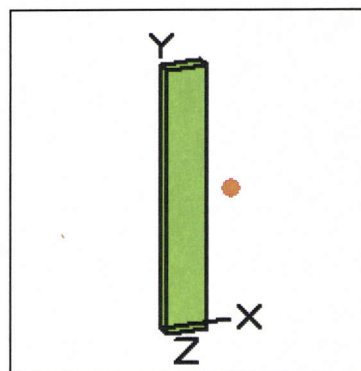


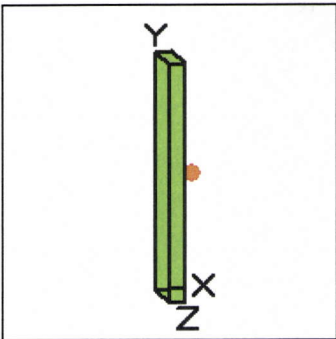
MicroShield 7.02 Westinghouse Electric Company (08-MSD-7.02-1424)				
Date		By		Checked
Filename		Run Date	Run Time	Duration
gondola_excavation_op_U238_concrete2.ms7		January 8, 2012	3:00:11 AM	00:00:01
Project Info				
Case Title		Case 1		
Description		Case 1		
Geometry		13 - Rectangular Volume		
Source Dimensions				
Length	274.32 cm (9 ft)			
Width	121.92 cm (4 ft)			
Height	1.8e+3 cm (60 ft)			
Dose Points				
A	X	Y	Z	
#1	476.86 cm (15 ft 7.7 in)	914.4 cm (30 ft)	60.96 cm (2 ft)	
Shields				
Shield N	Dimension	Material	Density	
Source	6.12e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	2.54 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: Included				
Library: Grove				
Nuclide	Ci	Bq	μCi/cm <sup>3</sup>	Bq/cm <sup>3</sup>
Pa-234	9.7863e-002	3.6209e+009	1.6000e-003	5.9200e+001
Pa-234m	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
Th-231				
Th-234	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
U-234				
U-235				
U-238	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
Buildup: The material reference is Shield 1				
Integration Parameters				
X Direction				20
Y Direction				20
Z Direction				20
Results				



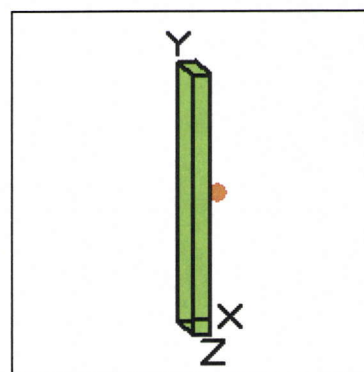
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.015	4.318e+11	0.000e+00	1.906e-23	0.000e+00	1.635e-24
0.04	4.432e+06	1.467e-35	6.457e-28	6.490e-38	2.856e-30
0.06	8.858e+10	5.334e-10	8.400e-10	1.059e-12	1.668e-12
0.08	3.217e+09	5.975e-06	1.193e-05	9.455e-09	1.887e-08
0.1	1.389e+11	3.113e-02	7.605e-02	4.762e-05	1.164e-04
0.15	1.142e+09	1.482e-02	5.045e-02	2.441e-05	8.308e-05
0.2	7.638e+08	3.992e-02	1.670e-01	7.046e-05	2.947e-04
0.3	2.630e+08	4.953e-02	2.328e-01	9.395e-05	4.415e-04
0.4	2.223e+08	8.709e-02	4.069e-01	1.697e-04	7.927e-04
0.5	3.302e+08	2.194e-01	9.752e-01	4.306e-04	1.914e-03
0.6	1.349e+09	1.360e+00	5.695e+00	2.655e-03	1.112e-02
0.8	7.513e+09	1.443e+01	5.386e+01	2.745e-02	1.024e-01
1.0	2.402e+10	7.546e+01	2.549e+02	1.391e-01	4.699e-01
1.5	5.067e+08	3.800e+00	1.070e+01	6.393e-03	1.800e-02
2.0	6.537e+07	8.764e-01	2.219e+00	1.355e-03	3.431e-03
<b>Totals</b>	<b>6.987e+11</b>	<b>9.638e+01</b>	<b>3.293e+02</b>	<b>1.778e-01</b>	<b>6.086e-01</b>



MicroShield 7.02 Westinghouse Electric Company (08-MSD-7.02-1424)					
Date		By		Checked	
Filename			Run Date	Run Time	Duration
gondola_surveyor_U234_concrete2.ms7			January 8, 2012	3:01:21 AM	00:00:00
Project Info					
Case Title			Case 1		
Description			Case 1		
Geometry			13 - Rectangular Volume		
Source Dimensions					
Length		121.92 cm (4 ft)			
Width		274.32 cm (9 ft)			
Height		1.8e+3 cm (60 ft)			
Dose Points					
A	X	Y	Z		
#1	222.714 cm (7 ft 3.7 in)	914.4 cm (30 ft)	137.16 cm (4 ft 6.0 in)		
Shields					
Shield N	Dimension	Material	Density		
Source	6.12e+07 cm <sup>3</sup>	Concrete	1.54		
Shield 1	.794 cm	Iron	7.86		
Air Gap		Air	0.00122		
Source Input: Grouping Method - Actual Photon Energies					
Nuclide	Ci	Bq	μCi/cm <sup>3</sup>	Bq/cm <sup>3</sup>	
Pa-234					
Pa-234m					
Th-231					
Th-234					
U-234	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004	
U-235					
U-238					
Buildup: The material reference is Source Integration Parameters					
X Direction				20	
Y Direction				20	
Z Direction				20	
Results					
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.013	2.377e+11	1.846e-157	2.098e-23	2.484e-158	2.822e-24
0.0532	2.670e+09	1.096e-05	6.417e-05	2.607e-08	1.526e-07
0.1214	9.065e+08	2.464e-01	1.883e+00	3.860e-04	2.950e-03
Totals	2.413e+11	2.464e-01	1.883e+00	3.860e-04	2.950e-03



