E+00
28	.00000E+00	.00000E+00	4.00764E-01	3.97965E-01	4.00764E-01	3.05024E-03	-3.05835E-03	9.99971E-01
0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	r2n rate	fiss rate	flux*dr**2	total flux
1	1.33503E-02	-1.28141E-03	1.32122E-02	-8.94660E-04	1.97453E-11	.00000E+00	1.07007E-05	8.74062E-03
2	9.42736E-02	-1.31845E-02	9.29294E-02	-8.95586E-03	.00000E+00	.00000E+00	4.78553E-05	6.15782E-02
3	1.16919E-01	-1.68240E-02	1.15283E-01	-1.12212E-02	.00000E+00	.00000E+00	4.94563E-05	7.63650E-02
4	7.18507E-02	-1.05068E-02	7.08824E-02	-6.84786E-03	.00000E+00	.00000E+00	2.29828E-05	4.69294E-02
5	1.07230E-01	-1.60703E-02	1.05770E-01	-1.03392E-02	.00000E+00	.00000E+00	2.64964E-05	7.00213E-02
6	2.01003E-01	-2.92315E-02	1.98404E-01	-1.87349E-02	.00000E+00	.00000E+00	4.47304E-05	1.31301E-01
7	1.98091E-01	-1.75125E-02	1.96582E-01	-1.13632E-02	.00000E+00	.00000E+00	3.14980E-05	1.29804E-01
8	1.47844E-01	-3.66538E-03	1.47551E-01	-2.77239E-03	.00000E+00	.00000E+00	1.72005E-05	9.72229E-02
9	1.15706E-01	8.79823E-04	1.15930E-01	5.60524E-04	.00000E+00	.00000E+00	1.13474E-05	7.62395E-02
10	1.06524E-01	2.23300E-03	1.06774E-01	1.38010E-03	.00000E+00	.00000E+00	1.00126E-05	7.02198E-02
11	9.94111E-02	5.27714E-03	9.99771E-02	3.33223E-03	.00000E+00	.00000E+00	9.31503E-06	6.56599E-02
12	6.35998E-02	6.33602E-03	6.42927E-02	4.05029E-03	.00000E+00	.00000E+00	5.42889E-06	4.21522E-02
13	5.41550E-02	5.95770E-03	5.47702E-02	3.87764E-03	.00000E+00	.00000E+00	4.50622E-06	3.58846E-02
14	5.04836E-02	8.94156E-03	5.14373E-02	5.76435E-03	.00000E+00	.00000E+00	4.30490E-06	3.35983E-02
15	2.85108E-02	1.73741E-03	2.86134E-02	1.25199E-03	.00000E+00	.00000E+00	2.31536E-06	1.88060E-02
16	1.57187E-02	1.02188E-03	1.57978E-02	7.07106E-04	.00000E+00	.00000E+00	1.16547E-06	1.03772E-02
17	6.66279E-03	9.46053E-04	6.76315E-03	6.09231E-04	.00000E+00	.00000E+00	4.52860E-07	4.42453E-03
18	4.38194E-03	2.45195E-03	4.68868E-03	1.50864E-03	.00000E+00	.00000E+00	2.99826E-07	3.00277E-03
19	9.96347E-03	1.67260E-03	1.01271E-02	1.10057E-03	.00000E+00	.00000E+00	6.92853E-07	6.62169E-03
20	3.38777E-02	3.54679E-03	3.41952E-02	2.41728E-03	.00000E+00	.00000E+00	2.62780E-06	2.24198E-02
21	9.92844E-03	2.63577E-03	1.02328E-02	1.68411E-03	.00000E+00	.00000E+00	6.10040E-07	6.65319E-03
22	1.95691E-02	7.73131E-03	2.03196E-02	4.93662E-03	.00000E+00	.00000E+00	1.19886E-06	1.31142E-02
23	6.74292E-02	1.79141E-02	6.96812E-02	1.20476E-02	.00000E+00	.00000E+00	3.73068E-06	4.52315E-02
24	5.40547E-02	1.54658E-02	5.63807E-02	1.03470E-02	.00000E+00	.00000E+00	2.23410E-06	3.64477E-02
25	2.39285E-02	7.17311E-03	2.52058E-02	4.76627E-03	.00000E+00	.00000E+00	7.68146E-07	1.62214E-02
26	1.65561E-02	5.48506E-03	1.77922E-02	3.46782E-03	.00000E+00	.00000E+00	3.97109E-07	1.13554E-02
27	2.97030E-03	1.11086E-03	3.32287E-03	5.99586E-04	.00000E+00	.00000E+00	4.56166E-08	2.09788E-03
28	1.73379E+00	-9.75886E-03	1.73691E+00	-6.72040E-03	1.97453E-11	.00000E+00	3.11764E-04	1.14246E+00

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

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.34835E-02	.00000E+00	2.17709E-02	2.05866E-02	3.82560E-03	1.28141E-03	9.98906E-01
2	.00000E+00	1.95460E-01	7.16469E-03	2.52450E-01	1.74080E-01	1.53724E-02	1.31845E-02	1.00002E+00
3	.00000E+00	2.16133E-01	7.19728E-02	2.58305E-01	2.55072E-01	1.62136E-02	1.68239E-02	9.99988E-01
4	.00000E+00	1.23637E-01	1.05989E-01	1.77132E-01	2.11393E-01	7.72605E-03	1.05068E-02	9.99999E-01
5	.00000E+00	1.63627E-01	1.92659E-01	4.44990E-01	3.35072E-01	5.14701E-03	1.60702E-02	9.99990E-01
6	.00000E+00	1.76243E-01	3.91730E-01	1.19120E+00	5.30639E-01	8.09493E-03	2.92314E-02	1.00001E+00
7	.00000E+00	8.69766E-02	5.95850E-01	1.56388E+00	6.55305E-01	8.01626E-03	1.75114E-02	9.99991E-01
8	.00000E+00	1.33892E-02	6.89659E-01	1.57564E+00	6.86432E-01	1.30071E-02	3.66520E-03	9.99921E-01
9	.00000E+00	9.71502E-04	6.78516E-01	1.37304E+00	6.58905E-01	2.15359E-02	-8.70875E-04	9.99879E-01
10	.00000E+00	7.21551E-05	6.55899E-01	1.25082E+00	6.25794E-01	3.24757E-02	-2.23998E-03	9.99902E-01

11	.00000E+00	5.67662E-06	6.29784E-01	1.16619E+00	5.81763E-01	5.33410E-02	-5.27941E-03	9.99945E-01
12	.00000E+00	3.98772E-07	5.06664E-01	6.37355E-01	4.54473E-01	5.85405E-02	-6.33669E-03	9.99978E-01
13	.00000E+00	6.33213E-08	4.49136E-01	5.05960E-01	3.99414E-01	5.56927E-02	-5.95657E-03	9.99968E-01
14	.00000E+00	1.25486E-08	4.31362E-01	4.67818E-01	3.59604E-01	8.07050E-02	-8.94152E-03	9.99989E-01
15	.00000E+00	1.41813E-09	2.36346E-01	2.13907E-01	2.29645E-01	8.36333E-03	-1.74555E-03	1.00035E+00
16	.00000E+00	4.16412E-10	1.61205E-01	9.82015E-02	1.55434E-01	6.73931E-03	-1.02677E-03	1.00036E+00
17	.00000E+00	1.34105E-10	8.60151E-02	3.00328E-02	7.77842E-02	9.15592E-03	-9.50470E-04	1.00029E+00
18	.00000E+00	9.60152E-11	7.63121E-02	1.75281E-02	4.97439E-02	2.90143E-02	-2.45152E-03	1.00007E+00
19	.00000E+00	1.35745E-10	1.17873E-01	5.65410E-02	1.07407E-01	1.21168E-02	-1.67242E-03	1.00018E+00
20	.00000E+00	2.20735E-10	2.82360E-01	3.33729E-01	2.57942E-01	2.78825E-02	-3.56150E-03	1.00034E+00
21	.00000E+00	3.23085E-11	1.38148E-01	6.48419E-02	1.14855E-01	2.59073E-02	-2.63464E-03	1.00014E+00
22	.00000E+00	3.74853E-11	2.60617E-01	1.64582E-01	1.92272E-01	7.60364E-02	-7.73609E-03	1.00016E+00
23	.00000E+00	3.58401E-11	6.20191E-01	9.31170E-01	5.00905E-01	1.37039E-01	-1.79119E-02	1.00025E+00
24	.00000E+00	9.75521E-12	6.55841E-01	8.13847E-01	5.42596E-01	1.28184E-01	-1.54664E-02	1.00019E+00
25	.00000E+00	2.85568E-12	4.35719E-01	3.31629E-01	3.72678E-01	7.01614E-02	-7.17637E-03	1.00013E+00
26	.00000E+00	2.00242E-12	3.38241E-01	3.34190E-01	2.80084E-01	6.36089E-02	-5.48519E-03	1.00010E+00
27	.00000E+00	4.77188E-13	1.11844E-01	6.76414E-02	9.47151E-02	1.82348E-02	-1.11083E-03	1.00004E+00
28	.00000E+00	1.00000E+00	8.92510E+00	1.43444E+01	8.92510E+00	9.92138E-01	9.72608E-03	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*adj**2	total flux
1	1.36540E-02	-4.06852E-09	1.33503E-02	-1.28141E-03	2.28188E-03	2.53618E-03	3.01195E-04	3.47079E-01
2	9.75930E-02	-3.14073E-08	9.42736E-02	-1.31845E-02	1.56948E-05	1.10523E-02	1.60436E-03	2.47821E+00
3	1.21277E-01	-5.16775E-08	1.16919E-01	-1.68240E-02	.00000E+00	1.33044E-02	1.88580E-03	3.07873E+00
4	7.46607E-02	-2.17850E-08	7.18507E-02	-1.05068E-02	.00000E+00	5.69588E-03	8.85991E-04	1.89499E+00
5	1.11794E-01	-5.68470E-08	1.07230E-01	-1.60708E-02	.00000E+00	1.61424E-03	1.05291E-03	2.83638E+00
6	2.09787E-01	-1.08298E-07	2.01003E-01	-2.92315E-02	.00000E+00	1.29666E-03	1.73187E-03	5.32064E+00
7	2.08616E-01	-1.49683E-06	1.98091E-01	-1.75129E-02	.00000E+00	1.20666E-03	1.22692E-03	5.17072E+00
8	1.49010E-01	-1.80777E-07	1.47844E-01	-3.66538E-03	.00000E+00	1.19455E-03	6.98720E-04	3.79087E+00
9	1.15376E-01	8.94787E-06	1.15706E-01	8.79823E-04	.00000E+00	1.56926E-03	4.71727E-04	2.93848E+00
10	1.05742E-01	-9.79025E-07	1.06524E-01	2.23300E-03	.00000E+00	3.35129E-03	4.29086E-04	2.69452E+00
11	9.75792E-02	-2.26843E-06	9.94111E-02	5.27714E-03	.00000E+00	7.29890E-03	3.87307E-04	2.48955E+00
12	6.14143E-02	-6.68124E-07	6.35998E-02	6.33602E-03	.00000E+00	9.76411E-03	2.27668E-04	1.56965E+00
13	5.21211E-02	1.12596E-06	5.41550E-02	5.95770E-03	.00000E+00	1.15766E-02	1.94110E-04	1.33271E+00
14	4.74317E-02	3.77208E-08	5.04836E-02	8.94156E-03	.00000E+00	7.25150E-03	1.72454E-04	1.21592E+00
15	2.79425E-02	-8.13845E-06	2.85108E-02	1.73741E-03	.00000E+00	1.64382E-03	1.10066E-04	7.13204E-01
16	1.53859E-02	-4.88586E-06	1.57187E-02	1.02188E-03	.00000E+00	1.17001E-03	5.65876E-05	3.92712E-01
17	6.34546E-03	-4.41693E-06	6.66279E-03	9.46053E-04	.00000E+00	1.28100E-03	2.04740E-05	1.62403E-01
18	3.51575E-03	4.10572E-07	4.38194E-03	2.45198E-03	.00000E+00	8.31515E-04	7.67636E-06	9.15184E-02
19	9.38344E-03	1.79238E-07	9.96347E-03	1.67260E-03	.00000E+00	2.05257E-03	3.10823E-05	2.40595E-01
20	3.26433E-02	-1.47142E-05	3.38777E-02	3.54679E-03	.00000E+00	1.36368E-02	1.20240E-04	8.34891E-01
21	8.97624E-03	1.12438E-06	9.92864E-03	2.63577E-03	.00000E+00	1.48204E-02	2.47962E-05	2.31261E-01
22	1.64378E-02	-4.77990E-06	1.95691E-02	7.73131E-03	.00000E+00	4.40380E-02	4.15552E-05	4.26944E-01
23	5.98809E-02	2.26608E-06	6.74292E-02	1.79141E-02	.00000E+00	7.51179E-02	1.58562E-04	1.54084E+00
24	4.61492E-02	-6.00261E-07	5.40547E-02	1.54658E-02	.00000E+00	6.82952E-02	9.75683E-05	1.20458E+00
25	1.98757E-02	-3.25380E-06	2.39285E-02	7.17311E-03	.00000E+00	3.88690E-02	3.35964E-05	5.21228E-01
26	1.31258E-02	-1.31666E-07	1.65561E-02	5.48506E-03	.00000E+00	3.57222E-02	1.66405E-05	3.46220E-01
27	2.21605E-03	2.86444E-08	2.97080E-03	1.11086E-03	.00000E+00	1.00907E-02	1.71561E-06	5.86150E-02
28	1.72263E+00	-3.26864E-05	1.73379E+00	-9.75886E-03	2.29757E-03	3.86281E-01	1.19206E-02	4.39235E+01

1fine group summary for system

0 grp.	fix source	fiss source	in scatter	slf scatter	out scatter	absorption	leakage	balance
1	.00000E+00	2.34835E-02	.00000E+00	2.27744E-02	2.18857E-02	3.91394E-03	-4.06352E-09	9.98905E-01
2	.00000E+00	1.95460E-01	7.78542E-03	2.63402E-01	1.87601E-01	1.56577E-02	-3.14073E-08	1.00001E+00
3	.00000E+00	2.16133E-01	7.80468E-02	2.69482E-01	2.77807E-01	1.63765E-02	-5.16775E-08	9.99985E-01
4	.00000E+00	1.23637E-01	1.14872E-01	1.84974E-01	2.30706E-01	7.80374E-03	-2.17850E-08	9.99998E-01
5	.00000E+00	1.63627E-01	2.09064E-01	4.67130E-01	3.67454E-01	5.24025E-03	-5.68470E-08	9.99990E-01
6	.00000E+00	1.76243E-01	4.25820E-01	1.25661E+00	5.98804E-01	8.25152E-03	-1.08298E-07	1.00001E+00
7	.00000E+00	8.69766E-02	6.59435E-01	1.66986E+00	7.38283E-01	8.13685E-03	-1.49683E-06	9.99991E-01
8	.00000E+00	1.33895E-02	7.76156E-01	1.70441E+00	7.76525E-01	1.30848E-02	-1.80777E-07	9.99919E-01
9	.00000E+00	9.71502E-04	7.67208E-01	1.49008E+00	7.46605E-01	2.16573E-02	8.94787E-06	9.99880E-01
10	.00000E+00	7.21551E-05	7.42987E-01	1.36120E+00	7.10544E-01	3.25901E-02	-9.79025E-07	9.99901E-01
11	.00000E+00	5.67662E-06	7.14975E-01	1.27047E+00	6.61507E-01	5.35151E-02	-2.26843E-06	9.99944E-01

12	.00000E+00	3.98772E-07	5.75835E-01	6.93399E-01	5.17212E-01	5.86380E-02	-6.68124E-07	9.99976E-01
13	.00000E+00	6.33213E-08	5.10817E-01	5.51628E-01	4.55005E-01	5.58274E-02	1.12596E-06	9.99967E-01
14	.00000E+00	1.25486E-08	4.91286E-01	5.12504E-01	4.10373E-01	8.09184E-02	3.77203E-08	9.99988E-01
15	.00000E+00	1.41813E-09	2.69104E-01	2.31554E-01	2.60485E-01	8.54015E-03	-8.13845E-06	1.00031E+00
16	.00000E+00	4.16412E-10	1.82759E-01	1.05751E-01	1.75848E-01	6.85833E-03	-4.88585E-06	1.00032E+00
17	.00000E+00	1.34105E-10	9.70999E-02	3.21979E-02	8.78660E-02	9.21284E-03	-4.41693E-06	1.00026E+00
18	.00000E+00	9.60152E-11	8.61253E-02	1.90144E-02	5.70624E-02	2.90572E-02	4.10572E-07	1.00006E+00
19	.00000E+00	1.35745E-10	1.33953E-01	6.12171E-02	1.21695E-01	1.22158E-02	1.79258E-07	1.00016E+00
20	.00000E+00	2.20735E-10	3.21513E-01	3.66239E-01	2.93130E-01	2.83001E-02	-1.47142E-05	1.00030E+00
21	.00000E+00	3.23085E-11	1.56825E-01	7.12781E-02	1.30740E-01	2.60641E-02	1.12438E-06	1.00012E+00
22	.00000E+00	3.74853E-11	2.97289E-01	1.83668E-01	2.20851E-01	7.63980E-02	-4.77990E-06	1.00015E+00
23	.00000E+00	3.58401E-11	7.13944E-01	1.04663E+00	5.75061E-01	1.38720E-01	2.26603E-06	1.00023E+00
24	.00000E+00	9.75521E-12	7.55638E-01	9.22314E-01	6.25338E-01	1.30171E-01	-6.00261E-07	1.00017E+00
25	.00000E+00	2.85568E-12	5.02174E-01	3.77501E-01	4.30784E-01	7.13361E-02	-3.25380E-06	1.00011E+00
26	.00000E+00	2.00242E-12	3.91178E-01	3.84872E-01	3.26348E-01	6.47961E-02	-1.31666E-07	1.00009E+00
27	.00000E+00	4.77188E-13	1.29773E-01	7.85514E-02	1.11113E-01	1.86553E-02	2.86444E-08	1.00004E+00
28	.00000E+00	1.00000E+00	1.01116E+01	1.55987E+01	1.01116E+01	1.00194E+00	-3.26679E-05	1.00004E+00

0 grp.	rt bdy flux	rt leakage	lft bdy flux	lft leakage	n2n rate	fiss rate	flux*dd**2	total flux
1	1.36540E-02	-4.06352E-09	1.30674E-02	.00000E+00	2.28790E-03	2.53618E-03	3.33749E-04	3.74506E-01
2	9.75930E-02	-3.14073E-08	9.11561E-02	.00000E+00	1.56948E-05	1.10523E-02	1.75307E-03	2.67062E+00
3	1.21277E-01	-5.16775E-08	1.12766E-01	.00000E+00	.00000E+00	1.33044E-02	1.99049E-03	3.31714E+00
4	7.46607E-02	-2.17850E-08	6.91094E-02	.00000E+00	.00000E+00	5.69588E-03	9.57632E-04	2.04138E+00
5	1.11794E-01	-5.68470E-08	1.02834E-01	.00000E+00	.00000E+00	1.61424E-03	1.11746E-03	3.05460E+00
6	2.09787E-01	-1.08295E-07	1.92888E-01	.00000E+00	.00000E+00	1.29656E-03	1.87022E-03	5.72991E+00
7	2.03616E-01	-1.49683E-06	1.93146E-01	.00000E+00	.00000E+00	1.20666E-03	1.32606E-03	5.57760E+00
8	1.49010E-01	-1.80777E-07	1.47040E-01	.00000E+00	.00000E+00	1.19455E-03	7.53984E-04	4.09772E+00
9	1.15376E-01	8.94787E-06	1.15990E-01	.00000E+00	.00000E+00	1.56926E-03	5.09350E-04	3.17978E+00
10	1.05742E-01	-9.79025E-07	1.07234E-01	.00000E+00	.00000E+00	3.35129E-03	4.63148E-04	2.91707E+00
11	9.75792E-02	-2.26843E-06	1.01028E-01	.00000E+00	.00000E+00	7.29890E-03	4.19333E-04	2.69852E+00
12	6.14143E-02	-6.68124E-07	6.55046E-02	.00000E+00	.00000E+00	9.76411E-03	2.46847E-04	1.70421E+00
13	5.21211E-02	1.12596E-06	5.59031E-02	.00000E+00	.00000E+00	1.15766E-02	2.10105E-04	1.44742E+00
14	4.74317E-02	3.77203E-08	5.31350E-02	.00000E+00	.00000E+00	7.25150E-03	1.87772E-04	1.32403E+00
15	2.79425E-02	-8.13845E-06	2.89305E-02	.00000E+00	.00000E+00	1.64382E-03	1.18243E-04	7.72978E-01
16	1.53859E-02	-4.88585E-06	1.59843E-02	.00000E+00	.00000E+00	1.17001E-03	6.07455E-05	4.25717E-01
17	6.34546E-03	-4.41693E-06	6.94042E-03	.00000E+00	.00000E+00	1.28100E-03	2.21429E-05	1.76589E-01
18	3.51575E-03	4.10572E-07	5.15355E-03	.00000E+00	.00000E+00	8.31515E-04	8.83067E-06	1.01551E-01
19	9.38344E-03	1.79258E-07	1.04495E-02	.00000E+00	.00000E+00	2.05257E-03	3.36297E-05	2.61876E-01
20	3.26433E-02	-1.47142E-05	3.48768E-02	.00000E+00	.00000E+00	1.36368E-02	1.29640E-04	9.06498E-01
21	8.97624E-03	1.12438E-06	1.07680E-02	.00000E+00	.00000E+00	1.48204E-02	2.71253E-05	2.52883E-01
22	1.64376E-02	-4.77990E-06	2.19562E-02	.00000E+00	.00000E+00	4.40380E-02	4.61958E-05	4.70199E-01
23	5.98809E-02	2.26603E-06	7.43764E-02	.00000E+00	.00000E+00	7.51179E-02	1.73188E-04	1.68862E+00
24	4.61492E-02	-6.00261E-07	6.11340E-02	.00000E+00	.00000E+00	6.82952E-02	1.07080E-04	1.32461E+00
25	1.98757E-02	-3.25380E-06	2.76795E-02	.00000E+00	.00000E+00	3.88690E-02	3.71587E-05	5.75033E-01
26	1.31258E-02	-1.31666E-07	1.99808E-02	.00000E+00	.00000E+00	3.57222E-02	1.87193E-05	3.84401E-01
27	2.21605E-03	2.86444E-08	3.79604E-03	.00000E+00	.00000E+00	1.00907E-02	2.01286E-06	6.57572E-02
28	1.72243E+00	-3.26864E-05	1.74283E+00	.00000E+00	2.30360E-03	3.86281E-01	1.29239E-02	4.75410E+01

- elapsed time .02 min.

