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

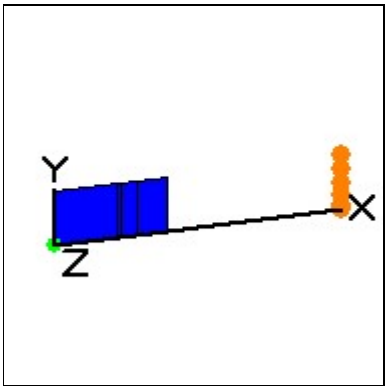
Date	By	Checked

Filename	Run Date	Run Time	Duration
synthAir.ms7	November 14, 2022	10:13:08 AM	00:00:00

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

Dose Points

A	X	Y	Z
#1	426.72 cm (14 ft 0.0 in)	0.0 cm (0.0 in)	0.0 cm (0.0 in)
#2	426.72 cm (14 ft 0.0 in)	6.0 cm (2.4 in)	0.0 cm (0.0 in)
#3	426.72 cm (14 ft 0.0 in)	20.0 cm (7.9 in)	0.0 cm (0.0 in)
#4	426.72 cm (14 ft 0.0 in)	40.0 cm (1 ft 3.7 in)	0.0 cm (0.0 in)
#5	426.72 cm (14 ft 0.0 in)	60.0 cm (1 ft 11.6 in)	0.0 cm (0.0 in)
#6	426.72 cm (14 ft 0.0 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
Shield 3	22.86 cm	Air	0.00122
Shield 4	45.72 cm	Concrete	2.34
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 4
Integration Parameters

Results - Dose Point # 1 - (426.72,0,0) cm

Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm²/sec	Fluence Rate MeV/cm²/sec	Exposure Rate mR/hr	Exposure Rate mR/hr

		No Buildup	With Buildup	No Buildup	With Buildup
0.0314	5.875e+05	6.066e-231	1.498e-28	5.243e-233	1.295e-30
0.117	1.091e+03	5.109e-19	1.239e-16	7.946e-22	1.928e-19
0.1761	2.987e+04	1.660e-13	4.237e-11	2.845e-16	7.260e-14
0.21	2.915e+03	1.720e-13	4.008e-11	3.069e-16	7.149e-14
0.321	1.744e+03	6.934e-12	9.785e-10	1.326e-14	1.871e-12
0.3804	6.254e+03	1.008e-10	1.098e-08	1.958e-13	2.132e-11
0.4371	1.679e+05	7.950e-09	6.924e-07	1.556e-11	1.355e-09
0.511	2.486e+05	3.740e-08	2.509e-06	7.340e-11	4.924e-09
0.6006	7.431e+04	3.498e-08	1.784e-06	6.827e-11	3.482e-09
0.6612	4.793e+06	4.356e-06	1.888e-04	8.445e-09	3.659e-07
0.672	7.774e+03	7.884e-09	3.324e-07	1.527e-11	6.436e-10
0.8196	1.296e+06	4.863e-06	1.471e-04	9.224e-09	2.789e-07
1.1732	1.199e+06	4.092e-05	6.991e-04	7.313e-08	1.249e-06
1.3325	1.199e+06	8.479e-05	1.200e-03	1.471e-07	2.082e-06
1.6747	4.470e+03	1.063e-06	1.107e-05	1.735e-09	1.806e-08
Totals	**9.619e+06**	**1.361e-04**	**2.251e-03**	**2.398e-07**	**4.005e-06**

