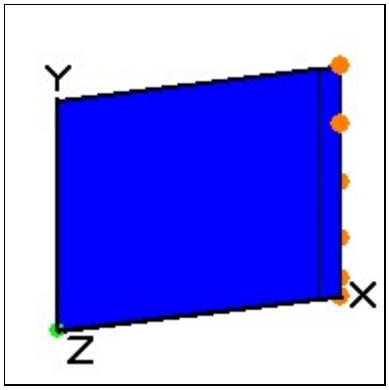
MicroShield 7.02
Dominion (07-MSD-7.02-1318)

Date	By	Checked

Filename	Run Date	Run Time	Duration
synthIron.ms7	November 14, 2022	10:12:19 AM	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 - Linear Energy
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/cm²/sec No Buildup	Fluence Rate MeV/cm²/sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.0314	5.875e+05	1.517e-182	1.442e-27	1.311e-184	1.246e-29

0.117	1.091e+03	1.783e-10	7.279e-10	2.774e-13	1.132e-12
0.1761	2.987e+04	3.978e-06	2.644e-05	6.816e-09	4.531e-08
0.21	2.915e+03	1.659e-06	1.289e-05	2.959e-09	2.299e-08
0.321	1.744e+03	9.491e-06	8.242e-05	1.815e-08	1.576e-07
0.3804	6.254e+03	6.678e-05	5.691e-04	1.297e-07	1.105e-06
0.4371	1.679e+05	2.965e-03	2.415e-02	5.803e-06	4.728e-05
0.511	2.486e+05	7.453e-03	5.628e-02	1.463e-05	1.105e-04
0.6006	7.431e+04	3.735e-03	2.561e-02	7.291e-06	4.998e-05
0.6612	4.793e+06	3.242e-01	2.085e+00	6.285e-04	4.042e-03
0.672	7.774e+03	5.525e-04	3.514e-03	1.070e-06	6.804e-06
0.8196	1.296e+06	1.662e-01	9.161e-01	3.153e-04	1.738e-03
1.1732	1.199e+06	4.186e-01	1.755e+00	7.481e-04	3.136e-03
1.3325	1.199e+06	5.838e-01	2.226e+00	1.013e-03	3.863e-03
1.6747	4.470e+03	3.796e-03	1.243e-02	6.193e-06	2.027e-05
Totals	**9.619e+06**	**1.511e+00**	**7.105e+00**	**2.740e-03**	**1.301e-02**

Results - Dose Point # 2 - (99.06,6,0) 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**
0.0314	5.875e+05	7.041e-183	1.436e-27	6.087e-185	1.242e-29
0.117	1.091e+03	1.727e-10	7.054e-10	2.686e-13	1.097e-12
0.1761	2.987e+04	3.896e-06	2.594e-05	6.677e-09	4.445e-08
0.21	2.915e+03	1.629e-06	1.268e-05	2.905e-09	2.261e-08
0.321	1.744e+03	9.350e-06	8.136e-05	1.788e-08	1.556e-07
0.3804	6.254e+03	6.584e-05	5.623e-04	1.279e-07	1.092e-06
0.4371	1.679e+05	2.925e-03	2.388e-02	5.726e-06	4.675e-05
0.511	2.486e+05	7.359e-03	5.569e-02	1.444e-05	1.093e-04
0.6006	7.431e+04	3.691e-03	2.535e-02	7.203e-06	4.948e-05
0.6612	4.793e+06	3.204e-01	2.065e+00	6.212e-04	4.003e-03
0.672	7.774e+03	5.462e-04	3.481e-03	1.057e-06	6.739e-06
0.8196	1.296e+06	1.644e-01	9.080e-01	3.118e-04	1.722e-03
1.1732	1.199e+06	4.146e-01	1.741e+00	7.408e-04	3.111e-03
1.3325	1.199e+06	5.784e-01	2.209e+00	1.003e-03	3.833e-03
1.6747	4.470e+03	3.763e-03	1.234e-02	6.139e-06	2.013e-05
Totals	**9.619e+06**	**1.496e+00**	**7.044e+00**	**2.712e-03**	**1.290e-02**

Results - Dose Point # 3 - (99.06,20,0) 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**
0.0314	5.875e+05	3.247e-186	1.385e-27	2.807e-188	1.197e-29
0.117	1.091e+03	1.251e-10	5.155e-10	1.946e-13	8.017e-13
0.1761	2.987e+04	3.169e-06	2.141e-05	5.431e-09	3.668e-08
0.21	2.915e+03	1.356e-06	1.074e-05	2.419e-09	1.915e-08
0.321	1.744e+03	8.052e-06	7.152e-05	1.540e-08	1.368e-07
0.3804	6.254e+03	5.723e-05	4.993e-04	1.111e-07	9.697e-07

0.4371	1.679e+05	2.560e-03	2.135e-02	5.010e-06	4.179e-05
0.511	2.486e+05	6.483e-03	5.013e-02	1.272e-05	9.838e-05
0.6006	7.431e+04	3.273e-03	2.296e-02	6.388e-06	4.481e-05
0.6612	4.793e+06	2.852e-01	1.876e+00	5.529e-04	3.637e-03
0.672	7.774e+03	4.864e-04	3.164e-03	9.417e-07	6.125e-06
0.8196	1.296e+06	1.475e-01	8.304e-01	2.797e-04	1.575e-03
1.1732	1.199e+06	3.763e-01	1.607e+00	6.724e-04	2.872e-03
1.3325	1.199e+06	5.269e-01	2.046e+00	9.142e-04	3.549e-03
1.6747	4.470e+03	3.449e-03	1.147e-02	5.627e-06	1.872e-05
Totals	**9.619e+06**	**1.352e+00**	**6.469e+00**	**2.450e-03**	**1.184e-02**

