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ATTENUATION DATA OF POINT ISOTROPIC NEUTRON SOURCES UP TO 400MeV IN WATER, ORDINARY CONCRETE AND IRON

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A comprehensive attenuation data of dose equivalent for point isotropic monoenergetic neutron sources up to 400MeV in infinite shields of water, ordinary concrete and iron has been calculated using the ANISN-JR code and a neutron-photon multigroup macroscopic cross section HIL086R. The attenuation factors were fitted to a 4th order polynomial exponent formula, making possible to use easily for point kernel codes. Additional data in finite shielding geometry was also calculated to correct the effect due to infinite medium, giving the maximum correction of 0.23 in the region for more 400 cm distance from neutron source of 400 MeV in iron shield.

Effective attenuation length for monoenergetic neutrons have been studied in detail. Subsequently, it was shown that the attenuation length was strongly dependent upon the penetration length and the Moyer's formula using a single attenuation length brought large error into the dose estimation behind thick shields for the intermediate energy neutrons up to 400 MeV. Furthermore, it was demonstrated that there was difference more than 50 % in the attenuation length of iron between the calculations with HIL086R and HIL086 because of the self-shielding effect.

Keywords : Attenuation Data, High Energy Neutron Source, Secondary Gamma-Rays, Point Isotropic Source, Dose Equivalent, Water, Concrete, Iron, HIL086R, HIL086, Attenuation Length

水，コンクリート，鉄中での400MeVまでの点等方中性子線源からの減衰データ

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ＡＮＩＳＮコードと中性子－γ線多群巨視的断面積ＨＩＬＯ８６Ｒを使って，400MeVまでの点等方単色エネルギー中性子を線源とする無限厚さの水，普通コンクリート，鉄の各単層遮蔽体に対する中性子と２次γ線の線量当量減衰係数を計算した。点減衰核簡易計算コードＰＫＮ－Ｈで利用するため，４次の多項式を含む指数関数で近似した。無限媒質による反射の効果を補正するための補足的データも評価した。反射の効果は400MeV中性子線源に対し鉄遮蔽体中 400cm以上で最大0.23に達する。

単色中性子に対する実効的減弱距離を詳細に検討した。減弱距離は透過距離に強く依存し，単一の減弱距離を用いるモイヤーモデルの式は，少なくとも400MeVまでの中間エネルギー中性子に対する遮蔽体透過後の線量評価に大きな誤差が生じることを示した。

さらに，自己遮蔽効果を考慮しているＨＩＬＯ８６Ｒは自己遮蔽効果を考慮していないＨＩＬＯ８６と比べて，鉄の減弱距離は，50％以上大きくなる。

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1. INTRODUCTION

The present authors have calculated the attenuation data[1] of neutron and secondary gamma-ray dose equivalents for neutron sources from 0.01 MeV up to 14.9 MeV in water, ordinary concrete and iron shields based on the JSD-100 library,[2] and developed a point kernel code PKN[3] using the attenuation data fitted to a 4-th order polynomial exponent formula, since the feature of the buildup factor was changed anomalously and significantly with source energy and penetrations, and essentially dependent upon the group structure of the neutron cross section used.

In this work, the attenuation data for 55 neutron energies above 0.01 MeV up to 400 MeV have been calculated using a high energy neutron group cross section HIL086R library[4]. The new attenuation factors were also fitted to a polynomial exponent formula modified from the previous one to represent the attenuation in deep penetration. Additional data for finite medium were calculated to estimate the infinite medium effect, as well. These data have been stored in a PKN-H[5] code, higher energy version of point kernel code PKN[3], to apply it for shielding calculations from 0.01 MeV to 400 MeV neutrons.

The attenuation length, which is specially important for shielding calculations of high energy neutrons, has been studied in detail based on the attenuation data, and discussed together with exsisting calculations and experiments.

2. CALCULATIONAL METHOD

2.1 Dose Equivalent Calculation

If flux densities for neutrons and secondary gamma rays having energy E at a location r are represented by $\Phi_n(E,r)$ and $\Phi_\gamma(E,r)$, the dose equivalents for neutrons and secondary gamma rays are represented, respectively, as follows:

$$H_n(r) = \int [H_n(E)/\Phi_n] \times \Phi_n(E,r)\, dE \;, \qquad (2.1)$$

$$H_\gamma(r) = \int [H_\gamma(E)/\Phi_\gamma] \times \Phi_\gamma(E,r)\, dE \;, \qquad (2.2)$$

1. INTRODUCTION

The present authors have calculated the attenuation data[1] of neutron and secondary gamma-ray dose equivalents for neutron sources from 0.01 MeV up to 14.9 MeV in water, ordinary concrete and iron shields based on the JSD-100 library,[2] and developed a point kernel code PKN[3] using the attenuation data fitted to a 4-th order polynomial exponent formula, since the feature of the buildup factor was changed anomalously and significantly with source energy and penetrations, and essentially dependent upon the group structure of the neutron cross section used.

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where $[H_n(E)/\Phi_n]$ and $[H_\gamma(E)/\Phi_\gamma]$ are the fluence to dose equivalent conversion factor for neutrons and gamma rays.

In the present work, neutron and secondary gamma-ray spectra were calculated for 55 groups of neutron sources from 0.01 MeV up to 400 MeV with ANISN-JR[6] and HIL086R in the point isotropic geometry of water, ordinary concrete and iron infinite shields. Tables 2.1 and 2.2 show the calculational conditions and the atomic number densities of the materials. For the $[H_n(E)/\Phi_n]$, the 1cm dose equivalent conversion factor for the ICRU-sphere phantom presented in Table 21 of ICRP Pub.-51[7] for neutrons below 20 MeV was used, and the maximum dose equivalent conversion factor for a semi-infinite slab phantom listed in Table 23 of ICRP Pub.-51 for neutrons over 20 MeV up to 400 MeV. For the $[H_\gamma(E)/\Phi_\gamma]$, 1cm dose equivalent conversion factor in Table 10 of ICRP Pub.-51 for the ICRU sphere phantom was used for gamma rays less than 10 MeV, and the maximum one in Table 14 of ICRP Pub.-51 for a slab phantom for those greater than 10 MeV.

The dose equivalent conversion factors used are summarized in Tables 2.3 and 2.4 for neutrons and gamma rays, respectively.

2.2 Neutron Cross Section Data, HIL086R

The macroscopic effective cross section HIR086R is a revised version of HIL086 neutron cross section[8], of which energy group structures of neutrons and gamma-rays are given in Tables 2.5 and 2.6. Among them, 37-neutron groups less than 19.6 MeV and all of gamma-ray groups have been replaced by the data collapsed from JSSTDL[9] group constants for taking into account self-shielding factors. The JSSTDL is a group cross section set of 295-neutron and 104-gamma-ray groups based on JENDL-3 cross section library.

In the previous work, a group cross section library JSD100[2] composed of 100-neutron and 44-gamma-ray groups has been used to calculate the attenuation data for neutrons less than 14.9 MeV. In Figs.2.1 to 2.3, the attenuations for ^{252}Cf neutron source were compared between HIL086R and JSD100 librares. The energy group structure of HIL086R is more sparse than that of JSD100, however, the results are in rather good agreement for every material.

3. ATTENUATION FACTORS AND FITTING PARAMETERS

3.1 Attenuation Factors of Dose Equivalent

Attenuation factors of neutron and secondary gamma-ray dose equivalents in infinite water, ordinary concrete and iron shields are represented in Tables 3.1 to 3.6 for monoenergetic neutron sources from 0.01 MeV to 400 MeV. In Figs. 3.1 to 3.6, are shown the examples of the attenuation of neutron and secondary gamma-ray dose equivalent for 1st group(400-375 MeV), 5th group(300-275 MeV), 9th group(200-180 MeV), 15th group(100-90 MeV), 22nd group(50-45 MeV) and 29th group(22.5-19.6 MeV) neutron sources. These figures suggest that the attenuations, in general, become smaller with increasing neutron energy and approach an exponential one in deep penetration.

3.2 Fitting Formula for Attenuation Factor

It is useful and convienent to approximate the attenuation factor with a function for the point kernel code PKN-H. Thus, the attenuation data were fitted to a polynomial exponent formula given by the following equations,

$$H_J(r) = \exp(\ F_J(r)\ )\ /\ 4\pi r^2\ ,\ (j = \text{energy index}\ ), \qquad (3.1)$$

where

$$F_J(r) = \Sigma_m\ a^N_{mJ}\ x\ r^{m-1}\quad ,\quad (m = 1\ \text{to}\ N+1\ ), \qquad (3.2)$$

a^N_{mJ} ; m-th coefficient of N-order polynomial for j-th source energy.

According to the systematic survey in the previous work[1], N=4 has been chosen in this study, as well. The parameter set a^N_{mJ} determined by a least square method are summarized in Tables 3.7 to 3.12.

The reproducibility with the parameters determined was examined for 1st(400-375 MeV), 15th(100-90 MeV) and 29th(22.5-19.6 MeV) groups in water, concrete and iron. As seen in Tables 3.13 to 3.15, the fitting error for neutrons is very small except for thickness less than 5-10 cm and the maximum error is almost within 20 % for every source and shield combination. For secondary gamma-rays, the fitting error becomes fairly larger, especially in the region close to source because of steep increase of secondary gamma-rays, but it doesn't increase monotonously with penetration depth.

3.3 Extrapolation of Attenuation Factor

The attenuation data, initially, have been calculated up to the thickness of 14 m for water, 8 m for concrete and 5 m for iron with the ANISN-JR code. Whereas, the shields thicker than these thicknesses have been often employed in high energy accelerators, especially in proton accelerators. Thus, the feature of the attenuation was examined in deep penetration concerning the present attenuation data. Figures 3.7 to 3.9 represent two kinds of attenuation length changing with the penetration, where solid and broken lines show the attenuation length obtained by fitting the attenuation data to an exponential function devided by $4\pi r^2$ and a simple exponential function. In water and concrete, the attenuation length shown by broken line approaches more quickly to a constant value, while in iron the solid line converges faster to an asymptotic value. These results suggest that the extrapolation is better to be made based on the different fitting formula for water, concrete and iron, as follows:

$$H_J(r) \sim \exp(-r/\lambda_o^J), \qquad \text{for water and concrete,} \qquad (3.3)$$

$$H_J(r) \sim \exp(-r/\lambda_o^J)/4\pi r^2 , \qquad \text{for iron,} \qquad (3.4)$$

where λ_o^J is the attenuation length for energy group of source neutron j, determined from the attenuation in deeper penetration, where the attenuation length becomes almost constant.

Namely, the attenuation length for water and ordinary concrete, and for iron were calculated by the following relations, respectively.
For water and concrete,

$$1 / \lambda_o^J = - \ln(H_J(r_o) / H_J(r_1)) / (r_o - r_1), \qquad (3.5)$$

and for iron,

$$1 / \lambda_o{}^j = - \ln(r_o{}^2 \times H_j(r_o) / r_1{}^2 \times H_j(r_1)) / (r_o - r_1), \qquad (3.6)$$

where r_o and r_1 represent two arbitrary distant points from source, where the dose equivalent attenuates exponentialy.

Subsequently, the extrapolated dose equivalent $H_j(r)$ is given by the following equations, for water and concrete,

$$H_j(r) = H_j(r_{cj}) \times \exp(-(r - r_{cj})/\lambda_o{}^j) , \qquad (3.7)$$

and for iron,

$$H_j(r) = H_j(r_{cj}) \times \exp(-(r - r_{cj})/\lambda_o{}^j) \times r_{cj}{}^2 / r^2 , \qquad (3.8)$$

where $H_j(r_{cj})$ denotes the dose equivalent at the penetration length r_{cj}(conjunction radius), which is calculated by Eq.(3.1) with the parameter set $a^N{}_{mj}$ for source neutrons of j-th energy.

In summary of the above descriptions, the equation including the extrapolation is given by the similar representation as Eq.(3.1), as follows:

$$H_j(r) = \exp(G_j(r)) / 4\pi r^2 , \qquad (3.9)$$

where $G_j(r)$ is given by the followings,

$$G_j(r) = \Sigma_m a^N{}_{mj} \times r^{m-1} \times \theta_+(r) + (b_j \times r + g(r)) \times \theta_-(r), \qquad (3.10)$$

$$\theta_+(r) = \{ | r_{cj} - r | - (r_{cj} - r) \} / 2 \times | r_{cj} - r | , \qquad (3.11)$$

$$\theta_-(r) = 1 - \theta_+(r) , \qquad (3.12)$$

$$g(r) = \ln(4\pi r^2) , \quad \text{for water and concrete}, \qquad (3.13)$$
$$= 0 , \quad \text{for iron},$$

where $a^N{}_{mj}$: fitting parameter set($m=1\sim N$)
r_{cj} : conjunction radius
b_j : minus of inverse of attenuation length $\lambda_o{}^j$
($b_j = - \rho / \lambda_o{}^j$, where ρ is density).

In this work, the attenuation lengths for the extrapolation have been calculated for 10 MeV to 400 MeV neutron sources using the data of 1000 to 1300 cm for water, 600 to 700 cm for concrete, and 350 to 450 cm for iron, of which the data aren't affected from the outer boundary. In Tables 3.7 to 3.12, the values of b_J obtained by above procedure are listed together with the parameter set a^N_{mJ}, where the r_{CJ} is the conjunction radius for the extrapolation. The attenuation length for each incident neutron energy is summarized in Table 3.16.

3.4 Infinite Medium Effect

The present attenuation factors have been calculated in infinite media. Therefore, the dose equivalent obtained using the data becomes overestimation comparing with that for finite ones, which are rather realistic shields. The correction factor, namely "infinite medium effect" $C_H(E,r)$ is defined as the ratio of dose equivalent $H(E,r)$ behind finite medium to dose equivalent $H_\infty(E,r)$ in infinite one at the same penetration r by the following,

$$C_H(E,r) = H(E,r) \,/\, H_\infty(E,r) \;. \qquad (3.14)$$

To estimate the infinite medium effect, the H(E,r) for finite thickness of water, concrete and iron shields of 5, 15, 30, 50, 100, 200 and 400 cm were calculated for energies for 400, 200, 100, 50, 20, 10 , 5, 2, 1, 0.1, 0.01 MeV neutron sources, and the infinite medium effects $C_H(E,r)$ were obtained using the data as shown in Tables 3.17 to 3.19. Figures 3.10 to 3.15 show the 3-dimensional description of the infinite medium effect vs. source neutron energies of 0.01 to 400 MeV. The figures show that the infinite medium effect changes smoothly with the source neutron energy and the penetration. Besides, the effect becomes constant with increasing the penetration, which makes possible to do the extrapolation vs. the penetration.

The reflection of neutrons in iron is significant, and the infinite medium effect attains to 0.23 at 400 cm radius for neutron source of 400 MeV. However, the dose equivalent H(En,r) for a shield of finite thickness is estimated without serious excess overestimation using the data of $C_H(En,r)$ interporated for source energy and extrapolated for shield thickness. The correction procedure has been added to the PKN-H code.

4. DISCUSSION OF ATTENUATION LENGTH

So far, the attenuation of dose equivalent for high energy neutron source has been represented as a product of exponential attenuation part and geometrical attenuation part $1/4\pi r^2$,

$$H(r) = H_0 \times \exp(-r/\lambda_{eff}) / 4\pi r^2 , \tag{3.15}$$

where λ_{eff} is effective attenuation length, and it has been shown that the value for concrete is independent upon the penetration in the range greater than 200 g/cm^2 thickness.[10]

As seen in Figs.3.7 to 3.8, however, the attenuation length λ up to 400 MeV neutrons depends on the radius up to fairly deep penetration, and a limited value λ_o of the attenuation length has been determined by Eq.(3.3) for water and concrete. Therefore, Eq.(3.15) have to be written using the attenuation length depending on the penetration radius as a following,

$$H(r) = H_0 \times \exp(-r/\lambda(r)) / 4\pi r^2 , \tag{3.16}$$

where $\lambda(r)$ is equivalent to the effective attenuation length at radius r. The inverse of $\lambda(r)$ at distance r is defined as the differentiation of $-\ln[r^2H(r)]$ vs r, and subsequently it is related to λ_o for water and concrete as

$$\lambda(r) = \lambda_o / (1 - 2\lambda_o/r) . \tag{3.17}$$

Eq.(3.17) suggests that the attenuation length $\lambda(r)$ used in Eq.(3.16) for water and concrete consists with the attenuation length λ_o where the radius is enough large to neglect the $2\lambda_o/r$. The attenuation length at r = 300, 500, 1000 cm and infinite distance in water and concrete are compared in Figs.4.1 and 4.2. The figures represent clearly that the attenuation length in water and concrete doesn't become constant for neutron source at least up to 400 MeV. In Fig.4.2, other measured and calculated data are also compared together. As for concrete, Thomas et al.[10] have recommended the effective attenuation length based on the calculation by Alsmiller et al.[11] and Wycoff et al.[12] and the experiment by Gilbert et al.[13]. Alsmiller et al. calculated the attenuation of dose equivalent in 15 ft(= 620 cm) thick concrete in plane geometry. Therefore, we have made additional calculations in the same plane geometry to verify the present data, and compared it with the Alsmiller's data. The comparison has been made for 400, 300, 200, 100 and 50 MeV neutrons, and both results were in good agreement despite of a little different atomic composition of concrete as demonstrated for 400 MeV neutrons in Fig.4.3. Thomas et al. has evaluated the attenuation length from the calculations by Alsmiller et al., as shown by a simbol + in Fig.4.2.[10] As seen in Fig.4.4, however, the attenuation length is still changed significantly in the range calculated by Alsmiller et al. and the values agree almost with the present attenuation length at 500 cm radius calculated in spherical geometry as seen in Fig.4.2.

In Fig.4.5, the attenuation length λ_o in iron are shown with other data, where the broken line shows the result obtained with HILO86 cross section. We have already pointed out that the effect of self-shielding factor in resonance energy region below 1 MeV is serious for the dose attenuation in iron, because the dose equivalent is dominated by neutrons less than 1 MeV in deep penetration even for several hundreds MeV source neutrons.[4] Figure 4.5 reveals the different cross sections give a difference greater than 50% to the attenuation length. The present attenuation length in iron, which was calculated with HILO86R cross section is constant from 400 MeV down to 1 MeV, and nearly equal to the measurement value for 12 GeV proton incident at KEK[14], although the value is larger than the measurements of Howe et al.[15] and the estimation value of Stevenson et al.[16].

5. CONCLUDING REMARKS

A lot of attenuation length has been measured and calculated in context with the Moyer model[17] for neutron shielding in high energy accelerators. In the model, the attenuation of neutrons above 150 MeV is represented with an attenuation length which is independent upon the energy. The present study made clear that this special feature isn't satisfied for neutron sources in the intermediate energy region up to 400 MeV. Shin et al.[18] have calculated the buildup factor of neutrons in a slab geometry of concrete and iron shields for 12 neutron energies from thermal to 400 MeV based on the multigroup cross section DLC-87/HILO[19], equivalent in 15 ft(= 620 cm) thick concrete in plane geometry. Therefore, we have made additional calculations in the same plane geometry to verify the present data, and compared it with the Alsmiller's data. The comparison has been made for 400, 300, 200, 100 and 50 MeV neutrons, and both results were in good agreement despite of a little different atomic composition of concrete as demonstrated for 400 MeV neutrons in Fig.4.3. Thomas et al. has evaluated the attenuation length from the calculations by Alsmiller et al., as shown by a simbol + in Fig.4.2.[10] As seen in Fig.4.4, however, the attenuation length is still changed significantly in the range calculated by Alsmiller et al. and the values agree almost with the present attenuation length at 500 cm radius calculated in spherical geometry as seen in Fig.4.2.

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and proposed to represent the atenuation with the buildup factor and the removal cross section which has been assumed as total cross section in the same sense for gamma-ray source. This idea is physically rigorous, but the values of buildup factor of neutrons are strongly dependent upon the energy group structure of cross section and vary largely with the energy to reflect the complicated feature of cross section. In addition, the absolute values become very large, which have already been indicated by the present author[1].

The authors, therefore, have calculated the attenuation data in water, concrete and iron with a point isotropic geometry for 55 neutron energies from 0.01 to 400 MeV based on the revised cross section HILO86R. These attenuation data were fitted to a 4th order polynomial exponent formula having an exponential term for extrapolation to facilitate the application to a point kernel code PKN-H.

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Table 2.1 Calculational conditions

Code	ANISN-JR : 1-dimensional discrete ordinates transport calculation code		
Cross section library	HILO86R[4] : (P_5) effective macroscopic cross section		
Number of Energy Groups	neutron 66 groups gamma-ray 22 groups		
Source	point isotropic 55 monoenergetic neutrons (from 0.01 to 400MeV)		
Shielding materials	water, ordinary concrete and iron		
Geometry	1-dimensional sphere (S_{16})		
Flux to dose equivalent conversion factors	neutron	E > 20MeV	Maximum dose*)
		E ≦ 20MeV	1cm depth dose**)
	gamma ray	E > 10MeV	Maximum dose+)
		E ≦ 10MeV	1cm depth dose++)

*) ICRP Publication 51(1987),p.39,Table 23.
**) ibid.,p.36,Table 21.
+) ibid.,p.26,Table 14.
++) ibid.,p.22,Table 10.

Table 2.2 Atomic number densities

unit($10^{24}/cm^3$)

	water	ordinary concrete**)	iron
H	6.6738-2+)	1.3851-2	
C		1.1542-4	
O	3.3369-2	4.5921-2	
Mg		1.2388-4	
Al		1.7409-3	
Si		1.6621-2	
K		4.6205-4	
Ca		1.5025-3	
Fe		3.4510-4	8.4869-2
density (g/cm^3)	1.00	2.27	7.87

*) JAERI-M 6928(1977).
**) type 02-a concrete,ANL-5800(1963),p.660.
+) read as 6.6738×10^{-2}

Table 2.3 Flux to dose equivalent conversion factors for neutrons

Flux to dose equivalent conversion factors for neutrons			
Neutron energy	Maximum*) dose equiv.	Neutron energy	1cm depth**) dose equiv.
(MeV)	(10^{-12}Sv · cm²)	(MeV)	(10^{-12}Sv · cm²)
700.	1050.	20.	650.
400.	630.	17.	610.
200.	508.	14.	520.
100.	469.	10.	446.
60.	450.	8.	417.
20.	425.	7.	403.
		6.	383.
		5.	378.
		4.	409.
		3.	380.
		2.	352.
		1.5	362.
		1.0	340.
		0.5	258.
		0.2	126.
		0.15	69.
		0.05	35.
		0.02	14.6
		0.01	8.6
		0.001	6.2
		0.0001	7.1
		1.0×10^{-5}	9.2
		1.0×10^{-6}	11.2
		1.0×10^{-7}	10.4
		2.5×10^{-8}	8.0

*) ICRP Publication 51(1987),Table 23.
**) ibid.,Table 21.

Table 2.4 Flux to dose equivalent conversion factors for gamma rays

Flux to dose equivalent conversion factors for gamma rays			
Gamma rays energy	Maximum*) dose equiv.	Gamma rays energy	1cm depth**) dose equiv.
(MeV)	(10^{-12}Sv · cm²)	(MeV)	(10^{-12}Sv · cm²)
20.	41.6	10.	25.18
10.	24.3	8.	21.26
		6.	17.38
		5.	15.43
		4.	13.32
		3.	11.05
		2.	8.475
		1.5	6.916
		1.0	5.096
		0.8	4.280
		0.6	3.380
		0.5	2.880
		0.4	2.381
		0.3	1.808
		0.2	1.181
		0.15	0.893
		0.10	0.612
		0.08	0.531
		0.06	0.503
		0.05	0.527
		0.04	0.614
		0.03	0.786
		0.02	1.010
		0.015	0.846
		0.010	0.0743

*) ICRP Publication 51(1987),Table 14.
**) ibid.,Table 10.

Table 2.5 Energy group structure of neutrons in units of MeV

Group	Energy Range	Group	Energy Range
1	4.000E+02 - 3.750E+02	34	1.220E+01 - 1.000E+01
2	3.750E+02 - 3.500E+02	35	1.000E+01 - 8.190E+00
3	3.500E+02 - 3.250E+02	36	8.190E+00 - 6.700E+00
4	3.250E+02 - 3.000E+02	37	6.700E+00 - 5.490E+00
5	3.000E+02 - 2.750E+02	38	5.490E+00 - 4.490E+00
6	2.750E+02 - 2.500E+02	39	4.490E+00 - 3.680E+00
7	2.500E+02 - 2.250E+02	40	3.680E+00 - 3.010E+00
8	2.250E+02 - 2.000E+02	41	3.010E+00 - 2.460E+00
9	2.000E+02 - 1.800E+02	42	2.460E+00 - 2.020E+00
10	1.800E+02 - 1.600E+02	43	2.020E+00 - 1.650E+00
11	1.600E+02 - 1.400E+02	44	1.650E+00 - 1.350E+00
12	1.400E+02 - 1.200E+02	45	1.350E+00 - 1.110E+00
13	1.200E+02 - 1.100E+02	46	1.110E+00 - 9.070E-01
14	1.100E+02 - 1.000E+02	47	9.070E-01 - 7.430E-01
15	1.000E+02 - 9.000E+01	48	7.430E-01 - 4.980E-01
16	9.000E+01 - 8.000E+01	49	4.980E-01 - 3.340E-01
17	8.000E+01 - 7.000E+01	50	3.340E-01 - 2.240E-01
18	7.000E+01 - 6.500E+01	51	2.240E-01 - 1.500E-01
19	6.500E+01 - 6.000E+01	52	1.500E-01 - 8.650E-02
20	6.000E+01 - 5.500E+01	53	8.650E-02 - 3.180E-02
21	5.500E+01 - 5.000E+01	54	3.180E-02 - 1.500E-02
22	5.000E+01 - 4.500E+01	55	1.500E-02 - 7.100E-03
23	4.500E+01 - 4.000E+01	56	7.100E-03 - 3.350E-03
24	4.000E+01 - 3.500E+01	57	3.350E-03 - 1.580E-03
25	3.500E+01 - 3.000E+01	58	1.580E-03 - 4.540E-04
26	3.000E+01 - 2.750E+01	59	4.540E-04 - 1.010E-04
27	2.750E+01 - 2.500E+01	60	1.010E-04 - 2.260E-05
28	2.500E+01 - 2.250E+01	61	2.260E-05 - 1.070E-05
29	2.250E+01 - 1.960E+01	62	1.070E-05 - 5.040E-06
30	1.960E+01 - 1.750E+01	63	5.040E-06 - 2.380E-06
31	1.750E+01 - 1.490E+01	64	2.380E-06 - 1.120E-06
32	1.490E+01 - 1.350E+01	65	1.120E-06 - 4.140E-07
33	1.350E+01 - 1.220E+01	66	4.140E-07 - 1.000E-10

Table 2.6 Energy group structure of gamma rays in units of MeV

Group	Energy Range	Group	Energy Range
1	2.000E+01 - 1.400E+01	12	4.500E+00 - 4.000E+00
2	1.400E+01 - 1.200E+01	13	4.000E+00 - 3.500E+00
3	1.200E+01 - 1.000E+01	14	3.500E+00 - 3.000E+00
4	1.000E+01 - 8.000E+00	15	3.000E+00 - 2.500E+00
5	8.000E+00 - 7.500E+00	16	2.500E+00 - 2.000E+00
6	7.500E+00 - 7.000E+00	17	2.000E+00 - 1.500E+00
7	7.000E+00 - 6.500E+00	18	1.500E+00 - 1.000E+00
8	6.500E+00 - 6.000E+00	19	1.000E+00 - 4.000E-01
9	6.000E+00 - 5.500E+00	20	4.000E-01 - 2.000E-01
10	5.500E+00 - 5.000E+00	21	2.000E-01 - 1.000E-01
11	5.000E+00 - 4.500E+00	22	1.000E-01 - 1.000E-02

Table 3.1 Dose equivalent per source neutrons and attenuation factor of neutrons in water (1/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		1		2		3		4		5	
		(400.000	- 375.000)	(375.000	- 350.000)	(350.000	- 325.000)	(325.000	- 300.000)	(300.000	- 275.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.85E-08	2.30E+00	1.80E-08	2.30E+00	1.76E-08	2.31E+00	1.71E-08	2.31E+00	1.66E-08	2.31E+00
2	10.0	2.92E-09	1.46E+00	2.85E 09	1.46E+00	2.78E-09	1.46E+00	2.71E-09	1.46E+00	2.63E-09	1.47E+00
3	15.0	1.19E-09	1.33E+00	1.16E-09	1.34E+00	1.13E-09	1.34E+00	1.10E-09	1.34E+00	1.07E-09	1.35E+00
4	20.0	6.47E-10	1.29E+00	6.32E-10	1.29E+00	6.16E-10	1.29E+00	6.00E-10	1.30E+00	5.82E-10	1.30E+00
5	25.0	4.08E-10	1.27E+00	3.98E-10	1.27E+00	3.88E-10	1.27E+00	3.77E-10	1.27E+00	3.65E-10	1.27E+00
6	30.0	2.80E-10	1.26E+00	2.73E-10	1.26E+00	2.66E-10	1.26E+00	2.58E-10	1.26E+00	2.50E-10	1.26E+00
7	35.0	2.04E-10	1.25E+00	1.98E-10	1.24E+00	1.93E-10	1.24E+00	1.87E-10	1.24E+00	1.82E-10	1.24E+00
8	40.0	1.58E-10	1.26E+00	1.54E-10	1.26E+00	1.50E-10	1.26E+00	1.45E-10	1.26E+00	1.40E-10	1.25E+00
9	45.0	1.23E-10	1.24E+00	1.20E-10	1.24E+00	1.17E-10	1.24E+00	1.13E-10	1.24E+00	1.09E-10	1.23E+00
10	50.0	9.86E-11	1.23E+00	9.59E-11	1.23E+00	9.31E-11	1.22E+00	9.02E-11	1.22E+00	8.66E-11	1.21E+00
11	60.0	6.67E-11	1.20E+00	6.48E-11	1.19E+00	6.27E-11	1.19E+00	6.06E-11	1.18E+00	5.81E-11	1.17E+00
12	70.0	4.76E-11	1.16E+00	4.62E-11	1.16E+00	4.47E-11	1.15E+00	4.30E-11	1.14E+00	4.11E-11	1.13E+00
13	80.0	3.53E-11	1.13E+00	3.42E-11	1.12E+00	3.30E-11	1.11E+00	3.17E-11	1.10E+00	3.02E-11	1.08E+00
14	90.0	2.70E-11	1.09E+00	2.61E-11	1.08E+00	2.51E-11	1.07E+00	2.41E-11	1.05E+00	2.28E-11	1.03E+00
15	100.0	2.12E-11	1.06E+00	2.05E-11	1.05E+00	1.97E-11	1.03E+00	1.88E-11	1.02E+00	1.78E-11	9.92E-01
16	110.0	1.68E-11	1.01E+00	1.62E-11	1.00E+00	1.55E-11	9.87E-01	1.48E-11	9.70E-01	1.40E-11	9.43E-01
17	120.0	1.35E-11	9.71E-01	1.30E-11	9.60E-01	1.25E-11	9.42E-01	1.18E-11	9.23E-01	1.11E-11	8.95E-01
18	130.0	1.10E-11	9.28E-01	1.06E-11	9.15E-01	1.01E-11	8.96E-01	9.58E-12	8.76E-01	8.97E-12	8.47E-01
19	140.0	9.05E-12	8.84E-01	8.69E-12	8.71E-01	8.27E-12	8.52E-01	7.82E-12	8.30E-01	7.30E-12	7.99E-01
20	150.0	7.50E-12	8.42E-01	7.19E-12	8.27E-01	6.82E-12	8.06E-01	6.45E-12	7.84E-01	5.99E-12	7.53E-01
21	160.0	6.26E-12	7.99E-01	5.99E-12	7.84E-01	5.68E-12	7.63E-01	5.34E 12	7.40E-01	4.96E-12	7.08E-01
22	170.0	5.26E-12	7.57E-01	5.03E-12	7.43E-01	4.75E-12	7.21E-01	4.46E-12	6.97E-01	4.12E-12	6.65E-01
23	180.0	4.44E-12	7.17E-01	4.24E-12	7.02E-01	3.99E-12	6.80E-01	3.74E-12	6.56E-01	3.45E-12	6.24E-01
24	190.0	3.77E-12	6.78E-01	3.59E-12	6.63E-01	3.38E-12	6.40E-01	3.16E-12	6.17E-01	2.90E-12	5.84E-01
25	200.0	3.21E-12	6.41E-01	3.06E-12	6.25E-01	2.87E-12	6.03E-01	2.68E-12	5.79E-01	2.45E-12	5.47E-01
26	250.0	1.54E-12	4.79E-01	1.45E-12	4.64E-01	1.35E-12	4.43E-01	1.24E-12	4.20E-01	1.12E-12	3.90E-01
27	300.0	7.66E-13	3.44E-01	7.17E-13	3.30E-01	6.58E-13	3.11E 01	5.99E-13	2.91E-01	5.31E-13	2.67E-01
28	350.0	3.94E-13	2.41E-01	3.66E-13	2.29E-01	3.33E-13	2.14E-01	3.00E-13	1.98E-01	2.62E-13	1.79E-01
29	400.0	2.08E-13	1.66E-01	1.92E-13	1.57E-01	1.72E-13	1.45E-01	1.53E-13	1.33E-01	1.32E-13	1.18E-01
30	450.0	1.11E-13	1.17E-01	1.02E-13	1.06E-01	9.11E-14	9.69E-02	8.00E-14	8.76E-02	6.80E-14	7.69E-02
31	500.0	6.05E-14	7.54E-02	5.51E-14	7.05E-02	4.86E-14	6.39E-02	4.22E-14	5.71E-02	3.55E-14	4.95E-02
32	550.0	3.32E-14	5.00E-02	3.01E-14	4.65E-02	2.63E-14	4.18E-02	2.26E-14	3.70E-02	1.87E-14	3.16E-02
33	600.0	1.83E-14	3.29E-02	1.65E-14	3.03E-02	1.43E-14	2.70E-02	1.21E-14	2.36E-02	9.94E-15	2.00E-02
34	650.0	1.02E-14	2.14E-02	9.09E-15	1.96E-02	7.81E-15	1.73E-02	6.57E-15	1.50E-02	5.30E-15	1.25E-02
35	700.0	5.65E-15	1.38E-02	5.03E-15	1.26E-02	4.28E-15	1.10E-02	3.56E-15	9.44E-03	2.84E-15	7.77E-03
36	750.0	3.16E-15	8.86E-03	2.79E-15	8.04E-03	2.36E-15	6.96E-03	1.94E-15	5.91E-03	1.53E-15	4.81E-03
37	800.0	1.77E-15	5.65E-03	1.56E-15	5.10E-03	1.30E-15	4.38E-03	1.06E-15	3.68E-03	8.28E-16	2.96E-03
38	850.0	9.95E-16	3.58E-03	8.71E-16	3.22E-03	7.27E-16	2.74E 03	5.83E-16	2.28E-03	4.49E-16	1.81E 03
39	900.0	5.62E-16	2.27E-03	4.89E-16	2.02E-03	4.02E-16	1.71E-03	3.22E-16	1.41E-03	2.45E-16	1.11E-03
40	950.0	3.17E-16	1.43E-03	2.74E-16	1.26E-03	2.24E-16	1.06E-03	1.77E-16	8.64E-04	1.33E-16	6.71E-04
41	1000.0	1.79E-16	8.90E-04	1.53E-16	7.84E-04	1.24E-16	6.53E-04	9.73E-17	5.26E-04	7.25E-17	4.05E-04
42	1100.0	5.69E-17	3.43E-04	4.84E-17	2.99E-04	3.85E-17	2.45E-04	2.96E-17	1.94E-04	2.16E-17	1.46E-04
43	1200.0	1.82E-17	1.31E-04	1.53E 17	1.13E-04	1.20E-17	9.08E-05	9.03E-18	7.03E-05	6.44E-18	5.18E-05
44	1300.0	5.82E-18	4.90E-05	4.84E-18	4.18E-05	3.74E-18	3.32E-05	2.77E-18	2.53E-05	1.92E-18	1.82E-05

