HPNS RG External Risk

Note: Utilized BPRG calculator and ORNL Splash correction to post proces

Parent ROC	Contributing Progeny	RG pCi/cm2	Bounding Risk*
^{241}Am		0.45	1.96E-06
^{60}Co		22.5	2.01E-04
^{137}Cs	^{137m}Ba	22.5	1.37E-04
^{152}Eu		22.5	2.13E-04
^{154}Eu		22.5	1.71E-04
^{3}H		22.5	0
^{239}Pu	^{235m}U	0.45	4.14E-09
^{226}Ra	^{222}Rn+D	0.45	1.17E-05
	^{210}Pb+D		
	^{210}Po+D		
^{90}Sr	^{90}Y	4.5	2.34E-06
^{232}Th		0.164	5.81E-06
	^{228}Ra+D		
	^{228}Th+D		
^{235}U	^{231}Th	2.2	8.36E-06

*** Assumptions**

Room	10x10x10	Walls to a hieght of 6ft, no ce
Fi		1
Fin		1
Position	Corner	

equilibrium no decay for long lived decay chains Ra-226 and th-232,

Concrete 10x10x10 Splash Room

Nuclide	Average	Center	Wall	Corner
Ac-223	1.283964419	0.797945164	1.236732235	1.459577042
Ac-224	1.042014613	0.688322533	1.010205103	1.177979118
Ac-225	1.557268434	0.938741064	1.494446938	1.775713269
Ac-226	0.943288226	0.639395982	0.91782774	1.06236754
Ac-227	1.692760571	1.023535766	1.626037734	1.923815396
Ac-228	0.669201797	0.457055158	0.65321795	0.748586914
Ac-230	0.635265336	0.431891765	0.619743383	0.710158483
Ac-231	0.797000655	0.557014947	0.779133095	0.894432603
Ac-232	0.601581254	0.409857911	0.587147624	0.671715579
Ac-233	0.639017723	0.450984863	0.626337702	0.714104473
Ag-100m	0.602028153	0.420789347	0.589524215	0.671852464
Ag-101	0.632912172	0.445340727	0.620038315	0.706755102
Ag-102m	0.573659268	0.397704863	0.561030926	0.6396746
Ag-102	0.598475062	0.417362275	0.585824356	0.667761183
Ag-103	0.66521866	0.465881562	0.650864588	0.742792799
Ag-104	0.613464603	0.426845029	0.600369024	0.684465878
Ag-104m	0.613713825	0.429296855	0.60083008	0.685071668
Ag-105	0.730253374	0.511292458	0.714474134	0.815817477
Ag-105m	0.761432746	0.530494874	0.74431853	0.850674564
Ag-106	0.659713946	0.464376538	0.646297683	0.737219071
Ag-106m	0.618924788	0.431247281	0.605741682	0.690628482
Ag-108	0.680539147	0.474334428	0.665760452	0.759910073
Ag-108m	0.649601951	0.455193843	0.636243986	0.725330467
Ag-109m	0.996907904	0.667650781	0.967595232	1.11341802
Ag-110	0.622000595	0.435858383	0.609311957	0.694118567
Ag-110m	0.595286272	0.414272771	0.582735063	0.663920793
Ag-111	0.680975969	0.489816728	0.668978222	0.761277997
Ag-111m	0.972436284	0.652452976	0.944326871	1.08605639
Ag-112	0.585927753	0.407460505	0.573357954	0.653399716
Ag-113m	0.674266347	0.479655877	0.661426456	0.753422141
Ag-113	0.654785117	0.466783158	0.642451722	0.731389031
Ag-114	0.592972462	0.41367586	0.580413921	0.661533319
Ag-115	0.589111882	0.411379682	0.57660034	0.657071891
Ag-116	0.565640697	0.391629878	0.553128216	0.630568201
Ag-117	0.563919522	0.390674186	0.551434472	0.628614752
Ag-99	0.612180406	0.429360335	0.599600555	0.683336547
Al-26	0.575474648	0.399596588	0.563076763	0.641917166
Al-28	0.542244986	0.371906732	0.529837072	0.604137187
Al-29	0.561360727	0.386429335	0.5484846	0.625326431
Am-237	0.873452672	0.598498303	0.851726311	0.980321066
Am-238	0.697933663	0.476902451	0.681002481	0.780668422
Am-239	1.065415793	0.712976423	1.035138448	1.198707187
Am-240	0.704650407	0.479008391	0.687156283	0.788115838
Am-241	1.248365367	0.792090149	1.205096848	1.404296554
Am-242	1.291703909	0.836025705	1.250422212	1.453936354

Am-242m	1.414904483	0.900813294	1.367550171	1.593016165
Am-243	1.014869354	0.682450157	0.986280669	1.142150372
Am-244	0.736567779	0.50194523	0.718717254	0.823838289
Am-244m	1.072467225	0.699232912	1.039719992	1.203963391
Am-245	0.96137255	0.657606691	0.936675707	1.0790834
Am-246	0.802870401	0.546899835	0.782916227	0.898799155
Am-246m	0.62307838	0.428824739	0.608808887	0.695186464
Am-247	0.908191059	0.626843291	0.885972548	1.018909917
Ar-37	0	0	0	0
Ar-39	0	0	0	0
Ar-41	0.565447687	0.389465262	0.552511407	0.629914226
Ar-42	0	0	0	0
Ar-43	0.56390192	0.389213566	0.551292447	0.628393158
Ar-44	0.559837764	0.387054232	0.54738532	0.623975338
As-68	0.591239031	0.411889947	0.578672271	0.659528632
As-69	0.633283707	0.447263584	0.620770221	0.707658321
As-70	0.590032773	0.410505202	0.577379409	0.658104121
As-71	0.672823703	0.473436016	0.658597663	0.753307053
As-72	0.616565697	0.432454816	0.604083336	0.688512544
As-73	2.125283661	1.119923469	2.006834051	2.473904913
As-74	0.637938263	0.44773798	0.62485297	0.712990537
As-76	0.612933492	0.429703265	0.600294393	0.684124243
As-77	0.712672336	0.505666284	0.698058624	0.798642759
As-78	0.585636199	0.406910058	0.573020292	0.653032163
As-79	0.629522296	0.44401685	0.617300457	0.703049146
At-204	0.6599823	0.459032903	0.645700972	0.738668305
At-205	0.685844459	0.465293012	0.668609376	0.769488821
At-206	0.651353715	0.451610937	0.63700967	0.728853982
At-207	0.649472918	0.442197031	0.633578772	0.727429128
At-208	0.644062535	0.442310674	0.629024243	0.720641699
At-209	0.676635841	0.461863149	0.660295445	0.758523535
At-210	0.624565444	0.424339811	0.608970196	0.69863382
At-211	1.418582177	0.848494889	1.358602087	1.624789391
At-215	0.703470309	0.492932245	0.68890708	0.78879207
At-216	1.217348135	0.749945492	1.169806138	1.391160162
At-217	0.806392173	0.54883972	0.785427701	0.908612332
At-218	0	0	0	0
At-219	0	0	0	0
At-220	0.712280301	0.504214074	0.697841418	0.797674445
Au-186	0.648864303	0.453017751	0.634897292	0.726009493
Au-187	0.651287376	0.440103827	0.634537222	0.730470964
Au-190	0.592182329	0.408182446	0.578534508	0.66150468
Au-191	0.755304941	0.5127671	0.735843371	0.850455747
Au-192	0.600388776	0.412775055	0.586421237	0.671033975
Au-193	0.970711897	0.628478792	0.938583356	1.103325942
Au-193m	0.928581143	0.613153136	0.90068404	1.051714947
Au-194	0.641927984	0.440492755	0.626697467	0.71893271

Au-195	1.325630808	0.790165911	1.268561342	1.522583776
Au-195m	0.934955394	0.615436253	0.906553069	1.059297071
Au-196	0.749805482	0.519025832	0.732593562	0.843136461
Au-196m	1.120420873	0.706168863	1.079613513	1.27737514
Au-198	0.662995423	0.472119499	0.650871534	0.741421578
Au-198m	0.845266312	0.581278213	0.823428592	0.953300285
Au-199	0.907072861	0.61496896	0.88173941	1.024830862
Au-200	0.599179584	0.417699611	0.586401921	0.668396888
Au-200m	0.656213954	0.462862992	0.643058396	0.733756105
Au-201	0.747013489	0.505597716	0.72781563	0.840187225
Au-202	0.603658047	0.421413797	0.590972558	0.673586974
Ba-124	0.648236562	0.456575168	0.634790987	0.723468207
Ba-126	0.643254705	0.452027191	0.629734173	0.717552456
Ba-127	0.640617039	0.452118105	0.627689405	0.715471549
Ba-128	0.766335624	0.539226301	0.748983924	0.854208398
Ba-129	0.660680047	0.46567431	0.646898907	0.737462562
Ba-129m	0.617297091	0.43239604	0.604355977	0.688642234
Ba-131	0.682343033	0.484679666	0.668647014	0.762035854
Ba-131m	0.758393828	0.547683311	0.742591881	0.846969721
Ba-133	0.708007006	0.504857281	0.694079747	0.79058997
Ba-133m	0.776816991	0.543336023	0.758877417	0.868176357
Ba-135m	0.749092813	0.530831432	0.732935146	0.835230388
Ba-137m	0.540007278	0.363334273	0.52565199	0.601809214
Ba-139	0.708323693	0.516894316	0.6951424	0.791272809
Ba-140	0.671172347	0.47326525	0.657435853	0.750100014
Ba-141	0.623761157	0.440544259	0.611280193	0.696218093
Ba-142	0.603870972	0.421839022	0.591041493	0.67339807
Be-10	0	0	0	0
Be-7	0.643893794	0.456856881	0.631682368	0.71978834
Bi-197	0.656383687	0.443508648	0.639614701	0.735979644
Bi-200	0.669166443	0.46069757	0.65359435	0.74986469
Bi-201	0.642175915	0.43235047	0.625517879	0.719794095
Bi-202	0.642939078	0.441696328	0.627967138	0.719603098
Bi-203	0.622050156	0.421139291	0.606488446	0.6964378
Bi-204	0.636942767	0.435349994	0.621747269	0.712902155
Bi-205	0.63982752	0.42990419	0.623098963	0.717354506
Bi-206	0.639608704	0.43777165	0.624513916	0.716102771
Bi-207	0.661368755	0.448232304	0.644576151	0.741447591
Bi-208	0.56283952	0.377249452	0.547863102	0.629147888
Bi-210	0.767200541	0.533914391	0.749628388	0.862753933
Bi-210m	0.745284594	0.521601356	0.72883406	0.837031529
Bi-211	0.730505035	0.509651796	0.714673296	0.820376536
Bi-212n	0	0	0	0
Bi-212	0.788559521	0.503222679	0.76274475	0.892322146
Bi-213	0.682299895	0.478396071	0.66822816	0.7643596
Bi-214	0.574039687	0.397006633	0.561334397	0.639970536
Bi-215	0.711172327	0.490302998	0.694413709	0.797883542

Bi-216	0.646441601	0.455924678	0.633592727	0.722636767
Bk-245	0.975974319	0.666639891	0.95058583	1.095785734
Bk-246	0.719812893	0.491562691	0.702451928	0.805048654
Bk-247	0.841244905	0.590259247	0.821972539	0.943228872
Bk-248m	0.989572534	0.664617692	0.962308883	1.110533596
Bk-249	0.790632451	0.554701766	0.773571037	0.885959267
Bk-250	0.611849126	0.421460108	0.597868271	0.682269496
Bk-251	1.061377231	0.717234456	1.032304985	1.19134026
Br-72	0.605705268	0.421896816	0.592832666	0.676263403
Br-73	0.650601366	0.455333914	0.636964859	0.72797406
Br-74	0.567580373	0.392729378	0.554769444	0.63291398
Br-74m	0.588311706	0.408488024	0.575459088	0.656454776
Br-75	0.681209019	0.475687899	0.666542301	0.763395563
Br-76	0.609177676	0.417799607	0.594839057	0.681209414
Br-76m	1.827426932	1.028648986	1.739368431	2.105031176
Br-77	1.030229461	0.635618236	0.991447293	1.175169846
Br-77m	2.018887897	1.124431987	1.919303438	2.329826128
Br-78	0.646899804	0.454853438	0.633755355	0.723543143
Br-80	0.739840525	0.493189408	0.719553038	0.833278568
Br-80m	1.961902713	1.093511461	1.86543518	2.261693877
Br-82m	2.201784707	1.204270052	2.089576584	2.544529321
Br-82	0.599711483	0.41811989	0.58713992	0.668999982
Br-83	0.634996609	0.448645182	0.622500407	0.709491647
Br-84m	0.585878175	0.407078247	0.573379972	0.653420399
Br-84	0.548030186	0.377272367	0.535549796	0.610450297
Br-85	0.588731798	0.408875302	0.576241212	0.656540376
C-10	0.626656274	0.441420515	0.614277476	0.699896147
C-11	0.637542578	0.451187282	0.625155152	0.712488239
C-14	0	0	0	0
Ca-41	0	0	0	0
Ca-45	2.135093064	1.195916955	2.032181362	2.457832103
Ca-47	0.569779793	0.393135482	0.556903828	0.634878909
Ca-49	0.510628046	0.348709696	0.498134121	0.568054732
Cd-101	0.601531219	0.419018838	0.588576614	0.671169214
Cd-102	0.663914319	0.464191807	0.649667402	0.741465966
Cd-103	0.591605126	0.408839364	0.578282273	0.659715207
Cd-104	0.770917283	0.530728272	0.751888014	0.860843335
Cd-105	0.606529444	0.419987706	0.593004836	0.676572952
Cd-107	0.995606957	0.665689704	0.966267988	1.111932911
Cd-109	1.008866074	0.673541099	0.978896776	1.126726577
Cd-111m	0.748776335	0.537131697	0.733837414	0.836870173
Cd-113	0	0	0	0
Cd-113m	0.840407633	0.581260671	0.819535985	0.938778815
Cd-115	0.644913527	0.455893625	0.632172199	0.720615441
Cd-115m	0.583874552	0.404580911	0.571116553	0.650862628
Cd-117	0.590265136	0.410909612	0.577574404	0.658228635
Cd-117m	0.56271198	0.38832182	0.55011874	0.627084259

Cd-118	0	0	0	0
Cd-119	0.571139926	0.39589649	0.558618259	0.636700099
Cd-119m	0.565120859	0.390134521	0.552487734	0.629775605
Ce-130	0.660535878	0.467991845	0.646996123	0.737121732
Ce-131	0.62106533	0.436368994	0.608336348	0.69324638
Ce-132	0.719991382	0.519835139	0.706058445	0.803883485
Ce-133	0.667582195	0.47323789	0.654029117	0.745488047
Ce-133m	0.607660038	0.424750258	0.594817181	0.677893612
Ce-134	0.77824946	0.544045142	0.759490831	0.86607355
Ce-135	0.649029153	0.459072228	0.636090513	0.724502687
Ce-137	0.791286776	0.545102571	0.771024583	0.883480904
Ce-137m	0.730970538	0.51841723	0.715235007	0.81481477
Ce-139	0.739986154	0.534504194	0.725098134	0.825763583
Ce-141	0.725872626	0.53216698	0.712368805	0.811200852
Ce-143	0.67250307	0.478947135	0.659370338	0.750769858
Ce-144	0.732613906	0.533699971	0.718295196	0.81842361
Ce-145	0.625692386	0.438814388	0.612795385	0.698041247
Cf-244	1.383628192	0.885150935	1.338032994	1.55632887
Cf-246	1.378203953	0.882168601	1.332863933	1.550111295
Cf-247	1.147846827	0.761388101	1.114209428	1.289485121
Cf-248	1.361123632	0.872015786	1.316495184	1.530736352
Cf-249	0.74104982	0.520573849	0.725846242	0.829460831
Cf-250	1.003947682	0.657336161	0.973902975	1.126498372
Cf-251	1.020558859	0.691920573	0.993046031	1.1459493
Cf-252	0.595239758	0.411601387	0.581866403	0.663934119
Cf-253	1.283285492	0.833214572	1.242994408	1.439715652
Cf-254	0.575586711	0.399717326	0.563000755	0.641690685
Cf-255	0	0	0	0
Cl-34	0.637542578	0.451187282	0.625155152	0.712488239
Cl-34m	0.569290018	0.395611096	0.556851224	0.634789257
Cl-36	0.637542578	0.451187282	0.625155152	0.712488239
Cl-38	0.536684418	0.367784395	0.524291209	0.597825922
Cl-39	0.573797166	0.397352945	0.5610334	0.63949828
Cl-40	0.531983098	0.364756664	0.519423303	0.592281636
Cm-238	1.097320445	0.734791133	1.065876633	1.234439516
Cm-239	0.927885885	0.6421635	0.904867764	1.041513441
Cm-240	1.46879402	0.927557924	1.418354833	1.656052786
Cm-241	0.849525116	0.579866388	0.828370425	0.95302958
Cm-242	1.469286127	0.927800173	1.418818883	1.656623581
Cm-243	1.030221307	0.692326995	1.00166935	1.158431186
Cm-244	1.469239012	0.92769625	1.418761741	1.656595704
Cm-245	1.126984262	0.748039489	1.093650882	1.268982287
Cm-246	1.27169439	0.811073033	1.229608535	1.432221405
Cm-247	0.672687833	0.479794006	0.660445917	0.752236054
Cm-248	0.583756805	0.40456194	0.570828018	0.650968828
Cm-249	0.653719161	0.458797164	0.64024721	0.730256223
Cm-250	0.5754837	0.399609215	0.562892336	0.641574304