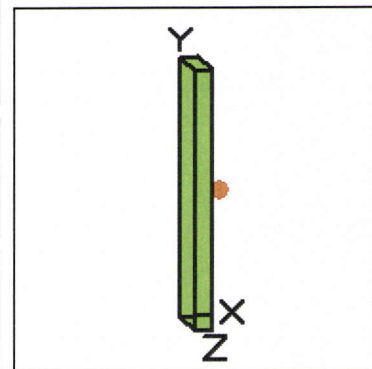
<b>MicroShield 7.02</b> <b>Westinghouse Electric Company (08-MSD-7.02-1424)</b>				
<b>Date</b>		<b>By</b>		<b>Checked</b>
<b>Filename</b>		<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>
gondola_surveyor_U235_concrete2.ms7		January 8, 2012	3:01:49 AM	00:00:00
<b>Project Info</b>				
Case Title		Case 1		
Description		Case 1		
Geometry		13 - Rectangular Volume		
<b>Source Dimensions</b>				
Length	121.92 cm (4 ft)			
Width	274.32 cm (9 ft)			
Height	1.8e+3 cm (60 ft)			
<b>Dose Points</b>				
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	
#1	222.714 cm (7 ft 3.7 in)	914.4 cm (30 ft)	137.16 cm (4 ft 6.0 in)	
<b>Shields</b>				
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>	
Source	6.12e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	.794 cm	Iron	7.86	
Air Gap		Air	0.00122	
<b>Source Input: Grouping Method - Standard Indices</b> <b>Number of Groups: 25</b> <b>Lower Energy Cutoff: 0.015</b> <b>Photons &lt; 0.015: Included</b> <b>Library: Grove</b>				
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>
Pa-234				
Pa-234m				
Th-231	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
Th-234				
U-234				
U-235	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
U-238				
<b>Buildup: The material reference is Source</b> <b>Integration Parameters</b>				
X Direction			20	
Y Direction			20	
Z Direction			20	
<b>Results</b>				





Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.015	2.306e+12	2.066e-156	2.348e-22	1.772e-157	2.014e-23
0.03	3.316e+11	3.365e-22	7.929e-22	3.335e-24	7.858e-24
0.06	1.075e+10	1.167e-03	8.089e-03	2.317e-06	1.607e-05
0.08	2.655e+11	3.391e+00	2.814e+01	5.366e-03	4.453e-02
0.1	2.365e+11	2.179e+01	1.794e+02	3.333e-02	2.744e-01
0.15	3.524e+11	2.153e+02	1.480e+03	3.545e-01	2.438e+00
0.2	1.397e+12	1.859e+03	1.107e+04	3.280e+00	1.954e+01
<b>Totals</b>	<b>4.899e+12</b>	<b>2.099e+03</b>	<b>1.276e+04</b>	<b>3.674e+00</b>	<b>2.230e+01</b>

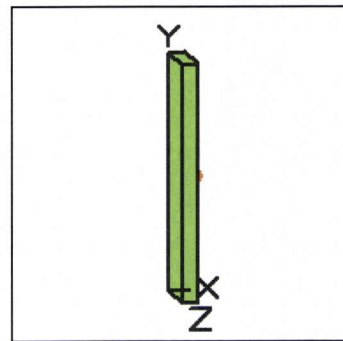
<b>MicroShield 7.02</b> <b>Westinghouse Electric Company (08-MSD-7.02-1424)</b>				
<b>Date</b>		<b>By</b>		<b>Checked</b>
<b>Filename</b>		<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>
gondola_surveyor_U238_concrete2.ms7		January 8, 2012	3:02:12 AM	00:00:00
<b>Project Info</b>				
Case Title		Case 1		
Description		Case 1		
Geometry		13 - Rectangular Volume		
<b>Source Dimensions</b>				
Length	121.92 cm (4 ft)			
Width	274.32 cm (9 ft)			
Height	1.8e+3 cm (60 ft)			
<b>Dose Points</b>				
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	
#1	222.714 cm (7 ft 3.7 in)	914.4 cm (30 ft)	137.16 cm (4 ft 6.0 in)	
<b>Shields</b>				
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>	
Source	6.12e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	.794 cm	Iron	7.86	
Air Gap		Air	0.00122	
<b>Source Input: Grouping Method - Standard Indices</b> <b>Number of Groups: 25</b> <b>Lower Energy Cutoff: 0.015</b> <b>Photons &lt; 0.015: Included</b> <b>Library: Grove</b>				
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>
Pa-234	9.7863e-002	3.6209e+009	1.6000e-003	5.9200e+001
Pa-234m	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
Th-231				
Th-234	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
U-234				
U-235				
U-238	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
<b>Buildup: The material reference is Source</b> <b>Integration Parameters</b>				
X Direction				20
Y Direction				20
Z Direction				20
<b>Results</b>				