Table 3.1 (Continued) (2/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		6		7		8		9		10	
		(275.000	- 250.000)	(250.000	- 225.000)	(225.000	- 200.000)	(200.000	- 180.000)	(180.000	- 160.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.60E-08	2.31E+00	1.54E-08	2.32E+00	1.48E-08	2.32E+00	1.44E-08	2.32E+00	1.42E-08	2.32E+00
2	10.0	2.55E-09	1.47E+00	2.46E-09	1.47E+00	2.36E-09	1.48E+00	2.30E-09	1.48E+00	2.26E-09	1.48E+00
3	15.0	1.04E-09	1.35E+00	9.99E-10	1.35E+00	9.59E-10	1.35E+00	9.32E-10	1.35E+00	9.18E-10	1.35E+00
4	20.0	5.62E-10	1.30E+00	5.41E-10	1.30E+00	5.19E-10	1.30E+00	5.04E-10	1.30E+00	4.96E-10	1.30E+00
5	25.0	3.52E-10	1.27E+00	3.39E-10	1.27E+00	3.25E-10	1.27E+00	3.15E-10	1.27E+00	3.09E-10	1.26E+00
6	30.0	2.41E-10	1.25E+00	2.31E-10	1.25E+00	2.22E-10	1.25E+00	2.14E-10	1.24E+00	2.10E-10	1.24E+00
7	35.0	1.75E-10	1.24E+00	1.67E-10	1.23E+00	1.60E-10	1.23E+00	1.55E-10	1.22E+00	1.51E-10	1.21E+00
8	40.0	1.34E-10	1.24E+00	1.29E-10	1.24E+00	1.23E-10	1.23E+00	1.18E-10	1.22E+00	1.15E-10	1.21E+00
9	45.0	1.04E-10	1.27E+00	9.98E-11	1.21E+00	9.51E-11	1.21E+00	9.14E-11	1.19E+00	8.87E-11	1.18E+00
10	50.0	8.29E-11	1.70E+00	7.92E-11	1.19E+00	7.54E-11	1.18E+00	7.23E-11	1.17E+00	7.00E-11	1.15E+00
11	60.0	5.53E-11	1.15E+00	5.28E-11	1.14E+00	5.00E-11	1.13E+00	4.78E-11	1.11E+00	4.60E-11	1.08E+00
12	70.0	3.90E-11	1.11E+00	3.71E-11	1.09E+00	3.50E-11	1.08E+00	3.33E-11	1.05E+00	3.19E-11	1.02E+00
13	80.0	2.86E-11	1.06E+00	2.71E-11	1.04E+00	2.55E-11	1.02E+00	2.41E-11	9.96E-01	2.29E-11	9.62E-01
14	90.0	2.15E-11	1.01E+00	2.03E-11	9.88E-01	1.91E-11	9.68E-01	1.80E-11	9.39E-01	1.70E-11	9.01E-01
15	100.0	1.67E-11	9.64E-01	1.57E-11	9.42E-01	1.47E-11	9.20E-01	1.38E-11	8.89E-01	1.29E-11	8.48E-01
16	110.0	1.31E-11	9.13E-01	1.23E-11	8.90E-01	1.14E-11	8.65E-01	1.07E-11	8.33E-01	9.95E-12	7.89E-01
17	120.0	1.04E-11	8.63E-01	9.70E-12	8.38E-01	9.00E-12	8.12E-01	8.36E-12	7.77E-01	7.77E-12	7.33E-01
18	130.0	8.32E-12	8.13E-01	7.76E-12	7.88E-01	7.18E-12	7.60E-01	6.64E-12	7.24E-01	6.14E-12	6.79E-01
19	140.0	6.75E-12	7.65E-01	6.27E-12	7.38E-01	5.78E-12	7.10E-01	5.33E-12	6.74E-01	4.89E-12	6.27E-01
20	150.0	5.52E-12	7.18E-01	5.11E-12	6.90E-01	4.70E-12	6.62E-01	4.30E-12	6.25E-01	3.93E-12	5.79E-01
21	160.0	4.55E-12	6.73E-01	4.20E-12	6.45E-01	3.84E-12	6.16E-01	3.50E-12	5.79E-01	3.18E-12	5.33E-01
22	170.0	3.77E-12	6.30E-01	3.47E 12	6.01E-01	3.16E-12	5.72E-01	2.87E-12	5.35E-01	2.59E-12	4.90E-01
23	180.0	3.14E-12	5.88E-01	2.88E-12	5.60E-01	2.62E-12	5.31E-01	2.36E-12	4.94E-01	2.12E-12	4.50E-01
24	190.0	2.63E-12	5.49E-01	2.40E-12	5.21E-01	2.18E-12	4.92E-01	1.96E-12	4.56E-01	1.75E-12	4.13E-01
25	200.0	2.21E-12	5.12E-01	2.02E-12	4.84E-01	1.82E-12	4.56E-01	1.63E-12	4.20E-01	1.44E-12	3.78E-01
26	250.0	9.93E-13	3.59E-01	8.88E-13	3.33E-01	7.87E-13	3.08E-01	6.88E-13	2.77E-01	5.93E-13	2.43E-01
27	300.0	4.63E-13	2.41E-01	4.08E-13	2.20E-01	3.55E-13	2.00E-01	3.03E-13	1.76E-01	2.54E-13	1.50E-01
28	350.0	2.24E-13	1.59E-01	1.94E-13	1.43E-01	1.66E-13	1.27E-01	1.38E-13	1.09E-01	1.13E-13	9.03E-02
29	400.0	1.12E-13	1.03E-01	9.49E-14	9.12E-02	7.96E-14	7.98E-02	6.48E-14	6.69E-02	5.12E-14	5.37E-02
30	450.0	5.65E-14	6.61E-02	4.73E-14	5.75E-02	3.89E-14	4.94E-02	3.10E-14	4.05E-02	2.38E-14	3.16E-02
31	500.0	2.90E-14	4.18E-02	2.39E-14	3.59E-02	1.93E-14	3.03E-02	1.50E-14	2.43E-02	1.12E-14	1.84E-02
32	550.0	1.51E-14	2.63E-02	1.22E-14	2.22E-02	9.72E-15	1.84E-02	7.40E-15	1.44E-02	5.37E-15	1.06E-02
33	600.0	7.88E-15	1.64E-02	6.31E-15	1.36E-02	4.92E-15	1.11E-02	3.66E-15	8.51E-03	2.59E-15	6.10E-03
34	650.0	4.15E-15	1.01E-02	3.27E-15	8.29E-03	2.51E-15	6.65E-03	1.83E-15	4.98E-03	1.25E-15	3.47E-03
35	700.0	2.19E-15	6.20E-03	1.70E-15	5.01E-03	1.29E-15	3.94E-03	9.14E-16	2.89E-03	6.12E-16	1.96E-03
36	750.0	1.16E-15	3.79E-03	8.92E-16	3.01E-03	6.63E-16	2.34E-03	4.61E-16	1.67E-03	2.99E-16	1.10E-03
37	800.0	6.21E-16	2.30E-03	4.69E-16	1.80E-03	3.43E-16	1.37E-03	2.33E-16	9.63E-04	1.47E-16	6.18E-04
38	850.0	3.32E-16	1.39E-03	2.48E-16	1.07E-03	1.78E 16	8.05E-04	1.18E-16	5.57E-04	7.28E-17	3.45E-04
39	900.0	1.79E-16	8.38E-04	1.31E-16	6.39E-04	9.29E-17	4.72E-04	6.04E-17	3.15E-04	3.62E-17	1.92E-04
40	950.0	9.60E-17	5.01E-04	6.96E-17	3.77E-04	4.84E-17	2.74E-04	3.08E-17	1.79E-04	1.79E-17	1.06E-04
41	1000.0	5.16E-17	2.98E-04	3.69E-17	2.21E-04	2.53E-17	1.58E-04	1.57E-17	1.01E-04	8.91E-18	5.83E-05
42	1100.0	1.50E-17	1.05E-04	1.04E-17	7.58E-05	6.91E-18	5.24E-05	4.11E-18	3.21E-05	2.21E-18	1.75E-05
43	1200.0	4.36E-18	3.63E-05	2.96E-18	2.56E-05	1.90E-18	1.71E-05	1.08E-18	1.01E-05	5.51E-19	5.20E-06
44	1300.0	1.27E-18	1.24E-05	8.41E-19	8.54E-06	5.25E-19	5.55E-06	2.87E-19	3.13E-06	1.38E-19	1.53E-06

Table 3.1 (Continued) (3/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		11		12		13		14		15	
		(160.000 - 140.000)		(140.000 - 120.000)		(120.000 - 110.000)		(110.000 - 100.000)		(100.000 - 90.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.40E-08	2.33E+00	1.37E-08	2.33E+00	1.35E-08	2.33E+00	1.33E-08	2.33E+00	1.32E-08	2.33E+00
2	10.0	2.23E-09	1.49E+00	2.19E-09	1.49E+00	2.15E-09	1.49E+00	2.13E-09	1.49E+00	2.10E-09	1.49E+00
3	15.0	9.03E-10	1.35E+00	8.84E-10	1.35E+00	8.68E-10	1.35E+00	8.55E-10	1.35E+00	8.41E-10	1.34E+00
4	20.0	4.86E-10	1.29E+00	4.74E-10	1.29E+00	4.63E-10	1.28E+00	4.56E-10	1.27E+00	4.47E-10	1.27E+00
5	25.0	3.02E-10	1.26E+00	2.93E-10	1.24E+00	2.86E-10	1.23E+00	2.80E-10	1.22E+00	2.74E-10	1.21E+00
6	30.0	2.04E-10	1.22E+00	1.98E-10	1.21E+00	1.92E-10	1.19E+00	1.87E-10	1.18E+00	1.83E-10	1.16E+00
7	35.0	1.46E-10	1.19E+00	1.41E-10	1.17E+00	1.36E-10	1.15E+00	1.32E-10	1.13E+00	1.29E-10	1.12E+00
8	40.0	1.12E-10	1.19E+00	1.07E-10	1.16E+00	1.03E-10	1.13E+00	9.98E-11	1.12E+00	9.65E-11	1.09E+00
9	45.0	8.55E-11	1.15E+00	8.14E-11	1.12E+00	7.77E-11	1.09E+00	7.54E-11	1.07E+00	7.26E-11	1.04E+00
10	50.0	6.72E-11	1.12E+00	6.36E-11	1.08E+00	6.04E-11	1.04E+00	5.84E-11	1.02E+00	5.61E-11	9.93E-01
11	60.0	4.39E-11	1.05E+00	4.11E-11	1.00E+00	3.86E-11	9.61E-01	3.69E-11	9.29E-01	3.51E-11	8.94E-01
12	70.0	3.01E-11	9.84E-01	2.79E-11	9.29E-01	2.60E-11	8.79E-01	2.46E-11	8.43E-01	2.32E-11	8.05E-01
13	80.0	2.15E-11	9.18E-01	1.97E-11	8.57E-01	1.82E-11	8.03E-01	1.71E-11	7.63E-01	1.59E-11	7.22E-01
14	90.0	1.58E-11	8.54E-01	1.43E-11	7.88E-01	1.31E-11	7.31E-01	1.22E-11	6.89E-01	1.12E-11	6.45E-01
15	100.0	1.20E-11	7.97E-01	1.07E-11	7.27E-01	9.66E-12	6.67E-01	8.93E-12	6.24E-01	8.18E-12	5.80E-01
16	110.0	9.13E-12	7.36E-01	8.09E-12	6.65E-01	7.22E-12	6.04E-01	6.62E-12	5.60E-01	6.02E-12	5.16E-01
17	120.0	7.07E-12	6.78E-01	6.20E-12	6.06E-01	5.48E-12	5.45E-01	4.98E-12	5.01E-01	4.47E-12	4.56E-01
18	130.0	5.53E-12	6.23E-01	4.80E-12	5.51E-01	4.19E-12	4.89E-01	3.78E-12	4.47E-01	3.37E-12	4.04E-01
19	140.0	4.38E-12	5.72E-01	3.75E-12	5.00E-01	3.25E-12	4.40E-01	2.91E-12	3.98E-01	2.56E-12	3.56E-01
20	150.0	3.49E-12	5.24E-01	2.96E-12	4.53E-01	2.54E-12	3.95E-01	2.25E-12	3.54E-01	1.97E-12	3.14E-01
21	160.0	2.80E-12	4.78E-01	2.35E-12	4.09E-01	2.00E-12	3.53E-01	1.76E-12	3.14E-01	1.52E-12	2.75E-01
22	170.0	2.27E-12	4.37E-01	1.88E-12	3.70E-01	1.58E-12	3.15E-01	1.38E-12	2.78E-01	1.18E-12	2.42E-01
23	180.0	1.84E-12	3.98E-01	1.51E-12	3.33E-01	1.26E-12	2.81E-01	1.09E-12	2.46E-01	9.24E-13	2.12E-01
24	190.0	1.51E-12	3.62E-01	1.22E-12	3.00E-01	1.00E-12	2.50E-01	8.61E-13	2.17E-01	7.26E-13	1.86E-01
25	200.0	1.23E-12	3.29E-01	9.92E-13	2.70E-01	8.06E-13	2.23E-01	6.86E-13	1.92E-01	5.71E-13	1.62E-01
26	250.0	4.88E-13	2.03E-01	3.71E-13	1.58E-01	2.86E-13	1.23E-01	2.34E-13	1.02E-01	1.85E-13	8.19E-02
27	300.0	2.01E-13	1.20E-01	1.45E-13	8.85E-02	1.06E-13	6.57E-02	8.27E-14	5.20E-02	6.22E-14	3.97E-02
28	350.0	8.57E-14	6.99E-02	5.86E-14	4.88E-02	4.05E-14	3.42E-02	3.04E-14	2.60E-02	2.17E-14	1.88E-02
29	400.0	3.76E-14	4.01E-02	2.43E-14	2.64E-02	1.59E-14	1.76E-02	1.14E-14	1.28E-02	7.74E-15	8.77E-03
30	450.0	1.68E-14	2.27E-02	1.03E-14	1.42E-02	6.37E-15	8.91E-03	4.39E-15	6.21E-03	2.82E-15	4.05E-03
31	500.0	7.62E-15	1.27E-02	4.44E-15	7.54E-03	2.59E-15	4.48E-03	1.71E-15	2.99E-03	1.04E-15	1.84E-03
32	550.0	3.50E-15	7.06E-03	1.93E-15	3.97E-03	1.07E-15	2.23E-03	6.73E-16	1.42E-03	3.89E-16	8.32E-04
33	600.0	1.62E-15	3.89E-03	8.49E-16	2.08E-03	4.43E-16	1.10E-03	2.67E-16	6.72E-04	1.46E-16	3.71E-04
34	650.0	7.57E-16	2.13E-03	3.75E-16	1.08E-03	1.85E-16	5.38E-04	1.07E-16	3.15E-04	5.51E-17	1.65E-04
35	700.0	3.54E-16	1.16E-03	1.67E-16	5.56E-04	7.72E-17	2.61E-04	4.26E-17	1.46E-04	2.09E-17	7.24E-05
36	750.0	1.67E-16	6.27E-04	7.45E-17	2.85E-04	3.26E-17	1.27E-04	1.72E-17	6.76E-05	7.96E-18	3.17E-05
37	800.0	7.93E-17	3.38E-04	3.35E-17	1.46E-04	1.38E-17	6.09E-05	6.95E-18	3.11E-05	3.04E-18	1.38E-05
38	850.0	3.77E-17	1.81E-04	1.51E-17	7.41E-05	5.84E-18	2.92E-05	2.82E-18	1.42E-05	1.17E-18	5.98E-06
39	900.0	1.80E-17	9.72E-05	6.86E-18	3.78E-05	2.49E-18	1.40E-05	1.15E-18	6.49E-06	4.48E-19	2.57E-06
40	950.0	8.60E-18	5.17E-05	3.10E-18	1.90E-05	1.06E-18	6.59E-06	4.67E-19	2.95E-06	1.72E-19	1.10E-06
41	1000.0	4.11E-18	2.74E-05	1.41E-18	9.56E-06	4.52E-19	3.12E-06	1.90E-19	1.33E-06	6.66E-20	4.72E-07
42	1100.0	9.46E-19	7.63E-06	2.91E-19	2.39E-06	8.25E-20	6.89E-07	3.16E-20	2.67E-07	9.86E-21	8.45E-08
43	1200.0	2.20E-19	2.11E-06	6.07E-20	5.94E-07	1.51E-20	1.50E-07	5.28E-21	5.32E-08	1.48E-21	1.51E-08
44	1300.0	5.11E-20	5.76E-07	1.27E-20	1.46E-07	2.78E-21	3.24E-08	8.87E-22	1.05E-08	2.21E-22	2.64E-09

Table 3.1 (Continued) (4/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		16		17		18		19		20	
		(90.000 - 80.000)		(80.000 - 70.000)		(70.000 - 65.000)		(65.000 - 60.000)		(60.000 - 55.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.30E-08	2.33E+00	1.27E-08	2.32E+00	1.26E-08	2.32E+00	1.49E-08	2.78E+00	1.23E-08	2.32E+00
2	10.0	2.06E-09	1.48E+00	2.03E-09	1.48E+00	2.00E-09	1.48E+00	2.15E-09	1.61E+00	1.96E-09	1.47E+00
3	15.0	8.26E-10	1.33E+00	8.09E-10	1.33E+00	7.95E-10	1.32E+00	8.24E-10	1.38E+00	7.74E-10	1.31E+00
4	20.0	4.38E-10	1.26E+00	4.27E-10	1.25E+00	4.18E-10	1.24E+00	4.26E-10	1.27E+00	4.03E-10	1.22E+00
5	25.0	2.68E-10	1.20E+00	2.60E-10	1.18E+00	2.53E-10	1.17E+00	2.54E-10	1.19E+00	2.42E-10	1.14E+00
6	30.0	1.78E-10	1.15E+00	1.71E-10	1.12E+00	1.66E-10	1.10E+00	1.65E-10	1.11E+00	1.57E-10	1.07E+00
7	35.0	1.24E-10	1.09E+00	1.19E-10	1.06E+00	1.15E-10	1.04E+00	1.14E-10	1.04E+00	1.08E-10	9.97E-01
8	40.0	9.30E-11	1.07E+00	8.83E-11	1.03E+00	8.46E-11	1.00E+00	8.15E-11	9.73E-01	7.86E-11	9.48E-01
9	45.0	6.96E-11	1.01E+00	6.57E-11	9.71E-01	6.26E-11	9.36E-01	6.01E-11	9.08E-01	5.76E-11	8.78E-01
10	50.0	5.35E-11	9.60E-01	5.01E-11	9.14E-01	4.74E-11	8.76E-01	4.74E-11	8.83E-01	4.32E-11	8.13E-01
11	60.0	3.31E-11	8.56E-01	3.08E-11	8.08E-01	2.88E-11	7.65E-01	2.82E-11	7.57E-01	2.56E-11	6.94E-01
12	70.0	2.17E-11	7.62E-01	1.99E-11	7.10E-01	1.83E-11	6.63E-01	1.77E-11	6.48E-01	1.59E-11	5.88E-01
13	80.0	1.47E-11	6.77E-01	1.33E-11	6.22E-01	1.21E-11	5.73E-01	1.15E-11	5.49E-01	1.03E-11	4.96E-01
14	90.0	1.03E-11	5.98E-01	9.18E-12	5.42E-01	8.23E-12	4.92E-01	7.69E-12	4.65E-01	6.82E-12	4.16E-01
15	100.0	7.40E-12	5.31E-01	6.51E-12	4.75E-01	5.75E-12	4.25E-01	5.25E-12	3.92E-01	4.65E-12	3.50E-01
16	110.0	5.37E-12	4.67E-01	4.66E-12	4.11E-01	4.06E-12	3.63E-01	3.66E-12	3.31E-01	3.20E-12	2.92E-01
17	120.0	3.96E-12	4.09E-01	3.38E-12	3.55E-01	2.90E-12	3.09E-01	2.59E-12	2.78E-01	2.22E-12	2.41E-01
18	130.0	2.94E-12	3.57E-01	2.48E-12	3.06E-01	2.10E-12	2.62E-01	1.84E-12	2.32E-01	1.57E-12	2.00E-01
19	140.0	2.21E-12	3.12E-01	1.84E-12	2.63E-01	1.53E-12	2.21E-01	1.33E-12	1.94E-01	1.11E-12	1.64E-01
20	150.0	1.68E-12	2.71E-01	1.37E-12	2.25E-01	1.12E-12	1.87E-01	9.52E-13	1.60E-01	7.95E-13	1.35E-01
21	160.0	1.28E-12	2.36E-01	1.03E-12	1.93E-01	8.32E-13	1.57E-01	6.98E-13	1.33E-01	5.72E-13	1.10E-01
22	170.0	9.84E-13	2.04E-01	7.80E-13	1.64E-01	6.19E-13	1.32E-01	5.12E-13	1.10E-01	4.14E-13	9.02E-02
23	180.0	7.59E-13	1.77E-01	5.93E-13	1.40E-01	4.62E-13	1.11E-01	3.77E-13	9.11E-02	3.01E-13	7.34E-02
24	190.0	5.89E-13	1.53E-01	4.53E-13	1.19E-01	3.48E-13	9.27E-02	2.80E-13	7.54E-02	2.19E-13	5.97E-02
25	200.0	4.59E-13	1.32E-01	3.47E-13	1.01E-01	2.62E-13	7.73E-02	2.08E-13	6.20E-02	1.61E-13	4.84E-02
26	250.0	1.40E-13	6.27E-02	9.72E-14	4.43E-02	6.73E-14	3.11E-02	4.93E-14	2.30E-02	3.56E-14	1.68E-02
27	300.0	4.40E-14	2.85E-02	2.82E-14	1.85E-02	1.79E-14	1.19E-02	1.23E-14	8.26E-03	8.09E-15	5.49E-03
28	350.0	1.44E-14	1.26E-02	8.65E-15	7.55E-03	4.86E-15	4.40E-03	3.13E-15	2.86E-03	1.88E-15	1.73E-03
29	400.0	4.80E-15	5.51E-03	2.59E-15	3.02E-03	1.35E-15	1.60E-03	8.07E-16	9.63E-04	4.43E-16	5.34E-04
30	450.0	1.63E-15	2.38E-03	8.06E-16	1.19E-03	3.81E-16	5.69E-04	2.11E-16	3.19E-04	1.06E-16	1.62E-04
31	500.0	5.63E-16	1.01E-03	2.54E-16	4.63E-04	1.08E-16	2.00E-04	5.56E-17	1.04E-04	2.55E-17	4.80E-05
32	550.0	1.96E-16	4.26E-04	8.06E-17	1.78E-04	3.10E-17	6.93E-05	1.48E-17	3.34E-05	6.15E-18	1.40E-05
33	600.0	6.87E-17	1.78E-04	2.59E-17	6.79E-05	8.92E-18	2.37E-05	3.95E-18	1.06E-05	1.50E-18	4.08E-06
34	650.0	2.42E-17	7.36E-05	8.31E-18	2.56E-05	2.56E-18	8.00E-06	1.05E-18	3.31E-06	3.64E-19	1.16E-06
35	700.0	8.55E-18	3.01E-05	2.68E-18	9.57E-06	7.38E-19	2.67E-06	2.80E-19	1.02E-06	8.84E-20	3.26E-07
36	750.0	3.03E-18	1.23E-05	8.67E-19	3.56E-06	2.14E-19	8.88E-07	7.48E-20	3.14E-07	2.15E-20	9.11E-08
37	800.0	1.08E-18	4.98E-06	2.82E-19	1.32E-06	6.22E-20	2.94E-07	2.01E-20	9.58E-08	5.29E-21	2.55E-08
38	850.0	3.87E-19	2.01E-06	9.18E-20	4.84E-07	1.80E-20	9.61E-08	5.39E-21	2.90E-08	1.29E-21	7.02E-09
39	900.0	1.39E-19	8.07E-07	3.01E-20	1.78E-07	5.22E-21	3.17E-08	1.44E-21	8.73E-09	3.15E-22	1.92E-09
40	950.0	4.98E-20	3.23E-07	9.78E-21	6.44E-08	1.52E-21	1.01E-08	3.86E-22	2.60E-09	7.62E-23	5.18E-10
41	1000.0	1.78E-20	1.28E-07	3.20E-21	2.34E-08	4.39E-22	3.24E-09	1.03E-22	7.67E-10	1.87E-23	1.41E-10
42	1100.0	2.30E-21	2.00E-08	3.43E-22	3.02E-09	3.69E-23	3.29E-10	7.38E-24	6.66E-11	1.11E-24	1.01E-11
43	1200.0	2.97E-22	3.07E-09	3.69E-23	3.88E-10	3.08E-24	3.28E-11	5.30E-25	5.69E-12	6.58E-26	7.14E-13
44	1300.0	3.86E-23	4.68E-10	4.00E-24	4.93E-11	2.60E-25	3.24E-12	3.80E-26	4.79E-13	3.96E-27	5.05E-14

Table 3.1 (Continued) (5/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		21		22		23		24		25	
		(55.000 -	50.000)	(50.000 -	45.000)	(45.000 -	40.000)	(40.000 -	35.000)	(35.000 -	30.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.22E-08	2.32E+00	1.20E-08	2.32E+00	1.19E-08	2.31E+00	1.31E-08	2.55E+00	1.29E-08	2.56E+00
2	10.0	1.93E-09	1.47E+00	1.90E-09	1.46E+00	1.88E-09	1.45E+00	1.94E-09	1.52E+00	1.92E-09	1.52E+00
3	15.0	7.61E-10	1.30E+00	7.48E-10	1.29E+00	7.33E-10	1.28E+00	7.39E-10	1.30E+00	7.26E-10	1.29E+00
4	20.0	3.95E-10	1.20E+00	3.86E-10	1.19E+00	3.76E-10	1.17E+00	3.74E-10	1.17E+00	3.61E-10	1.14E+00
5	25.0	2.36E-10	1.12E+00	2.29E-10	1.10E+00	2.21E-10	1.07E+00	2.16E-10	1.06E+00	2.06E-10	1.02E+00
6	30.0	1.52E-10	1.04E+00	1.47E-10	1.02E+00	1.41E-10	9.84E-01	1.36E-10	9.57E-01	1.27E-10	9.06E-01
7	35.0	1.04E-10	9.70E-01	9.95E-11	9.38E-01	9.46E-11	8.99E-01	8.99E-11	8.61E-01	8.27E-11	8.01E-01
8	40.0	7.52E-11	9.17E-01	7.15E-11	8.80E-01	6.74E-11	8.36E-01	6.15E-11	7.69E-01	5.56E-11	7.02E-01
9	45.0	5.47E-11	8.44E-01	5.16E-11	8.04E-01	4.81E-11	7.55E-01	4.39E-11	6.95E-01	3.89E-11	6.22E-01
10	50.0	4.07E-11	7.76E-01	3.81E-11	7.33E-01	3.52E-11	6.81E-01	3.17E-11	6.20E-01	2.75E-11	5.43E-01
11	60.0	2.38E-11	6.53E-01	2.19E-11	6.06E-01	1.98E-11	5.52E-01	1.73E-11	4.87E-01	1.44E-11	4.09E-01
12	70.0	1.46E-11	5.45E-01	1.32E-11	4.97E-01	1.17E-11	4.43E-01	9.88E-12	3.79E-01	7.84E-12	3.03E-01
13	80.0	9.28E-12	4.52E-01	8.23E-12	4.05E-01	7.10E-12	3.52E-01	5.83E-12	2.92E-01	4.41E-12	2.23E-01
14	90.0	6.06E-12	3.74E-01	5.26E-12	3.28E-01	4.44E-12	2.79E-01	3.52E-12	2.23E-01	2.54E-12	1.63E-01
15	100.0	4.06E-12	3.10E-01	3.46E-12	2.66E-01	2.85E-12	2.21E-01	2.19E-12	1.71E-01	1.50E-12	1.19E-01
16	110.0	2.75E-12	2.53E-01	2.30E-12	2.14E-01	1.84E-12	1.73E-01	1.37E-12	1.29E-01	8.94E-13	8.55E-02
17	120.0	1.88E-12	2.06E-01	1.54E-12	1.70E-01	1.20E-12	1.34E-01	8.62E-13	9.71E-02	5.38E-13	6.11E-02
18	130.0	1.30E-12	1.68E-01	1.04E-12	1.36E-01	7.92E-13	1.04E-01	5.48E-13	7.24E-02	3.23E-13	4.31E-02
19	140.0	9.07E-13	1.35E-01	7.12E-13	1.07E-01	5.28E-13	8.02E-02	3.52E-13	5.39E-02	1.98E-13	3.07E-02
20	150.0	6.38E-13	1.09E-01	4.89E-13	8.47E-02	3.54E-13	6.17E-02	2.27E-13	3.99E-02	1.21E-13	2.16E-02
21	160.0	4.51E-13	8.80E-02	3.38E-13	6.66E-02	2.38E-13	4.72E-02	1.47E-13	2.95E-02	7.48E-14	1.51E-02
22	170.0	3.20E-13	7.05E-02	2.35E-13	5.23E-02	1.61E-13	3.61E-02	9.60E-14	2.17E-02	4.63E-14	1.06E-02
23	180.0	2.28E-13	5.64E-02	1.64E-13	4.09E-02	1.10E-13	2.75E-02	6.30E-14	1.60E-02	2.88E-14	7.36E-03
24	190.0	1.64E-13	4.50E-02	1.15E-13	3.20E-02	7.46E-14	2.09E-02	4.12E-14	1.16E-02	1.80E-14	5.13E-03
25	200.0	1.18E-13	3.59E-02	8.09E-14	2.49E-02	5.10E-14	1.58E-02	2.72E-14	8.51E-03	1.12E-14	3.55E-03
26	250.0	2.37E-14	1.13E-02	1.45E-14	6.98E-03	7.97E-15	3.86E-03	3.55E-15	1.74E-03	1.13E-15	5.58E-04
27	300.0	4.87E-15	3.34E-03	2.66E-15	1.84E-03	1.27E-15	8.89E-04	4.69E-16	3.30E-04	1.15E-16	8.20E-05
28	350.0	1.02E-15	9.52E-04	4.94E-16	4.65E-04	2.07E-16	1.96E-04	6.30E-17	6.03E-05	1.18E-17	1.14E-05
29	400.0	2.17E-16	2.65E-04	9.35E-17	1.15E-04	3.37E-17	4.18E-05	8.49E-18	1.06E-05	1.22E-18	1.54E-06
30	450.0	4.69E-17	7.23E-05	1.80E-17	2.80E-05	5.67E-18	8.91E-06	1.17E-18	1.85E-06	1.30E-19	2.08E-07
31	500.0	1.01E-17	1.93E-05	3.44E-18	6.62E-06	9.48E-19	1.84E-06	1.63E-19	3.18E-07	1.39E-20	2.74E-08
32	550.0	2.21E-18	5.10E-06	6.62E-19	1.54E-06	1.59E-19	3.72E-07	2.28E-20	5.39E-08	1.51E-21	3.60E-09
33	600.0	4.82E-19	1.32E-06	1.28E-19	3.56E-07	2.70E-20	7.55E-08	3.18E-21	8.96E-09	1.61E-22	4.58E-10
34	650.0	1.05E-19	3.39E-07	2.50E-20	8.14E-08	4.60E-21	1.51E-08	4.57E-22	1.51E-09	1.79E-23	5.98E-11
35	700.0	2.29E-20	8.54E-08	4.82E-21	1.82E-08	7.77E-22	2.95E-09	6.51E-23	2.50E-10	1.99E-24	7.69E-12
36	750.0	5.03E-21	2.16E-08	9.44E-22	4.08E-09	1.32E-22	5.78E-10	9.35E-24	4.11E-11	2.21E-25	9.82E-13
37	800.0	1.11E-21	5.41E-09	1.85E-22	9.10E-10	2.28E-23	1.13E-10	1.36E-24	6.81E-12	2.48E-26	1.26E-13
38	850.0	2.44E-22	1.34E-09	3.61E-23	2.01E-10	3.91E-24	2.19E-11	1.96E-25	1.11E-12	2.79E-27	1.59E-14
39	900.0	5.38E-23	3.32E-10	7.00E-24	4.36E-11	6.69E-25	4.20E-12	2.84E-26	1.80E-13	3.10E-28	1.99E-15
40	950.0	1.17E-23	8.05E-11	1.37E-24	9.52E-12	1.14E-25	7.99E-13	4.07E-27	2.87E-14	3.48E-29	2.48E-16
41	1000.0	2.57E-24	1.96E-11	2.66E-25	2.04E-12	1.94E-26	1.50E-13	5.83E-28	4.56E-15	3.83E-30	3.02E-17
42	1100.0	1.23E-25	1.13E-12	1.01E-26	9.36E-14	5.67E-28	5.32E-15	1.19E-29	1.13E-16	4.63E-32	4.43E-19
43	1200.0	5.90E-27	6.47E-14	3.83E 28	4.24E-15	1.65E-29	1.84E-16	2.49E-31	2.80E-18	5.73E-34	6.51E-21
44	1300.0	2.89E-28	3.72E-15	1.46E-29	1.90E-16	4.90E-31	6.42E-18	5.18E-33	6.84E-20	7.05E-36	9.41E-23

Table 3.1 (Continued) (6/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		26		27		28		29		30	
		(30.000 -	27.500)	(27.500 -	25.000)	(25.000 -	22.500)	(22.500 -	20.000)	(20.000 -	17.500)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.28E-08	2.55E+00	1.28E-08	2.56E+00	1.27E-08	2.55E+00	1.26E-08	2.56E+00	1.25E-08	2.56E+00
2	10.0	1.90E-09	1.51E+00	1.88E 09	1.51E+00	1.87E-09	1.51E+00	1.85E-09	1.50E+00	1.82E-09	1.49E+00
3	15.0	7.10E-10	1.27E+00	6.99E-10	1.26E+00	6.85E-10	1.24E+00	6.70E-10	1.23E+00	6.32E-10	1.17E+00
4	20.0	3.50E-10	1.12E+00	3.41E-10	1.09E+00	3.29E-10	1.06E+00	3.14E-10	1.02E+00	2.84E-10	9.31E-01
5	25.0	1.97E-10	9.80E-01	1.89E-10	9.47E-01	1.79E-10	9.04E-01	1.67E-10	8.49E-01	1.43E-10	7.33E-01
6	30.0	1.20E-10	8.57E-01	1.13E-10	8.15E-01	1.05E-10	7.64E-01	9.54E-11	6.98E-01	7.75E-11	5.72E-01
7	35.0	7.62E-11	7.44E-01	7.10E-11	6.97E-01	6.46E-11	6.39E-01	5.68E-11	5.66E-01	4.38E-11	4.40E-01
8	40.0	5.02E-11	6.40E-01	4.60E-11	5.90E-01	4.10E-11	5.30E-01	3.49E-11	4.55E-01	2.56E-11	3.36E-01
9	45.0	3.44E-11	5.55E-01	3.10E-11	5.03E-01	2.70E-11	4.41E-01	2.22E-11	3.66E-01	1.54E-11	2.56E-01
10	50.0	2.39E-11	4.75E-01	2.10E-11	4.21E-01	1.79E-11	3.61E-01	1.43E-11	2.91E-01	9.41E-12	1.93E-01
11	60.0	1.19E-11	3.41E-01	1.01E-11	2.91E-01	8.15E-12	2.37E-01	6.08E-12	1.78E-01	3.62E-12	1.07E-01
12	70.0	6.18E-12	2.41E-01	5.05E-12	1.98E-01	3.88E-12	1.53E-01	2.69E-12	1.07E-01	1.43E-12	5.74E-02
13	80.0	3.31E-12	1.69E-01	2.58E-12	1.32E-01	1.88E-12	9.72E-02	1.21E-12	6.27E-02	5.80E-13	3.04E-02
14	90.0	1.81E-12	1.17E-01	1.35E-12	8.76E-02	9.25E-13	6.05E-02	5.53E-13	3.65E-02	2.41E-13	1.60E-02
15	100.0	1.02E-12	8.09E-02	7.26E-13	5.82E-02	4.69E-13	3.79E-02	2.60E-13	2.11E-02	1.02E-13	8.38E-03
16	110.0	5.73E-13	5.53E-02	3.89E-13	3.77E-02	2.39E-13	2.33E-02	1.24E-13	1.22E-02	4.30E-14	4.27E-03
17	120.0	3.26E-13	3.74E-02	2.10E-13	2.42E-02	1.22E-13	1.42E-02	5.85E-14	6.85E-03	1.80E-14	2.13E-03
18	130.0	1.86E-13	2.50E-02	1.15E-13	1.56E-02	6.27E-14	8.55E-03	2.78E-14	3.82E-03	7.74E-15	1.07E-03
19	140.0	1.07E-13	1.67E-02	6.32E-14	9.93E-03	3.26E-14	5.16E-03	1.35E-14	2.15E-03	3.36E-15	5.40E-04
20	150.0	6.21E-14	1.11E-02	3.50E-14	6.31E-03	1.70E-14	3.08E-03	6.55E-15	1.20E-03	1.45E-15	2.68E-04
21	160.0	3.61E-14	7.36E-03	1.93E-14	3.97E-03	8.84E-15	1.83E-03	3.15E-15	6.55E-04	6.21E-16	1.30E-04
22	170.0	2.11E-14	4.85E-03	1.09E-14	2.52E-03	4.68E-15	1.09E-03	1.55E-15	3.63E-04	2.72E-16	6.44E-05
23	180.0	1.23E-14	3.18E-03	6.04E-15	1.57E-03	2.48E-15	6.49E-04	7.58E-16	2.00E-04	1.18E-16	3.13E-05
24	190.0	7.24E-15	2.08E-03	3.36E-15	9.73E-04	1.31E-15	3.81E-04	3.70E-16	1.09E-04	5.11E-17	1.51E-05
25	200.0	4.28E-15	1.37E-03	1.91E-15	6.12E-04	6.94E-16	2.24E-04	1.85E-16	6.03E-05	2.26E-17	7.41E-06
26	250.0	3.16E-16	1.57E-04	1.11E-16	5.55E-05	3.06E-17	1.54E-05	5.62E-18	2.86E-06	3.74E-19	1.92E-07
27	300.0	2.35E-17	1.69E-05	6.52E-18	4.71E-06	1.35E-18	9.82E-07	1.74E-19	1.27E-07	6.08E-21	4.49E-09
28	350.0	1.74E-18	1.69E-06	3.79E-19	3.72E-07	5.88E-20	5.81E-08	5.28E-21	5.26E-09	9.42E-23	9.47E-11
29	400.0	1.28E-19	1.63E-07	2.19E-20	2.81E-08	2.56E-21	3.30E-09	1.61E-22	2.09E-10	1.42E-24	1.87E-12
30	450.0	9.65E-21	1.56E-08	1.31E-21	2.13E-09	1.15E-22	1.88E-10	5.09E-24	8.38E-12	2.25E-26	3.74E-14
31	500.0	7.39E-22	1.47E-09	7.95E-23	1.59E-10	5.29E-24	1.07E-11	1.66E-25	3.38E-13	3.63E-28	7.45E-16
32	550.0	5.58E-23	1.34E-10	4.79E-24	1.16E-11	2.40E-25	5.86E-13	5.36E-27	1.32E-14	5.64E-30	1.40E-17
33	600.0	4.22E-24	1.21E-11	2.87E-25	8.27E-13	1.09E-26	3.16E-14	1.69E-28	4.95E-16	8.56E-32	2.53E-19
34	650.0	3.35E-25	1.13E-12	1.79E-26	6.08E-14	5.17E-28	1.76E-15	5.70E-30	1.96E-17	1.41E-33	4.87E-21
35	700.0	2.60E-26	1.02E-13	1.12E-27	4.38E-15	2.46E-29	9.74E-17	1.92E-31	7.66E-19	2.30E-35	9.26E-23
36	750.0	2.01E-27	8.99E-15	6.92E-29	3.12E-16	1.16E-30	5.26E-18	6.45E-33	2.95E-20	3.74E-37	1.73E-24
37	800.0	1.61E-28	8.23E-16	4.43E-30	2.27E-17	5.68E-32	2.93E-19	2.28E-34	1.19E-21	6.62E-39	3.47E-26
38	850.0	1.27E-29	7.33E-17	2.78E-31	1.61E-18	2.75E-33	1.60E-20	7.94E-36	4.66E-23	1.12E-40	6.64E-28
39	900.0	1.00E-30	6.46E-18	1.76E-32	1.14E-19	1.31E-34	8.53E-22	2.68E-37	1.76E-24	1.83E-42	1.22E-29
40	950.0	7.78E-32	5.59E-19	1.08E-33	7.82E-21	6.14E-36	4.47E-23	8.89E-39	6.53E-26	2.99E-44	2.21E-31
41	1000.0	5.91E-33	4.71E-20	6.47E-35	5.19E-22	2.76E-37	2.23E-24	2.82E-40	2.29E-27	4.65E-46	3.81E-33
42	1100.0	3.42E-35	3.29E-22	2.34E-37	2.27E-24	5.60E-40	5.47E-27	2.80E-43	2.76E-30	1.16E-49	1.16E-36
43	1200.0	1.99E-37	2.28E-24	8.43E-40	9.73E-27	1.14E-42	1.32E-29	2.77E-46	3.25E-33	2.74E-53	3.23E-40
44	1300.0	1.16E-39	1.56E-26	3.09E-42	4.18E-29	2.36E-45	3.22E-32	2.69E-49	3.70E-36	6.30E-57	8.73E-44

