

MicroShield 7.02
Dominion (07-MSD-7.02-1318)

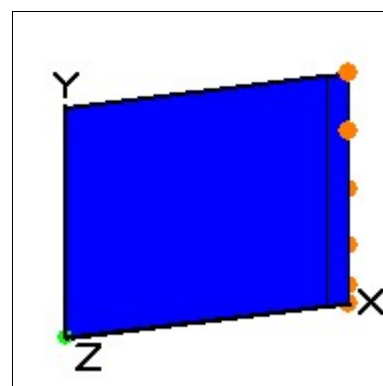
Date	By	Checked

Filename	Run Date	Run Time	Duration
synthIron.ms7	November 11, 2022	7:13:15 PM	00:00:00

Project Info	
Case Title	synthetic benchmark
Description	Case 1
Geometry	1 - Point

Dose Points			
A	X	Y	Z
#1	99.06 cm (3 ft 3.0 in)	0.0 cm (0.0 in)	0.0 cm (0.0 in)
#2	99.06 cm (3 ft 3.0 in)	6.0 cm (2.4 in)	0.0 cm (0.0 in)
#3	99.06 cm (3 ft 3.0 in)	20.0 cm (7.9 in)	0.0 cm (0.0 in)
#4	99.06 cm (3 ft 3.0 in)	40.0 cm (1 ft 3.7 in)	0.0 cm (0.0 in)
#5	99.06 cm (3 ft 3.0 in)	60.0 cm (1 ft 11.6 in)	0.0 cm (0.0 in)
#6	99.06 cm (3 ft 3.0 in)	80.7 cm (2 ft 7.8 in)	0.0 cm (0.0 in)

Shields			
Shield N	Dimension	Material	Density
Shield 1	91.44 cm	Air	0.00122
Shield 2	7.62 cm	Iron	7.874
Air Gap		Air	0.00122



Source Input: Grouping Method - Standard Indices

Number of Groups: 25
Lower Energy Cutoff: 0.015
Photons < 0.015: Excluded
Library: Grove

Nuclide	Ci	Bq
Ba-137m	1.4190e-004	5.2503e+006
Co-58	2.2500e-005	8.3250e+005
Co-60	3.2400e-005	1.1988e+006
Cs-137	1.5000e-004	5.5500e+006
Mn-54	1.2500e-005	4.6250e+005
Sb-125	1.1300e-005	4.1810e+005

Buildup: The material reference is Shield 2
Integration Parameters

Results - Dose Point # 1 - (99.06,0,0) cm					
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec No Buildup	Fluence Rate MeV/cm ² /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	2.691e-208	1.154e-27	2.667e-210	1.144e-29

0.04	9.039e+04	6.724e-93	3.209e-28	2.974e-95	1.419e-30
0.1	1.091e+03	1.035e-12	3.481e-12	1.583e-15	5.326e-15
0.15	1.049e+03	2.156e-08	1.184e-07	3.550e-11	1.950e-10
0.2	3.173e+04	1.264e-05	9.487e-05	2.231e-08	1.674e-07
0.3	1.744e+03	7.078e-06	6.134e-05	1.343e-08	1.164e-07
0.4	1.309e+05	1.683e-03	1.415e-02	3.279e-06	2.758e-05
0.5	2.919e+05	8.144e-03	6.224e-02	1.599e-05	1.222e-04
0.6	4.875e+06	2.443e-01	1.676e+00	4.769e-04	3.271e-03
0.8	1.296e+06	1.549e-01	8.693e-01	2.947e-04	1.653e-03
1.0	1.199e+06	2.707e-01	1.282e+00	4.989e-04	2.364e-03
1.5	1.203e+06	7.871e-01	2.764e+00	1.324e-03	4.650e-03
Totals	9.619e+06	1.467e+00	6.668e+00	2.614e-03	1.209e-02

Results - Dose Point # 2 - (99.06,6,0) cm

Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec No Buildup	Fluence Rate MeV/cm ² /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	1.121e-208	1.150e-27	1.111e-210	1.140e-29
0.04	9.039e+04	4.570e-93	3.198e-28	2.021e-95	1.414e-30
0.1	1.091e+03	9.931e-13	3.342e-12	1.519e-15	5.113e-15
0.15	1.049e+03	2.105e-08	1.158e-07	3.466e-11	1.906e-10
0.2	3.173e+04	1.241e-05	9.325e-05	2.190e-08	1.646e-07
0.3	1.744e+03	6.970e-06	6.053e-05	1.322e-08	1.148e-07
0.4	1.309e+05	1.660e-03	1.399e-02	3.234e-06	2.726e-05
0.5	2.919e+05	8.041e-03	6.158e-02	1.578e-05	1.209e-04
0.6	4.875e+06	2.414e-01	1.659e+00	4.712e-04	3.239e-03
0.8	1.296e+06	1.532e-01	8.615e-01	2.914e-04	1.639e-03
1.0	1.199e+06	2.679e-01	1.272e+00	4.938e-04	2.344e-03
1.5	1.203e+06	7.800e-01	2.743e+00	1.312e-03	4.616e-03
Totals	9.619e+06	1.452e+00	6.611e+00	2.588e-03	1.199e-02