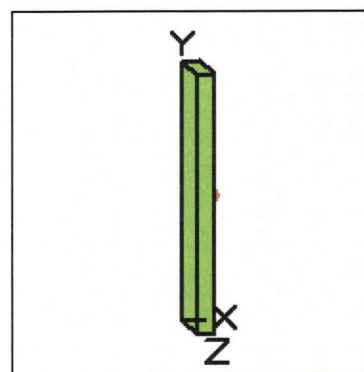
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.015	4.318e+11	3.870e-157	4.398e-23	3.320e-158	3.772e-24
0.04	4.432e+06	2.626e-14	9.032e-14	1.161e-16	3.994e-16
0.06	8.858e+10	9.609e-03	6.663e-02	1.909e-05	1.323e-04
0.08	3.217e+09	4.110e-02	3.410e-01	6.503e-05	5.397e-04
0.1	1.389e+11	1.279e+01	1.053e+02	1.957e-02	1.612e-01
0.15	1.142e+09	6.973e-01	4.796e+00	1.148e-03	7.897e-03
0.2	7.638e+08	1.016e+00	6.056e+00	1.794e-03	1.069e-02
0.3	2.630e+08	8.087e-01	3.944e+00	1.534e-03	7.481e-03
0.4	2.223e+08	1.161e+00	4.914e+00	2.262e-03	9.574e-03
0.5	3.302e+08	2.568e+00	9.741e+00	5.040e-03	1.912e-02
0.6	1.349e+09	1.447e+01	5.015e+01	2.825e-02	9.789e-02
0.8	7.513e+09	1.337e+02	4.050e+02	2.542e-01	7.703e-01
1.0	2.402e+10	6.328e+02	1.739e+03	1.166e+00	3.206e+00
1.5	5.067e+08	2.716e+01	6.353e+01	4.569e-02	1.069e-01
2.0	6.537e+07	5.724e+00	1.220e+01	8.852e-03	1.886e-02
<b>Totals</b>	<b>6.987e+11</b>	<b>8.329e+02</b>	<b>2.405e+03</b>	<b>1.535e+00</b>	<b>4.417e+00</b>

MicroShield 7.02 Westinghouse Electric Company (08-MSD-7.02-1424)					
Date		By		Checked	
Filename			Run Date	Run Time	Duration
gondola_transportation_U234_concrete2.ms7			January 8, 2012	3:14:33 AM	00:00:00
Project Info					
Case Title		Case 1			
Description		Case 1			
Geometry		13 - Rectangular Volume			
Source Dimensions					
Length		121.92 cm (4 ft)			
Width		274.32 cm (9 ft)			
Height		1.8e+3 cm (60 ft)			
Dose Points					
A	X	Y	Z		
#1	153.194 cm (5 ft 0.3 in)	914.4 cm (30 ft)	137.16 cm (4 ft 6.0 in)		
Shields					
Shield N	Dimension	Material	Density		
Source	6.12e+07 cm <sup>3</sup>	Concrete	1.54		
Shield 1	.794 cm	Iron	7.86		
Air Gap		Air	0.00122		
Source Input: Grouping Method - Actual Photon Energies					
Nuclide	Ci	Bq	μCi/cm <sup>3</sup>	Bq/cm <sup>3</sup>	
Pa-234					
Pa-234m					
Th-231					
Th-234					
U-234	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004	
U-235					
U-238					
Buildup: The material reference is Source Integration Parameters					
X Direction				20	
Y Direction				20	
Z Direction				20	
Results					
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.013	2.377e+11	2.150e-166	3.544e-23	2.892e-167	4.768e-24
0.0532	2.670e+09	1.320e-05	7.795e-05	3.140e-08	1.854e-07
0.1214	9.065e+08	2.804e-01	2.153e+00	4.392e-04	3.372e-03
<b>Totals</b>	<b>2.413e+11</b>	<b>2.804e-01</b>	<b>2.153e+00</b>	<b>4.392e-04</b>	<b>3.372e-03</b>





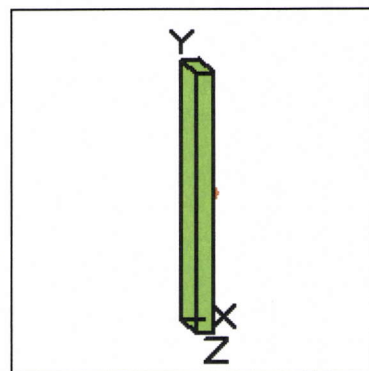
<b>MicroShield 7.02</b> <b>Westinghouse Electric Company (08-MSD-7.02-1424)</b>				
<b>Date</b>	<b>By</b>	<b>Checked</b>		
<b>Filename</b>	<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>	
gondola transportation U235 concrete2.ms7	January 8, 2012	3:03:24 AM	00:00:00	
<b>Project Info</b>				
Case Title	Case 1			
Description	Case 1			
Geometry	13 - Rectangular Volume			
<b>Source Dimensions</b>				
Length	121.92 cm (4 ft)			
Width	274.32 cm (9 ft)			
Height	1.8e+3 cm (60 ft)			
<b>Dose Points</b>				
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	
#1	153.194 cm (5 ft 0.3 in)	914.4 cm (30 ft)	137.16 cm (4 ft 6.0 in)	
<b>Shields</b>				
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>	
Source	6.12e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	.794 cm	Iron	7.86	
Air Gap		Air	0.00122	
<b>Source Input: Grouping Method - Standard Indices</b> <b>Number of Groups: 25</b> <b>Lower Energy Cutoff: 0.015</b> <b>Photons &lt; 0.015: Included</b> <b>Library: Grove</b>				
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>
Pa-234				
Pa-234m				
Th-231	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
Th-234				
U-234				
U-235	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
U-238				
<b>Buildup: The material reference is Source</b> <b>Integration Parameters</b>				
X Direction				20
Y Direction				20
Z Direction				20
<b>Results</b>				



Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.015	2.306e+12	2.406e-165	3.967e-22	2.064e-166	3.403e-23
0.03	3.316e+11	4.515e-23	2.871e-22	4.475e-25	2.845e-24
0.06	1.075e+10	1.441e-03	9.986e-03	2.863e-06	1.984e-05
0.08	2.655e+11	3.982e+00	3.236e+01	6.301e-03	5.121e-02
0.1	2.365e+11	2.479e+01	2.013e+02	3.793e-02	3.079e-01
0.15	3.524e+11	2.482e+02	1.750e+03	4.088e-01	2.881e+00
0.2	1.397e+12	2.188e+03	1.359e+04	3.862e+00	2.398e+01
<b>Totals</b>	<b>4.899e+12</b>	<b>2.465e+03</b>	<b>1.557e+04</b>	<b>4.315e+00</b>	<b>2.722e+01</b>



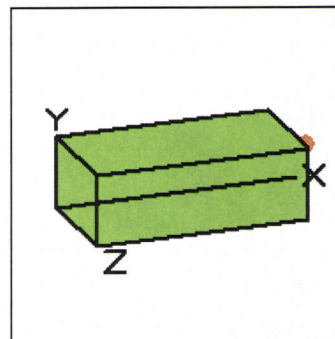
<b>MicroShield 7.02</b> <b>Westinghouse Electric Company (08-MSD-7.02-1424)</b>				
<b>Date</b>	<b>By</b>	<b>Checked</b>		
<b>Filename</b>		<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>
gondola_transportation_U238_concrete2.ms7		January 8, 2012	3:04:19 AM	00:00:01
<b>Project Info</b>				
Case Title		Case 1		
Description		Case 1		
Geometry		13 - Rectangular Volume		
<b>Source Dimensions</b>				
Length	121.92 cm (4 ft)			
Width	274.32 cm (9 ft)			
Height	1.8e+3 cm (60 ft)			
<b>Dose Points</b>				
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	
#1	153.194 cm (5 ft 0.3 in)	914.4 cm (30 ft)	137.16 cm (4 ft 6.0 in)	
<b>Shields</b>				
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>	
Source	6.12e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	.794 cm	Iron	7.86	
Air Gap		Air	0.00122	
<b>Source Input: Grouping Method - Standard Indices</b> <b>Number of Groups: 25</b> <b>Lower Energy Cutoff: 0.015</b> <b>Photons &lt; 0.015: Included</b> <b>Library: Grove</b>				
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>
Pa-234	9.7863e-002	3.6209e+009	1.6000e-003	5.9200e+001
Pa-234m	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
Th-231				
Th-234	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
U-234				
U-235				
U-238	6.1164e+001	2.2631e+012	1.0000e+000	3.7000e+004
<b>Buildup: The material reference is Source</b> <b>Integration Parameters</b>				
X Direction				20
Y Direction				20
Z Direction				20
<b>Results</b>				



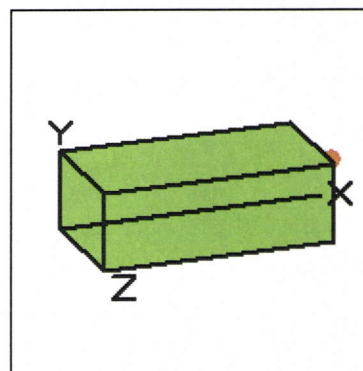
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.015	4.318e+11	4.507e-166	7.430e-23	3.866e-167	6.373e-24
0.04	4.432e+06	1.955e-14	6.833e-14	8.648e-17	3.022e-16
0.06	8.858e+10	1.187e-02	8.226e-02	2.358e-05	1.634e-04
0.08	3.217e+09	4.826e-02	3.922e-01	7.636e-05	6.206e-04
0.1	1.389e+11	1.456e+01	1.182e+02	2.228e-02	1.808e-01
0.15	1.142e+09	8.041e-01	5.667e+00	1.324e-03	9.332e-03
0.2	7.638e+08	1.197e+00	7.431e+00	2.112e-03	1.311e-02
0.3	2.630e+08	9.744e-01	5.004e+00	1.848e-03	9.492e-03
0.4	2.223e+08	1.418e+00	6.335e+00	2.763e-03	1.234e-02
0.5	3.302e+08	3.168e+00	1.269e+01	6.218e-03	2.490e-02
0.6	1.349e+09	1.800e+01	6.582e+01	3.513e-02	1.285e-01
0.8	7.513e+09	1.685e+02	5.377e+02	3.205e-01	1.023e+00
1.0	2.402e+10	8.064e+02	2.329e+03	1.486e+00	4.294e+00
1.5	5.067e+08	3.532e+01	8.641e+01	5.943e-02	1.454e-01
2.0	6.537e+07	7.547e+00	1.676e+01	1.167e-02	2.591e-02
<b>Totals</b>	<b>6.987e+11</b>	<b>1.058e+03</b>	<b>3.192e+03</b>	<b>1.950e+00</b>	<b>5.867e+00</b>