Cm-251	0.70121496	0.489354566	0.686026076	0.784264958
Co-54m	0.596345878	0.415987759	0.583702846	0.665269681
Co-55	0.607061259	0.424822868	0.594514684	0.677530335
Co-56	0.564569286	0.389976753	0.551988392	0.629169908
Co-57	0.853996251	0.605961106	0.834782485	0.959380499
Co-58	0.606569324	0.423766021	0.594255976	0.676936248
Co-58m	0.923309405	0.620548829	0.896089008	1.030379031
Co-60	0.522402139	0.351228515	0.508035119	0.580960584
Co-60m	0.600883274	0.422629673	0.587844126	0.670023424
Co-61	0.65235969	0.470831034	0.640078005	0.729264152
Co-62	0.559786286	0.385422529	0.546935434	0.623517124
Co-62m	0.563881227	0.388495309	0.551013196	0.628148841
Cr-48	0.692322536	0.503163166	0.6802285	0.774362776
Cr-49	0.644013767	0.457871736	0.631580657	0.719774605
Cr-51	0.680141744	0.490119618	0.668296576	0.760364747
Cr-55	0.550877316	0.378484822	0.538285784	0.613772964
Cr-56	0.778530622	0.55312099	0.760141293	0.869567386
Cs-121	0.639453429	0.45265903	0.626932502	0.714448026
Cs-121m	0.645285834	0.457603613	0.632682626	0.72090272
Cs-123	0.640247413	0.452046093	0.627439083	0.71512546
Cs-124	0.633927738	0.448087387	0.621523994	0.708283085
Cs-125	0.640798007	0.451570443	0.627829429	0.715662104
Cs-126	0.637122069	0.450479073	0.624694589	0.711850547
Cs-127	0.679190752	0.480878053	0.665660409	0.758561937
Cs-128	0.64062582	0.452833802	0.628042235	0.715792131
Cs-129	0.709403023	0.500956645	0.694722912	0.79192409
Cs-130m	0.769864975	0.543884795	0.751985408	0.85810664
Cs-130	0.648650832	0.457497849	0.635568586	0.724568043
Cs-131	0.82393325	0.568135679	0.802509176	0.917364829
Cs-132	0.636724119	0.445552547	0.623393173	0.710345671
Cs-134	0.612536675	0.428884918	0.600081984	0.683583223
Cs-134m	0.847789212	0.582531387	0.825214537	0.950070752
Cs-135	0	0	0	0
Cs-135m	0.601001239	0.418724549	0.588660708	0.670503999
Cs-136	0.599328156	0.417882995	0.586683673	0.668379266
Cs-137	0.599841323	0.414774205	0.588047517	0.673333588
Cs-138m	0.615345816	0.429629985	0.602016655	0.686272576
Cs-138	0.565486804	0.390647426	0.552868338	0.630259036
Cs-139	0.553127388	0.380702479	0.540487889	0.61619304
Cs-140	0.559749933	0.386654629	0.547219516	0.623775592
Cu-57	0.631246232	0.445792288	0.618807984	0.705260932
Cu-59	0.623167268	0.438884879	0.610717438	0.696011555
Cu-60	0.576588267	0.400105193	0.564030371	0.6429702
Cu-61	0.633749141	0.448007535	0.621333775	0.708029281
Cu-62	0.637101812	0.450811587	0.624711723	0.711983336
Cu-64	0.635232433	0.449217061	0.622830193	0.709845995
Cu-66	0.582148242	0.40281774	0.56919487	0.648681022

Cu-67	0.715114496	0.526637262	0.70249531	0.799506394
Cu-69	0.589562406	0.409410853	0.576854273	0.657337132
Dy-148	0.627316406	0.441344219	0.614536635	0.700135573
Dy-149	0.587632158	0.408774148	0.574939285	0.655275587
Dy-150	0.667264154	0.476764125	0.655039751	0.745774371
Dy-151	0.601033913	0.419755721	0.588338482	0.670451674
Dy-152	0.699856056	0.50711611	0.687112701	0.78206502
Dy-153	0.623774492	0.439720578	0.610834276	0.696037135
Dy-154	0	0	0	0
Dy-155	0.628608568	0.444243674	0.615715398	0.701421726
Dy-157	0.681838964	0.490283935	0.66942732	0.761974546
Dy-159	0.698768833	0.49868179	0.683344278	0.779438259
Dy-165m	0.674319757	0.484079877	0.661059193	0.753491075
Dy-165	0.654103773	0.466756627	0.641127881	0.730457696
Dy-166	0.693632671	0.500762465	0.679332728	0.774507371
Dy-167	0.649663284	0.462466988	0.637194131	0.725663888
Dy-168	0.656910569	0.468972929	0.644434389	0.734017711
Er-154	0.734511011	0.515163633	0.717266162	0.819674041
Er-156	0.715712967	0.510462662	0.700204565	0.798248825
Er-159	0.6103451	0.42814071	0.597668707	0.680987125
Er-161	0.604530795	0.422394787	0.591893953	0.674359368
Er-163	0.690304115	0.495643389	0.675628609	0.770367165
Er-165	0.69184185	0.496949963	0.6771274	0.772085903
Er-167m	0.71196513	0.520611153	0.699276551	0.795706246
Er-169	0.708325176	0.519168561	0.694773554	0.792136972
Er-171	0.684550389	0.494831415	0.672334072	0.765292054
Er-172	0.644850746	0.457671911	0.632425783	0.720294752
Er-173	0.633922323	0.449792623	0.621333335	0.707635889
Es-249	0.786893745	0.545708701	0.768866172	0.880917359
Es-250	0.809257676	0.55246951	0.789303909	0.905845189
Es-250m	0.714618404	0.489999787	0.697293649	0.798719772
Es-251	1.121770179	0.749767147	1.089786992	1.259657091
Es-253	1.306691437	0.84329609	1.26497956	1.46844132
Es-254	1.36858341	0.878073711	1.324011998	1.538961672
Es-254m	0.676229292	0.468619799	0.661308595	0.75520524
Es-255	0.575957409	0.399991831	0.563367217	0.642110967
Es-256	1.224748406	0.800278684	1.186919321	1.3724394
Eu-142	0.624885334	0.440485367	0.612477525	0.69804032
Eu-142m	0.610250433	0.427204066	0.597673773	0.681035702
Eu-143	0.615910058	0.432854361	0.603389442	0.687746927
Eu-144	0.624257073	0.440012278	0.611828905	0.697342587
Eu-145	0.586184229	0.406819162	0.573501804	0.653574017
Eu-146	0.598964146	0.417613448	0.586385396	0.668094357
Eu-147	0.635068352	0.447892605	0.621828311	0.708495871
Eu-148	0.615647925	0.431753952	0.60299373	0.687067213
Eu-149	0.713860292	0.506275085	0.69837718	0.796340474
Eu-150	0.635930298	0.449584876	0.6234887	0.710140049

Eu-150m	0.646749482	0.458262117	0.634059105	0.722178862
Eu-152	0.601264405	0.419761483	0.588417202	0.670510576
Eu-152m	0.605151885	0.422155071	0.592319867	0.674884416
Eu-152n	0.731524932	0.533487517	0.716475805	0.818116574
Eu-154	0.59330623	0.413186104	0.580528072	0.661554949
Eu-154m	0.723102772	0.523806377	0.70842935	0.807823418
Eu-155	0.71343601	0.523565387	0.699455319	0.797706314
Eu-156	0.567596506	0.392128287	0.554927288	0.632528636
Eu-157	0.659591281	0.46993771	0.646958669	0.736851769
Eu-158	0.582383631	0.403691958	0.569650205	0.649171549
Eu-159	0.641268501	0.45248025	0.627803818	0.715608709
F-17	0.637530913	0.451176989	0.625143472	0.712474841
F-18	0.637542578	0.451187282	0.625155152	0.712488239
Fe-52	0.653837738	0.467108665	0.641411877	0.730736353
Fe-53	0.639639697	0.45319998	0.627336294	0.714830798
Fe-53m	0.578387348	0.400414845	0.565661681	0.644662489
Fe-55	0.728505042	0.541438763	0.71592142	0.815743526
Fe-59	0.573009845	0.395575261	0.560025083	0.638379333
Fe-60	0	0	0	0
Fe-61	0.576899042	0.399506038	0.564086569	0.642911335
Fe-62	0.638371007	0.451935837	0.626006479	0.713452304
Fm-251	0.90414123	0.62041519	0.881369666	1.013000993
Fm-252	1.284972858	0.832188895	1.244233853	1.442294909
Fm-253	1.134887531	0.755237728	1.102113751	1.273101246
Fm-254	1.040908507	0.683464924	1.009869394	1.166845329
Fm-255	1.348274123	0.868593641	1.304949982	1.514857385
Fm-256	0.576413919	0.40032299	0.563817023	0.642628272
Fm-257	0.983395852	0.666619429	0.957085647	1.1026351
Fr-212	0.692292408	0.466243856	0.673963505	0.776520981
Fr-219	0.720564225	0.503734635	0.705039966	0.808149042
Fr-220	1.579113363	0.93353267	1.511208112	1.808223464
Fr-221	0.855056265	0.589304466	0.833587011	0.962734452
Fr-222	0.944326417	0.630559474	0.917388903	1.064381464
Fr-223	1.209743713	0.763440568	1.167036977	1.371515358
Fr-224	0.668724683	0.458979964	0.652785181	0.748391864
Fr-227	0.763283202	0.522013525	0.744240848	0.857102053
Ga-64	0.577838696	0.401755812	0.565324447	0.6443855
Ga-65	0.637457908	0.451882975	0.625031448	0.712306913
Ga-66	0.562362165	0.389664486	0.549818683	0.626793931
Ga-67	0.696869619	0.508835866	0.684499293	0.77920745
Ga-68	0.635210492	0.449167505	0.622801163	0.709806887
Ga-70	0.592146058	0.411750787	0.579156833	0.660038953
Ga-72	0.56687462	0.391884648	0.554447927	0.631890928
Ga-73	0.724480293	0.505387076	0.708494527	0.813302264
Ga-74	0.561347088	0.388003037	0.548840812	0.625632488
Gd-142	0.621140435	0.437316413	0.608570783	0.69354561
Gd-143m	0.617220201	0.434065573	0.604671046	0.688987809

Gd-144	0.606329935	0.425208878	0.59378244	0.676797296
Gd-145m	0.6182781	0.433307025	0.605827371	0.690037435
Gd-145	0.561186674	0.387758025	0.548678347	0.625525981
Gd-146	0.718718426	0.522430348	0.704418461	0.802967505
Gd-147	0.625061829	0.440298344	0.612449429	0.697574907
Gd-148	0	0	0	0
Gd-149	0.661230653	0.471861473	0.64845094	0.738456192
Gd-150	0	0	0	0
Gd-151	0.72443048	0.517004187	0.708841348	0.808382643
Gd-152	0	0	0	0
Gd-153	0.715126234	0.515758101	0.699992845	0.798408305
Gd-159	0.677146016	0.48525495	0.664519386	0.756600993
Gd-162	0.657750201	0.468968856	0.64578539	0.735323828
Ge-66	0.676606573	0.473325615	0.662088216	0.75809022
Ge-67	0.631646125	0.446714575	0.619128227	0.70564401
Ge-68	3.046481548	1.459560664	2.847763268	3.589358037
Ge-69	0.613275737	0.423867096	0.599475601	0.685221102
Ge-71	3.046481551	1.459560664	2.847763271	3.589358041
Ge-75	0.700838311	0.506500862	0.688205152	0.783919001
Ge-77	0.637517431	0.45025923	0.624730978	0.712136939
Ge-78	0.694586436	0.502729598	0.682385783	0.776648018
H-3	0	0	0	0
Hf-167	0.658980907	0.468821404	0.646332112	0.736849197
Hf-169	0.652415208	0.461800102	0.639512142	0.72967994
Hf-170	0.677979909	0.478791924	0.663594498	0.75902707
Hf-172	0.84036449	0.571892932	0.81652769	0.946453142
Hf-173	0.704971238	0.508059048	0.691229824	0.789378862
Hf-174	0	0	0	0
Hf-175	0.691158518	0.49329241	0.677916848	0.77367296
Hf-177m	0.691123468	0.497017511	0.67829015	0.773116875
Hf-178m	0.666620529	0.475727374	0.653942674	0.745402173
Hf-179m	0.68584235	0.491212225	0.672869733	0.767494809
Hf-180m	0.679026822	0.486195926	0.666372577	0.759576737
Hf-181	0.663348336	0.472586917	0.650608562	0.742060084
Hf-182	0.700586335	0.507706972	0.688101817	0.783507043
Hf-182m	0.655386505	0.464685522	0.642405064	0.732672066
Hf-183	0.618497741	0.434143859	0.606076475	0.690620218
Hf-184	0.755565317	0.530665524	0.738616679	0.848912937
Hg-190	1.009240325	0.657587999	0.976061796	1.146680171
Hg-191m	0.662138074	0.458207784	0.647053168	0.741561607
Hg-192	0.928974817	0.613566125	0.900835246	1.0525528
Hg-193	0.687276385	0.46329964	0.669286089	0.771820918
Hg-193m	0.648561794	0.445562035	0.633340532	0.726208656
Hg-194	2.348737827	1.259231686	2.223720831	2.722576939
Hg-195	0.944817718	0.598188703	0.911939898	1.073358934
Hg-195m	1.02086234	0.647137773	0.985435419	1.160578479
Hg-197	1.321416974	0.795287351	1.266270957	1.51482961

Hg-197m	1.154555871	0.726869039	1.112459132	1.316048161
Hg-199m	0.937675302	0.62201434	0.909584744	1.061620249
Hg-203	0.754775209	0.529520101	0.73822853	0.847891797
Hg-205	0.855952362	0.58230682	0.832721044	0.966580104
Hg-206	0.758822218	0.52357714	0.740844457	0.853623857
Hg-207	0.583585806	0.401769475	0.570297965	0.651326893
Ho-150	0.620391356	0.435922773	0.60798591	0.692719776
Ho-153	0.636137455	0.450422234	0.623647433	0.710467561
Ho-153m	0.642865375	0.456334251	0.630379932	0.71819047
Ho-154m	0.636854352	0.45082307	0.624560434	0.711411655
Ho-154	0.623602305	0.43956133	0.61119724	0.696332739
Ho-155	0.635285035	0.450204447	0.622615344	0.709393304
Ho-156	0.606151468	0.425447917	0.593605078	0.676399276
Ho-157	0.654322148	0.465370758	0.641355046	0.730752591
Ho-159	0.679703823	0.490056386	0.666616939	0.759353074
Ho-160	0.607008707	0.424237938	0.594343264	0.677098269
Ho-161	0.764696135	0.536395854	0.746110085	0.853343639
Ho-162	0.632304086	0.446305417	0.618787595	0.705476285
Ho-162m	0.613136686	0.430618625	0.600069904	0.683757561
Ho-163	0	0	0	0
Ho-164	0.695334227	0.499383465	0.680479731	0.776016833
Ho-164m	0.698917963	0.500971366	0.683880702	0.779717511
Ho-166	0.613250983	0.433781324	0.600099395	0.684117827
Ho-166m	0.625497173	0.441094695	0.613126497	0.698233526
Ho-167	0.67620453	0.4864032	0.664247748	0.755908555
Ho-168	0.604426367	0.422235017	0.592051138	0.674377976
Ho-168m	0.69182014	0.496961694	0.677109838	0.772063763
Ho-170	0.604588101	0.422886229	0.591909461	0.674318708
I-118m	0.615403485	0.431489232	0.602753391	0.686826808
I-118	0.619360947	0.435310091	0.606809363	0.691536968
I-119	0.658574652	0.467542319	0.645679761	0.735772412
I-120	0.588856036	0.410382233	0.576247058	0.656901347
I-120m	0.608079436	0.425662359	0.595425575	0.678595142
I-121	0.701325347	0.498580987	0.686938013	0.783231023
I-122	0.637332521	0.450018031	0.624721489	0.712072082
I-123	0.767595305	0.546103108	0.750604349	0.856947415
I-124	0.615755461	0.429726664	0.602628367	0.687055625
I-125	0.853865569	0.582825305	0.830368425	0.951537172
I-126	0.652893867	0.45918673	0.639645149	0.728918406
I-128	0.66312412	0.469159483	0.65014604	0.740999391
I-129	0.8212221	0.56609842	0.797890313	0.911647249
I-130m	0.654960642	0.45907838	0.641010739	0.731126785
I-130	0.619008466	0.43460113	0.60657145	0.690980823
I-131	0.621161172	0.43146921	0.608450499	0.696057743
I-132	0.604219041	0.421930725	0.591737327	0.674097873
I-132m	0.649791609	0.45483257	0.636070952	0.725167527
I-133	0.625213328	0.440331522	0.612705011	0.698255705