Table 3.1 (Continued) (7/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		31 (17.500 - 14.900)		32 (14.900 - 13.500)		33 (13.500 - 12.200)		34 (12.200 - 10.000)		35 (10.000 - 8.190)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.23E-08	2.55E+00	1.22E-08	2.54E+00	1.21E-08	2.54E+00	1.21E-08	2.56E+00	1.17E-08	2.51E+00
2	10.0	1.78E-09	1.47E+00	1.74E-09	1.46E+00	1.72E-09	1.45E+00	1.72E-09	1.46E+00	1.62E-09	1.39E+00
3	15.0	6.14E-10	1.14E+00	5.95E-10	1.12E+00	5.80E-10	1.10E+00	5.66E-10	1.08E+00	5.20E-10	9.99E-01
4	20.0	2.73E-10	9.03E-01	2.59E-10	8.66E-01	2.49E-10	8.39E-01	2.36E-10	8.00E-01	2.10E-10	7.16E-01
5	25.0	1.36E-10	7.04E-01	1.27E-10	6.63E-01	1.20E-10	6.30E-01	1.10E-10	5.85E-01	9.46E-11	5.05E-01
6	30.0	7.21E-11	5.37E-01	6.59E-11	4.96E-01	6.11E-11	4.63E-01	5.44E-11	4.16E-01	4.53E-11	3.48E-01
7	35.0	4.01E-11	4.06E-01	3.58E-11	3.66E-01	3.25E-11	3.35E-01	2.80E-11	2.91E-01	2.25E-11	2.36E-01
8	40.0	2.30E-11	3.05E-01	2.01E-11	2.68E-01	1.78E-11	2.40E-01	1.50E-11	2.03E-01	1.15E-11	1.58E-01
9	45.0	1.35E-11	2.26E-01	1.15E-11	1.94E-01	1.00E-11	1.71E-01	8.10E-12	1.39E-01	6.20E-12	1.07E-01
10	50.0	8.09E-12	1.67E-01	6.73E-12	1.40E-01	5.74E-12	1.21E-01	4.57E-12	9.60E-02	3.31E-12	7.06E-02
11	60.0	2.97E-12	8.86E-02	2.34E-12	7.03E-02	1.92E-12	5.82E-02	1.42E-12	4.33E-02	9.56E-13	2.94E-02
12	70.0	1.12E-12	4.53E-02	8.36E-13	3.42E-02	6.61E-13	2.72E-02	4.57E-13	1.90E-02	2.91E-13	1.22E-02
13	80.0	4.34E-13	2.30E-02	3.08E-13	1.64E-02	2.34E-13	1.26E-02	1.54E-13	8.35E-03	9.03E-14	4.94E-03
14	90.0	1.70E-13	1.14E-02	1.16E-13	7.85E-03	8.40E-14	5.72E-03	5.19E-14	3.57E-03	2.87E-14	1.99E-03
15	100.0	6.79E-14	5.62E-03	4.41E-14	3.68E-03	3.01E-14	2.53E-03	1.77E-14	1.50E-03	9.14E-15	7.81E-04
16	110.0	2.75E-14	2.76E-03	1.68E-14	1.70E-03	1.11E-14	1.13E-03	6.23E-15	6.40E-04	2.99E-15	3.09E-04
17	120.0	1.11E-14	1.32E-03	6.47E-15	7,78E-04	4.10E-15	4.96E-04	2.18E-15	2.66E-04	9.75E-16	1.20E-04
18	130.0	4.48E-15	6.27E-04	2.46E-15	3.48E-04	1.50E-15	2.14E-04	7.45E-16	1.07E-04	3.14E-16	4.53E-05
19	140.0	1.83E-15	2.97E-04	9.48E-16	1.55E-04	5.65E-16	9.31E-05	2.66E-16	4.43E-05	1.05E-16	1.76E-05
20	150.0	7.51E-16	1.40E-04	3.72E-16	6.99E-05	2.13E-16	4.02E-05	9.41E-17	1.80E-05	3.43E-17	6.59E-06
21	160.0	3.07E-16	6.52E-05	1.45E-16	3.10E-05	7.69E-17	1.65E-05	3.34E-17	7.26E-06	1.11E-17	2.43E-06
22	170.0	1.26E-16	3.01E-05	5.73E-17	1.38E-05	2.96E-17	7.19E-06	1.18E-17	2.89E-06	3.75E-18	9.25E-07
23	180.0	5.26E-17	1.41E-05	2.21E-17	5.97E-06	1.13E-17	3.07E-06	4.25E-18	1.17E-06	1.28E-18	3.55E-07
24	190.0	2.16E-17	6.45E-06	8.65E-18	2.61E-06	4.09E-18	1.24E-06	1.51E-18	4.61E-07	4.18E-19	1.29E-07
25	200.0	9.03E-18	2.99E-06	3.43E-18	1.15E-06	1.58E-18	5.30E-07	5.48E-19	1.86E-07	1.43E-19	4.88E-08
26	250.0	1.16E-19	5.99E-08	3.29E-20	1.72E-08	1.23E-20	6.46E-09	3.28E-21	1.74E-09	6.32E-22	3.37E-10
27	300.0	1.44E-21	1.08E-09	3.16E-22	2.38E-10	9.68E-23	7.32E-11	2.07E-23	1.58E-11	3.03E-24	2.33E-12
28	350.0	1.70E-23	1.73E-11	2.82E-24	2.89E-12	7.20E-25	7.41E-13	1.26E-25	1.31E-13	1.49E-26	1.56E-14
29	400.0	1.96E-25	2.60E-13	2.43E-26	3.25E-14	5.15E-27	6.93E-15	7.31E-28	9.93E-16	7.19E-29	9.84E-17
30	450.0	2.35E-27	3.95E-15	2.17E-28	3.67E-16	3.79E-29	6.45E-17	4.45E-30	7.66E-18	3.85E-31	6.66E-19
31	500.0	2.87E-29	5.94E-17	1.94E-30	4.06E-18	2.82E-31	5.94E-19	2.76E-32	5.86E-20	2.17E-33	4.63E-21
32	550.0	3.34E-31	8.38E-19	1.64E-32	4.15E-20	1.96E-33	4.97E-21	1.60E-34	4.12E-22	1.16E-35	3.00E-23
33	600.0	3.81E-33	1.14E-20	1.34E-34	4.04E-22	1.32E-35	3.99E-23	9.12E-37	2.79E-24	6.24E-38	1.92E-25
34	650.0	4.70E-35	1.64E-22	1.14E-36	4.04E-24	8.72E-38	3.10E-25	4.48E-39	1.61E-26	2.57E-40	9.26E-28
35	700.0	5.84E-37	2.37E-24	9.95E-39	4.07E-26	5.88E-40	2.42E-27	2.16E-41	9.00E-29	9.77E-43	4.09E-30
36	750.0	7.15E-39	3.33E-26	8.59E-41	4.04E-28	3.99E-42	1.89E-29	1.05E-43	5.00E-31	3.56E-45	1.71E-32
37	800.0	9.65E-41	5.12E-28	8.36E-43	4.47E-30	3.12E-44	1.68E-31	6.00E-46	3.26E-33	1.51E-47	8.24E-35
38	850.0	1.24E-42	7.44E-30	7.70E-45	4.65E-32	2.31E-46	1.40E-33	3.28E-48	2.01E-35	5.88E-50	3.63E-37
39	900.0	1.54E-44	1.03E-31	6.74E-47	4.56E-34	1.62E-48	1.10E-35	1.69E-50	1.16E-37	1.99E-52	1.38E-39
40	950.0	2.00E-46	1.50E-33	6.93E-49	5.22E-36	1.54E-50	1.17E-37	1.62E-52	1.24E-39	3.10E-54	2.39E-41
41	1000.0	2.52E-48	2.09E-35	7.73E-51	6.45E-38	1.72E-52	1.45E-39	1.95E-54	1.66E-41	5.05E-56	4.31E-43
42	1100.0	4.61E-52	4.62E-39	1.30E-54	1.31E-41	3.04E-56	3.10E-43	3.81E-58	3.91E-45	1.53E-59	1.58E-46
43	1200.0	8.81E-56	1.05E-42	2.60E-58	3.13E-45	6.31E-60	7.64E-47	8.07E-62	9.87E-49	5.53E-63	6.80E-50
44	1300.0	1.80E-59	2.52E-46	5.51E-62	7.78E-49	1.35E-63	1.92E-50	1.74E-65	2.49E-52	2.30E-66	3.32E-53

Table 3.1 (Continued) (8/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		36 (8.190 - 6.700)		37 (6.700 - 5.490)		38 (5.490 - 4.490)		39 (4.490 - 3.680)		40 (3.680 - 3.010)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.17E-08	2.51E+00	1.20E-08	2.49E+00	1.20E-08	2.43E+00	5.51E-09	1.18E+00	5.20E-09	1.19E+00
2	10.0	1.60E-09	1.37E+00	1.59E-09	1.33E+00	1.51E-09	1.23E+00	1.03E-09	8.81E-01	8.98E-10	8.23E-01
3	15.0	4.98E-10	9.58E-01	4.79E-10	8.99E-01	4.19E-10	7.68E-01	2.77E-10	5.35E-01	2.22E-10	4.57E-01
4	20.0	1.94E-10	6.62E-01	1.78E-10	5.93E-01	1.42E-10	4.63E-01	8.68E-11	2.98E-01	6.32E-11	2.32E-01
5	25.0	8.40E-11	4.49E-01	7.34E-11	3.82E-01	5.27E-11	2.68E-01	2.93E-11	1.57E-01	1.94E-11	1.11E-01
6	30.0	3.84E-11	2.95E-01	3.19E-11	2.39E-01	2.09E-11	1.53E-01	1.04E-11	8.00E-02	6.23E-12	5.13E-02
7	35.0	1.84E-11	1.92E-01	1.44E-11	1.47E-01	8.60E-12	8.58E-02	3.73E-12	3.92E-02	2.04E-12	2.29E-02
8	40.0	9.08E-12	1.24E-01	6.72E-12	8.96E-02	3.51E-12	4.57E-02	1.37E-12	1.88E-02	6.82E-13	9.99E-03
9	45.0	4.54E-12	7.85E-02	3.17E-12	5.34E-02	1.48E-12	2.44E-02	5.09E-13	8.85E-03	2.31E-13	4.29E-03
10	50.0	2.31E-12	4.94E-02	1.52E-12	3.16E-02	6.44E-13	1.31E-02	1.91E-13	4.11E-03	7.94E-14	1.82E-03
11	60.0	6.21E-13	1.91E-02	3.59E-13	1.08E-02	1.21E-13	3.54E-03	2.77E-14	8.55E-04	9.86E-15	3.25E-04
12	70.0	1.71E-13	7.14E-03	8.79E-14	3.59E-03	2.38E-14	9.50E-04	4.16E-15	1.75E-04	1.24E-15	5.54E-05
13	80.0	4.81E-14	2.63E-03	2.22E-14	1.19E-03	4.57E-15	2.38E-04	6.27E-16	3.45E-05	1.57E-16	9.17E-06
14	90.0	1.35E-14	9.33E-04	5.62E-15	3.79E-04	9.19E-16	6.06E-05	9.52E-17	6.62E-06	2.05E-17	1.52E-06
15	100.0	3.96E-15	3.38E-04	1.45E-15	1.21E-04	1.82E-16	1.48E-05	1.45E-17	1.24E-06	2.65E-18	2.43E-07
16	110.0	1.22E-15	1.26E-04	3.94E-16	3.97E-05	4.13E-17	4.07E-06	2.22E-18	2.30E-07	3.38E-19	3.74E-08
17	120.0	3.45E-16	4.24E-05	1.04E-16	1.25E-05	8.68E-18	1.02E-06	3.43E-19	4.24E-08	4.68E-20	6.17E-09
18	130.0	1.03E-16	1.49E-05	2.61E-17	3.68E-06	1.82E-18	2.51E-07	5.29E-20	7.68E-09	6.18E-21	9.57E-10
19	140.0	3.23E-17	5.41E-06	7.33E-18	1.20E-06	4.14E-19	6.61E-08	8.33E-21	1.40E-09	8.00E-22	1.44E-10
20	150.0	9.09E-18	1.75E-06	2.00E-18	3.74E-07	9.25E-20	1.69E-08	1.31E-21	2.52E-10	1.05E-22	2.16E-11
21	160.0	2.73E-18	5.96E-07	5.32E-19	1.14E-07	2.03E-20	4.22E-09	2.01E-22	4.43E-11	1.43E-23	3.36E-12
22	170.0	8.44E-19	2.08E-07	1.51E-19	3.63E-08	4.70E-21	1.11E-09	3.16E-23	7.84E-12	1.90E-24	5.02E-13
23	180.0	2.59E-19	7.16E-08	4.02E-20	1.09E-08	1.05E-21	2.77E-10	4.98E-24	1.38E-12	2.51E-25	7.43E-14
24	190.0	7.50E-20	2.31E-08	1.13E-20	3.41E-09	2.31E-22	6.80E-11	7.72E-25	2.39E-13	3.45E-26	1.14E-14
25	200.0	2.44E-20	8.35E-09	3.09E-21	1.03E-09	5.30E-23	1.73E-11	1.23E-25	4.21E-14	4.68E-27	1.71E-15
26	250.0	6.69E-23	3.58E-11	5.08E-24	2.64E-12	2.67E-26	1.36E-14	1.36E-29	7.29E-18	2.56E-31	1.47E-19
27	300.0	2.23E-25	1.71E-13	1.17E-26	8.81E-15	1.66E-28	1.21E-16	1.34E-33	1.03E-21	1.00E-35	8.28E-24
28	350.0	8.94E-28	9.35E-16	4.37E-29	4.46E-17	9.27E-31	9.25E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	400.0	4.00E-30	5.47E-18	2.03E-31	2.71E-19	4.96E-33	6.46E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	450.0	2.12E-32	3.67E-20	1.12E-33	1.88E-21	2.85E-35	4.70E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	500.0	1.20E-34	2.56E-22	6.43E-36	1.34E-23	1.68E-37	3.41E-25	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	550.0	6.52E-37	1.68E-24	3.52E-38	8.88E-26	9.32E-40	2.30E-27	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	600.0	3.55E-39	1.09E-26	1.93E-40	5.78E-28	5.14E-42	1.51E-29	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	650.0	1.42E-41	5.14E-29	7.72E-43	2.72E-30	2.12E-44	7.30E-32	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	700.0	5.23E-44	2.19E-31	2.84E-45	1.16E-32	8.07E-47	3.20E-34	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	750.0	1.83E-46	8.80E-34	9.94E-48	4.66E-35	2.89E-49	1.32E-36	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	800.0	7.45E-49	4.08E-36	4.05E-50	2.16E-37	1.20E-51	6.28E-39	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	850.0	2.78E-51	1.71E-38	1.51E-52	9.07E-40	4.60E-54	2.71E-41	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	900.0	8.82E-54	6.11E-41	4.79E-55	3.23E-42	1.51E-56	9.94E-44	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	950.0	1.28E-55	9.87E-43	6.95E-57	5.22E-44	2.16E-58	1.59E-45	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	1000.0	1.86E-57	1.59E-44	1.01E-58	8.40E-46	3.13E-60	2.55E-47	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	1100.0	3.95E-61	4.09E-48	2.14E-62	2.16E-49	6.64E-64	6.54E-51	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	1200.0	8.55E-65	1.05E-51	4.57E-66	5.48E-53	1.43E-67	1.68E-54	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	1300.0	1.93E-68	2.79E-55	9.83E-70	1.38E-56	3.12E-71	4.29E-58	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.1 (Continued) (9/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		41 (3.010 - 2.460)		42 (2.460 - 2.020)		43 (2.020 - 1.650)		44 (1.650 - 1.350)		45 (1.350 - 1.110)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	4.65E-09	1.13E+00	4.37E-09	1.09E+00	4.18E-09	1.03E+00	3.85E-09	9.40E-01	3.72E-09	8.99E-01
2	10.0	7.83E-10	7.65E-01	6.80E-10	6.79E-01	5.59E-10	5.52E-01	4.77E-10	4.66E-01	3.63E-10	3.51E-01
3	15.0	1.86E-10	4.10E-01	1.47E-10	3.31E-01	1.06E-10	2.35E-01	7.96E-11	1.75E-01	5.27E-11	1.15E-01
4	20.0	5.08E-11	1.98E-01	3.61E-11	1.44E-01	2.22E-11	8.77E-02	1.45E-11	5.66E-02	8.31E-12	3.21E-02
5	25.0	1.49E-11	9.08E-02	9.54E-12	5.95E-02	4.97E-12	3.07E-02	2.80E-12	1.71E-02	1.35E-12	8.16E-03
6	30.0	4.57E-12	4.02E-02	2.62E-12	2.36E-02	1.11E-12	9.86E-03	5.29E-13	4.65E-03	2.16E-13	1.88E-03
7	35.0	1.43E-12	1.72E-02	7.37E-13	9.07E-03	2.53E-13	3.06E-03	1.10E-13	1.32E-03	3.47E-14	4.10E-04
8	40.0	4.61E-13	7.21E-03	2.12E-13	3.38E-03	5.85E-14	9.25E-04	2.11E-14	3.30E-04	5.77E-15	8.91E-05
9	45.0	1.51E-13	2.98E-03	6.46E-14	1.31E-03	1.36E-14	2.72E-04	4.48E-15	8.86E-05	9.17E-16	1.79E-05
10	50.0	4.99E-14	1.22E-03	1.94E-14	4.84E-04	3.45E-15	8.52E-05	9.05E-16	2.21E-05	1.60E-16	3.86E-06
11	60.0	5.90E-15	2.07E-04	1.81E-15	6.50E-05	2.06E-16	7.33E-06	3.92E-17	1.38E-06	4.22E-18	1.47E-07
12	70.0	6.97E-16	3.33E-05	1.76E-16	8.61E-06	1.27E-17	6.13E-07	1.74E-18	8.32E-08	1.20E-19	5.66E-09
13	80.0	8.51E-17	5.32E-06	1.87E-17	1.20E-06	8.22E-19	5.20E-08	7.98E-20	4.99E-09	4.54E-21	2.81E-10
14	90.0	1.08E-17	8.52E-07	1.99E-18	1.61E-07	5.02E-20	4.01E-09	3.91E-21	3.09E-10	2.88E-22	2.26E-11
15	100.0	1.37E-18	1.34E-07	2.15E-19	2.14E-08	3.83E-21	3.78E-10	2.38E-22	2.32E-11	1.33E-23	1.29E-12
16	110.0	1.71E-19	2.03E-08	2.31E-20	2.80E-09	2.26E-22	2.70E-11	1.32E-23	1.56E-12	8.05E-25	9.41E-14
17	120.0	2.24E-20	3.15E-09	2.55E-21	3.67E-10	1.65E-23	2.34E-12	8.01E-25	1.13E-13	9.05E-26	1.26E-14
18	130.0	2.97E-21	4.91E-10	2.86E-22	4.83E-11	1.26E-24	2.10E-13	4.14E-26	6.83E-15	3.59E-27	5.86E-16
19	140.0	3.84E-22	7.35E-11	3.28E-23	6.42E-12	7.85E-26	1.52E-14	2.23E-27	4.27E-16	2.85E-28	5.40E-17
20	150.0	4.91E-23	1.08E-11	3.48E-24	7.82E-13	5.51E-27	1.22E-15	1.30E-28	2.87E-17	8.39E-30	1.82E-18
21	160.0	6.55E-24	1.64E-12	4.67E-25	1.19E-13	4.70E-28	1.19E-16	8.41E-30	2.10E-18	8.44E-31	2.09E-19
22	170.0	9.21E-25	2.60E-13	5.05E-26	1.46E-14	2.42E-29	6.92E-18	4.00E-31	1.13E-19	4.55E-32	1.27E-20
23	180.0	1.15E-25	3.63E-14	6.70E-27	2.17E-15	1.75E-30	5.60E-19	3.95E-32	1.25E-20	2.44E-33	7.64E-22
24	190.0	1.54E-26	5.45E-15	8.11E-28	2.92E-16	1.39E-31	4.96E-20	2.27E-33	7.99E-22	2.10E-34	7.34E-23
25	200.0	2.08E-27	8.11E-16	8.58E-29	3.43E-17	8.01E-33	3.16E-21	2.83E-34	1.11E-22	1.31E-35	5.07E-24
26	250.0	1.03E-31	6.26E-20	1.69E-33	1.06E-21	2.00E-38	1.24E-26	3.85E-40	2.35E-28	7.40E-41	4.47E-29
27	300.0	4.70E-36	4.13E-24	4.29E-38	3.86E-26	1.56E-43	1.38E-31	2.87E-45	2.52E-33	5.69E-45	4.94E-33
28	350.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	800.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	850.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	900.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	950.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	1000.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	1100.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	1200.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	1300.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.1 (Continued) (10/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		46 (1.110 - 0.907)		47 (0.907 - 0.743)		48 (0.743 - 0.498)		49 (0.498 - 0.334)		50 (0.334 - 0.224)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	2.97E-09	7.18E-01	2.56E-09	6.73E-01	2.02E-09	6.15E-01	1.30E-09	5.23E-01	1.04E-09	5.97E-01
2	10.0	2.88E-10	2.79E-01	2.58E-10	2.71E-01	1.96E-10	2.39E-01	1.36E-10	2.18E-01	1.21E-10	2.79E-01
3	15.0	3.86E-11	8.39E-02	3.46E-11	8.20E-02	2.55E-11	7.00E-02	1.70E-11	6.14E-02	1.49E-11	7.67E-02
4	20.0	5.36E-12	2.07E-02	4.71E-12	1.98E-02	3.40E-12	1.65E-02	2.09E-12	1.34E-02	1.77E-12	1.63E-02
5	25.0	8.07E-13	4.88E-03	7.02E-13	4.62E-03	4.45E-13	3.39E-03	2.58E-13	2.59E-03	2.14E-13	3.08E-03
6	30.0	1.18E-13	1.03E-03	1.00E-13	9.53E-04	6.19E-14	6.79E-04	3.21E-14	4.64E-04	2.64E-14	5.46E-04
7	35.0	1.77E-14	2.10E-04	1.48E-14	1.91E-04	8.21E-15	1.23E-04	4.08E-15	8.00E-05	3.34E-15	9.39E-05
8	40.0	2.33E-15	3.60E-05	1.90E-15	3.20E-05	1.17E-15	2.28E-05	5.26E-16	1.35E-05	4.30E-16	1.58E-05
9	45.0	3.69E-16	7.22E-06	2.97E-16	6.34E-06	1.68E-16	4.14E-06	6.92E-17	2.24E-06	5.65E-17	2.63E-06
10	50.0	5.48E-17	1.32E-06	4.36E-17	1.15E-06	2.57E-17	7.83E-07	9.14E-18	3.66E-07	7.47E-18	4.29E-07
11	60.0	1.13E-18	3.94E-08	9.21E-19	3.49E-08	4.64E-19	2.03E-08	1.64E-19	9.48E-09	1.34E-19	1.11E-08
12	70.0	2.29E-20	1.08E-09	1.93E-20	9.95E-10	1.06E-20	6.36E-10	3.04E-21	2.39E-10	2.49E-21	2.80E-10
13	80.0	6.09E-22	3.77E-11	4.38E-22	2.95E-11	2.93E-22	2.28E-11	5.75E-23	5.90E-12	4.84E-23	7.12E-12
14	90.0	2.81E-23	2.20E-12	1.80E-23	1.53E-12	1.18E-23	1.17E-12	1.11E-24	1.44E-13	9.45E-25	1.76E-13
15	100.0	1.46E-24	1.41E-13	1.03E-24	1.08E-13	5.74E-25	6.99E-14	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16	110.0	9.50E-26	1.11E-14	5.35E-26	6.82E-15	1.75E-26	2.58E-15	0.00E+00	0.00E+00	0.00E+00	0.00E+00
17	120.0	4.38E-27	6.10E-16	3.22E-27	4.88E-16	7.99E-28	1.40E-16	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18	130.0	1.57E-28	2.56E-17	1.53E-28	2.72E-17	3.31E-29	6.82E-18	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19	140.0	8.03E-30	1.52E-18	5.57E-30	1.15E-18	1.56E-30	3.74E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	150.0	1.94E-31	4.22E-20	1.83E-31	4.34E-20	1.85E-31	5.08E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
21	160.0	2.07E-32	5.13E-21	2.22E-32	5.99E-21	2.47E-32	7.71E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22	170.0	1.62E-33	4.54E-22	1.35E-33	4.12E-22	3.37E-33	1.19E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00
23	180.0	1.97E-34	6.16E-23	1.81E-34	6.19E-23	4.57E-34	1.80E-22	0.00E+00	0.00E+00	0.00E+00	0.00E+00
24	190.0	2.67E-35	9.33E-24	2.46E-35	9.37E-24	6.21E-35	2.73E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25	200.0	3.64E-36	1.41E-24	3.36E-36	1.41E-24	8.54E-36	4.16E-24	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26	250.0	1.80E-40	1.09E-28	1.66E-40	1.09E-28	4.75E-40	3.62E-28	0.00E+00	0.00E+00	0.00E+00	0.00E+00
27	300.0	9.20E-45	8.00E-33	8.48E-45	8.04E-33	3.65E-44	4.01E-32	0.00E+00	0.00E+00	0.00E+00	0.00E+00
28	350.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	800.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	850.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	900.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	950.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	1000.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	1100.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	1200.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	1300.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.1 (Continued) (11/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		51		52		53		54		55	
		(0.224 -	0.150)	(0.150 -	0.087)	(0.087 -	0.032)	(0.032 -	0.015)	(0.015 -	0.007)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	9.05E-10	7.45E-01	8.44E-10	1.05E+00	8.18E-10	1.80E+00	8.13E-10	3.68E+00	8.13E-10	6.63E+00
2	10.0	1.11E-10	3.65E-01	1.03E-10	5.14E-01	9.57E-11	8.40E-01	8.91E-11	1.62E+00	8.50E-11	2.78E+00
3	15.0	1.30E-11	9.61E-02	1.16E-11	1.30E-01	1.03E-11	2.03E-01	9.29E-12	3.79E-01	8.72E-12	6.41E-01
4	20.0	1.50E-12	1.97E-02	1.31E-12	2.61E-02	1.15E-12	4.04E-02	1.03E-12	7.48E-02	9.66E-13	1.26E-01
5	25.0	1.79E-13	3.68E-03	1.56E-13	4.84E-03	1.36E-13	7.47E-03	1.22E-13	1.38E-02	1.14E-13	2.33E-02
6	30.0	2.20E-14	6.51E-04	1.91E-14	8.54E-04	1.67E-14	1.32E-03	1.49E-14	2.44E-03	1.40E-14	4.11E-03
7	35.0	2.77E-15	1.12E-04	2.40E-15	1.47E-04	2.10E-15	2.26E-04	1.88E-15	4.18E-04	1.77E-15	7.06E-04
8	40.0	3.57E-16	1.88E-05	3.10E-16	2.47E-05	2.71E-16	3.81E-05	2.43E-16	7.04E-05	2.26E-16	1.18E-04
9	45.0	4.69E-17	3.12E-06	4.07E-17	4.10E-06	3.55E-17	6.32E-06	3.21E-17	1.18E-05	3.01E-17	1.99E-05
10	50.0	6.19E-18	5.10E-07	5.35E-18	6.66E-07	4.82E-18	1.06E-06	4.46E-18	2.02E-06	4.20E-18	3.43E-06
11	60.0	1.11E-19	1.32E-08	9.85E-20	1.77E-08	9.54E-20	3.02E-08	8.82E-20	5.76E-08	8.32E-20	9.77E-08
12	70.0	2.06E-21	3.32E-10	1.95E-21	4.74E-10	1.94E-21	8.36E-10	1.79E-21	1.59E-09	1.69E-21	2.70E-09
13	80.0	4.48E-23	9.43E-12	4.16E-23	1.32E-11	4.11E-23	2.31E-11	4.31E-23	5.00E-11	4.13E-23	8.64E-11
14	90.0	9.59E-25	2.56E-13	8.90E-25	3.59E-13	1.04E-24	7.41E-13	1.18E-24	1.73E-12	1.13E-24	2.98E-12
15	100.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16	110.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
17	120.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18	130.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19	140.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	150.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
21	160.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22	170.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
23	180.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
24	190.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25	200.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26	250.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
27	300.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
28	350.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	800.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	850.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	900.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	950.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	1000.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	1100.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	1200.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	1300.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.2 Dose equivalent per source neutrons and attenuation factor of secondary gamma rays in water (1/11).

