

**MicroShield 9.05
Croft (9.05-0000)**

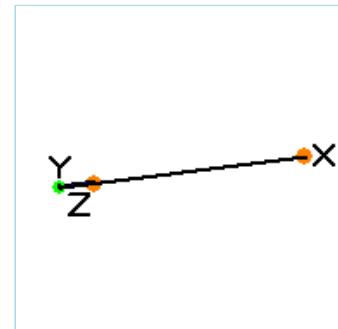
Date	By	Checked

Filename	Run Date	Run Time	Duration
HS-3977A-Base with 3982 insert -Ra-226.ms	March 14, 2013	14:15:53	00:00:00

Project Info	
Case Title	HS 3977A
Description	Base Shielding, point source with 3982 insert
Geometry	1 - Point

Dose Points			
A	X	Y	Z
#1	16.12 cm (6.3 in)	0.0 cm (0 in)	0.0 cm (0 in)
#2	116.12 cm (3 ft 9.7 in)	0.0 cm (0 in)	0.0 cm (0 in)

Shields			
Shield N	Dimension	Material	Density
Shield 1	2.73 cm	Tungsten	17.23
Shield 2	.31 cm	Iron	7.86
Shield 3	.07 cm	Air	0.00122
Shield 4	4.6 cm	Uranium	17.93
Shield 5	.06 cm	Air	0.00122
Shield 6	.6 cm	Iron	7.86
Shield 7	.6 cm	Iron	7.86
Shield 8	6.75 cm	Air	0.00122
Shield 9	.4 cm	Iron	7.86
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: ICRP-38		
Nuclide	Ci	Bq
At-218	1.9998e-004	7.3993e+006
Bi-210	6.5466e-003	2.4222e+008
Bi-214	9.9990e-001	3.6996e+010
Pb-210	7.1577e-003	2.6483e+008
Pb-214	9.9970e-001	3.6989e+010
Po-210	1.1306e-003	4.1834e+007
Po-214	9.9970e-001	3.6989e+010
Po-218	9.9990e-001	3.6996e+010
Ra-226	9.9989e-001	3.6996e+010
Rn-222	9.9990e-001	3.6996e+010

Buildup: The material reference is Shield 4	
Integration Parameters	

Results - Dose Point # 1 - (16.12,0,0) 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	Absorbed Dose Rate mrad/hr No Buildup	Absorbed Dose Rate mrad/hr With Buildup	Absorbed Dose Rate mGy/hr No Buildup	Absorbed Dose Rate mGy/hr With Buildup
0.015	5.104e+08	0.000e+00	2.053e-23	0.000e+00	1.761e-24	0.000e+00	1.537e-24	0.000e+00	1.537e-26
0.05	4.184e+08	0.000e+00	5.902e-23	0.000e+00	1.572e-25	0.000e+00	1.373e-25	0.000e+00	1.373e-27
				7.045e-		6.150e-		6.150e-	

0.08	9.010e+09	4.452e-263	2.265e-21	266	3.584e-24	266	3.129e-24	268	3.129e-26
0.1	9.156e+07	1.748e-148	3.147e-23	2.674e-151	4.814e-26	2.334e-151	4.203e-26	2.334e-153	4.203e-28
0.15	3.636e+07	4.178e-118	9.321e-12	6.880e-121	1.535e-14	6.007e-121	1.340e-14	6.007e-123	1.340e-16
0.2	4.002e+09	2.222e-55	4.038e-21	3.922e-58	7.127e-24	3.424e-58	6.222e-24	3.424e-60	6.222e-26
0.3	7.681e+09	3.342e-19	5.495e-19	6.340e-22	1.042e-21	5.535e-22	9.100e-22	5.535e-24	9.100e-24
0.4	1.413e+10	1.453e-08	2.793e-08	2.830e-11	5.442e-11	2.471e-11	4.751e-11	2.471e-13	4.751e-13
0.5	7.709e+08	1.743e-05	3.787e-05	3.421e-08	7.433e-08	2.986e-08	6.489e-08	2.986e-10	6.489e-10
0.6	1.797e+10	7.590e-02	1.749e-01	1.481e-04	3.414e-04	1.293e-04	2.981e-04	1.293e-06	2.981e-06
0.8	3.621e+09	2.971e+00	7.733e+00	5.651e-03	1.471e-02	4.934e-03	1.284e-02	4.934e-05	1.284e-04
1.0	1.046e+10	1.252e+02	3.503e+02	2.308e-01	6.457e-01	2.015e-01	5.637e-01	2.015e-03	5.637e-03
1.5	7.133e+09	1.777e+03	5.325e+03	2.990e+00	8.960e+00	2.610e+00	7.822e+00	2.610e-02	7.822e-02
2.0	1.022e+10	8.138e+03	2.509e+04	1.258e+01	3.880e+01	1.099e+01	3.387e+01	1.099e-01	3.387e-01
3.0	6.297e+07	1.328e+02	4.011e+02	1.801e-01	5.442e-01	1.572e-01	4.751e-01	1.572e-03	4.751e-03
Totals	8.611e+10	1.018e+04	3.118e+04	1.599e+01	4.897e+01	1.396e+01	4.275e+01	1.396e-01	4.275e-01