Results - Dose Point # 2 - (426.72,6,0) 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	5.758e-231	1.498e-28	4.977e-233	1.295e-30
0.117	1.091e+03	5.091e-19	1.236e-16	7.919e-22	1.922e-19
0.1761	2.987e+04	1.656e-13	4.227e-11	2.837e-16	7.244e-14
0.21	2.915e+03	1.716e-13	4.000e-11	3.062e-16	7.134e-14
0.321	1.744e+03	6.921e-12	9.768e-10	1.324e-14	1.868e-12
0.3804	6.254e+03	1.006e-10	1.096e-08	1.954e-13	2.129e-11
0.4371	1.679e+05	7.937e-09	6.913e-07	1.554e-11	1.353e-09
0.511	2.486e+05	3.734e-08	2.505e-06	7.328e-11	4.917e-09
0.6006	7.431e+04	3.493e-08	1.782e-06	6.817e-11	3.478e-09
0.6612	4.793e+06	4.349e-06	1.885e-04	8.433e-09	3.655e-07
0.672	7.774e+03	7.873e-09	3.320e-07	1.524e-11	6.428e-10
0.8196	1.296e+06	4.857e-06	1.469e-04	9.212e-09	2.786e-07
1.1732	1.199e+06	4.088e-05	6.984e-04	7.305e-08	1.248e-06
1.3325	1.199e+06	8.469e-05	1.199e-03	1.469e-07	2.080e-06
1.6747	4.470e+03	1.062e-06	1.106e-05	1.733e-09	1.805e-08
Totals	**9.619e+06**	**1.359e-04**	**2.249e-03**	**2.395e-07**	**4.001e-06**

Results - Dose Point # 3 - (426.72,20,0) 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	3.400e-231	1.495e-28	2.939e-233	1.292e-30
0.117	1.091e+03	4.920e-19	1.196e-16	7.652e-22	1.861e-19
0.1761	2.987e+04	1.614e-13	4.130e-11	2.766e-16	7.078e-14
0.21	2.915e+03	1.677e-13	3.917e-11	2.992e-16	6.986e-14

0.321	1.744e+03	6.788e-12	9.601e-10	1.298e-14	1.836e-12
0.3804	6.254e+03	9.881e-11	1.079e-08	1.919e-13	2.095e-11
0.4371	1.679e+05	7.802e-09	6.809e-07	1.527e-11	1.333e-09
0.511	2.486e+05	3.674e-08	2.470e-06	7.210e-11	4.847e-09
0.6006	7.431e+04	3.440e-08	1.758e-06	6.714e-11	3.431e-09
0.6612	4.793e+06	4.286e-06	1.861e-04	8.310e-09	3.608e-07
0.672	7.774e+03	7.759e-09	3.277e-07	1.502e-11	6.345e-10
0.8196	1.296e+06	4.792e-06	1.452e-04	9.089e-09	2.753e-07
1.1732	1.199e+06	4.040e-05	6.912e-04	7.220e-08	1.235e-06
1.3325	1.199e+06	8.377e-05	1.187e-03	1.453e-07	2.060e-06
1.6747	4.470e+03	1.052e-06	1.096e-05	1.716e-09	1.789e-08
Totals	**9.619e+06**	**1.344e-04**	**2.226e-03**	**2.368e-07**	**3.959e-06**

Results - Dose Point # 4 - (426.72,40,0) 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	6.012e-232	1.485e-28	5.197e-234	1.284e-30
0.117	1.091e+03	4.395e-19	1.076e-16	6.836e-22	1.673e-19
0.1761	2.987e+04	1.485e-13	3.827e-11	2.545e-16	6.559e-14
0.21	2.915e+03	1.554e-13	3.656e-11	2.772e-16	6.522e-14
0.321	1.744e+03	6.370e-12	9.072e-10	1.218e-14	1.735e-12
0.3804	6.254e+03	9.309e-11	1.023e-08	1.808e-13	1.987e-11
0.4371	1.679e+05	7.373e-09	6.475e-07	1.443e-11	1.267e-09
0.511	2.486e+05	3.483e-08	2.356e-06	6.836e-11	4.623e-09
0.6006	7.431e+04	3.272e-08	1.682e-06	6.386e-11	3.282e-09
0.6612	4.793e+06	4.085e-06	1.783e-04	7.919e-09	3.457e-07
0.672	7.774e+03	7.397e-09	3.141e-07	1.432e-11	6.082e-10
0.8196	1.296e+06	4.585e-06	1.396e-04	8.695e-09	2.647e-07
1.1732	1.199e+06	3.889e-05	6.682e-04	6.950e-08	1.194e-06
1.3325	1.199e+06	8.079e-05	1.150e-03	1.402e-07	1.995e-06
1.6747	4.470e+03	1.018e-06	1.065e-05	1.660e-09	1.737e-08
Totals	**9.619e+06**	**1.295e-04**	**2.152e-03**	**2.281e-07**	**3.826e-06**

