

Time (min)	L	B/B ₀	>75MeV (rad)	>80MeV	>85MeV	>90MeV	>95MeV	>100MeV (rad)	>105MeV	>110MeV	>115MeV	>120MeV	>125MeV	>130MeV	>135MeV	>140MeV	>145MeV	>150MeV (rad)	TOTAL RADS	TOTALS RADS <8MeV & >100MeV excluded	
5	1.44168	2.14962	1.777E+02 (0.05686rad, 0.00341rad)	1.711E+02 (0.05840rad, 0.00350rad)	1.640E+02 (0.05948rad, 0.00357rad)	1.572E+02 (0.06036rad, 0.00362rad)	1.507E+02 (0.06108rad, 0.00367rad)	1.445E+02 (0.06165rad, 0.00370rad)	1.363E+02 (0.06106rad, 0.00366rad)	1.286E+02 (0.06036rad, 0.00362rad)	1.214E+02 (0.05957rad, 0.00357rad)	1.145E+02 (0.05862rad, 0.00352rad)	1.081E+02 (0.05765rad, 0.00346rad)	1.020E+02 (0.05658rad, 0.00339rad)	9.620E+01 (0.05541rad, 0.00332rad)	9.077E+01 (0.05422rad, 0.00325rad)	8.565E+01 (0.05299rad, 0.00318rad)	8.081E+01 (0.05172rad, 0.00310rad)	0.92544rad, 0.05554rad	0.35726rad, 0.02147rad	
6	1.51254	2.50334	2.610E+02 (0.08352rad, 0.00501rad)	2.481E+02 (0.08468rad, 0.00508rad)	2.343E+02 (0.08497rad, 0.00510rad)	2.212E+02 (0.08494rad, 0.00509rad)	2.088E+02 (0.08463rad, 0.00508rad)	1.972E02 (0.08414rad, 0.00505rad)	1.842E+02 (0.08252rad, 0.00495rad)	1.722E+02 (0.08082rad, 0.00485rad)	1.609E+02 (0.07895rad, 0.00474rad)	1.503E+02 (0.07695rad, 0.00462rad)	1.405E+02 (0.07493rad, 0.00449rad)	1.313E+02 (0.07283rad, 0.00437rad)	1.227E+02 (0.07068rad, 0.00424rad)	1.146E+02 (0.06845rad, 0.00411rad)	1.071E+02 (0.06619rad, 0.00398rad)	1.001E+02 (0.06406rad, 0.00384rad)	1.24326rad, 0.07460rad	0.50688rad, 0.03041rad	
7	1.62236	2.9037	4.49E+02 (0.14368rad, 0.00862rad)	4.172E+02 (0.14240rad, 0.00854rad)	3.841E+02 (0.12367rad, 0.00836rad)	3.537E+02 (0.13582rad, 0.00815rad)	3.256E+02 (0.13198rad, 0.00792rad)	2.998E+02 (0.12791rad, 0.00767rad)	2.746E+02 (0.12302rad, 0.00738rad)	2.515E+02 (0.11804rad, 0.00708rad)	2.303E+02 (0.11300rad, 0.00678rad)	2.109E+02 (0.10798rad, 0.00648rad)	1.932E+02 (0.10304rad, 0.00618rad)	1.769E+02 (0.09812rad, 0.00589rad)	1.620E+02 (0.09331rad, 0.00539rad)	1.484E+02 (0.08864rad, 0.00532rad)	1.359E+02 (0.08408rad, 0.00504rad)	1.244E+02 (0.07962rad, 0.00478rad)	1.81396rad, 0.10958rad	1.0085rad, 0.06032rad	
8	1.73976	3.34539	2.747E+02 (0.08790rad, 0.00527rad)	2.452E+02 (0.08369rad, 0.00502rad)	2.178E+02 (0.07899rad, 0.00474rad)	1.935E+02 (0.07392rad, 0.00446rad)	1.719E+02 (0.06968rad, 0.00418rad)	1.527E+02 (0.06515rad, 0.00391rad)	1.363E+02 (0.06106rad, 0.00366rad)	1.216E+02 (0.05707rad, 0.00342rad)	1.085E+02 (0.05324rad, 0.00319rad)	9.679E+01 (0.04956rad, 0.00297rad)	8.636E+01 (0.04599rad, 0.00276rad)	7.705E+01 (0.04274rad, 0.00256rad)	6.875E+01 (0.03960rad, 0.00238rad)	6.134E+01 (0.03664rad, 0.00219rad)	5.473E+01 (0.03386rad, 0.00203rad)	4.883E+01 (0.03125rad, 0.00188rad)	0.91034rad, 0.05462rad	0.45101rad, 0.02704rad	
9	1.86325	3.82043	1.468E+02 (0.04698rad, 0.00282rad)	1.275E+02 (0.04352rad, 0.00261rad)	1.113E+02 (0.04036rad, 0.00242rad)	9.718E+01 (0.03732rad, 0.00224rad)	8.486E+01 (0.03439rad, 0.00206rad)	7.409E+01 (0.03161rad, 0.00189rad)	6.533E+01 (0.02927rad, 0.00176rad)	5.761E+01 (0.02704rad, 0.00162rad)	4.806E+01 (0.02493rad, 0.00149rad)	4.580E+01 (0.02345rad, 0.00141rad)	3.95E+01 (0.02107rad, 0.00126rad)	3.483E+01 (0.01932rad, 0.00116rad)	3.071E+01 (0.01769rad, 0.00106rad)	2.708E+01 (0.01618rad, 0.00097rad)	2.388E+01 (0.01477rad, 0.00089rad)	2.106E+01 (0.01348rad, 0.00081rad)	0.42790rad, 0.02647rad	0.19372rad, 0.01243rad	
10	1.99131	4.31882	8.657E+01 (0.02770rad, 0.00194rad)	7.410E+01 (0.02529rad, 0.00152rad)	6.443E+01 (0.02336rad, 0.00140rad)	5.602E+01 (0.02151rad, 0.00129rad)	4.870E+01 (0.01974rad, 0.00118rad)	4.235E+01 (0.01807rad, 0.00108rad)	3.793E+01 (0.01699rad, 0.00102rad)	3.397E+01 (0.01594rad, 0.00096rad)	3.042E+01 (0.01493rad, 0.00090rad)	2.725E+01 (0.01395rad, 0.00084rad)	2.440E+01 (0.01301rad, 0.00078rad)	2.186E+01 (0.01213rad, 0.00073rad)	1.958E+01 (0.01128rad, 0.00068rad)	1.753E+01 (0.01047rad, 0.00063rad)	1.570E+01 (0.00971rad, 0.00058rad)	1.406E+01 (0.00899rad, 0.00054rad)	0.26307rad, 0.01607rad	0.12740rad, 0.00766rad	
11	2.12248	4.82912	3.250E+01 (0.01040rad, 0.00062rad)	2.721E+01 (0.00929rad, 0.00056rad)	2.345E+01 (0.00850rad, 0.00051rad)	2.021E+01 (0.00776rad, 0.00047rad)	1.742E+01 (0.00706rad, 0.00042rad)	1.501E+01 (0.00640rad, 0.00038rad)	1.332E+01 (0.00597rad, 0.00036rad)	1.181E+01 (0.00554rad, 0.00033rad)	1.048E+01 (0.00514rad, 0.00031rad)	9.295E+00 (0.00476rad, 0.00029rad)	8.246E+00 (0.00439rad, 0.00026rad)	7.314E+00 (0.00406rad, 0.00024rad)	6.488E+00 (0.00374rad, 0.00022rad)	5.755E+00 (0.00344rad, 0.00021rad)	5.105E+00 (0.00316rad, 0.00019rad)	4.529E+00 (0.00289rad, 0.00017rad)	0.09250rad, 0.00554rad	0.04309rad, 0.00258rad	
12	2.25532	5.33932	1.117E+01 (0.00357rad, 0.00021rad)	9.071E+00 (0.00310rad, 0.00019rad)	7.494E+00 (0.00272rad, 0.00016rad)	6.192E+00 (0.00238rad, 0.00014rad)	5.116E+ (0.00207rad, 0.00012rad)	4.227E+00 (0.00180rad, 0.00011rad)	3.492E+00 (0.00156rad, 0.00009rad)	2.885E+00 (0.00135rad, 0.00008rad)	2.384E+00 (0.00117rad, 0.00007rad)	1.970E+00 (0.00101rad, 0.00006rad)	1.627E+00 (0.00087rad, 0.00005rad)	1.345E+00 (0.00075rad, 0.00004rad)	1.111E+00 (0.00064rad, 0.00004rad)	0	0	0	0.02299rad, 0.00136rad	0.00735rad, 0.00043rad	
13	2.38857	5.83768	4.256E+00 (0.00136rad, 0.00008rad)	3.352E+00 (0.00114rad, 0.00007rad)	2.666E+00 (0.00097rad, 0.00006rad)	2.121E+00 (0.00081rad, 0.00005rad)	1.687E+00 (0.00068rad, 0.00004rad)	1.342E+00 (0.00057rad, 0.00003rad)	1.067E+00 (0.00048rad, 0.00003rad)	0	0	0	0	0	0	0	0	0	0	0.00553rad, 0.00033rad	0.00048rad, 0.00003rad
14	2.52112	6.31360	1.200E+00 (0.00038rad, 0.00002rad)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00038rad, 0.00002rad	0rad, 0rad
15	2.65202	6.75809	0	00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0rad, 0rad	0rad, 0rad
TOTALS																				5.70537rad, 0.34413rad	2.69569rad, 0.16237rad