Results - Dose Point # 2 - (116.12,0,0) 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	Absorbed Dose Rate mrad/hr No Buildup	Absorbed Dose Rate mrad/hr With Buildup	Absorbed Dose Rate mGy/hr No Buildup	Absorbed Dose Rate mGy/hr With Buildup
0.015	5.104e+08	0.000e+00	3.957e-25	0.000e+00	3.394e-26	0.000e+00	2.963e-26	0.000e+00	2.963e-28
0.05	4.184e+08	0.000e+00	1.137e-24	0.000e+00	3.030e-27	0.000e+00	2.645e-27	0.000e+00	2.645e-29
0.08	9.010e+09	8.412e-265	4.365e-23	1.331e-267	6.907e-26	1.162e-267	6.030e-26	1.162e-269	6.030e-28
0.1	9.156e+07	3.307e-150	6.064e-25	5.059e-153	9.277e-28	4.416e-153	8.099e-28	4.416e-155	8.099e-30
0.15	3.636e+07	7.921e-120	1.796e-13	1.304e-122	2.958e-16	1.139e-122	2.582e-16	1.139e-124	2.582e-18
0.2	4.002e+09	4.219e-57	7.782e-23	7.446e-60	1.373e-25	6.500e-60	1.199e-25	6.500e-62	1.199e-27
0.3	7.681e+09	6.358e-21	1.045e-20	1.206e-23	1.983e-23	1.053e-23	1.731e-23	1.053e-25	1.731e-25
0.4	1.413e+10	2.767e-10	5.320e-10	5.391e-13	1.037e-12	4.707e-13	9.050e-13	4.707e-15	9.050e-15
0.5	7.709e+08	3.323e-07	7.221e-07	6.522e-10	1.417e-09	5.694e-10	1.237e-09	5.694e-12	1.237e-11
0.6	1.797e+10	1.448e-03	3.339e-03	2.827e-06	6.517e-06	2.468e-06	5.689e-06	2.468e-08	5.689e-08
0.8	3.621e+09	5.677e-02	1.478e-01	1.080e-04	2.811e-04	9.426e-05	2.454e-04	9.426e-07	2.454e-06
1.0	1.046e+10	2.394e+00	6.701e+00	4.413e-03	1.235e-02	3.853e-03	1.078e-02	3.853e-05	1.078e-04
1.5	7.133e+09	3.403e+01	1.020e+02	5.726e-02	1.717e-01	4.999e-02	1.499e-01	4.999e-04	1.499e-03
2.0	1.022e+10	1.560e+02	4.812e+02	2.412e-01	7.442e-01	2.106e-01	6.496e-01	2.106e-03	6.496e-03
3.0	6.297e+07	2.547e+00	7.700e+00	3.456e-03	1.045e-02	3.017e-03	9.120e-03	3.017e-05	9.120e-05
Totals	8.611e+10	1.950e+02	5.978e+02	3.065e-01	9.389e-01	2.675e-01	8.197e-01	2.675e-03	8.197e-03