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

1 transport cross section weighting function

Ozone	grp. 1	grp. 2	grp. 3	grp. 4	grp. 5	grp. 6	grp. 7	grp. 8
1	1.16953E-03	5.09070E-03	5.31188E-03	2.51372E-03	3.18427E-03	5.52368E-03	3.71568E-03	1.74438E-03
2	7.12394E-04	5.02709E-03	5.81052E-03	3.44971E-03	4.30069E-03	6.14865E-03	4.33003E-03	2.14950E-03
3	1.19887E-03	5.51743E-03	5.89598E-03	2.91929E-03	3.86183E-03	6.77437E-03	4.37378E-03	1.82498E-03
4	8.23241E-04	4.33250E-03	4.95393E-03	2.39850E-03	2.83036E-03	4.80085E-03	3.32700E-03	1.79979E-03
5	8.47338E-04	4.39962E-03	4.99795E-03	2.41794E-03	2.88005E-03	4.88868E-03	3.37582E-03	1.79998E-03

Ozone	grp. 9	grp. 10	grp. 11	grp. 12	grp. 13	grp. 14	grp. 15	grp. 16
1	1.11378E-03	1.01461E-03	1.09316E-03	8.75250E-04	8.00304E-04	1.06237E-03	3.23771E-04	1.70254E-04
2	1.79209E-03	1.95514E-03	2.04391E-03	1.60444E-03	1.43145E-03	1.72953E-03	6.30977E-04	3.50116E-04
3	1.12212E-03	1.05307E-03	1.29135E-03	1.22526E-03	1.13412E-03	1.61667E-03	3.92363E-04	2.16574E-04
4	1.19668E-03	1.09576E-03	1.03083E-03	6.78130E-04	6.01984E-04	6.44863E-04	3.11345E-04	1.61402E-04

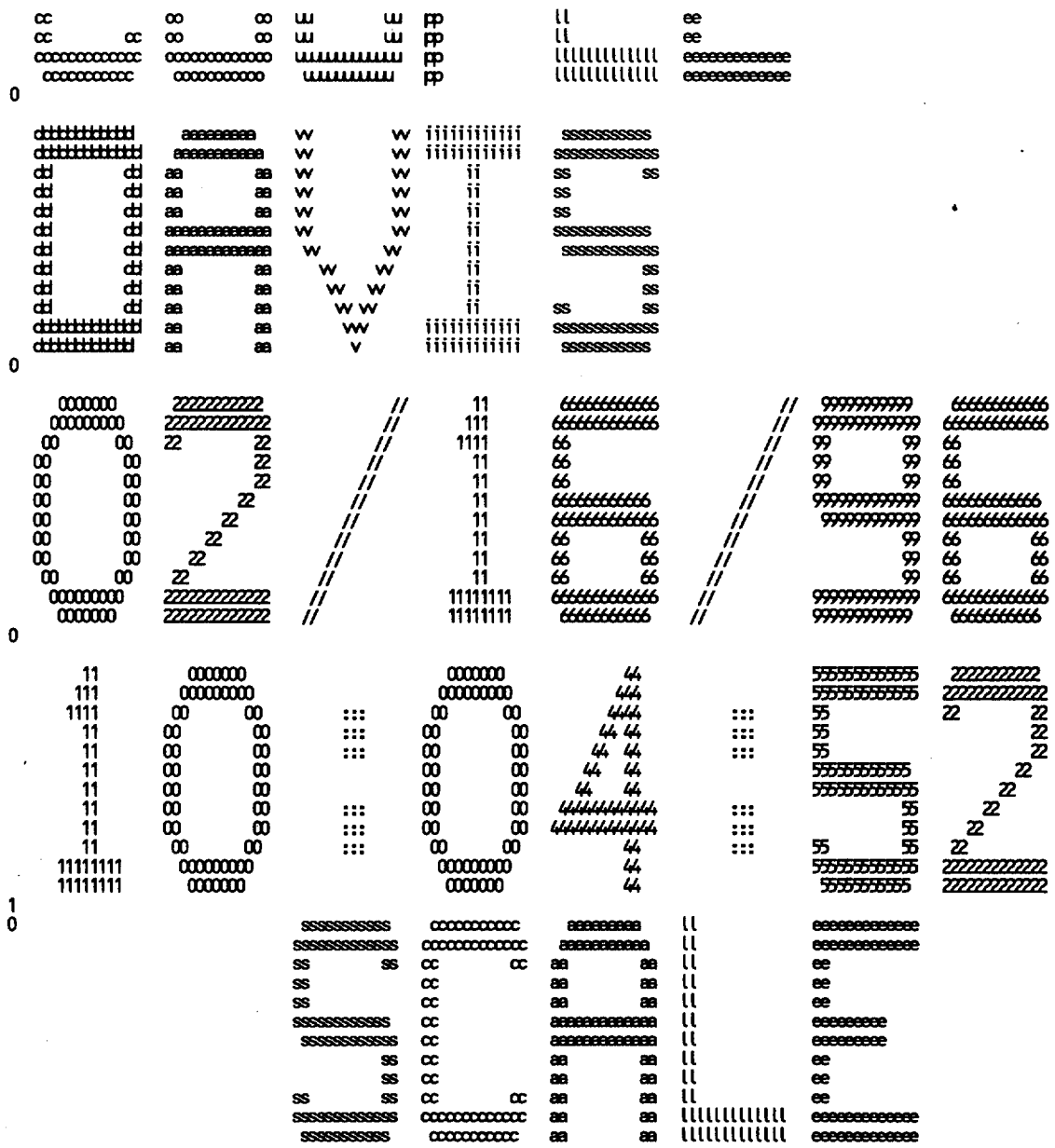
```
    5 1.19472E-03 1.09624E-03 1.04603E-03 7.05757E-04 6.28769E-04 6.93699E-04 3.15782E-04 1.64261E-04
0zone  grp. 17     grp. 18     grp. 19     grp. 20     grp. 21     grp. 22     grp. 23     grp. 24
    1 1.12105E-04 2.43536E-04 2.00417E-04 4.96986E-04 2.87952E-04 8.25432E-04 2.10826E-03 1.78616E-03
    2 1.97688E-04 3.77700E-04 3.32593E-04 8.83234E-04 4.56858E-04 1.26564E-03 3.23641E-03 2.75062E-03
    3 1.70829E-04 4.19462E-04 3.02611E-04 6.85905E-04 4.61946E-04 1.34799E-03 3.21262E-03 2.75750E-03
    4 7.30702E-05 8.18574E-05 1.23139E-04 3.84512E-04 1.38982E-04 3.43480E-04 1.04633E-03 8.17017E-04
    5 7.79415E-05 9.90924E-05 1.32221E-04 3.99865E-04 1.55418E-04 3.95056E-04 1.15980E-03 9.19309E-04
0zone  grp. 25     grp. 26     grp. 27     grp. 28
    1 8.03128E-04 5.66114E-04 8.62278E-05 4.22234E-02
    2 1.25379E-03 9.09085E-04 1.56284E-04 5.52854E-02
    3 1.27244E-03 9.49288E-04 1.77223E-04 5.21736E-02
    4 3.39997E-04 2.06277E-04 2.56439E-05 3.45620E-02
    5 3.88940E-04 2.44704E-04 3.28211E-05 3.54578E-02
1broad group parameters
  grp   upper energy  mid energy     velocity    fiss spec
    1    2.0000E+07   2.6627E+06   1.9701E+09   7.2234E-01
    2    9.0000E+05   1.5164E+05   1.0141E+07   2.7766E-01
    3    4.0000E-01   1.2480E-01   3.6435E+05   1.2072E-10
    4    1.0000E-05
1                    1040 d, second part of sas2h pass to make library
0cell averaged fluxes

0zone  grp. 1      grp. 2      grp. 3
    1 3.92269E-01 1.13464E+00 2.12328E-01
    2 3.97532E-01 1.13571E+00 2.03251E-01
    3 4.00499E-01 1.13588E+00 1.99177E-01
    4 4.17691E-01 1.13730E+00 1.70043E-01
    5 4.15998E-01 1.13714E+00 1.72869E-01
0flux disadvantage factors (zone average/cell average-flux)

0zone  grp. 1      grp. 2      grp. 3
    1 9.42959E-01 9.97802E-01 1.22826E+00
    2 9.55611E-01 9.98743E-01 1.17575E+00
    3 9.62742E-01 9.98959E-01 1.15218E+00
    4 1.00407E+00 1.00015E+00 9.83650E-01
    5 1.00000E+00 1.00000E+00 1.00000E+00
0cell averaged currents

0zone  grp. 1      grp. 2      grp. 3
    1 1.72699E-02 1.84908E-02 6.46326E-03
    2 1.98002E-02 2.59569E-02 1.00284E-02
    3 1.99934E-02 2.26012E-02 1.01790E-02
    4 1.53335E-02 1.63107E-02 2.91772E-03
    5 1.55429E-02 1.66189E-02 3.29605E-03
0zone       volume      vol. fraction

    1    1.25665E+00    4.56234E-02
    2    1.66687E-01    6.05165E-03
    3    6.58265E-01    2.38987E-02
    4    2.54624E+01    9.24426E-01
    5    2.75440E+01    1.00000E+00
- elapsed time    .02 min.
1  ccccccccccc    ooooooooooo   ww        ww  ppppppppppp   ll          eeeeeeeeeeee
   ccccccccccccc  ooooooooooooo  ww        ww  ppppppppppppp  ll          eeeeeeeeeeee
   cc        cc   oo         oo  ww        ww  pp        pp   ll          ee
   cc             oo         oo  ww        ww  pp        pp   ll          ee
   cc             oo         oo  ww        ww  pp        pp   ll          ee
   cc             oo         oo  ww        ww  ppppppppppp   ll          eeeeeeeee
   cc             oo         oo  ww        ww  ppppppppppp   ll          eeeeeeeee
   cc             oo         oo   ww      ww   pp            ll          ee
```



```
                    ********************************************************************************
                    ********************************************************************************
                    ********************************************************************************
                    *****                                                                      *****
                    *****                  program verification information                   *****
                    *****                                                                      *****
                    *****                  code system:    scale  version:    4.2             *****
                    *****                                                                      *****
                    ********************************************************************************
                    ********************************************************************************
                    *****                                                                      *****
                    *****                                                                      *****
                    *****                program:  c0c005                                      *****
                    *****                                                                      *****
                    *****           creation date:  04/27/95                                   *****
                    *****                                                                      *****
                    *****                library:  /neutronics/scale/exe                       *****
                    *****                                                                      *****
                    *****                                                                      *****
                    *****      this is not a  scale  configuration controlled code             *****
                    *****                                                                      *****
                    *****                jobname:  davis                                       *****
                    *****                                                                      *****
                    *****      date of execution:  02/16/96                                    *****
                    *****                                                                      *****
                    *****      time of execution:  10:04:52                                    *****
                    *****                                                                      *****
                    *****                                                                      *****
                    ********************************************************************************
                    ********************************************************************************
                    ********************************************************************************
1
0       -1q array has       1 entries.
0        0q array has       1 entries.
0        0q array has       1 entries.
0        1q array has       1 entries.
0        1q array has       1 entries.
0        1q array has       1 entries.
0        1q array has       1 entries.
0        1q array has       1 entries.
0        2q array has       1 entries.
0         * core allocated to array-data (by -19$ or default) was   200000 words. *
1          * broad 3-group flux weighting factors *
0
0                 therm =    .5126
0                 res   =    .4497
0                 fast  =   3.4893
0 user requested (see jadd) that only the nuclide transitions presently included in
0 origen library be updated.
1cross sections, available from ampx (normalized to thermal flux), barns

                      10010 to  10020  2.85588E-01
                      10010 tot-cap    2.85588E-01
                      50100 to  40100  2.50160E-02
                      50100 to  10010  2.50160E-02
                      50100 to  40090  3.85350E-03
```

50100	to	10020	3.85350E-03
50100	to	30070	3.28386E+03
50100	to	20040	3.28404E+03
50100	to	10030	9.39363E-02
50100	tot-cap		3.28398E+03
50110	to	50100	1.11152E-05
50110	to	50120	4.34943E-03
50110	to	40110	1.41841E-06
50110	to	10010	1.41841E-06
50110	to	40090	1.26578E-05
50110	to	10030	1.26578E-05
50110	to	30080	1.65242E-04
50110	to	20040	1.65242E-04
50110	tot-cap		4.53987E-03
80160	to	80170	1.52575E-04
80160	to	70160	9.72558E-05
80160	to	10010	9.72558E-05
80160	to	70150	1.83423E-05
80160	to	10020	1.83423E-05
80160	to	60130	2.69575E-02
80160	to	20040	2.69575E-02
80160	to	80161	4.26530E-03
80160	tot-cap		2.72256E-02
360830	to	360820	2.20799E-02
360830	to	360810	2.33108E-09
360830	to	360840	1.55894E+02
360830	to	350830	9.01086E-04
360830	to	10010	9.01086E-04
360830	to	350820	7.29238E-06
360830	to	10020	7.29238E-06
360830	to	350810	2.54882E-06
360830	to	10030	2.54882E-06
360830	to	340810	4.12506E-08
360830	to	20030	4.12506E-08
360830	to	340800	4.84378E-05
360830	to	20040	4.84378E-05
360830	tot-cap		1.55917E+02
360850	to	360860	1.41363E+00
360850	tot-cap		1.41363E+00
380900	to	380910	6.34958E-01
380900	tot-cap		6.34958E-01
390890	to	390900	9.98628E-01
390890	tot-cap		9.98628E-01
400930	to	400940	1.37852E+01
400930	tot-cap		1.37852E+01
400940	to	400950	1.90769E-01
400940	tot-cap		1.90769E-01
400950	to	400960	2.28487E+00
400950	tot-cap		2.28487E+00
410940	to	410950	3.94339E+01
410940	tot-cap		3.94339E+01
420950	to	420960	3.86075E+01
420950	tot-cap		3.86075E+01
430990	to	430980	6.69935E-03
430990	to	431000	9.06183E+01
430990	tot-cap		9.06250E+01
441010	to	441020	2.89488E+01
441010	tot-cap		2.89488E+01
441060	to	441070	8.90233E-01
441060	tot-cap		8.90233E-01

451030 to 451020	2.42626E-03
451030 to 451040	3.50206E+02
451030 tot-cap	3.50209E+02
451050 to 451060	8.21154E+03
451050 tot-cap	8.21154E+03
461050 to 461060	3.46009E+01
461050 tot-cap	3.46009E+01
461080 to 461090	6.99666E+01
461080 tot-cap	6.99666E+01
471090 to 471080	5.64211E-03
471090 to 471100	3.75733E+02
471090 to 461090	3.18502E-04
471090 to 10010	3.18502E-04
471090 to 451060	2.64343E-04
471090 to 20040	2.64343E-04
471090 to 471091	6.56022E-01
471090 tot-cap	3.75740E+02
511240 to 511250	1.23093E+01
511240 tot-cap	1.23093E+01
541310 to 541300	6.84125E-02
541310 to 541290	1.43052E-05
541310 to 541320	2.57092E+02
541310 to 531310	4.09207E-05
541310 to 10010	4.09207E-05
541310 to 531300	5.73707E-07
541310 to 10020	5.73707E-07
541310 to 531290	5.88279E-07
541310 to 10030	5.88279E-07
541310 to 521280	1.91871E-05
541310 to 20040	1.91871E-05
541310 tot-cap	2.57161E+02
541320 to 541310	1.10517E-02
541320 to 541300	2.34399E-05
541320 to 541330	9.44700E-01
541320 to 531320	8.41414E-06
541320 to 10010	8.41414E-06
541320 to 531310	3.56199E-07
541320 to 10020	3.56199E-07
541320 to 531300	4.79622E-08
541320 to 10030	4.79622E-08
541320 to 521290	1.03868E-06
541320 to 20040	1.03868E-06
541320 tot-cap	9.55786E-01
541350 to 541360	1.47549E+06
541350 tot-cap	1.47549E+06
541360 to 541350	1.86047E-02
541360 to 541340	5.77395E-05
541360 to 541370	1.24662E-01
541360 to 531360	3.49089E-07
541360 to 10010	3.49089E-07
541360 to 531350	1.29964E-07
541360 to 10020	1.29964E-07
541360 to 531340	2.93612E-08
541360 to 10030	2.93612E-08
541360 to 521330	2.92831E-07
541360 to 20040	2.92831E-07
541360 tot-cap	1.43626E-01
551330 to 551320	8.85273E-03
551330 to 551340	1.02523E+02
551330 to 541330	9.52659E-04

551330	to 10010	9.52659E-04
551330	to 531300	1.51250E-05
551330	to 20040	1.51250E-05
551330	tot-cap	1.02533E+02
551340	to 551350	1.30526E+02
551340	tot-cap	1.30526E+02
551350	to 551360	2.19227E+01
551350	tot-cap	2.19227E+01
551370	to 551380	2.34914E-01
551370	tot-cap	2.34914E-01
561360	to 561370	9.22416E-01
561360	tot-cap	9.22416E-01
571390	to 571400	8.04501E+00
571390	tot-cap	8.04501E+00
581440	to 581450	1.25978E+00
581440	tot-cap	1.25978E+00
591410	to 591400	6.34364E-03
591410	to 591390	1.82268E-06
591410	to 571370	2.72050E-06
591410	to 20040	5.61475E-05
591410	to 581400	1.93316E-05
591410	to 10010	5.48838E-05
591410	to 591420	1.20027E+01
591410	to 581410	5.17146E-05
591410	to 10020	1.61624E-05
591410	to 581390	1.69499E-06
591410	to 10030	1.69499E-06
591410	to 571390	1.63694E-08
591410	to 20030	1.63694E-08
591410	to 571380	5.34270E-05
591410	tot-cap	1.20091E+01
591430	to 591440	9.95397E+01
591430	tot-cap	9.95397E+01
601430	to 601420	9.70131E-02
601430	to 601410	9.90631E-06
601430	to 581390	2.12389E-05
601430	to 20040	5.94627E-04
601430	to 591420	4.14677E-06
601430	to 10010	4.25411E-05
601430	to 601440	2.00228E+02
601430	to 591430	4.09788E-05
601430	to 10020	2.58448E-06
601430	to 591410	3.72423E-06
601430	to 10030	3.72423E-06
601430	to 581410	1.78934E-08
601430	to 20030	1.78934E-08
601430	to 581400	5.73388E-04
601430	tot-cap	2.00325E+02
601450	to 601440	1.24443E-01
601450	to 601430	1.26481E-04
601450	to 581410	8.90192E-06
601450	to 20040	2.22408E-04
601450	to 591440	2.37587E-06
601450	to 10010	1.54304E-05
601450	to 601460	7.95926E+01
601450	to 591450	1.44827E-05
601450	to 10020	1.42819E-06
601450	to 591430	2.25157E-06
601450	to 10030	2.25157E-06
601450	to 581430	4.58420E-09