I-134m	0.717209219	0.510336281	0.702596654	0.800786364
I-134	0.593581232	0.412942016	0.581061302	0.662022794
I-135	0.568679617	0.392665968	0.555934072	0.633721955
In-103	0.601297649	0.420677135	0.588719653	0.670958056
In-105	0.617749266	0.433369631	0.604955943	0.68959778
In-106	0.611820803	0.428068815	0.599170043	0.682766221
In-106m	0.593707675	0.414431846	0.581187948	0.66243043
In-107	0.612504347	0.427362018	0.599331011	0.683453573
In-108	0.602732749	0.419517203	0.589813572	0.672250176
In-108m	0.579910797	0.402529777	0.567150975	0.646610671
In-109	0.673500825	0.47156592	0.658741575	0.751784053
In-109m	0.622599088	0.43669367	0.609941313	0.694807055
In-110	0.612677836	0.426374629	0.599639195	0.683432734
In-110m	0.62164504	0.435709404	0.608825262	0.693967638
In-111	0.767317583	0.547908973	0.751294612	0.85746483
In-111m	0.640474413	0.451698978	0.627641694	0.715504982
In-112	0.67036517	0.469823324	0.656177053	0.748919034
In-112m	0.888215452	0.606799886	0.863874461	0.991629517
In-113m	0.692755747	0.491087693	0.679322026	0.774296128
In-114	0.649504247	0.445669556	0.633769861	0.724300934
In-114m	0.766865091	0.532954775	0.7485065	0.856243874
In-115	0	0	0	0
In-115m	0.730602194	0.516101777	0.715497974	0.816410105
In-116m	0.570859986	0.394388679	0.558078892	0.636148853
In-117	0.651977707	0.463858216	0.639194257	0.728346866
In-117m	0.746288094	0.530180144	0.730698898	0.833915272
In-118m	0.58099069	0.402302728	0.56812634	0.647498198
In-118	0.572075116	0.394986731	0.559148928	0.637414679
In-119	0.615127976	0.428740322	0.602416089	0.686389506
In-119m	0.638515714	0.440271581	0.623513039	0.711945378
In-121	0.594894602	0.413637903	0.582262182	0.663359946
In-121m	0.742069355	0.509865664	0.722943901	0.827671883
Ir-180	0.659679731	0.45904426	0.645224619	0.738739547
Ir-182	0.665048539	0.461172162	0.650037406	0.745212949
Ir-183	0.662378411	0.447316614	0.645199883	0.743767469
Ir-184	0.645877313	0.444170066	0.630682984	0.723441803
Ir-185	0.715177395	0.467993656	0.693513942	0.8069203
Ir-186	0.651871538	0.44826388	0.636510594	0.730483693
Ir-186m	0.62915469	0.43063298	0.614143194	0.704351224
Ir-187	0.818634059	0.529368842	0.792298034	0.927609146
Ir-188	0.59118631	0.402726829	0.576753662	0.660997333
Ir-189	1.28641061	0.756347433	1.228773817	1.481377754
Ir-190	0.677994481	0.472258336	0.663086403	0.759837021
Ir-190m	2.668624676	1.354141172	2.510534375	3.118936285
Ir-190n	1.240819383	0.739061525	1.186752498	1.426584442
Ir-191m	1.369752578	0.80423137	1.308195347	1.577410422
Ir-192	0.674279229	0.479961614	0.661456622	0.75434738

Ir-192m	2.644675732	1.345701572	2.488759731	3.089746549
Ir-192n	2.625563842	1.337628456	2.471070415	3.067056601
Ir-193m	2.586810783	1.319985415	2.434928036	3.021548515
Ir-194	0.648262842	0.459058926	0.635598717	0.724393492
Ir-194m	0.649869433	0.458664617	0.63701816	0.726503458
Ir-195	1.273695632	0.768007317	1.220455859	1.460927583
Ir-195m	0.751892155	0.514559778	0.733397983	0.84605685
Ir-196	0.631357163	0.44439999	0.618881345	0.705277045
Ir-196m	0.657370781	0.462345321	0.644122245	0.735410317
K-38	0.569782818	0.395515357	0.557434	0.635490247
K-40	0.556987636	0.383025727	0.54428323	0.620596926
K-42	0.553862519	0.380680049	0.541242037	0.617133929
K-43	0.640861442	0.454045449	0.628597761	0.715765311
K-44	0.549621586	0.378009187	0.536960397	0.612148221
K-45	0.558947397	0.386586064	0.546442179	0.622912387
K-46	0.538455331	0.369493512	0.525751321	0.599435359
Kr-74	0.705463044	0.48909901	0.689409742	0.791504138
Kr-75	0.671196718	0.469399083	0.656765971	0.751682617
Kr-76	0.990454709	0.632743618	0.957458688	1.124452198
Kr-77	0.685473371	0.48037131	0.67076398	0.768125926
Kr-79	1.045900453	0.6512241	1.008004753	1.190196894
Kr-81	2.251927544	1.229192422	2.136648615	2.603206274
Kr-81m	0.971417319	0.648848073	0.943149936	1.097757536
Kr-83m	2.055507137	1.169001881	1.960057224	2.360333807
Kr-85	0.63874183	0.451638007	0.626250353	0.713864276
Kr-85m	0.790583093	0.560425497	0.773263645	0.887567643
Kr-87	0.57644729	0.401196085	0.564182682	0.642905778
Kr-88	0.557675252	0.382448983	0.544690219	0.621735332
Kr-89	0.567446569	0.392853114	0.554847071	0.632490459
La-128	0.618125986	0.434581937	0.605582331	0.690032834
La-129	0.648725552	0.459997647	0.636052247	0.724735229
La-130	0.61740321	0.433977163	0.604914004	0.689268077
La-131	0.661706477	0.4696778	0.648718637	0.739110167
La-132	0.603653263	0.422396338	0.591079123	0.673679705
La-132m	0.643842856	0.4554383	0.630935759	0.718833128
La-133	0.70234073	0.490315992	0.686620493	0.784320498
La-134	0.639052265	0.451390369	0.626401481	0.713939308
La-135	0.773686903	0.539325357	0.75502524	0.861340133
La-136	0.650386291	0.458837035	0.637264765	0.72637512
La-137	0.79434676	0.552756377	0.774730945	0.883953392
La-138	0.575280748	0.3971513	0.562436799	0.641142613
La-140	0.572185323	0.396259521	0.559722612	0.638002066
La-141	0.559271403	0.384808381	0.546483725	0.623072602
La-142	0.549045301	0.37815424	0.536563731	0.611668886
La-143	0.567041507	0.391935164	0.554454793	0.631987391
Lu-165	0.617622836	0.435133184	0.604974107	0.689541372
Lu-167	0.58571916	0.407261592	0.572931625	0.653203532

Lu-169m	3.078252838	1.468000204	2.876020225	3.629056365
Lu-169	0.58837971	0.409343625	0.575519088	0.656072626
Lu-170	0.554393856	0.381960163	0.541703263	0.617642138
Lu-171m	2.745901967	1.33401251	2.570005966	3.231403292
Lu-171	0.640956096	0.448278134	0.627455805	0.715609056
Lu-172	0.59604473	0.415368622	0.583251499	0.664679601
Lu-172m	2.941954822	1.429404385	2.754254352	3.459599286
Lu-173	0.695755192	0.502181375	0.682003779	0.777970774
Lu-174	0.635481965	0.448329862	0.621458809	0.709535637
Lu-174m	0.827128394	0.553007987	0.802094651	0.935025799
Lu-176	0.706355301	0.509456697	0.693261124	0.79049285
Lu-176m	0.873728371	0.585982307	0.846740609	0.98988277
Lu-177	0.736366451	0.533569953	0.722060279	0.825078408
Lu-177m	0.700383169	0.504859578	0.687331907	0.783787997
Lu-178	0.589222316	0.405530506	0.575364214	0.657704228
Lu-178m	0.684000848	0.491302366	0.671392045	0.765169832
Lu-179	0.705620107	0.513736538	0.692965638	0.788866208
Lu-180	0.59467322	0.413909549	0.581751681	0.663261616
Lu-181	0.6484905	0.455566658	0.635037046	0.725026595
Mg-27	0.59360074	0.412509985	0.581062824	0.661970875
Mg-28	0.592629391	0.410772602	0.579547189	0.660605284
Mn-50m	0.591271184	0.411437418	0.578631162	0.659465736
Mn-51	0.637253982	0.450940577	0.624865648	0.712157826
Mn-52	0.58491398	0.405878949	0.572308942	0.652221861
Mn-52m	0.593345118	0.413731587	0.580762365	0.662042761
Mn-53	0	0	0	0
Mn-54	0.598742554	0.4168618	0.586400365	0.667947623
Mn-56	0.569119337	0.393401626	0.556747574	0.634468561
Mn-57	0.803114789	0.543377493	0.782410928	0.901496418
Mn-58m	0.577826401	0.400219084	0.565268645	0.644212996
Mo-101	0.588080553	0.408605596	0.575341838	0.655773486
Mo-102	0.734168531	0.534919587	0.720791307	0.820822995
Mo-89	0.629160195	0.443499421	0.61664239	0.702850227
Mo-90	0.762554513	0.531174938	0.745593918	0.852865947
Mo-91m	0.605856856	0.422844316	0.593086087	0.676072341
Mo-91	0.641111466	0.452982272	0.628517398	0.716481289
Mo-93	1.401473434	0.910217936	1.358577084	1.571661159
Mo-93m	0.596859555	0.414007226	0.583849719	0.665630309
Mo-99	0.645900642	0.452817363	0.632658355	0.721030877
N-13	0.637542578	0.451187282	0.625155152	0.712488239
N-16	0.479031534	0.327238908	0.466483773	0.531991945
Na-22	0.598200087	0.417456077	0.585495816	0.667403148
Na-24	0.533850737	0.365794495	0.521260985	0.594413073
Nb-87	0.699823936	0.492715253	0.685369157	0.782765531
Nb-88m	0.60354065	0.421511043	0.590858087	0.673390818
Nb-88	0.621726481	0.433412249	0.608435557	0.693896871
Nb-89	0.618221159	0.431194367	0.605056125	0.690337296

Nb-89m	0.649239887	0.45751512	0.63627994	0.725675329
Nb-90	0.584052216	0.402475948	0.570707486	0.651331117
Nb-91	1.483646962	0.948998486	1.435684922	1.668774882
Nb-91m	1.231390833	0.804285281	1.194568858	1.380212299
Nb-92	0.663414384	0.457624201	0.648459903	0.741036579
Nb-92m	0.682891664	0.465337011	0.666525668	0.76287762
Nb-93m	1.401456142	0.910207718	1.358560443	1.571641566
Nb-94m	1.354542678	0.881340639	1.313419524	1.518818997
Nb-94	0.603505284	0.420914454	0.591078742	0.673266449
Nb-95	0.606093206	0.423120134	0.593804638	0.6763002
Nb-95m	1.076770207	0.725867397	1.048193004	1.206341113
Nb-96	0.602100475	0.420083922	0.589539417	0.671680544
Nb-97	0.617954393	0.433365062	0.6054356	0.689585522
Nb-98m	0.589949689	0.410061048	0.577471343	0.657950085
Nb-99	0.904456571	0.636821623	0.883756383	1.012231857
Nb-99m	0.568782939	0.392635829	0.555937808	0.633975434
Nd-134	0.668347874	0.477620168	0.655338028	0.7464687
Nd-135	0.647337329	0.459408367	0.63470545	0.723166107
Nd-136	0.675410718	0.479059753	0.661309031	0.753674057
Nd-137	0.618569214	0.433935261	0.605772795	0.690293991
Nd-138	0.740087575	0.522366529	0.7233641	0.82436683
Nd-139	0.638190614	0.449556761	0.625197389	0.712483032
Nd-139m	0.60756534	0.424174053	0.594752343	0.677617259
Nd-140	0.752539516	0.528499216	0.734732026	0.837598359
Nd-141	0.690826039	0.484819202	0.675265185	0.769748645
Nd-141m	0.607913396	0.424591968	0.595585115	0.678323836
Nd-144	0	0	0	0
Nd-147	0.670350775	0.47815506	0.656821307	0.748575089
Nd-149	0.675141572	0.485282333	0.66252124	0.754340076
Nd-151	0.612496873	0.430409496	0.599784108	0.683362743
Nd-152	0.726392349	0.519041025	0.712383443	0.812283566
Ne-19	0.637541896	0.451186883	0.625154455	0.712487449
Ne-24	0.63887085	0.45241817	0.626656896	0.714003526
Ni-56	0.617033251	0.434211597	0.604697931	0.688738772
Ni-57	0.57864367	0.401557457	0.566006964	0.645265827
Ni-59	0.637542578	0.451187282	0.625155152	0.712488239
Ni-63	0	0	0	0
Ni-65	0.566448593	0.390738743	0.553694617	0.631206348
Ni-66	0	0	0	0
Np-232	0.720243241	0.493645941	0.703176533	0.806535624
Np-233	1.143514953	0.751123836	1.108122908	1.290507304
Np-234	0.662607846	0.448248311	0.64579625	0.741182756
Np-235	1.604685065	0.989077738	1.545106011	1.817423374
Np-236	1.264342258	0.816275331	1.223288885	1.426791635
Np-236m	1.166083964	0.760762455	1.129346022	1.31580679
Np-237	1.40621203	0.882149937	1.35610493	1.590847872
Np-238	0.663738369	0.451815465	0.647531475	0.741426564

Np-239	0.99791403	0.675490374	0.970998229	1.121749131
Np-240	0.724594299	0.495201782	0.707075521	0.810774139
Np-240m	0.729150694	0.497637802	0.711486345	0.816095364
Np-241	1.070835889	0.71461331	1.039965624	1.205073008
Np-242	0.602618488	0.413981112	0.588832496	0.67237587
Np-242m	0.731831066	0.497837175	0.713914657	0.818921605
O-14	0.566702012	0.393156194	0.554342448	0.631985832
O-15	0.637542578	0.451187282	0.625155152	0.712488239
O-19	0.594330243	0.416008458	0.581566598	0.662700742
Os-180	1.097081768	0.665604761	1.052457014	1.25536406
Os-181	0.654763442	0.445132415	0.638341682	0.734425947
Os-182	0.784387156	0.525374726	0.762354444	0.88608118
Os-183	0.765030436	0.516240796	0.744584472	0.863112846
Os-183m	0.626326168	0.424206781	0.610316304	0.701176793
Os-185	0.673970306	0.459429787	0.657415831	0.756252049
Os-186	0	0	0	0
Os-189m	2.826169799	1.398223512	2.651169956	3.31503318
Os-190m	0.674809385	0.471813099	0.660384621	0.755923466
Os-191	1.318043817	0.78227071	1.260313962	1.516071837
Os-191m	2.051995301	1.075923638	1.93595234	2.393049967
Os-193	0.866227019	0.567690942	0.839580043	0.981824495
Os-194	2.171644562	1.141585081	2.050287886	2.527197356
Os-196	0.759801028	0.522399607	0.741158626	0.855357072
P-30	0.637405391	0.451074669	0.625018015	0.712332324
P-32	0	0	0	0
P-33	0	0	0	0
Pa-227	1.428008229	0.887086667	1.375174462	1.6210334
Pa-228	0.727470604	0.491666341	0.708871013	0.815650766
Pa-229	1.279700827	0.815948482	1.235600898	1.449506802
Pa-230	0.75706904	0.509469	0.737198998	0.849370105
Pa-231	1.415133724	0.873150384	1.362313142	1.606245746
Pa-232	0.681395925	0.466550851	0.665321121	0.762087354
Pa-233	0.955500213	0.641810225	0.929566741	1.075179177
Pa-234	0.703011752	0.480088468	0.686038406	0.78681899
Pa-234m	0.719889038	0.492212758	0.7032066	0.805369887
Pa-235	2.004937681	1.153620794	1.91462456	2.297791382
Pa-236	0.641320935	0.438638848	0.626150471	0.716659595
Pa-237	0.612901074	0.427650548	0.600208934	0.684137639
Pb-194	0.716170069	0.475926512	0.695988322	0.806408712
Pb-195m	0.730046212	0.490998413	0.710909101	0.82158762
Pb-196	0.878186156	0.571598428	0.850506293	0.995617158
Pb-197	0.654669373	0.442425965	0.637968461	0.734368137
Pb-197m	0.756631898	0.505360715	0.735932692	0.852748293
Pb-198	0.90767697	0.588234325	0.878563745	1.0300104
Pb-199	0.689699787	0.461639185	0.671099884	0.775408215
Pb-200	1.213979317	0.737347631	1.164528445	1.391042417
Pb-201	0.763021931	0.509338747	0.741930859	0.860341708