Skin dose Calculations

$$\begin{aligned} &(\text{Protons/cm}^2/\text{s}) * (100^2 \text{cm}^2) * (3600 \text{s/hr}) = \text{Protons/m}^2/\text{hr} \\ &(\text{Protons/m}^2/\text{hr}) * 2 \text{m}^2 = \text{Protons/hr} \\ &\text{Protons/hr} * (\text{E MeV/Proton}) = \text{E MeV/hr} \\ &(\text{E MeV/hr}) * (1.6 * 10^{-13} / \text{MeV}) = \text{Joules/hr} \\ &(\text{Joules/hr}) / 4.5 \text{kg} = \text{Gray/hr} \\ &(\text{Gray/hr}) * 100 \text{rad/hr} = \text{rad/hr} \\ &\text{Rad/hr} * 1/60 = \text{rad/min} \end{aligned}$$

Depth dose Calculations

$$(\text{Protons/cm}^2/\text{s}) * (100^2 \text{cm}^2) * (3600 \text{s/hr}) = \text{Protons/m}^2/\text{hr}$$

$$(\text{Protons/m}^2/\text{hr}) * 2 \text{m}^2 = \text{Protons/hr}$$

$$\text{Protons/hr} * (E \text{ MeV/Proton}) = E \text{ MeV/hr}$$

$$(E \text{ MeV/hr}) * (1.6 * 10^{-13} / \text{MeV}) = \text{Joules/hr}$$

$$(\text{Joules/hr}) / 75 \text{kg} = \text{Gray/hr}$$

$$(\text{Gray/hr}) * 100 \text{rad/hr} = \text{rad/hr}$$

$$\text{Rad/hr} * 1/60 = \text{rad/min}$$