601450 to 20030 4.58420E-09
601450 to 581420 2.13505E-04
601450 tot-cap 7.97175E+01
601470 to 601480 1.93197E+02
601470 tot-cap 1.93197E+02
611470 to 611460 3.40804E-02
611470 to 611450 1.06336E-04
611470 to 591430 9.41176E-06
611470 to 20040 8.70684E-05
611470 to 601460 1.30192E-05
611470 to 10010 2.96031E-05
611470 to 611480 5.90057E+02
611470 to 601470 2.63915E-05
611470 to 10020 9.80754E-06
611470 to 601450 3.70296E-06
611470 to 10030 3.70296E-06
611470 to 591450 5.56751E-09
611470 to 20030 5.56751E-09
611470 to 591440 7.76567E-05
611470 tot-cap 5.90092E+02
611480 to 611490 1.20917E+04
611480 tot-cap 1.20917E+04
621470 to 621460 8.89030E-02
621470 to 621450 8.00533E-03
621470 to 601430 6.87306E-05
621470 to 20040 1.30955E-03
621470 to 611460 1.61345E-04
621470 to 10010 2.29758E-04
621470 to 621480 2.37921E+02
621470 to 611470 2.02560E-04
621470 to 10020 1.34146E-04
621470 to 611450 1.44042E-04
621470 to 10030 1.44042E-04
621470 to 601450 6.62765E-06
621470 to 20030 6.62765E-06
621470 to 601440 1.24082E-03
621470 to 621471 1.71350E+00
621470 tot-cap 2.38020E+02
621490 to 621480 5.02405E-02
621490 to 621470 3.99031E-05
621490 to 621500 4.52520E+04
621490 to 611490 5.10996E-04
621490 to 10010 5.10996E-04
621490 to 601460 5.10996E-04
621490 to 20040 5.10996E-04
621490 tot-cap 4.52520E+04
621500 to 621510 1.35845E+02
621500 tot-cap 1.35845E+02
621510 to 621500 1.67358E-01
621510 to 621490 1.50152E-04
621510 to 601470 1.67820E-05
621510 to 20040 1.30450E-04
621510 to 611500 2.05602E-06
621510 to 10010 1.59581E-05
621510 to 621520 4.98487E+03
621510 to 611510 1.47020E-05
621510 to 10020 7.99870E-07
621510 to 611490 1.45371E-06
621510 to 10030 1.45371E-06
621510 to 601490 1.49760E-09

621510 to 20030 1.49760E-09
621510 to 601480 1.13668E-04
621510 tot-cap 4.98503E+03
621520 to 621510 2.01070E-02
621520 to 621500 1.35864E-04
621520 to 601480 3.03558E-06
621520 to 20040 1.26060E-05
621520 to 611510 8.70916E-07
621520 to 10010 2.57005E-06
621520 to 621530 7.34953E+02
621520 to 611520 2.28300E-06
621520 to 10020 5.83865E-07
621520 to 611500 1.51849E-07
621520 to 10030 1.51849E-07
621520 to 601500 4.60190E-10
621520 to 20030 4.60190E-10
621520 to 601490 9.57046E-06
621520 tot-cap 7.34973E+02
631530 to 631520 1.95286E-02
631530 to 631510 2.91623E-05
631530 to 611490 4.53018E-05
631530 to 20040 6.61191E-04
631530 to 621520 8.16308E-06
631530 to 10010 6.84505E-05
631530 to 631540 6.29703E+02
631530 to 621530 6.56649E-05
631530 to 10020 5.37745E-06
631530 to 621510 1.20554E-06
631530 to 10030 1.20554E-06
631530 to 611510 2.75607E-08
631530 to 20030 2.75607E-08
631530 to 611500 6.15889E-04
631530 tot-cap 6.29723E+02
631540 to 631530 3.12189E-02
631540 to 631520 1.12145E-05
631540 to 611500 1.09041E-10
631540 to 20040 7.95581E-04
631540 to 621530 2.45459E-06
631540 to 10010 1.30024E-03
631540 to 631550 1.07871E+03
631540 to 621540 1.30024E-03
631540 to 10020 2.45323E-06
631540 to 621520 4.15495E-06
631540 to 10030 4.15495E-06
631540 to 611520 1.76198E-08
631540 to 20030 1.76198E-08
631540 to 611510 7.95581E-04
631540 tot-cap 1.07874E+03
631550 to 631540 2.56319E-02
631550 to 631530 7.17750E-05
631550 to 611510 1.93124E-06
631550 to 20040 9.50444E-06
631550 to 621540 3.91376E-06
631550 to 10010 8.20598E-06
631550 to 631560 2.56940E+03
631550 to 621550 6.30167E-06
631550 to 10020 2.00945E-06
631550 to 621530 6.65198E-07
631550 to 10030 6.65198E-07
631550 to 611530 1.50770E-10

631550 to 20030 1.50770E-10
631550 to 611520 7.57320E-06
631550 tot-cap 2.56943E+03
641550 to 641560 1.71533E+04
641550 tot-cap 1.71533E+04
922340 to 922330 6.71520E-03
922340 fission 4.59102E+00
922340 nu-sigf 1.20723E+01
922340 to 922320 9.73665E-05
922340 to 922350 1.89714E+02
922340 to 922341 3.07043E+00
922340 tot-cap 1.94312E+02
922350 to 922340 3.05974E-02
922350 fission 3.64309E+02
922350 nu-sigf 8.82275E+02
922350 to 922330 2.93301E-05
922350 to 922360 8.71018E+01
922350 to 922351 8.73287E-02
922350 tot-cap 4.51442E+02
922360 to 922350 3.42086E-02
922360 fission 1.97200E+00
922360 nu-sigf 5.41556E+00
922360 to 922340 4.55888E-04
922360 to 922370 7.20735E+01
922360 to 922361 3.35905E+00
922360 tot-cap 7.40802E+01
922380 to 922370 6.83171E-02
922380 fission 9.89546E-01
922380 nu-sigf 2.78747E+00
922380 to 922360 4.41539E-04
922380 to 922390 8.69045E+00
922380 tot-cap 9.74876E+00
932370 to 932360 1.55753E-02
932370 fission 5.32347E+00
932370 nu-sigf 1.60371E+01
932370 to 932350 5.95861E-05
932370 to 932380 3.04246E+02
932370 to 932371 7.87315E-01
932370 tot-cap 3.09585E+02
942380 to 942370 2.50351E-03
942380 fission 2.28012E+01
942380 nu-sigf 6.46745E+01
942380 to 942360 1.40109E-05
942380 to 942390 2.67456E+02
942380 to 942381 3.08822E+00
942380 tot-cap 2.90260E+02
942390 to 942380 1.32440E-02
942390 fission 8.33475E+02
942390 nu-sigf 2.39654E+03
942390 to 942370 2.25568E-05
942390 to 942360 2.23609E-08
942390 to 942400 4.65602E+02
942390 tot-cap 1.29909E+03
942400 to 942390 6.23485E-03
942400 fission 6.00277E+00
942400 nu-sigf 1.88168E+01
942400 to 942380 6.08423E-05
942400 to 942410 1.30940E+03
942400 tot-cap 1.31541E+03
942410 to 942400 7.85761E-02

```
                    942410 fission   8.97827E+02
                    942410 nu-sigf   2.63446E+03
                    942410 to 942390 1.30186E-04
                    942410 to 942420 2.92690E+02
                    942410 tot-cap   1.19060E+03
                    942420 to 942410 2.54158E-02
                    942420 fission   4.61698E+00
                    942420 nu-sigf   1.44685E+01
                    942420 to 942400 3.08991E-04
                    942420 to 942430 3.36161E+02
                    942420 tot-cap   3.40804E+02
                    952410 fission   1.26157E+01
                    952410 nu-sigf   4.08103E+01
                    952410 to 952420 1.01243E+03
                    952410 tot-cap   1.02505E+03
                    952430 fission   3.56483E+00
                    952430 nu-sigf   1.19874E+01
                    952430 to 952440 4.26547E+02
                    952430 tot-cap   4.30111E+02
                    962440 to 962430 6.10822E-03
                    962440 fission   1.57846E+01
                    962440 nu-sigf   5.29118E+01
                    962440 to 962420 6.09135E-05
                    962440 to 962450 1.44656E+02
                    962440 to 962441 3.93822E+00
                    962440 tot-cap   1.60446E+02
Othe reaction  50100 to  30070 was not used, because  50100 is not in library., (in subr pool)
                                        in the search of library number 3
Othe reaction  50100 to  40090 was not used, because  50100 is not in library., (in subr pool)
                                        in the search of library number 3
Othe reaction  50110 to  40090 was not used, because  50110 is not in library., (in subr pool)
                                        in the search of library number 3
Othe reaction  50100 to  40100 was not used, because  50100 is not in library., (in subr pool)
                                        in the search of library number 3
Othe reaction  80160 to  80161 was not used, because  80161 is not in library., (in subr pool)
Othe reaction 621470 to 621471 was not used, because 621471 is not in library., (in subr pool)
Othe fission product transitions for  922340 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  922340 to 922341 was not used, because  922341 is not in library., (in subr pool)
Othe reaction  922350 to 922351 was not used, because  922351 is not in library., (in subr pool)
Othe fission product transitions for  922360 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  922360 to 922361 was not used, because  922361 is not in library., (in subr pool)
Othe fission product transitions for  952370 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  952370 to 952371 was not used, because  952371 is not in library., (in subr pool)
Othe fission product transitions for  942380 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe reaction  942380 to 942381 was not used, because  942381 is not in library., (in subr pool)
Othe fission product transitions for  942400 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  942420 were not used.  library fissile nuclides are
   922330  922350  942410  922380  942390
Ouse substitute nuclide in block 8 data.  or, update with new fission yield data.
Othe fission product transitions for  952410 were not used.  library fissile nuclides are
```

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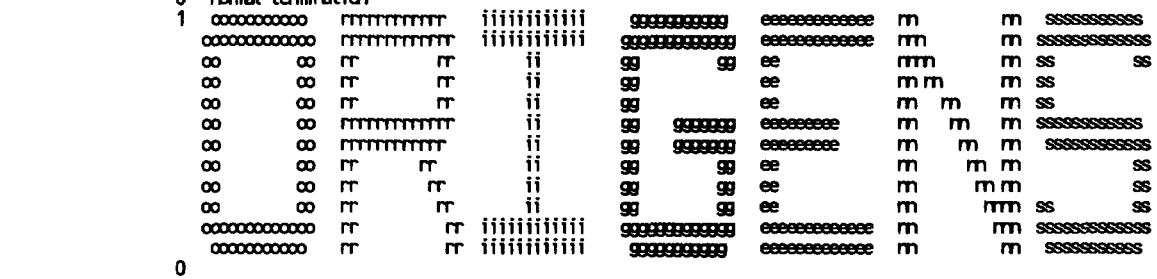
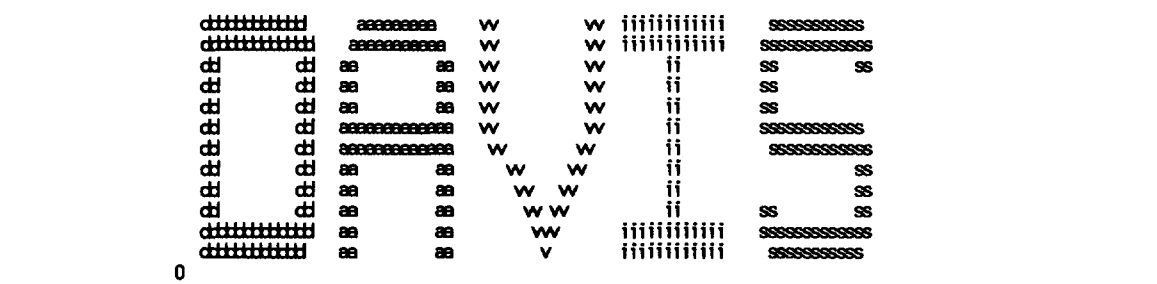
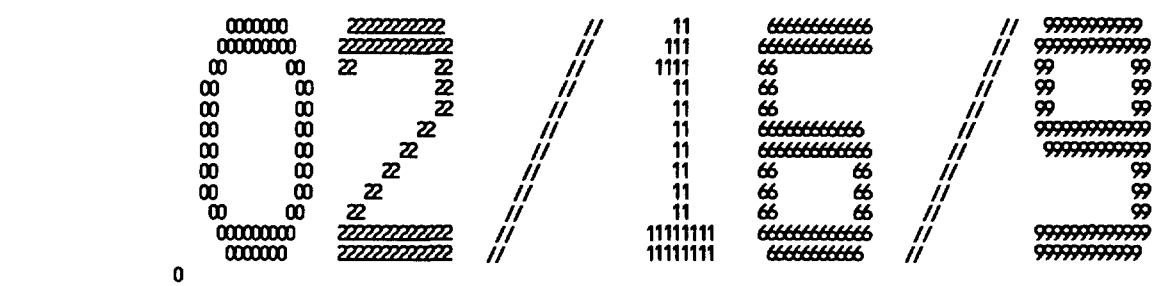
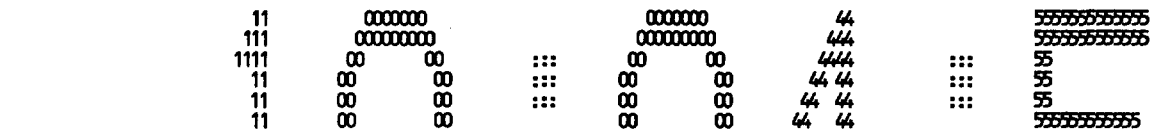
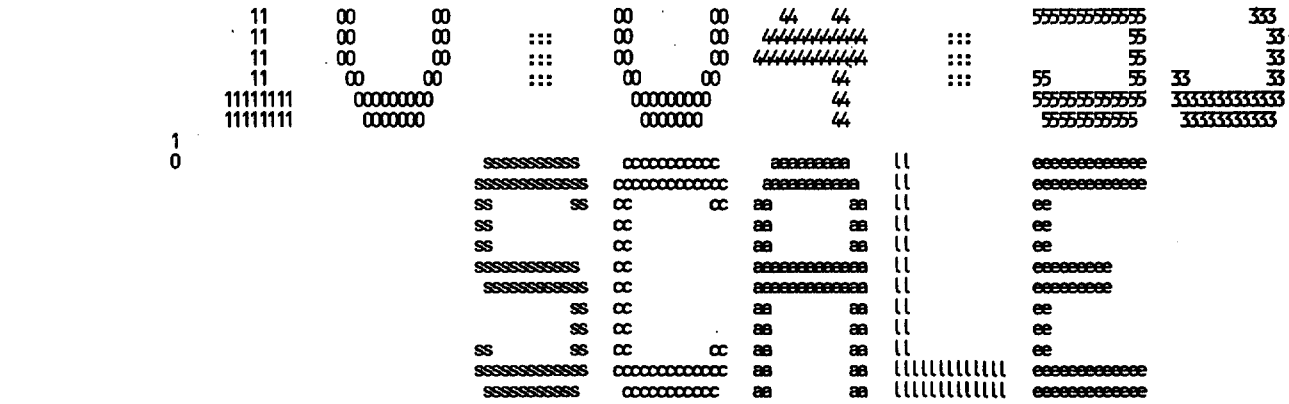
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update with new fission yield data.
0the fission product transitions for  952430 were not used.  library fissile nuclides are
  922330  922350  942410  922380  942390
0use substitute nuclide in block 8 data.  or, update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

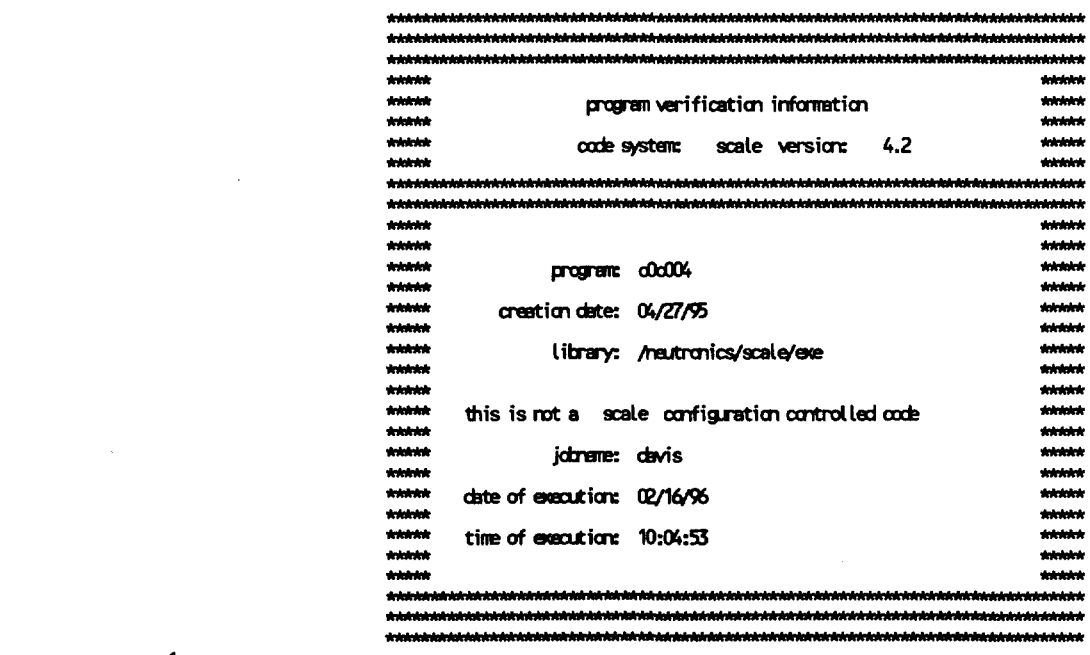













```
1
0     -1q array has     1 entries.
0      0q array has     1 entries.
0      0q array has     1 entries.
0      0q array has     1 entries.
```

```
0       0q array has      1 entries.
0       dbl. prec. machine word applied has, at least, a 16 significant figure accuracy.
0           short-lived split test fraction, qm =    9.1188E-04
0           half-norm of matrix used, avn =    7.0000E+00
0           4-place-accuracy-retention ratio, ratio4 =    6.4516E-13
0       1q array has     20 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       3q array has      1 entries.
0       4q array has      1 entries.
0      54q array has     12 entries.
1library information...

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

         pass  7
         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 ua2 matrix              *
         *                                                                              *
         *        see information above this box (if present) for later updates         *
         *                                                                              *
         ********************************************************************************
         *                                                                              *
0        ********************************************************************************
0                 .other identification and sizes of library.
0                  data set name:  ft15f001
0               2/16/1996    date library was produced
0                  1697    total number of nuclides in library
                    689    number of light-element nuclides
                    129    number of actinide nuclides
                    879    number of fission product nuclides
0                  7955    number of nonzero off-diagonal matrix elements
0        ********************************************************************************
```

1

sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp actinides page 1
power= 8.466E-05mw, burnup=2.0318E-02mwd, flux= 1.62E+13n/cm**2-sec