Pb-201m	0.724576326	0.487500804	0.705448559	0.814848547
Pb-202	2.835602426	1.398966669	2.659147465	3.327406729
Pb-202m	0.634678391	0.439550335	0.62076264	0.709613895
Pb-203	0.963138579	0.621427747	0.931365825	1.094746023
Pb-204m	0.612265201	0.426312635	0.599395122	0.683477214
Pb-205	2.835097633	1.398816979	2.658694883	3.326781234
Pb-209	0	0	0	0
Pb-210	2.175836889	1.182801136	2.062999089	2.517556776
Pb-211	0.644987012	0.449329112	0.631433333	0.721385959
Pb-212	0.92786047	0.616259339	0.90026226	1.05036433
Pb-214	0.801580247	0.545041138	0.781152374	0.903251194
Pd-100	0.977416911	0.666575325	0.951170429	1.092249248
Pd-101	0.805349441	0.551822375	0.785481163	0.899442097
Pd-103	1.117816451	0.741946254	1.08481692	1.248773883
Pd-107	0	0	0	0
Pd-109m	0.809182861	0.574852322	0.7915835	0.904278639
Pd-109	0.992110764	0.664752411	0.963023792	1.108058662
Pd-111	0.609229464	0.425117651	0.596326642	0.679738368
Pd-112	1.251299119	0.82713657	1.214992183	1.398583733
Pd-114	0.720386027	0.522956021	0.707228328	0.805554854
Pd-96	0.642747537	0.449340389	0.629164597	0.717561231
Pd-97	0.605367362	0.422733388	0.592563656	0.675521753
Pd-98	0.755306031	0.524197963	0.737743271	0.843686558
Pd-99	0.641714737	0.449994854	0.62822337	0.716509838
Pm-136	0.627151235	0.441969835	0.614795453	0.700346812
Pm-137m	0.639337535	0.452958178	0.626716904	0.714036303
Pm-139	0.633352965	0.447386372	0.620884082	0.707551534
Pm-140m	0.611811876	0.428530218	0.599284098	0.682782697
Pm-140	0.632291354	0.446556921	0.619846843	0.706426854
Pm-141	0.62400607	0.439046761	0.611336148	0.696779262
Pm-142	0.633727288	0.447728131	0.621248062	0.708056163
Pm-143	0.631499242	0.441958503	0.618307407	0.70434223
Pm-144	0.626422376	0.440202198	0.613790221	0.699177828
Pm-145	0.738989185	0.520823593	0.721752281	0.822878832
Pm-146	0.63152608	0.444636328	0.619042513	0.705135104
Pm-147	0.726450049	0.531188713	0.712442561	0.812183204
Pm-148	0.582131418	0.403880279	0.569494649	0.649133508
Pm-148m	0.62171937	0.437026888	0.609194764	0.693999861
Pm-149	0.673456513	0.48355699	0.661186822	0.752547228
Pm-150	0.591167529	0.412000403	0.578632954	0.659283982
Pm-151	0.665101092	0.475789253	0.652602724	0.74301799
Pm-152m	0.607693995	0.426481	0.595001674	0.677885665
Pm-152	0.597108754	0.41695614	0.584409085	0.665947058
Pm-153	0.722768941	0.523929103	0.708501026	0.807449495
Pm-154	0.561093835	0.387068677	0.548477562	0.625217256
Pm-154m	0.588880479	0.410459007	0.576243627	0.656700498
Po-203	0.663903199	0.448182409	0.646824441	0.744418725

Po-204	0.794291514	0.52066325	0.770460201	0.896524277
Po-205	0.657503189	0.444097771	0.640749912	0.737083641
Po-206	0.757988288	0.502691436	0.736541079	0.853847693
Po-207	0.670290553	0.452719836	0.653105285	0.751687182
Po-208	0.822796971	0.539635406	0.798171884	0.929537148
Po-209	0.734647585	0.493938892	0.715064663	0.826457171
Po-210	0.603114988	0.42018758	0.590753419	0.672988143
Po-211	0.610352864	0.425973487	0.597615769	0.681199267
Po-212m	0.540821112	0.371993561	0.528338859	0.602492549
Po-212	0	0	0	0
Po-213	0.608722477	0.423918725	0.596180667	0.679468533
Po-214	0.60371249	0.42067851	0.591349706	0.67366998
Po-215	0.660550778	0.468477649	0.648063835	0.738933128
Po-216	0.602921516	0.42002466	0.59055851	0.672767626
Po-218	0	0	0	0
Pr-134	0.622682797	0.438431658	0.610237347	0.695169654
Pr-134m	0.609338197	0.427670011	0.596954473	0.680256067
Pr-135	0.643878831	0.455631389	0.631094204	0.719097766
Pr-136	0.609074253	0.426933601	0.59647875	0.67984303
Pr-137	0.643023383	0.45296213	0.629887142	0.717888557
Pr-138	0.637549996	0.45071915	0.625047603	0.712362576
Pr-138m	0.610006652	0.426623881	0.597326902	0.680488914
Pr-139	0.676108969	0.475391548	0.661541281	0.754078329
Pr-140	0.643447867	0.454914144	0.630733077	0.718863111
Pr-142	0.551160916	0.378595047	0.538592169	0.614124034
Pr-142m	0	0	0	0
Pr-143	0.608664358	0.425351316	0.596352311	0.679182995
Pr-144	0.5644529	0.390166694	0.552045196	0.62917161
Pr-144m	0.742355748	0.521121476	0.724879089	0.826346286
Pr-145	0.604187267	0.421290929	0.591412112	0.673791594
Pr-146	0.583381022	0.405703146	0.570930488	0.650696685
Pr-147	0.635044155	0.447259008	0.621818665	0.708490145
Pr-148	0.595673846	0.416364132	0.583170295	0.664399081
Pr-148m	0.639182001	0.453274823	0.626951435	0.713903411
Pt-184	0.825992347	0.54849112	0.801809561	0.934120446
Pt-186	0.707369896	0.479958487	0.689436819	0.7950068
Pt-187	0.767588771	0.511924857	0.745911096	0.866048649
Pt-188	0.966623921	0.623128974	0.934110596	1.099496898
Pt-189	0.8040537	0.528637732	0.779801978	0.909216586
Pt-190	0	0	0	0
Pt-191	0.897165331	0.581618717	0.868116228	1.018539938
Pt-193	2.628205091	1.341190914	2.474070223	3.069173758
Pt-193m	1.741134716	0.973378126	1.65490024	2.012748755
Pt-195m	1.434835093	0.838452258	1.370068252	1.65136576
Pt-197	1.430087753	0.845256677	1.367705993	1.642072051
Pt-197m	1.296952077	0.769556179	1.241497141	1.489026918
Pt-199	0.670450248	0.469104602	0.656183434	0.750678774

Pt-200	1.1348464	0.709814026	1.09265179	1.294720061
Pt-202	0	0	0	0
Pu-232	1.148642037	0.758187537	1.1137204	1.295066891
Pu-234	1.174504561	0.771523411	1.138243265	1.324526876
Pu-235	1.172936996	0.767554249	1.136431107	1.32261467
Pu-236	1.570562589	0.97469552	1.513528933	1.776435683
Pu-237	1.269109018	0.819972051	1.227907103	1.432195179
Pu-238	1.607730406	0.999083716	1.549734922	1.817856039
Pu-239	1.587997716	0.986622838	1.530673658	1.795782939
Pu-240	1.606136684	0.998274095	1.548349278	1.816099982
Pu-241	1.266310916	0.816044305	1.224705063	1.430410306
Pu-242	1.568303976	0.973149356	1.511329653	1.7739316
Pu-243	1.060610956	0.709607136	1.030060143	1.191973107
Pu-244	0.983517846	0.635283319	0.952678685	1.106967748
Pu-245	0.688574198	0.481205906	0.673869641	0.769951508
Pu-246	0.979249732	0.666063244	0.953187627	1.099561032
Ra-219	0.782618895	0.540695764	0.764197984	0.879691643
Ra-220	0.653705239	0.463013019	0.64116477	0.731094137
Ra-221	1.396055462	0.853130868	1.34112108	1.592257649
Ra-222	0.703288013	0.501335667	0.689990152	0.787288955
Ra-223	1.000887086	0.655171238	0.969503117	1.133373315
Ra-224	0.78098491	0.551405241	0.764120378	0.876348842
Ra-225	1.261790136	0.791238049	1.216320117	1.428380902
Ra-226	0.924468578	0.6286893	0.899664228	1.040294906
Ra-227	1.040482924	0.67489042	1.007794067	1.175082567
Ra-228	1.599028077	1.001415594	1.5430752	1.806370379
Ra-230	0.924644277	0.618675907	0.898638952	1.042468756
Rb-77	0.648342316	0.454401803	0.634810175	0.725066449
Rb-78m	0.600632216	0.419627458	0.588062756	0.670370841
Rb-78	0.571063233	0.396005849	0.55837139	0.636877765
Rb-79	0.684629422	0.475787336	0.66949182	0.766994198
Rb-80	0.636790659	0.449786935	0.624269563	0.711586534
Rb-81	0.803571601	0.534896894	0.781450081	0.905409949
Rb-81m	1.585086273	0.952573308	1.521555794	1.80550657
Rb-82	0.63862654	0.450129457	0.625931652	0.71380987
Rb-82m	0.63793841	0.43845151	0.623281752	0.713397342
Rb-83	0.859083368	0.562226803	0.833498885	0.969921289
Rb-84	0.705178469	0.474909493	0.687118598	0.791476519
Rb-84m	0.77527274	0.539393306	0.757736958	0.870167457
Rb-86m	0.635039274	0.447365332	0.622287022	0.709414833
Rb-86	0.579285558	0.400423113	0.566263135	0.645406956
Rb-87	0	0	0	0
Rb-88	0.549347176	0.377739543	0.53691248	0.612086799
Rb-89	0.561918216	0.387382851	0.549172337	0.626011256
Rb-90	0.527489532	0.36226334	0.514937821	0.587025213
Rb-90m	0.55140911	0.379733767	0.538864004	0.614285817
Re-178	0.593044769	0.413655777	0.580164598	0.661787415

Re-179	0.627898087	0.441871382	0.615082711	0.701530203
Re-180	0.609744624	0.424407996	0.596668689	0.680704933
Re-181	0.649078316	0.457671846	0.635930042	0.725594346
Re-182	0.622487426	0.436406204	0.609022088	0.695024808
Re-182m	0.59548766	0.412843553	0.581999444	0.664367489
Re-183	0.775337977	0.545523951	0.756961438	0.871626031
Re-184	0.614786732	0.428325682	0.601716311	0.686453931
Re-184m	0.741051124	0.499601445	0.720962886	0.835018547
Re-186	0.965376179	0.629778202	0.933142382	1.098329572
Re-186m	2.254299723	1.143875686	2.119134691	2.639256304
Re-187	0	0	0	0
Re-188	0.74581742	0.508622117	0.726354184	0.839791495
Re-188m	1.320643586	0.7666545	1.258930109	1.524531476
Re-189	0.842201286	0.567385574	0.818612885	0.952141197
Re-190	0.645034766	0.454486123	0.632029921	0.720977955
Re-190m	0.673841156	0.468812514	0.658937093	0.755147727
Rh-100m	0.983310317	0.659791339	0.955783839	1.098247734
Rh-100	0.593976196	0.41009631	0.580613336	0.662349403
Rh-101	0.858899363	0.60450841	0.839621541	0.960180496
Rh-101m	0.813995688	0.56818946	0.795959984	0.909754264
Rh-102	0.694717317	0.484970961	0.679837153	0.77617615
Rh-102m	0.639165398	0.445775214	0.625624484	0.713370809
Rh-103m	1.116411044	0.741121035	1.083465986	1.247191739
Rh-104	0.646548091	0.453667113	0.63318357	0.722024493
Rh-104m	0.999203893	0.674829802	0.971471856	1.116176594
Rh-105	0.6839056	0.492626058	0.671897954	0.764563692
Rh-106	0.62318253	0.438499079	0.610653181	0.695855659
Rh-106m	0.601532652	0.420069307	0.588989802	0.671133902
Rh-107	0.678556195	0.48786671	0.666482683	0.758495562
Rh-108	0.642359254	0.455163312	0.630141802	0.717737913
Rh-109	0.696701614	0.499792225	0.683874676	0.778816146
Rh-94	0.589539144	0.410470011	0.57694988	0.657618491
Rh-95	0.597290906	0.415556042	0.584450454	0.666273425
Rh-95m	0.603671075	0.422223387	0.59090071	0.673628955
Rh-96	0.608279625	0.424702087	0.595640123	0.678754877
Rh-96m	0.61105354	0.424519875	0.59786674	0.681804507
Rh-97	0.637284106	0.447287017	0.624309524	0.711728376
Rh-97m	0.595544261	0.411763883	0.582137398	0.664070588
Rh-98	0.623267017	0.438079319	0.61068701	0.695948566
Rh-99	0.755456647	0.524795734	0.73843793	0.8440243
Rh-99m	0.705983822	0.492208174	0.690665152	0.788424905
Rn-207	0.690889811	0.47595204	0.674929623	0.774445081
Rn-209	0.673038287	0.461035559	0.657039765	0.754209276
Rn-210	0.747216475	0.502496453	0.727425839	0.840178369
Rn-211	0.642786557	0.43968513	0.627441022	0.719176045
Rn-212	0.617191669	0.432041506	0.604646149	0.688822432
Rn-215	0	0	0	0

Rn-216	0	0	0	0
Rn-217	0	0	0	0
Rn-218	0.627467536	0.440805536	0.61471852	0.700534366
Rn-219	0.720555595	0.509313453	0.705937099	0.807661772
Rn-220	0.644216507	0.453007838	0.631645404	0.720828813
Rn-222	0.658141103	0.464721272	0.645554964	0.736519573
Rn-223	0.805586298	0.535156284	0.782948987	0.90681215
Ru-103	0.64036735	0.45329643	0.627966735	0.715672919
Ru-105	0.635759927	0.446524274	0.622956067	0.709789549
Ru-106	0	0	0	0
Ru-107	0.611020251	0.428198034	0.59839947	0.681775928
Ru-108	0.792397339	0.569111458	0.775959911	0.886204199
Ru-92	0.685843222	0.480619877	0.671196468	0.765981462
Ru-94	0.741792809	0.514959546	0.725521764	0.828682342
Ru-95	0.654686964	0.45552837	0.640481146	0.730698731
Ru-97	0.882501747	0.615459371	0.862311343	0.986475647
S-35	0	0	0	0
S-37	0.511301469	0.349156269	0.498813616	0.568834789
S-38	0.536236573	0.367445485	0.523888912	0.59735162
Sb-111	0.639123703	0.45191258	0.62643627	0.713979451
Sb-113	0.640847472	0.452373053	0.628114852	0.716016309
Sb-114	0.593005146	0.412736227	0.580247076	0.661450878
Sb-115	0.652350675	0.459692757	0.639137525	0.728910088
Sb-116	0.587753536	0.407689664	0.574819031	0.65540006
Sb-116m	0.603651404	0.419534159	0.590403881	0.673172027
Sb-117	0.777899916	0.549838887	0.760105404	0.868787877
Sb-118	0.641444613	0.452613778	0.628650694	0.716701283
Sb-118m	0.606902221	0.420804758	0.593197469	0.676477743
Sb-119	0.914376773	0.615871327	0.887686498	1.020203185
Sb-120	0.662185553	0.465187188	0.648362316	0.73976592
Sb-120m	0.605599666	0.420868374	0.592023212	0.675049247
Sb-122m	0.807535436	0.562308636	0.787096696	0.901186638
Sb-122	0.628256401	0.44237695	0.615617707	0.701517792
Sb-124	0.581245314	0.403603885	0.568718519	0.648169166
Sb-124m	0.627193611	0.441675258	0.614685869	0.700299037
Sb-124n	0.893990827	0.603860336	0.868115542	0.997185142
Sb-125	0.664861825	0.468454133	0.651267475	0.74242009
Sb-126	0.619303151	0.434754187	0.606921019	0.691226671
Sb-126m	0.625345636	0.440046257	0.613016787	0.69812609
Sb-127	0.626544923	0.440966634	0.614137639	0.699535815
Sb-128	0.615546437	0.431675025	0.603154872	0.686987933
Sb-128m	0.617852039	0.43373528	0.605571319	0.689606163
Sb-129	0.590105676	0.410308163	0.577591096	0.65812183
Sb-130m	0.598758014	0.417261336	0.586246969	0.667855274
Sb-130	0.608879865	0.426349883	0.596471625	0.679409894
Sb-131	0.579577017	0.401760985	0.56696668	0.646112556
Sb-133	0.564171881	0.389363491	0.551517811	0.628663149