MicroShield 7.02 Westinghouse Electric Company (08-MSD-7.02-1424)					
Date		By		Checked	
Filename		Run Date	Run Time	Duration	
TruckDriver_U234_concrete.ms7		January 8, 2012	3:05:00 AM	00:00:00	
Project Info					
Case Title		Case 1			
Description		Case 1			
Geometry		13 - Rectangular Volume			
Source Dimensions					
Length	457.2 cm (15 ft)				
Width	243.84 cm (8 ft)				
Height	152.4 cm (5 ft 0.0 in)				
Dose Points					
A	X	Y	Z		
#1	518.794 cm (17 ft 0.2 in)	91.44 cm (3 ft)	60.96 cm (2 ft)		
Shields					
Shield N	Dimension	Material	Density		
Source	1.70e+07 cm <sup>3</sup>	Concrete	1.54		
Shield 1	.64 cm	Aluminum	2.7		
Air Gap		Air	0.00122		
Source Input: Grouping Method - Actual Photon Energies					
Nuclide	Ci	Bq	μCi/cm <sup>3</sup>	Bq/cm <sup>3</sup>	
Pa-234					
Pa-234m					
Th-231					
Th-234					
U-234	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004	
U-235					
U-238					
Buildup: The material reference is Source Integration Parameters					
X Direction				20	
Y Direction				20	
Z Direction				20	
Results					
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.013	6.603e+10	1.470e-14	1.632e-14	1.977e-15	2.196e-15
0.0532	7.418e+08	4.588e-01	1.089e+00	1.091e-03	2.591e-03
0.1214	2.518e+08	1.135e+00	4.157e+00	1.778e-03	6.511e-03
<b>Totals</b>	<b>6.702e+10</b>	<b>1.594e+00</b>	<b>5.246e+00</b>	<b>2.869e-03</b>	<b>9.102e-03</b>



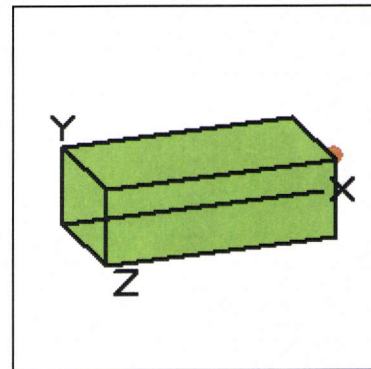
MicroShield 7.02 Westinghouse Electric Company (08-MSD-7.02-1424)				
<b>Date</b>	<b>By</b>	<b>Checked</b>		
<b>Filename</b>		<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>
TruckDriver_U235_concrete.ms7		January 8, 2012	3:05:22 AM	00:00:01
<b>Project Info</b>				
Case Title		Case 1		
Description		Case 1		
Geometry		13 - Rectangular Volume		
<b>Source Dimensions</b>				
Length	457.2 cm (15 ft)			
Width	243.84 cm (8 ft)			
Height	152.4 cm (5 ft 0.0 in)			
<b>Dose Points</b>				
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	
#1	518.794 cm (17 ft 0.2 in)	91.44 cm (3 ft)	60.96 cm (2 ft)	
<b>Shields</b>				
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>	
Source	1.70e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	.64 cm	Aluminum	2.7	
Air Gap		Air	0.00122	
<b>Source Input: Grouping Method - Standard Indices</b> <b>Number of Groups: 25</b> <b>Lower Energy Cutoff: 0.015</b> <b>Photons &lt; 0.015: Included</b> <b>Library: Grove</b>				
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>
Pa-234				
Pa-234m				
Th-231	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
Th-234				
U-234				
U-235	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
U-238				
<b>Buildup: The material reference is Source</b> <b>Integration Parameters</b>				
X Direction			20	
Y Direction			20	
Z Direction			20	
<b>Results</b>				





Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.015	6.404e+11	1.645e-13	1.827e-13	1.411e-14	1.567e-14
0.03	9.211e+10	5.795e-01	8.594e-01	5.743e-03	8.517e-03
0.06	2.987e+09	2.850e+00	7.590e+00	5.662e-03	1.507e-02
0.08	7.374e+10	1.521e+02	4.894e+02	2.408e-01	7.744e-01
0.1	6.571e+10	2.121e+02	7.480e+02	3.245e-01	1.144e+00
0.15	9.790e+10	6.149e+02	2.257e+03	1.013e+00	3.717e+00
0.2	3.879e+11	3.745e+03	1.327e+04	6.609e+00	2.342e+01
<b>Totals</b>	<b>1.361e+12</b>	<b>4.727e+03</b>	<b>1.677e+04</b>	<b>8.198e+00</b>	<b>2.908e+01</b>

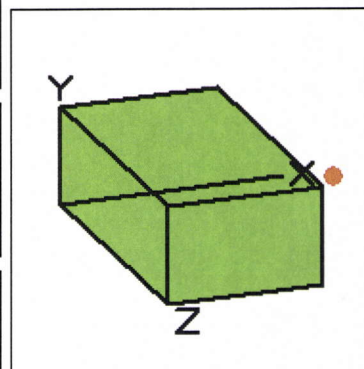
<b>MicroShield 7.02</b> <b>Westinghouse Electric Company (08-MSD-7.02-1424)</b>				
<b>Date</b>		<b>By</b>		<b>Checked</b>
<b>Filename</b>		<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>
TruckDriver_U238_concrete.ms7		January 8, 2012	3:05:45 AM	00:00:01
<b>Project Info</b>				
Case Title		Case 1		
Description		Case 1		
Geometry		13 - Rectangular Volume		
<b>Source Dimensions</b>				
Length	457.2 cm (15 ft)			
Width	243.84 cm (8 ft)			
Height	152.4 cm (5 ft 0.0 in)			
<b>Dose Points</b>				
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	
#1	518.794 cm (17 ft 0.2 in)	91.44 cm (3 ft)	60.96 cm (2 ft)	
<b>Shields</b>				
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>	
Source	1.70e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	.64 cm	Aluminum	2.7	
Air Gap		Air	0.00122	
<b>Source Input: Grouping Method - Standard Indices</b> <b>Number of Groups: 25</b> <b>Lower Energy Cutoff: 0.015</b> <b>Photons &lt; 0.015: Included</b> <b>Library: Grove</b>				
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>
Pa-234	2.7184e-002	1.0058e+009	1.6000e-003	5.9200e+001
Pa-234m	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
Th-231				
Th-234	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
U-234				
U-235				
U-238	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
<b>Buildup: The material reference is Source</b> <b>Integration Parameters</b>				
X Direction				20
Y Direction				20
Z Direction				20
<b>Results</b>				





Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm <sup>2</sup> /sec No Buildup	Fluence Rate MeV/cm <sup>2</sup> /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.015	1.200e+11	3.081e-14	3.422e-14	2.643e-15	2.935e-15
0.04	1.231e+06	1.638e-04	3.015e-04	7.244e-07	1.334e-06
0.06	2.461e+10	2.348e+01	6.251e+01	4.664e-02	1.242e-01
0.08	8.937e+08	1.844e+00	5.931e+00	2.918e-03	9.385e-03
0.1	3.859e+10	1.246e+02	4.393e+02	1.906e-01	6.721e-01
0.15	3.171e+08	1.992e+00	7.312e+00	3.280e-03	1.204e-02
0.2	2.122e+08	2.048e+00	7.257e+00	3.615e-03	1.281e-02
0.3	7.305e+07	1.277e+00	4.086e+00	2.421e-03	7.751e-03
0.4	6.176e+07	1.647e+00	4.817e+00	3.209e-03	9.386e-03
0.5	9.172e+07	3.405e+00	9.259e+00	6.683e-03	1.817e-02
0.6	3.748e+08	1.826e+01	4.660e+01	3.564e-02	9.096e-02
0.8	2.087e+09	1.568e+02	3.642e+02	2.982e-01	6.927e-01
1.0	6.672e+09	7.036e+02	1.526e+03	1.297e+00	2.814e+00
1.5	1.408e+08	2.763e+01	5.334e+01	4.649e-02	8.974e-02
2.0	1.816e+07	5.524e+00	9.960e+00	8.543e-03	1.540e-02
<b>Totals</b>	<b>1.941e+11</b>	<b>1.072e+03</b>	<b>2.541e+03</b>	<b>1.945e+00</b>	<b>4.568e+00</b>

<b>MicroShield 7.02</b> <b>Westinghouse Electric Company (08-MSD-7.02-1424)</b>					
<b>Date</b>		<b>By</b>		<b>Checked</b>	
<b>Filename</b>			<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>
TruckSurveyor U234 concrete 2.ms7			January 8, 2012	3:06:29 AM	00:00:00
<b>Project Info</b>					
Case Title			Case 1		
Description			Case 1		
Geometry			13 - Rectangular Volume		
<b>Source Dimensions</b>					
Length		243.84 cm (8 ft)			
Width		457.2 cm (15 ft)			
Height		152.4 cm (5 ft 0.0 in)			
<b>Dose Points</b>					
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>		
#1	344.48 cm (11 ft 3.6 in)	76.2 cm (2 ft 6.0 in)	228.6 cm (7 ft 6.0 in)		
#2	274.48 cm (9 ft 0.1 in)	76.2 cm (2 ft 6.0 in)	228.6 cm (7 ft 6.0 in)		
<b>Shields</b>					
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>		
Source	1.70e+07 cm <sup>3</sup>	Concrete	1.54		
Shield 1	.64 cm	Aluminum	2.7		
Air Gap		Air	0.00122		
<b>Source Input: Grouping Method - Actual Photon Energies</b>					
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>	
Pa-234					
Pa-234m					
Th-231					
Th-234					
U-234	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004	
U-235					
U-238					
<b>Buildup: The material reference is Source</b>					
<b>Integration Parameters</b>					
X Direction				20	
Y Direction				20	
Z Direction				20	
<b>Results - Dose Point # 1 - (3.44e+02,76.2,228.6) cm</b>					
<b>Energy (MeV)</b>	<b>Activity (Photons/sec)</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec No Buildup</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec With Buildup</b>	<b>Exposure Rate mR/hr No Buildup</b>	<b>Exposure Rate mR/hr With Buildup</b>

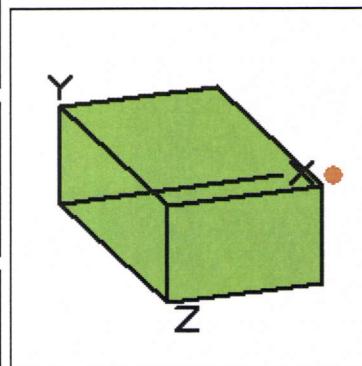




0.013	6.603e+10	9.040e-11	9.946e-11	1.216e-11	1.338e-11
0.0532	7.418e+08	4.124e-01	9.281e-01	9.808e-04	2.207e-03
0.1214	2.518e+08	9.706e-01	3.565e+00	1.520e-03	5.584e-03
<b>Totals</b>	<b>6.702e+10</b>	<b>1.383e+00</b>	<b>4.493e+00</b>	<b>2.501e-03</b>	<b>7.791e-03</b>

<b>Results - Dose Point # 2 - (2.74e+02,76.2,228.6) cm</b>					
<b>Energy (MeV)</b>	<b>Activity (Photons/sec)</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec No Buildup</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec With Buildup</b>	<b>Exposure Rate mR/hr No Buildup</b>	<b>Exposure Rate mR/hr With Buildup</b>
0.013	6.603e+10	1.011e-10	1.112e-10	1.360e-11	1.497e-11
0.0532	7.418e+08	6.731e-01	1.576e+00	1.601e-03	3.749e-03
0.1214	2.518e+08	1.756e+00	6.836e+00	2.751e-03	1.071e-02
<b>Totals</b>	<b>6.702e+10</b>	<b>2.430e+00</b>	<b>8.412e+00</b>	<b>4.352e-03</b>	<b>1.446e-02</b>