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		1		2		3		4		5	
		(400.000	- 375.000)	(375.000	- 350.000)	(350.000	- 325.000)	(325.000	- 300.000)	(300.000	- 275.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	6.15E-12	7.67E-04	6.09E-12	7.79E-04	6.07E-12	7.97E-04	6.06E-12	8.20E-04	6.17E-12	8.62E-04
2	10.0	4.11E-12	2.05E-03	4.07E-12	2.08E-03	4.05E-12	2.13E-03	4.05E-12	2.19E-03	4.11E-12	2.29E-03
3	15.0	3.03E-12	3.39E-03	3.00E-12	3.45E-03	2.99E-12	3.53E-03	2.98E-12	3.63E-03	3.02E-12	3.80E-03
4	20.0	2.32E-12	4.63E-03	2.30E-12	4.70E-03	2.29E-12	4.81E-03	2.28E-12	4.94E-03	2.31E-12	5.16E-03
5	25.0	1.82E-12	5.66E-03	1.80E-12	5.75E-03	1.79E-12	5.88E-03	1.79E-12	6.04E-03	1.80E-12	6.29E-03
6	30.0	1.45E-12	6.51E-03	1.44E-12	6.62E-03	1.43E-12	6.77E-03	1.43E-12	6.95E-03	1.44E-12	7.22E-03
7	35.0	1.18E-12	7.21E-03	1.17E-12	7.32E-03	1.16E-12	7.49E-03	1.16E-12	7.68E-03	1.16E-12	7.96E-03
8	40.0	9.96E-13	7.94E-03	9.87E-13	8.07E-03	9.83E-13	8.26E-03	9.78E-13	8.46E-03	9.79E-13	8.75E-03
9	45.0	8.27E-13	8.35E-03	8.19E-13	8.48E-03	8.14E-13	8.66E-03	8.10E-13	8.87E-03	8.09E-13	9.14E-03
10	50.0	6.99E-13	8.71E-03	6.90E-13	8.82E-03	6.86E-13	9.01E-03	6.81E-13	9.21E-03	6.79E-13	9.48E-03
11	60.0	5.16E-13	9.26E-03	5.10E-13	9.38E-03	5.05E-13	9.56E-03	5.01E-13	9.75E-03	4.98E-13	1.00E-02
12	70.0	3.91E-13	9.56E-03	3.86E-13	9.67E-03	3.82E-13	9.83E-03	3.78E-13	1.00E-02	3.74E-13	1.02E-02
13	80.0	3.00E-13	9.56E-03	2.95E-13	9.67E-03	2.92E-13	9.81E-03	2.88E-13	9.96E-03	2.83E-13	1.01E-02
14	90.0	2.35E-13	9.50E-03	2.32E-13	9.59E-03	2.28E-13	9.70E-03	2.24E-13	9.82E-03	2.19E-13	9.91E-03
15	100.0	1.89E-13	9.40E-03	1.85E-13	9.48E-03	1.82E-13	9.57E-03	1.78E-13	9.65E-03	1.75E-13	9.75E-03
16	110.0	1.53E-13	9.24E-03	1.50E-13	9.30E-03	1.47E-13	9.32E-03	1.44E-13	9.40E-03	1.40E-13	9.46E-03
17	120.0	1.25E-13	8.97E-03	1.22E-13	9.02E-03	1.19E-13	9.02E-03	1.16E-13	9.05E-03	1.13E-13	9.07E-03
18	130.0	1.03E-13	8.68E-03	1.01E-13	8.69E-03	9.77E-14	8.68E-03	9.49E-14	8.67E-03	9.19E-14	8.67E-03
19	140.0	8.51E-14	8.32E-03	8.30E-14	8.32E-03	8.11E-14	8.35E-03	7.81E-14	8.28E-03	7.56E-14	8.28E-03
20	150.0	7.14E-14	8.01E-03	6.95E-14	7.99E-03	6.71E-14	7.93E-03	6.51E-14	7.92E-03	6.22E-14	7.81E-03
21	160.0	6.01E-14	7.66E-03	5.83E-14	7.63E-03	5.65E-14	7.60E-03	5.43E-14	7.52E-03	5.20E-14	7.43E-03
22	170.0	5.07E-14	7.31E-03	4.94E-14	7.29E-03	4.76E-14	7.22E-03	4.55E-14	7.11E-03	4.35E-14	7.01E-03
23	180.0	4.32E-14	6.97E-03	4.19E-14	6.93E-03	4.03E-14	6.86E-03	3.85E-14	6.74E-03	3.65E-14	6.61E-03
24	190.0	3.68E-14	6.62E-03	3.57E-14	6.59E-03	3.42E-14	6.48E-03	3.27E-14	6.39E-03	3.08E-14	6.20E-03
25	200.0	3.15E-14	6.29E-03	3.05E-14	6.23E-03	2.92E-14	6.14E-03	2.79E-14	6.03E-03	2.62E-14	5.85E-03
26	250.0	1.54E-14	4.80E-03	1.48E-14	4.72E-03	1.40E-14	4.61E-03	1.32E-14	4.47E-03	1.21E-14	4.21E-03
27	300.0	7.94E-15	3.56E-03	7.51E-15	3.46E-03	6.92E-15	3.27E-03	6.43E-15	3.13E-03	5.84E-15	2.94E-03
28	350.0	4.09E-15	2.49E-03	3.86E-15	2.42E-03	3.61E-15	2.32E-03	3.29E-15	2.18E-03	2.95E-15	2.02E-03
29	400.0	2.21E-15	1.76E-03	2.05E-15	1.68E-03	1.86E-15	1.57E-03	1.70E-15	1.47E-03	1.50E-15	1.34E-03
30	450.0	1.18E-15	1.19E-03	1.10E-15	1.14E-03	9.99E-16	1.06E-03	8.95E-16	9.80E-04	7.73E-16	8.74E-04
31	500.0	6.57E-16	8.19E-04	6.05E-16	7.74E-04	5.39E-16	7.08E-04	4.73E-16	6.40E-04	4.10E-16	5.72E-04
32	550.0	3.58E-16	5.40E-04	3.29E-16	5.09E-04	2.94E-16	4.67E-04	2.57E-16	4.20E-04	2.16E-16	3.65E-04
33	600.0	2.01E-16	3.60E-04	1.82E-16	3.36E-04	1.61E-16	3.04E-04	1.38E-16	2.69E-04	1.16E-16	2.32E-04
34	650.0	1.12E-16	2.37E-04	1.02E-16	2.20E-04	8.92E-17	1.98E-04	7.54E-17	1.72E-04	6.22E-17	1.47E-04
35	700.0	6.31E-17	1.54E-04	5.67E-17	1.42E-04	4.85E-17	1.25E-04	4.08E-17	1.08E-04	3.33E-17	9.12E-05
36	750.0	3.53E-17	9.89E-05	3.13E-17	9.00E-05	2.66E-17	7.87E-05	2.24E-17	6.82E-05	1.80E-17	5.67E-05
37	800.0	1.98E-17	6.32E-05	1.79E-17	5.85E-05	1.50E-17	5.05E-05	1.25E-17	4.31E-05	9.78E-18	3.50E-05
38	850.0	1.12E-17	4.05E-05	9.93E-18	3.67E-05	8.34E-18	3.17E-05	6.79E-18	2.65E-05	5.35E-18	2.16E-05
39	900.0	6.39E-18	2.58E-05	5.53E-18	2.29E-05	4.65E-18	1.98E-05	3.79E-18	1.66E-05	2.94E-18	1.33E-05
40	950.0	3.63E-18	1.63E-05	3.13E-18	1.44E-05	2.62E-18	1.24E-05	2.10E-18	1.02E-05	1.58E-18	7.96E-06
41	1000.0	2.04E-18	1.02E-05	1.74E-18	8.89E-06	1.46E-18	7.67E-06	1.13E-18	6.13E-06	8.80E-19	4.91E-06
42	1100.0	6.48E-19	3.91E-06	5.53E-19	3.42E-06	4.50E-19	2.86E-06	3.48E-19	2.28E-06	2.59E-19	1.75E-06
43	1200.0	2.12E-19	1.52E-06	1.78E-19	1.31E-06	1.43E-19	1.08E-06	1.06E-19	8.28E-07	7.84E-20	6.30E-07
44	1300.0	6.68E-20	5.63E-07	5.54E-20	4.79E-07	4.40E-20	3.90E-07	3.34E-20	3.05E-07	2.31E-20	2.18E-07

Table 3.2 (Continued) (2/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

I	R(CM)	6 (275.000 - 250.000)		7 (250.000 - 225.000)		8 (225.000 - 200.000)		9 (200.000 - 180.000)		10 (180.000 - 160.000)	
		H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	6.29E-12	9.09E-04	6.30E-12	9.46E-04	6.35E-12	9.95E-04	6.47E-12	1.04E-03	6.64E-12	1.09E-03
2	10.0	4.18E-12	2.42E-03	4.18E-12	2.51E-03	4.21E-12	2.64E-03	4.29E-12	2.77E-03	4.40E-12	2.88E-03
3	15.0	3.06E-12	3.98E-03	3.06E-12	4.14E-03	3.08E-12	4.34E-03	3.13E-12	4.54E-03	3.20E-12	4.72E-03
4	20.0	2.33E-12	5.40E-03	2.33E-12	5.60E-03	2.34E-12	5.86E-03	2.37E-12	6.12E-03	2.42E-12	6.35E-03
5	25.0	1.82E-12	6.56E-03	1.81E-12	6.79E-03	1.81E-12	7.10E-03	1.83E-12	7.40E-03	1.87E-12	7.66E-03
6	30.0	1.44E-12	7.51E-03	1.44E-12	7.77E-03	1.44E-12	8.10E-03	1.45E-12	8.42E-03	1.48E-12	8.71E-03
7	35.0	1.17E-12	8.25E-03	1.16E-12	8.53E-03	1.16E-12	8.87E-03	1.16E-12	9.20E-03	1.18E-12	9.50E-03
8	40.0	9.77E-13	9.04E-03	9.72E-13	9.34E-03	9.66E-13	9.68E-03	9.69E-13	1.00E-02	9.84E-13	1.03E-02
9	45.0	8.06E-13	9.43E-03	8.00E-13	9.73E-03	7.94E-13	1.01E-02	7.97E-13	1.04E-02	8.05E-13	1.07E-02
10	50.0	6.78E-13	9.79E-03	6.71E-13	1.01E-02	6.66E-13	1.04E-02	6.68E-13	1.08E-02	6.73E-13	1.10E-02
11	60.0	4.94E-13	1.03E-02	4.88E-13	1.06E-02	4.83E-13	1.09E-02	4.82E-13	1.12E-02	4.83E-13	1.14E-02
12	70.0	3.69E-13	1.04E-02	3.60E-13	1.06E-02	3.56E-13	1.09E-02	3.51E-13	1.11E-02	3.50E-13	1.13E-02
13	80.0	2.78E-13	1.03E-02	2.73E-13	1.05E-02	2.68E-13	1.07E-02	2.64E-13	1.09E-02	2.63E-13	1.10E-02
14	90.0	2.15E-13	1.01E-02	2.11E-13	1.02E-02	2.07E-13	1.05E-02	2.03E-13	1.06E-02	2.00E-13	1.06E-02
15	100.0	1.71E-13	9.85E-03	1.66E-13	9.95E-03	1.61E-13	1.01E-02	1.57E-13	1.02E-02	1.54E-13	1.01E-02
16	110.0	1.36E-13	9.48E-03	1.32E-13	9.58E-03	1.27E-13	9.60E-03	1.24E-13	9.67E-03	1.20E-13	9.50E-03
17	120.0	1.09E-13	9.08E-03	1.06E-13	9.14E-03	1.01E-13	9.15E-03	9.78E-14	9.09E-03	9.47E-14	8.93E-03
18	130.0	8.82E-14	8.62E-03	8.53E-14	8.65E-03	8.19E-14	8.67E-03	7.84E-14	8.55E-03	7.58E-14	8.39E-03
19	140.0	7.23E-14	8.19E-03	6.91E-14	8.13E-03	6.61E-14	8.12E-03	6.35E-14	8.03E-03	6.06E-14	7.78E-03
20	150.0	5.93E-14	7.71E-03	5.65E-14	7.64E-03	5.38E-14	7.59E-03	5.12E-14	7.44E-03	4.90E-14	7.22E-03
21	160.0	4.92E-14	7.29E-03	4.69E-14	7.21E-03	4.43E-14	7.10E-03	4.19E-14	6.92E-03	3.97E-14	6.65E-03
22	170.0	4.11E-14	6.87E-03	3.90E-14	6.76E-03	3.67E-14	6.64E-03	3.44E-14	6.42E-03	3.25E-14	6.16E-03
23	180.0	3.44E-14	6.44E-03	3.25E-14	6.33E-03	3.06E-14	6.21E-03	2.86E-14	5.98E-03	2.67E-14	5.66E-03
24	190.0	2.90E-14	6.05E-03	2.72E-14	5.89E-03	2.56E-14	5.79E-03	2.38E-14	5.54E-03	2.20E-14	5.20E-03
25	200.0	2.43E-14	5.63E-03	2.29E-14	5.49E-03	2.14E-14	5.36E-03	1.98E-14	5.10E-03	1.82E-14	4.77E-03
26	250.0	1.10E-14	3.98E-03	1.02E-14	3.82E-03	9.38E-15	3.67E-03	8.41E-15	3.39E-03	7.55E-15	3.09E-03
27	300.0	5.28E-15	2.75E-03	4.79E-15	2.59E-03	4.28E-15	2.41E-03	3.75E-15	2.18E-03	3.28E-15	1.93E-03
28	350.0	2.57E-15	1.82E-03	2.28E-15	1.67E-03	2.00E-15	1.53E-03	1.74E-15	1.37E-03	1.46E-15	1.18E-03
29	400.0	1.29E-15	1.20E-03	1.13E-15	1.09E-03	9.79E-16	9.81E-04	8.14E-16	8.40E-04	6.66E-16	6.98E-04
30	450.0	6.59E-16	7.71E-04	5.68E-16	6.90E-04	4.76E-16	6.03E-04	3.95E-16	5.16E-04	3.14E-16	4.17E-04
31	500.0	3.41E-16	4.93E-04	2.87E-16	4.31E-04	2.40E-16	3.75E-04	1.91E-16	3.08E-04	1.47E-16	2.41E-04
32	550.0	1.78E-16	3.11E-04	1.47E-16	2.68E-04	1.20E-16	2.27E-04	9.49E-17	1.85E-04	7.05E-17	1.40E-04
33	600.0	9.35E-17	1.95E-04	7.68E-17	1.66E-04	6.11E-17	1.38E-04	4.74E-17	1.10E-04	3.44E-17	8.12E-05
34	650.0	5.00E-17	1.22E-04	3.98E-17	1.01E-04	3.16E-17	8.35E-05	2.36E-17	6.45E-05	1.67E-17	4.62E-05
35	700.0	2.62E-17	7.42E-05	2.09E-17	6.14E-05	1.60E-17	4.92E-05	1.18E-17	3.73E-05	8.28E-18	2.66E-05
36	750.0	1.40E-17	4.56E-05	1.10E-17	3.71E-05	8.35E-18	2.94E-05	5.95E-18	2.16E-05	3.99E-18	1.47E-05
37	800.0	7.50E-18	2.78E-05	5.79E-18	2.23E-05	4.33E-18	1.73E-05	3.06E-18	1.26E-05	1.99E-18	8.33E-06
38	850.0	4.02E-18	1.68E-05	3.10E-18	1.34E-05	2.24E-18	1.01E-05	1.55E-18	7.22E-06	9.80E-19	4.64E-06
39	900.0	2.19E-18	1.02E-05	1.64E-18	7.98E-06	1.17E-18	5.94E-06	7.77E-19	4.06E-06	4.89E-19	2.60E-06
40	950.0	1.19E-18	6.20E-06	8.58E-19	4.65E-06	6.17E-19	3.49E-06	4.00E-19	2.33E-06	2.42E-19	1.43E-06
41	1000.0	6.28E-19	3.63E-06	4.56E-19	2.74E-06	3.24E-19	2.03E-06	2.02E-19	1.30E-06	1.21E-19	7.96E-07
42	1100.0	1.86E-19	1.30E-06	1.32E-19	9.56E-07	8.81E-20	6.68E-07	5.40E-20	4.22E-07	3.02E-20	2.39E-07
43	1200.0	5.35E-20	4.45E-07	3.72E-20	3.21E-07	2.43E-20	2.19E-07	1.43E-20	1.33E-07	7.48E-21	7.06E-08
44	1300.0	1.57E-20	1.54E-07	1.07E-20	1.09E-07	6.80E-21	7.20E-08	3.84E-21	4.18E-08	1.87E-21	2.07E-08

Table 3.2 (Continued) (3/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

I	R(CM)	11 (160.000 - 140.000)		12 (140.000 - 120.000)		13 (120.000 - 110.000)		14 (110.000 - 100.000)		15 (100.000 - 90.000)	
		H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	6.90E-12	1.15E-03	7.34E-12	1.25E-03	7.71E-12	1.33E-03	7.97E-12	1.39E-03	8.19E-12	1.45E-03
2	10.0	4.56E-12	3.04E-03	4.84E-12	3.29E-03	5.07E-12	3.50E-03	5.23E-12	3.66E-03	5.37E-12	3.80E-03
3	15.0	3.32E-12	4.97E-03	3.50E-12	5.36E-03	3.66E-12	5.69E-03	3.77E-12	5.93E-03	3.86E-12	6.15E-03
4	20.0	2.51E-12	6.68E-03	2.64E-12	7.16E-03	2.74E-12	7.58E-03	2.82E-12	7.88E-03	2.88E-12	8.15E-03
5	25.0	1.93E-12	8.03E-03	2.02E-12	8.58E-03	2.09E-12	9.04E-03	2.15E-12	9.38E-03	2.19E-12	9.68E-03
6	30.0	1.52E-12	9.10E-03	1.58E-12	9.67E-03	1.63E-12	1.02E-02	1.67E-12	1.05E-02	1.70E-12	1.08E-02
7	35.0	1.21E-12	9.89E-03	1.26E-12	1.04E-02	1.29E-12	1.09E-02	1.32E-12	1.13E-02	1.34E-12	1.16E-02
8	40.0	1.00E-12	1.07E-02	1.03E-12	1.12E-02	1.06E-12	1.17E-02	1.08E-12	1.21E-02	1.09E-12	1.24E-02
9	45.0	8.19E-13	1.11E-02	8.41E-13	1.16E-02	8.57E-13	1.20E-02	8.71E-13	1.23E-02	8.77E-13	1.26E-02
10	50.0	6.82E-13	1.14E-02	6.97E-13	1.18E-02	7.06E-13	1.22E-02	7.13E-13	1.25E-02	7.17E-13	1.27E-02
11	60.0	4.87E-13	1.17E-02	4.92E-13	1.20E-02	4.94E-13	1.23E-02	4.93E-13	1.24E-02	4.92E-13	1.25E-02
12	70.0	3.51E-13	1.14E-02	3.51E-13	1.17E-02	3.49E-13	1.18E-02	3.47E-13	1.19E-02	3.44E-13	1.19E-02
13	80.0	2.60E-13	1.11E-02	2.57E-13	1.12E-02	2.54E-13	1.12E-02	2.50E-13	1.12E-02	2.47E-13	1.12E-02
14	90.0	1.97E-13	1.06E-02	1.92E-13	1.06E-02	1.88E-13	1.05E-02	1.83E-13	1.04E-02	1.79E-13	1.03E-02
15	100.0	1.51E-13	1.01E-02	1.46E-13	9.89E-03	1.40E-13	9.67E-03	1.36E-13	9.53E-03	1.32E-13	9.34E-03
16	110.0	1.17E-13	9.42E-03	1.11E-13	9.14E-03	1.06E-13	8.86E-03	1.03E-13	8.70E-03	9.89E-14	8.48E-03
17	120.0	9.09E-14	8.73E-03	8.65E-14	8.46E-03	8.18E-14	8.13E-03	7.82E-14	7.87E-03	7.39E-14	7.53E-03
18	130.0	7.15E-14	8.05E-03	6.75E-14	7.75E-03	6.31E-14	7.36E-03	5.94E-14	7.02E-03	5.59E-14	6.70E-03
19	140.0	5.72E-14	7.48E-03	5.28E-14	7.04E-03	4.87E-14	6.59E-03	4.57E-14	6.27E-03	4.26E-14	5.91E-03
20	150.0	4.61E-14	6.90E-03	4.17E-14	6.38E-03	3.83E-14	5.94E-03	3.55E-14	5.58E-03	3.30E-14	5.25E-03
21	160.0	3.70E-14	6.31E-03	3.32E-14	5.77E-03	3.02E-14	5.34E-03	2.79E-14	5.00E-03	2.55E-14	4.62E-03
22	170.0	2.99E-14	5.75E-03	2.65E-14	5.20E-03	2.38E-14	4.75E-03	2.19E-14	4.42E-03	1.98E-14	4.05E-03
23	180.0	2.43E-14	5.24E-03	2.15E-14	4.72E-03	1.90E-14	4.24E-03	1.73E-14	3.93E-03	1.56E-14	3.57E-03
24	190.0	2.00E-14	4.81E-03	1.73E-14	4.25E-03	1.53E-14	3.80E-03	1.37E-14	3.45E-03	1.23E-14	3.15E-03
25	200.0	1.63E-14	4.36E-03	1.41E-14	3.83E-03	1.23E-14	3.39E-03	1.10E-14	3.06E-03	9.63E-15	2.73E-03
26	250.0	6.55E-15	2.73E-03	5.28E-15	2.24E-03	4.33E-15	1.87E-03	3.73E-15	1.63E-03	3.14E-15	1.39E-03
27	300.0	2.72E-15	1.63E-03	2.09E-15	1.28E-03	1.65E-15	1.02E-03	1.33E-15	8.35E-04	1.06E-15	6.73E-04
28	350.0	1.16E-15	9.48E-04	8.54E-16	7.11E-04	6.23E-16	5.27E-04	4.96E-16	4.25E-04	3.73E-16	3.24E-04
29	400.0	5.17E-16	5.52E-04	3.55E-16	3.86E-04	2.46E-16	2.72E-04	1.84E-16	2.06E-04	1.33E-16	1.50E-04
30	450.0	2.30E-16	3.10E-04	1.51E-16	2.07E-04	9.95E-17	1.39E-04	7.14E-17	1.01E-04	4.86E-17	6.97E-05
31	500.0	1.06E-16	1.77E-04	6.50E-17	1.10E-04	4.05E-17	6.99E-05	2.78E-17	4.85E-05	1.80E-17	3.19E-05
32	550.0	4.82E-17	9.71E-05	2.87E-17	5.90E-05	1.66E-17	3.48E-05	1.10E-17	2.32E-05	6.74E-18	1.44E-05
33	600.0	2.27E-17	5.45E-05	1.23E-17	3.02E-05	7.00E-18	1.74E-05	4.37E-18	1.10E-05	2.51E-18	6.39E-06
34	650.0	1.06E-17	2.99E-05	5.52E-18	1.58E-05	2.90E-18	8.47E-06	1.76E-18	5.19E-06	9.66E-19	2.89E-06
35	700.0	4.96E-18	1.62E-05	2.49E-18	8.28E-06	1.20E-18	4.07E-06	7.10E-19	2.43E-06	3.66E-19	1.27E-06
36	750.0	2.32E-18	8.71E-06	1.09E-18	4.17E-06	5.15E-19	2.00E-06	2.85E-19	1.12E-06	1.40E-19	5.59E-07
37	800.0	1.11E-18	4.73E-06	5.05E-19	2.20E-06	2.18E-19	9.62E-07	1.15E-19	5.15E-07	5.29E-20	2.40E-07
38	850.0	5.24E-19	2.52E-06	2.23E-19	1.09E-06	9.21E-20	4.59E-07	4.64E-20	2.34E-07	2.09E-20	1.07E-07
39	900.0	2.49E-19	1.34E-06	1.03E-19	5.66E-07	3.93E-20	2.20E-07	1.88E-20	1.06E-07	7.83E-21	4.49E-08
40	950.0	1.21E-19	7.27E-07	4.60E-20	2.82E-07	1.65E-20	1.03E-07	7.84E-21	4.95E-08	3.04E-21	1.95E-08
41	1000.0	5.81E-20	3.87E-07	2.10E-20	1.43E-07	7.26E-21	5.01E-08	3.11E-21	2.17E-08	1.20E-21	8.52E-09
42	1100.0	1.34E-20	1.08E-07	4.30E-21	3.53E-08	1.31E-21	1.09E-08	5.25E-22	4.44E-09	1.77E-22	1.52E-09
43	1200.0	3.14E-21	3.01E-08	9.04E-22	8.84E-09	2.44E-22	2.42E-09	8.96E-23	9.02E-10	2.67E-23	2.72E-10
44	1300.0	7.13E-22	8.03E-09	1.87E-22	2.15E-09	4.50E-23	5.25E-10	1.50E-23	1.77E-10	3.85E-24	4.61E-11

Table 3.2 (Continued) (4/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		16 (90.000 - 80.000)		17 (80.000 - 70.000)		18 (70.000 - 65.000)		19 (65.000 - 60.000)		20 (60.000 - 55.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	8.42E-12	1.51E-03	8.72E-12	1.59E-03	9.12E-12	1.68E-03	9.65E-12	1.80E-03	9.60E-12	1.81E-03
2	10.0	5.51E-12	3.96E-03	5.69E-12	4.15E-03	5.93E-12	4.38E-03	6.26E-12	4.67E-03	6.21E-12	4.68E-03
3	15.0	3.95E-12	6.38E-03	4.06E-12	6.66E-03	4.22E-12	7.01E-03	4.43E-12	7.43E-03	4.41E-12	7.48E-03
4	20.0	2.94E-12	8.43E-03	3.01E-12	8.79E-03	3.11E-12	9.20E-03	3.22E-12	9.60E-03	3.24E-12	9.76E-03
5	25.0	2.23E-12	9.99E-03	2.27E-12	1.04E-02	2.34E-12	1.08E-02	2.39E-12	1.12E-02	2.42E-12	1.14E-02
6	30.0	1.72E-12	1.11E-02	1.75E-12	1.15E-02	1.80E-12	1.19E-02	1.83E-12	1.23E-02	1.84E-12	1.25E-02
7	35.0	1.35E-12	1.19E-02	1.37E-12	1.22E-02	1.40E-12	1.27E-02	1.41E-12	1.29E-02	1.43E-12	1.32E-02
8	40.0	1.10E-12	1.27E-02	1.11E-12	1.30E-02	1.13E-12	1.33E-02	1.12E-12	1.33E-02	1.14E-12	1.38E-02
9	45.0	8.81E-13	1.28E-02	8.86E-13	1.31E-02	8.93E-13	1.34E-02	8.92E-13	1.35E-02	8.99E-13	1.37E-02
10	50.0	7.16E-13	1.29E-02	7.15E-13	1.30E-02	7.21E-13	1.33E-02	7.56E-13	1.41E-02	7.21E-13	1.36E-02
11	60.0	4.88E-13	1.26E-02	4.83E-13	1.27E-02	4.83E-13	1.29E-02	4.97E-13	1.33E-02	4.77E-13	1.29E-02
12	70.0	3.40E-13	1.20E-02	3.34E-13	1.19E-02	3.31E-13	1.20E-02	3.42E-13	1.25E-02	3.21E-13	1.18E-02
13	80.0	2.43E-13	1.12E-02	2.35E-13	1.10E-02	2.29E-13	1.08E-02	2.30E-13	1.10E-02	2.17E-13	1.04E-02
14	90.0	1.73E-13	1.01E-02	1.66E-13	9.81E-03	1.60E-13	9.59E-03	1.59E-13	9.60E-03	1.49E-13	9.09E-03
15	100.0	1.28E-13	9.16E-03	1.20E-13	8.77E-03	1.15E-13	8.49E-03	1.11E-13	8.28E-03	1.05E-13	7.93E-03
16	110.0	9.38E-14	8.15E-03	8.79E-14	7.75E-03	8.31E-14	7.43E-03	7.90E-14	7.13E-03	7.44E-14	6.78E-03
17	120.0	6.95E-14	7.19E-03	6.48E-14	6.80E-03	6.02E-14	6.40E-03	5.72E-14	6.14E-03	5.25E-14	5.69E-03
18	130.0	5.20E-14	6.31E-03	4.76E-14	5.87E-03	4.38E-14	5.47E-03	4.09E-14	5.15E-03	3.74E-14	4.76E-03
19	140.0	3.93E-14	5.53E-03	3.55E-14	5.08E-03	3.21E-14	4.65E-03	2.99E-14	4.37E-03	2.68E-14	3.96E-03
20	150.0	2.98E-14	4.82E-03	2.67E-14	4.38E-03	2.37E-14	3.94E-03	2.16E-14	3.63E-03	1.93E-14	3.27E-03
21	160.0	2.30E-14	4.22E-03	2.02E-14	3.77E-03	1.76E-14	3.33E-03	1.59E-14	3.04E-03	1.40E-14	2.70E-03
22	170.0	1.77E-14	3.67E-03	1.53E-14	3.22E-03	1.32E-14	2.81E-03	1.17E-14	2.52E-03	1.03E-14	2.24E-03
23	180.0	1.37E-14	3.18E-03	1.16E-14	2.74E-03	9.88E-15	2.36E-03	8.67E-15	2.10E-03	7.51E-15	1.83E-03
24	190.0	1.06E-14	2.75E-03	8.85E-15	2.33E-03	7.44E-15	1.98E-03	6.48E-15	1.74E-03	5.52E-15	1.50E-03
25	200.0	8.28E-15	2.38E-03	6.80E-15	1.98E-03	5.60E-15	1.65E-03	4.82E-15	1.44E-03	4.06E-15	1.22E-03
26	250.0	2.53E-15	1.13E-03	1.91E-15	8.71E-04	1.46E-15	6.72E-04	1.17E-15	5.45E-04	9.19E-16	4.33E-04
27	300.0	8.00E-16	5.17E-04	5.70E-16	3.74E-04	4.05E-16	2.69E-04	2.97E-16	1.99E-04	2.19E-16	1.48E-04
28	350.0	2.65E-16	2.33E-04	1.71E-16	1.52E-04	1.09E-16	9.88E-05	7.73E-17	7.06E-05	5.18E-17	4.78E-05
29	400.0	8.88E-17	1.02E-04	5.30E-17	6.18E-05	3.07E-17	3.63E-05	2.02E-17	2.41E-05	1.25E-17	1.51E-05
30	450.0	3.06E-17	4.45E-05	1.64E-17	2.42E-05	8.68E-18	1.30E-05	5.35E-18	8.08E-06	3.11E-18	4.74E-06
31	500.0	1.04E-17	1.87E-05	5.25E-18	9.58E-06	2.52E-18	4.66E-06	1.42E-18	2.65E-06	7.67E-19	1.44E-06
32	550.0	3.71E-18	8.06E-06	1.65E-18	3.64E-06	7.34E-19	1.64E-06	3.86E-19	8.71E-07	1.85E-19	4.23E-07
33	600.0	1.26E-18	3.26E-06	5.36E-19	1.41E-06	2.12E-19	5.65E-07	1.05E-19	2.82E-07	4.86E-20	1.32E-07
34	650.0	4.62E-19	1.40E-06	1.75E-19	5.38E-07	6.15E-20	1.92E-07	2.85E-20	8.97E-08	1.20E-20	3.83E-08
35	700.0	1.60E-19	5.63E-07	5.56E-20	1.99E-07	1.78E-20	6.44E-08	7.72E-21	2.82E-08	2.99E-21	1.10E-08
36	750.0	5.69E-20	2.30E-07	1.82E-20	7.48E-08	5.21E-21	2.16E-08	2.11E-21	8.87E-09	7.46E-22	3.16E-09
37	800.0	2.03E-20	9.34E-08	5.93E-21	2.77E-08	1.52E-21	7.16E-09	5.66E-22	2.70E-09	1.95E-22	9.42E-10
38	850.0	7.25E-21	3.76E-08	1.92E-21	1.01E-08	4.44E-22	2.37E-09	1.55E-22	8.33E-10	4.89E-23	2.66E-10
39	900.0	2.66E-21	1.55E-08	6.41E-22	3.79E-09	1.29E-22	7.71E-10	4.17E-23	2.52E-10	1.23E-23	7.49E-11
40	950.0	9.65E-22	6.26E-09	2.05E-22	1.35E-09	3.82E-23	2.55E-10	1.17E-23	7.88E-11	3.18E-24	2.16E-11
41	1000.0	3.41E-22	2.44E-09	6.91E-23	5.04E-10	1.14E-23	8.42E-11	3.09E-24	2.30E-11	8.21E-25	6.19E-12
42	1100.0	4.35E-23	3.78E-10	7.32E-24	6.46E-11	9.31E-25	8.33E-12	2.40E-25	2.17E-12	5.72E-26	5.22E-13
43	1200.0	5.65E-24	5.84E-11	8.06E-25	8.47E-12	8.11E-26	8.63E-13	1.80E-26	1.93E-13	3.96E-27	4.30E-14
44	1300.0	7.45E-25	9.04E-12	8.76E-26	1.08E-12	7.01E-27	8.75E-14	1.34E-27	1.69E-14	3.09E-28	3.94E-15

Table 3.2 (Continued) (5/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		21 (55.000 - 50.000)		22 (50.000 - 45.000)		23 (45.000 - 40.000)		24 (40.000 - 35.000)		25 (35.000 - 30.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	9.85E-12	1.88E-03	9.97E-12	1.92E-03	1.01E-11	1.96E-03	1.08E-11	2.11E-03	1.18E-11	2.33E-03
2	10.0	6.36E-12	4.85E-03	6.44E-12	4.95E-03	6.51E-12	5.05E-03	6.93E-12	5.42E-03	7.54E-12	5.96E-03
3	15.0	4.50E-12	7.72E-03	4.55E-12	7.88E-03	4.61E-12	8.04E-03	4.84E-12	8.52E-03	5.28E-12	9.38E-03
4	20.0	3.30E-12	1.00E-02	3.33E-12	1.02E-02	3.36E-12	1.04E-02	3.52E-12	1.10E-02	3.79E-12	1.20E-02
5	25.0	2.45E-12	1.17E-02	2.47E-12	1.19E-02	2.49E-12	1.21E-02	2.60E-12	1.27E-02	2.77E-12	1.37E-02
6	30.0	1.86E-12	1.28E-02	1.87E-12	1.30E-02	1.88E-12	1.31E-02	1.95E-12	1.38E-02	2.06E-12	1.47E-02
7	35.0	1.44E-12	1.34E-02	1.44E-12	1.35E-02	1.44E-12	1.37E-02	1.49E-12	1.42E-02	1.55E-12	1.50E-02
8	40.0	1.15E-12	1.40E-02	1.14E-12	1.41E-02	1.14E-12	1.42E-02	1.14E-12	1.43E-02	1.18E-12	1.49E-02
9	45.0	9.00E-13	1.39E-02	8.92E-13	1.39E-02	8.87E-13	1.39E-02	8.94E-13	1.42E-02	9.15E-13	1.46E-02
10	50.0	7.15E-13	1.36E-02	7.07E-13	1.36E-02	6.98E-13	1.35E-02	7.02E-13	1.37E-02	7.09E-13	1.40E-02
11	60.0	4.69E-13	1.29E-02	4.58E-13	1.27E-02	4.48E-13	1.25E-02	4.38E-13	1.23E-02	4.32E-13	1.23E-02
12	70.0	3.12E-13	1.17E-02	3.03E-13	1.14E-02	2.91E-13	1.11E-02	2.80E-13	1.07E-02	2.69E-13	1.04E-02
13	80.0	2.09E-13	1.02E-02	2.01E-13	9.91E-03	1.90E-13	9.42E-03	1.80E-13	9.00E-03	1.67E-13	8.45E-03
14	90.0	1.47E-13	8.79E-03	1.34E-13	8.37E-03	1.26E-13	7.88E-03	1.16E-13	7.35E-03	1.06E-13	6.77E-03
15	100.0	9.93E-14	7.57E-03	9.23E-14	7.10E-03	8.50E-14	6.59E-03	7.67E-14	6.00E-03	6.79E-14	5.36E-03
16	110.0	6.93E-14	6.39E-03	6.35E-14	5.91E-03	5.74E-14	5.38E-03	5.09E-14	4.81E-03	4.37E-14	4.17E-03
17	120.0	4.81E-14	5.28E-03	4.34E-14	4.81E-03	3.88E-14	4.34E-03	3.37E-14	3.79E-03	2.83E-14	3.21E-03
18	130.0	3.40E-14	4.37E-03	3.01E-14	3.92E-03	2.63E-14	3.44E-03	2.23E-14	2.95E-03	1.81E-14	2.42E-03
19	140.0	2.39E-14	3.57E-03	2.10E-14	3.17E-03	1.80E-14	2.74E-03	1.50E-14	2.29E-03	1.18E-14	1.83E-03
20	150.0	1.71E-14	2.93E-03	1.47E-14	2.55E-03	1.24E-14	2.16E-03	1.00E-14	1.76E-03	7.67E-15	1.36E-03
21	160.0	1.23E-14	2.39E-03	1.04E-14	2.04E-03	8.54E-15	1.69E-03	6.74E-15	1.35E-03	5.02E-15	1.02E-03
22	170.0	8.76E-15	1.93E-03	7.32E-15	1.63E-03	5.92E-15	1.33E-03	4.55E-15	1.03E-03	3.30E-15	7.54E-04
23	180.0	6.30E-15	1.56E-03	5.17E-15	1.29E-03	4.12E-15	1.03E-03	3.10E-15	7.86E-04	2.18E-15	5.57E-04
24	190.0	4.56E-15	1.25E-03	3.69E-15	1.07E-03	2.85E-15	7.98E-04	2.10E-15	5.92E-04	1.44E-15	4.11E-04
25	200.0	3.33E-15	1.01E-03	2.63E-15	8.10E-04	1.99E-15	6.17E-04	1.43E-15	4.47E-04	9.56E-16	3.02E-04
26	250.0	6.89E-16	3.28E-04	5.00E-16	2.41E-04	3.42E-16	1.66E-04	2.20E-16	1.08E-04	1.34E-16	6.59E-05
27	300.0	1.49E-16	1.02E-04	9.81E-17	6.79E-05	6.22E-17	4.34E-05	3.62E-17	2.55E-05	2.09E-17	1.49E-05
28	350.0	3.32E-17	3.09E-05	1.95E-17	1.84E-05	1.15E-17	1.09E-05	6.33E-18	6.07E-06	3.63E-18	3.51E-06
29	400.0	7.34E-18	8.95E-06	4.07E-18	5.02E-06	2.16E-18	2.68E-06	1.16E-18	1.46E-06	7.00E-19	8.84E-07
30	450.0	1.66E-18	2.57E-06	8.70E-19	1.35E-06	4.40E-19	6.90E-07	2.31E-19	3.66E-07	1.49E-19	2.39E-07
31	500.0	3.78E-19	7.20E-07	1.82E-19	3.50E-07	9.04E-20	1.75E-07	4.94E-20	9.66E-08	3.40E-20	6.71E-08
32	550.0	8.78E-20	2.02E-07	3.92E-20	9.12E-08	1.94E-20	4.56E-08	1.12E-20	2.65E-08	8.09E-21	1.93E-08
33	600.0	2.01E-20	5.52E-08	8.71E-21	2.41E-08	4.39E-21	1.23E-08	2.63E-21	7.42E-09	1.98E-21	5.64E-09
34	650.0	4.69E-21	1.51E-08	2.00E-21	6.49E-09	1.03E-21	3.37E-09	6.53E-22	2.16E-09	5.06E-22	1.69E-09
35	700.0	1.10E-21	4.11E-09	4.62E-22	1.74E-09	2.48E-22	9.42E-10	1.66E-22	6.37E-10	1.32E-22	5.11E-10
36	750.0	2.65E-22	1.13E-09	1.11E-22	4.80E-10	6.22E-23	2.71E-10	4.34E-23	1.91E-10	3.50E-23	1.56E-10
37	800.0	6.45E-23	3.14E-10	2.74E-23	1.35E-10	1.62E-23	8.02E-11	1.17E-23	5.85E-11	9.55E-24	4.83E-11
38	850.0	1.60E-23	8.80E-11	6.94E-24	3.86E-11	4.30E-24	2.41E-11	3.21E-24	1.81E-11	2.65E-24	1.51E-11
39	900.0	4.03E-24	2.49E-11	1.81E-24	1.13E-11	1.18E-24	7.38E-12	9.01E-25	5.71E-12	7.51E-25	4.80E-12
40	950.0	1.01E-24	6.94E-12	4.83E-25	3.35E-12	3.26E-25	2.28E-12	2.55E-25	1.80E-12	2.14E-25	1.53E-12
41	1000.0	2.63E-25	2.00E-12	1.32E-25	1.02E-12	9.26E-26	7.18E-13	7.35E-26	5.74E-13	6.22E-26	4.91E-13
42	1100.0	1.88E-26	1.73E-13	1.07E-26	9.94E-14	7.95E-27	7.46E-14	6.46E-27	6.11E-14	5.54E-27	5.29E-14
43	1200.0	1.50E-27	1.65E-14	9.46E-28	1.05E-14	7.35E-28	8.20E-15	6.08E-28	6.85E-15	5.28E-28	6.00E-15
44	1300.0	1.32E-28	1.69E-15	9.05E-29	1.18E-15	7.25E-29	9.50E-16	6.09E-29	8.05E-16	5.34E-29	7.13E-16