Sc-42m	0.591280318	0.411936054	0.578684248	0.659612048
Sc-43	0.640121365	0.453501017	0.627787937	0.71539265
Sc-44	0.60383068	0.422036027	0.591101128	0.673739028
Sc-44m	0.678871403	0.489758206	0.666664766	0.758623642
Sc-46	0.584089403	0.404535549	0.571288239	0.651013937
Sc-47	0.717242737	0.529441643	0.704669561	0.801911217
Sc-48	0.576912298	0.398740223	0.564007392	0.642840555
Sc-49	0.543832395	0.373091325	0.531398296	0.605919144
Sc-50	0.573616645	0.396845433	0.560891716	0.639416017
Se-70	0.948336393	0.59017551	0.913594502	1.081415851
Se-71	0.628668577	0.441340608	0.615718376	0.702504182
Se-72	2.238425071	1.149422465	2.10746079	2.614674467
Se-73	0.725807938	0.495237888	0.707926523	0.816728035
Se-73m	0.76599257	0.509285372	0.744540483	0.864373213
Se-75	1.07780128	0.667526102	1.036603683	1.232847353
Se-77m	1.269561077	0.768905728	1.217223857	1.45517491
Se-79m	2.316063816	1.223740091	2.188347316	2.693118493
Se-79	0	0	0	0
Se-81	0.650155963	0.462137938	0.637744405	0.726361305
Se-81m	2.23176335	1.187831303	2.110230127	2.593439744
Se-83m	0.580597128	0.402694236	0.56796611	0.647241682
Se-83	0.59410742	0.414633589	0.581640211	0.662776955
Se-84	0.660348443	0.471221361	0.648475396	0.738282738
Si-31	0.56705933	0.39071831	0.554091023	0.631698092
Si-32	0	0	0	0
Sm-139	0.631969937	0.446693123	0.619525106	0.7058334
Sm-140	0.626039223	0.440533566	0.613086823	0.698675218
Sm-141	0.619211991	0.435625708	0.606765361	0.69141104
Sm-141m	0.613241176	0.430453459	0.600651374	0.684356545
Sm-142	0.671466152	0.474102032	0.657211681	0.749216207
Sm-143	0.637533583	0.45028961	0.624837764	0.712163132
Sm-143m	0.608227581	0.424894171	0.595898511	0.678682511
Sm-145	0.726168345	0.513533478	0.709432323	0.808959458
Sm-146	0	0	0	0
Sm-147	0	0	0	0
Sm-148	0	0	0	0
Sm-151	1.05902101	0.703981404	1.027393924	1.182979996
Sm-153	0.714622529	0.517003927	0.699843423	0.798168273
Sm-155	0.719483426	0.529838442	0.706157186	0.805092314
Sm-156	0.71972265	0.524780739	0.706250876	0.804386849
Sm-157	0.651243138	0.465307099	0.638588075	0.727155722
Sn-106	0.648796053	0.455450966	0.635272295	0.724374838
Sn-108	0.694038318	0.490428268	0.679820448	0.775317795
Sn-109	0.583485362	0.402666368	0.570236718	0.650370262
Sn-110	0.7516124	0.5320246	0.735724092	0.839817687
Sn-111	0.650633555	0.453429873	0.636378169	0.726426112
Sn-113	0.92219012	0.621372732	0.895463405	1.029299564

Sn-113m	0.907206129	0.611880098	0.880853303	1.012130257
Sn-117m	0.787363284	0.559722471	0.769664666	0.879481168
Sn-119m	0.921648965	0.619963525	0.89461062	1.028443941
Sn-121	0	0	0	0
Sn-121m	0.868181883	0.590227173	0.843809161	0.967923184
Sn-123	0.578630219	0.399928768	0.565607166	0.644660453
Sn-123m	0.730907645	0.534870901	0.717270276	0.816944558
Sn-125m	0.672052731	0.482419358	0.660118145	0.751191733
Sn-125	0.58115697	0.402623012	0.568428472	0.647779515
Sn-126	0.803136271	0.565743748	0.783532976	0.896908116
Sn-127m	0.624646844	0.440341147	0.612255047	0.697803722
Sn-127	0.584397369	0.405727351	0.571676693	0.651512726
Sn-128	0.692482568	0.485219764	0.677394449	0.773299259
Sn-129	0.601977603	0.420229081	0.58938229	0.671480258
Sn-130	0.648514116	0.457647881	0.635444812	0.724031192
Sn-130m	0.609102714	0.424193681	0.595923061	0.679347911
Sr-79	0.689905902	0.481418028	0.675018519	0.772628684
Sr-80	0.849206715	0.563589758	0.825422509	0.956265549
Sr-81	0.657224599	0.463151854	0.643878171	0.734964725
Sr-82	1.882414544	1.110707491	1.803239876	2.148173394
Sr-83	0.794690088	0.528403144	0.772929551	0.893777208
Sr-85	0.840921046	0.558777609	0.81758866	0.947034542
Sr-85m	0.792403142	0.560553601	0.7754021	0.888826909
Sr-87m	0.721126751	0.506142462	0.706496302	0.807740031
Sr-89	0.593052046	0.411713893	0.580428278	0.661319859
Sr-90	0	0	0	0
Sr-91	0.594761741	0.41362307	0.582076629	0.663185817
Sr-92	0.563882469	0.388472178	0.551072986	0.628285094
Sr-93	0.596611117	0.414345752	0.583711106	0.665528336
Sr-94	0.560557368	0.38586431	0.547825972	0.624594967
Ta-170	0.636868194	0.448959275	0.624019461	0.711764838
Ta-172	0.607867952	0.424539837	0.59483513	0.678491567
Ta-173	0.634344767	0.442447773	0.62022252	0.709303777
Ta-174	0.624642849	0.438343917	0.611370699	0.697832083
Ta-175	0.604968789	0.421746959	0.59175246	0.675384316
Ta-176	0.568927212	0.392206772	0.555929457	0.634314201
Ta-177	0.754208993	0.527082644	0.73551538	0.847896854
Ta-178	0.682825008	0.473267093	0.666085894	0.765725668
Ta-178m	0.687421005	0.492968177	0.674528183	0.769194676
Ta-179	0.845157647	0.567330254	0.819728869	0.955645329
Ta-180	0.782338659	0.542291285	0.761783729	0.880945359
Ta-182	0.591095765	0.410090512	0.577801882	0.659134031
Ta-182m	0.75200804	0.538310942	0.735989399	0.843723361
Ta-183	0.734767067	0.524497976	0.719589947	0.823895374
Ta-184	0.63759559	0.450056128	0.624932085	0.712267043
Ta-185	0.741990888	0.528905252	0.726080881	0.832262874
Ta-186	0.640499787	0.453720533	0.627929631	0.71542021

Tb-146	0.575896932	0.399363055	0.563285891	0.642139307
Tb-147m	0.572740631	0.396476029	0.560031367	0.638492006
Tb-147	0.591775129	0.412015866	0.578955712	0.659856152
Tb-148m	0.616054296	0.432140808	0.603658604	0.687617797
Tb-148	0.594563132	0.414834512	0.582097599	0.663352591
Tb-149m	0.614236759	0.430304347	0.601765433	0.685530447
Tb-149	0.603849895	0.422931571	0.591316444	0.673694645
Tb-150m	0.629134444	0.44339798	0.61667994	0.702463446
Tb-150	0.577125571	0.400940201	0.564560946	0.643469553
Tb-151	0.642836517	0.456089576	0.630194904	0.717840309
Tb-151m	0.662663611	0.468020173	0.649136572	0.739989893
Tb-152m	0.657735642	0.469388682	0.645204334	0.734728457
Tb-152	0.600209429	0.420220005	0.587704846	0.669652991
Tb-153	0.665117507	0.475378683	0.651901675	0.742609886
Tb-154	0.561179885	0.387644613	0.548532852	0.625335679
Tb-155	0.705741766	0.511869785	0.691806254	0.788414071
Tb-156	0.601697306	0.420644722	0.588862578	0.671102134
Tb-156m	0.689808053	0.496759424	0.675395084	0.769958379
Tb-156n	0.700087143	0.503458859	0.685051065	0.781310707
Tb-157	0.704444038	0.500835613	0.688576623	0.785494543
Tb-158	0.602791583	0.420369072	0.589862804	0.672125207
Tb-160	0.596721772	0.415969383	0.583995301	0.665383167
Tb-161	0.782508827	0.546739241	0.763126219	0.873402834
Tb-162	0.621364217	0.437576899	0.608963728	0.693482297
Tb-163	0.653495416	0.465546581	0.641380857	0.730351519
Tb-164	0.600200341	0.419646645	0.587657293	0.669523225
Tb-165	0.573533811	0.396782129	0.560765112	0.63924554
Tc-101	0.678332108	0.48766765	0.666179032	0.758220915
Tc-102m	0.580544416	0.403347977	0.568024456	0.647427193
Tc-102	0.609188857	0.427103856	0.596738715	0.680021133
Tc-104	0.578991571	0.40287792	0.56659208	0.645670407
Tc-105	0.636141053	0.447286441	0.622956811	0.710122785
Tc-91	0.586682366	0.408617114	0.574146604	0.654542347
Tc-91m	0.631601211	0.445632	0.619100286	0.705654992
Tc-92	0.608004128	0.425304481	0.595354844	0.678561976
Tc-93	0.612306142	0.419516657	0.597916791	0.682762169
Tc-93m	0.605172432	0.41872986	0.59166899	0.675016444
Tc-94	0.627874824	0.435922976	0.614513536	0.700648047
Tc-94m	0.613476929	0.427832097	0.600598824	0.684707754
Tc-95	0.690528004	0.475253134	0.674984095	0.770986083
Tc-95m	0.723505233	0.502072343	0.707420009	0.808161565
Tc-96	0.629540299	0.436330443	0.616065041	0.702493416
Tc-96m	0.965401028	0.646504504	0.939268619	1.078508373
Tc-97	1.318019184	0.865335496	1.279082637	1.475043405
Tc-97m	1.242171546	0.821000358	1.206019183	1.388525535
Tc-98	0.613611738	0.429602386	0.601202605	0.684735604
Tc-99	1.006516148	0.685144101	0.977727214	1.120313852

Tc-99m	0.769614469	0.561113319	0.754886249	0.860966471
Te-113	0.599534364	0.418833447	0.586969685	0.66902849
Te-114	0.613479636	0.42621861	0.599928427	0.684279079
Te-115	0.602239951	0.420269542	0.589466963	0.671902149
Te-115m	0.592875312	0.412389745	0.58014453	0.661300105
Te-116	0.79645579	0.550372803	0.776011011	0.888652702
Te-117	0.599375874	0.416478144	0.586421641	0.668555378
Te-118	0.878509302	0.595778168	0.853560746	0.979553745
Te-119	0.63799429	0.444854306	0.624238271	0.711817667
Te-119m	0.605704996	0.420993336	0.592147321	0.675211617
Te-121	0.662696377	0.464367404	0.648557478	0.739904528
Te-121m	0.732827454	0.523932099	0.717715981	0.818309418
Te-123	0.87850931	0.595778172	0.853560754	0.979553754
Te-123m	0.758204818	0.545615081	0.74237801	0.846810279
Te-125m	0.852918384	0.582379762	0.829484098	0.950480727
Te-127	0.665675989	0.475163565	0.653556379	0.7441361
Te-127m	0.854320818	0.583103643	0.830797116	0.952094168
Te-129	0.689732629	0.483299829	0.674790427	0.77009904
Te-129m	0.734819915	0.506734553	0.716791239	0.819363
Te-131	0.644197161	0.457549946	0.631328338	0.719286952
Te-131m	0.604836031	0.42208861	0.592155444	0.674671362
Te-132	0.743801262	0.5332514	0.728704135	0.830567045
Te-133	0.600369595	0.420228374	0.587965044	0.669812941
Te-133m	0.598499196	0.417032986	0.585848278	0.667523578
Te-134	0.64462897	0.456264209	0.631949853	0.719821851
Th-223	1.264032521	0.798311412	1.218847704	1.435343217
Th-224	0.910178731	0.620702648	0.886235425	1.024681639
Th-226	1.394470137	0.869368468	1.343553057	1.583077991
Th-227	1.179558713	0.751552878	1.139707929	1.336485323
Th-228	1.675165019	1.0171041	1.610014576	1.904666101
Th-229	1.425284916	0.879173509	1.371154829	1.620866052
Th-230	1.776306595	1.068674687	1.705731943	2.022413072
Th-231	1.503848105	0.931074731	1.448231719	1.703322904
Th-232	1.78861216	1.073964132	1.716881592	2.036168599
Th-233	0.948437529	0.626225996	0.920809738	1.067600387
Th-234	1.346079946	0.851201803	1.299048043	1.523679435
Th-235	0.647707083	0.453117759	0.634339641	0.723855005
Th-236	0.92199032	0.616180312	0.896315593	1.037819544
Ti-44	0.693425297	0.512846192	0.681051378	0.776051829
Ti-45	0.637339588	0.45101383	0.624951549	0.712256047
Ti-51	0.664008908	0.475647736	0.652014121	0.742008666
Ti-52	0.863218305	0.615947875	0.844690452	0.966727605
Tl-190	0.646915903	0.454944001	0.633823005	0.723384369
Tl-190m	0.637011082	0.446679871	0.623962204	0.71187604
Tl-194	0.666941113	0.46643325	0.652874229	0.746672562
Tl-194m	0.652291037	0.454768476	0.638414609	0.729720592
Tl-195	0.642957357	0.435286357	0.626663069	0.720325411

Tl-196	0.610854841	0.422442573	0.597233864	0.682640327
Tl-197	0.725314696	0.490700815	0.706441118	0.815422842
Tl-198	0.604749979	0.416820726	0.590986784	0.675674865
Tl-198m	0.716598338	0.49007946	0.699189557	0.804985591
Tl-199	0.846469666	0.567590517	0.822795066	0.955774903
Tl-200	0.640507502	0.442819517	0.626036238	0.716449022
Tl-201	1.145794135	0.722681314	1.104123403	1.305753518
Tl-202	0.734531645	0.507028827	0.717556	0.825396266
Tl-204	1.239612636	0.765079289	1.191578492	1.416077811
Tl-206m	0.651977141	0.454841716	0.63792266	0.729318814
Tl-206	1.230299154	0.73655154	1.17868386	1.410009929
Tl-207	0.596097618	0.413633094	0.583387762	0.66491712
Tl-208	0.552995148	0.380997581	0.540351362	0.616384873
Tl-209	0.595834912	0.412369325	0.582532612	0.665469114
Tl-210	0.60496304	0.416077551	0.591112521	0.675847114
Tm-161	0.599326702	0.420255871	0.586613239	0.668605927
Tm-162	0.580170146	0.403530159	0.567591638	0.646968227
Tm-163	0.592954994	0.413895587	0.58015427	0.661243342
Tm-164	0.612853394	0.430652989	0.600287491	0.684204158
Tm-165	0.649797253	0.462927686	0.63716647	0.725640829
Tm-166	0.578816429	0.401924859	0.566211538	0.645299998
Tm-167	0.699969027	0.508645626	0.686736177	0.781963081
Tm-168	0.62540638	0.441044831	0.61295281	0.698106038
Tm-170	0.697554629	0.509769523	0.683580235	0.779861349
Tm-171	0.699297632	0.504530398	0.684714768	0.7820076
Tm-172	0.567487	0.39196676	0.554720906	0.632421002
Tm-173	0.662070025	0.472953184	0.650197265	0.740180208
Tm-174	0.630059746	0.445679074	0.617559841	0.703288139
Tm-175	0.612863308	0.429615804	0.600313779	0.68406645
Tm-176	0.587745457	0.410086929	0.575103641	0.655346105
U-227	1.040721218	0.689132225	1.009889645	1.174301641
U-228	1.479516608	0.922063143	1.426049935	1.67549354
U-230	1.608188008	0.987490768	1.547704414	1.823359161
U-231	1.405626335	0.881364005	1.355236826	1.591880994
U-232	1.651201046	1.008912946	1.588224138	1.873048162
U-233	1.66446493	1.012101493	1.599985114	1.889935082
U-234	1.686245148	1.033698109	1.623789912	1.910948394
U-235	0.975923007	0.666766266	0.949310538	1.096581249
U-235m	0	0	0	0
U-236	1.663219343	1.014615883	1.599490485	1.88707981
U-237	1.095692065	0.726137552	1.063229879	1.233995765
U-238	1.685496425	1.03233538	1.622798572	1.910073187
U-239	0.957002396	0.64583668	0.930709867	1.076214026
U-240	1.482378339	0.929827547	1.43014694	1.675031006
U-242	0.746499397	0.52058773	0.72968913	0.836140634
V-47	0.63693928	0.450688871	0.6245513	0.711801417
V-48	0.585831108	0.4066263	0.573059551	0.653173792