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**
0.0314	5.875e+05	8.254e-197	1.239e-27	7.134e-199	1.071e-29
0.117	1.091e+03	4.518e-11	1.909e-10	7.028e-14	2.969e-13
0.1761	2.987e+04	1.651e-06	1.166e-05	2.830e-09	1.998e-08
0.21	2.915e+03	7.611e-07	6.354e-06	1.358e-09	1.133e-08
0.321	1.744e+03	5.029e-06	4.759e-05	9.618e-09	9.100e-08
0.3804	6.254e+03	3.681e-05	3.430e-04	7.149e-08	6.662e-07
0.4371	1.679e+05	1.682e-03	1.500e-02	3.292e-06	2.936e-05
0.511	2.486e+05	4.353e-03	3.596e-02	8.543e-06	7.058e-05
0.6006	7.431e+04	2.243e-03	1.680e-02	4.379e-06	3.278e-05
0.6612	4.793e+06	1.978e-01	1.387e+00	3.835e-04	2.689e-03
0.672	7.774e+03	3.380e-04	2.343e-03	6.544e-07	4.536e-06
0.8196	1.296e+06	1.049e-01	6.270e-01	1.989e-04	1.189e-03
1.1732	1.199e+06	2.777e-01	1.250e+00	4.963e-04	2.234e-03
1.3325	1.199e+06	3.936e-01	1.607e+00	6.829e-04	2.787e-03
1.6747	4.470e+03	2.626e-03	9.144e-03	4.284e-06	1.492e-05
Totals	**9.619e+06**	**9.853e-01**	**4.950e+00**	**1.783e-03**	**9.052e-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**
0.0314	5.875e+05	2.715e-213	1.055e-27	2.346e-215	9.116e-30
0.117	1.091e+03	9.365e-12	4.107e-11	1.457e-14	6.387e-14
0.1761	2.987e+04	6.057e-07	4.567e-06	1.038e-09	7.826e-09
0.21	2.915e+03	3.134e-07	2.828e-06	5.590e-10	5.044e-09
0.321	1.744e+03	2.446e-06	2.542e-05	4.677e-09	4.861e-08
0.3804	6.254e+03	1.874e-05	1.924e-04	3.639e-08	3.736e-07
0.4371	1.679e+05	8.847e-04	8.713e-03	1.732e-06	1.705e-05
0.511	2.486e+05	2.369e-03	2.159e-02	4.649e-06	4.238e-05
0.6006	7.431e+04	1.261e-03	1.040e-02	2.461e-06	2.030e-05
0.6612	4.793e+06	1.132e-01	8.728e-01	2.195e-04	1.692e-03
0.672	7.774e+03	1.940e-04	1.478e-03	3.757e-07	2.862e-06

0.8196	1.296e+06	6.237e-02	4.079e-01	1.183e-04	7.736e-04
1.1732	1.199e+06	1.751e-01	8.529e-01	3.129e-04	1.524e-03
1.3325	1.199e+06	2.529e-01	1.112e+00	4.387e-04	1.929e-03
1.6747	4.470e+03	1.738e-03	6.477e-03	2.835e-06	1.057e-05
Totals	**9.619e+06**	**6.100e-01**	**3.295e+00**	**1.102e-03**	**6.013e-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**
0.0314	5.875e+05	3.176e-235	8.665e-28	2.746e-237	7.490e-30
0.117	1.091e+03	1.174e-12	5.389e-12	1.826e-15	8.383e-15
0.1761	2.987e+04	1.624e-07	1.328e-06	2.782e-10	2.275e-09
0.21	2.915e+03	9.800e-08	9.738e-07	1.748e-10	1.737e-09
0.321	1.744e+03	9.541e-07	1.116e-05	1.825e-09	2.134e-08
0.3804	6.254e+03	7.768e-06	9.003e-05	1.509e-08	1.748e-07
0.4371	1.679e+05	3.833e-04	4.274e-03	7.502e-07	8.366e-06
0.511	2.486e+05	1.074e-03	1.108e-02	2.107e-06	2.174e-05
0.6006	7.431e+04	5.965e-04	5.553e-03	1.164e-06	1.084e-05
0.6612	4.793e+06	5.487e-02	4.764e-01	1.064e-04	9.237e-04
0.672	7.774e+03	9.442e-05	8.098e-04	1.828e-07	1.568e-06
0.8196	1.296e+06	3.182e-02	2.328e-01	6.035e-05	4.416e-04
1.1732	1.199e+06	9.655e-02	5.191e-01	1.725e-04	9.276e-04
1.3325	1.199e+06	1.429e-01	6.903e-01	2.479e-04	1.198e-03
1.6747	4.470e+03	1.022e-03	4.148e-03	1.667e-06	6.768e-06
Totals	**9.619e+06**	**3.293e-01**	**1.945e+00**	**5.931e-04**	**3.540e-03**