0 nuclide concentrations, gram atoms
basis = converted to atoms/(barn-cm)

	charge	1000.1 d	1040.1 d	1080.1 d	1120.1 d	1120.2 d	1160.2 d	1200.2 d
he 4	6.33E-08	7.46E-08	8.72E-08	1.01E-07	1.17E-07	1.17E-07	1.34E-07	1.54E-07
u230	1.33E-20	1.51E-20	1.69E-20	1.89E-20	2.09E-20	2.09E-20	2.31E-20	2.55E-20
u231	2.58E-19	2.94E-19	3.27E-19	3.62E-19	3.99E-19	3.96E-19	4.40E-19	4.83E-19
u232	3.37E-12	3.76E-12	4.18E-12	4.63E-12	5.10E-12	5.10E-12	5.61E-12	6.15E-12
u233	4.10E-11	4.22E-11	4.32E-11	4.42E-11	4.52E-11	4.52E-11	4.61E-11	4.70E-11
u234	4.37E-06	4.33E-06	4.28E-06	4.24E-06	4.19E-06	4.19E-06	4.15E-06	4.11E-06
u235	3.83E-04	3.74E-04	3.64E-04	3.55E-04	3.47E-04	3.47E-04	3.38E-04	3.29E-04
u236	5.84E-05	6.00E-05	6.16E-05	6.31E-05	6.45E-05	6.45E-05	6.59E-05	6.73E-05
u237	7.61E-08	7.84E-08	8.01E-08	8.18E-08	8.34E-08	8.30E-08	8.50E-08	8.66E-08
u238	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.18E-02	2.17E-02	2.17E-02
u239	1.19E-09	6.19E-09	6.21E-09	6.22E-09	6.23E-09	9.22E-10	6.24E-09	6.26E-09
u240	.00E+00	7.72E-32	1.16E-31	1.72E-31	2.50E-31	2.50E-31	3.60E-31	5.10E-31
u241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
np235	8.52E-14	9.34E-14	1.02E-13	1.10E-13	1.19E-13	1.19E-13	1.28E-13	1.38E-13
np236m	8.65E-14	9.67E-14	1.02E-13	1.08E-13	1.14E-13	1.10E-13	1.20E-13	1.26E-13
np236	8.79E-12	9.76E-12	1.08E-11	1.19E-11	1.30E-11	1.30E-11	1.42E-11	1.55E-11
np237	4.21E-06	4.45E-06	4.70E-06	4.95E-06	5.20E-06	5.20E-06	5.46E-06	5.71E-06
np238	5.32E-09	5.75E-09	6.08E-09	6.42E-09	6.76E-09	6.66E-09	7.11E-09	7.46E-09
np239	8.77E-07	8.94E-07	8.96E-07	8.98E-07	9.00E-07	8.95E-07	9.01E-07	9.03E-07
np240m	.00E+00	6.59E-34	9.91E-34	1.47E-33	2.14E-33	2.14E-33	3.07E-33	4.35E-33
np240	8.77E-12	1.68E-11	1.68E-11	1.69E-11	1.70E-11	8.24E-12	1.71E-11	1.72E-11
np241	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
pu236	9.84E-12	1.09E-11	1.19E-11	1.30E-11	1.42E-11	1.42E-11	1.54E-11	1.66E-11
pu237	3.41E-13	3.65E-13	3.85E-13	4.12E-13	4.35E-13	4.35E-13	4.59E-13	4.84E-13
pu238	6.64E-07	7.35E-07	8.10E-07	8.90E-07	9.74E-07	9.74E-07	1.06E-06	1.16E-06
pu239	1.13E-04	1.15E-04	1.17E-04	1.19E-04	1.21E-04	1.21E-04	1.23E-04	1.24E-04
pu240	2.35E-05	2.47E-05	2.59E-05	2.70E-05	2.81E-05	2.81E-05	2.92E-05	3.03E-05
pu241	1.29E-05	1.37E-05	1.46E-05	1.54E-05	1.63E-05	1.63E-05	1.72E-05	1.81E-05
pu242	1.62E-06	1.81E-06	2.00E-06	2.21E-06	2.43E-06	2.44E-06	2.67E-06	2.91E-06
pu243	1.97E-10	2.52E-10	2.80E-10	3.10E-10	3.42E-10	2.94E-10	3.75E-10	4.11E-10
pu244	2.51E-21	3.84E-21	5.78E-21	8.56E-21	1.25E-20	1.25E-20	1.79E-20	2.54E-20
pu245	1.70E-27	2.77E-27	4.17E-27	6.19E-27	9.05E-27	8.42E-27	1.30E-26	1.85E-26
pu246	7.11E-30	1.10E-29	1.67E-29	2.51E-29	3.69E-29	3.68E-29	5.35E-29	7.66E-29
am239	6.83E-18	8.13E-18	8.96E-18	9.83E-18	1.07E-17	1.01E-17	1.17E-17	1.26E-17
am240	3.08E-15	3.52E-15	3.88E-15	4.26E-15	4.66E-15	4.58E-15	5.06E-15	5.48E-15
am241	4.23E-07	4.68E-07	5.15E-07	5.63E-07	6.13E-07	6.13E-07	6.65E-07	7.18E-07
am242m	9.56E-09	1.07E-08	1.20E-08	1.33E-08	1.47E-08	1.47E-08	1.62E-08	1.77E-08
am242	4.63E-10	5.32E-10	5.86E-10	6.43E-10	7.02E-10	6.70E-10	7.63E-10	8.26E-10
am243	1.66E-07	1.94E-07	2.25E-07	2.60E-07	2.97E-07	2.98E-07	3.39E-07	3.84E-07
am244m	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00	.00E+00
am244	5.56E-11	6.99E-11	8.13E-11	9.40E-11	1.08E-10	1.00E-10	1.23E-10	1.40E-10
am245	1.52E-25	2.31E-25	3.46E-25	5.09E-25	7.36E-25	7.36E-25	1.05E-24	1.47E-24
am246	.00E+00	2.75E-32	4.18E-32	6.26E-32	9.22E-32	9.21E-32	1.34E-31	1.92E-31
cm241	8.64E-18	1.05E-17	1.25E-17	1.47E-17	1.71E-17	1.71E-17	1.98E-17	2.28E-17
cm242	5.40E-08	6.13E-08	6.90E-08	7.73E-08	8.61E-08	8.61E-08	9.53E-08	1.05E-07
cm243	9.35E-10	1.11E-09	1.30E-09	1.51E-09	1.74E-09	1.74E-09	2.00E-09	2.27E-09
cm244	1.78E-08	2.16E-08	2.63E-08	3.17E-08	3.79E-08	3.79E-08	4.50E-08	5.30E-08
cm245	4.09E-10	5.22E-10	6.58E-10	8.21E-10	1.01E-09	1.01E-09	1.24E-09	1.51E-09
cm246	1.90E-11	2.53E-11	3.34E-11	4.34E-11	5.63E-11	5.63E-11	7.19E-11	9.10E-11
cm247	1.49E-13	2.09E-13	2.88E-13	3.91E-13	5.24E-13	5.24E-13	6.94E-13	9.10E-13

1

sas2h: babcock wilcox 15x15, 3.00w%, 20gwd/mtu burn high temp actinides page 2
power= 8.466E-05mw, burnup=2.0318E-02mwd, flux= 1.62E+13n/cm**2-sec

0 nuclide concentrations, gram atoms

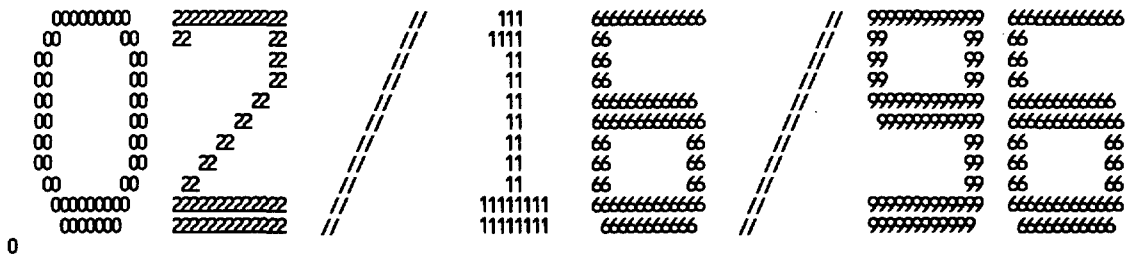
```
                                                basis = converted to atoms/(barn-cm)
                charge  1000.1 d  1040.1 d  1080.1 d  1120.1 d  1120.2 d  1160.2 d  1200.2 d
     cm248  5.32E-15 7.82E-15  1.13E-14  1.60E-14  2.25E-14  2.25E-14  3.11E-14  4.24E-14
     cm249  2.02E-20 5.47E-20  7.92E-20  1.13E-19  1.59E-19  7.88E-20  2.20E-19  3.01E-19
     cm250  6.68E-24 1.03E-23  1.56E-23  2.33E-23  3.41E-23  3.41E-23  4.92E-23  7.02E-23
     cm251   .00E+00 2.47E-31  3.76E-31  5.61E-31  8.25E-31  5.72E-32  1.19E-30  1.71E-30
    totals  2.24E-02 2.24E-02  2.24E-02  2.24E-02  2.23E-02  2.23E-02  2.23E-02  2.23E-02
0    flux            1.61E+13  1.61E+13  1.62E+13  1.62E+13   .00E+00  1.63E+13  1.63E+13
0  .results on logical unit no. 71, position  1, for time step  7, subcase 1. (run position 1, case position 1)
    title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0  .results on logical unit no. 71, position  2, for time step  5, subcase 1. (run position 1, case position 1)
    title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0  .results on logical unit no. 71, position  3, for time step  4, subcase 1. (run position 1, case position 1)
    title: sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0     .terminated logical unit no. 71 with zero flag record.
1  * normal termination of execution *
0                                  table of contents for material tables
0                                    case or subcase printed      page

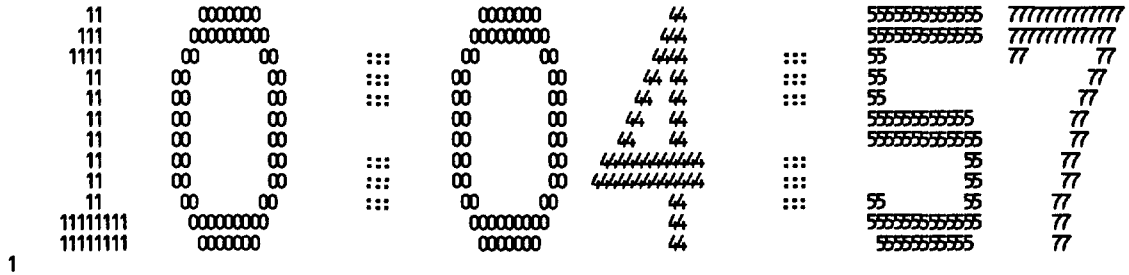
                                                    1                1
0ndset          33
           15          4          1         27          6          0          0          0          0          0
            0          0          0          0          0          0         -1       1698        690        130
          880       7935          0          5         99          2         16         96         18         18
           18          0         71
0      56q array has      2 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      56q array has      1 entries.
0      57q array has      3 entries.
0       1q array has     20 entries.
0       1q array has     10 entries.
     l90  97376
     l116  60826
     l32  33663 nuclata (library) storage size
     l44  33734
     l103  75953
0      58q array has      4 entries.
0      60q array has      7 entries.
0      58q array has      7 entries.
0      66q array has      1 entries.
0      73q array has   1697 entries.
0      74q array has   1697 entries.
0      75q array has   1697 entries.
     l140  66991
     used  101044 in size  200000
0jqpt           12
            0          0          0          0          0          0          0          0          0          0
            0          0
0therm          4
 5.125936E-01 4.497346E-01 3.489329E+00 1.000000E-31
0nan            5
         7935         20          6         18       1697
0mm            19
            7          7          0          0          1          1          0          0          0          0
           21        100       1697          4          3         74          4          1          0
0tconst         5
```

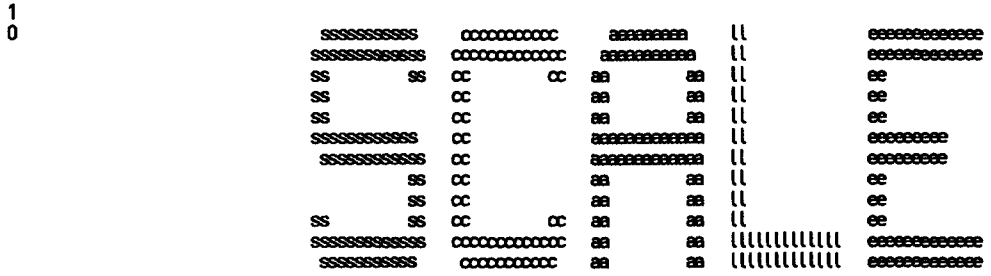
```
  8.640000E+04 9.601346E+02  .000000E+00  .000000E+00 1.000000E-08
0mzero          4
          0         689         129         879
0pow            3
   .000000E+00  .000000E+00  .000000E+00
0 lirp          9
          6           0          51          26           2        3000        1000        1697          94
 n-gamma, fission and total mev/fission =              7.4172E+00  1.9683E+02  2.0425E+02
 start of interval flux =         1.60782E+13
 n-gamma, fission and total mev/fission =              7.4945E+00  1.9691E+02  2.0440E+02
 start of interval flux =         1.61169E+13
 n-gamma, fission and total mev/fission =              7.5889E+00  1.9698E+02  2.0457E+02
 start of interval flux =         1.61552E+13
 n-gamma, fission and total mev/fission =              7.6825E+00  1.9705E+02  2.0473E+02
 start of interval flux =         1.61953E+13
 start of interval flux =          .00000E+00
 n-gamma, fission and total mev/fission =              7.7959E+00  1.9712E+02  2.0492E+02
 start of interval flux =         1.62348E+13
 n-gamma, fission and total mev/fission =              7.8675E+00  1.9719E+02  2.0506E+02
 start of interval flux =         1.62804E+13
0 case or subcase    1  sas2h: babcock wilcox 15x15, 3.00w%, 20gd/mtu burn high temp
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has      1 entries.
0       56q array has      1 entries.
0       56q array has     20 entries.
0       56q array has     20 entries.
0requested parm=halt8,skipcellwt,skipshipdata
  pass= 8, exec halts after pass  8
1  bbbbbbbbbbb     ooooooooooo   m         m                 aaaaaaaaa    mm         mm  iiiiiiiiiii     zzzzzzzzzz
   bbbbbbbbbbbb   ooooooooooooo  mm        m                aaaaaaaaaaa   mmm        mm  iiiiiiiiiii     zzzzzzzzzzz
   bb        bb   oo         oo  mmm       m               aa         aa  mmmm      mmm      ii              zz
   bb        bb   oo         oo  m mm      m               aa         aa  m mm     mm mm     ii             zz
   bb        bb   oo         oo  m  m      m               aa         aa  m  mm   mm  mm     ii            zz
   bbbbbbbbbbb    oo         oo  m   m     m  ----------   aaaaaaaaaaaa  m   mmm  mm  mm     ii           zz
   bbbbbbbbbbb    oo         oo  m    m    m  ----------   aaaaaaaaaaaa  m    m   mm  mm     ii          zz
   bb        bb   oo         oo  m     m   m               aa         aa  m        mm  mm     ii         zz
   bb        bb   oo         oo  m      m  m               aa         aa  m        mm  mm     ii        zz
   bb        bb   oo         oo  m       mm               aa         aa  m        mm  mm     ii       zz
   bbbbbbbbbbbb   ooooooooooooo  m        m               aa         aa  m        mm  iiiiiiiiiii  zzzzzzzzzzz
   bbbbbbbbbbb     ooooooooooo   m        m               aa         aa  m        mm  iiiiiiiiiii  zzzzzzzzzzz
0

   ddddddddddd     aaaaaaaaa    w         w  iiiiiiiiiii   sssssssssss
   ddddddddddddd   aaaaaaaaaaa  w         w  iiiiiiiiiii   sssssssssssss
   dd        dd   aa         aa  w         w      ii       ss         ss
   dd        dd   aa         aa  w         w      ii       ss
   dd        dd   aa         aa  w         w      ii       ss
   dd        dd   aaaaaaaaaaaaa  w         w      ii       sssssssssss
   dd        dd   aaaaaaaaaaaaa   w       w       ii        sssssssssss
   dd        dd   aa         aa    w     w        ii              ss
   dd        dd   aa         aa     w   w         ii              ss
   dd        dd   aa         aa      w w          ii       ss     ss
   ddddddddddddd  aa         aa       ww      iiiiiiiiiii  sssssssssss
   ddddddddddddd  aa         aa        v      iiiiiiiiiii   sssssssssss
0

     0000000     zzzzzzzzzz            //       11        6666666666          //  9999999999    6666666666
```







```
**********************************************************************
**********************************************************************
**********************************************************************
******                                                          ******
******                program verification information          ******
******                                                          ******
******                code system:   scale  version:   4.2      ******
******                                                          ******
**********************************************************************
**********************************************************************
******                                                          ******
******                                                          ******
******          program:  c0c008                                ******
******                                                          ******
******     creation date:  04/27/95                             ******
******                                                          ******
******          library:  /neutronics/scale/exe                 ******
```

```
                    *****                                                       *****
                    *****                                                       *****
                    *****   this is not a  scale  configuration controlled code *****
                    *****                                                       *****
                    *****            jobname:  davis                            *****
                    *****                                                       *****
                    *****   date of execution:  02/16/96                        *****
                    *****                                                       *****
                    *****   time of execution:  10:04:57                        *****
                    *****                                                       *****
                    *****                                                       *****
                    ***************************************************************
                    ***************************************************************
                    ***************************************************************

1
0      -1q array has      1 entries.
0       0q array has      4 entries.
0       1q array has      6 entries.
0       2q array has      2 entries.
1logical assignments
0master library   12
 working library   0
 scratch file     18
 new library       1
0p r o b l e m   d e s c r i p t i o n
0igr--geometry (0/1/2/3--inf med/slab/cyl/sphere                2
0izm--number of zones or material regions                       4
0ms--mixing table length                                       66
0ibl--shielded cross section edit option (0/1--no/yes)          0
0ibr--bondarenko factor edit option (0/1--no/yes)               0
0issopt--dancoff factor option                                  0
0convergence criterion    1.0000E-03
0geometry correction factor for wigner rational approximation  1.350E+00
0       3q array has     66 entries.
0       4q array has     66 entries.
0       5q array has     66 entries.
0       6q array has      4 entries.
0       7q array has      4 entries.
0       8q array has      4 entries.
0       9q array has      4 entries.
0      10q array has     66 entries.
0      11q array has      4 entries.
0m i x i n g   t a b l e
0entry  mixture   isotope   number density   new identifier
    1        1     92235     3.29451E-04            92235
    2        1     92234     4.10648E-06            92234
    3        1     92236     6.72906E-05            92236
    4        1     92238     2.17324E-02            92238
    5        1      8016     4.55359E-02             8016
    6        3      8016     2.09710E-02                6
    7        1     36083     1.81372E-06            36083
    8        1     36085     8.71779E-07            36085
    9        1     38090     2.00600E-05            38090
   10        1     39089     1.64607E-05            39089
   11        1     42095     2.30516E-05            42095
   12        1     40093     1.64590E-05            40093
   13        1     40094     2.61240E-05            40094
   14        1     40095     1.92652E-06            40095
   15        1     41094     1.43208E-11            41094
   16        1     43099     2.55495E-05            43099
```

```
   17      1        45103   1.43117E-05          45103
   18      1        45105   2.51927E-08          45105
   19      1        44101   2.36761E-05          44101
   20      1        44106   3.50872E-06          44106
   21      1        46105   1.03319E-05          46105
   22      1        46108   3.17250E-06          46108
   23      1        47109   2.13200E-06          47109
   24      1        51124   4.69872E-10          51124
   25      1        54131   1.14853E-05          54131
   26      1        54132   2.33195E-05          54132
   27      1        54135   6.64007E-09          54135
   28      1        54136   4.51578E-05          54136
   29      1        55134   1.63057E-06          55134
   30      1        55135   1.43530E-05          55135
   31      1        55137   2.77063E-05          55137
   32      1        56136   3.51878E-07          56136
   33      1        57139   2.73886E-05          57139
   34      1        59141   2.40560E-05          59141
   35      1        59143   3.60032E-07          59143
   36      1        58144   6.94065E-06          58144
   37      1        60143   2.05000E-05          60143
   38      1        60145   1.54707E-05          60145
   39      1        61147   4.51200E-06          61147
   40      1        61148   1.36887E-08          61148
   41      1        60147   1.28677E-07          60147
   42      1        62147   2.20336E-06          62147
   43      1        62149   9.06657E-08          62149
   44      1        62150   5.84210E-06          62150
   45      1        62151   4.61651E-07          62151
   46      1        62152   2.70673E-06          62152
   47      1        64155   3.60027E-09          64155
   48      1        63153   1.87279E-06          63153
   49      1        63154   4.84438E-07          63154
   50      1        63155   2.11219E-07          63155
   51      2        40302   4.25156E-02          40302
   52      3         1001   4.19420E-02           1001
   53      3         5010   3.81515E-06           5010
   54      3         5011   1.54884E-05           5011
   55      1        55133   2.80248E-05          55133
   56      1        95237   5.71129E-06          95237
   57      1        94238   1.15608E-06          94238
   58      1        94239   1.24276E-04          94239
   59      1        94240   3.02932E-05          94240
   60      1        94241   1.81183E-05          94241
   61      1        94242   2.91035E-06          94242
   62      1        95241   7.18357E-07          95241
   63      1        95243   3.83515E-07          95243
   64      1        96244   5.30179E-08          96244
   65      1          999   1.00000E-20            999
   66      4          999   1.00000E-20             66
Ogeometry and material description
Ozone   mixture   outer dimension   temperature      extra xs   type (0/1--fuel/mod)
    1         1      4.68122E-01    9.75000E+02   9.05844E-01             0
    2         4      4.78790E-01    2.93000E+02   5.49010E-01             0
    3         2      5.46100E-01    6.50000E+02    .00000E+00             0
    4         3      8.13968E-01    6.07600E+02    .00000E+00             0
     7711 locations of   200000 available are required to make a new master containing the self-shielded values
Ono nuclides in your problem have bondarenko factor data**bonami will copy from logical 12 to logical  1
Ocopy      999  1/v cross sectio from log 12 to log 18    bondarenko trigger 0
Ocopy      999  1/v cross sectio from log 18 to log  1    bondarenko trigger 0
```