V-49	0	0	0	0
V-50	0.557316359	0.383522681	0.544757715	0.621074647
V-52	0.557853157	0.38363733	0.545108979	0.621533309
V-53	0.582608333	0.403282058	0.569710535	0.649256128
W-177	0.647636536	0.455996366	0.633987741	0.724040907
W-178	0.933596184	0.609219149	0.90251345	1.059693917
W-179	0.830417113	0.565548406	0.807109342	0.934651968
W-179m	0.765810842	0.540022449	0.747987318	0.860472949
W-181	0.785389013	0.544397752	0.764882875	0.884258463
W-185m	1.092847232	0.689238614	1.052566278	1.246838499
W-185	1.044417786	0.657515834	1.004923303	1.194370551
W-187	0.65724346	0.456561902	0.642754689	0.736045829
W-188	0.797246635	0.546733549	0.777031492	0.899118721
W-190	1.013549094	0.643054621	0.976327402	1.15718039
Xe-120	0.695935038	0.486337747	0.680351491	0.776537342
Xe-121	0.604381691	0.422567416	0.591547379	0.674357758
Xe-122	0.781126627	0.544268656	0.762435677	0.871095737
Xe-123	0.647995722	0.456355576	0.634361013	0.723259951
Xe-125	0.734404422	0.522121401	0.718797689	0.81971474
Xe-127	0.739884897	0.53002373	0.724851445	0.826198716
Xe-127m	0.751516122	0.544788006	0.736483293	0.839637985
Xe-129m	0.813318032	0.563263391	0.792629977	0.905754782
Xe-131m	0.818308494	0.566069572	0.797350149	0.911273963
Xe-133	0.7659076	0.543582215	0.748299093	0.85389549
Xe-133m	0.790172425	0.55318101	0.771414458	0.880701215
Xe-135	0.698268685	0.506403452	0.685878177	0.780431673
Xe-135m	0.640842672	0.452588291	0.628117652	0.715941063
Xe-137	0.62872872	0.444199235	0.616528404	0.702425798
Xe-138	0.576209674	0.400108181	0.563695085	0.64269693
Y-81	0.70084009	0.489345373	0.685718785	0.784867034
Y-83	0.682079103	0.472220477	0.666869416	0.763395235
Y-83m	0.689273009	0.484425747	0.675095375	0.77126525
Y-84m	0.603244973	0.420522055	0.590533747	0.673078317
Y-85	0.667725977	0.466772643	0.653684427	0.747029677
Y-85m	0.641948314	0.444642008	0.627705643	0.717631238
Y-86	0.60882706	0.419973172	0.595097845	0.679582473
Y-86m	0.729114585	0.526720175	0.715320384	0.815427877
Y-87	0.845242828	0.567165021	0.822955704	0.950300039
Y-87m	0.727228976	0.510983422	0.71255813	0.814220173
Y-88	0.606474373	0.412150788	0.591831119	0.67734801
Y-89m	0.593052045	0.411713892	0.580428277	0.661319858
Y-90	1.494844085	0.955536298	1.446402341	1.681428816
Y-90m	0.68233309	0.486533752	0.66922818	0.763076818
Y-91	0.570803903	0.393648733	0.557779511	0.635859333
Y-91m	0.64066566	0.450783245	0.627699291	0.715754138
Y-92	0.58661396	0.407083239	0.57396264	0.654080149
Y-93	0.593585085	0.414795223	0.58106494	0.66207431

Y-94	0.584075397	0.405017696	0.571452715	0.651165545
Y-95	0.539409361	0.370422079	0.526890898	0.60068584
Yb-162	0.680368638	0.492295003	0.667416225	0.760314144
Yb-163	0.611350461	0.428927095	0.59870432	0.68239613
Yb-164	0.680848015	0.489916337	0.666909609	0.760267723
Yb-165	0.634665758	0.450439469	0.621559223	0.708476026
Yb-166	0.691017235	0.50051224	0.676859207	0.771766003
Yb-167	0.701990638	0.51129401	0.688330937	0.785004515
Yb-169	0.7017745	0.511810664	0.688570679	0.784317304
Yb-175	0.680809623	0.488149111	0.668336006	0.761608768
Yb-177	0.614003278	0.430892004	0.600728826	0.685159538
Yb-178	0.673951289	0.481141587	0.661692191	0.753845218
Yb-179	0.63224854	0.445886424	0.619675334	0.706020201
Zn-60	0.634139787	0.448206869	0.621740946	0.70840321
Zn-61	0.615205316	0.432625855	0.60279199	0.68704684
Zn-62	0.638529786	0.451359133	0.625890786	0.713176488
Zn-63	0.631891119	0.44627631	0.61947338	0.705987111
Zn-65	0.578156084	0.399638025	0.565133352	0.644152466
Zn-69	0.650352971	0.463313593	0.638278383	0.726521192
Zn-69m	0.652938009	0.464829032	0.640958847	0.729980143
Zn-71	0.620000481	0.436016456	0.60752722	0.692297849
Zn-71m	0.634382024	0.448470008	0.622059403	0.708577839
Zn-72	0.883908887	0.606686109	0.860228986	0.997419877
Zr-85	0.636962711	0.449162562	0.624348839	0.711766244
Zr-86	1.065601786	0.707403009	1.035291764	1.198327252
Zr-87	0.650913698	0.457146532	0.63761391	0.727644697
Zr-88	0.866983468	0.588990014	0.845648634	0.973187323
Zr-89	0.66919551	0.458815286	0.653697742	0.748058229
Zr-89m	0.631879004	0.442182488	0.618703036	0.705567014
Zr-93	0	0	0	0
Zr-95	0.608771481	0.425408177	0.596451192	0.679303108
Zr-97	0	0	0	0

Site-specific

Am 241

Resident Building PRGs for 3-D Direct External Exposure -

Isotope	Parent	External Exposure Slope Factor (Ground Plane) (risk/yr per pCi/cm^2)	Halflife (yr)	Concrete $F_{r\text{-}surf}$ (Ground Plane)	Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Default Surface Factor Removed Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Splash Surface Factor Average (ground plane)	Splash Surface Factor Added Default Ground Plane BPRG TR=0.0001 (pCi/cm^2)
Center Room Position								
BPRGs for Am-241 Chain	***Am-241***	-	-	-	-			
Am-241	Am-241	1.87E-08	4.32E+02	8.59E-01	**2.55E+02**	2.19E+02	0.792090149	2.77E+02
Np-237	Am-241	2.10E-08	2.14E+06	1.31E+00	**1.45E+02**	1.90E+02	0.882149937	2.15E+02
Pa-233	Am-241	1.88E-07	7.39E-02	1.76E+00	**2.96E+03**	5.21E+03	0.641810225	8.12E+03
U-233	Am-241	3.57E-10	1.59E+05	1.12E-01	**1.00E+05**	1.12E+04	1.012101493	1.11E+04
Th-229	Am-241	7.08E-08	7.34E+03	2.29E+00	**2.48E+01**	5.68E+01	0.879173509	6.46E+01
Ra-225	Am-241	8.84E-09	4.08E-02	4.95E-01	**4.04E+05**	2.00E+05	0.791238049	2.53E+05
Ac-225	Am-241	1.20E-08	2.74E-02	4.81E-01	**4.56E+05**	2.19E+05	0.938741064	2.34E+05
Fr-221	Am-241	2.52E-08	9.32E-06	1.72E-01	**1.79E+09**	3.08E+08	0.589304466	5.22E+08
At-217	Am-241	2.13E-10	1.02E-09	1.07E-03	**3.10E+17**	3.32E+14	0.54883972	6.04E+14
Bi-213	Am-241	1.20E-07	8.67E-05	2.63E-01	**2.64E+07**	6.94E+06	0.478396071	1.45E+07
Po-213	Am-241	3.36E-11	1.33E-13	3.34E-05	**4.83E+23**	1.61E+19	0.423918725	3.81E+19
Tl-209	Am-241	1.86E-06	4.11E-06	2.47E+00	**3.83E+06**	9.46E+06	0.412369325	2.29E+07
Pb-209	Am-241	5.65E-10	3.71E-04	0.00E+00	-			
Average Room Position								
BPRGs for Am-241 Chain	***Am-241***	-	-	-	-			
Am-241	Am-241	1.87E-08	4.32E+02	1.13E+00	**1.94E+02**	2.19E+02	1.248365367	175.6056406
Np-237	Am-241	2.10E-08	2.14E+06	2.16E+00	**8.85E+01**	1.91E+02	1.40621203	135.9396705
Pa-233	Am-241	1.88E-07	7.39E-02	2.72E+00	**1.91E+03**	5.20E+03	0.955500213	5437.152111
U-233	Am-241	3.57E-10	1.59E+05	1.96E-01	**5.73E+04**	1.12E+04	1.66446493	6747.39359
Th-229	Am-241	7.08E-08	7.34E+03	3.77E+00	**1.51E+01**	5.69E+01	1.425284916	39.94078613
Ra-225	Am-241	8.84E-09	4.08E-02	7.88E-01	**2.54E+05**	2.00E+05	1.261790136	158625.4277
Ac-225	Am-241	1.20E-08	2.74E-02	8.18E-01	**2.68E+05**	2.19E+05	1.557268434	140774.7022
Fr-221	Am-241	2.52E-08	9.32E-06	2.45E-01	**1.25E+09**	3.06E+08	0.855056265	358163564.8
At-217	Am-241	2.13E-10	1.02E-09	1.56E-03	**2.14E+17**	3.34E+14	0.806392173	4.13992E+14
Bi-213	Am-241	1.20E-07	8.67E-05	3.70E-01	**1.87E+07**	6.92E+06	0.682299895	10140702.13
Po-213	Am-241	3.36E-11	1.33E-13	4.67E-05	**3.46E+23**	1.62E+19	0.608722477	2.65444E+19
Tl-209	Am-241	1.86E-06	4.11E-06	3.42E+00	**2.77E+06**	9.47E+06	0.595834912	15899370.46
Pb-209	Am-241	5.65E-10	3.71E-04	0.00E+00	-			

Remedial Goal (pCi/cm^2)	Risk	Total Risk	Risk from Am-241 - DON report isotopes
		1.08E-06	**1.08E-06**
0.45	1.63E-07		
0.45	2.09E-07		
0.45	5.54E-09		
0.45	4.07E-09		
0.45	6.97E-07		
0.45	1.78E-10		
0.45	1.93E-10		
0.45	8.61E-14		
0.45	7.45E-20		
0.45	3.10E-12		
0.45	1.18E-24		
0.45	1.96E-12		

		1.73E-06	**1.73E-06**
0.45	2.56E-07		
0.45	3.31E-07		
0.45	8.28E-09		
0.45	6.67E-09		
0.45	1.13E-06		
0.45	2.84E-10		
0.45	3.20E-10		
0.45	1.26E-13		
0.45	1.09E-19		
0.45	4.44E-12		
0.45	1.70E-24		
0.45	2.83E-12		

Corner Room Position								
BPRGs for Am-241 Chain	***Am-241***	-	-	-	-			
Am-241	Am-241	1.87E-08	4.32E+02	1.14E+00	**1.92E+02**	2.19E+02	1.404296554	155.8645141
Np-237	Am-241	2.10E-08	2.14E+06	2.18E+00	**8.76E+01**	1.91E+02	1.590847872	120.0416478
Pa-233	Am-241	1.88E-07	7.39E-02	2.75E+00	**1.89E+03**	5.20E+03	1.075179177	4834.077995
U-233	Am-241	3.57E-10	1.59E+05	1.98E-01	**5.66E+04**	1.12E+04	1.889935082	5929.727485
Th-229	Am-241	7.08E-08	7.34E+03	3.82E+00	**1.49E+01**	5.69E+01	1.620866052	35.115795
Ra-225	Am-241	8.84E-09	4.08E-02	7.95E-01	**2.52E+05**	2.00E+05	1.428380902	140256.7058
Ac-225	Am-241	1.20E-08	2.74E-02	8.29E-01	**2.65E+05**	2.20E+05	1.775713269	123716.4827
Fr-221	Am-241	2.52E-08	9.32E-06	2.49E-01	**1.23E+09**	3.06E+08	0.962734452	318125106.4
At-217	Am-241	2.13E-10	1.02E-09	1.58E-03	**2.10E+17**	3.32E+14	0.908612332	3.65172E+14
Bi-213	Am-241	1.20E-07	8.67E-05	3.74E-01	**1.85E+07**	6.92E+06	0.7643596	9052022.111
Po-213	Am-241	3.36E-11	1.33E-13	4.71E-05	**3.43E+23**	1.62E+19	0.679468533	2.37764E+19
Tl-209	Am-241	1.86E-06	4.11E-06	3.45E+00	**2.74E+06**	9.45E+06	0.665469114	14205016.88
Pb-209	Am-241	5.65E-10	3.71E-04	0.00E+00	-			

		1.96E-06	1.96E-06
0.45	2.89E-07		
0.45	3.75E-07		
0.45	9.31E-09		
0.45	7.59E-09		
0.45	1.28E-06		
0.45	3.21E-10		
0.45	3.64E-10		
0.45	1.41E-13		
0.45	1.23E-19		
0.45	4.97E-12		
0.45	1.89E-24		
0.45	3.17E-12		

Site-specific

Progeny included (with decay)

Gamma emitters

Isotope	Parent	External Exposure Slope Factor (Ground Plane) (risk/yr per pCi/cm^2)	Halflife (yr)	Concrete $F_{r\text{-}surf}$ (Ground Plane)	Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Default Surface Factor Removed Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Splash Surface Factor Average (ground plane)	Splash Surface Factor Added Default Ground Plane BPRG TR=0.0001 (pCi/cm^2)
Center Room Position								
BPRGs for Co-60 Chain	***Co-60***	-	-	-	-			
Co-60	Co-60	2.18E-06	5.27E+00	1.32E+00	**4.92E+00**	6.49E+00	0.351228515	1.85E+01
BPRGs for Cs-137 Chain	***Cs-137***	-	-	-	-			
Cs-137	Cs-137	5.53E-10	3.02E+01	8.18E-01	**1.18E+04**	9.65E+03	0.414774205	2.33E+04
Ba-137m	Cs-137	5.36E-07	3.02E+01	6.66E-01	**1.49E+01**	9.92E+00	0.363334273	2.73E+01
BPRGs for Eu-152 Chain	***Eu-152***	-	-	-	-			
Eu-152	Eu-152	1.03E-06	1.35E+01	1.94E+00	**3.65E+00**	7.08E+00	0.419761483	1.69E+01
Gd-152	Eu-152	0.00E+00	1.08E+14	0.00E+00	-			
Sm-148	Eu-152	0.00E+00	7.00E+15	0.00E+00	-			
Nd-144	Eu-152	0.00E+00	2.29E+15	0.00E+00	-			
BPRGs for Eu-154 Chain	***Eu-154***	-	-	-	-			
Eu-154	Eu-154	1.10E-06	8.59E+00	1.54E+00	**5.69E+00**	8.76E+00	0.413186104	2.12E+01
BPRGs for Sr-90 Chain	***Sr-90***	-	-	-	-			
Sr-90	Sr-90	3.74E-10	2.88E+01	0.00E+00	-			
Y-90	Sr-90	1.67E-08	2.88E+01	9.52E-05	**3.39E+06**	3.23E+02	0.955536298	3.38E+02
Average Room Position								
BPRGs for Co-60 Chain	***Co-60***	-	-	-	-			
Co-60	Co-60	2.18E-06	5.27E+00	1.85E+00	**3.50E+00**	6.48E+00	0.522402139	1.24E+01

Remedial Goal (pCi/cm^2)	Risk	Total Risk
		1.22E-04
22.5	1.22E-04	
		8.25E-05
22.5	9.67E-08	
22.5	8.24E-05	
		1.33E-04
22.5	1.33E-04	
		1.06E-04
22.5	1.06E-04	
		1.33E-06
4.5	1.33E-06	
		1.82E-04
22.5	1.82E-04	

Notes

Ba-137m T/2 changed to match Cs-137 to account for ingrowth and decay

4.86E-06

Y-90 T/2 changed to match Cs-137 to account for ingrowth and decay

7.32E-03

BPRGs for Cs-137 Chain	***Cs-137***	-	-	-	-			
Cs-137	Cs-137	5.53E-10	3.02E+01	1.13E+00	**8.55E+03**	9.66E+03	0.599841323	1.61E+04
Ba-137m	Cs-137	5.36E-07	3.02E+01	9.27E-01	**1.07E+01**	9.92E+00	0.540007278	1.84E+01
BPRGs for Eu-152 Chain	***Eu-152***	-	-	-	-			
Eu-152	Eu-152	1.03E-06	1.35E+01	2.77E+00	**2.55E+00**	7.06E+00	0.601264405	1.17E+01
Gd-152	Eu-152	0.00E+00	1.08E+14	0.00E+00	-			
Sm-148	Eu-152	0.00E+00	7.00E+15	0.00E+00	-			
Nd-144	Eu-152	0.00E+00	2.29E+15	0.00E+00	-			
BPRGs for Eu-154 Chain	***Eu-154***	-	-	-	-			
Eu-154	Eu-154	1.10E-06	8.59E+00	2.16E+00	**4.04E+00**	8.73E+00	0.59330623	1.47E+01
BPRGs for Sr-90 Chain	***Sr-90***	-	-	-	-			
Sr-90	Sr-90	3.74E-10	2.88E+01	0.00E+00	-			
Y-90	Sr-90	1.67E-08	2.88E+01	1.48E-04	**2.18E+06**	3.23E+02	1.494844085	2.16E+02