Table 3.2 (Continued) (6/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		26		27		28		29		30	
		(30.000 - 27.500)		(27.500 - 25.000)		(25.000 - 22.500)		(22.500 - 20.000)		(20.000 - 17.500)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.26E-11	2.52E-03	1.34E-11	2.69E-03	1.45E-11	2.93E-03	1.63E-11	3.31E-03	2.33E-11	4.78E-03
2	10.0	8.03E-12	6.40E-03	8.51E-12	6.82E-03	9.14E-12	7.38E-03	1.01E-11	8.25E-03	1.30E-11	1.07E-02
3	15.0	5.55E-12	9.95E-03	5.85E-12	1.06E-02	6.24E-12	1.13E-02	6.90E-12	1.26E-02	8.30E-12	1.53E-02
4	20.0	3.99E-12	1.27E-02	4.18E-12	1.34E-02	4.42E-12	1.43E-02	4.78E-12	1.56E-02	5.55E-12	1.82E-02
5	25.0	2.89E-12	1.44E-02	3.01E-12	1.51E-02	3.16E-12	1.59E-02	3.36E-12	1.71E-02	3.75E-12	1.92E-02
6	30.0	2.14E-12	1.53E-02	2.20E-12	1.59E-02	2.28E-12	1.66E-02	2.40E-12	1.76E-02	2.59E-12	1.91E-02
7	35.0	1.59E-12	1.55E-02	1.63E-12	1.60E-02	1.68E-12	1.66E-02	1.73E-12	1.72E-02	1.81E-12	1.81E-02
8	40.0	1.20E-12	1.52E-02	1.22E-12	1.56E-02	1.24E-12	1.60E-02	1.26E-12	1.63E-02	1.28E-12	1.68E-02
9	45.0	9.19E-13	1.48E-02	9.27E-13	1.51E-02	9.29E-13	1.52E-02	9.33E-13	1.54E-02	9.25E-13	1.54E-02
10	50.0	7.08E-13	1.41E-02	7.01E-13	1.40E-02	6.98E-13	1.41E-02	6.94E-13	1.41E-02	6.71E-13	1.38E-02
11	60.0	4.21E-13	1.21E-02	4.11E-13	1.19E-02	3.99E-13	1.16E-02	3.85E-13	1.13E-02	3.61E-13	1.07E-02
12	70.0	2.56E-13	1.00E-02	2.47E-13	9.70E-03	2.35E-13	9.28E-03	2.20E-13	8.77E-03	1.98E-13	7.97E-03
13	80.0	1.56E-13	7.95E-03	1.47E-13	7.55E-03	1.38E-13	7.12E-03	1.26E-13	6.54E-03	1.11E-13	5.84E-03
14	90.0	9.58E-14	6.18E-03	8.89E-14	5.77E-03	8.12E-14	5.31E-03	7.32E-14	4.82E-03	6.37E-14	4.24E-03
15	100.0	6.00E-14	4.78E-03	5.50E-14	4.41E-03	4.92E-14	3.97E-03	4.35E-14	3.54E-03	3.75E-14	3.07E-03
16	110.0	3.77E-14	3.64E-03	3.37E-14	3.27E-03	2.98E-14	2.91E-03	2.60E-14	2.56E-03	2.21E-14	2.19E-03
17	120.0	2.38E-14	2.73E-03	2.07E-14	2.39E-03	1.81E-14	2.11E-03	1.56E-14	1.82E-03	1.32E-14	1.56E-03
18	130.0	1.50E-14	2.02E-03	1.29E-14	1.75E-03	1.11E-14	1.51E-03	9.44E-15	1.30E-03	8.02E-15	1.11E-03
19	140.0	9.52E-15	1.49E-03	8.06E-15	1.27E-03	6.88E-15	1.09E-03	5.82E-15	9.28E-04	4.95E-15	7.95E-04
20	150.0	6.06E-15	1.09E-03	5.09E-15	9.17E-04	4.28E-15	7.78E-04	3.62E-15	6.62E-04	3.08E-15	5.69E-04
21	160.0	3.88E-15	7.91E-04	3.23E-15	6.62E-04	2.69E-15	5.56E-04	2.26E-15	4.72E-04	1.94E-15	4.08E-04
22	170.0	2.50E-15	5.75E-04	2.07E-15	4.79E-04	1.71E-15	3.99E-04	1.44E-15	3.39E-04	1.24E-15	2.94E-04
23	180.0	1.61E-15	4.17E-04	1.32E-15	3.44E-04	1.10E-15	2.87E-04	9.24E-16	2.44E-04	8.02E-16	2.13E-04
24	190.0	1.05E-15	3.01E-04	8.55E-16	2.47E-04	7.07E-16	2.06E-04	5.99E-16	1.76E-04	5.23E-16	1.55E-04
25	200.0	6.89E-16	2.19E-04	5.59E-16	1.79E-04	4.62E-16	1.49E-04	3.94E-16	1.28E-04	3.47E-16	1.14E-04
26	250.0	9.27E-17	4.62E-05	7.58E-17	3.80E-05	6.45E-17	3.25E-05	5.68E-17	2.89E-05	5.17E-17	2.65E-05
27	300.0	1.46E-17	1.04E-05	1.23E-17	8.88E-06	1.09E-17	7.90E-06	9.88E-18	7.24E-06	9.14E-18	6.74E-06
28	350.0	2.66E-18	2.60E-06	2.34E-18	2.30E-06	2.13E-18	2.11E-06	1.98E-18	1.97E-06	1.83E-18	1.84E-06
29	400.0	5.47E-19	6.97E-07	4.95E-19	6.35E-07	4.58E-19	5.92E-07	4.29E-19	5.59E-07	3.97E-19	5.21E-07
30	450.0	1.22E-19	1.97E-07	1.12E-19	1.82E-07	1.05E-19	1.72E-07	9.87E-20	1.63E-07	9.09E-20	1.51E-07
31	500.0	2.87E-20	5.72E-08	2.67E-20	5.34E-08	2.50E-20	5.05E-08	2.36E-20	4.80E-08	2.17E-20	4.44E-08
32	550.0	6.97E-21	1.68E-08	6.51E-21	1.58E-08	6.13E-21	1.50E-08	5.79E-21	1.42E-08	5.31E-21	1.32E-08
33	600.0	1.73E-21	4.96E-09	1.62E-21	4.68E-09	1.53E-21	4.44E-09	1.45E-21	4.24E-09	1.33E-21	3.92E-09
34	650.0	4.45E-22	1.50E-09	4.18E-22	1.42E-09	3.96E-22	1.35E-09	3.75E-22	1.29E-09	3.45E-22	1.20E-09
35	700.0	1.17E-22	4.56E-10	1.10E-22	4.32E-10	1.04E-22	4.12E-10	9.89E-23	3.94E-10	9.15E-23	3.68E-10
36	750.0	3.11E-23	1.40E-10	2.94E-23	1.33E-10	2.79E-23	1.27E-10	2.65E-23	1.21E-10	2.47E-23	1.14E-10
37	800.0	8.54E-24	4.35E-11	8.08E-24	4.15E-11	7.68E-24	3.97E-11	7.32E-24	3.81E-11	6.89E-24	3.62E-11
38	850.0	2.38E-24	1.37E-11	2.26E-24	1.31E-11	2.15E-24	1.25E-11	2.05E-24	1.21E-11	1.95E-24	1.16E-11
39	900.0	6.77E-25	4.37E-12	6.44E-25	4.18E-12	6.15E-25	4.02E-12	5.89E-25	3.88E-12	5.68E-25	3.77E-12
40	950.0	1.94E-25	1.39E-12	1.85E-25	1.34E-12	1.77E-25	1.29E-12	1.70E-25	1.25E-12	1.66E-25	1.23E-12
41	1000.0	5.66E-26	4.50E-13	5.40E-26	4.33E-13	5.18E-26	4.18E-13	4.99E-26	4.05E-13	4.98E-26	4.09E-13
42	1100.0	5.08E-27	4.90E-14	4.87E-27	4.73E-14	4.68E-27	4.58E-14	4.54E-27	4.47E-14	4.79E-27	4.75E-14
43	1200.0	4.87E-28	5.59E-15	4.69E-28	5.41E-15	4.53E-28	5.26E-15	4.43E-28	5.19E-15	5.02E-28	5.93E-15
44	1300.0	4.96E-29	6.68E-16	4.79E-29	6.49E-16	4.64E-29	6.33E-16	4.60E-29	6.32E-16	5.75E-29	7.97E-16

Table 3.2 (Continued) (7/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		31		32		33		34		35	
		(17.500 - 14.900)		(14.900 - 13.500)		(13.500 - 12.200)		(12.200 - 10.000)		(10.000 - 8.190)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	2.25E-11	4.65E-03	3.68E-11	7.69E-03	7.04E-11	1.48E-02	5.56E-11	1.18E-02	5.21E-11	1.11E-02
2	10.0	1.30E-11	1.07E-02	1.73E-11	1.44E-02	2.65E-11	2.23E-02	2.23E-11	1.90E-02	2.17E-11	1.86E-02
3	15.0	8.38E-12	1.56E-02	1.04E-11	1.96E-02	1.45E-11	2.74E-02	1.26E-11	2.40E-02	1.22E-11	2.34E-02
4	20.0	5.55E-12	1.84E-02	6.66E-12	2.22E-02	8.77E-12	2.95E-02	7.66E-12	2.60E-02	7.35E-12	2.51E-02
5	25.0	3.75E-12	1.94E-02	4.39E-12	2.29E-02	5.60E-12	2.94E-02	4.90E-12	2.60E-02	4.63E-12	2.47E-02
6	30.0	2.57E-12	1.92E-02	2.96E-12	2.22E-02	3.70E-12	2.80E-02	3.22E-12	2.46E-02	3.01E-12	2.31E-02
7	35.0	1.79E-12	1.81E-02	2.03E-12	2.08E-02	2.50E-12	2.58E-02	2.16E-12	2.25E-02	1.99E-12	2.09E-02
8	40.0	1.27E-12	1.68E-02	1.42E-12	1.90E-02	1.74E-12	2.34E-02	1.49E-12	2.03E-02	1.36E-12	1.86E-02
9	45.0	9.10E-13	1.53E-02	1.02E-12	1.72E-02	1.24E-12	2.11E-02	1.05E-12	1.81E-02	9.58E-13	1.66E-02
10	50.0	6.57E-13	1.36E-02	7.31E-13	1.53E-02	8.84E-13	1.86E-02	7.47E-13	1.58E-02	6.75E-13	1.44E-02
11	60.0	3.50E-13	1.04E-02	3.87E-13	1.16E-02	4.69E-13	1.42E-02	3.89E-13	1.19E-02	3.46E-13	1.06E-02
12	70.0	1.90E-13	7.71E-03	2.11E-13	8.63E-03	2.59E-13	1.07E-02	2.12E-13	8.82E-03	1.87E-13	7.81E-03
13	80.0	1.07E-13	5.65E-03	1.19E-13	6.36E-03	1.48E-13	7.98E-03	1.20E-13	6.51E-03	1.04E-13	5.70E-03
14	90.0	6.08E-14	4.08E-03	6.88E-14	4.65E-03	8.74E-14	5.95E-03	6.94E-14	4.77E-03	5.99E-14	4.14E-03
15	100.0	3.57E-14	2.96E-03	4.10E-14	3.42E-03	5.32E-14	4.47E-03	4.17E-14	3.54E-03	3.56E-14	3.04E-03
16	110.0	2.11E-14	2.12E-03	2.47E-14	2.50E-03	3.28E-14	3.34E-03	2.53E-14	2.60E-03	2.14E-14	2.21E-03
17	120.0	1.27E-14	1.51E-03	1.52E-14	1.82E-03	2.06E-14	2.50E-03	1.57E-14	1.92E-03	1.31E-14	1.61E-03
18	130.0	7.73E-15	1.08E-03	9.46E-15	1.33E-03	1.32E-14	1.87E-03	9.86E-15	1.41E-03	8.14E-15	1.18E-03
19	140.0	4.79E-15	7.78E-04	6.01E-15	9.83E-04	8.59E-15	1.42E-03	6.32E-15	1.05E-03	5.15E-15	8.63E-04
20	150.0	3.01E-15	5.60E-04	3.87E-15	7.27E-04	5.67E-15	1.07E-03	4.10E-15	7.83E-04	3.30E-15	6.35E-04
21	160.0	1.91E-15	4.04E-04	2.52E-15	5.39E-04	3.78E-15	8.14E-04	2.69E-15	5.85E-04	2.14E-15	4.68E-04
22	170.0	1.23E-15	2.94E-04	1.67E-15	4.03E-04	2.56E-15	6.22E-04	1.79E-15	4.40E-04	1.41E-15	3.48E-04
23	180.0	8.02E-16	2.15E-04	1.12E-15	3.02E-04	1.75E-15	4.77E-04	1.21E-15	3.32E-04	9.36E-16	2.59E-04
24	190.0	5.28E-16	1.58E-04	7.56E-16	2.28E-04	1.21E-15	3.66E-04	8.19E-16	2.51E-04	6.28E-16	1.94E-04
25	200.0	3.53E-16	1.17E-04	5.18E-16	1.73E-04	8.42E-16	2.83E-04	5.63E-16	1.91E-04	4.27E-16	1.46E-04
26	250.0	5.52E-17	2.86E-05	9.02E-17	4.71E-05	1.57E-16	8.24E-05	9.79E-17	5.19E-05	7.09E-17	3.79E-05
27	300.0	1.02E-17	7.57E-06	1.79E-17	1.34E-05	3.21E-17	2.43E-05	1.89E-17	1.45E-05	1.32E-17	1.02E-05
28	350.0	2.10E-18	2.13E-06	3.88E-18	3.97E-06	7.09E-18	7.30E-06	3.95E-18	4.11E-06	2.69E-18	2.81E-06
29	400.0	4.65E-19	6.17E-07	8.92E-19	1.19E-06	1.64E-18	2.21E-06	8.65E-19	1.17E-06	5.74E-19	7.85E-07
30	450.0	1.09E-19	1.82E-07	2.15E-19	3.64E-07	3.98E-19	6.77E-07	1.97E-19	3.38E-07	1.27E-19	2.20E-07
31	500.0	2.63E-20	5.45E-08	5.39E-20	1.13E-07	9.95E-20	2.09E-07	4.59E-20	9.75E-08	2.89E-20	6.18E-08
32	550.0	6.54E-21	1.64E-08	1.39E-20	3.50E-08	2.55E-20	6.49E-08	1.09E-20	2.80E-08	6.67E-21	1.72E-08
33	600.0	1.66E-21	4.95E-09	3.64E-21	1.09E-08	6.68E-21	2.02E-08	2.63E-21	8.02E-09	1.55E-21	4.77E-09
34	650.0	4.37E-22	1.53E-09	9.92E-22	3.50E-09	1.81E-21	6.42E-09	6.50E-22	2.33E-09	3.70E-22	1.33E-09
35	700.0	1.17E-22	4.76E-10	2.76E-22	1.13E-09	4.98E-22	2.05E-09	1.63E-22	6.76E-10	8.86E-23	3.71E-10
36	750.0	3.21E-23	1.49E-10	7.80E-23	3.66E-10	1.40E-22	6.60E-10	4.11E-23	1.96E-10	2.13E-23	1.03E-10
37	800.0	9.02E-24	4.78E-11	2.26E-23	1.21E-10	4.00E-23	2.15E-10	1.06E-23	5.75E-11	5.21E-24	2.85E-11
38	850.0	2.58E-24	1.54E-11	6.67E-24	4.03E-11	1.16E-23	7.06E-11	2.75E-24	1.69E-11	1.28E-24	7.89E-12
39	900.0	7.55E-25	5.07E-12	2.01E-24	1.36E-11	3.44E-24	2.34E-11	7.26E-25	4.99E-12	3.16E-25	2.18E-12
40	950.0	2.23E-25	1.66E-12	6.05E-25	4.56E-12	1.02E-24	7.72E-12	1.91E-25	1.46E-12	7.71E-26	5.95E-13
41	1000.0	6.69E-26	5.54E-13	1.85E-25	1.55E-12	3.05E-25	2.56E-12	5.09E-26	4.32E-13	1.89E-26	1.62E-13
42	1100.0	6.39E-27	6.41E-14	1.81E-26	1.83E-13	2.84E-26	2.89E-13	3.75E-27	3.85E-14	1.16E-27	1.20E-14
43	1200.0	6.57E-28	7.84E-15	1.86E-27	2.23E-14	2.74E-27	3.32E-14	2.90E-28	3.54E-15	7.30E-29	8.99E-16
44	1300.0	7.25E-29	1.02E-15	1.99E-28	2.81E-15	2.74E-28	3.89E-15	2.34E-29	3.35E-16	4.67E-30	6.75E-17

Table 3.2 (Continued) (8/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

I	R(CM)	36 (8.190 - 6.700) H	ATT.F	37 (6.700 - 5.490) H	ATT.F	38 (5.490 - 4.490) H	ATT.F	39 (4.490 - 3.680) H	ATT.F	40 (3.680 - 3.010) H	ATT.F
1	5.0	4.08E-11	8.72E-03	2.74E-11	5.71E-03	3.11E-11	6.33E-03	3.05E-11	6.56E-03	3.49E-11	7.99E-03
2	10.0	1.91E-11	1.63E-02	1.60E-11	1.33E-02	1.79E-11	1.46E-02	1.96E-11	1.68E-02	2.16E-11	1.98E-02
3	15.0	1.10E-11	2.12E-02	9.84E-12	1.85E-02	1.07E-11	1.96E-02	1.11E-11	2.14E-02	1.17E-11	2.41E-02
4	20.0	6.69E-12	2.29E-02	6.03E-12	2.01E-02	6.31E-12	2.05E-02	6.27E-12	2.15E-02	6.39E-12	2.34E-02
5	25.0	4.18E-12	2.23E-02	3.75E-12	1.95E-02	3.78E-12	1.93E-02	3.67E-12	1.97E-02	3.65E-12	2.09E-02
6	30.0	2.67E-12	2.06E-02	2.38E-12	1.79E-02	2.37E-12	1.74E-02	2.25E-12	1.74E-02	2.21E-12	1.82E-02
7	35.0	1.77E-12	1.86E-02	1.57E-12	1.60E-02	1.53E-12	1.53E-02	1.42E-12	1.49E-02	1.38E-12	1.55E-02
8	40.0	1.20E-12	1.65E-02	1.05E-12	1.40E-02	1.00E-12	1.31E-02	9.25E-13	1.27E-02	9.03E-13	1.32E-02
9	45.0	8.33E-13	1.44E-02	7.18E-13	1.21E-02	6.79E-13	1.12E-02	6.21E-13	1.08E-02	6.08E-13	1.13E-02
10	50.0	5.80E-13	1.24E-02	4.94E-13	1.03E-02	4.65E-13	9.46E-03	4.27E-13	9.17E-03	4.19E-13	9.58E-03
11	60.0	2.94E-13	9.05E-03	2.44E-13	7.32E-03	2.29E-13	6.72E-03	2.13E-13	6.58E-03	2.09E-13	6.90E-03
12	70.0	1.56E-13	6.51E-03	1.26E-13	5.16E-03	1.19E-13	4.74E-03	1.11E-13	4.68E-03	1.10E-13	4.92E-03
13	80.0	8.53E-14	4.67E-03	6.77E-14	3.61E-03	6.37E-14	3.32E-03	6.05E-14	3.32E-03	5.97E-14	3.50E-03
14	90.0	4.81E-14	3.33E-03	3.72E-14	2.51E-03	3.50E-14	2.31E-03	3.34E-14	2.32E-03	3.30E-14	2.45E-03
15	100.0	2.80E-14	2.39E-03	2.10E-14	1.75E-03	1.98E-14	1.61E-03	1.88E-14	1.61E-03	1.86E-14	1.70E-03
16	110.0	1.65E-14	1.70E-03	1.19E-14	1.20E-03	1.12E-14	1.11E-03	1.07E-14	1.11E-03	1.06E-14	1.17E-03
17	120.0	9.83E-15	1.21E-03	6.84E-15	8.21E-04	6.44E-15	7.56E-04	6.15E-15	7.60E-04	6.08E-15	8.01E-04
18	130.0	5.95E-15	8.60E-04	3.95E-15	5.57E-04	3.72E-15	5.12E-04	3.57E-15	5.18E-04	3.53E-15	5.46E-04
19	140.0	3.67E-15	6.14E-04	2.31E-15	3.78E-04	2.17E-15	3.47E-04	2.08E-15	3.51E-04	2.06E-15	3.70E-04
20	150.0	2.28E-15	4.39E-04	1.36E-15	2.55E-04	1.27E-15	2.33E-04	1.23E-15	2.37E-04	1.21E-15	2.50E-04
21	160.0	1.44E-15	3.15E-04	8.00E-16	1.71E-04	7.48E-16	1.56E-04	7.24E-16	1.59E-04	7.16E-16	1.68E-04
22	170.0	9.20E-16	2.27E-04	4.76E-16	1.15E-04	4.44E-16	1.05E-04	4.30E-16	1.07E-04	4.25E-16	1.12E-04
23	180.0	5.94E-16	1.65E-04	2.84E-16	7.67E-05	2.64E-16	6.97E-05	2.56E-16	7.12E-05	2.53E-16	7.50E-05
24	190.0	3.88E-16	1.20E-04	1.70E-16	5.11E-05	1.57E-16	4.62E-05	1.53E-16	4.74E-05	1.51E-16	5.00E-05
25	200.0	2.56E-16	8.76E-05	1.02E-16	3.41E-05	9.44E-17	3.07E-05	9.17E-17	3.15E-05	9.06E-17	3.32E-05
26	250.0	3.79E-17	2.03E-05	8.61E-18	4.48E-06	7.67E-18	3.91E-06	7.40E-18	3.97E-06	7.31E-18	4.18E-06
27	300.0	6.58E-18	5.06E-06	7.58E-19	5.69E-07	6.29E-19	4.61E-07	6.23E-19	4.81E-07	6.14E-19	5.06E-07
28	350.0	1.28E-18	1.34E-06	7.40E-20	7.56E-08	5.28E-20	5.27E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	400.0	2.66E-19	3.64E-07	8.47E-21	1.13E-08	4.52E-21	5.89E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	450.0	5.79E-20	1.00E-07	1.20E-21	2.03E-09	4.02E-22	6.64E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	500.0	1.29E-20	2.76E-08	2.08E-22	4.33E-10	3.72E-23	7.58E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	550.0	2.93E-21	7.57E-09	4.09E-23	1.03E-10	3.54E-24	8.72E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	600.0	6.69E-22	2.06E-09	8.65E-24	2.60E-11	3.50E-25	1.03E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	650.0	1.57E-22	5.66E-10	1.94E-24	6.84E-12	3.87E-26	1.33E-13	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	700.0	3.69E-23	1.54E-10	4.44E-25	1.81E-12	4.62E-27	1.84E-14	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	750.0	8.72E-24	4.19E-11	1.02E-25	4.79E-13	6.11E-28	2.80E-15	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	800.0	2.09E-24	1.14E-11	2.40E-26	1.28E-13	9.08E-29	4.73E-16	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	850.0	5.02E-25	3.10E-12	5.64E-27	3.40E-14	1.47E-29	8.62E-17	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	900.0	1.22E-25	8.42E-13	1.34E-27	9.02E-15	2.55E-30	1.68E-17	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	950.0	2.91E-26	2.24E-13	3.13E-28	2.35E-15	4.57E-31	3.36E-18	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	1000.0	7.00E-27	5.98E-14	7.34E-29	6.12E-16	8.63E-32	7.03E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	1100.0	4.11E-28	4.25E-15	4.10E-30	4.13E-17	3.59E-33	3.54E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	1200.0	2.46E-29	3.03E-16	2.31E-31	2.78E-18	1.88E-34	2.21E-21	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	1300.0	1.50E-30	2.17E-17	1.32E-32	1.86E-19	1.25E-35	1.72E-22	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.2 (Continued) (9/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

I	R(CM)	41 (3.010 - 2.460) H	ATT.F	42 (2.460 - 2.020) H	ATT.F	43 (2.020 - 1.650) H	ATT.F	44 (1.650 - 1.350) H	ATT.F	45 (1.350 - 1.110) H	ATT.F
1	5.0	3.73E-11	9.11E-03	4.12E-11	1.03E-02	4.62E-11	1.14E-02	5.01E-11	1.22E-02	6.08E-11	1.47E-02
2	10.0	2.25E-11	2.20E-02	2.40E-11	2.39E-02	2.51E-11	2.48E-02	2.69E-11	2.62E-02	2.82E-11	2.73E-02
3	15.0	1.19E-11	2.61E-02	1.22E-11	2.74E-02	1.23E-11	2.73E-02	1.26E-11	2.77E-02	1.26E-11	2.74E-02
4	20.0	6.39E-12	2.50E-02	6.38E-12	2.55E-02	6.24E-12	2.47E-02	6.24E-12	2.44E-02	6.11E-12	2.36E-02
5	25.0	3.61E-12	2.21E-02	3.55E-12	2.21E-02	3.49E-12	2.16E-02	3.39E-12	2.07E-02	3.34E-12	2.02E-02
6	30.0	2.17E-12	1.91E-02	2.12E-12	1.91E-02	2.06E-12	1.83E-02	2.02E-12	1.78E-02	1.98E-12	1.72E-02
7	35.0	1.36E-12	1.63E-02	1.33E-12	1.63E-02	1.29E-12	1.56E-02	1.27E-12	1.52E-02	1.25E-12	1.48E-02
8	40.0	8.89E-13	1.39E-02	8.69E-13	1.39E-02	8.48E-13	1.34E-02	8.36E-13	1.31E-02	8.24E-13	1.27E-02
9	45.0	5.99E-13	1.18E-02	5.86E-13	1.19E-02	5.74E-13	1.15E-02	5.67E-13	1.12E-02	5.60E-13	1.10E-02
10	50.0	4.13E-13	1.01E-02	4.05E-13	1.01E-02	3.98E-13	9.82E-03	3.93E-13	9.60E-03	3.89E-13	9.39E-03
11	60.0	2.07E-13	7.28E-03	2.04E-13	7.32E-03	2.00E-13	7.12E-03	1.98E-13	6.97E-03	1.96E-13	6.83E-03
12	70.0	1.09E-13	5.20E-03	1.07E-13	5.24E-03	1.05E-13	5.10E-03	1.04E-13	5.00E-03	1.03E-13	4.90E-03
13	80.0	5.92E-14	3.70E-03	5.83E-14	3.73E-03	5.76E-14	3.64E-03	5.70E-14	3.56E-03	5.65E-14	3.49E-03
14	90.0	3.27E-14	2.59E-03	3.23E-14	2.61E-03	3.18E-14	2.55E-03	3.15E-14	2.49E-03	3.12E-14	2.44E-03
15	100.0	1.84E-14	1.80E-03	1.81E-14	1.81E-03	1.79E-14	1.77E-03	1.77E-14	1.73E-03	1.76E-14	1.70E-03
16	110.0	1.05E-14	1.24E-03	1.03E-14	1.25E-03	1.02E-14	1.22E-03	1.01E-14	1.19E-03	9.99E-15	1.17E-03
17	120.0	6.02E-15	8.47E-04	5.93E-15	8.54E-04	5.85E-15	8.32E-04	5.80E-15	8.15E-04	5.74E-15	7.99E-04
18	130.0	3.49E-15	5.77E-04	3.44E-15	5.81E-04	3.39E-15	5.67E-04	3.36E-15	5.55E-04	3.33E-15	5.44E-04
19	140.0	2.04E-15	3.91E-04	2.01E-15	3.94E-04	1.98E-15	3.84E-04	1.96E-15	3.76E-04	1.95E-15	3.68E-04
20	150.0	1.20E-15	2.64E-04	1.19E-15	2.67E-04	1.16E-15	2.59E-04	1.16E-15	2.54E-04	1.14E-15	2.48E-04
21	160.0	7.09E-16	1.77E-04	7.01E-16	1.79E-04	6.88E-16	1.74E-04	6.84E-16	1.71E-04	6.75E-16	1.67E-04
22	170.0	4.20E-16	1.19E-04	4.15E-16	1.20E-04	4.08E-16	1.16E-04	4.05E-16	1.14E-04	4.00E-16	1.12E-04
23	180.0	2.50E-16	7.93E-05	2.47E-16	8.00E-05	2.43E-16	7.78E-05	2.41E-16	7.64E-05	2.38E-16	7.46E-05
24	190.0	1.50E-16	5.28E-05	1.48E-16	5.33E-05	1.45E-16	5.18E-05	1.44E-16	5.08E-05	1.42E-16	4.96E-05
25	200.0	8.97E-17	3.51E-05	8.85E-17	3.54E-05	8.70E-17	3.44E-05	8.64E-17	3.37E-05	8.53E-17	3.30E-05
26	250.0	7.23E-18	4.42E-06	7.11E-18	4.44E-06	7.01E-18	4.33E-06	6.94E-18	4.24E-06	6.87E-18	4.15E-06
27	300.0	6.08E-19	5.35E-07	5.99E-19	5.38E-07	5.89E-19	5.24E-07	5.84E-19	5.13E-07	5.77E-19	5.02E-07
28	350.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	800.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	850.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	900.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	950.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	1000.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	1100.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	1200.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	1300.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.2 (Continued) (10/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		46		47		48		49		50	
		(1.110 -	0.907)	(0.907 -	0.743)	(0.743 -	0.498)	(0.498 -	0.334)	(0.334 -	0.224)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	5.93E-11	1.43E-02	6.05E-11	1.59E-02	6.49E-11	1.98E-02	6.88E-11	2.76E-02	7.20E-11	4.13E-02
2	10.0	2.90E-11	2.80E-02	2.92E-11	3.07E-02	2.91E-11	3.55E-02	2.87E-11	4.60E-02	2.89E-11	6.64E-02
3	15.0	1.26E-11	2.74E-02	1.26E-11	2.98E-02	1.23E-11	3.36E-02	1.17E-11	4.23E-02	1.16E-11	6.00E-02
4	20.0	6.02E-12	2.33E-02	5.99E-12	2.52E-02	5.83E-12	2.84E-02	5.59E-12	3.58E-02	5.54E-12	5.08E-02
5	25.0	3.25E-12	1.97E-02	3.24E-12	2.13E-02	3.23E-12	2.46E-02	3.08E-12	3.09E-02	3.06E-12	4.40E-02
6	30.0	1.95E-12	1.70E-02	1.95E-12	1.85E-02	1.93E-12	2.12E-02	1.86E-12	2.68E-02	1.85E-12	3.83E-02
7	35.0	1.24E-12	1.47E-02	1.23E-12	1.59E-02	1.23E-12	1.83E-02	1.19E-12	2.33E-02	1.18E-12	3.33E-02
8	40.0	8.18E-13	1.27E-02	8.16E-13	1.38E-02	8.11E-13	1.58E-02	7.90E-13	2.03E-02	7.88E-13	2.89E-02
9	45.0	5.56E-13	1.09E-02	5.55E-13	1.18E-02	5.52E-13	1.36E-02	5.41E-13	1.76E-02	5.40E-13	2.51E-02
10	50.0	3.87E-13	9.35E-03	3.86E-13	1.02E-02	3.84E-13	1.17E-02	3.77E-13	1.51E-02	3.76E-13	2.16E-02
11	60.0	1.95E-13	6.80E-03	1.95E-13	7.39E-03	1.94E-13	8.51E-03	1.91E-13	1.10E-02	1.91E-13	1.57E-02
12	70.0	1.03E-13	4.88E-03	1.03E-13	5.30E-03	1.02E-13	6.11E-03	1.01E-13	7.92E-03	1.01E-13	1.13E-02
13	80.0	5.61E-14	3.47E-03	5.60E-14	3.78E-03	5.57E-14	4.35E-03	5.44E-14	5.58E-03	5.43E-14	7.98E-03
14	90.0	3.11E-14	2.43E-03	3.10E-14	2.65E-03	3.08E-14	3.04E-03	2.94E-14	3.81E-03	2.93E-14	5.45E-03
15	100.0	1.75E-14	1.69E-03	1.74E-14	1.84E-03	1.73E-14	2.11E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16	110.0	9.94E-15	1.16E-03	9.92E-15	1.26E-03	9.87E-15	1.45E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
17	120.0	5.71E-15	7.95E-04	5.70E-15	8.65E-04	5.67E-15	9.96E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18	130.0	3.31E-15	5.41E-04	3.31E-15	5.89E-04	3.29E-15	6.78E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19	140.0	1.93E-15	3.67E-04	1.93E-15	3.99E-04	1.93E-15	4.61E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	150.0	1.14E-15	2.48E-04	1.14E-15	2.70E-04	1.13E-15	3.11E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
21	160.0	6.73E-16	1.67E-04	6.72E-16	1.81E-04	6.69E-16	2.09E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22	170.0	3.99E-16	1.11E-04	3.98E-16	1.21E-04	3.97E-16	1.40E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
23	180.0	2.38E-16	7.44E-05	2.37E-16	8.09E-05	2.36E-16	9.32E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
24	190.0	1.42E-16	4.95E-05	1.42E-16	5.39E-05	1.41E-16	6.20E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25	200.0	8.50E-17	3.29E-05	8.49E-17	3.58E-05	8.45E-17	4.12E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26	250.0	6.83E-18	4.13E-06	6.82E-18	4.49E-06	6.78E-18	5.16E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
27	300.0	5.74E-19	5.00E-07	5.73E-19	5.43E-07	5.70E-19	6.25E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
28	350.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	800.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	850.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	900.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	950.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	1000.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	1100.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	1200.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	1300.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.2 (Continued) (11/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / WATER / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		51		52		53		54		55	
		(0.224 -	0.150)	(0.150 -	0.087)	(0.087 -	0.032)	(0.032 -	0.015)	(0.015 -	0.007)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	7.55E-11	6.21E-02	7.87E-11	9.79E-02	8.23E-11	1.81E-01	8.54E-11	3.87E-01	8.74E-11	7.14E-01
2	10.0	2.90E-11	9.55E-02	2.90E-11	1.44E-01	2.90E-11	2.54E-01	2.88E-11	5.23E-01	2.87E-11	9.39E-01
3	15.0	1.15E-11	8.51E-02	1.14E-11	1.27E-01	1.13E-11	2.22E-01	1.12E-11	4.55E-01	1.11E-11	8.15E-01
4	20.0	5.48E-12	7.22E-02	5.44E-12	1.08E-01	5.40E-12	1.90E-01	5.36E-12	3.89E-01	5.34E-12	6.98E-01
5	25.0	3.04E-12	6.26E-02	3.03E-12	9.42E-02	3.01E-12	1.65E-01	3.00E-12	3.40E-01	3.00E-12	6.11E-01
6	30.0	1.84E-12	5.46E-02	1.84E-12	8.22E-02	1.83E-12	1.45E-01	1.82E-12	2.98E-01	1.82E-12	5.35E-01
7	35.0	1.18E-12	4.76E-02	1.18E-12	7.17E-02	1.17E-12	1.26E-01	1.17E-12	2.60E-01	1.17E-12	4.68E-01
8	40.0	7.85E-13	4.14E-02	7.83E-13	6.24E-02	7.81E-13	1.10E-01	7.80E-13	2.26E-01	7.79E-13	4.07E-01
9	45.0	5.38E-13	3.59E-02	5.37E-13	5.41E-02	5.36E-13	9.52E-02	5.35E-13	1.96E-01	5.34E-13	3.53E-01
10	50.0	3.75E-13	3.09E-02	3.74E-13	4.65E-02	3.73E-13	8.19E-02	3.73E-13	1.69E-01	3.72E-13	3.04E-01
11	60.0	1.90E-13	2.25E-02	1.90E-13	3.40E-02	1.89E-13	5.98E-02	1.89E-13	1.23E-01	1.89E-13	2.22E-01
12	70.0	1.00E-13	1.62E-02	1.00E-13	2.44E-02	1.00E-13	4.30E-02	9.98E-14	8.86E-02	9.97E-14	1.59E-01
13	80.0	5.42E-14	1.14E-02	5.40E-14	1.72E-02	5.39E-14	3.03E-02	5.38E-14	6.25E-02	5.38E-14	1.12E-01
14	90.0	2.92E-14	7.80E-03	2.92E-14	1.18E-02	2.91E-14	2.07E-02	2.91E-14	4.27E-02	2.90E-14	7.68E-02
15	100.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16	110.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
17	120.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18	130.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19	140.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	150.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
21	160.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22	170.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
23	180.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
24	190.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25	200.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26	250.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
27	300.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
28	350.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	800.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	850.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	900.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	950.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	1000.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	1100.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	1200.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	1300.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.3 Dose equivalent per source neutrons and attenuation factor of neutrons in ordinary concrete (1/11).

