

Time (min)	L	B/B <sub>0</sub>	>142MeV	>143MeV	>144MeV	>146MeV	>147MeV	>148MeV	>149MeV	TOTAL RADS
5	1.44168	2.14962	8.868E+01 (0.05373rad, 0.00322rad)	8.766E+01 (0.05348rad, 0.00321rad)	8.665E+01 (0.05324rad, 0.00319rad)	8.466E+01 (0.05274rad, 0.00316rad)	8.368E+01 (0.05248rad, 0.00315rad)	8.271E+01 (0.05223rad, 0.00313rad)	8.176E+01 (0.05198rad, 0.00312rad)	0.36988rad, 0.02218rad
6	1.51254	2.50334	1.116E+02 (0.06761rad, 0.00406rad)	1.101E+02 (0.06718rad, 0.00403rad)	1.086E+02 (0.06672rad, 0.00400rad)	1.057E+02 (0.06584rad, 0.00395rad)	1.043E+02 (0.06542rad, 0.00393rad)	1.029E+02 (0.06498rad, 0.00390rad)	1.015E+02 (0.06453rad, 0.00387rad)	0.46228rad, 0.02774rad
7	1.62236	2.90373	1.432E+02 (0.08676rad, 0.00521rad)	1.407E+02 (0.08585rad, 0.00515rad)	1.383E+02 (0.08497rad, 0.00510rad)	1.335E+02 (0.08316rad, 0.00499rad)	1.312E+02 (0.08229rad, 0.00494rad)	1.289E+02 (0.08140rad, 0.00488rad)	1.266E+02 (0.08048rad, 0.00491rad)	0.58491rad, 0.03518rad
8	1.73976	3.34539	5.860E+01 (0.03550rad, 0.00213rad)	5.728E+01 (0.03495rad, 0.00210rad)	5.599E+01 (0.03440rad, 0.00206rad)	5.349E+01 (0.03332rad, 0.00200rad)	5.229E+01 (0.03280rad, 0.00197rad)	5.111E+01 (0.03227rad, 0.00194rad)	4.995E+01 (0.03175rad, 0.00191rad)	0.23499rad, 0.01411rad
9	1.86325	3.82043	2.575E+01 (0.01560rad, 0.00094rad)	2.511E+01 (0.01532rad, 0.00092rad)	2.449E+01 (0.01505rad, 0.00090rad)	2.329E+01 (0.01451rad, 0.00087rad)	2.271E+01 (0.01424rad, 0.00085rad)	2.215E+01 (0.01399rad, 0.00084rad)	2.160E+01 (0.01373rad, 0.00082rad)	0.10244rad, 0.00614rad
10	1.99131	4.31882	1.678E+01 (0.01017rad, 0.00061rad)	1.641E+01 (0.01001rad, 0.00060rad)	1.605E+01 (0.00986rad, 0.00059rad)	1.536E+02 (0.00957rad, 0.00057rad)	1.503E+01 (0.00943rad, 0.00057rad)	1.470E+01 (0.00928rad, 0.00056rad)	1.438E+01 (0.00914rad, 0.00055rad)	0.06746rad, 0.00405rad
11	2.12248	4.82912	5.486E+00 (0.00332rad, 0.00020rad)	5.356E+00 (0.00327rad, 0.00020rad)	5.229E+00 (0.00321rad, 0.00019rad)	4.984E+00 (0.00310rad, 0.00019rad)	4.866E+00 (0.00305rad, 0.00018rad)	4.751E+00 (0.00300rad, 0.00018rad)	4.639E+00 (0.00295rad, 0.00018rad)	0.02190rad, 0.00132rad
<b>TOTALS</b>										<b>1.84383rad, 0.11072rad</b>

#### Skin dose Calculations

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

#### Depth dose Calculations

$$\begin{aligned} &(\text{Protons/cm}^2/\text{s}) \cdot (100^2 \text{cm}^2) \cdot (3600 \text{s/hr}) = \text{Protons/m}^2/\text{hr} \\ &(\text{Protons/m}^2/\text{hr}) \cdot 2 \text{m}^2 = \text{Protons/hr} \\ &\text{Protons/hr} \cdot (E \text{ MeV/Proton}) = E \text{ MeV/hr} \\ &(E \text{ MeV/hr}) \cdot (1.6 \cdot 10^{-13} / \text{MeV}) = \text{Joules/hr} \\ &(\text{Joules/hr}) / 75 \text{kg} = \text{Gray/hr} \\ &(\text{Gray/hr}) \cdot 100 \text{rad/hr} = \text{rad/hr} \end{aligned}$$

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