<b>MicroShield 7.02</b> <b>Westinghouse Electric Company (08-MSD-7.02-1424)</b>				
<b>Date</b>		<b>By</b>		<b>Checked</b>
<b>Filename</b>		<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>
TruckSurveyor_U235_concrete 2.ms7		January 8, 2012	3:07:04 AM	00:00:01
<b>Project Info</b>				
Case Title		Case 1		
Description		Case 1		
Geometry		13 - Rectangular Volume		
<b>Source Dimensions</b>				
Length	243.84 cm (8 ft)			
Width	457.2 cm (15 ft)			
Height	152.4 cm (5 ft 0.0 in)			
<b>Dose Points</b>				
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	
#1	344.48 cm (11 ft 3.6 in)	76.2 cm (2 ft 6.0 in)	228.6 cm (7 ft 6.0 in)	
#2	274.48 cm (9 ft 0.1 in)	76.2 cm (2 ft 6.0 in)	228.6 cm (7 ft 6.0 in)	
<b>Shields</b>				
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>	
Source	1.70e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	.64 cm	Aluminum	2.7	
Air Gap		Air	0.00122	
<b>Source Input: Grouping Method - Standard Indices</b>				
<b>Number of Groups: 25</b>				
<b>Lower Energy Cutoff: 0.015</b>				
<b>Photons &lt; 0.015: Included</b>				
<b>Library: Grove</b>				
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>
Pa-234				
Pa-234m				
Th-231	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
Th-234				
U-234				
U-235	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
U-238				
<b>Buildup: The material reference is Source</b>				
<b>Integration Parameters</b>				
X Direction				20
Y Direction				20
Z Direction				20

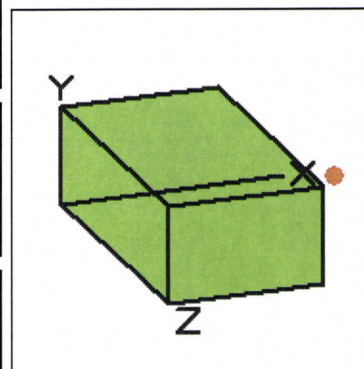


<b>Results - Dose Point # 1 - (3.44e+02,76.2,228.6) cm</b>					
<b>Energy (MeV)</b>	<b>Activity (Photons/sec)</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec No Buildup</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec With Buildup</b>	<b>Exposure Rate mR/hr No Buildup</b>	<b>Exposure Rate mR/hr With Buildup</b>
0.015	6.404e+11	1.012e-09	1.113e-09	8.678e-11	9.548e-11
0.03	9.211e+10	1.275e+00	1.814e+00	1.263e-02	1.798e-02
0.06	2.987e+09	2.499e+00	6.394e+00	4.963e-03	1.270e-02
0.08	7.374e+10	1.307e+02	4.130e+02	2.069e-01	6.536e-01
0.1	6.571e+10	1.816e+02	6.379e+02	2.778e-01	9.759e-01
0.15	9.790e+10	5.255e+02	1.942e+03	8.654e-01	3.198e+00
0.2	3.879e+11	3.201e+03	1.143e+04	5.650e+00	2.017e+01
<b>Totals</b>	<b>1.361e+12</b>	<b>4.043e+03</b>	<b>1.443e+04</b>	<b>7.017e+00</b>	<b>2.503e+01</b>

<b>Results - Dose Point # 2 - (2.74e+02,76.2,228.6) cm</b>					
<b>Energy (MeV)</b>	<b>Activity (Photons/sec)</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec No Buildup</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec With Buildup</b>	<b>Exposure Rate mR/hr No Buildup</b>	<b>Exposure Rate mR/hr With Buildup</b>
0.015	6.404e+11	1.132e-09	1.245e-09	9.706e-11	1.068e-10
0.03	9.211e+10	1.581e+00	2.263e+00	1.567e-02	2.243e-02
0.06	2.987e+09	4.201e+00	1.122e+01	8.345e-03	2.228e-02
0.08	7.374e+10	2.296e+02	7.651e+02	3.633e-01	1.211e+00
0.1	6.571e+10	3.249e+02	1.208e+03	4.971e-01	1.848e+00
0.15	9.790e+10	9.598e+02	3.760e+03	1.580e+00	6.192e+00
0.2	3.879e+11	5.907e+03	2.234e+04	1.043e+01	3.943e+01
<b>Totals</b>	<b>1.361e+12</b>	<b>7.427e+03</b>	<b>2.809e+04</b>	<b>1.289e+01</b>	<b>4.873e+01</b>