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

I	R(CM)	1 (400.000 - 375.000)		2 (375.000 - 350.000)		3 (350.000 - 325.000)		4 (325.000 - 300.000)		5 (300.000 - 275.000)	
		H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.27E-08	1.58E+00	1.24E-08	1.59E+00	1.48E-08	1.94E+00	1.44E-08	1.95E+00	1.15E-08	1.61E+00
2	10.0	3.20E-09	1.60E+00	3.14E-09	1.60E+00	3.28E-09	1.72E+00	3.20E-09	1.73E+00	2.91E-09	1.62E+00
3	15.0	1.53E-09	1.71E+00	1.50E-09	1.72E+00	1.52E-09	1.80E+00	1.48E-09	1.81E+00	1.38E-09	1.74E+00
4	20.0	9.28E-10	1.85E+00	9.08E-10	1.86E+00	8.95E-10	1.88E+00	8.71E-10	1.88E+00	8.36E-10	1.87E+00
5	25.0	6.10E-10	1.90E+00	5.96E-10	1.91E+00	5.88E-10	1.93E+00	5.70E-10	1.93E+00	5.47E-10	1.91E+00
6	30.0	4.28E-10	1.92E+00	4.18E-10	1.93E+00	4.25E-10	2.01E+00	4.12E-10	2.01E+00	3.81E-10	1.92E+00
7	35.0	3.15E-10	1.92E+00	3.07E-10	1.92E+00	3.10E-10	1.99E+00	3.00E-10	1.98E+00	2.78E-10	1.90E+00
8	40.0	2.39E-10	1.90E+00	2.33E-10	1.90E+00	2.33E-10	1.96E+00	2.25E-10	1.95E+00	2.09E-10	1.87E+00
9	45.0	1.86E-10	1.87E+00	1.80E-10	1.87E+00	1.80E-10	1.91E+00	1.73E-10	1.90E+00	1.61E-10	1.82E+00
10	50.0	1.50E-10	1.87E+00	1.45E-10	1.86E+00	1.41E-10	1.86E+00	1.36E-10	1.84E+00	1.29E-10	1.80E+00
11	55.0	1.20E-10	1.81E+00	1.16E-10	1.80E+00	1.12E-10	1.78E+00	1.07E-10	1.76E+00	1.02E-10	1.73E+00
12	60.0	9.77E-11	1.75E+00	9.45E-11	1.74E+00	9.08E-11	1.72E+00	8.68E-11	1.69E+00	8.26E-11	1.66E+00
13	65.0	8.02E-11	1.69E+00	7.75E-11	1.67E+00	7.43E-11	1.65E+00	7.08E-11	1.62E+00	6.72E-11	1.59E+00
14	70.0	6.65E-11	1.62E+00	6.41E-11	1.61E+00	6.13E-11	1.58E+00	5.83E-11	1.55E+00	5.52E-11	1.51E+00
15	75.0	5.55E-11	1.56E+00	5.35E-11	1.54E+00	5.10E-11	1.51E+00	4.84E-11	1.47E+00	4.57E-11	1.44E+00
16	80.0	4.67E-11	1.49E+00	4.49E-11	1.47E+00	4.30E-11	1.44E+00	4.07E-11	1.41E+00	3.81E-11	1.36E+00
17	85.0	3.95E-11	1.42E+00	3.79E-11	1.40E+00	3.62E-11	1.37E+00	3.42E-11	1.34E+00	3.20E-11	1.29E+00
18	90.0	3.36E-11	1.36E+00	3.22E-11	1.33E+00	3.06E-11	1.30E+00	2.89E-11	1.27E+00	2.70E-11	1.22E+00
19	95.0	2.87E-11	1.29E+00	2.74E-11	1.27E+00	2.60E-11	1.23E+00	2.45E-11	1.20E+00	2.29E-11	1.15E+00
20	100.0	2.46E-11	1.23E+00	2.35E-11	1.20E+00	2.23E-11	1.17E+00	2.09E-11	1.13E+00	1.94E-11	1.09E+00
21	110.0	1.83E-11	1.10E+00	1.74E-11	1.08E+00	1.64E-11	1.04E+00	1.53E-11	1.00E+00	1.42E-11	9.61E-01
22	120.0	1.37E-11	9.87E-01	1.30E-11	9.60E-01	1.22E-11	9.25E-01	1.14E-11	8.88E-01	1.05E-11	8.46E-01
23	130.0	1.04E-11	8.78E-01	9.87E-12	8.52E-01	9.21E-12	8.18E-01	8.55E-12	7.81E-01	7.86E-12	7.41E-01
24	140.0	7.97E-12	7.79E-01	7.52E-12	7.53E-01	6.99E-12	7.20E-01	6.46E-12	6.85E-01	5.91E-12	6.47E-01
25	150.0	6.18E-12	6.93E-01	5.86E-12	6.74E-01	5.34E-12	6.31E-01	4.91E-12	5.98E-01	4.52E-12	5.68E-01
26	160.0	4.78E-12	6.09E-01	4.51E-12	5.91E-01	4.10E-12	5.51E-01	3.76E-12	5.20E-01	3.44E-12	4.92E-01
27	170.0	3.70E-12	5.34E-01	3.49E-12	5.16E-01	3.16E-12	4.80E-01	2.89E-12	4.51E-01	2.63E-12	4.25E-01
28	180.0	2.88E-12	4.66E-01	2.71E-12	4.49E-01	2.45E-12	4.17E-01	2.23E-12	3.90E-01	2.02E-12	3.66E-01
29	190.0	2.25E-12	4.06E-01	2.11E-12	3.90E-01	1.90E-12	3.61E-01	1.72E-12	3.37E-01	1.56E-12	3.14E-01
30	200.0	1.77E-12	3.52E-01	1.65E-12	3.37E-01	1.50E-12	3.14E-01	1.35E-12	2.93E-01	1.20E-12	2.69E-01
31	220.0	1.09E-12	2.63E-01	1.01E-12	2.51E-01	9.14E-13	2.32E-01	8.20E-13	2.15E-01	7.26E-13	1.96E-01
32	240.0	6.80E-13	1.95E-01	6.27E-13	1.85E-01	5.62E-13	1.70E-01	5.01E-13	1.56E-01	4.41E-13	1.42E-01
33	260.0	4.26E-13	1.44E-01	3.91E-13	1.35E-01	3.48E-13	1.24E-01	3.09E-13	1.13E-01	2.69E-13	1.02E-01
34	280.0	2.68E-13	1.05E-01	2.45E-13	9.82E-02	2.17E-13	8.94E-02	1.91E-13	8.10E-02	1.66E-13	7.25E-02
35	300.0	1.71E-13	7.67E-02	1.54E-13	7.09E-02	1.36E-13	6.41E-02	1.19E-13	5.78E-02	1.03E-13	5.16E-02
36	350.0	5.48E-14	3.35E-02	4.89E-14	3.07E-02	4.25E-14	2.74E-02	3.67E-14	2.43E-02	3.12E-14	2.14E-02
37	400.0	1.78E-14	1.42E-02	1.58E-14	1.29E-02	1.35E-14	1.14E-02	1.15E-14	9.95E-03	9.64E-15	8.61E-03
38	450.0	5.83E-15	5.89E-03	5.12E-15	5.30E-03	4.34E-15	4.62E-03	3.64E-15	3.99E-03	3.01E-15	3.40E-03
39	500.0	1.92E-15	2.39E-03	1.67E-15	2.14E-03	1.40E-15	1.84E-03	1.16E-15	1.57E-03	9.50E-16	1.33E-03
40	550.0	6.34E-16	9.56E-04	5.49E-16	8.50E-04	4.55E-16	7.22E-04	3.72E-16	6.08E-04	3.00E-16	5.07E-04
41	600.0	2.10E-16	3.77E-04	1.80E-16	3.32E-04	1.48E-16	2.80E-04	1.19E-16	2.33E-04	9.48E-17	1.91E-04
42	650.0	6.96E-17	1.47E-04	5.93E-17	1.28E-04	4.82E-17	1.07E-04	3.85E-17	8.79E-05	3.00E-17	7.08E-05
43	700.0	2.31E-17	5.63E-05	1.95E-17	4.89E-05	1.57E-17	4.04E-05	1.24E-17	3.29E-05	9.56E-18	2.61E-05
44	750.0	7.64E-18	2.14E-05	6.41E-18	1.84E-05	5.11E-18	1.51E-05	3.99E-18	1.22E-05	3.03E-18	9.53E-06

Table 3.3 (Continued) (2/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

I	R(CM)	6 (275.000 - 250.000)		7 (250.000 - 225.000)		8 (225.000 - 200.000)		9 (200.000 - 180.000)		10 (180.000 - 160.000)	
		H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.11E-08	1.61E+00	1.08E-08	1.62E+00	1.04E-08	1.63E+00	1.01E-08	1.64E+00	1.00E-08	1.64E+00
2	10.0	2.82E-09	1.63E+00	2.73E-09	1.64E+00	2.64E-09	1.65E+00	2.57E-09	1.66E+00	2.54E-09	1.66E+00
3	15.0	1.34E-09	1.74E+00	1.30E-09	1.75E+00	1.25E-09	1.77E+00	1.22E-09	1.77E+00	1.20E-09	1.77E+00
4	20.0	8.09E-10	1.87E+00	7.82E-10	1.88E+00	7.54E-10	1.89E+00	7.34E-10	1.89E+00	7.19E-10	1.88E+00
5	25.0	5.28E-10	1.91E+00	5.09E-10	1.91E+00	4.90E-10	1.92E+00	4.75E-10	1.92E+00	4.64E-10	1.90E+00
6	30.0	3.67E-10	1.91E+00	3.53E-10	1.91E+00	3.39E-10	1.91E+00	3.28E-10	1.90E+00	3.19E-10	1.88E+00
7	35.0	2.67E-10	1.89E+00	2.57E-10	1.89E+00	2.46E-10	1.88E+00	2.36E-10	1.87E+00	2.29E-10	1.84E+00
8	40.0	2.01E-10	1.85E+00	1.92E-10	1.84E+00	1.83E-10	1.83E+00	1.75E-10	1.81E+00	1.69E-10	1.77E+00
9	45.0	1.54E-10	1.80E+00	1.47E-10	1.79E+00	1.40E-10	1.77E+00	1.33E-10	1.74E+00	1.28E-10	1.70E+00
10	50.0	1.23E-10	1.78E+00	1.17E-10	1.76E+00	1.11E-10	1.74E+00	1.05E-10	1.70E+00	1.01E-10	1.65E+00
11	55.0	9.76E-11	1.71E+00	9.26E-11	1.68E+00	8.74E-11	1.66E+00	8.27E-11	1.61E+00	7.87E-11	1.56E+00
12	60.0	7.84E-11	1.63E+00	7.42E-11	1.60E+00	6.98E-11	1.57E+00	6.57E-11	1.53E+00	6.23E-11	1.47E+00
13	65.0	6.36E-11	1.55E+00	6.01E-11	1.52E+00	5.63E-11	1.49E+00	5.28E-11	1.44E+00	4.98E-11	1.38E+00
14	70.0	5.21E-11	1.48E+00	4.91E-11	1.44E+00	4.58E-11	1.41E+00	4.28E-11	1.36E+00	4.02E-11	1.29E+00
15	75.0	4.31E-11	1.40E+00	4.04E-11	1.37E+00	3.76E-11	1.33E+00	3.50E-11	1.27E+00	3.27E-11	1.21E+00
16	80.0	3.58E-11	1.32E+00	3.35E-11	1.29E+00	3.11E-11	1.25E+00	2.88E-11	1.19E+00	2.68E-11	1.12E+00
17	85.0	3.00E-11	1.25E+00	2.80E-11	1.21E+00	2.58E-11	1.17E+00	2.39E-11	1.11E+00	2.21E-11	1.05E+00
18	90.0	2.52E-11	1.18E+00	2.34E-11	1.14E+00	2.16E-11	1.10E+00	1.99E-11	1.04E+00	1.83E-11	9.72E-01
19	95.0	2.13E-11	1.11E+00	1.97E-11	1.07E+00	1.81E-11	1.03E+00	1.66E-11	9.68E-01	1.52E-11	9.01E-01
20	100.0	1.81E-11	1.04E+00	1.67E-11	1.00E+00	1.53E-11	9.58E-01	1.40E-11	9.01E-01	1.28E-11	8.35E-01
21	110.0	1.31E-11	9.18E-01	1.21E-11	8.78E-01	1.10E-11	8.34E-01	9.96E-12	7.77E-01	9.01E-12	7.15E-01
22	120.0	9.66E-12	8.04E-01	8.84E-12	7.64E-01	7.99E-12	7.21E-01	7.18E-12	6.68E-01	6.45E-12	6.08E-01
23	130.0	7.18E-12	7.01E-01	6.53E-12	6.63E-01	5.87E-12	6.21E-01	5.23E-12	5.71E-01	4.65E-12	5.15E-01
24	140.0	5.37E-12	6.09E-01	4.86E-12	5.72E-01	4.34E-12	5.33E-01	3.84E-12	4.86E-01	3.39E-12	4.35E-01
25	150.0	4.08E-12	5.31E-01	3.68E-12	4.97E-01	3.27E-12	4.60E-01	2.87E-12	4.16E-01	2.51E-12	3.70E-01
26	160.0	3.09E-12	4.58E-01	2.77E-12	4.26E-01	2.45E-12	3.92E-01	2.13E-12	3.52E-01	1.85E-12	3.10E-01
27	170.0	2.36E-12	3.93E-01	2.10E-12	3.64E-01	1.84E-12	3.33E-01	1.59E-12	2.97E-01	1.37E-12	2.59E-01
28	180.0	1.80E-12	3.37E-01	1.60E-12	3.10E-01	1.39E-12	2.83E-01	1.20E-12	2.50E-01	1.02E-12	2.16E-01
29	190.0	1.38E-12	2.88E-01	1.22E-12	2.64E-01	1.06E-12	2.39E-01	9.01E-13	2.10E-01	7.62E-13	1.80E-01
30	200.0	1.06E-12	2.46E-01	9.33E-13	2.24E-01	8.05E-13	2.02E-01	6.81E-13	1.76E-01	5.71E-13	1.50E-01
31	220.0	6.34E-13	1.77E-01	5.51E-13	1.60E-01	4.70E-13	1.43E-01	3.93E-13	1.23E-01	3.24E-13	1.03E-01
32	240.0	3.81E-13	1.27E-01	3.29E-13	1.14E-01	2.77E-13	1.00E-01	2.28E-13	8.49E-02	1.85E-13	6.99E-02
33	260.0	2.31E-13	9.04E-02	1.97E-13	8.07E-02	1.65E-13	6.98E-02	1.34E-13	5.84E-02	1.07E-13	4.73E-02
34	280.0	1.41E-13	6.39E-02	1.19E-13	5.62E-02	9.86E-14	4.84E-02	7.90E-14	4.00E-02	6.20E-14	3.19E-02
35	300.0	8.67E-14	4.51E-02	7.28E-14	3.93E-02	5.95E-14	3.35E-02	4.70E-14	2.73E-02	3.63E-14	2.14E-02
36	350.0	2.58E-14	1.83E-02	2.12E-14	1.56E-02	1.69E-14	1.30E-02	1.29E-14	1.02E-02	9.61E-15	7.71E-03
37	400.0	7.83E-15	7.24E-03	6.31E-15	6.06E-03	4.91E-15	4.92E-03	3.63E-15	3.75E-03	2.59E-15	2.72E-03
38	450.0	2.40E-15	2.81E-03	1.90E-15	2.30E-03	1.44E-15	1.83E-03	1.03E-15	1.35E-03	7.09E-16	9.41E-04
39	500.0	7.45E-16	1.08E-03	5.78E-16	8.67E-04	4.29E-16	6.72E-04	2.97E-16	4.80E-04	1.97E-16	3.22E-04
40	550.0	2.31E-16	4.05E-04	1.76E-16	3.20E-04	1.28E-16	2.42E-04	8.59E-17	1.68E-04	5.48E-17	1.09E-04
41	600.0	7.20E-17	1.50E-04	5.39E-17	1.16E-04	3.82E-17	8.62E-05	2.49E-17	5.78E-05	1.53E-17	3.60E-05
42	650.0	2.24E-17	5.48E-05	1.65E-17	4.18E-05	1.14E-17	3.03E-05	7.21E-18	1.97E-05	4.27E-18	1.18E-05
43	700.0	7.06E-18	2.00E-05	5.08E-18	1.50E-05	3.45E-18	1.06E-05	2.12E-18	6.70E-06	1.20E-18	3.86E-06
44	750.0	2.21E-18	7.18E-06	1.56E-18	5.28E 06	1.04E-18	3.66E-06	6.16E-19	2.24E-06	3.39E-19	1.25E-06

Table 3.3 (Continued) (3/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		11		12		13		14		15	
		(160.000 - 140.000)		(140.000 - 120.000)		(120.000 - 110.000)		(110.000 - 100.000)		(100.000 - 90.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	9.87E-09	1.64E+00	9.71E-09	1.65E+00	9.58E-09	1.65E+00	9.48E-09	1.66E+00	1.13E-08	2.01E+00
2	10.0	2.50E-09	1.67E+00	2.46E-09	1.67E+00	2.43E-09	1.68E+00	2.41E-09	1.68E+00	2.54E-09	1.80E+00
3	15.0	1.18E-09	1.77E+00	1.16E-09	1.78E+00	1.14E-09	1.77E+00	1.13E-09	1.77E+00	1.16E-09	1.85E+00
4	20.0	7.06E-10	1.88E+00	6.88E-10	1.87E+00	6.73E-10	1.86E+00	6.62E-10	1.85E+00	6.56E-10	1.86E+00
5	25.0	4.53E-10	1.89E+00	4.39E-10	1.86E+00	4.27E-10	1.84E+00	4.18E-10	1.83E+00	4.11E-10	1.82E+00
6	30.0	3.10E-10	1.86E+00	2.98E-10	1.82E+00	2.88E-10	1.79E+00	2.81E-10	1.77E+00	2.83E-10	1.80E+00
7	35.0	2.21E-10	1.81E+00	2.11E-10	1.76E+00	2.02E-10	1.71E+00	1.96E-10	1.68E+00	1.96E-10	1.70E+00
8	40.0	1.63E-10	1.73E+00	1.54E-10	1.67E+00	1.46E-10	1.62E+00	1.41E-10	1.58E+00	1.39E-10	1.58E+00
9	45.0	1.22E-10	1.65E+00	1.15E-10	1.58E+00	1.09E-10	1.52E+00	1.04E-10	1.47E+00	1.02E-10	1.46E+00
10	50.0	9.57E-11	1.59E+00	8.92E-11	1.51E+00	8.35E-11	1.44E+00	7.96E-11	1.39E+00	7.55E-11	1.34E+00
11	55.0	7.43E-11	1.50E+00	6.87E-11	1.41E+00	6.38E-11	1.33E+00	6.04E-11	1.28E+00	5.69E-11	1.22E+00
12	60.0	5.85E-11	1.40E+00	5.36E-11	1.31E+00	4.94E-11	1.23E+00	4.65E-11	1.17E+00	4.35E-11	1.11E+00
13	65.0	4.65E-11	1.31E+00	4.22E-11	1.21E+00	3.86E-11	1.13E+00	3.61E-11	1.07E+00	3.36E-11	1.00E+00
14	70.0	3.73E-11	1.22E+00	3.36E-11	1.12E+00	3.05E-11	1.03E+00	2.83E-11	9.71E-01	2.62E-11	9.08E-01
15	75.0	3.02E-11	1.13E+00	2.70E-11	1.03E+00	2.43E-11	9.42E-01	2.24E-11	8.82E-01	2.06E-11	8.19E-01
16	80.0	2.46E-11	1.05E+00	2.18E-11	9.47E-01	1.94E-11	8.59E-01	1.79E-11	7.99E-01	1.64E-11	7.42E-01
17	85.0	2.01E-11	9.69E-01	1.77E-11	8.69E-01	1.57E-11	7.82E-01	1.43E-11	7.23E-01	1.30E-11	6.66E-01
18	90.0	1.66E-11	8.95E-01	1.45E-11	7.97E-01	1.27E-11	7.11E-01	1.15E-11	6.53E-01	1.04E-11	5.98E-01
19	95.0	1.37E-11	8.26E-01	1.19E-11	7.29E-01	1.04E-11	6.46E-01	9.35E-12	5.90E-01	8.37E-12	5.35E-01
20	100.0	1.14E-11	7.61E-01	9.80E-12	6.66E-01	8.48E-12	5.85E-01	7.60E-12	5.31E-01	6.76E-12	4.79E-01
21	110.0	7.98E-12	6.43E-01	6.74E-12	5.54E-01	5.74E-12	4.80E-01	5.09E-12	4.30E-01	4.45E-12	3.82E-01
22	120.0	5.64E-12	5.41E-01	4.69E-12	4.59E-01	3.93E-12	3.91E-01	3.45E-12	3.47E-01	2.97E-12	3.03E-01
23	130.0	4.03E-12	4.53E-01	3.30E-12	3.79E-01	2.73E-12	3.18E-01	2.36E-12	2.79E-01	2.00E-12	2.40E-01
24	140.0	2.90E-12	3.79E-01	2.34E-12	3.12E-01	1.90E-12	2.58E-01	1.63E-12	2.23E-01	1.36E-12	1.89E-01
25	150.0	2.12E-12	3.18E-01	1.69E-12	2.58E-01	1.35E-12	2.10E-01	1.14E-12	1.79E-01	9.33E-13	1.49E-01
26	160.0	1.55E-12	2.64E-01	1.21E-12	2.11E-01	9.56E-13	1.69E-01	7.98E-13	1.43E-01	6.43E-13	1.17E-01
27	170.0	1.13E-12	2.18E-01	8.75E-13	1.72E-01	6.80E-13	1.36E-01	5.60E-13	1.13E-01	4.45E-13	9.11E-02
28	180.0	8.34E-13	1.80E-01	6.34E-13	1.40E-01	4.85E-13	1.08E-01	3.95E-13	8.95E-02	3.10E-13	7.10E-02
29	190.0	6.17E-13	1.48E-01	4.62E-13	1.13E-01	3.48E-13	8.67E-02	2.80E-13	7.07E-02	2.16E-13	5.53E-02
30	200.0	4.57E-13	1.22E-01	3.37E-13	9.17E-02	2.50E-13	6.91E-02	1.99E-13	5.57E-02	1.53E-13	4.33E-02
31	220.0	2.54E-13	8.18E-02	1.82E-13	5.97E-02	1.31E-13	4.37E-02	1.01E-13	3.43E-02	7.55E-14	2.59E-02
32	240.0	1.42E-13	5.45E-02	9.88E-14	3.86E-02	6.89E-14	2.74E-02	5.22E-14	2.10E-02	3.76E-14	1.53E-02
33	260.0	8.02E-14	3.61E-02	5.42E-14	2.49E-02	3.66E-14	1.71E-02	2.71E-14	1.28E-02	1.89E-14	9.05E-03
34	280.0	4.55E-14	2.38E-02	2.99E-14	1.59E-02	1.96E-14	1.06E-02	1.42E-14	7.76E-03	9.56E-15	5.31E-03
35	300.0	2.61E-14	1.57E-02	1.67E-14	1.02E-02	1.06E-14	6.58E-03	7.45E-15	4.69E-03	4.86E-15	3.10E-03
36	350.0	6.55E-15	5.35E-03	3.89E-15	3.24E-03	2.28E-15	1.93E-03	1.51E-15	1.29E-03	9.11E-16	7.91E-04
37	400.0	1.68E-15	1.79E-03	9.28E-16	1.01E-03	5.03E-16	5.55E-04	3.13E-16	3.50E-04	1.74E-16	1.97E-04
38	450.0	4.35E-16	5.88E-04	2.25E-16	3.09E-04	1.12E-16	1.57E-04	6.54E-17	9.27E-05	3.36E-17	4.82E-05
39	500.0	1.15E-16	1.91E-04	5.52E-17	9.38E-05	2.54E-17	4.38E-05	1.39E-17	2.43E-05	6.55E-18	1.16E-05
40	550.0	3.04E-17	6.12E-05	1.36E-17	2.80E-05	5.76E-18	1.20E-05	2.96E-18	6.26E-06	1.28E-18	2.75E-06
41	600.0	8.06E-18	1.93E-05	3.37E-18	8.23E-06	1.31E-18	3.25E-06	6.30E-19	1.58E-06	2.53E-19	6.44E-07
42	650.0	2.14E-18	6.03E-06	8.33E-19	2.39E-06	2.97E-19	8.66E-07	1.34E-19	3.96E-07	5.00E-20	1.50E-07
43	700.0	5.75E-19	1.88E-06	2.09E-19	6.95E-07	6.82E-20	2.31E-07	2.88E-20	9.88E-08	9.91E-21	3.44E-08
44	750.0	1.54E-19	5.77E-07	5.22E-20	1.99E-07	1.56E-20	6.06E-08	6.19E-21	2.44E-08	1.97E-21	7.84E-09

Table 3.3 (Continued) (4/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		16		17		18		19		20	
		(90.000 - 80.000)		(80.000 - 70.000)		(70.000 - 65.000)		(65.000 - 60.000)		(60.000 - 55.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	9.28E-09	1.66E+00	9.15E-09	1.67E+00	1.09E-08	2.01E+00	1.08E-08	2.02E+00	1.07E-08	2.02E+00
2	10.0	2.35E-09	1.69E+00	2.32E-09	1.69E+00	2.44E-09	1.80E+00	2.41E-09	1.80E+00	2.38E-09	1.80E+00
3	15.0	1.10E-09	1.77E+00	1.08E-09	1.77E+00	1.10E-09	1.82E+00	1.08E-09	1.82E+00	1.06E-09	1.81E+00
4	20.0	6.38E-10	1.83E+00	6.21E-10	1.81E+00	6.10E-10	1.80E+00	5.99E-10	1.79E+00	5.86E-10	1.77E+00
5	25.0	3.99E-10	1.79E+00	3.85E-10	1.76E+00	3.76E-10	1.73E+00	3.67E-10	1.71E+00	3.57E-10	1.68E+00
6	30.0	2.64E-10	1.71E+00	2.54E-10	1.66E+00	2.53E-10	1.68E+00	2.46E-10	1.65E+00	2.38E-10	1.61E+00
7	35.0	1.83E-10	1.61E+00	1.74E-10	1.55E+00	1.71E-10	1.55E+00	1.65E-10	1.51E+00	1.59E-10	1.46E+00
8	40.0	1.30E-10	1.49E+00	1.22E-10	1.43E+00	1.19E-10	1.41E+00	1.14E-10	1.36E+00	1.09E-10	1.31E+00
9	45.0	9.42E-11	1.37E+00	8.80E-11	1.30E+00	8.46E-11	1.26E+00	8.07E-11	1.22E+00	7.65E-11	1.17E+00
10	50.0	7.10E-11	1.28E+00	6.57E-11	1.20E+00	6.12E-11	1.13E+00	5.81E-11	1.08E+00	5.47E-11	1.03E+00
11	55.0	5.32E-11	1.15E+00	4.87E-11	1.07E+00	4.50E-11	1.01E+00	4.25E-11	9.58E-01	3.97E-11	9.04E-01
12	60.0	4.03E-11	1.04E+00	3.66E-11	9.60E-01	3.35E-11	8.91E-01	3.14E-11	8.43E-01	2.91E-11	7.89E-01
13	65.0	3.08E-11	9.36E-01	2.78E-11	8.55E-01	2.52E-11	7.86E-01	2.34E-11	7.38E-01	2.15E-11	6.85E-01
14	70.0	2.38E-11	8.39E-01	2.13E-11	7.59E-01	1.91E-11	6.91E-01	1.76E-11	6.44E-01	1.61E-11	5.93E-01
15	75.0	1.86E-11	7.51E-01	1.64E-11	6.73E-01	1.46E-11	6.06E-01	1.34E-11	5.61E-01	1.21E-11	5.12E-01
16	80.0	1.46E-11	6.70E-01	1.27E-11	5.94E-01	1.13E-11	5.34E-01	1.03E-11	4.90E-01	9.20E-12	4.43E-01
17	85.0	1.15E-11	5.97E-01	9.95E-12	5.24E-01	8.74E-12	4.66E-01	7.88E-12	4.25E-01	7.00E-12	3.81E-01
18	90.0	9.14E-12	5.31E-01	7.81E-12	4.62E-01	6.79E-12	4.06E-01	6.08E-12	3.67E-01	5.34E-12	3.26E-01
19	95.0	7.28E-12	4.72E-01	6.16E-12	4.06E-01	5.29E-12	3.53E-01	4.70E-12	3.16E-01	4.10E-12	2.79E-01
20	100.0	5.83E-12	4.19E-01	4.88E-12	3.56E-01	4.15E-12	3.07E-01	3.66E-12	2.73E-01	3.16E-12	2.38E-01
21	110.0	3.78E-12	3.28E-01	3.10E-12	2.73E-01	2.57E-12	2.30E-01	2.23E-12	2.01E-01	1.89E-12	1.72E-01
22	120.0	2.48E-12	2.56E-01	1.99E-12	2.09E-01	1.62E-12	1.72E-01	1.38E-12	1.48E-01	1.14E-12	1.24E-01
23	130.0	1.64E-12	1.99E-01	1.29E-12	1.59E-01	1.02E-12	1.28E-01	8.57E-13	1.08E-01	6.97E-13	8.88E-02
24	140.0	1.10E-12	1.55E-01	8.42E-13	1.20E-01	6.53E-13	9.45E-02	5.37E-13	7.85E-02	4.28E-13	6.32E-02
25	150.0	7.45E-13	1.20E-01	5.58E-13	9.16E-02	4.20E-13	6.97E-02	3.39E-13	5.69E-02	2.65E-13	4.49E-02
26	160.0	5.04E-13	9.27E-02	3.69E-13	6.89E-02	2.71E-13	5.12E-02	2.15E-13	4.11E-02	1.64E-13	3.17E-02
27	170.0	3.42E-13	7.11E-07	2.45E-13	5.16E-02	1.75E-13	3.75E-02	1.37E-13	2.95E-02	1.02E-13	2.22E-02
28	180.0	2.33E-13	5.43E-02	1.63E-13	3.85E-02	1.14E-13	2.74E-02	8.75E-14	2.11E-02	6.39E-14	1.56E-02
29	190.0	1.60E-13	4.15E-02	1.09E-13	2.88E-02	7.46E-14	1.99E-02	5.61E-14	1.51E-02	4.00E-14	1.09E-02
30	200.0	1.10E-13	3.16E-02	7.33E-14	2.14E-02	4.93E-14	1.46E-02	3.63E-14	1.08E-02	2.54E-14	7.65E-03
31	220.0	5.24E-14	1.82E-02	3.33E-14	1.17E-02	2.12E-14	7.59E-03	1.50E-14	5.43E-03	1.00E-14	3.66E-03
32	240.0	2.51E-14	1.04E-02	1.52E-14	6.38E-03	9.19E-15	3.91E-03	6.26E-15	2.69E-03	3.99E-15	1.73E-03
33	260.0	1.22E-14	5.91E-03	7.00E-15	3.45E-03	4.01E-15	2.00E-03	2.62E-15	1.32E-03	1.59E-15	8.10E-04
34	280.0	5.92E-15	3.33E-03	3.24E-15	1.85E-03	1.75E-15	1.02E-03	1.10E-15	6.44E-04	6.37E-16	3.76E-04
35	300.0	2.90E-15	1.88E-03	1.51E-15	9.92E-04	7.70E-16	5.12E-04	4.64E-16	3.11E-04	2.56E-16	1.73E-04
36	350.0	4.92E-16	4.33E-04	2.25E-16	2.01E-04	9.93E-17	8.99E-05	5.39E-17	4.92E-05	2.63E-17	2.42E-05
37	400.0	8.47E-17	9.73E-05	3.40E-17	3.96E-05	1.29E-17	1.53E-05	6.31E-18	7.53E-06	2.72E-18	3.28E-06
38	450.0	1.47E-17	2.14E-05	5.18E-18	7.65E-06	1.70E-18	2.54E-06	7.43E-19	1.12E-06	2.83E-19	4.31E-07
39	500.0	2.60E-18	4.66E-06	7.99E-19	1.46E-06	2.23E-19	4.12E-07	8.77E-20	1.63E-07	2.95E-20	5.55E-08
40	550.0	4.58E-19	9.95E-07	1.23E-19	2.72E-07	2.94E-20	6.57E-08	1.04E-20	2.34E-08	3.07E-21	7.01E-09
41	600.0	8.07E-20	2.09E-07	1.90E-20	4.98E-08	3.88E-21	1.03E-08	1.23E-21	3.30E-09	3.22E-22	8.73E-10
42	650.0	1.42E-20	4.30E-08	2.91E-21	8.96E-09	5.13E-22	1.60E-09	1.46E-22	4.60E-10	3.36E-23	1.07E-10
43	700.0	2.55E-21	8.97E-09	4.54E-22	1.62E-09	6.79E-23	2.46E-10	1.73E-23	6.32E-11	3.52E-24	1.30E-11
44	750.0	4.52E-22	1.83E-09	7.06E-23	2.90E-10	8.99E-24	3.74E-11	2.05E-24	8.62E-12	3.69E-25	1.56E-12