Results - Dose Point # 3 - (99.06,20,0) cm

Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec No Buildup	Fluence Rate MeV/cm ² /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	1.749e-212	1.109e-27	1.733e-214	1.099e-29
0.04	9.039e+04	9.579e-95	3.084e-28	4.237e-97	1.364e-30
0.1	1.091e+03	6.567e-13	2.225e-12	1.005e-15	3.403e-15
0.15	1.049e+03	1.659e-08	9.234e-08	2.732e-11	1.521e-10
0.2	3.173e+04	1.027e-05	7.849e-05	1.813e-08	1.385e-07
0.3	1.744e+03	5.978e-06	5.297e-05	1.134e-08	1.005e-07
0.4	1.309e+05	1.446e-03	1.246e-02	2.818e-06	2.427e-05
0.5	2.919e+05	7.077e-03	5.537e-02	1.389e-05	1.087e-04
0.6	4.875e+06	2.140e-01	1.502e+00	4.178e-04	2.933e-03
0.8	1.296e+06	1.373e-01	7.873e-01	2.612e-04	1.497e-03
1.0	1.199e+06	2.419e-01	1.169e+00	4.459e-04	2.155e-03
1.5	1.203e+06	7.129e-01	2.546e+00	1.200e-03	4.284e-03

Totals	9.619e+06	1.315e+00	6.073e+00	2.341e-03	1.100e-02
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Results - Dose Point # 4 - (99.06,40,0) cm					
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm²/sec No Buildup	Fluence Rate MeV/cm²/sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	1.422e-224	9.925e-28	1.409e-226	9.836e-30
0.04	9.039e+04	4.482e-100	2.759e-28	1.982e-102	1.220e-30
0.1	1.091e+03	1.773e-13	6.127e-13	2.712e-16	9.373e-16
0.15	1.049e+03	7.827e-09	4.517e-08	1.289e-11	7.438e-11
0.2	3.173e+04	5.663e-06	4.553e-05	9.995e-09	8.036e-08
0.3	1.744e+03	3.685e-06	3.475e-05	6.990e-09	6.592e-08
0.4	1.309e+05	9.377e-04	8.631e-03	1.827e-06	1.682e-05
0.5	2.919e+05	4.738e-03	3.961e-02	9.301e-06	7.775e-05
0.6	4.875e+06	1.467e-01	1.099e+00	2.864e-04	2.145e-03
0.8	1.296e+06	9.737e-02	5.931e-01	1.852e-04	1.128e-03
1.0	1.199e+06	1.757e-01	8.983e-01	3.239e-04	1.656e-03
1.5	1.203e+06	5.381e-01	2.016e+00	9.053e-04	3.392e-03
Totals	9.619e+06	9.635e-01	4.655e+00	1.712e-03	8.416e-03

Results - Dose Point # 5 - (99.06,60,0) cm					
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm²/sec No Buildup	Fluence Rate MeV/cm²/sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	2.203e-243	8.445e-28	2.184e-245	8.369e-30
0.04	9.039e+04	2.302e-108	2.348e-28	1.018e-110	1.038e-30
0.1	1.091e+03	2.336e-14	8.315e-14	3.574e-17	1.272e-16
0.15	1.049e+03	2.459e-09	1.496e-08	4.049e-12	2.464e-11
0.2	3.173e+04	2.268e-06	1.965e-05	4.002e-09	3.468e-08
0.3	1.744e+03	1.756e-06	1.816e-05	3.330e-09	3.445e-08
0.4	1.309e+05	4.832e-04	4.905e-03	9.415e-07	9.558e-06
0.5	2.919e+05	2.567e-03	2.368e-02	5.039e-06	4.648e-05
0.6	4.875e+06	8.244e-02	6.804e-01	1.609e-04	1.328e-03
0.8	1.296e+06	5.767e-02	3.845e-01	1.097e-04	7.314e-04
1.0	1.199e+06	1.081e-01	6.006e-01	1.992e-04	1.107e-03
1.5	1.203e+06	3.512e-01	1.413e+00	5.909e-04	2.377e-03
Totals	9.619e+06	6.025e-01	3.107e+00	1.067e-03	5.600e-03

Results - Dose Point # 6 - (99.06,80.7,0) cm					
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm²/sec No Buildup	Fluence Rate MeV/cm²/sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	2.062e-268	6.938e-28	2.043e-270	6.876e-30
0.04	9.039e+04	2.169e-119	1.929e-28	9.593e-122	8.532e-31
0.1	1.091e+03	1.604e-15	5.916e-15	2.453e-18	9.051e-18
0.15	1.049e+03	5.362e-10	3.484e-09	8.829e-13	5.737e-12
0.2	3.173e+04	6.832e-07	6.495e-06	1.206e-09	1.146e-08

0.3	1.744e+03	6.665e-07	7.743e-06	1.264e-09	1.469e-08
0.4	1.309e+05	2.036e-04	2.336e-03	3.968e-07	4.551e-06
0.5	2.919e+05	1.156e-03	1.208e-02	2.270e-06	2.371e-05
0.6	4.875e+06	3.899e-02	3.632e-01	7.610e-05	7.089e-04
0.8	1.296e+06	2.926e-02	2.184e-01	5.565e-05	4.155e-04
1.0	1.199e+06	5.762e-02	3.558e-01	1.062e-04	6.559e-04
1.5	1.203e+06	2.028e-01	8.922e-01	3.412e-04	1.501e-03
Totals	9.619e+06	3.300e-01	1.844e+00	5.818e-04	3.310e-03