Corner Room Position								
BPRGs for Co-60 Chain	***Co-60***	-	-	-	-			
Co-60	Co-60	2.18E-06	5.27E+00	1.87E+00	**3.48E+00**	6.51E+00	0.580960584	1.12E+01
BPRGs for Cs-137 Chain	***Cs-137***	-	-	-	-			
Cs-137	Cs-137	5.53E-10	3.02E+01	1.14E+00	**8.47E+03**	9.66E+03	0.673333588	1.43E+04
Ba-137m	Cs-137	5.36E-07	3.02E+01	9.34E-01	**1.06E+01**	9.90E+00	0.601809214	1.65E+01
BPRGs for Eu-152 Chain	***Eu-152***	-	-	-	-			
Eu-152	Eu-152	1.03E-06	1.35E+01	2.80E+00	**2.53E+00**	7.08E+00	0.670510576	1.06E+01
Gd-152	Eu-152	0.00E+00	1.08E+14	0.00E+00	-			
Sm-148	Eu-152	0.00E+00	7.00E+15	0.00E+00	-			
Nd-144	Eu-152	0.00E+00	2.29E+15	0.00E+00	-			
BPRGs for Eu-154 Chain	***Eu-154***	-	-	-	-			
Eu-154	Eu-154	1.10E-06	8.59E+00	2.18E+00	**4.00E+00**	8.72E+00	0.661554949	1.32E+01

		1.23E-04
22.5	1.40E-07	
22.5	1.22E-04	
22.5	1.92E-04	**1.92E-04**
22.5	1.53E-04	**1.53E-04**
4.5	2.08E-06	**2.08E-06**
		2.01E-04
22.5	2.01E-04	
		1.37E-04
22.5	1.57E-07	
22.5	1.37E-04	
		2.13E-04
22.5	2.13E-04	
		1.71E-04
22.5	1.71E-04	

BPRGs for Sr-90 Chain	***Sr-90***	**-**	**-**	**-**	**-**			
Sr-90	Sr-90	3.74E-10	2.88E+01	0.00E+00	-			
Y-90	Sr-90	1.67E-08	2.88E+01	1.49E-04	**2.17E+06**	3.23E+02	1.681428816	1.92E+02

2.34E-06

4.5 2.34E-06

Site-specific

Progeny included (with decay)

Pu-239

Isotope	Parent	External Exposure Slope Factor (Ground Plane) (risk/yr per pCi/cm^2)	Halflife (yr)	Concrete $F_{r\text{-}surf}$ (Ground Plane)	Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Default Surface Factor Removed Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Splash Surface Factor Average (ground plane)	Splash Surface Factor Added Default Ground Plane BPRG TR=0.0001 (pCi/cm^2)
Center Room Position								
BPRGs for Pu-239 Chain	***Pu-239***	-	-	-	-			
Pu-239	Pu-239	2.06E-10	2.41E+04	1.09E-01	**1.79E+05**	1.95E+04	0.986622838	1.98E+04
	Pu-239	1.39E-07	7.04E+08	1.04E+00	**2.77E+01**	2.88E+01	0.666766266	4.32E+01
	Pu-239	0.00E+00	4.95E-05	1.37E-12	-			
	Pu-239	1.24E-08	2.91E-03	1.53E+00	**1.31E+06**	2.00E+06	0.931074731	2.15E+06
	Pu-239	3.14E-08	3.28E+04	1.26E+00	**1.02E+02**	1.29E+02	0.873150384	1.47E+02
	Pu-239	1.65E-10	2.18E+01	1.24E-01	**2.88E+05**	3.57E+04	1.023535766	3.49E+04
	Pu-239	4.83E-08	4.19E-05	1.06E+00	**3.37E+07**	3.57E+07	0.763440568	4.68E+07
	Pu-239	1.07E-07	5.12E-02	1.57E+00	**8.36E+03**	1.31E+04	0.751552878	1.75E+04
	Pu-239	0.00E+00	1.78E-06	0.00E+00	-			
	Pu-239	1.18E-07	3.13E-02	1.30E+00	**1.51E+04**	1.96E+04	0.551405241	3.56E+04
	Pu-239	2.32E-07	1.45E-05	6.93E-01	**1.51E+04**	1.05E+04	0.490302998	2.13E+04
	Pu-239	5.17E-08	1.26E-07	1.73E-01	**1.51E+04**	2.61E+03	0.509313453	5.13E+03
	Pu-239	1.59E-10	5.65E-11	3.01E-04	**1.51E+04**	4.55E+00	0.468477649	9.70E+00
	Pu-239	5.17E-08	1.26E-07	1.73E-01	**1.52E+11**	2.63E+10	0.449929112	5.85E+10
	Pu-239	4.19E-08	4.07E-06	1.38E-01	**3.07E+09**	4.24E+08	0.509651796	8.31E+08
	Pu-239	7.31E-09	1.64E-08	7.80E-03	**7.75E+13**	6.05E+11	0.425973487	1.42E+12
	Pu-239	9.53E-09	9.08E-06	1.86E-03	**4.50E+11**	8.37E+08	0.413633094	2.02E+09
Average Room Position								
BPRGs for Pu-239 Chain	***Pu-239***	-	-	-	-			
Pu-239	Pu-239	2.06E-10	2.41E+04	1.98E-01	**9.84E+04**	1.95E+04	1.587997716	1.23E+04
	Pu-239	1.39E-07	7.04E+08	1.36E+00	**5.04E+01**	6.85E+01	0.975923007	7.02E+01
	Pu-239	0.00E+00	4.95E-05	2.91E-12	-			
	Pu-239	1.24E-08	2.91E-03	2.60E+00	**1.82E+06**	4.73E+06	1.503848105	3.15E+06
	Pu-239	3.14E-08	3.28E+04	2.18E+00	**1.39E+02**	3.03E+02	1.415133724	2.14E+02
	Pu-239	1.65E-10	2.18E+01	2.37E-01	**3.58E+05**	8.48E+04	1.692760571	5.01E+04
	Pu-239	4.83E-08	4.19E-05	1.66E+00	**5.08E+07**	8.43E+07	1.209743713	6.97E+07
	Pu-239	1.07E-07	5.12E-02	2.56E+00	**1.22E+04**	3.12E+04	1.179558713	2.65E+04
	Pu-239	0.00E+00	1.78E-06	0.00E+00	-			
	Pu-239	1.18E-07	3.13E-02	1.98E+00	**2.34E+04**	4.63E+04	1.000887086	4.63E+04

Remedial Goal (pCi/cm^2)	Risk	BPRG Total Risk	Risk from Pu-239 - U-235m DON report isotopes
		6.00E-06	2.28E-09
0.45	2.28E-09		
0.45	1.04E-06		
0.45	2.09E-11		
0.45	3.06E-07		
0.45	1.29E-09		
0.45	9.62E-13		
0.45	2.58E-09		
0.45	1.26E-09		
0.45	2.11E-09		
0.45	8.77E-09		
0.45	4.64E-06		
0.45	7.69E-16		
0.45	5.41E-14		
0.45	3.17E-17		
0.45	2.22E-14		
			3.67E-09
0.45	3.67E-09		
0.45	6.41E-07		
0.45	1.43E-11		
0.45	2.10E-07		
0.45	8.98E-10		
0.45	6.46E-13		
0.45	1.70E-09		
0.45	9.72E-10		

	Pu-239	2.32E-07	1.45E-05	9.94E-01	**5.13E+07**	5.10E+07	0.711172327	7.17E+07
	Pu-239	5.17E-08	1.26E-07	2.40E-01	**1.10E+11**	2.64E+10	0.720555595	3.66E+10
	Pu-239	1.59E-10	5.65E-11	4.11E-04	**4.64E+19**	1.91E+16	0.660550778	2.89E+16
	Pu-239	6.40E-08	6.87E-05	1.31E-01	**2.97E+08**	3.89E+07	0.644987012	6.03E+07
	Pu-239	4.19E-08	4.07E-06	1.95E-01	**5.14E+09**	1.00E+09	0.730505035	1.37E+09
	Pu-239	7.31E-09	1.64E-08	1.08E-02	**1.32E+14**	1.43E+12	0.610352864	2.34E+12
	Pu-239	9.53E-09	9.08E-06	2.60E-03	**7.62E+11**	1.98E+09	0.596097618	3.32E+09

Corner Room Position								
BPRGs for Pu-239 Chain	***Pu-239***	**-**	**-**	**-**	**-**			
Pu-239	Pu-239	2.06E-10	2.41E+04	2.01E-01	**9.70E+04**	1.95E+04	1.795782939	1.09E+04
	Pu-239	1.39E-07	7.04E+08	1.38E+00	**4.96E+01**	6.84E+01	1.096581249	6.24E+01
	Pu-239	0.00E+00	4.95E-05	2.97E-12	**-**			
	Pu-239	1.24E-08	2.91E-03	2.63E+00	**1.80E+06**	4.73E+06	1.703322904	2.78E+06
	Pu-239	3.14E-08	3.28E+04	2.21E+00	**1.37E+02**	3.03E+02	1.606245746	1.88E+02
	Pu-239	1.65E-10	2.18E+01	2.41E-01	**3.52E+05**	8.48E+04	1.923815396	4.41E+04
	Pu-239	4.83E-08	4.19E-05	1.69E+00	**5.02E+07**	8.48E+07	1.371515358	6.19E+07
	Pu-239	1.07E-07	5.12E-02	2.60E+00	**1.20E+04**	3.12E+04	1.336485323	2.33E+04
	Pu-239	0.00E+00	1.78E-06	0.00E+00	**-**			
	Pu-239	1.18E-07	3.13E-02	2.01E+00	**2.31E+04**	4.64E+04	1.133373315	4.10E+04
	Pu-239	2.32E-07	1.45E-05	1.01E+00	**5.06E+07**	5.11E+07	0.797883542	6.41E+07
	Pu-239	5.17E-08	1.26E-07	2.43E-01	**1.08E+11**	2.62E+10	0.807661772	3.25E+10
	Pu-239	1.59E-10	5.65E-11	4.16E-04	**4.59E+19**	1.91E+16	0.738933128	2.58E+16
	Pu-239	6.40E-08	6.87E-05	1.33E-01	**2.94E+08**	3.91E+07	0.721385959	5.42E+07
	Pu-239	4.19E-08	4.07E-06	1.98E-01	**5.07E+09**	1.00E+09	0.820376536	1.22E+09
	Pu-239	7.31E-09	1.64E-08	1.09E-02	**1.31E+14**	1.43E+12	0.681199267	2.10E+12
	Pu-239	9.53E-09	9.08E-06	2.62E-03	**7.56E+11**	1.98E+09	0.66491712	2.98E+09

0.45 6.28E-13
0.45 1.23E-15
0.45 1.56E-21
0.45 7.46E-13
0.45 3.28E-14
0.45 1.93E-17
0.45 1.35E-14

4.14E-09

0.45 4.14E-09
0.45 7.21E-07

0.45 1.62E-11
0.45 2.39E-07
0.45 1.02E-09
0.45 7.27E-13
0.45 1.93E-09

0.45 1.10E-09
0.45 7.03E-13
0.45 1.38E-15
0.45 1.74E-21
0.45 8.30E-13
0.45 3.68E-14
0.45 2.15E-17
0.45 1.51E-14

Site-specific

U-235

Progeny included (with decay)

Isotope	Parent	External Exposure Slope Factor (Ground Plane) (risk/yr per pCi/cm^2)	Halflife (yr)	Concrete $F_{r\text{-}surf}$ (Ground Plane)	Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Default Surface Factor Removed Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Splash Surface Factor Average (ground plane)	Splash Surface Factor Added Default Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Remedial Goal (pCi/cm^2)
Center Room Position									
BPRGs for U-235 Chain	***U-235***	-	-	-	-				
U-235	U-235	1.39E-07	7.04E+08	1.04E+00	**2.77E+01**	2.88E+01	6.67E-01	4.32E+01	2.2
Th-231	U-235	1.24E-08	2.91E-03	1.53E+00	**1.31E+06**	2.00E+06	9.31E-01	2.15E+06	2.2
Pa-231	U-235	3.14E-08	3.28E+04	1.26E+00	**1.02E+02**	1.29E+02	8.73E-01	1.47E+02	2.2
Ac-227	U-235	1.65E-10	2.18E+01	1.24E-01	**2.88E+05**	3.57E+04	1.02E+00	3.49E+04	2.2
Fr-223	U-235	4.83E-08	4.19E-05	1.06E+00	**3.37E+07**	3.57E+07	7.63E-01	4.68E+07	2.2
Th-227	U-235	1.07E-07	5.12E-02	1.57E+00	**8.36E+03**	1.31E+04	7.52E-01	1.75E+04	2.2
At-219	U-235	0.00E+00	1.78E-06	0.00E+00	-				
Ra-223	U-235	1.18E-07	3.13E-02	1.30E+00	**1.51E+04**	1.96E+04	5.51E-01	3.56E+04	2.2
Bi-215	U-235	2.32E-07	1.45E-05	6.93E-01	**3.11E+07**	2.16E+07	4.90E-01	4.40E+07	2.2
Rn-219	U-235	5.17E-08	1.26E-07	1.73E-01	**6.43E+10**	1.11E+10	5.09E-01	2.18E+10	2.2
Po-215	U-235	1.59E-10	5.65E-11	3.01E-04	**2.68E+19**	8.07E+15	4.68E-01	1.72E+16	2.2
Pb-211	U-235	6.40E-08	6.87E-05	9.27E-02	**1.77E+08**	1.64E+07	4.49E-01	3.65E+07	2.2
Bi-211	U-235	4.19E-08	4.07E-06	1.38E-01	**3.07E+09**	4.24E+08	5.10E-01	8.31E+08	2.2
Po-211	U-235	7.31E-09	1.64E-08	7.80E-03	**7.75E+13**	6.05E+11	4.26E-01	1.42E+12	2.2
Tl-207	U-235	9.53E-09	9.08E-06	1.86E-03	**4.50E+11**	8.37E+08	4.14E-01	2.02E+09	2.2
Average Room Position									
BPRGs for U-235 Chain	***U-235***	-	-	-	-				
U-235	U-235	1.39E-07	7.04E+08	1.36E+00	**2.13E+01**	2.90E+01	0.975923007	2.97E+01	2.2
Th-231	U-235	1.24E-08	2.91E-03	2.60E+00	**7.70E+05**	2.00E+06	1.503848105	1.33E+06	2.2
Pa-231	U-235	3.14E-08	3.28E+04	2.18E+00	**5.86E+01**	1.28E+02	1.415133724	9.03E+01	2.2
Ac-227	U-235	1.65E-10	2.18E+01	2.37E-01	**1.51E+05**	3.58E+04	1.692760571	2.11E+04	2.2
Fr-223	U-235	4.83E-08	4.19E-05	1.66E+00	**2.15E+07**	3.57E+07	1.209743713	2.95E+07	2.2
Th-227	U-235	1.07E-07	5.12E-02	2.56E+00	**5.13E+03**	1.31E+04	1.179558713	1.11E+04	2.2
At-219	U-235	0.00E+00	1.78E-06	0.00E+00	-				
Ra-223	U-235	1.18E-07	3.13E-02	1.98E+00	**9.87E+03**	1.95E+04	1.000887086	1.95E+04	2.2
Bi-215	U-235	2.32E-07	1.45E-05	9.94E-01	**2.16E+07**	2.15E+07	0.711172327	3.02E+07	2.2
Rn-219	U-235	5.17E-08	1.26E-07	2.40E-01	**4.64E+10**	1.11E+10	0.720555595	1.55E+10	2.2

Risk	Total Risk	Risk from U-235-Th-231 DON report isotopes
	6.61E-06	5.09E-06
5.09E-06		
1.02E-10		
1.49E-06		
6.31E-09		
4.70E-12		
1.26E-08		
6.18E-09		
5.00E-12		
1.01E-14		
1.28E-20		
6.02E-12		
2.65E-13		
1.55E-16		
1.09E-13		
	9.89E-06	7.41E-06
7.41E-06		
1.65E-10		
2.44E-06		
1.04E-08		
7.46E-12		
1.98E-08		
1.13E-08		
7.29E-12		
1.42E-14		

Po-215	U-235	1.59E-10	5.65E-11	4.11E-04	**1.96E+19**	8.06E+15	0.660550778	1.22E+16	2.2
Pb-211	U-235	6.40E-08	6.87E-05	1.31E-01	**1.25E+08**	1.64E+07	0.644987012	2.54E+07	2.2
Bi-211	U-235	4.19E-08	4.07E-06	1.95E-01	**2.17E+09**	4.23E+08	0.730505035	5.79E+08	2.2
Po-211	U-235	7.31E-09	1.64E-08	1.08E-02	**5.58E+13**	6.03E+11	0.610352864	9.87E+11	2.2
Tl-207	U-235	9.53E-09	9.08E-06	2.60E-03	**3.22E+11**	8.37E+08	0.596097618	1.40E+09	2.2