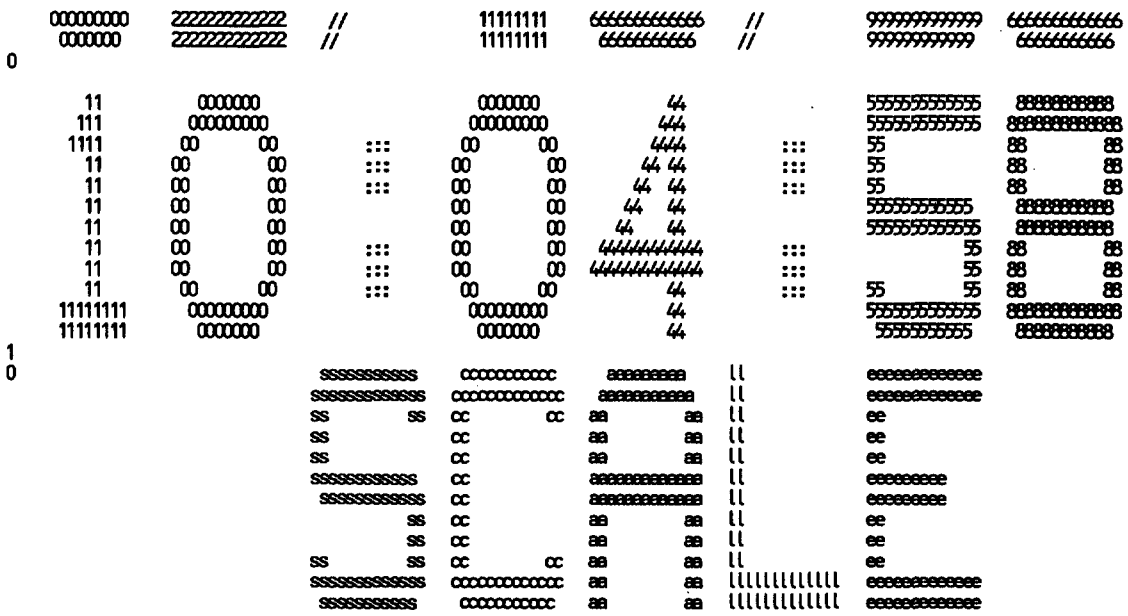
```
0copy      999  1/v cross sectio from lag 18 to lag  1   bondarenko trigger 0
0copy     1001   hydrogen        from lag 12 to lag  1   bondarenko trigger 0
0copy     5010  b-10 1273 218mgp from lag 12 to lag  1   bondarenko trigger 0
0copy     5011   boron-11        from lag 12 to lag  1   bondarenko trigger 0
0copy     8016   oxygen-16       from lag 12 to lag 18   bondarenko trigger 0
0copy     8016   oxygen-16       from lag 18 to lag  1   bondarenko trigger 0
0copy     8016   oxygen-16       from lag 18 to lag  1   bondarenko trigger 0
0copy    36083   kr-83           from lag 12 to lag  1   bondarenko trigger 0
0copy    36085   kr-85           from lag 12 to lag  1   bondarenko trigger 0
0copy    38090   sr-90           from lag 12 to lag  1   bondarenko trigger 0
0copy    39089    y-89           from lag 12 to lag  1   bondarenko trigger 0
0copy    40093   zr-93           from lag 12 to lag  1   bondarenko trigger 0
0copy    40094   zr-94           from lag 12 to lag  1   bondarenko trigger 0
0copy    40095   zr-95           from lag 12 to lag  1   bondarenko trigger 0
0copy    40302   zircalloy       from lag 12 to lag  1   bondarenko trigger 0
0copy    41094   nb-94           from lag 12 to lag  1   bondarenko trigger 0
0copy    42095   mo-95           from lag 12 to lag  1   bondarenko trigger 0
0copy    43099   tc-99           from lag 12 to lag  1   bondarenko trigger 0
0copy    44101   ru-101          from lag 12 to lag  1   bondarenko trigger 0
0copy    44106   ru-106          from lag 12 to lag  1   bondarenko trigger 0
0copy    45103   rh-103          from lag 12 to lag  1   bondarenko trigger 0
0copy    45105   rh-105          from lag 12 to lag  1   bondarenko trigger 0
0copy    46105   pd-105          from lag 12 to lag  1   bondarenko trigger 0
0copy    46108   pd-108          from lag 12 to lag  1   bondarenko trigger 0
0copy    47109   silver-109      from lag 12 to lag  1   bondarenko trigger 0
0copy    51124   sb-124          from lag 12 to lag  1   bondarenko trigger 0
0copy    54131   xe-131          from lag 12 to lag  1   bondarenko trigger 0
0copy    54132   xe-132          from lag 12 to lag  1   bondarenko trigger 0
0copy    54135   xenon-135       from lag 12 to lag  1   bondarenko trigger 0
0copy    54136   xe-136          from lag 12 to lag  1   bondarenko trigger 0
0copy    55133   cesium-133      from lag 12 to lag  1   bondarenko trigger 0
0copy    55134   cs-134          from lag 12 to lag  1   bondarenko trigger 0
0copy    55135   cs-135          from lag 12 to lag  1   bondarenko trigger 0
0copy    55137   cs-137          from lag 12 to lag  1   bondarenko trigger 0
0copy    56136   ba-136          from lag 12 to lag  1   bondarenko trigger 0
0copy    57139   la-139          from lag 12 to lag  1   bondarenko trigger 0
0copy    58144   ce-144          from lag 12 to lag  1   bondarenko trigger 0
0copy    59141   pr-141          from lag 12 to lag  1   bondarenko trigger 0
0copy    59143   pr-143          from lag 12 to lag  1   bondarenko trigger 0
0copy    60143   nd-143          from lag 12 to lag  1   bondarenko trigger 0
0copy    60145   nd-145          from lag 12 to lag  1   bondarenko trigger 0
0copy    60147   nd-147          from lag 12 to lag  1   bondarenko trigger 0
0copy    61147   pm-147          from lag 12 to lag  1   bondarenko trigger 0
0copy    61148   pm-148          from lag 12 to lag  1   bondarenko trigger 0
0copy    62147   sm-147          from lag 12 to lag  1   bondarenko trigger 0
0copy    62149   sm-149          from lag 12 to lag  1   bondarenko trigger 0
0copy    62150   sm-150          from lag 12 to lag  1   bondarenko trigger 0
0copy    62151   sm-151          from lag 12 to lag  1   bondarenko trigger 0
0copy    62152   sm-152          from lag 12 to lag  1   bondarenko trigger 0
0copy    63153   eu-153          from lag 12 to lag  1   bondarenko trigger 0
0copy    63154   eu-154          from lag 12 to lag  1   bondarenko trigger 0
0copy    63155   eu-155          from lag 12 to lag  1   bondarenko trigger 0
0copy    64155   gd-155          from lag 12 to lag  1   bondarenko trigger 0
0copy    92234  u-234 1043 sigc= from lag 12 to lag  1   bondarenko trigger 0
0copy    92235   uranium-235     from lag 12 to lag  1   bondarenko trigger 0
0copy    92236  u-236 1163 sigc= from lag 12 to lag  1   bondarenko trigger 0
0copy    92238   uranium-238     from lag 12 to lag  1   bondarenko trigger 0
0copy    93237   neptunium-237   from lag 12 to lag  1   bondarenko trigger 0
0copy    94238  pu-238 1060 sigc from lag 12 to lag  1   bondarenko trigger 0
0copy    94239   plutonium-239   from lag 12 to lag  1   bondarenko trigger 0
```

```
0copy    94240  plutonium-240   from log 12 to log  1    bondarenko trigger 0
0copy    94241  plutonium-241   from log 12 to log  1    bondarenko trigger 0
0copy    94242  plutonium-242   from log 12 to log  1    bondarenko trigger 0
0copy    95241  am-241 1056 sigp from log 12 to log  1    bondarenko trigger 0
0copy    95243  am-243 1057 218  from log 12 to log  1    bondarenko trigger 0
0copy    96244  curium-244      from log 12 to log  1    bondarenko trigger 0
1     scale 4.2 - 27 group neutron burnup library
      based on endf-b version 4 data with endf-b version 5 fission products
         compiled for nrc     1/27/89
            last updated      9/16/93
               l.m.petrie  -  ornl
       tape id                          4321        number of nuclides          66
       number of neutron groups           27        number of gamma groups       0
       first thermal group                15        logical unit                 1
                                table of contents
     1/v cross sections normalized to 1.0 at 0.0253 ev                        id    999
     1/v cross sections normalized to 1.0 at 0.0253 ev                        id     66
      hydrogen       endf/b-iv mat 1269/thrml002   updated 10/13/89          id   1001
     b-10 1273 218ngp 042375 p-3 293k                                         id   5010
      boron-11       endf/b-iv mat 1160            updated 10/13/89          id   5011
      oxygen-16      endf/b-iv mat 1276            updated 10/13/89          id   8016
      oxygen-16      endf/b-iv mat 1276            updated 10/13/89          id      6
      kr-83          mt=102,103,103,105,106,107    updated 10/13/89          id  36083
      kr-85            mt=  102                                               id  36085
      sr-90          mt=102                        updated 10/13/89          id  38090
       y-89          mt=102                        updated 10/13/89          id  39089
      zr-93            mt=  102                                               id  40093
      zr-94          mt=102                        updated 10/13/89          id  40094
      zr-95          mt=102                        updated 10/13/89          id  40095
      zircalloy      endf/b-iv mat 1284            updated 10/13/89          id  40302
      nb-94          mt=102                        updated 10/13/89          id  41094
      mo-95          mt=102                        updated 10/13/89          id  42095
      tc-99          mt=102                        updated 10/13/89          id  43099
      ru-101         mt=102                        updated 10/13/89          id  44101
      ru-106         mt=102                        updated 10/13/89          id  44106
      rh-103         mt=102                        updated 10/13/89          id  45103
      rh-105           mt=  102                                               id  45105
      pd-105         mt=102                        updated 10/13/89          id  46105
      pd-108         mt=102                        updated 10/13/89          id  46108
      silver-109     endf/b-iv mat 1139            updated 10/13/89          id  47109
      sb-124         mt=102                        updated 10/13/89          id  51124
      xe-131         mt=102,103,104,105,106        updated 10/13/89          id  54131
      xe-132         mt=102,103,104,105,106        updated 10/13/89          id  54132
      xenon-135      endf/b-iv mat 1294            updated 10/13/89          id  54135
      xe-136           mt=  102, 103, 104, 105, 107                           id  54136
      cesium-133     endf/b-iv mat 1141            updated 10/13/89          id  55133
      cs-134         mt=102                        updated 10/13/89          id  55134
      cs-135           mt=  102                                               id  55135
      cs-137         mt=102                        updated 10/13/89          id  55137
      ba-136         mt=102                        updated 10/13/89          id  56136
      la-139         mt=102                        updated 10/13/89          id  57139
      ce-144           mt=  102                                               id  58144
      pr-141         mt=102,103,104,105,106,107    updated 10/13/89          id  59141
      pr-143         mt=102                        updated 10/13/89          id  59143
      nd-143         mt=102                        updated 10/13/89          id  60143
      nd-145         mt=102                        updated 10/13/89          id  60145
      nd-147         mt=102                        updated 10/13/89          id  60147
      pm-147         mt=102                        updated 10/13/89          id  61147
      pm-148           mt=  102                                               id  61148
      sm-147         endf/b-v fission product      updated 10/13/89          id  62147
```

```
        sm-149        mt=102,103,107                updated 10/13/89              id    62149
        sm-150        mt=102                        updated 10/13/89              id    62150
        sm-151        mt=102,103,104,105,106,107    updated 10/13/89              id    62151
        sm-152        mt=102,103,104,105,106,107    updated 10/13/89              id    62152
        eu-153        mt=102,103,104,105,106,107    updated 10/13/89              id    63153
        eu-154        mt=102,103,104,105,106,107    updated 10/13/89              id    63154
        eu-155        mt=102,103,104,105,106,107    updated 10/13/89              id    63155
        gd-155        mt=102                        updated 10/13/89              id    64155
       u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                       id    92234
        uranium-235   endf/b-iv mat 1261            updated 10/13/89              id    92235
       u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                       id    92236
        uranium-238   endf/b-iv mat 1262            updated 10/13/89              id    92238
        neptunium-237 endf/b-iv mat 1263            updated 10/13/89              id    93237
       pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                      id    94238
        plutonium-239 endf/b-iv mat 1264            updated 10/13/89              id    94239
        plutonium-240 endf/b-iv mat 1265            updated 10/13/89              id    94240
        plutonium-241 endf/b-iv mat 1266            updated 10/13/89              id    94241
        plutonium-242 endf/b-iv mat 1161            updated 10/13/89              id    94242
       am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                             id    95241
       am-243 1057 218 gp wt f-1/e-m 090376 p3 293k                              id    95243
        curium-244    endf/b-iv mat 1162            updated 10/13/89              id    96244
0        tape copy used      0 i/o's, and took     .00 seconds
1
                m         m  iiiiiiiiiiii   ttttttttttttt     eeeeeeee    ww          ww  ll
                mm        m  iiiiiiiiiiii   ttttttttttttt    eeeeeeeeee   ww          ww  ll
                mmm       m      ii             tt         ee        ee   ww          ww  ll
                m m       m      ii             tt         ee        ee   ww          ww  ll
                m  m      m      ii             tt         ee        ee   ww          ww  ll
                m   m     m      ii             tt         eeeeeeeeeeee   ww    w     ww  ll
                m    m    m      ii             tt         eeeeeeeeeeee   ww   www    ww  ll
                m     m m m      ii             tt         ee        ee   ww  ww ww   ww  ll
                m      m m       ii             tt         ee        ee   ww ww   ww ww  ll
                m       mm       ii             tt         ee        ee   wwww     wwww  ll
                m        m  iiiiiiiiiiii       tt         ee        ee   www       www  llllllllllll
                m        m  iiiiiiiiiiii       tt         ee        ee   ww         ww  llllllllllll
0

   ddddddddddd     eeeeeeee    w         w  iiiiiiiiiiii    ssssssssss
   ddddddddddd    eeeeeeeeee   w         w  iiiiiiiiiiii   ssssssssssss
   dd        dd  ee        ee  w         w      ii        ss        ss
   dd        dd  ee        ee  w         w      ii        ss
   dd        dd  ee        ee  w         w      ii        ss
   dd        dd  eeeeeeeeeeee  w         w      ii        ssssssssss
   dd        dd  eeeeeeeeeeee   w       w       ii         ssssssssss
   dd        dd  ee        ee    w     w        ii                 ss
   dd        dd  ee        ee     w   w         ii                 ss
   dd        dd  ee        ee      w w          ii        ss       ss
   ddddddddddd   ee        ee       w           ii        ssssssssssss
   ddddddddddd   ee        ee       v           ii        ssssssssss
0

     000000     2222222222          //      11     6666666666          //  9999999999   6666666666
   00000000    22222222222         //      111    66666666666         //  99999999999  66666666666
  00      00   22        22        //      1111   66                  //  99       99  66
 00        00          22        //        11    66                  //   99       99  66
 00        00          22       //         11    66                 //    99       99  66
 00        00         22        //         11    6666666666        //     9999999999   6666666666
 00        00       22          //         11    66666666666       //      99999999    66666666666
 00        00     22            //         11    66      66       //              99   66      66
 00        00   22              //         11    66      66      //               99   66      66
  00      00   22               //         11    66      66      //               99   66      66
```




```
**********************************************************************
**********************************************************************
**********************************************************************
******                                                          ******
******                program verification information          ******
******                                                          ******
******                code system:   scale  version:   4.2      ******
******                                                          ******
**********************************************************************
**********************************************************************
******                                                          ******
******                                                          ******
******           program:  c0c002                               ******
******                                                          ******
******      creation date:  04/27/95                            ******
******                                                          ******
******           library:  /neutronics/scale/exe                ******
******                                                          ******
******                                                          ******
****** this is not a  scale  configuration controlled code       ******
******                                                          ******
******           jobname:  davis                                ******
******                                                          ******
****** date of execution:  02/16/96                             ******
******                                                          ******
****** time of execution:  10:04:58                             ******
```

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

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

       61 resonance calculations have been requested
        0 output option for ampx formatted cross section data.
0the storage allocated for this case is 200000 words
0        2q array has      65 entries.
0        3q array has     915 entries.
0        4q array has      65 entries.
0 general information concerning cross section library
    tape identification number                4321
    number of nuclides on tape                  66
    number of neutron energy groups             27
    first thermal neutron energy group          15
    number of gamma energy groups                0
0   direct access unit number  9 requires 117 blocks of length  1484 words
- xsdrn tape   4321
                    scale 4.2 - 27 group neutron burnup library
                      based on endf-b version 4 data with endf-b version 5 fission products
                        compiled for nrc      1/27/89
                          last updated       9/16/93
                            l.m.petrie   -   ornl
0 nuclides from xsdrn tape
     1    1/v cross sections normalized to 1.0 at 0.0253 ev                        999
     2     hydrogen       endf/b-iv mat 1269/thrml002   updated 10/13/89         1001
     3    b-10 1273 218ngp 042375 p-3 293k                                       5010
     4     boron-11       endf/b-iv mat 1160            updated 10/13/89         5011
     5     oxygen-16      endf/b-iv mat 1276            updated 10/13/89         8016
     6     oxygen-16      endf/b-iv mat 1276            updated 10/13/89            6
     7     kr-83          mt=102,103,103,105,106,107    updated 10/13/89        36083
     8     kr-85            mt=  102                                             36085
     9     sr-90          mt=102                        updated 10/13/89        38090
    10      y-89          mt=102                        updated 10/13/89        39089
    11     zr-93            mt=  102                                             40093
    12     zr-94          mt=102                        updated 10/13/89        40094
    13     zr-95          mt=102                        updated 10/13/89        40095
    14     zircalloy      endf/b-iv mat 1284            updated 10/13/89        40802
    15     rb-94          mt=102                        updated 10/13/89        41094
    16     mo-95          mt=102                        updated 10/13/89        42095
    17     tc-99          mt=102                        updated 10/13/89        43099
    18     ru-101         mt=102                        updated 10/13/89        44101
    19     ru-106         mt=102                        updated 10/13/89        44106
    20     rh-103         mt=102                        updated 10/13/89        45103
    21     rh-105           mt=  102                                             45105
    22     pd-105         mt=102                        updated 10/13/89        46105
    23     pd-108         mt=102                        updated 10/13/89        46108
    24     silver-109     endf/b-iv mat 1139            updated 10/13/89        47109
    25     sb-124         mt=102                        updated 10/13/89        51124
    26     xe-131         mt=102,103,104,105,106        updated 10/13/89        54131
```

```
    27    xe-132          mt=102,103,104,105,106          updated 10/13/89              54132
    28    xenon-135       endf/b-iv mat 1294              updated 10/13/89              54135
    29    xe-136            mt=  102, 103, 104, 105, 107                                54136
    30    cesium-133      endf/b-iv mat 1141              updated 10/13/89              55133
    31    cs-134          mt=102                          updated 10/13/89              55134
    32    cs-135            mt=  102                                                    55135
    33    cs-137          mt=102                          updated 10/13/89              55137
    34    ba-136          mt=102                          updated 10/13/89              56136
    35    la-139          mt=102                          updated 10/13/89              57139
    36    ce-144            mt=  102                                                    58144
    37    pr-141          mt=102,103,104,105,106,107      updated 10/13/89              59141
    38    pr-143          mt=102                          updated 10/13/89              59143
    39    nd-143          mt=102                          updated 10/13/89              60143
    40    nd-145          mt=102                          updated 10/13/89              60145
    41    nd-147          mt=102                          updated 10/13/89              60147
    42    pm-147          mt=102                          updated 10/13/89              61147
    43    pm-148            mt=  102                                                    61148
    44    sm-147          endf/b-v fission product        updated 10/13/89              62147
    45    sm-149          mt=102,103,107                  updated 10/13/89              62149
    46    sm-150          mt=102                          updated 10/13/89              62150
    47    sm-151          mt=102,103,104,105,106,107      updated 10/13/89              62151
    48    sm-152          mt=102,103,104,105,106,107      updated 10/13/89              62152
    49    eu-153          mt=102,103,104,105,106,107      updated 10/13/89              63153
    50    eu-154          mt=102,103,104,105,106,107      updated 10/13/89              63154
    51    eu-155          mt=102,103,104,105,106,107      updated 10/13/89              63155
    52    gd-155          mt=102                          updated 10/13/89              64155
    53   u-234 1043 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                             92234
    54    uranium-235     endf/b-iv mat 1261              updated 10/13/89              92235
    55   u-236 1163 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                             92236
    56    uranium-238     endf/b-iv mat 1262              updated 10/13/89              92238
    57    neptunium-237   endf/b-iv mat 1263              updated 10/13/89              93237
    58   pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                            94238
    59    plutonium-239   endf/b-iv mat 1264              updated 10/13/89              94239
    60    plutonium-240   endf/b-iv mat 1265              updated 10/13/89              94240
    61    plutonium-241   endf/b-iv mat 1266              updated 10/13/89              94241
    62    plutonium-242   endf/b-iv mat 1161              updated 10/13/89              94242
    63   am-241 1056 sigo=5+4 newklacs 218ngp p-3 293k                                   95241
    64   am-243 1057 218 gp wt f-1/e-m 090576 p3 293k                                    95243
    65    curium-244      endf/b-iv mat 1162              updated 10/13/89              96244
01/v cross sections normalized to 1.0 at 0.0253 ev                          999    temperature=   975.00
0 hydrogen        endf/b-iv mat 1269/thrm1002    updated 10/13/89            1001    temperature=   607.60
                        thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0b-10 1273 218ngp 042375 p-3 293k                                           5010    temperature=   607.60
                        thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 boron-11        endf/b-iv mat 1160             updated 10/13/89            5011    temperature=   607.60
                        thermal scattering matrix number  2 at a temperature of   550.00 was selected.
0 oxygen-16       endf/b-iv mat 1276             updated 10/13/89            8016    temperature=   975.00
0 oxygen-16       endf/b-iv mat 1276             updated 10/13/89               6    temperature=   607.60
0 kr-83           mt=102,103,103,105,106,107     updated 10/13/89           36083    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =    82.202          temperature(kelvin)      =   975.000
0potential scatter sigma  =     7.004          lumped nuclear density   = 1.8137241E-06
0spin factor (g)          =  4988.190          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 9.4148664E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.0504055E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
```