Table 3.3 (Continued) (5/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		21		22		23		24		25	
		(55.000 -	50.000)	(50.000 -	45.000)	(45.000 -	40.000)	(40.000 -	35.000)	(35.000 -	30.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	8.80E-09	1.68E+00	8.67E-09	1.67E+00	8.55E-09	1.66E+00	8.48E-09	1.66E+00	8.44E-09	1.67E+00
2	10.0	2.21E-09	1.68E+00	2.16E-09	1.66E+00	2.11E-09	1.64E+00	2.07E-09	1.62E+00	2.06E-09	1.63E+00
3	15.0	1.00E-09	1.72E+00	9.76E-10	1.69E+00	9.48E-10	1.65E+00	9.24E-10	1.63E+00	9.09E-10	1.62E+00
4	20.0	5.68E-10	1.73E+00	5.48E-10	1.69E+00	5.28E-10	1.64E+00	5.11E-10	1.60E+00	4.97E-10	1.57E+00
5	25.0	3.44E-10	1.64E+00	3.30E-10	1.59E+00	3.15E-10	1.53E+00	3.02E-10	1.48E+00	2.90E-10	1.43E+00
6	30.0	2.21E-10	1.51E+00	2.10E-10	1.45E+00	1.99E-10	1.39E+00	1.89E-10	1.33E+00	1.78E-10	1.27E+00
7	35.0	1.47E-10	1.37E+00	1.39E-10	1.31E+00	1.31E-10	1.24E+00	1.22E-10	1.17E+00	1.14E-10	1.10E+00
8	40.0	1.01E-10	1.23E+00	9.45E-11	1.16E+00	8.79E-11	1.09E+00	8.13E-11	1.02E+00	7.42E-11	9.38E-01
9	45.0	7.05E-11	1.09E+00	6.55E-11	1.02E+00	6.03E-11	9.47E-01	5.50E-11	8.71E-01	4.93E-11	7.88E-01
10	50.0	5.11E-11	9.73E-01	4.70E-11	9.04E-01	4.28E-11	8.30E-01	3.85E-11	7.52E-01	3.38E-11	6.68E-01
11	55.0	3.67E-11	8.45E-01	3.34E-11	7.78E-01	3.01E-11	7.06E-01	2.66E-11	6.30E-01	2.30E-11	5.49E-01
12	60.0	2.66E-11	7.31E-01	2.40E-11	6.65E-01	2.14E-11	5.97E-01	1.86E-11	5.24E-01	1.57E-11	4.47E-01
13	65.0	1.95E-11	6.29E-01	1.74E-11	5.66E-01	1.53E-11	5.01E-01	1.31E-11	4.33E-01	1.08E-11	3.62E-01
14	70.0	1.44E-11	5.39E-01	1.27E-11	4.80E-01	1.10E-11	4.19E-01	9.30E-12	3.56E-01	7.52E-12	2.91E-01
15	75.0	1.07E-11	4.61E-01	9.36E-12	4.05E-01	8.01E-12	3.49E-01	6.63E-12	2.92E-01	5.24E-12	2.33E-01
16	80.0	8.04E-12	3.92E-01	6.92E-12	3.41E-01	5.84E-12	2.90E-01	4.75E-12	2.38E-01	3.67E-12	1.86E-01
17	85.0	6.05E-12	3.33E-01	5.14E-12	2.86E-01	4.28E-12	2.40E-01	3.42E-12	1.93E-01	2.58E-12	1.47E-01
18	90.0	4.57E-12	2.82E-01	3.84E-12	2.39E-01	3.15E-12	1.98E-01	2.47E-12	1.56E-01	1.82E-12	1.16E-01
19	95.0	3.47E-12	2.39E-01	2.88E-12	2.00E-01	2.32E-12	1.63E-01	1.79E-12	1.26E-01	1.29E-12	9.18E-02
20	100.0	2.64E-12	2.02E-01	2.16E-12	1.66E-01	1.72E-12	1.33E-01	1.30E-12	1.02E-01	9.14E-13	7.22E-02
21	110.0	1.55E-12	1.43E-01	1.23E-12	1.15E-01	9.51E-13	8.92E-02	6.92E-13	6.55E-02	4.63E-13	4.43E-02
22	120.0	9.15E-13	1.00E-01	7.09E-13	7.86E-02	5.30E-13	5.92E-02	3.71E-13	4.18E-02	2.36E-13	2.69E-02
23	130.0	5.45E-13	7.02E-02	4.11E-13	5.34E-02	2.98E-13	3.90E-02	2.00E-13	2.65E-02	1.21E-13	1.62E-02
24	140.0	3.27E-13	4.89E-02	2.40E-13	3.61E-02	1.68E-13	2.55E-02	1.09E-13	1.67E-02	6.25E-14	9.68E-03
25	150.0	1.99E-13	3.41E-02	1.42E-13	2.45E-02	9.61E-14	1.68E-02	5.98E-14	1.05E-02	3.27E-14	5.80E-03
26	160.0	1.20E-13	2.35E-02	8.33E-14	1.64E-02	5.48E-14	1.09E-02	3.27E-14	6.55E-03	1.70E-14	3.44E-03
27	170.0	7.31E-14	1.61E-02	4.91E-14	1.09E-02	3.12E-14	7.00E-03	1.79E-14	4.05E-03	8.83E-15	2.02E-03
28	180.0	4.44E-14	1.10E-02	2.89E-14	7.21E-03	1.78E-14	4.47E-03	9.80E-15	2.48E-03	4.58E-15	1.17E-03
29	190.0	2.71E-14	7.46E-03	1.72E-14	4.77E-03	1.02E-14	2.86E-03	5.41E-15	1.53E-03	2.40E-15	6.85E-04
30	200.0	1.66E-14	5.05E-03	1.02E-14	3.14E-03	5.87E-15	1.82E-03	2.98E-15	9.33E-04	1.26E-15	3.97E-04
31	220.0	6.23E-15	2.30E-03	3.60E-15	1.34E-03	1.94E-15	7.30E-04	9.10E-16	3.45E-04	3.45E-16	1.32E-04
32	240.0	2.34E-15	1.03E-03	1.28E-15	5.66E-04	6.44E-16	2.88E-04	2.78E-16	1.25E-04	9.47E-17	4.31E-05
33	260.0	8.90E-16	4.58E-04	4.56E-16	2.37E-04	2.16E-16	1.13E-04	8.58E-17	4.54E-05	2.64E-17	1.41E-05
34	280.0	3.38E-16	2.02E-04	1.63E-16	9.84E-05	7.21E-17	4.38E-05	2.65E-17	1.62E-05	7.32E-18	4.53E-06
35	300.0	1.29E-16	8.84E-05	5.85E-17	4.05E-05	2.42E-17	1.69E-05	8.19E-18	5.77E-06	2.04E-18	1.45E-06
36	350.0	1.15E-17	1.08E-05	4.48E-18	4.23E-06	1.57E-18	1.49E-06	4.35E-19	4.17E-07	8.30E-20	8.03E-08
37	400.0	1.04E-18	1.26E-06	3.46E-19	4.25E-07	1.03E-19	1.27E-07	2.33E-20	2.92E-08	3.42E-21	4.32E-09
38	450.0	9.34E-20	1.44E-07	2.67E-20	4.16E-08	6.74E-21	1.06E-08	1.26E-21	1.99E-09	1.43E-22	2.28E-10
39	500.0	8.49E-21	1.62E-08	2.08E-21	4.00E-09	4.47E-22	8.67E-10	6.89E-23	1.35E-10	5.98E-24	1.18E-11
40	550.0	7.68E-22	1.77E-09	1.61E-22	3.74E-10	2.94E-23	6.89E-11	3.75E-24	8.86E-12	2.56E-25	6.11E-13
41	600.0	6.84E-23	1.88E-10	1.23E-23	3.42E-11	1.93E-24	5.39E-12	2.00E-25	5.62E-13	1.06E-26	3.01E-14
42	650.0	6.08E-24	1.96E-11	9.31E-25	3.03E-12	1.23E-25	4.03E-13	1.06E-26	3.50E-14	4.28E-28	1.43E-15
43	700.0	5.49E-25	2.05E-12	7.23E-26	2.73E-13	8.12E-27	3.08E-14	5.80E-28	2.22E-15	1.79E-29	6.94E-17
44	750.0	4.93E-26	2.11E-13	5.56E-27	2.41E-14	5.37E-28	2.34E-15	3.17E-29	1.39E-16	7.44E-31	3.31E-18

Table 3.3 (Continued) (6/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		26		27		28		29		30	
		(30.000 -	27.500)	(27.500 -	25.000)	(25.000 -	22.500)	(22.500 -	20.000)	(20.000 -	17.500)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.28E-08	2.56E+00	1.28E-08	2.56E+00	1.27E-08	2.56E+00	7.60E-09	1.54E+00	1.25E-08	2.56E+00
2	10.0	2.34E-09	1.86E+00	2.32E-09	1.86E+00	2.28E-09	1.84E+00	1.88E-09	1.53E+00	2.22E-09	1.82E+00
3	15.0	9.65E-10	1.73E+00	9.46E-10	1.71E+00	9.23E-10	1.68E+00	8.58E-10	1.57E+00	8.54E-10	1.58E+00
4	20.0	4.98E-10	1.59E+00	4.83E-10	1.55E+00	4.66E-10	1.50E+00	4.33E-10	1.41E+00	4.07E-10	1.33E+00
5	25.0	2.84E-10	1.41E+00	2.73E-10	1.37E+00	2.60E-10	1.31E+00	2.39E-10	1.21E+00	2.14E-10	1.10E+00
6	30.0	1.72E-10	1.23E+00	1.63E-10	1.17E+00	1.53E-10	1.11E+00	1.39E-10	1.01E+00	1.18E-10	8.74E-01
7	35.0	1.07E-10	1.05E+00	1.01E-10	9.89E-01	9.34E-11	9.24E-01	8.29E-11	8.26E-01	6.79E-11	6.82E-01
8	40.0	7.04E-11	8.98E-01	6.53E-11	8.38E-01	5.96E-11	7.70E-01	5.06E-11	6.59E-01	4.07E-11	5.34E-01
9	45.0	4.58E-11	7.39E-01	4.19E-11	6.80E-01	3.76E-11	6.15E-01	3.14E-11	5.17E-01	2.42E-11	4.02E-01
10	50.0	3.01E-11	6.00E-01	2.72E-11	5.45E-01	2.40E-11	4.85E-01	2.00E-11	4.06E-01	1.45E-11	2.97E-01
11	55.0	2.00E-11	4.82E-01	1.78E-11	4.31E-01	1.54E-11	3.77E-01	1.26E-11	3.10E-01	8.74E-12	2.17E-01
12	60.0	1.34E-11	3.85E-01	1.18E-11	3.39E-01	1.00E-11	2.92E-01	7.99E-12	2.34E-01	5.35E-12	1.58E-01
13	65.0	9.06E-12	3.05E-01	7.80E-12	2.64E-01	6.54E-12	2.23E-01	5.10E-12	1.75E-01	3.29E-12	1.14E-01
14	70.0	6.13E-12	2.39E-01	5.20E-12	2.04E-01	4.27E-12	1.69E-01	3.27E-12	1.30E-01	2.02E-12	8.12E-02
15	75.0	4.19E-12	1.88E-01	3.49E-12	1.57E-01	2.87E-12	1.28E-01	2.10E-12	9.61E-02	1.26E-12	5.80E-02
16	80.0	2.86E-12	1.46E-01	2.35E-12	1.20E-01	1.86E-12	9.60E-02	1.36E-12	7.05E-02	7.82E-13	4.11E-02
17	85.0	1.96E-12	1.13E-01	1.58E-12	9.14E-02	1.23E-12	7.15E-02	8.76E-13	5.15E-02	4.86E-13	2.88E-02
18	90.0	1.35E-12	8.73E-02	1.07E-12	6.95E-02	8.15E-13	5.33E-02	5.68E-13	3.74E-02	3.06E-13	2.03E-02
19	95.0	9.34E-13	6.71E-02	7.25E-13	5.25E-02	5.41E-13	3.94E-02	3.69E-13	2.71E-02	1.92E-13	1.42E-02
20	100.0	6.41E-13	5.11E-02	4.89E-13	3.92E-02	3.57E-13	2.88E-02	2.40E-13	1.95E-02	1.20E-13	9.84E-03
21	110.0	3.09E-13	2.97E-02	2.27E-13	2.20E-02	1.59E-13	1.55E-02	1.02E-13	1.00E-02	4.79E-14	4.75E-03
22	120.0	1.49E-13	1.71E-02	1.06E-13	1.22E-02	7.11E-14	8.26E-03	4.35E-14	5.09E-03	1.92E-14	2.27E-03
23	130.0	7.27E-14	9.78E-03	4.94E-14	6.69E-03	3.19E-14	4.35E-03	1.86E-14	2.56E-03	7.76E-15	1.08E-03
24	140.0	3.55E-14	5.54E-03	2.32E-14	3.64E-03	1.43E-14	2.27E-03	7.99E-15	1.27E-03	3.15E-15	5.06E-04
25	150.0	1.74E-14	3.11E-03	1.09E-14	1.97E-03	6.46E-15	1.17E-03	3.49E-15	6.40E-04	1.28E-15	2.37E-04
26	160.0	8.52E-15	1.74E-03	5.14E-15	1.06E-03	2.92E-15	6.02E-04	1.49E-15	3.10E-04	5.24E-16	1.10E-04
27	170.0	4.19E-15	9.65E-04	2.43E-15	5.63E-04	1.32E-15	3.07E-04	6.37E-16	1.50E-04	2.15E-16	5.09E-05
28	180.0	2.06E-15	5.32E-04	1.15E-15	2.98E-04	5.96E-16	1.56E-04	2.72E-16	7.18E-05	8.82E-17	2.34E-05
29	190.0	1.02E-15	2.93E-04	5.43E-16	1.57E-04	2.70E-16	7.87E-05	1.17E-16	3.42E-05	3.63E-17	1.07E-05
30	200.0	5.08E-16	1.62E-04	2.61E-16	8.35E-05	1.24E-16	4.00E-05	4.99E-17	1.62E-05	1.51E-17	4.97E-06
31	220.0	1.23E-16	4.73E-05	5.76E-17	2.23E-05	2.52E-17	9.84E-06	9.18E-18	3.62E-06	2.51E-18	9.96E-07
32	240.0	2.96E-17	1.36E-05	1.29E-17	5.95E-06	5.06E-18	2.35E-06	1.69E-18	7.93E-07	4.27E-19	2.02E-07
33	260.0	7.15E-18	3.85E-06	2.87E-18	1.55E-06	1.03E-18	5.62E-07	3.12E-19	1.72E-07	7.15E-20	3.97E-08
34	280.0	1.75E-18	1.09E-06	6.33E-19	3.98E-07	2.11E-19	1.33E-07	5.80E-20	3.70E-08	1.22E-20	7.87E-09
35	300.0	4.22E-19	3.03E-07	1.42E-19	1.07E-07	4.24E-20	3.08E-08	1.07E-20	7.87E-09	2.07E-21	1.53E-09
36	350.0	1.23E-20	1.20E-08	3.34E-21	3.28E-09	8.04E-22	7.95E-10	1.61E-22	1.61E-10	2.42E-23	2.43E-11
37	400.0	3.56E-22	4.54E-10	7.90E-23	1.01E-10	1.49E-23	1.92E-11	2.36E-24	3.07E-12	2.90E-25	3.80E-13
38	450.0	1.04E-23	1.68E-11	1.87E-24	3.04E-12	2.82E-25	4.60E-13	3.58E-26	5.89E-14	3.34E-27	5.54E-15
39	500.0	3.05E-25	6.07E-13	4.40E-26	8.82E-14	5.78E-27	1.07E-14	5.30E-28	1.08E-15	3.86E-29	7.92E-17
40	550.0	8.97E-27	2.16E-14	1.04E-27	2.52E-15	9.98E-29	2.44E-16	7.41E-30	1.82E-17	4.67E-31	1.16E-18
41	600.0	2.60E-28	7.46E-16	2.47E-29	7.12E-17	1.88E-30	5.47E-18	1.13E-31	3.31E-19	5.41E-33	1.60E-20
42	650.0	7.59E-30	2.55E-17	5.79E-31	1.96E-18	3.58E-32	1.22E-19	1.49E-33	5.14E-21	6.32E-35	2.19E-22
43	700.0	2.22E-31	8.66E-19	1.38E-32	5.44E-20	6.77E-34	2.68E-21	2.26E-35	9.00E-23	7.35E-37	2.96E-24
44	750.0	6.57E-33	2.94E-20	3.29E-34	1.48E-21	1.29E-35	5.87E-23	3.30E-37	1.51E-24	8.59E-39	3.96E-26

Table 3.3 (Continued) (7/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		31		32		33		34		35	
		(17.500 -	14.900)	(14.900 -	13.500)	(13.500 -	12.200)	(12.200 -	10.000)	(10.000 -	8.190)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	7.90E-09	1.64E+00	9.27E-09	1.94E+00	9.22E-09	1.94E+00	1.17E-08	2.49E+00	1.16E-08	2.47E+00
2	10.0	1.78E-09	1.48E+00	1.87E-09	1.56E+00	1.85E-09	1.55E+00	1.98E-09	1.68E+00	1.98E-09	1.69E+00
3	15.0	7.23E-10	1.35E+00	7.31E-10	1.37E+00	7.21E-10	1.36E+00	7.51E-10	1.43E+00	7.43E-10	1.43E+00
4	20.0	3.61E-10	1.20E+00	3.53E-10	1.18E+00	3.46E-10	1.16E+00	3.54E-10	1.20E+00	3.51E-10	1.20E+00
5	25.0	1.91E-10	9.90E-01	1.87E-10	9.76E-01	1.83E-10	9.60E-01	1.84E-10	9.76E-01	1.83E-10	9.78E-01
6	30.0	1.07E-10	7.95E-01	1.08E-10	8.11E-01	1.05E-10	7.94E-01	1.01E-10	7.72E-01	1.01E-10	7.76E-01
7	35.0	6.14E-11	6.23E-01	6.18E-11	6.33E-01	6.00E-11	6.18E-01	5.76E-11	5.99E-01	5.77E-11	6.04E-01
8	40.0	3.62E-11	4.79E-01	3.62E-11	4.84E-01	3.50E-11	4.71E-01	3.43E-11	4.66E-01	3.45E-11	4.72E-01
9	45.0	2.16E-11	3.63E-01	2.16E-11	3.65E-01	2.08E-11	3.54E-01	2.03E-11	3.48E-01	2.05E-11	3.54E-01
10	50.0	1.34E-11	2.76E-01	1.30E-11	2.72E-01	1.25E-11	2.62E-01	1.21E-11	2.56E-01	1.23E-11	2.62E-01
11	55.0	8.13E-12	2.04E-01	7.91E-12	2.00E-01	7.56E-12	1.92E-01	7.23E-12	1.86E-01	7.39E-12	1.91E-01
12	60.0	4.98E-12	1.49E-01	4.85E-12	1.46E-01	4.62E-12	1.40E-01	4.40E-12	1.34E-01	4.52E-12	1.39E-01
13	65.0	3.08E-12	1.08E-01	2.98E-12	1.03E-01	2.83E-12	1.01E-01	2.68E-12	9.61E-02	2.77E-12	1.00E-01
14	70.0	1.91E-12	7.74E-02	1.85E-12	7.56E-02	1.75E-12	7.20E-02	1.63E-12	6.80E-02	1.70E-12	7.13E-02
15	75.0	1.19E-12	5.53E-02	1.15E-12	5.39E-02	1.08E-12	5.11E-02	1.01E-12	4.82E-02	1.06E-12	5.09E-02
16	80.0	7.42E-13	3.93E-02	7.20E-13	3.85E-02	6.76E-13	3.63E-02	6.23E-13	3.38E-02	6.58E-13	3.60E-02
17	85.0	4.65E-13	2.78E-02	4.51E-13	2.72E-02	4.22E-13	2.56E-02	3.84E-13	2.35E-02	4.08E-13	2.52E-02
18	90.0	2.92E-13	1.96E-02	2.82E-13	1.91E-02	2.63E-13	1.79E-02	2.40E-13	1.65E-02	2.57E-13	1.78E-02
19	95.0	1.84E-13	1.37E-02	1.76E-13	1.33E-02	1.64E-13	1.24E-02	1.49E-13	1.14E-02	1.61E-13	1.24E-02
20	100.0	1.16E-13	9.61E-03	1.11E-13	9.30E-03	1.03E-13	8.66E-03	9.21E-14	7.82E-03	1.00E-13	8.57E-03
21	110.0	4.64E-14	4.65E-03	4.39E-14	4.44E-03	4.03E-14	4.10E-03	3.61E-14	3.71E-03	3.98E-14	4.12E-03
22	120.0	1.87E-14	2.23E-03	1.76E-14	2.12E-03	1.61E-14	1.94E-03	1.43E-14	1.74E-03	1.59E-14	1.96E-03
23	130.0	7.54E-15	1.06E-03	7.06E-15	9.97E-04	6.40E-15	9.09E-04	5.66E-15	8.12E-04	6.37E-15	9.20E-04
24	140.0	3.06E-15	4.97E-04	2.82E-15	4.62E-04	2.54E-15	4.19E-04	2.26E-15	3.75E-04	2.56E-15	4.29E-04
25	150.0	1.26E-15	2.34E-04	1.15E-15	2.15E-04	1.02E-15	1.94E-04	9.03E-16	1.73E-04	1.04E-15	1.99E-04
26	160.0	5.14E-16	1.09E-04	4.63E-16	9.90E-05	4.12E-16	8.86E-05	3.63E-16	7.89E-05	4.19E-16	9.17E-05
27	170.0	2.09E-16	5.00E-05	1.87E-16	4.50E-05	1.65E-16	4.01E-05	1.46E-16	3.59E-05	1.70E-16	4.20E-05
28	180.0	8.44E-17	2.26E-05	7.62E-17	2.06E-05	6.71E-17	1.83E-05	5.91E-17	1.63E-05	6.91E-17	1.91E-05
29	190.0	3.48E-17	1.04E-05	3.10E-17	9.35E-06	2.72E-17	8.24E-06	2.40E-17	7.36E-06	2.81E-17	8.67E-06
30	200.0	1.42E-17	4.71E-06	1.27E-17	4.24E-06	1.11E-17	3.72E-06	9.86E-18	3.35E-06	1.16E-17	3.97E-06
31	220.0	2.38E-18	9.55E-07	2.07E-18	8.37E-07	1.79E-18	7.28E-07	1.61E-18	6.61E-07	1.87E-18	7.74E-07
32	240.0	3.96E-19	1.89E-07	3.39E-19	1.63E-07	2.91E-19	1.41E-07	2.60E-19	1.27E-07	3.11E-19	1.53E-07
33	260.0	6.75E-20	3.78E-08	5.59E-20	3.16E-08	4.76E-20	2.70E-08	4.29E-20	2.46E-08	5.01E-20	2.90E-08
34	280.0	1.14E-20	7.40E-09	9.27E-21	6.07E-09	7.83E-21	5.16E-09	7.04E-21	4.68E-09	8.38E-21	5.62E-09
35	300.0	1.91E-21	1.43E-09	1.54E-21	1.16E-09	1.31E-21	9.88E-10	1.18E-21	9.03E-10	1.38E-21	1.06E-09
36	350.0	2.23E-23	2.27E-11	1.73E-23	1.77E-11	1.45E-23	1.49E-11	1.30E-23	1.35E-11	1.58E-23	1.65E-11
37	400.0	2.59E-25	3.43E-13	1.93E-25	2.58E-13	1.64E-25	2.20E-13	1.46E-25	1.98E-13	1.74E-25	2.38E-13
38	450.0	2.99E-27	5.01E-15	2.22E-27	3.75E-15	1.83E-27	3.11E-15	1.63E-27	2.79E-15	1.94E-27	3.36E-15
39	500.0	3.41E-29	7.05E-17	2.64E-29	5.51E-17	2.07E-29	4.36E-17	1.85E-29	3.92E-17	2.23E-29	4.76E-17
40	550.0	5.29E-31	1.33E-18	2.98E-31	7.54E-19	2.35E-31	5.99E-19	2.11E-31	5.41E-19	2.45E-31	6.33E-19
41	600.0	6.16E-33	1.84E-20	3.42E-33	1.03E-20	2.68E-33	8.13E-21	2.42E-33	7.41E-21	2.94E-33	9.03E-21
42	650.0	1.21E-34	4.25E-22	3.93E-35	1.39E-22	3.21E-35	1.14E-22	2.77E-35	9.95E-23	3.16E-35	1.14E-22
43	700.0	1.56E-36	6.33E-24	4.49E-37	1.84E-24	3.61E-37	1.49E-24	3.19E-37	1.33E-24	3.73E-37	1.56E-24
44	750.0	3.50E-38	1.63E-25	5.19E-39	2.44E-26	4.07E-39	1.93E-26	3.59E-39	1.71E-26	4.18E-39	2.01E-26

Table 3.3 (Continued) (8/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		36		37		38		39		40	
		(8.190 -	6.700)	(6.700 -	5.490)	(5.490 -	4.490)	(4.490 -	3.680)	(3.680 -	3.010)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.19E-08	2.55E+00	1.26E-08	2.62E+00	1.31E-08	2.67E+00	1.31E-08	2.81E+00	1.28E-08	2.94E+00
2	10.0	2.10E-09	1.80E+00	2.29E-09	1.91E+00	2.40E-09	1.95E+00	2.41E-09	2.07E+00	2.38E-09	2.18E+00
3	15.0	8.02E-10	1.54E+00	9.04E-10	1.69E+00	9.29E-10	1.70E+00	8.98E-10	1.74E+00	8.48E-10	1.75E+00
4	20.0	3.85E-10	1.32E+00	4.44E-10	1.48E+00	4.41E-10	1.44E+00	4.09E-10	1.40E+00	3.69E-10	1.35E+00
5	25.0	2.05E-10	1.09E+00	2.38E-10	1.24E+00	2.27E-10	1.15E+00	1.99E-10	1.07E+00	1.75E-10	1.00E+00
6	30.0	1.15E-10	8.82E-01	1.34E-10	1.01E+00	1.22E-10	8.92E-01	1.01E-10	7.82E-01	8.67E-11	7.15E-01
7	35.0	6.64E-11	6.96E-01	7.80E-11	7.96E-01	6.75E-11	6.73E-01	5.33E-11	5.61E-01	4.45E-11	4.99E-01
8	40.0	4.03E-11	5.50E-01	4.72E-11	6.29E-01	3.84E-11	5.00E-01	2.88E-11	3.95E-01	2.35E-11	3.44E-01
9	45.0	2.41E-11	4.18E-01	2.82E-11	4.76E-01	2.18E-11	3.59E-01	1.55E-11	2.70E-01	1.24E-11	2.30E-01
10	50.0	1.46E-11	3.12E-01	1.70E-11	3.54E-01	1.25E-11	2.54E-01	8.43E-12	1.81E-01	6.60E-12	1.51E-01
11	55.0	8.87E-12	2.29E-01	1.03E-11	2.58E-01	7.16E-12	1.76E-01	4.61E-12	1.20E-01	3.55E-12	9.82E-02
12	60.0	5.46E-12	1.68E-01	6.27E-12	1.88E-01	4.14E-12	1.21E-01	2.54E-12	7.84E-02	1.92E-12	6.32E-02
13	65.0	3.37E-12	1.22E-01	3.84E-12	1.35E-01	2.40E-12	8.26E-02	1.40E-12	5.08E-02	1.04E-12	4.03E-02
14	70.0	2.08E-12	8.70E-02	2.35E-12	9.57E-02	1.40E-12	5.57E-02	7.76E-13	3.27E-02	5.69E-13	2.55E-02
15	75.0	1.30E-12	6.23E-02	1.45E-12	6.80E-02	8.13E-13	3.72E-02	4.31E-13	2.08E-02	3.12E-13	1.61E-02
16	80.0	8.07E-13	4.41E-02	8.95E-13	4.77E-02	4.75E-13	2.47E-02	2.40E-13	1.32E-02	1.71E-13	1.00E-02
17	85.0	5.01E-13	3.09E-02	5.50E-13	3.31E-02	2.77E-13	1.63E-02	1.34E-13	8.30E-03	9.45E-14	6.25E-03
18	90.0	3.15E-13	2.18E-02	3.43E-13	2.31E-02	1.63E-13	1.07E-02	7.49E-14	5.21E-03	5.27E-14	3.91E-03
19	95.0	1.98E-13	1.53E-02	2.13E-13	1.60E-02	9.56E-14	7.03E-03	4.20E-14	3.26E-03	2.92E-14	2.41E-03
20	100.0	1.23E-13	1.05E-02	1.31E-13	1.09E-02	5.61E-14	4.57E-03	2.36E-14	2.03E-03	1.62E-14	1.48E-03
21	110.0	4.87E-14	5.04E-03	5.08E-14	5.12E-03	1.93E-14	1.90E-03	7.33E-15	7.62E-04	4.91E-15	5.45E-04
22	120.0	1.94E-14	2.38E-03	1.98E-14	2.38E-03	6.60E-15	7.74E-04	2.28E-15	2.82E-04	1.55E-15	2.04E-04
23	130.0	7.73E-15	1.12E-03	7.75E-15	1.09E-03	2.29E-15	3.15E-04	7.29E-16	1.06E-04	4.76E-16	7.37E-05
24	140.0	3.09E-15	5.18E-04	3.04E-15	4.97E-04	7.91E-16	1.26E-04	2.32E-16	3.90E-05	1.45E-16	2.61E-05
25	150.0	1.24E-15	2.38E-04	1.20E-15	2.25E-04	2.72E-16	4.98E-05	7.18E-17	1.39E-05	4.52E-17	9.32E-06
26	160.0	4.99E-16	1.09E-04	4.73E-16	1.01E-04	9.47E-17	1.98E-05	2.30E-17	5.05E-06	1.44E-17	3.37E-06
27	170.0	2.01E-16	4.96E-05	1.87E-16	4.51E-05	3.28E-17	7.71E-06	7.30E-18	1.81E-06	4.41E-18	1.17E-06
28	180.0	8.09E-17	2.24E-05	7.45E-17	2.01E-05	1.13E-17	2.99E-06	2.29E-18	6.38E-07	1.40E-18	4.14E-07
29	190.0	3.27E-17	1.01E-05	2.96E-17	8.91E-06	3.95E-18	1.16E-06	7.29E-19	2.26E-07	4.43E-19	1.46E-07
30	200.0	1.34E-17	4.57E-06	1.19E-17	3.98E-06	1.38E-18	4.49E-07	2.31E-19	7.92E-08	1.39E-19	5.10E-08
31	220.0	2.13E-18	8.79E-07	1.88E-18	7.57E-07	1.56E-19	6.13E-08	2.25E-20	9.36E-09	1.39E-20	6.15E-09
32	240.0	3.48E-19	1.71E-07	2.92E-19	1.40E-07	1.91E-20	8.98E-09	2.32E-21	1.15E-09	1.41E-21	7.44E-10
33	260.0	5.62E-20	3.25E-08	4.69E-20	2.64E-08	2.30E-21	1.27E-09	2.47E-22	1.43E-10	1.63E-22	1.01E-10
34	280.0	9.09E-21	6.09E-09	7.54E-21	4.93E-09	2.83E-22	1.81E-10	3.07E-23	2.07E-11	1.96E-23	1.41E-11
35	300.0	1.50E-21	1.16E-09	1.19E-21	8.89E-10	3.47E-23	2.55E-11	3.06E-24	2.36E-12	2.45E-24	2.02E-12
36	350.0	1.60E-23	1.68E-11	1.26E-23	1.29E-11	1.71E-25	1.71E-13	1.86E-26	1.96E-14	1.10E-26	1.23E-14
37	400.0	1.76E-25	2.41E-13	1.32E-25	1.76E-13	9.84E-28	1.28E-15	8.46E-29	1.16E-16	5.85E-29	8.57E-17
38	450.0	1.97E-27	3.40E-15	1.40E-27	2.37E-15	5.03E-30	8.30E-18	3.63E-31	6.32E-19	3.32E-31	6.16E-19
39	500.0	2.15E-29	4.59E-17	1.52E-29	3.16E-17	2.83E-32	5.76E-20	1.85E-33	3.98E-21	1.89E-33	4.32E-21
40	550.0	2.50E-31	6.46E-19	1.74E-31	4.38E-19	1.49E-34	3.67E-22	1.07E-35	2.79E-23	1.00E-35	2.78E-23
41	600.0	2.72E-33	8.38E-21	1.92E-33	5.75E-21	7.71E-37	2.26E-24	4.75E-38	1.47E-25	5.72E-38	1.89E-25
42	650.0	3.12E-35	1.13E-22	2.16E-35	7.59E-23	5.28E-39	1.87E-26	3.09E-40	1.12E-27	3.39E-40	1.31E-27
43	700.0	3.42E-37	1.43E-24	2.51E-37	1.02E-24	2.91E-41	1.16E-28	1.90E-42	8.01E-30	1.96E-42	8.78E-30
44	750.0	4.13E-39	1.99E-26	2.74E-39	1.29E-26	1.83E-43	8.39E-31	1.11E-44	5.37E-32	9.47E-45	4.88E-32