Corner Room Position									
BPRGs for U-235 Chain	***U-235***	**-**	**-**	**-**	**-**				
U-235	U-235	1.39E-07	7.04E+08	1.38E+00	**2.09E+01**	2.88E+01	1.096581249	2.63E+01	2.2
Th-231	U-235	1.24E-08	2.91E-03	2.63E+00	**7.61E+05**	2.00E+06	1.703322904	1.18E+06	2.2
Pa-231	U-235	3.14E-08	3.28E+04	2.21E+00	**5.79E+01**	1.28E+02	1.606245746	7.97E+01	2.2
Ac-227	U-235	1.65E-10	2.18E+01	2.41E-01	**1.48E+05**	3.57E+04	1.923815396	1.85E+04	2.2
Fr-223	U-235	4.83E-08	4.19E-05	1.69E+00	**2.12E+07**	3.58E+07	1.371515358	2.61E+07	2.2
Th-227	U-235	1.07E-07	5.12E-02	2.60E+00	**5.07E+03**	1.32E+04	1.336485323	9.86E+03	2.2
At-219	U-235	0.00E+00	1.78E-06	0.00E+00	**-**				
Ra-223	U-235	1.18E-07	3.13E-02	2.01E+00	**9.73E+03**	1.96E+04	1.133373315	1.73E+04	2.2
Bi-215	U-235	2.32E-07	1.45E-05	1.01E+00	**2.14E+07**	2.16E+07	0.797883542	2.71E+07	2.2
Rn-219	U-235	5.17E-08	1.26E-07	2.43E-01	**4.57E+10**	1.11E+10	0.807661772	1.37E+10	2.2
Po-215	U-235	1.59E-10	5.65E-11	4.16E-04	**1.94E+19**	8.07E+15	0.738933128	1.09E+16	2.2
Pb-211	U-235	6.40E-08	6.87E-05	1.33E-01	**1.24E+08**	1.65E+07	0.721385959	2.29E+07	2.2
Bi-211	U-235	4.19E-08	4.07E-06	1.98E-01	**2.14E+09**	4.24E+08	0.820376536	5.16E+08	2.2
Po-211	U-235	7.31E-09	1.64E-08	1.09E-02	**5.54E+13**	6.04E+11	0.681199267	8.86E+11	2.2
Tl-207	U-235	9.53E-09	9.08E-06	2.62E-03	**3.19E+11**	8.36E+08	0.66491712	1.26E+09	2.2

1.80E-20
8.67E-12
3.80E-13
2.23E-16
1.57E-13

1.12E-05 8.36E-06
8.36E-06
1.87E-10
2.76E-06
1.19E-08
8.42E-12
2.23E-08

1.27E-08
8.12E-12
1.60E-14
2.01E-20
9.62E-12
4.26E-13
2.48E-16
1.75E-13

Site-specific

Ra-226

Progeny included (with decay)

Isotope	Parent	External Exposure Slope Factor (Ground Plane) (risk/yr per pCi/cm^2)	Halflife (yr)	Concrete $F_{r\text{-}surf}$ (Ground Plane)	Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Default Surface Factor Removed Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Splash Surface Factor Average (ground plane)	Splash Surface Factor Added Default Ground Plane BPRG TR=0.0001 (pCi/cm^2)
Center Room Position								
BPRGs for Ra-226 Chain	***Ra-226***	-	-	-	-			
Ra-226	Ra-226	6.25E-09	1.60E+03	7.21E-01	**8.90E+02**	6.42E+02	0.6286893	1.02E+03
Rn-222	Ra-226	3.50E-10	1.05E-02	5.46E-04	**2.10E+07**	1.15E+04	0.464721272	2.47E+04
Po-218	Ra-226	5.30E-15	5.90E-06	0.00E+00	-			
At-218	Ra-226	2.00E-11	4.76E-08	0.00E+00	-			
Pb-214	Ra-226	2.23E-07	5.10E-05	9.98E-01	**1.80E+01**	1.80E+01	0.741946254	2.42E+01
Bi-214	Ra-226	1.28E-06	3.79E-05	9.04E-01	**3.46E+00**	3.13E+00	0.397006633	7.88E+00
Rn-218	Ra-226	6.81E-10	1.11E-09	8.59E-04	**3.43E+13**	2.95E+10	0.440805536	6.68E+10
Po-214	Ra-226	7.43E-11	5.21E-12	6.92E-05	**7.81E+08**	5.40E+04	0.42067851	1.28E+05
Tl-210	Ra-226	2.41E-06	2.47E-06	2.57E+00	**3.09E+03**	7.94E+03	0.416077551	1.91E+04
Pb-210	Ra-226	1.72E-09	2.22E+01	5.00E-01	**4.67E+03**	2.34E+03	1.182801136	1.97E+03
Bi-210	Ra-226	4.82E-09	1.37E-02	1.16E-06	**7.16E+08**	8.31E+02	0.533914391	1.56E+03
Hg-206	Ra-226	1.12E-07	1.55E-05	4.22E-01	**4.48E+09**	1.89E+09	0.52357714	3.61E+09
Po-210	Ra-226	8.70E-12	3.79E-01	8.04E-06	**5.74E+10**	4.61E+05	0.42018758	1.10E+06
Tl-206	Ra-226	8.57E-09	7.99E-06	1.30E-03	**2.69E+11**	3.50E+08	0.73655154	4.75E+08
Average Room Position								
BPRGs for Ra-226 Chain	***Ra-226***	-	-	-	-			
Ra-226	Ra-226	6.25E-09	1.60E+03	9.99E-01	**6.43E+02**	6.42E+02	0.924468578	6.95E+02
Rn-222	Ra-226	3.50E-10	1.05E-02	7.49E-04	**1.53E+07**	1.15E+04	0.658141103	1.74E+04
Po-218	Ra-226	5.30E-15	5.90E-06	0.00E+00	-			
At-218	Ra-226	2.00E-11	4.76E-08	0.00E+00	-			
Pb-214	Ra-226	2.23E-07	5.10E-05	1.47E+00	**1.22E+01**	1.79E+01	0.801580247	2.24E+01
Bi-214	Ra-226	1.28E-06	3.79E-05	1.26E+00	**2.47E+00**	3.11E+00	0.574039687	5.42E+00
Rn-218	Ra-226	6.81E-10	1.11E-09	1.18E-03	**2.49E+13**	2.94E+10	0.627467536	4.68E+10
Po-214	Ra-226	7.43E-11	5.21E-12	9.61E-05	**5.62E+08**	5.40E+04	0.60371249	8.95E+04
Tl-210	Ra-226	2.41E-06	2.47E-06	3.72E+00	**2.14E+03**	7.96E+03	0.60496304	1.32E+04
Pb-210	Ra-226	1.72E-09	2.22E+01	9.32E-01	**2.51E+03**	2.34E+03	2.175836889	1.08E+03
Bi-210	Ra-226	4.82E-09	1.37E-02	1.64E-06	**5.07E+08**	8.31E+02	0.767200541	1.08E+03
Hg-206	Ra-226	1.12E-07	1.55E-05	6.04E-01	**3.13E+09**	1.89E+09	0.758822218	2.49E+09
Po-210	Ra-226	8.70E-12	3.79E-01	1.12E-05	**4.13E+10**	4.63E+05	0.603114988	7.67E+05

Remedial Goal (pCi/cm^2)	Risk	Total Risk
		7.67E-06
0.45	4.41E-08	
0.45	1.82E-09	
0.45	1.86E-06	
0.45	5.71E-06	
0.45	6.73E-16	
0.45	3.50E-10	
0.45	2.36E-09	
0.45	2.28E-08	
0.45	2.89E-08	
0.45	1.25E-14	
0.45	4.10E-11	
0.45	9.48E-14	
		1.05E-05
0.45	6.48E-08	
0.45	2.58E-09	
0.45	2.01E-06	
0.45	8.30E-06	
0.45	9.61E-16	
0.45	5.03E-10	
0.45	3.42E-09	
0.45	4.19E-08	
0.45	4.15E-08	
0.45	1.81E-14	
0.45	5.87E-11	

Tl-206	Ra-226	8.57E-09	7.99E-06	2.06E-03	**1.70E+11**	3.50E+08	1.230299154	2.85E+08

Corner Room Position								
BPRGs for Ra-226 Chain	***Ra-226***	**-**	**-**	**-**	**-**			
Ra-226	Ra-226	6.25E-09	1.60E+03	1.01E+00	**6.38E+02**	6.44E+02	1.040294906	6.19E+02
Rn-222	Ra-226	3.50E-10	1.05E-02	7.57E-04	**1.51E+07**	1.14E+04	0.736519573	1.55E+04
Po-218	Ra-226	5.30E-15	5.90E-06	0.00E+00	-			
At-218	Ra-226	2.00E-11	4.76E-08	0.00E+00	-			
Pb-214	Ra-226	2.23E-07	5.10E-05	1.49E+00	**1.21E+01**	1.80E+01	0.903251194	2.00E+01
Bi-214	Ra-226	1.28E-06	3.79E-05	1.27E+00	**2.45E+00**	3.11E+00	0.639970536	4.86E+00
Rn-218	Ra-226	6.81E-10	1.11E-09	1.19E-03	**2.47E+13**	2.94E+10	0.700534366	4.20E+10
Po-214	Ra-226	7.43E-11	5.21E-12	9.69E-05	**5.58E+08**	5.41E+04	0.67366998	8.03E+04
Tl-210	Ra-226	2.41E-06	2.47E-06	3.76E+00	**2.11E+03**	7.93E+03	0.675847114	1.17E+04
Pb-210	Ra-226	1.72E-09	2.22E+01	9.46E-01	**2.47E+03**	2.34E+03	2.517556776	9.28E+02
Bi-210	Ra-226	4.82E-09	1.37E-02	1.66E-06	**5.00E+08**	8.30E+02	0.862753933	9.62E+02
Hg-206	Ra-226	1.12E-07	1.55E-05	6.12E-01	**3.09E+09**	1.89E+09	0.853623857	2.22E+09
Po-210	Ra-226	8.70E-12	3.79E-01	1.13E-05	**4.10E+10**	4.63E+05	0.672988143	6.88E+05
Tl-206	Ra-226	8.57E-09	7.99E-06	2.09E-03	**1.67E+11**	3.49E+08	1.410009929	2.48E+08

0.45	1.58E-13

	1.17E-05
0.45	7.26E-08
0.45	2.90E-09

0.45	2.25E-06
0.45	9.26E-06
0.45	1.07E-15
0.45	5.61E-10
0.45	3.83E-09
0.45	4.85E-08
0.45	4.68E-08
0.45	2.03E-14
0.45	6.54E-11
0.45	1.82E-13

Site-specific

Progeny included (with decay)

Th-232

Isotope	Parent	External Exposure Slope Factor (Ground Plane) (risk/yr per pCi/cm^2)	Halflife (yr)	Concrete $F_{r\text{-}surf}$ (Ground Plane)	Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Default Surface Factor Removed Ground Plane BPRG TR=0.0001 (pCi/cm^2)	Splash Surface Factor Average (ground plane)	Splash Surface Factor Added Default Ground Plane BPRG TR=0.0001 (pCi/cm^2)
Center Room Position								
BPRGs for Th-232 Chain	***Th-232***	-	-	-	-			
Th-232	Th-232	3.26E-10	1.41E+10	6.53E-01	**1.89E+04**	1.23E+04	1.073964132	1.15E+04
Ra-228	Th-232	4.44E-10	5.75E+00	7.62E-01	**1.19E+04**	9.07E+03	1.001415594	9.05E+03
Ac-228	Th-232	7.65E-07	7.02E-04	1.51E+00	**3.48E+00**	5.25E+00	0.457055158	1.15E+01
Th-228	Th-232	1.89E-09	1.91E+00	1.89E-01	**1.12E+04**	2.12E+03	1.0171041	2.08E+03
Ra-224	Th-232	9.01E-09	1.00E-02	4.52E-02	**9.85E+03**	4.45E+02	0.551405241	8.07E+02
Rn-220	Th-232	5.65E-10	1.76E-06	8.31E-01	**8.55E+03**	7.11E+03	0.453007838	1.57E+04
Po-216	Th-232	1.37E-11	4.60E-09	1.26E-05	**2.33E+10**	2.94E+05	0.42002466	6.99E+05
Pb-212	Th-232	1.24E-07	1.21E-03	9.84E-01	**3.30E+01**	3.25E+01	0.616259339	5.27E+01
Bi-212	Th-232	9.91E-08	1.15E-04	2.31E-01	**1.75E+02**	4.04E+01	0.503222679	8.03E+01
Po-212	Th-232	0.00E+00	9.48E-15	0.00E+00	-			
Tl-208	Th-232	2.77E-06	5.81E-06	1.62E+00	**2.50E+00**	4.05E+00	0.380997581	1.06E+01
Average Room Position								
BPRGs for Th-232 Chain	***Th-232***	-	-	-	-			
Th-232	Th-232	3.26E-10	1.41E+10	9.04E-01	**1.36E+04**	1.23E+04	1.78861216	6.87E+03
Ra-228	Th-232	4.44E-10	5.75E+00	1.05E+00	**8.57E+03**	9.00E+03	1.599028077	5.63E+03
Ac-228	Th-232	7.65E-07	7.02E-04	2.30E+00	**2.28E+00**	5.24E+00	0.669201797	7.84E+00
Th-228	Th-232	1.89E-09	1.91E+00	3.27E-01	**6.49E+03**	2.12E+03	1.425284916	1.49E+03
Ra-224	Th-232	9.01E-09	1.00E-02	6.29E-02	**7.08E+03**	4.45E+02	0.78098491	5.70E+02
Rn-220	Th-232	5.65E-10	1.76E-06	1.13E+00	**6.25E+03**	7.06E+03	0.644216507	1.10E+04
Po-216	Th-232	1.37E-11	4.60E-09	1.75E-05	**1.67E+10**	2.92E+05	0.602921516	4.85E+05
Pb-212	Th-232	1.24E-07	1.21E-03	1.45E+00	**2.24E+01**	3.25E+01	0.92786047	3.50E+01
Bi-212	Th-232	9.91E-08	1.15E-04	4.03E-01	**1.01E+02**	4.07E+01	0.788559521	5.16E+01
Po-212	Th-232	0.00E+00	9.48E-15	0.00E+00	-			
Tl-208	Th-232	2.77E-06	5.81E-06	2.27E+00	**1.78E+00**	4.04E+00	0.552995148	7.31E+00
Corner Room Position								
BPRGs for Th-232 Chain	***Th-232***	-	-	-	-			

Remedial Goal (pCi/cm^2)	Risk	Total Risk
		3.53E-06
0.1644	1.43E-09	
0.1644	1.82E-09	
0.1644	1.43E-06	
0.1644	7.90E-09	
0.1644	2.04E-08	
0.1644	1.05E-09	
0.1644	2.35E-11	
0.1644	3.12E-07	
0.1644	2.05E-07	
0.1644	1.55E-06	
		5.18E-06
0.1644	2.39E-09	
0.1644	2.92E-09	
0.1644	2.10E-06	
0.1644	1.10E-08	
0.1644	2.88E-08	
0.1644	1.50E-09	
0.1644	3.39E-11	
0.1644	4.70E-07	
0.1644	3.19E-07	
0.1644	2.25E-06	
		5.81E-06

Th-232	Th-232	3.26E-10	1.41E+10	9.10E-01	**1.35E+04**	1.23E+04	2.036168599	6.03E+03
Ra-228	Th-232	4.44E-10	5.75E+00	1.06E+00	**8.51E+03**	9.02E+03	1.806370379	4.99E+03
Ac-228	Th-232	7.65E-07	7.02E-04	2.32E+00	**2.26E+00**	5.24E+00	0.748586914	7.00E+00
Th-228	Th-232	1.89E-09	1.91E+00	3.31E-01	**6.41E+03**	2.12E+03	1.904666101	1.11E+03
Ra-224	Th-232	9.01E-09	1.00E-02	6.38E-02	**6.97E+03**	4.45E+02	0.876348842	5.07E+02
Rn-220	Th-232	5.65E-10	1.76E-06	1.14E+00	**6.20E+03**	7.07E+03	0.720828813	9.81E+03
Po-216	Th-232	1.37E-11	4.60E-09	1.77E-05	**1.66E+10**	2.94E+05	0.672767626	4.37E+05
Pb-212	Th-232	1.24E-07	1.21E-03	1.47E+00	**2.21E+01**	3.25E+01	1.05036433	3.09E+01
Bi-212	Th-232	9.91E-08	1.15E-04	4.09E-01	**9.90E+01**	4.05E+01	0.892322146	4.54E+01
Po-212	Th-232	0.00E+00	9.48E-15	0.00E+00	-			
Tl-208	Th-232	2.77E-06	5.81E-06	2.28E+00	**1.77E+00**	4.04E+00	0.616384873	6.55E+00

0.1644	2.72E-09
0.1644	3.29E-09
0.1644	2.35E-06
0.1644	1.48E-08
0.1644	3.24E-08
0.1644	1.68E-09
0.1644	3.76E-11
0.1644	5.32E-07
0.1644	3.62E-07
0.1644	2.51E-06