```
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11      -2.726823E-03     .000000E+00   -3.444124E-03
  12       2.164301E-02     .000000E+00    9.884226E-03
  13      -5.916534E-01     .000000E+00   -1.766241E-01
  14       4.783685E-05     .000000E+00   -1.724147E-05
0excess resonance integrals
0                resolved
0absorption      1.44590E+02
 fission          .00000E+00
- elapsed time    .00 min.
0 kr-85           mt=  102                                          36085    temperature=  975.00
0 sr-90         mt=102                        updated 10/13/89      38090    temperature=  975.00
0  y-89         mt=102                        updated 10/13/89      39089    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =    88.142          temperature(kelvin)     =   975.000
0potential scatter sigma =     3.644          lumped nuclear density  = 1.6460750E-05
0spin factor (g)         =    78.664          lump dimension (a-bar)  = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995            sigma(per absorber atom)= 1.0373749E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.933            sigma(per absorber atom)= 1.1573869E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   9      -4.946415E-06     .000000E+00   -4.070307E-04
  10      -1.010821E-04     .000000E+00   -2.851098E-04
0excess resonance integrals
0                resolved
0absorption      1.46353E-01
 fission          .00000E+00
- elapsed time    .00 min.
0 zr-93           mt=  102                                          40093    temperature=  975.00
0 zr-94         mt=102                        updated 10/13/89      40094    temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =    93.100          temperature(kelvin)     =   975.000
0potential scatter sigma =     3.779          lumped nuclear density  = 2.6124020E-05
0spin factor (g)         =   180.853          lump dimension (a-bar)  = 4.6812201E-01
0inner radius            =  .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995            sigma(per absorber atom)= 6.5365015E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   237.933            sigma(per absorber atom)= 7.2926973E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   8      -1.715812E-06     .000000E+00   -1.608045E-03
   9      -5.114553E-05     .000000E+00   -4.521406E-03
0excess resonance integrals
0                resolved
0absorption      3.43462E-02
 fission          .00000E+00
- elapsed time    .00 min.
0 zr-95         mt=102                        updated 10/13/89      40095    temperature=  975.00
0 zircalloy     endf/b-iv mat 1284            updated 10/13/89      40302    temperature=  650.00
0resonance data for this nuclide
0mass number (a)         =    90.436          temperature(kelvin)     =   650.000
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0potential scatter sigma =     6.385              lumped nuclear density    = 4.251560E-02
0spin factor (g)         =     1.079              lump dimension (a-bar)    = 5.461000E-01
0inner radius            = 4.787899E-01           dancoff correction (c)    = 5.036463E-01
0the absorber will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss         res scat
   8      -1.780596E-03     .000000E+00    -1.286907E+00
   9      -5.898373E-02     .000000E+00    -2.695297E+00
  10      -6.959935E-02     .000000E+00    -1.601321E+00
  11      -1.883937E-01     .000000E+00    -7.920912E-01
0excess resonance integrals
0                 resolved
0absorption      2.28539E-01
 fission          .00000E+00
- elapsed time    .02 min.
0 rb-94          mt=102                    updated 10/13/89          41094     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =    93.101              temperature(kelvin)       =   975.000
0potential scatter sigma =     3.779              lumped nuclear density    = 1.4320781E-11
0spin factor (g)         = 43808.801              lump dimension (a-bar)    = 4.681220IE-01
0inner radius            =  .0000000E+00          dancoff correction (c)    = 3.426926IE-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995               sigma(per absorber atom)= 1.192391OE+10
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.933               sigma(per absorber atom)= 1.390836OE+10
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss         res scat
  13       1.043053E-02     .000000E+00     9.253249E-04
  14       9.836727E-03     .000000E+00    -4.064839E-04
0excess resonance integrals
0                 resolved
0absorption      9.15001E+01
 fission          .00000E+00
- elapsed time    .02 min.
0 mo-95          mt=102                    updated 10/13/89          42095     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =    94.091              temperature(kelvin)       =   975.000
0potential scatter sigma =     3.806              lumped nuclear density    = 2.3051618E-05
0spin factor (g)         =   607.724              lump dimension (a-bar)    = 4.681220IE-01
0inner radius            =  .0000000E+00          dancoff correction (c)    = 3.426926IE-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995               sigma(per absorber atom)= 7.407710OE+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.933               sigma(per absorber atom)= 8.264694IE+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss         res scat
  10      -4.875015E-03     .000000E+00    -2.926810E-02
  11      -9.137521E-03     .000000E+00    -1.501381E-02
  12      -6.205746E+00     .000000E+00    -7.138883E+00
  13       1.560822E-04     .000000E+00    -1.886280E-05
0excess resonance integrals
0                 resolved
0absorption      9.55450E+01
 fission          .00000E+00
- elapsed time    .03 min.
```

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0 tc-99        mt=102                    updated 10/13/89          43099     temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =   98.150          temperature(kelvin)     =   975.000
0potential scatter sigma =    6.000         lumped nuclear density  = 2.5549456E-05
0spin factor (g)        = 4527.940          lump dimension (a-bar)  = 4.6812201E-01
0inner radius           = .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =  15.995           sigma(per absorber atom)= 6.6834966E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    = 237.933           sigma(per absorber atom)= 7.4566982E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  11     -3.297395E-02    .000000E+00   -1.552925E-02
  12     -8.767703E-03    .000000E+00   -3.101468E-04
  13     -5.338085E-01    .000000E+00   -2.808330E-02
  14     -1.126903E+01    .000000E+00   -3.591854E-01
  15      1.069416E-02    .000000E+00   -5.378884E-04
  16      4.835891E-03    .000000E+00   -2.801828E-04
  17      2.074195E-04    .000000E+00   -1.191841E-05
0excess resonance integrals
0              resolved
0absorption    3.1969E+02
 fission       .0000E+00
- elapsed time  .03 min.
0 ru-101       mt=102                    updated 10/13/89          44101     temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =  100.039          temperature(kelvin)     =   975.000
0potential scatter sigma =    3.965         lumped nuclear density  = 2.3676123E-05
0spin factor (g)        = 8785.290          lump dimension (a-bar)  = 4.6812201E-01
0inner radius           = .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =  15.995           sigma(per absorber atom)= 7.2123169E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    = 237.933           sigma(per absorber atom)= 8.0466968E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  11     -3.694152E-02    .000000E+00   -3.706604E-03
  12     -2.101600E-01    .000000E+00   -5.001156E-02
  13     -6.353251E-01    .000000E+00   -1.710328E-02
  14      2.367621E-04    .000000E+00   -4.135463E-05
0excess resonance integrals
0              resolved
0absorption    7.8955E+01
 fission       .0000E+00
- elapsed time  .03 min.
0 ru-106       mt=102                    updated 10/13/89          44106     temperature=  975.00
0 rh-103       mt=102                    updated 10/13/89          45103     temperature=  975.00
0resonance data for this nuclide
0mass number (a)        =  102.021          temperature(kelvin)     =   975.000
0potential scatter sigma =    5.408         lumped nuclear density  = 1.4311722E-05
0spin factor (g)        =     .500          lump dimension (a-bar)  = 4.6812201E-01
0inner radius           = .0000000E+00      dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =  15.995           sigma(per absorber atom)= 1.1931457E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    = 237.933           sigma(per absorber atom)= 1.3311788E+04
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0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  9       1.204389E-03      .000000E+00      1.788869E-03
 10      -5.018506E-03      .000000E+00     -6.849820E-03
 11      -2.882715E-02      .000000E+00     -2.528439E-02
 12      -4.875087E-04      .000000E+00     -2.801735E-05
 13       .000000E+00       .000000E+00      .000000E+00
 14       .000000E+00       .000000E+00      .000000E+00
 15       2.245639E-01      .000000E+00      3.170446E-03
 16       2.830610E+01      .000000E+00     -8.509586E-02
 17      -1.880581E+02      .000000E+00     -1.769714E-01
 18       8.646072E+01      .000000E+00      2.602341E-01
 19       1.139143E+01      .000000E+00     -1.224586E-03
 20       1.079806E+00      .000000E+00     -2.404856E-03
 21       2.165706E-01      .000000E+00      1.925355E-03
 22       2.583927E-01      .000000E+00      2.926545E-03
 23      -9.878527E-02      .000000E+00      1.798742E-03
0excess resonance integrals
0                 resolved
0absorption      1.13329E+03
 fission          .00000E+00
-  elapsed time    .07 min.
0 rh-105          mt=  102                                          45105     temperature=   975.00
0 pd-105        mt=102                    updated 10/13/89        46105     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   104.004          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.069          lumped nuclear density   = 1.0331927E-05
0spin factor (g)          = 15210.000          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.6527381E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933            sigma(per absorber atom)= 1.8439402E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
 12      -6.809954E-02      .000000E+00     -2.334454E-03
 13      -7.995243E-02      .000000E+00     -1.860649E-03
 14       7.754399E-04      .000000E+00     -8.104906E-05
0excess resonance integrals
0                 resolved
0absorption      6.11507E+01
 fission          .00000E+00
-  elapsed time    .07 min.
0 pd-108        mt=102                    updated 10/13/89        46108     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   106.977          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.146          lumped nuclear density   = 3.1724992E-06
0spin factor (g)          = 21175.100          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 5.3824973E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933            sigma(per absorber atom)= 6.0051887E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
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```
0group       res abs         res fiss        res scat
  11       1.169765E-04     .000000E+00    3.530660E-04
  12      -2.857494E+00     .000000E+00   -2.103978E+00
  13       6.680858E-03     .000000E+00    1.885999E-03
  14       8.560859E-02     .000000E+00   -3.210489E-05
  15      -1.841547E-01     .000000E+00    8.083373E-05
  16       2.946591E-04     .000000E+00   -9.255674E-06
0excess resonance integrals
0                  resolved
0absorption       2.10595E+02
 fission           .00000E+00
- elapsed time     .07 min.
0 silver-109     endf/b-iv mat 1139          updated 10/13/89          47109     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   107.969          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.988          lumped nuclear density   = 2.132001BE-06
0spin factor (g)          =  1441.870          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 8.0093602E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933            sigma(per absorber atom)= 8.9359484E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  10       -2.564913E-04     .000000E+00   -2.992681E-04
  11       -9.993934E-03     .000000E+00   -7.286188E-03
  12       -7.463377E-01     .000000E+00   -3.687714E-02
  13        7.666948E-01     .000000E+00    3.380718E-02
  14       -2.031872E+01     .000000E+00   -1.884823E+00
0excess resonance integrals
0                  resolved
0absorption       1.37614E+03
 fission           .00000E+00
- elapsed time     .08 min.
0 sb-124         mt=102                      updated 10/13/89          51124     temperature=   975.00
0 xe-131         mt=102,103,104,105,106      updated 10/13/89          54131     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   129.781          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.301          lumped nuclear density   = 1.1485292E-05
0spin factor (g)          =   246.825          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995            sigma(per absorber atom)= 1.4867684E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.933            sigma(per absorber atom)= 1.6587699E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9       -3.839524E-06     .000000E+00   -3.538854E-05
  10       -2.589499E-04     .000000E+00   -2.257703E-04
  11       -3.124803E-03     .000000E+00   -2.320908E-03
  12       -5.929664E-02     .000000E+00   -5.519651E-03
  13       -8.836818E+01     .000000E+00   -2.070617E+02
  14        1.039511E-02     .000000E+00    1.456956E-02
0excess resonance integrals
0                  resolved
0absorption       7.37500E+02
```

```
 fission          .00000E+00
- elapsed time    .08 min.
0 xe-132        mt=102,103,104,105,106        updated 10/13/89              54132    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   130.771             temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.301             lumped nuclear density   = 2.3319530E-05
0spin factor (g)          =   675.899             lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00          dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995             sigma(per absorber atom)= 7.3226045E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933             sigma(per absorber atom)= 8.1697432E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9     -3.613185E-05     .000000E+00   -1.677534E-04
  10     -1.091632E-02     .000000E+00   -1.389546E-01
  11      3.338928E-08     .000000E+00   -9.226723E-07
0excess resonance integrals
0                resolved
0absorption     9.65781E-01
 fission          .00000E+00
- elapsed time    .08 min.
0 xenon-135     endf/b-iv mat 1294            updated 10/13/89              54135    temperature=  975.00
0 xe-136          mt=  102,  103,  104,  105,  107                          54136    temperature=  975.00
0 cesium-133    endf/b-iv mat 1141            updated 10/13/89              55133    temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   131.764             temperature(kelvin)      =   975.000
0potential scatter sigma  =     7.100             lumped nuclear density   = 2.8024819E-05
0spin factor (g)          =   374.437             lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00          dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995             sigma(per absorber atom)= 6.0931592E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   238.051             sigma(per absorber atom)= 6.5357119E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
   9     -7.626979E-05     .000000E+00   -5.370495E-04
  10     -3.880106E-03     .000000E+00   -7.411718E-03
  11     -1.434303E-01     .000000E+00   -2.506073E-01
  12     -2.228179E-01     .000000E+00   -3.098573E-02
  13     -3.706751E-01     .000000E+00   -2.016849E-02
  14     -1.585101E+01     .000000E+00   -6.935894E-01
  15      5.617684E-03     .000000E+00   -4.040337E-04
  16      2.777807E-03     .000000E+00   -2.215017E-04
  17      2.352259E-03     .000000E+00   -1.830746E-04
  18      2.215079E-03     .000000E+00   -1.679363E-04
  19      1.317512E-03     .000000E+00   -9.681352E-05
0excess resonance integrals
0                resolved
0absorption     3.46055E+02
 fission          .00000E+00
- elapsed time    .10 min.
0 cs-134        mt=102                        updated 10/13/89              55134    temperature=  975.00
0 cs-135          mt=  102                                                  55135    temperature=  975.00
0 cs-137        mt=102                        updated 10/13/89              55137    temperature=  975.00
0 ba-136        mt=102                        updated 10/13/89              56136    temperature=  975.00
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0resonance data for this nuclide
0mass number (a)          =   134.737          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.835          lumped nuclear density   = 3.5187762E-07
0spin factor (g)          =  1247.690          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 4.8528150E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   257.933          sigma(per absorber atom)= 5.4142288E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  10      8.530733E-07     .000000E+00   3.484196E-07
  11     -4.364408E-05     .000000E+00  -3.643748E-05
0excess resonance integrals
0                resolved
0absorption     1.38465E+00
 fission         .00000E+00
- elapsed time    .12 min.
0 la-139        mt=102                  updated 10/13/89          57139    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   137.713          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.906          lumped nuclear density   = 2.7388562E-05
0spin factor (g)          =   145.855          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 6.2347080E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   257.933          sigma(per absorber atom)= 6.9559902E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
   9     -3.695308E-05     .000000E+00  -3.095299E-03
  10     -5.133480E-04     .000000E+00  -2.743127E-02
  11      .000000E+00      .000000E+00   .000000E+00
  12     -9.349354E-02     .000000E+00  -5.643091E-02
0excess resonance integrals
0                resolved
0absorption     8.03619E+00
 fission         .00000E+00
- elapsed time    .12 min.
0 ce-144         mt=  102                                          58144    temperature=   975.00
0 pr-141        mt=102,103,104,105,106,107   updated 10/13/89     59141    temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   139.697          temperature(kelvin)      =   975.000
0potential scatter sigma  =     4.953          lumped nuclear density   = 2.4055988E-05
0spin factor (g)          =  1026.500          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 7.0984277E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   257.933          sigma(per absorber atom)= 7.9196329E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  10     -9.366466E-03     .000000E+00  -3.182227E-01
  11     -1.521154E-01     .000000E+00  -2.022333E+00
```