<b>MicroShield 7.02</b> <b>Westinghouse Electric Company (08-MSD-7.02-1424)</b>				
<b>Date</b>		<b>By</b>		<b>Checked</b>
<b>Filename</b>		<b>Run Date</b>	<b>Run Time</b>	<b>Duration</b>
TruckSurveyor_U238_concrete 2.ms7		January 8, 2012	3:07:34 AM	00:00:01
<b>Project Info</b>				
Case Title		Case 1		
Description		Case 1		
Geometry		13 - Rectangular Volume		
<b>Source Dimensions</b>				
Length	243.84 cm (8 ft)			
Width	457.2 cm (15 ft)			
Height	152.4 cm (5 ft 0.0 in)			
<b>Dose Points</b>				
<b>A</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	
#1	344.48 cm (11 ft 3.6 in)	76.2 cm (2 ft 6.0 in)	228.6 cm (7 ft 6.0 in)	
#2	274.48 cm (9 ft 0.1 in)	76.2 cm (2 ft 6.0 in)	228.6 cm (7 ft 6.0 in)	
<b>Shields</b>				
<b>Shield N</b>	<b>Dimension</b>	<b>Material</b>	<b>Density</b>	
Source	1.70e+07 cm <sup>3</sup>	Concrete	1.54	
Shield 1	.64 cm	Aluminum	2.7	
Air Gap		Air	0.00122	
<b>Source Input: Grouping Method - Standard Indices</b> <b>Number of Groups: 25</b> <b>Lower Energy Cutoff: 0.015</b> <b>Photons &lt; 0.015: Included</b> <b>Library: Grove</b>				
<b>Nuclide</b>	<b>Ci</b>	<b>Bq</b>	<b>μCi/cm<sup>3</sup></b>	<b>Bq/cm<sup>3</sup></b>
Pa-234	2.7184e-002	1.0058e+009	1.6000e-003	5.9200e+001
Pa-234m	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
Th-231				
Th-234	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
U-234				
U-235				
U-238	1.6990e+001	6.2863e+011	1.0000e+000	3.7000e+004
<b>Buildup: The material reference is Source</b> <b>Integration Parameters</b>				
X Direction				20
Y Direction				20
Z Direction				20



<b>Results - Dose Point # 1 - (3.44e+02,76.2,228.6) cm</b>					
<b>Energy (MeV)</b>	<b>Activity (Photons/sec)</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec No Buildup</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec With Buildup</b>	<b>Exposure Rate mR/hr No Buildup</b>	<b>Exposure Rate mR/hr With Buildup</b>
0.015	1.200e+11	1.895e-10	2.085e-10	1.625e-11	1.788e-11
0.04	1.231e+06	1.801e-04	3.115e-04	7.965e-07	1.378e-06
0.06	2.461e+10	2.058e+01	5.267e+01	4.088e-02	1.046e-01
0.08	8.937e+08	1.584e+00	5.006e+00	2.507e-03	7.921e-03
0.1	3.859e+10	1.066e+02	3.746e+02	1.631e-01	5.731e-01
0.15	3.171e+08	1.702e+00	6.290e+00	2.803e-03	1.036e-02
0.2	2.122e+08	1.751e+00	6.252e+00	3.090e-03	1.103e-02
0.3	7.305e+07	1.092e+00	3.526e+00	2.072e-03	6.688e-03
0.4	6.176e+07	1.411e+00	4.164e+00	2.749e-03	8.114e-03
0.5	9.172e+07	2.920e+00	8.019e+00	5.732e-03	1.574e-02
0.6	3.748e+08	1.568e+01	4.044e+01	3.060e-02	7.893e-02
0.8	2.087e+09	1.349e+02	3.171e+02	2.566e-01	6.031e-01
1.0	6.672e+09	6.066e+02	1.333e+03	1.118e+00	2.457e+00
1.5	1.408e+08	2.393e+01	4.687e+01	4.027e-02	7.885e-02
2.0	1.816e+07	4.804e+00	8.794e+00	7.429e-03	1.360e-02
<b>Totals</b>	<b>1.941e+11</b>	<b>9.236e+02</b>	<b>2.207e+03</b>	<b>1.676e+00</b>	<b>3.969e+00</b>

<b>Results - Dose Point # 2 - (2.74e+02,76.2,228.6) cm</b>					
<b>Energy (MeV)</b>	<b>Activity (Photons/sec)</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec No Buildup</b>	<b>Fluence Rate MeV/cm<sup>2</sup>/sec With Buildup</b>	<b>Exposure Rate mR/hr No Buildup</b>	<b>Exposure Rate mR/hr With Buildup</b>
0.015	1.200e+11	2.120e-10	2.332e-10	1.818e-11	2.000e-11
0.04	1.231e+06	2.626e-04	4.641e-04	1.162e-06	2.053e-06
0.06	2.461e+10	3.461e+01	9.239e+01	6.874e-02	1.835e-01
0.08	8.937e+08	2.783e+00	9.272e+00	4.403e-03	1.467e-02
0.1	3.859e+10	1.908e+02	7.094e+02	2.919e-01	1.085e+00
0.15	3.171e+08	3.109e+00	1.218e+01	5.119e-03	2.006e-02
0.2	2.122e+08	3.231e+00	1.222e+01	5.702e-03	2.157e-02
0.3	7.305e+07	2.042e+00	6.954e+00	3.874e-03	1.319e-02
0.4	6.176e+07	2.662e+00	8.253e+00	5.187e-03	1.608e-02
0.5	9.172e+07	5.547e+00	1.594e+01	1.089e-02	3.129e-02
0.6	3.748e+08	2.995e+01	8.059e+01	5.846e-02	1.573e-01
0.8	2.087e+09	2.600e+02	6.343e+02	4.945e-01	1.206e+00
1.0	6.672e+09	1.177e+03	2.674e+03	2.170e+00	4.929e+00
1.5	1.408e+08	4.700e+01	9.452e+01	7.907e-02	1.590e-01
2.0	1.816e+07	9.506e+00	1.780e+01	1.470e-02	2.752e-02
<b>Totals</b>	<b>1.941e+11</b>	<b>1.768e+03</b>	<b>4.368e+03</b>	<b>3.212e+00</b>	<b>7.865e+00</b>