Results - Dose Point # 5 - (426.72,60,0) 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	3.391e-233	1.469e-28	2.931e-235	1.270e-30
0.117	1.091e+03	3.645e-19	9.016e-17	5.670e-22	1.402e-19
0.1761	2.987e+04	1.294e-13	3.373e-11	2.217e-16	5.780e-14
0.21	2.915e+03	1.370e-13	3.262e-11	2.444e-16	5.818e-14
0.321	1.744e+03	5.731e-12	8.257e-10	1.096e-14	1.579e-12
0.3804	6.254e+03	8.433e-11	9.368e-09	1.638e-13	1.819e-11
0.4371	1.679e+05	6.713e-09	5.958e-07	1.314e-11	1.166e-09
0.511	2.486e+05	3.189e-08	2.178e-06	6.259e-11	4.275e-09
0.6006	7.431e+04	3.012e-08	1.562e-06	5.878e-11	3.050e-09

0.6612	4.793e+06	3.771e-06	1.661e-04	7.311e-09	3.220e-07
0.672	7.774e+03	6.832e-09	2.928e-07	1.323e-11	5.668e-10
0.8196	1.296e+06	4.260e-06	1.308e-04	8.080e-09	2.481e-07
1.1732	1.199e+06	3.651e-05	6.318e-04	6.524e-08	1.129e-06
1.3325	1.199e+06	7.609e-05	1.090e-03	1.320e-07	1.891e-06
1.6747	4.470e+03	9.636e-07	1.014e-05	1.572e-09	1.655e-08
Totals	**9.619e+06**	**1.217e-04**	**2.034e-03**	**2.144e-07**	**3.616e-06**

Results - Dose Point # 6 - (426.72,80.7,0) 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	5.297e-235	1.447e-28	4.578e-237	1.250e-30
0.117	1.091e+03	2.781e-19	6.986e-17	4.326e-22	1.087e-19
0.1761	2.987e+04	1.059e-13	2.809e-11	1.815e-16	4.814e-14
0.21	2.915e+03	1.141e-13	2.765e-11	2.036e-16	4.933e-14
0.321	1.744e+03	4.920e-12	7.206e-10	9.408e-15	1.378e-12
0.3804	6.254e+03	7.310e-11	8.249e-09	1.420e-13	1.602e-11
0.4371	1.679e+05	5.862e-09	5.282e-07	1.147e-11	1.034e-09
0.511	2.486e+05	2.807e-08	1.945e-06	5.508e-11	3.817e-09
0.6006	7.431e+04	2.671e-08	1.405e-06	5.214e-11	2.742e-09
0.6612	4.793e+06	3.360e-06	1.499e-04	6.513e-09	2.907e-07
0.672	7.774e+03	6.091e-09	2.644e-07	1.179e-11	5.120e-10
0.8196	1.296e+06	3.832e-06	1.191e-04	7.268e-09	2.258e-07
1.1732	1.199e+06	3.332e-05	5.826e-04	5.954e-08	1.041e-06
1.3325	1.199e+06	6.977e-05	1.009e-03	1.210e-07	1.751e-06
1.6747	4.470e+03	8.905e-07	9.457e-06	1.453e-09	1.543e-08
Totals	**9.619e+06**	**1.112e-04**	**1.875e-03**	**1.959e-07**	**3.332e-06**