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  12      -3.555179E-03     .000000E+00   -3.483960E-04
0excess resonance integrals
0                 resolved
0absorption       1.20251E+01
 fission           .00000E+00
- elapsed time     .12 min.
0 pr-143          mt=102                    updated 10/13/89              59143     temperature=   975.00
0 nd-143          mt=102                    updated 10/13/89              60143     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   141.682          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.000          lumped nuclear density   = 2.049998E-05
0spin factor (g)          =  1964.860          lump dimension (a-bar)   = 4.681220IE-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.426928IE-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 8.329742E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 9.295394E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  10      -2.012659E-04     .000000E+00   -1.244567E-04
  11      -4.714201E-01     .000000E+00   -5.472325E+00
  12      -3.134185E-01     .000000E+00   -1.541217E-01
0excess resonance integrals
0                 resolved
0absorption       5.05055E+01
 fission           .00000E+00
- elapsed time     .12 min.
0 nd-145          mt=102                    updated 10/13/89              60145     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   143.668          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.047          lumped nuclear density   = 1.547073IE-05
0spin factor (g)          =  1007.250          lump dimension (a-bar)   = 4.681220IE-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.426928IE-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.103759E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953          sigma(per absorber atom)= 1.231451E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  10      -6.324348E-03     .000000E+00   -9.915684E-02
  11      -9.467698E-02     .000000E+00   -2.868854E-01
  12      -2.238582E+00     .000000E+00   -1.408134E+01
  13       9.550272E-05     .000000E+00    2.048740E-04
  14      -2.098093E+00     .000000E+00   -5.512056E-02
  15       5.892251E-03     .000000E+00   -4.599468E-04
  16       1.326648E-03     .000000E+00   -1.451205E-04
  17       9.642470E-04     .000000E+00   -1.063907E-04
  18       8.539751E-04     .000000E+00   -9.313989E-05
  19       7.634095E-04     .000000E+00   -8.069885E-05
  20       2.839469E-05     .000000E+00   -2.920642E-06
0excess resonance integrals
0                 resolved
0absorption       2.04663E+02
 fission           .00000E+00
- elapsed time     .13 min.
0 nd-147          mt=102                    updated 10/13/89              60147     temperature=   975.00
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0 pm-147        mt=102                          updated 10/13/89              61147     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   145.653             temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.093             lumped nuclear density    = 4.5120155E-06
0spin factor (g)          = 21589.500             lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00         dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995             sigma(per absorber atom)= 3.7845547E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953             sigma(per absorber atom)= 4.2223832E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  12      -2.273065E-01     .000000E+00    -7.274823E-02
  13      -5.826789E-02     .000000E+00    -3.273887E-03
  14      -1.005808E+02     .000000E+00    -4.320737E+01
  15       4.125411E-02     .000000E+00     6.973337E-03
  16       1.697908E-02     .000000E+00     1.746655E-03
  17       1.369737E-02     .000000E+00     1.150451E-03
  18       1.253792E-02     .000000E+00     9.649321E-04
  19       6.998683E-04     .000000E+00     5.069563E-05
0excess resonance integrals
0                 resolved
0absorption      1.99190E+03
 fission          .00000E+00
-  elapsed time    .13 min.
0 pm-148          mt=  102                                                61148     temperature=   975.00
0 sm-147        endf/b-v fission product        updated 10/13/89              62147     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   145.653             temperature(kelvin)       =   975.000
0potential scatter sigma  =     5.093             lumped nuclear density    = 2.2033623E-06
0spin factor (g)          =      .000             lump dimension (a-bar)    = 4.6812201E-01
0inner radius             =  .0000000E+00         dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995             sigma(per absorber atom)= 7.7499602E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.953             sigma(per absorber atom)= 8.6465391E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11       2.531995E-01     .000000E+00     1.026770E+00
  12       6.925951E-01     .000000E+00    -1.801583E+00
  13      -5.105210E+00     .000000E+00    -3.361143E+00
  14      -6.485435E-01     .000000E+00    -9.227741E-03
  15       3.108576E-01     .000000E+00    -1.889360E-03
  16       7.287601E-03     .000000E+00    -3.739430E-04
  17       4.281461E-03     .000000E+00    -2.401664E-04
  18       3.510383E-03     .000000E+00    -1.997177E-04
  19       2.910569E-03     .000000E+00    -1.649473E-04
  20       8.434785E-04     .000000E+00    -4.626470E-05
0excess resonance integrals
0                 resolved
0absorption      7.19832E+02
 fission          .00000E+00
-  elapsed time    .15 min.
                          thermal scattering matrix number  3 at a temperature of    900.03 was selected.
0 sm-149        mt=102,103,107                  updated 10/13/89              62149     temperature=   975.00
0resonance data for this nuclide
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0mass number (a)          =   147.638          temperature(kelvin)      =   975.000
0potential scatter sigma  =     3.260          lumped nuclear density   = 9.0665708E-08
0spin factor (g)          = 10407.900          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 1.8833989E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 2.1012860E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  11      8.546572E-03     .000000E+00    3.071153E-02
  12     -5.606520E-02     .000000E+00   -1.834105E-01
  13      2.252520E-02     .000000E+00    2.740474E-03
  14     -1.121898E-03     .000000E+00   -8.399253E-03
0excess resonance integrals
0                 resolved
0absorption      8.04326E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-150       mt=102                    updated 10/13/89          62150     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   148.629          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.162          lumped nuclear density   = 5.8421019E-06
0spin factor (g)          =  4376.420          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 2.9229152E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 3.2610619E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  10     -1.916888E-03     .000000E+00   -1.862840E-02
  11     -4.404323E-02     .000000E+00   -4.970627E-01
  12     -1.437634E-01     .000000E+00   -4.344102E-02
  13     -9.971263E+00     .000000E+00   -7.845757E+00
  14      1.064415E-04     .000000E+00   -6.365839E-05
0excess resonance integrals
0                 resolved
0absorption      2.83489E+02
 fission          .00000E+00
- elapsed time    .15 min.
0 sm-151       mt=102,103,104,105,106,107    updated 10/13/89          62151     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   149.623          temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.185          lumped nuclear density   = 4.6166064E-07
0spin factor (g)          = 75574.703          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 3.6988944E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933          sigma(per absorber atom)= 4.1268128E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs         res fiss        res scat
  14     -2.664968E-01     .000000E+00   -2.407252E-02
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  15      1.482324E+01     .000000E+00   7.495161E-02
  16     -2.184584E+01     .000000E+00  -6.215366E-02
  17      1.734203E+02     .000000E+00   8.254912E-01
  18     -3.208668E+02     .000000E+00  -1.785959E+00
  19      6.252787E+01     .000000E+00   3.867234E-01
  20      1.141006E+00     .000000E+00  -1.381543E-04
  21     -7.117630E-02     .000000E+00   1.244101E-02
  22      6.952575E-02     .000000E+00   3.838917E-03
  23     -1.091929E-02     .000000E+00   3.374082E-04
0excess resonance integrals
0                 resolved
0absorption     2.05581E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 sm-152       mt=102,103,104,105,106,107     updated 10/13/89              62152     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   150.615              temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.208              lumped nuclear density   = 2.7067281E-06
0spin factor (g)          =   863.594              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995              sigma(per absorber atom)= 6.3087125E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933              sigma(per absorber atom)= 7.0885563E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss          res scat
   9      2.402534E-06     .000000E+00   1.158422E-04
  10     -2.209686E-03     .000000E+00  -3.404345E-02
  11     -3.158748E-02     .000000E+00  -1.201679E-01
  12     -2.107241E-01     .000000E+00  -6.678880E-01
  13      4.146076E-02     .000000E+00   1.007926E-01
  14     -1.800018E+02     .000000E+00  -3.473057E+02
0excess resonance integrals
0                 resolved
0absorption     2.67894E+03
 fission          .00000E+00
- elapsed time    .17 min.
0 eu-153       mt=102,103,104,105,106,107     updated 10/13/89              63153     temperature=  975.00
0resonance data for this nuclide
0mass number (a)          =   151.607              temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.731              lumped nuclear density   = 1.8727959E-06
0spin factor (g)          = 12265.900              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00          dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995              sigma(per absorber atom)= 9.1179117E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.933              sigma(per absorber atom)= 1.0172746E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss          res scat
  12     -3.151911E-01     .000000E+00  -6.169670E-02
  13     -2.597048E-01     .000000E+00  -1.150879E-02
  14     -1.181352E+00     .000000E+00  -6.071259E-03
  15     -4.179145E-02     .000000E+00  -6.054394E-02
  16     -3.307578E+00     .000000E+00   8.152518E-03
  17      1.505559E-01     .000000E+00  -3.437564E-03
  18      7.726792E-02     .000000E+00  -2.231180E-03
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  19      5.055416E-02     .000000E+00   -1.541084E-03
  20     -1.253808E-01     .000000E+00   -1.274912E-03
0excess resonance integrals
0                resolved
0absorption      1.35238E+03
 fission          .00000E+00
- elapsed time    .18 min.
0 eu-154        mt=102,103,104,105,106,107     updated 10/13/89              63154     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   152.601              temperature(kelvin)      =   975.000
0potential scatter sigma  =     9.731              lumped nuclear density   = 4.8443843E-07
0spin factor (g)          = 19135.801              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00           dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995                sigma(per absorber atom)= 3.5248597E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953                sigma(per absorber atom)= 3.9526891E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss        res scat
  12     -4.021110E-01     .000000E+00   -6.263666E-02
  13     -3.529810E-01     .000000E+00   -2.641435E-02
  14      2.707021E-01     .000000E+00    1.353824E-02
  15      2.154105E-02     .000000E+00    2.040740E-02
  16      7.004523E+00     .000000E+00    9.140816E-02
  17     -1.450002E+02     .000000E+00   -1.900830E+00
  18      1.130468E+02     .000000E+00    1.854371E+00
  19     -1.014953E+02     .000000E+00    1.187526E+00
0excess resonance integrals
0                resolved
0absorption      2.13529E+03
 fission          .00000E+00
- elapsed time    .18 min.
0 eu-155        mt=102,103,104,105,106,107     updated 10/13/89              63155     temperature=   975.00
0 gd-155        mt=102                         updated 10/13/89              64155     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   153.592              temperature(kelvin)      =   975.000
0potential scatter sigma  =     5.277              lumped nuclear density   = 3.6002734E-09
0spin factor (g)          = 12700.100              lump dimension (a-bar)   = 4.6812201E-01
0inner radius             = .0000000E+00           dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995                sigma(per absorber atom)= 4.7429644E+07
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   237.953                sigma(per absorber atom)= 5.2916696E+07
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss        res scat
  12     -1.439572E+00     .000000E+00   -1.839546E-01
  13      1.540814E+00     .000000E+00    1.984648E-01
  14      2.186907E-01     .000000E+00    9.800664E-03
  15     -3.396920E-01     .000000E+00   -2.237280E-04
  16      1.477357E+00     .000000E+00   -4.148862E-03
  17      1.568659E-01     .000000E+00   -1.479108E-03
  18      9.605182E-02     .000000E+00   -1.078062E-03
  19      6.295395E-02     .000000E+00   -8.026944E-04
  20      1.670401E-02     .000000E+00    1.626967E-04
  21       .000000E+00     .000000E+00     .000000E+00
  22       .000000E+00     .000000E+00     .000000E+00
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  23       .000000E+00     .000000E+00     .000000E+00
  24       .000000E+00     .000000E+00     .000000E+00
  25      -2.128025E+03    .000000E+00    -1.622201E+00
  26      -5.205858E+03    .000000E+00     1.961556E+00
  27      -1.660053E+03    .000000E+00     7.392990E-01
0excess resonance integrals
0                  resolved
0absorption       3.96996E+04
 fission           .00000E+00
-  elapsed time    .20 min.
0u-234 1043 sigo=5+4 new+lacs p-3 293k f-1/e-m(1.+5)                    92234     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   232.029          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.021          lumped nuclear density   = 4.1064836E-06
0spin factor (g)          =  6948.450          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 4.1582949E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   237.985          sigma(per absorber atom)= 4.6379398E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  11      -1.961208E-02     .000000E+00    -5.722908E-02
  12      -1.601150E-01     .000000E+00    -6.698953E-02
  13       7.760650E-04     .000000E+00    -6.473847E-04
  14      -1.579266E+01     .000000E+00    -2.586926E+00
0excess resonance integrals
0                  resolved
0absorption       5.85330E+02
 fission           .00000E+00
-  elapsed time    .20 min.
0 uranium-235   endf/b-iv mat 1261          updated 10/13/89          92235     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   233.025          temperature(kelvin)      =   975.000
0potential scatter sigma  =    11.500          lumped nuclear density   = 3.2945091E-04
0spin factor (g)          = 15171.100          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =    15.995          sigma(per absorber atom)= 5.1831604E+02
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =   238.049          sigma(per absorber atom)= 5.5623993E+02
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs          res fiss         res scat
  12      -1.406618E+00    -8.762665E-01    -3.299534E-02
  13      -5.052756E+00    -2.519020E+00    -1.097110E-01
  14      -4.070006E+00    -2.511537E+00    -2.790143E-02
0excess resonance integrals
0                  resolved
0absorption       2.15877E+02
 fission           1.28393E+02
-  elapsed time    .22 min.
0u-236 1163 sigo=5+4 new+lacs p-3 293k f-1/e-m(1.+5)                    92236     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   234.017          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.995          lumped nuclear density   = 6.7290581E-05
0spin factor (g)          =  6328.490          lump dimension (a-bar)   = 4.6812201E-01
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0inner radius            =  .0000000E+00          dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995               sigma(per absorber atom)= 2.5376465E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  237.934               sigma(per absorber atom)= 2.8307280E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss        res scat
  11      -3.205253E-01      .000000E+00   -8.065267E-01
  12      -1.740610E+00      .000000E+00   -1.175568E+00
  13      -7.067173E-02      .000000E+00   -3.588744E-03
  14      -5.391120E+01      .000000E+00   -4.716531E+00
0excess resonance integrals
0                  resolved
0absorption       2.6404%E+02
 fission           .0000E+00
- elapsed time     .22 min.
0 uranium-238   endf/b-iv mat 1262          updated 10/13/89          92238     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =  236.006            temperature(kelvin)      =   975.000
0potential scatter sigma =   10.599            lumped nuclear density   = 2.1732399E-02
0spin factor (g)         =  656.527            lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995            sigma(per absorber atom)= 7.8573786E+00
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  235.041            sigma(per absorber atom)= 3.3831647E-01
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss        res scat
   9      -3.922767E-02      .000000E+00   -4.031110E-01
  10      -1.025260E+00     -1.739109E-05   -6.468191E+00
  11      -9.700805E+00      .000000E+00   -2.688294E+01
  12      -4.303446E+01      .000000E+00   -4.997449E+01
  13      -5.400053E+01      .000000E+00   -1.768741E+01
  14      -1.044746E+02      .000000E+00   -6.058397E+00
0excess resonance integrals
0                  resolved
0absorption       1.8086%E+01
 fission          5.0416%E-04
- elapsed time     .25 min.
0 neptunium-237  endf/b-iv mat 1263          updated 10/13/89          93237     temperature=   975.00
0resonance data for this nuclide
0mass number (a)         =  235.012            temperature(kelvin)      =   975.000
0potential scatter sigma =   10.500            lumped nuclear density   = 5.7112925E-06
0spin factor (g)         = 10100.800           lump dimension (a-bar)   = 4.6812201E-01
0inner radius            =  .0000000E+00       dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =   15.995            sigma(per absorber atom)= 2.9898605E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =  238.051            sigma(per absorber atom)= 3.2070176E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs          res fiss        res scat
  11      -6.415946E-02     -2.341952E-06   -7.461254E-03
  12       2.260366E-03     -1.367187E-04    4.616411E-03
  13      -1.053958E-01      8.240857E-05   -4.853373E-03
```

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  14      -1.720739E-01   -2.041332E-05   -2.414718E-03
0excess resonance integrals
0                 resolved
0absorption       2.92790E+02
 fission          1.38500E-01
- elapsed time    .27 min.
0pu-238 1050 sigo=5+4 newklacs p-3 293k f-1/e-m(1.+5)                    9423B     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.167             temperature(kelvin)     =   975.000
0potential scatter sigma  =    10.890             lumped nuclear density  = 1.1560305E-06
0spin factor (g)          = 13130.600             lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00         dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995              sigma(per absorber atom)= 1.4771209E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051              sigma(per absorber atom)= 1.5844058E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11      -7.587170E-03   -1.185391E-03   -7.182622E-03
  12      -5.238791E-03   -5.998517E-04   -2.438190E-03
  13       3.688336E-01    7.361796E-02   -1.347240E-02
  14      -3.832955E-01   -7.007144E-02    8.539291E-03
0excess resonance integrals
0                 resolved
0absorption       8.24762E+01
 fission          9.08013E+00
- elapsed time    .27 min.
0 plutonium-239  endf/b-iv mat 1264          updated 10/13/89            9423g     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   236.999             temperature(kelvin)     =   975.000
0potential scatter sigma  =    10.200             lumped nuclear density  = 1.2427598E-04
0spin factor (g)          =  6435.710             lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00         dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995              sigma(per absorber atom)= 1.3740361E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2      =  238.051              sigma(per absorber atom)= 1.4738339E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  11      -2.584350E-01   -1.041815E-01   -7.897274E-02
  12      -2.277330E+00   -8.551598E-01   -2.991308E-01
  13      -7.430213E+00   -4.370307E+00   -1.138121E-01
  14      -2.367054E+00   -1.260185E+00   -2.088675E-02
0excess resonance integrals
0                 resolved
0absorption       3.04900E+02
 fission          1.71368E+02
- elapsed time    .28 min.
0 plutonium-240  endf/b-iv mat 1265          updated 10/13/89            9424o     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   237.992             temperature(kelvin)     =   975.000
0potential scatter sigma  =    10.599             lumped nuclear density  = 3.0293155E-05
0spin factor (g)          =   669.244             lump dimension (a-bar)  = 4.6812201E-01
0inner radius             =  .0000000E+00         dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1      =   15.995              sigma(per absorber atom)= 5.6369063E+03
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0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 6.0463213E+03
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
   9      -7.751930E-05   -2.527774E-06   -3.998371E-04
  10      -7.247898E-03   -4.475637E-04   -3.306840E-02
  11      -2.280458E-01   -1.319958E-03   -3.029641E-01
  12      -3.118556E+00   -1.702781E-02   -2.983013E+00
  13      -3.913366E-01   -2.399544E-03   -2.851979E-02
  14       .000000E+00     .000000E+00     .000000E+00
  15       1.719924E-02    3.282550E-06    3.363419E-03
  16       2.579595E+00    4.925270E-04    3.156881E-01
  17       3.784549E+02    7.222978E-02    3.331969E+01
  18      -9.504828E+03   -1.814088E+00   -7.483503E+02
  19       4.425319E+02    8.445916E-02    3.632726E+01
  20      -9.435818E+01   -1.800868E-02    1.798456E+00
0excess resonance integrals
0                resolved
0absorption     3.82386E+03
 fission        1.73142E+00
- elapsed time    .30 min.
0 plutonium-241  endf/b-iv mat 1266          updated 10/13/89          9424I     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   238.978          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.989          lumped nuclear density   = 1.8118280E-05
0spin factor (g)          = 16402.100          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 9.4247178E+03
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 1.0109246E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
  12      -1.407894E-02   -1.332271E-02    5.022025E-04
  13      -1.183183E+00   -9.034095E-01   -3.408006E-02
  14      -1.202047E+00   -8.511612E-01   -3.674328E-03
  15       1.777249E-02    1.592212E-02   -4.605964E-04
0excess resonance integrals
0                resolved
0absorption     5.06232E+02
 fission        4.24597E+02
- elapsed time    .32 min.
0 plutonium-242  endf/b-iv mat 1161          updated 10/13/89          9424Z     temperature=   975.00
0resonance data for this nuclide
0mass number (a)          =   240.145          temperature(kelvin)      =   975.000
0potential scatter sigma  =    10.694          lumped nuclear density   = 2.9103480E-06
0spin factor (g)          =  6606.710          lump dimension (a-bar)   = 4.6812201E-01
0inner radius             =  .0000000E+00      dancoff correction (c)   = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1    =    15.995              sigma(per absorber atom)= 5.8673289E+04
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2    =   238.051              sigma(per absorber atom)= 6.2934793E+04
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group        res abs         res fiss        res scat
```

```
  11     -7.952340E-03     .000000E+00   -2.154490E-02
  12     -1.668367E-01     .000000E+00   -3.208174E-01
  13     -4.553379E-04     .000000E+00   -8.138200E-07
  14      8.100781E-02     .000000E+00    1.510768E-02
  15     -5.726017E+01     .000000E+00   -4.603442E+00
  16      4.024002E-02     .000000E+00   -3.439860E-03
  17      1.550333E-02     .000000E+00   -1.848019E-03
  18      1.112551E-02     .000000E+00   -1.430582E-03
0excess resonance integrals
0                resolved
0absorption      1.07474E+03
 fission          .0000E+00
- elapsed time    .32 min.
0am-241 1056 sigp-5+4 newklacs 218ngp p-3 295k                          95241     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   238.950          temperature(kelvin)     =   975.000
0potential scatter sigma =     9.511          lumped nuclear density  = 7.1835694E-07
0spin factor (g)         = 82058.203          lump dimension (a-bar)  = 4.6812201E-01
0inner radius            = .0000000E+00       dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 2.3770869E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   238.051          sigma(per absorber atom)= 2.5497373E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  13     4.803471E-01   1.205702E-02   4.248833E-03
  14     -4.924113E-01  -1.156366E-02  -5.801683E-03
0excess resonance integrals
0                resolved
0absorption      1.95383E+02
 fission         1.07544E+00
- elapsed time    .32 min.
0am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                           95243     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   240.940          temperature(kelvin)     =   975.000
0potential scatter sigma =     9.511          lumped nuclear density  = 3.8351467E-07
0spin factor (g)         = 82052.602          lump dimension (a-bar)  = 4.6812201E-01
0inner radius            = .0000000E+00       dancoff correction (c)  = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1     =    15.995          sigma(per absorber atom)= 4.4524958E+05
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2     =   238.051          sigma(per absorber atom)= 4.7758834E+05
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group       res abs        res fiss       res scat
  13     -1.088286E-02     .000000E+00   3.156997E-04
  14      1.681003E-03     .000000E+00  -7.395966E-05
0excess resonance integrals
0                resolved
0absorption      1.60121E+02
 fission          .0000E+00
- elapsed time    .32 min.
0 curium-244     endf/b-iv mat 1162          updated 10/13/89           96244     temperature=  975.00
0resonance data for this nuclide
0mass number (a)         =   242.133          temperature(kelvin)     =   975.000
0potential scatter sigma =    10.320          lumped nuclear density  = 5.3017931E-08
0spin factor (g)         =  5251.150          lump dimension (a-bar)  = 4.6812201E-01
```

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0inner radius          =  .0000000E+00        dancoff correction (c)    = 3.4269261E-01
0the absorber will be treated by the nordheim integral method.
0mass of moderator-1   =   15.995             sigma(per absorber atom)= 3.2207913E+06
0moderator-1 will be treated by the nordheim integral method.
0mass of moderator-2   =  238.051             sigma(per absorber atom)= 3.4547208E+06
0moderator-2 will be treated by the nordheim integral method.
0this resonance material will be treated as a 2-dimensional object.
0volume fraction of lump in cell used to account for spatial self-shielding=1.00000
0group      res abs        res fiss       res scat
  11     9.779739E-05   2.721715E-06   8.773984E-05
  12     1.566525E-04   1.130186E-05  -4.530439E-05
  13     1.849926E-03   9.752654E-05   6.787102E-04
  14    -1.728596E-01  -1.034203E-02  -5.648884E-02
0excess resonance integrals
0              resolved
0absorption   6.13582E+02
 fission      3.54030E+01
-  elapsed time    .33 min.
-  elapsed time    .33 min.
1     this xsdrn working tape was created 02/16/96 at 10:04:59
      the title of the parent case is as follows
      scale 4.2 - 27 group neutron burnup library
         based on endf-b version 4 data with endf-b version 5 fission products
            compiled for nnc    1/27/89
          tape id                          4321      number of nuclides          65
          number of neutron groups           27      number of gamma groups       0
          first thermal group                15      logical unit                 4
                                  table of contents
        1/v cross sections normalized to 1.0 at 0.0253 ev                    id    999
         hydrogen       endf/b-iv mat 1269/thrml002   updated 10/13/89     id   1001
        b-10 1273 218ngp 042375 p-3 293k                                    id   5010
         boron-11       endf/b-iv mat 1160            updated 10/13/89     id   5011
         oxygen-16      endf/b-iv mat 1276            updated 10/13/89     id   8016
         oxygen-16      endf/b-iv mat 1276            updated 10/13/89     id      6
         kr-83          mt=102,103,103,105,106,107    updated 10/13/89     id  36083
         kr-85            mt=  102                                         id  36085
         sr-90          mt=102                        updated 10/13/89     id  38090
          y-89          mt=102                        updated 10/13/89     id  39089
         zr-93            mt=  102                                         id  40093
         zr-94          mt=102                        updated 10/13/89     id  40094
         zr-95          mt=102                        updated 10/13/89     id  40095
         zircalloy      endf/b-iv mat 1284            updated 10/13/89     id  40302
         rb-94          mt=102                        updated 10/13/89     id  41094
         mo-95          mt=102                        updated 10/13/89     id  42095
         tc-99          mt=102                        updated 10/13/89     id  43099
         ru-101         mt=102                        updated 10/13/89     id  44101
         ru-106         mt=102                        updated 10/13/89     id  44106
         rh-103         mt=102                        updated 10/13/89     id  45103
         rh-105           mt=  102                                         id  45105
         pd-105         mt=102                        updated 10/13/89     id  46105
         pd-108         mt=102                        updated 10/13/89     id  46108
         silver-109     endf/b-iv mat 1139            updated 10/13/89     id  47109
         sb-124         mt=102                        updated 10/13/89     id  51124
         xe-131         mt=102,103,104,105,106        updated 10/13/89     id  54131
         xe-132         mt=102,103,104,105,106        updated 10/13/89     id  54132
         xenon-135      endf/b-iv mat 1294            updated 10/13/89     id  54135
         xe-136           mt=  102, 103, 104, 105, 107                     id  54136
         cesium-133     endf/b-iv mat 1141            updated 10/13/89     id  55133
         cs-134         mt=102                        updated 10/13/89     id  55134
         cs-135           mt=  102                                         id  55135
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        ba-136        mt=102                          updated 10/13/89              id    56136
        la-139        mt=102                          updated 10/13/89              id    57139
        ce-144           mt=  102                                                   id    58144
        pr-141        mt=102,103,104,105,106,107      updated 10/13/89              id    59141
        pr-143        mt=102                          updated 10/13/89              id    59143
        nd-143        mt=102                          updated 10/13/89              id    60143
        nd-145        mt=102                          updated 10/13/89              id    60145
        nd-147        mt=102                          updated 10/13/89              id    60147
        pm-147        mt=102                          updated 10/13/89              id    61147
        pm-148           mt=  102                                                   id    61148
        sm-147        endf/b-v fission product        updated 10/13/89              id    62147
        sm-149        mt=102,103,107                  updated 10/13/89              id    62149
        sm-150        mt=102                          updated 10/13/89              id    62150
        sm-151        mt=102,103,104,105,106,107      updated 10/13/89              id    62151
        sm-152        mt=102,103,104,105,106,107      updated 10/13/89              id    62152
        eu-153        mt=102,103,104,105,106,107      updated 10/13/89              id    63153
        eu-154        mt=102,103,104,105,106,107      updated 10/13/89              id    63154
        eu-155        mt=102,103,104,105,106,107      updated 10/13/89              id    63155
        gd-155        mt=102                          updated 10/13/89              id    64155
       u-234 1043 sigp=5+4 newxlacs p-3 295k f-1/e-m(1.+5)                          id    92234
        uranium-235   endf/b-iv mat 1261              updated 10/13/89              id    92235
       u-236 1163 sigp=5+4 newxlacs p-3 295k f-1/e-m(1.+5)                          id    92236
        uranium-238   endf/b-iv mat 1262              updated 10/13/89              id    92238
        neptunium-237 endf/b-iv mat 1263              updated 10/13/89              id    93237
       pu-238 1050 sigp=5+4 newxlacs p-3 295k f-1/e-m(1.+5)                         id    94238
        plutonium-239 endf/b-iv mat 1264              updated 10/13/89              id    94239
        plutonium-240 endf/b-iv mat 1265              updated 10/13/89              id    94240
        plutonium-241 endf/b-iv mat 1266              updated 10/13/89              id    94241
        plutonium-242 endf/b-iv mat 1161              updated 10/13/89              id    94242
       am-241 1056 sigp=5+4 newxlacs 218ngp p-3 295k                                id    95241
       am-243 1057 218 gp wt f-1/e-m 090376 p3 295k                                 id    95243
        curium-244    endf/b-iv mat 1162              updated 10/13/89              id    96244
0        tape copy used      0 i/o's, and took     .00 seconds
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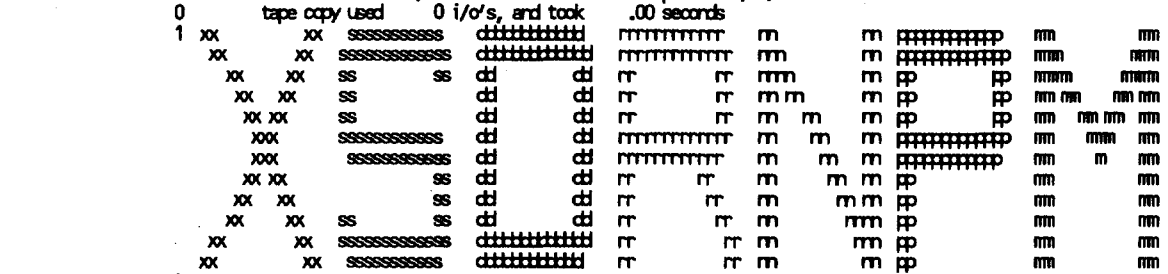

