Appendix I

Input Parameters Data Sheet

MicroShield 9.07
ERG (9.07-0000)

Date	By	Checked

Filename	Run Date	Run Time	Duration
RichlandB12Box_Flatbed.msd	September 8, 2014	11:44:56 AM	00:00:24

Project Info

Case Title	RER License
Description	B-12 Box on Flatbed
Geometry	13 - Rectangular Volume

Source Dimensions

Length	182.728 cm (5 ft 11.9 in)
Width	116.688 cm (3 ft 9.9 in)
Height	58.268 cm (1 ft 10.9 in)

Dose Points

A	X	Y	Z
#1	944.88 cm (31 ft)	58.42 cm (1 ft 11.0 in)	91.44 cm (3 ft)

Shields

Shield N	Dimension	Material	Density
Source	7.58e+04 in³	Th(OH)4	3.204
Shield 1	.063 in	Steel	8.03
Shield 2	216.0 in	Air	0.00122
Shield 3	.049 in	Steel	8.03
Air Gap		Air	0.00122
Immersion		Air	0.00122

Source Input: Grouping Method - Standard Indices
Number of Groups: 25
Lower Energy Cutoff: 0.015
Photons < 0.015: Included
Library: Grove

Nuclide	Ci	Bq	µCi/cm³	Bq/cm³
Ac-228	2.5984e-003	9.6142e+007	2.0915e-003	7.7385e+001
Bi-212	2.5974e-001	9.6103e+009	2.0906e-001	7.7354e+003
Pb-212	2.5973e-001	9.6101e+009	2.0906e-001	7.7352e+003
Po-212	1.6641e-001	6.1573e+009	1.3395e-001	4.9560e+003
Po-216	2.5969e-001	9.6085e+009	2.0902e-001	7.7339e+003
Ra-224	2.5969e-001	9.6085e+009	2.0902e-001	7.7339e+003
Ra-228	2.6306e-003	9.7331e+007	2.1174e-003	7.8342e+001
Rn-220	2.5969e-001	9.6085e+009	2.0902e-001	7.7339e+003
Th-228	2.5921e-001	9.5908e+009	2.0864e-001	7.7196e+003
Th-232	2.6700e-001	9.8790e+009	2.1491e-001	7.9516e+003
Tl-208	9.3324e-002	3.4530e+009	7.5117e-002	2.7793e+003

Buildup: The material reference is Shield 1
Integration Parameters

X Direction	372

Y Direction	22
Z Direction	46

Results

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	4.153e+09	1.498e-58	6.065e-26	1.285e-59	5.202e-27	1.121e-59	4.542e-27	1.121e-61	4.542e-29
0.04	9.827e+07	5.883e-08	6.723e-08	2.602e-10	2.974e-10	2.271e-10	2.596e-10	2.271e-12	2.596e-12
0.06	1.925e+07	8.893e-06	1.149e-05	1.766e-08	2.282e-08	1.542e-08	1.992e-08	1.542e-10	1.992e-10
0.08	3.944e+09	1.775e-02	2.568e-02	2.809e-05	4.064e-05	2.452e-05	3.548e-05	2.452e-07	3.548e-07
0.1	7.316e+07	1.084e-03	1.741e-03	1.658e-06	2.664e-06	1.447e-06	2.326e-06	1.447e-08	2.326e-08
0.15	3.083e+07	7.228e-04	1.408e-03	1.190e-06	2.319e-06	1.039e-06	2.024e-06	1.039e-08	2.024e-08
0.2	4.720e+09	3.028e-01	6.650e-01	5.345e-04	1.174e-03	4.666e-04	1.025e-03	4.666e-06	1.025e-05
0.3	6.510e+08	1.397e-01	3.332e-01	2.650e-04	6.320e-04	2.314e-04	5.518e-04	2.314e-06	5.518e-06
0.4	1.127e+07	4.958e-03	1.194e-02	9.660e-06	2.326e-05	8.433e-06	2.031e-05	8.433e-08	2.031e-07
0.5	7.941e+08	5.701e-01	1.349e+00	1.119e-03	2.648e-03	9.769e-04	2.311e-03	9.769e-06	2.311e-05
0.6	2.910e+09	3.018e+00	6.962e+00	5.891e-03	1.359e-02	5.143e-03	1.186e-02	5.143e-05	1.186e-04
0.8	1.907e+09	3.391e+00	7.438e+00	6.450e-03	1.415e-02	5.631e-03	1.235e-02	5.631e-05	1.235e-04
1.0	2.027e+08	5.360e-01	1.125e+00	9.881e-04	2.074e-03	8.626e-04	1.810e-03	8.626e-06	1.810e-05
1.5	3.390e+08	1.774e+00	3.420e+00	2.984e-03	5.754e-03	2.605e-03	5.023e-03	2.605e-05	5.023e-05
2.0	1.915e+07	1.572e-01	2.884e-01	2.431e-04	4.460e-04	2.122e-04	3.893e-04	2.122e-06	3.893e-06
3.0	3.446e+09	5.146e+01	8.790e+01	6.982e-02	1.192e-01	6.095e-02	1.041e-01	6.095e-04	1.041e-03
Totals	**2.332e+10**	**6.138e+01**	**1.095e+02**	**8.834e-02**	**1.598e-01**	**7.712e-02**	**1.395e-01**	**7.712e-04**	**1.395e-03**