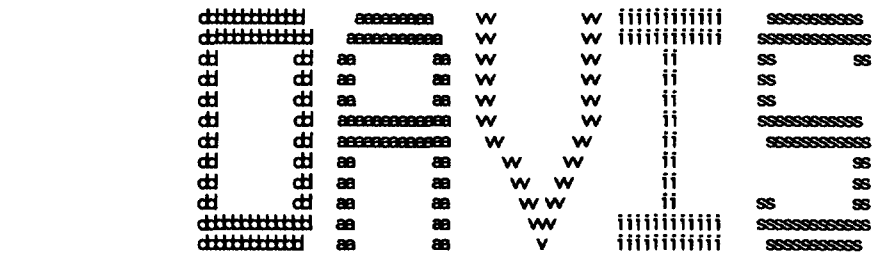

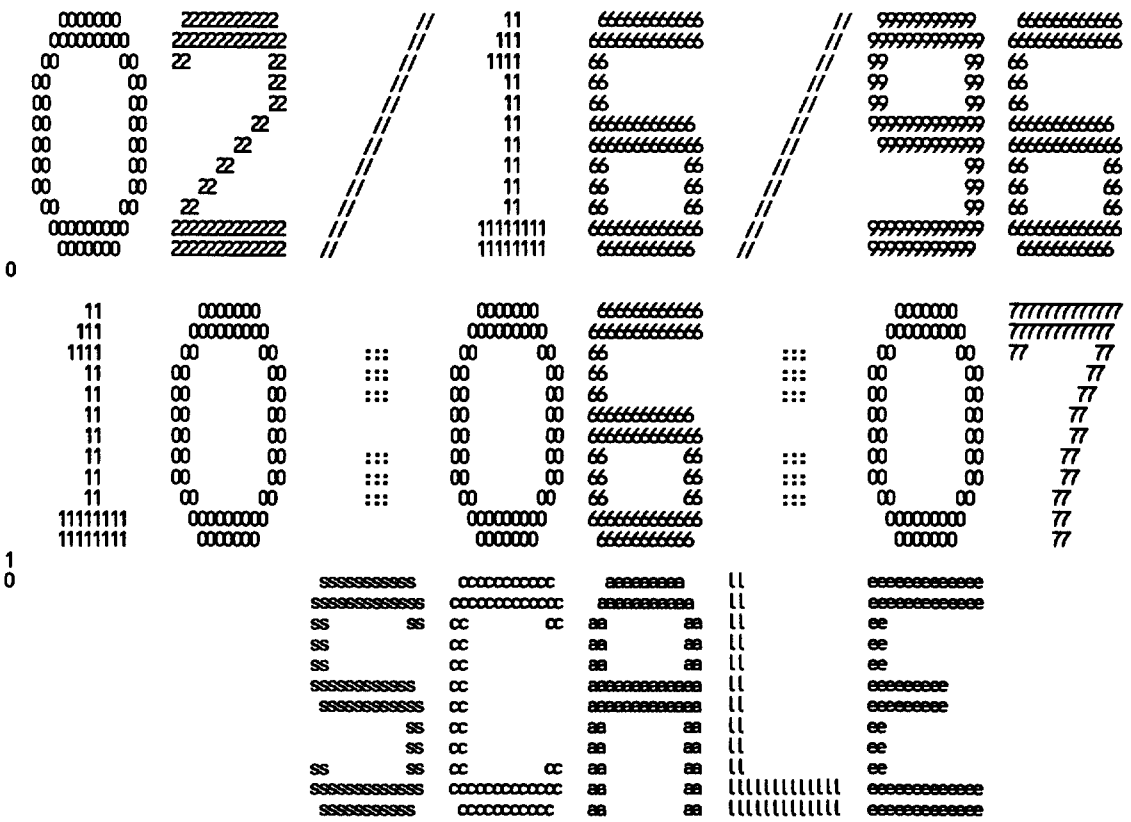
program verification information
code system: scale version: 4.2
program: c0c001

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                    ******              library:  /neutronics/scale/exe       ******
                    ******                                                    ******
                    ******                                                    ******
                    ******    this is not a   scale  configuration controlled code  ******
                    ******                                                    ******
                    ******              jobname:  davis                       ******
                    ******                                                    ******
                    ******    date of execution:  02/16/96                    ******
                    ******                                                    ******
                    ******    time of execution:  10:06:07                    ******
                    ******                                                    ******
                    ******                                                    ******
                    ************************************************************
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1
                    1200 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0       -1q array has      1 entries.
0        1q array has     15 entries.
0        2q array has     10 entries.
0        3q array has     12 entries.
0        4q array has      9 entries.
0        5q array has     12 entries.
0direct access unit   9 requires    12 blocks of length  704 for cross section mixing.
1                     1200 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0general problem description data block
0                              general problem data

 ige  1/2/3 = plane/cylinder/sphere      2        isn  quadrature order                 8
 izm  number of zones                    4        isct order of scattering              3
 im   number of special intervals       24        ievt 0/1/2/3/4/5/6=q/k/alpha/c/z/r/h  1
 ibl  0/1/2/3 = vacuum/refl/per/white    1        iim  inner iteration maximum       20
 ibr  right boundary condition           3        iom  outer iteration maximum       25
 mxx  number of mixtures                 3        iclc -1/0/n--flat res/sn/cpt          0
 ms   mixing table length               65        ith  0/1 = forward/adjoint           0
 igm  number of energy groups           27        iflu not used(always wgtd)            0
 nng  number of neutron groups          27        iprt -2/-1/0/n=mixture xsec print    -2
 ngg  number of gamma groups             0        idl  0/1/2/3=no/prt nd/pch n/both   53
 iftg number of first thermal group     15        ipbt -1/0/1=none/fine/all bal. prt    0
0                            special options

 ifg  0/1 = none/weighting calculation   1        ipn  0/1/2 diff. coef. param         0
 iqm  volumetric sources (0/n=no/yes)    0        idfm 0/1 = none/density factors 39*   1
 ipm  boundary sources (0/n=no/yes)      0        iaz  0/n = none/n activities by zone  0
 ifn  0/1/2 = input 33*/34*/use last    53        iai  0/1=none/activities by interval  0
 itmx maximum time (minutes)            10        ifct 0/1=no/yes upscatter scaling     0
 idt1 0/1/2/3=no/xsect/srce/flux--out    0        ipvt 0/1/2=no/k/alpha parametric srch 0
 isx  broad group fluxes                 0        isen outer iteration acceleration     0
 ibln activity data unit                 0        nbnd band rebaln parameter            0
 jbkl 0/1/2 buckling geometry            0
0                          weighting data (ifg=1)

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

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

this case will require 2535 locations for mixing
this case has been allocated 200000 locations

1 1200 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp
0 13q array has 65 entries.
0 14q array has 65 entries.
0 15q array has 65 entries.
0 data block 2 (mixing table, etc.)

	nuclides on tape	cccc identification	mixing table mixture	component	atom density	extra xsect id's
1	999		1	92235	3.29451E-04	
2	1001		1	92234	4.10648E-06	
3	5010		1	92236	6.72906E-05	
4	5011		1	92238	2.17524E-02	
5	8016		1	8016	4.55359E-02	
6	6		3	6	2.09710E-02	
7	36083		1	36083	1.81372E-06	
8	36085		1	36085	8.71779E-07	
9	38090		1	38090	2.00600E-05	
10	39089		1	39089	1.64607E-05	
11	40093		1	42095	2.30516E-05	
12	40094		1	40093	1.64590E-05	
13	40095		1	40094	2.61240E-05	
14	40802		1	40095	1.92652E-06	
15	41094		1	41094	1.43208E-11	
16	42095		1	43099	2.55495E-05	
17	43099		1	45103	1.43117E-05	
18	44101		1	45105	2.51927E-08	
19	44106		1	44101	2.36761E-05	
20	45103		1	44106	3.50872E-06	
21	45105		1	46105	1.03319E-05	
22	46105		1	46108	3.17250E-06	
23	46108		1	47109	2.13200E-06	
24	47109		1	51124	4.69372E-10	
25	51124		1	54131	1.14853E-05	
26	54131		1	54132	2.33195E-05	
27	54132		1	54135	6.64007E-09	
28	54135		1	54136	4.51578E-05	
29	54136		1	55134	1.63057E-06	
30	55133		1	55135	1.43530E-05	
31	55134		1	55137	2.77063E-05	
32	55135		1	56136	3.51878E-07	
33	55137		1	57139	2.73886E-05	
34	56136		1	59141	2.40560E-05	
35	57139		1	59143	3.60052E-07	
36	58144		1	58144	6.94065E-06	
37	59141		1	60143	2.05000E-05	
38	59143		1	60145	1.54707E-05	
39	60143		1	61147	4.51202E-06	
40	60145		1	61148	1.36887E-08	
41	60147		1	60147	1.28577E-07	
42	61147		1	62147	2.20536E-06	
43	61148		1	62149	9.06657E-08	
44	62147		1	62150	5.84210E-06	

45	62149	1	62151	4.61651E-07
46	62150	1	62152	2.70673E-06
47	62151	1	64155	3.60027E-09
48	62152	1	63153	1.87279E-06
49	63153	1	63154	4.84438E-07
50	63154	1	63155	2.11219E-07
51	63155	2	40302	4.25156E-02
52	64155	3	1001	4.19420E-02
53	92234	3	5010	3.81515E-06
54	92235	3	5011	1.54884E-05
55	92236	1	55133	2.80248E-05
56	92238	1	95237	5.71125E-06
57	95237	1	94238	1.15603E-06
58	94238	1	94239	1.24276E-04
59	94239	1	94240	3.02952E-05
60	94240	1	94241	1.81183E-05
61	94241	1	94242	2.91035E-06
62	94242	1	95241	7.18557E-07
63	95241	1	95243	3.83515E-07
64	95243	1	96244	5.30179E-08
65	96244	1	999	1.00000E-20

- elapsed time .00 min.
0 21649 locations will be used
0 35q array has 25 entries.
0 36q array has 24 entries.
0 38q array has 24 entries.
0 39q array has 4 entries.
0 40q array has 4 entries.
0 47q array has 27 entries.
0 51q array has 27 entries.
1 1200 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

neutron group parameters

0 gp	energy boundaries	lethargy boundaries	weighted velocities	broad gp numbers	calc type	group band	right albedo	left albedo
1	2.00000E+07	-6.93147E-01	4.60581E+09	1	0	1	1.00000E+00	
2	6.43400E+06	4.40989E-01	2.88737E+09	2	0	2	1.00000E+00	
3	3.00000E+06	1.20397E+00	2.12201E+09	3	0	3	1.00000E+00	
4	1.85000E+06	1.68740E+00	1.75673E+09	4	0	4	1.00000E+00	
5	1.40000E+06	1.96611E+00	1.46535E+09	5	0	5	1.00000E+00	
6	9.00000E+05	2.40795E+00	1.06620E+09	6	0	6	1.00000E+00	
7	4.00000E+05	3.21888E+00	6.07557E+08	7	0	7	1.00000E+00	
8	1.00000E+05	4.60517E+00	2.72415E+08	8	0	8	1.00000E+00	
9	1.70000E+04	6.37713E+00	1.13526E+08	9	0	9	1.00000E+00	
10	3.00000E+03	8.11173E+00	4.82126E+07	10	0	10	1.00000E+00	
11	5.50000E+02	9.80818E+00	2.05946E+07	11	0	11	1.00000E+00	
12	1.00000E+02	1.15129E+01	1.01036E+07	12	0	12	1.00000E+00	
13	3.00000E+01	1.27169E+01	5.69595E+06	13	0	13	1.00000E+00	
14	1.00000E+01	1.38155E+01	3.20957E+06	14	0	14	1.00000E+00	
15	3.04999E+00	1.50030E+01	2.10601E+06	15	0	15	1.00000E+00	
16	1.77000E+00	1.55471E+01	1.70522E+06	16	0	16	1.00000E+00	
17	1.29999E+00	1.58557E+01	1.52545E+06	17	0	17	1.00000E+00	
18	1.12999E+00	1.59959E+01	1.42867E+06	18	0	18	1.00000E+00	
19	1.00000E+00	1.61181E+01	1.31002E+06	19	0	19	1.00000E+00	
20	8.00000E-01	1.63412E+01	9.05898E+05	20	0	20	1.00000E+00	
21	4.00000E-01	1.70344E+01	8.17974E+05	21	0	21	1.00000E+00	
22	3.25000E-01	1.72420E+01	6.90070E+05	22	0	22	1.00000E+00	
23	2.25000E-01	1.76098E+01	4.86953E+05	23	0	23	1.00000E+00	
24	9.99999E-02	1.84207E+01	3.57766E+05	24	0	24	1.00000E+00	
25	5.00000E-02	1.91138E+01	2.71895E+05	25	0	25	1.00000E+00	
26	3.00000E-02	1.96247E+01	1.87283E+05	26	0	26	1.00000E+00	

27	1.00000E-02	2.07233E+01	8.88201E+04	27	0	27	1.00000E+00
28	1.00000E-05	2.76310E+01					

1 1200 d, sas2h: babcock wilcox 15x15, 3.00wt%, 20gwd/mtu burn high temp

0

	mixture by zone	order p(l) by zone	activity table matl no.	reaction	quadrature constants weights	directions	refl direc	wt x cos
1	1	3			0	-2.79004E-01	3	0
2	1	3			5.06143E-02	-1.97286E-01	3	-9.98548E-03
3	2	3			5.06143E-02	1.97286E-01	2	9.98548E-03
4	3	3			0	-6.04419E-01	8	0
5					5.55953E-02	-5.58410E-01	8	-3.10450E-02
6					5.55953E-02	-2.31301E-01	7	-1.28593E-02
7					5.55953E-02	2.31301E-01	6	1.28593E-02
8					5.55953E-02	5.58410E-01	5	3.10450E-02
9					0	-8.50774E-01	15	0
10					5.22844E-02	-8.21784E-01	15	-4.29665E-02
11					5.22844E-02	-6.01588E-01	14	-3.14537E-02
12					5.22844E-02	-2.20196E-01	13	-1.15128E-02
13					5.22844E-02	2.20196E-01	12	1.15128E-02
14					5.22844E-02	6.01588E-01	11	3.14537E-02
15					5.22844E-02	8.21784E-01	10	4.29665E-02
16					0	-9.83052E-01	24	0
17					4.53355E-02	-9.64143E-01	24	-4.37099E-02
18					4.53355E-02	-8.17361E-01	23	-3.70555E-02
19					4.53355E-02	-5.46143E-01	22	-2.47597E-02
20					4.53355E-02	-1.91780E-01	21	-8.69444E-03
21					4.53355E-02	1.91780E-01	20	8.69444E-03
22					4.53355E-02	5.46143E-01	19	2.47597E-02
23					4.53355E-02	8.17361E-01	18	3.70555E-02
24					4.53355E-02	9.64143E-01	17	4.37099E-02

0constants for p(3) scattering

0angl	set 1	set 2	set 3	set 4	set 5
1	-2.79004E-01	8.83236E-01	6.74143E-02	-6.16919E-01	-1.71701E-02
2	-1.97286E-01	8.83236E-01	.00000E+00	-4.36228E-01	1.21411E-02
3	1.97286E-01	8.83236E-01	.00000E+00	4.36228E-01	-1.21411E-02
4	-6.04419E-01	4.52016E-01	3.16379E-01	-8.04435E-01	-1.74564E-01
5	-5.58410E-01	4.52016E-01	2.23714E-01	-7.43201E-01	-6.68028E-02
6	-2.31301E-01	4.52016E-01	-2.23713E-01	-3.07844E-01	1.61276E-01
7	2.31301E-01	4.52016E-01	-2.23713E-01	3.07844E-01	-1.61276E-01
8	5.58410E-01	4.52016E-01	2.23713E-01	7.43201E-01	6.68028E-02
9	-8.50774E-01	-8.57235E-02	6.26843E-01	-1.98456E-01	-4.86835E-01
10	-8.21784E-01	-8.57235E-02	5.42862E-01	-1.91694E-01	-3.44245E-01
11	-6.01588E-01	-8.57235E-02	.00000E+00	-1.40330E-01	3.44244E-01
12	-2.20196E-01	-8.57235E-02	-5.42862E-01	-5.13643E-02	3.44245E-01
13	2.20196E-01	-8.57235E-02	-5.42862E-01	5.13643E-02	-3.44245E-01
14	6.01588E-01	-8.57235E-02	.00000E+00	1.40330E-01	-3.44245E-01
15	8.21784E-01	-8.57235E-02	5.42862E-01	1.91694E-01	3.44245E-01
16	-9.83052E-01	-4.49528E-01	8.36885E-01	5.00708E-01	-7.51005E-01
17	-9.64143E-01	-4.49528E-01	7.73181E-01	4.91083E-01	-6.24438E-01
18	-8.17361E-01	-4.49528E-01	3.20862E-01	4.16320E-01	1.46514E-01
19	-5.46143E-01	-4.49528E-01	-3.20862E-01	2.78176E-01	7.36575E-01
20	-1.91780E-01	-4.49528E-01	-7.73181E-01	9.76824E-02	4.17236E-01
21	1.91780E-01	-4.49528E-01	-7.73181E-01	-9.76824E-02	-4.17236E-01
22	5.46143E-01	-4.49528E-01	-3.20862E-01	-2.78176E-01	-7.36575E-01
23	8.17361E-01	-4.49528E-01	3.20862E-01	-4.16320E-01	-1.46514E-01
24	9.64143E-01	-4.49528E-01	7.73181E-01	-4.91083E-01	6.24438E-01

1 int

	radii	mid pts	zone no.	areas	volumes	dens fact	radius mod	spec(int)
1	0	1.29551E-02	1	0	2.10906E-03	1.00000E+00	0	
2	2.59102E-02	4.33406E-02	1	1.62798E-01	9.49318E-03	1.00000E+00	0	
3	6.07710E-02	8.75100E-02	1	3.81835E-01	2.94045E-02	1.00000E+00	0	
4	1.14249E-01	1.74155E-01	1	7.17848E-01	1.31104E-01	1.00000E+00	0	