Table 3.3 (Continued) (9/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		41		42		43		44		45	
		(3.010 -	2.460)	(2.460 -	2.020)	(2.020 -	1.650)	(1.650 -	1.350)	(1.350 -	1.110)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.15E-08	2.81E+00	1.13E-08	2.81E+00	1.08E-08	2.66E+00	1.07E-08	2.62E+00	1.07E-08	2.59E+00
2	10.0	2.11E-09	2.06E+00	2.06E-09	2.05E+00	2.03E-09	2.01E+00	1.89E-09	1.85E+00	1.71E-09	1.65E+00
3	15.0	7.65E-10	1.68E+00	7.16E-10	1.61E+00	6.60E-10	1.47E+00	5.75E-10	1.26E+00	4.65E-10	1.01E+00
4	20.0	3.37E-10	1.32E+00	3.04E-10	1.21E+00	2.56E-10	1.01E+00	2.08E-10	8.14E-01	1.53E-10	5.92E-01
5	25.0	1.61E-10	9.86E-01	1.41E-10	8.82E-01	1.07E-10	6.58E-01	8.21E-11	5.01E-01	5.66E-11	3.42E-01
6	30.0	8.05E-11	7.08E-01	6.84E-11	6.15E-01	4.64E-11	4.13E-01	3.42E-11	3.01E-01	2.28E-11	1.98E-01
7	35.0	4.15E-11	4.97E-01	3.41E-11	4.18E-01	2.12E-11	2.57E-01	1.51E-11	1.81E-01	9.93E-12	1.18E-01
8	40.0	2.22E-11	3.47E-01	1.75E-11	2.80E-01	9.81E-12	1.55E-01	6.85E-12	1.07E-01	4.50E-12	6.96E-02
9	45.0	1.18E-11	2.33E-01	9.00E-12	1.82E-01	4.63E-12	9.25E-02	3.18E-12	6.30E-02	2.12E-12	4.15E-02
10	50.0	6.27E-12	1.53E-01	4.68E-12	1.17E-01	2.21E-12	5.47E-02	1.52E-12	3.70E-02	1.03E-12	2.48E-02
11	55.0	3.34E-12	9.86E-02	2.46E-12	7.44E-02	1.07E-12	3.21E-02	7.34E-13	2.17E-02	5.07E-13	1.48E-02
12	60.0	1.81E-12	6.38E-02	1.30E-12	4.68E-02	5.29E-13	1.88E-02	3.63E-13	1.28E-02	2.55E-13	8.86E-03
13	65.0	9.85E-13	4.07E-02	6.94E-13	2.93E-02	2.65E-13	1.11E-02	1.83E-13	7.55E-03	1.30E-13	5.32E-03
14	70.0	5.37E-13	2.57E-02	3.72E-13	1.82E-02	1.34E-13	6.49E-03	9.30E-14	4.45E-03	6.70E-14	3.17E-03
15	75.0	2.94E-13	1.62E-02	2.00E-13	1.12E-02	6.81E-14	3.78E-03	4.76E-14	2.61E-03	3.46E-14	1.88E-03
16	80.0	1.60E-13	9.98E-03	1.09E-13	6.98E-03	3.49E-14	2.20E-03	2.45E-14	1.53E-03	1.80E-14	1.11E-03
17	85.0	8.84E-14	6.24E-03	5.92E-14	4.27E-03	1.80E-14	1.28E-03	1.27E-14	8.99E-04	9.41E-15	6.57E-04
18	90.0	4.88E-14	3.86E-03	3.23E-14	2.61E-03	9.34E-15	7.47E-04	6.65E-15	5.26E-04	4.94E-15	3.86E-04
19	95.0	2.71E-14	2.39E-03	1.76E-14	1.59E-03	4.87E-15	4.34E-04	3.49E-15	3.08E-04	2.60E-15	2.27E-04
20	100.0	1.49E-14	1.46E-03	9.61E-15	9.60E-04	2.55E-15	2.52E-04	1.84E-15	1.80E-04	1.37E-15	1.33E-04
21	110.0	4.48E-15	5.29E-04	2.91E-15	3.52E-04	7.10E-16	8.49E-05	5.15E-16	6.08E-05	3.86E-16	4.51E-05
22	120.0	1.38E-15	1.94E-04	8.78E-16	1.26E-04	2.00E-16	2.84E-05	1.46E-16	2.05E-05	1.09E-16	1.52E-05
23	130.0	4.27E-16	7.06E-05	2.64E-16	4.46E-05	5.68E-17	9.49E-06	4.16E-17	6.86E-06	3.13E-17	5.10E-06
24	140.0	1.33E-16	2.54E-05	8.18E-17	1.60E-05	1.63E-17	3.15E-06	1.19E-17	2.29E-06	8.99E-18	1.70E-06
25	150.0	4.24E-17	9.31E-06	2.49E-17	5.60E-06	4.70E-18	1.04E-06	3.45E-18	7.59E-07	2.60E-18	5.65E-07
26	160.0	1.32E-17	3.30E-06	7.52E-18	1.92E-06	1.36E-18	3.45E-07	1.00E-18	2.51E-07	7.56E-19	1.87E-07
27	170.0	4.12E-18	1.16E-06	2.37E-18	6.83E-07	3.97E-19	1.13E-07	2.93E-19	8.26E-08	2.21E-19	6.16E-08
28	180.0	1.28E-18	4.06E-07	7.25E-19	2.35E-07	1.17E-19	3.73E-08	8.59E-20	2.72E-08	6.48E-20	2.03E-08
29	190.0	3.94E-19	1.39E-07	2.25E-19	8.13E-08	3.43E-20	1.22E-08	2.52E-20	8.89E-09	1.89E-20	6.60E-09
30	200.0	1.25E-19	4.87E-08	6.95E-20	2.78E-08	1.01E-20	3.98E-09	7.40E-21	2.89E-09	5.54E-21	2.14E-09
31	220.0	1.26E-20	5.96E-09	6.86E-21	3.32E-09	8.66E-22	4.14E-10	6.34E-22	3.00E-10	5.14E-22	2.41E-10
32	240.0	1.27E-21	7.15E-10	6.53E-22	3.76E-10	7.35E-23	4.18E-11	5.44E-23	3.06E-11	4.71E-23	2.62E-11
33	260.0	1.54E-22	1.01E-10	8.59E-23	5.80E-11	6.75E-24	4.51E-12	4.98E-24	3.29E-12	5.09E-24	3.32E-12
34	280.0	1.73E-23	1.32E-11	9.40E-24	7.36E-12	6.23E-25	4.82E-13	4.64E-25	3.55E-13	5.48E-25	4.15E-13
35	300.0	1.79E-24	1.57E-12	1.11E-24	9.96E-13	5.21E-26	4.63E-14	4.17E-26	3.66E-14	5.85E-26	5.08E-14
36	350.0	7.65E-27	9.15E-15	6.72E-27	8.22E-15	1.43E-28	1.73E-16	1.50E-28	1.80E-16	2.55E-28	3.02E-16
37	400.0	4.27E-29	6.68E-17	3.01E-29	4.81E-17	4.17E-31	6.59E-19	6.48E-31	1.01E-18	1.33E-30	2.05E-18
38	450.0	2.40E-31	4.74E-19	1.96E-31	3.97E-19	1.49E-33	2.98E-21	2.92E-33	5.78E-21	8.61E-33	1.68E-20
39	500.0	1.18E-33	2.88E-21	8.17E-34	2.04E-21	7.83E-36	1.93E-23	1.66E-35	4.04E-23	8.19E-35	1.98E-22
40	550.0	7.65E-36	2.26E-23	4.67E-36	1.41E-23	4.94E-38	1.48E-25	1.37E-37	4.04E-25	9.92E-37	2.90E-24
41	600.0	3.85E-38	1.35E-25	2.16E-38	7.78E-26	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	650.0	1.93E-40	7.95E-28	1.01E-40	4.28E-28	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	700.0	8.63E-43	4.13E-30	4.83E-43	2.37E-30	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	750.0	4.16E-45	2.29E-32	2.73E-45	1.53E-32	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.3 (Continued) (10/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		46		47		48		49		50	
		(1.110 -	0.907)	(0.907 -	0.743)	(0.743 -	0.498)	(0.498 -	0.334)	(0.334 -	0.224)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	7.92E-09	1.91E+00	6.52E-09	1.72E+00	5.57E-09	1.70E+00	3.61E-09	1.45E+00	2.68E-09	1.54E+00
2	10.0	1.20E-09	1.16E+00	1.08E-09	1.14E+00	8.44E-10	1.03E+00	4.84E-10	7.76E-01	3.68E-10	8.44E-01
3	15.0	3.14E-10	6.82E-01	2.92E-10	6.92E-01	2.27E-10	6.21E-01	1.25E-10	4.52E-01	1.06E-10	5.50E-01
4	20.0	1.02E-10	3.96E-01	9.74E-11	4.10E-01	7.60E-11	3.70E-01	4.60E-11	2.95E-01	4.22E-11	3.88E-01
5	25.0	3.84E-11	2.32E-01	3.71E-11	2.44E-01	2.98E-11	2.27E-01	2.01E-11	2.01E-01	1.91E-11	2.75E-01
6	30.0	1.60E-11	1.39E-01	1.56E-11	1.48E-01	1.29E-11	1.42E-01	9.62E-12	1.39E-01	9.15E-12	1.89E-01
7	35.0	7.16E-12	8.48E-02	7.01E-12	9.05E-02	5.99E-12	8.94E-02	4.69E-12	9.21E-02	4.47E-12	1.26E-01
8	40.0	3.41E-12	5.28E-02	3.35E-12	5.65E-02	2.93E-12	5.70E-02	2.32E-12	5.95E-02	2.24E-12	8.25E-02
9	45.0	1.66E-12	3.25E-02	1.63E-12	3.49E-02	1.44E-12	3.56E-02	1.16E-12	3.77E-02	1.12E-12	5.22E-02
10	50.0	8.24E-13	1.99E-02	8.12E-13	2.14E-02	7.24E-13	2.20E-02	5.87E-13	2.35E-02	5.65E-13	3.24E-02
11	55.0	4.14E-13	1.21E-02	4.09E-13	1.30E-02	3.66E-13	1.35E-02	2.99E-13	1.45E-02	2.86E-13	1.99E-02
12	60.0	2.12E-13	7.37E-03	2.09E-13	7.92E-03	1.87E-13	8.22E-03	1.53E-13	8.83E-03	1.47E-13	1.21E-02
13	65.0	1.09E-13	4.45E-03	1.07E-13	4.78E-03	9.65E-14	4.97E-03	7.89E-14	5.34E-03	7.55E-14	7.32E-03
14	70.0	5.62E-14	2.66E-03	5.55E-14	2.86E-03	4.99E-14	2.98E-03	4.09E-14	3.21E-03	3.90E-14	4.39E-03
15	75.0	2.93E-14	1.60E-03	2.89E-14	1.72E-03	2.60E-14	1.78E-03	2.14E-14	1.93E-03	2.03E-14	2.63E-03
16	80.0	1.53E-14	9.49E-04	1.51E-14	1.02E-03	1.36E-14	1.06E-03	1.12E-14	1.15E-03	1.06E-14	1.56E-03
17	85.0	8.03E-15	5.61E-04	7.93E-15	6.03E-04	7.13E-15	6.27E-04	5.89E-15	6.82E-04	5.57E-15	9.24E-04
18	90.0	4.24E-15	3.32E-04	4.19E-15	3.57E-04	3.77E-15	3.72E-04	3.10E-15	4.02E-04	2.94E-15	5.47E-04
19	95.0	2.24E-15	1.96E-04	2.21E-15	2.10E-04	1.99E-15	2.19E-04	1.64E-15	2.37E-04	1.56E-15	3.22E-04
20	100.0	1.19E-15	1.15E-04	1.18E-15	1.24E-04	1.06E-15	1.29E-04	8.70E-16	1.39E-04	8.26E-16	1.90E-04
21	110.0	3.36E-16	3.93E-05	3.32E-16	4.23E-05	2.98E-16	4.40E-05	2.46E-16	4.77E-05	2.33E-16	6.48E-05
22	120.0	9.57E-17	1.33E-05	9.45E-17	1.43E-05	8.49E-17	1.49E-05	7.01E-17	1.62E-05	6.64E-17	2.19E-05
23	130.0	2.74E-17	4.48E-06	2.71E-17	4.82E-06	2.44E-17	5.01E-06	2.02E-17	5.48E-06	1.90E-17	7.38E-06
24	140.0	7.92E-18	1.50E-06	7.81E-18	1.61E-06	7.03E-18	1.68E-06	5.87E-18	1.84E-06	5.48E-18	2.46E-06
25	150.0	2.30E-18	5.00E-07	2.27E-18	5.37E-07	2.04E-18	5.59E-07	1.71E-18	6.17E-07	1.62E-18	8.39E-07
26	160.0	6.69E-19	1.66E-07	6.61E-19	1.78E-07	5.94E-19	1.85E-07	5.12E-19	2.10E-07	4.82E-19	2.83E-07
27	170.0	1.96E-19	5.47E-08	1.93E-19	5.88E-08	1.74E-19	6.12E-08	1.53E-19	7.06E-08	1.44E-19	9.54E-08
28	180.0	5.77E-20	1.81E-08	5.69E-20	1.94E-08	5.12E-20	2.02E-08	4.54E-20	2.36E-08	4.31E-20	3.20E-08
29	190.0	1.69E-20	5.91E-09	1.67E-20	6.35E-09	1.50E-20	6.58E-09	1.37E-20	7.92E-09	1.30E-20	1.08E-08
30	200.0	4.97E-21	1.92E-09	4.91E-21	2.07E-09	4.55E-21	2.22E-09	4.12E-21	2.64E-09	3.90E-21	3.59E-09
31	220.0	4.56E-22	2.13E-10	4.47E-22	2.28E-10	4.17E-22	2.46E-10	3.79E-22	2.94E-10	3.84E-22	4.27E-10
32	240.0	4.22E-23	2.35E-11	4.14E-23	2.51E-11	3.86E-23	2.71E-11	3.50E-23	3.23E-11	3.97E-23	5.25E-11
33	260.0	3.93E-24	2.57E-12	3.86E-24	2.75E-12	3.60E-24	2.97E-12	3.25E-24	3.52E-12	4.14E-24	6.42E-12
34	280.0	3.69E-25	2.80E-13	3.62E-25	2.99E-13	3.38E-25	3.23E-13	3.00E-25	3.76E-13	4.31E-25	7.77E-13
35	300.0	3.55E-26	3.09E-14	3.48E-26	3.30E-14	3.25E-26	3.56E-14	0.00E+00	0.00E+00	4.83E-26	9.99E-14
36	350.0	1.15E-28	1.36E-16	1.22E-28	1.58E-16	1.14E-28	1.70E-16	0.00E+00	0.00E+00	2.57E-28	7.23E-16
37	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.3 (Continued) (11/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		51		52		53		54		55	
		(0.224 -	0.150)	(0.150 -	0.087)	(0.087 -	0.032)	(0.032 -	0.015)	(0.015 -	0.007)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.90E-09	1.57E+00	1.12E-09	1.39E+00	8.73E-10	1.92E+00	5.74E-10	2.60E+00	5.28E-10	4.31E+00
2	10.0	2.81E-10	9.26E-01	2.24E-10	1.11E+00	1.95E-10	1.71E+00	1.73E-10	3.14E+00	1.70E-10	5.55E+00
3	15.0	9.18E-11	6.80E-01	8.28E-11	9.28E-01	7.78E-11	1.54E+00	7.28E-11	2.97E+00	7.13E-11	5.24E+00
4	20.0	3.89E-11	5.12E-01	3.67E-11	7.31E-01	3.51E-11	1.23E+00	3.30E-11	2.39E+00	3.21E-11	4.19E+00
5	25.0	1.81E-11	3.72E-01	1.73E-11	5.37E-01	1.65E-11	9.03E-01	1.54E-11	1.75E+00	1.49E-11	3.04E+00
6	30.0	8.71E-12	2.58E-01	8.43E-12	3.78E-01	7.88E-12	6.23E-01	7.45E-12	1.22E+00	7.14E-12	2.10E+00
7	35.0	4.26E-12	1.72E-01	4.11E-12	2.51E-01	3.83E-12	4.12E-01	3.60E-12	8.00E-01	3.44E-12	1.38E+00
8	40.0	2.13E-12	1.12E-01	2.03E-12	1.62E-01	1.91E-12	2.68E-01	1.77E-12	5.12E-01	1.68E-12	8.80E-01
9	45.0	1.06E-12	7.10E-02	1.01E-12	1.02E-01	9.49E-13	1.69E-01	8.77E-13	3.22E-01	8.36E-13	5.53E-01
10	50.0	5.35E-13	4.41E-02	5.10E-13	6.34E-02	4.76E-13	1.05E-01	4.41E-13	2.00E-01	4.20E-13	3.43E-01
11	55.0	2.71E-13	2.70E-02	2.59E-13	3.90E-02	2.41E-13	6.39E-02	2.23E-13	1.23E-01	2.13E-13	2.10E-01
12	60.0	1.39E-13	1.65E-02	1.32E-13	2.37E-02	1.23E-13	3.90E-02	1.14E-13	7.46E-02	1.09E-13	1.28E-01
13	65.0	7.15E-14	9.94E-03	6.82E-14	1.43E-02	6.34E-14	2.35E-02	5.89E-14	4.51E-02	5.61E-14	7.74E-02
14	70.0	3.69E-14	5.95E-03	3.54E-14	8.63E-03	3.27E-14	1.41E-02	3.05E-14	2.71E-02	2.91E-14	4.65E-02
15	75.0	1.93E-14	3.56E-03	1.85E-14	5.18E-03	1.71E-14	8.44E-03	1.60E-14	1.63E-02	1.52E-14	2.79E-02
16	80.0	1.01E-14	2.12E-03	9.70E-15	3.09E-03	8.93E-15	5.02E-03	8.37E-15	9.71E-03	7.97E-15	1.67E-02
17	85.0	5.27E-15	1.25E-03	5.09E-15	1.83E-03	4.68E-15	2.97E-03	4.39E-15	5.75E-03	4.19E-15	9.87E-03
18	90.0	2.78E-15	7.42E-04	2.68E-15	1.08E-03	2.47E-15	1.76E-03	2.31E-15	3.39E-03	2.20E-15	5.82E-03
19	95.0	1.47E-15	4.37E-04	1.42E-15	6.37E-04	1.31E-15	1.03E-03	1.22E-15	2.00E-03	1.17E-15	3.43E-03
20	100.0	7.82E-16	2.57E-04	7.52E-16	3.74E-04	6.94E-16	6.09E-04	6.49E-16	1.18E-03	6.18E-16	2.02E-03
21	110.0	2.21E-16	8.79E-05	2.13E-16	1.28E-04	1.96E-16	2.08E-04	1.84E-16	4.03E-04	1.75E-16	6.91E-04
22	120.0	6.28E-17	2.98E-05	6.06E-17	4.34E-05	5.57E-17	7.04E-05	5.23E-17	1.36E-04	4.98E-17	2.34E-04
23	130.0	1.80E-17	1.00E-05	1.75E-17	1.47E-05	1.61E-17	2.39E-05	1.51E-17	4.61E-05	1.43E-17	7.91E-05
24	140.0	5.28E-18	3.40E-06	5.05E-18	4.92E-06	4.75E-18	8.18E-06	4.44E-18	1.58E-05	4.26E-18	2.72E-05
25	150.0	1.56E-18	1.16E-06	1.50E-18	1.68E-06	1.41E-18	2.78E-06	1.31E-18	5.33E-06	1.25E-18	9.20E-06
26	160.0	4.63E-19	3.90E-07	4.48E-19	5.71E-07	4.17E-19	9.38E-07	3.90E-19	1.81E-06	3.73E-19	3.12E-06
27	170.0	1.38E-19	1.31E-07	1.34E-19	1.92E-07	1.24E-19	3.16E-07	1.16E-19	6.09E-07	1.11E-19	1.05E-06
28	180.0	4.14E-20	4.41E-08	3.98E-20	6.41E-08	3.73E-20	1.06E-07	3.46E-20	2.03E-07	3.31E-20	3.50E-07
29	190.0	1.25E-20	1.48E-08	1.20E-20	2.15E-08	1.12E-20	3.55E-08	1.04E-20	6.83E-08	9.98E-21	1.18E-07
30	200.0	3.75E-21	4.94E-09	3.61E-21	7.18E-09	3.43E-21	1.20E-08	3.14E-21	2.28E-08	3.00E-21	3.92E-08
31	220.0	3.69E-22	5.88E-10	3.32E-22	7.99E-10	3.51E-22	1.49E-09	2.88E-22	2.53E-09	2.76E-22	4.36E-09
32	240.0	3.82E-23	7.24E-11	3.06E-23	8.78E-11	3.63E-23	1.84E-10	2.78E-23	2.90E-10	2.66E-23	5.01E-10
33	260.0	3.97E-24	8.84E-12	2.84E-24	9.57E-12	3.78E-24	2.25E-11	2.85E-24	3.50E-11	2.73E-24	6.03E-11
34	280.0	4.14E-25	1.07E-12	2.61E-25	1.02E-12	3.91E-25	2.69E-12	2.92E-25	4.15E-12	2.80E-25	7.16E-12
35	300.0	4.69E-26	1.39E-13	0.00E+00	0.00E+00	4.53E-26	3.58E-13	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	350.0	2.45E-28	9.89E-16	0.00E+00	0.00E+00	2.62E-28	2.82E-15	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.4 Does equivalent per source neutrons and attenuation factor of secondary gamma rays in ordinary concrete (1/11).

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		1		2		3		4		5	
		(400.000	- 375.000)	(375.000	- 350.000)	(350.000	- 325.000)	(325.000	- 300.000)	(300.000	- 275.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.48E-11	1.84E-03	1.47E-11	1.87E-03	1.59E-11	2.09E-03	1.58E-11	2.13E-03	1.44E-11	2.01E-03
2	10.0	1.07E-11	5.31E-03	1.06E-11	5.41E-03	1.10E-11	5.77E-03	1.09E-11	5.89E-03	1.03E-11	5.76E-03
3	15.0	8.46E-12	9.49E-03	8.39E-12	9.65E-03	8.60E-12	1.02E-02	8.51E-12	1.04E-02	8.14E-12	1.02E-02
4	20.0	7.05E-12	1.40E-02	6.98E-12	1.43E-02	6.93E-12	1.46E-02	6.85E-12	1.48E-02	6.75E-12	1.51E-02
5	25.0	5.74E-12	1.79E-02	5.68E-12	1.82E-02	5.64E-12	1.85E-02	5.56E-12	1.88E-02	5.46E-12	1.91E-02
6	30.0	4.69E-12	2.11E-02	4.64E-12	2.14E-02	4.76E-12	2.25E-02	4.68E-12	2.28E-02	4.43E-12	2.23E-02
7	35.0	3.85E-12	2.35E-02	3.80E-12	2.38E-02	3.87E-12	2.49E-02	3.80E-12	2.52E-02	3.61E-12	2.47E-02
8	40.0	3.16E-12	2.52E-02	3.11E-12	2.55E-02	3.16E-12	2.65E-02	3.10E-12	2.68E-02	2.94E-12	2.62E-02
9	45.0	2.60E-12	2.63E-02	2.56E-12	2.65E-02	2.58E-12	2.75E-02	2.53E-12	2.77E-02	2.40E-12	2.71E-02
10	50.0	2.19E-12	2.73E-02	2.16E-12	2.76E-02	2.12E-12	2.79E-02	2.07E-12	2.80E-02	2.00E-12	2.80E-02
11	55.0	1.82E-12	2.74E-02	1.78E-12	2.76E-02	1.75E-12	2.78E-02	1.70E-12	2.79E-02	1.65E-12	2.78E-02
12	60.0	1.51E-12	2.71E-02	1.48E-12	2.72E-02	1.45E-12	2.74E-02	1.41E-12	2.74E-02	1.36E-12	2.73E-02
13	65.0	1.26E-12	2.66E-02	1.24E-12	2.67E-02	1.21E-12	2.68E-02	1.17E-12	2.67E-02	1.12E-12	2.65E-02
14	70.0	1.06E-12	2.59E-02	1.04E-12	2.59E-02	1.01E-12	2.59E-02	9.73E-13	2.58E-02	9.35E-13	2.56E-02
15	75.0	8.95E-13	2.51E-02	8.72E-13	2.51E-02	8.46E-13	2.50E-02	8.15E-13	2.48E-02	7.81E-13	2.45E-02
16	80.0	7.58E-13	2.42E-02	7.37E-13	2.41E-02	7.17E-13	2.41E-02	6.90E-13	2.39E-02	6.56E-13	2.34E-02
17	85.0	6.45E-13	2.32E-02	6.26E-13	2.31E-02	6.07E-13	2.30E-02	5.82E-13	2.28E-02	5.53E-13	2.23E-02
18	90.0	5.51E-13	2.22E-02	5.34E-13	2.21E-02	5.16E-13	2.20E-02	4.94E-13	2.16E-02	4.67E-13	2.11E-02
19	95.0	4.72E-13	2.12E-02	4.57E-13	2.11E-02	4.40E-13	2.09E-02	4.20E-13	2.05E-02	3.97E-13	2.00E-02
20	100.0	4.06E-13	2.02E-02	3.92E-13	2.00E-02	3.77E-13	1.98E-02	3.59E-13	1.94E-02	3.38E-13	1.89E-02
21	110.0	3.03E-13	1.83E-02	2.92E-13	1.80E-02	2.79E-13	1.77E-02	2.64E-13	1.73E-02	2.48E-13	1.68E-02
22	120.0	2.29E-13	1.64E-02	2.19E-13	1.61E-02	2.08E-13	1.58E-02	1.97E-13	1.53E-02	1.84E-13	1.48E-02
23	130.0	1.74E-13	1.47E-02	1.66E-13	1.44E-02	1.57E-13	1.40E-02	1.48E-13	1.35E-02	1.38E-13	1.30E-02
24	140.0	1.33E-13	1.30E-02	1.27E-13	1.27E-02	1.19E-13	1.23E-02	1.12E-13	1.18E-02	1.04E-13	1.13E-02
25	150.0	1.04E-13	1.16E-02	9.93E-14	1.14E-02	9.15E-14	1.08E-02	8.52E-14	1.04E-02	7.93E-14	9.97E-03
26	160.0	8.04E-14	1.03E-02	7.66E-14	1.00E-02	7.04E-14	9.46E-03	6.53E-14	9.04E-03	6.05E-14	8.65E-03
27	170.0	6.25E-14	9.01E-03	5.94E-14	8.78E-03	5.44E-14	8.26E-03	5.02E-14	7.85E-03	4.64E-14	7.48E-03
28	180.0	4.88E-14	7.88E-03	4.62E-14	7.66E-03	4.22E-14	7.18E-03	3.88E-14	6.81E-03	3.57E-14	6.45E-03
29	190.0	3.83E-14	6.88E-03	3.61E-14	6.66E-03	3.29E-14	6.23E-03	3.01E-14	5.88E-03	2.75E-14	5.55E-03
30	200.0	3.01E-14	5.99E-03	2.83E-14	5.78E-03	2.59E-14	5.44E-03	2.37E-14	5.12E-03	2.13E-14	4.76E-03
31	220.0	1.87E-14	4.50E-03	1.75E-14	4.32E-03	1.59E-14	4.04E-03	1.44E-14	3.77E-03	1.29E-14	3.48E-03
32	240.0	1.17E-14	3.35E-03	1.09E-14	3.20E-03	9.82E-15	2.97E-03	8.84E-15	2.76E-03	7.85E-15	2.53E-03
33	260.0	7.36E-15	2.48E-03	6.80E-15	2.35E-03	6.11E-15	2.17E-03	5.46E-15	2.00E-03	4.82E-15	1.82E-03
34	280.0	4.65E-15	1.82E-03	4.27E-15	1.71E-03	3.82E-15	1.57E-03	3.39E-15	1.44E-03	2.97E-15	1.30E-03
35	300.0	2.97E-15	1.33E-03	2.70E-15	1.24E-03	2.40E-15	1.13E-03	2.11E-15	1.03E-03	1.85E-15	9.28E-04
36	350.0	9.62E-16	5.87E-04	8.64E-16	5.41E-04	7.56E-16	4.87E-04	6.57E-16	4.36E-04	5.65E-16	3.86E-04
37	400.0	3.14E-16	2.51E-04	2.80E-16	2.29E-04	2.42E-16	2.03E-04	2.07E-16	1.79E-04	1.75E-16	1.57E-04
38	450.0	1.04E-16	1.05E-04	9.14E-17	9.46E-05	7.80E-17	8.30E-05	6.59E-17	7.22E-05	5.49E-17	6.21E-05
39	500.0	3.43E-17	4.27E-05	3.00E-17	3.83E-05	2.53E-17	3.32E-05	2.11E-17	2.85E-05	1.74E-17	2.43E-05
40	550.0	1.14E-17	1.71E-05	9.90E-18	1.53E-05	8.24E-18	1.31E-05	6.79E-18	1.11E-05	5.52E-18	9.32E-06
41	600.0	3.78E-18	6.78E-06	3.26E-18	6.00E-06	2.69E-18	5.09E-06	2.19E-18	4.26E-06	1.75E-18	3.52E-06
42	650.0	1.26E-18	2.65E-06	1.08E-18	2.33E-06	8.79E-19	1.95E-06	7.07E-19	1.61E-06	5.55E-19	1.31E-06
43	700.0	4.18E-19	1.02E-06	3.55E-19	8.90E-07	2.87E-19	7.40E-07	2.28E-19	6.05E-07	1.77E-19	4.85E-07
44	750.0	1.37E-19	3.85E-07	1.16E-19	3.33E-07	9.29E-20	2.75E-07	7.30E-20	2.22E-07	5.59E-20	1.75E-07

Table 3.4 (Continued) (2/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		6 (275.000 - 250.000)		7 (250.000 - 225.000)		8 (225.000 - 200.000)		9 (200.000 - 180.000)		10 (180.000 - 160.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.41E-11	2.04E-03	1.38E-11	2.08E-03	1.37E-11	2.15E-03	1.37E-11	2.21E-03	1.37E-11	2.25E-03
2	10.0	1.01E-11	5.86E-03	9.97E-12	5.98E-03	9.87E-12	6.18E-03	9.82E-12	6.34E-03	9.84E-12	6.45E-03
3	15.0	7.99E-12	1.04E-02	7.86E-12	1.06E-02	7.78E-12	1.10E-02	7.73E-12	1.12E-02	7.72E-12	1.14E-02
4	20.0	6.62E-12	1.53E-02	6.50E-12	1.56E-02	6.42E-12	1.61E-02	6.37E-12	1.64E-02	6.35E-12	1.66E-02
5	25.0	5.35E-12	1.93E-02	5.25E-12	1.97E-02	5.17E-12	2.03E-02	5.12E-12	2.06E-02	5.09E-12	2.08E-02
6	30.0	4.34E-12	2.26E-02	4.25E-12	2.30E-02	4.18E-12	2.35E-02	4.12E-12	2.39E-02	4.09E-12	2.41E-02
7	35.0	3.52E-12	2.49E-02	3.44E-12	2.53E-02	3.38E-12	2.59E-02	3.32E-12	2.63E-02	3.28E-12	2.63E-02
8	40.0	2.86E-12	2.65E-02	2.79E-12	2.68E-02	2.73E-12	2.74E-02	2.68E-12	2.76E-02	2.64E-12	2.76E-02
9	45.0	2.33E-12	2.73E-02	2.27E-12	2.76E-02	2.21E-12	2.81E-02	2.16E-12	2.82E-02	2.12E-12	2.82E-02
10	50.0	1.95E-12	2.81E-02	1.89E-12	2.84E-02	1.83E-12	2.87E-02	1.78E-12	2.88E-02	1.75E-12	2.86E-02
11	55.0	1.59E-12	2.79E-02	1.54E-12	2.80E-02	1.49E-12	2.83E-02	1.45E-12	2.83E-02	1.41E-12	2.79E-02
12	60.0	1.31E-12	2.73E-02	1.27E-12	2.73E-02	1.22E-12	2.75E-02	1.18E-12	2.74E-02	1.14E-12	2.70E-02
13	65.0	1.08E-12	2.64E-02	1.04E-12	2.64E-02	1.00E-12	2.65E-02	9.63E-13	2.62E-02	9.30E-13	2.57E-02
14	70.0	8.98E-13	2.54E-02	8.62E-13	2.54E-02	8.25E-13	2.53E-02	7.90E-13	2.50E-02	7.60E-13	2.44E-02
15	75.0	7.48E-13	2.43E-02	7.16E-13	2.42E-02	6.83E-13	2.41E-02	6.51E-13	2.36E-02	6.24E-13	2.30E-02
16	80.0	6.26E-13	2.32E-02	5.98E-13	2.30E-02	5.68E-13	2.28E-02	5.39E-13	2.23E-02	5.14E-13	2.16E-02
17	85.0	5.26E-13	2.20E-02	5.01E-13	2.17E-02	4.74E-13	2.14E-02	4.48E-13	2.09E-02	4.25E-13	2.01E-02
18	90.0	4.44E-13	2.08E-02	4.21E-13	2.05E-02	3.97E-13	2.01E-02	3.74E-13	1.96E-02	3.53E-13	1.88E-02
19	95.0	3.76E-13	1.96E-02	3.56E-13	1.93E-02	3.34E-13	1.89E-02	3.13E-13	1.82E-02	2.95E-13	1.74E-02
20	100.0	3.20E-13	1.85E-02	3.01E-13	1.81E-02	2.82E-13	1.77E-02	2.63E-13	1.70E-02	2.47E-13	1.62E-02
21	110.0	2.33E-13	1.63E-02	2.18E-13	1.59E-02	2.03E-13	1.54E-02	1.88E-13	1.47E-02	1.74E-13	1.38E-02
22	120.0	1.72E-13	1.43E-02	1.60E-13	1.38E-02	1.48E-13	1.33E-02	1.36E-13	1.26E-02	1.25E-13	1.18E-02
23	130.0	1.28E-13	1.25E-02	1.18E-13	1.20E-02	1.08E-13	1.15E-02	9.87E-14	1.08E-02	8.99E-14	9.96E-03
24	140.0	9.57E-14	1.08E-02	8.81E-14	1.04E-02	8.02E-14	9.85E-03	7.25E-14	9.17E-03	6.54E-14	8.40E-03
25	150.0	7.28E-14	9.47E-03	6.66E-14	9.00E-03	6.03E-14	8.50E-03	5.41E-14	7.85E-03	4.84E-14	7.13E-03
26	160.0	5.52E-14	8.17E-03	5.03E-14	7.73E-03	4.52E-14	7.25E-03	4.02E-14	6.64E-03	3.57E-14	5.98E-03
27	170.0	4.21E-14	7.03E-03	3.81E-14	6.61E-03	3.40E-14	6.16E-03	3.01E-14	5.61E-03	2.64E-14	5.00E-03
28	180.0	3.22E-14	6.03E-03	2.90E-14	5.64E-03	2.57E-14	5.22E-03	2.26E-14	4.72E-03	1.97E-14	4.17E-03
29	190.0	2.47E-14	5.16E-03	2.22E-14	4.80E-03	1.96E-14	4.42E-03	1.70E-14	3.96E-03	1.47E-14	3.48E-03
30	200.0	1.91E-14	4.41E-03	1.70E-14	4.08E-03	1.49E-14	3.73E-03	1.29E-14	3.32E-03	1.10E-14	2.89E-03
31	220.0	1.14E-14	3.19E-03	1.01E-14	2.93E-03	8.73E-15	2.65E-03	7.42E-15	2.32E-03	6.25E-15	1.98E-03
32	240.0	6.89E-15	2.29E-03	6.01E-15	2.08E-03	5.16E-15	1.86E-03	4.32E-15	1.61E-03	3.58E-15	1.35E-03
33	260.0	4.19E-15	1.64E-03	3.62E-15	1.47E-03	3.07E-15	1.30E-03	2.54E-15	1.11E-03	2.07E-15	9.16E-04
34	280.0	2.56E-15	1.16E-03	2.19E-15	1.03E-03	1.84E-15	9.04E-04	1.50E-15	7.59E-04	1.20E-15	6.18E-04
35	300.0	1.58E-15	8.20E-04	1.34E-15	7.24E-04	1.11E-15	6.27E-04	8.94E-16	5.19E-04	7.05E-16	4.16E-04
36	350.0	4.72E-16	3.35E-04	3.93E-16	2.89E-04	3.18E-16	2.44E-04	2.47E-16	1.95E-04	1.87E-16	1.50E-04
37	400.0	1.44E-16	1.33E-04	1.17E-16	1.13E-04	9.24E-17	9.26E-05	6.95E-17	7.17E-05	5.06E-17	5.30E-05
38	450.0	4.42E-17	5.18E-05	3.53E-17	4.30E-05	2.72E-17	3.45E-05	1.98E-17	2.59E-05	1.39E-17	1.84E-05
39	500.0	1.38E-17	1.99E-05	1.08E-17	1.62E-05	8.12E-18	1.27E-05	5.72E-18	9.23E-06	3.86E-18	6.32E-06
40	550.0	4.29E-18	7.51E-06	3.30E-18	6.00E-06	2.43E-18	4.60E-06	1.66E-18	3.24E-06	1.08E-18	2.13E-06
41	600.0	1.34E-18	2.79E-06	1.01E-18	2.19E-06	7.27E-19	1.64E-06	4.81E-19	1.12E-06	3.01E-19	7.09E-07
42	650.0	4.16E-19	1.02E-06	3.11E-19	7.88E-07	2.18E-19	5.77E-07	1.39E-19	3.78E-07	8.41E-20	2.33E-07
43	700.0	1.36E-19	3.85E-07	9.60E-20	2.82E-07	6.59E-20	2.02E-07	4.25E-20	1.34E-07	2.38E-20	7.63E-08
44	750.0	4.21E-20	1.37E-07	2.93E-20	9.89E-08	1.97E-20	6.93E-08	1.20E-20	4.36E-08	6.64E-21	2.45E-08

Table 3.4 (Continued) (3/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		11 (160.000 - 140.000)		12 (140.000 - 120.000)		13 (120.000 - 110.000)		14 (110.000 - 100.000)		15 (100.000 - 90.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.39E-11	2.32E-03	1.42E-11	2.41E-03	1.44E-11	2.49E-03	1.46E-11	2.55E-03	1.60E-11	2.83E-03
2	10.0	9.93E-12	6.62E-03	1.01E-11	6.85E-03	1.02E-11	7.05E-03	1.03E-11	7.21E-03	1.08E-11	7.66E-03
3	15.0	7.77E-12	1.16E-02	7.86E-12	1.20E-02	7.92E-12	1.23E-02	7.98E-12	1.26E-02	8.28E-12	1.32E-02
4	20.0	6.37E-12	1.70E-02	6.41E-12	1.74E-02	6.44E-12	1.78E-02	6.47E-12	1.81E-02	6.48E-12	1.84E-02
5	25.0	5.09E-12	2.12E-02	5.10E-12	2.16E-02	5.10E-12	2.20E-02	5.10E-12	2.23E-02	5.11E-12	2.26E-02
6	30.0	4.07E-12	2.44E-02	4.06E-12	2.48E-02	4.04E-12	2.51E-02	4.03E-12	2.54E-02	4.16E-12	2.65E-02
7	35.0	3.26E-12	2.66E-02	3.23E-12	2.69E-02	3.20E-12	2.70E-02	3.18E-12	2.72E-02	3.25E-12	2.82E-02
8	40.0	2.61E-12	2.78E-02	2.57E-12	2.79E-02	2.53E-12	2.79E-02	2.50E-12	2.80E-02	2.54E-12	2.88E-02
9	45.0	2.09E-12	2.82E-02	2.04E-12	2.81E-02	2.00E-12	2.80E-02	1.97E-12	2.79E-02	1.99E-12	2.85E-02
10	50.0	1.71E-12	2.85E-02	1.66E-12	2.82E-02	1.62E-12	2.79E-02	1.59E-12	2.77E-02	1.56E-12	2.76E-02
11	55.0	1.37E-12	2.77E-02	1.33E-12	2.72E-02	1.28E-12	2.68E-02	1.25E-12	2.65E-02	1.22E-12	2.62E-02
12	60.0	1.11E-12	2.66E-02	1.06E-12	2.59E-02	1.02E-12	2.53E-02	9.89E-13	2.49E-02	9.60E-13	2.45E-02
13	65.0	8.96E-13	2.52E-02	8.52E-13	2.45E-02	8.12E-13	2.37E-02	7.85E-13	2.32E-02	7.57E-13	2.27E-02
14	70.0	7.28E-13	2.38E-02	6.87E-13	2.29E-02	6.50E-13	2.20E-02	6.25E-13	2.14E-02	5.99E-13	2.08E-02
15	75.0	5.94E-13	2.23E-02	5.56E-13	2.13E-02	5.22E-13	2.03E-02	4.99E-13	1.96E-02	4.76E-13	1.90E-02
16	80.0	4.87E-13	2.08E-02	4.52E-13	1.97E-02	4.21E-13	1.86E-02	4.00E-13	1.79E-02	3.82E-13	1.73E-02
17	85.0	4.01E-13	1.93E-02	3.69E-13	1.81E-02	3.41E-13	1.70E-02	3.22E-13	1.63E-02	3.05E-13	1.56E-02
18	90.0	3.31E-13	1.79E-02	3.02E-13	1.66E-02	2.77E-13	1.55E-02	2.60E-13	1.48E-02	2.45E-13	1.40E-02
19	95.0	2.74E-13	1.65E-02	2.48E-13	1.52E-02	2.26E-13	1.41E-02	2.11E-13	1.33E-02	1.97E-13	1.26E-02
20	100.0	2.28E-13	1.52E-02	2.05E-13	1.39E-02	1.85E-13	1.28E-02	1.72E-13	1.20E-02	1.59E-13	1.13E-02
21	110.0	1.59E-13	1.28E-02	1.41E-13	1.16E-02	1.25E-13	1.05E-02	1.15E-13	9.71E-03	1.05E-13	8.97E-03
22	120.0	1.13E-13	1.08E-02	9.78E-14	9.57E-03	8.56E-14	8.51E-03	7.75E-14	7.81E-03	6.97E-14	7.11E-03
23	130.0	8.03E-14	9.04E-03	6.87E-14	7.88E-03	5.91E-14	6.90E-03	5.29E-14	6.25E-03	4.69E-14	5.61E-03
24	140.0	5.77E-14	7.54E-03	4.86E-14	6.47E-03	4.12E-14	5.58E-03	3.64E-14	4.99E-03	3.18E-14	4.41E-03
25	150.0	4.22E-14	6.32E-03	3.50E-14	5.34E-03	2.92E-14	4.53E-03	2.55E-14	4.01E-03	2.17E-14	3.46E-03
26	160.0	3.07E-14	5.24E-03	2.51E-14	4.36E-03	2.06E-14	3.64E-03	1.78E-14	3.18E-03	1.49E-14	2.71E-03
27	170.0	2.25E-14	4.34E-03	1.81E-14	3.55E-03	1.46E-14	2.92E-03	1.25E-14	2.52E-03	1.03E-14	2.11E-03
28	180.0	1.66E-14	3.58E-03	1.31E-14	2.88E-03	1.04E-14	2.33E-03	8.78E-15	1.99E-03	7.16E-15	1.64E-03
29	190.0	1.22E-14	2.95E-03	9.54E-15	2.34E-03	7.48E-15	1.87E-03	6.22E-15	1.57E-03	5.00E-15	1.28E-03
30	200.0	9.08E-15	2.42E-03	6.97E-15	1.89E-03	5.38E-15	1.49E-03	4.42E-15	1.24E-03	3.53E-15	1.00E-03
31	220.0	5.04E-15	1.62E-03	3.75E-15	1.23E-03	2.81E-15	9.39E-04	2.25E-15	7.62E-04	1.74E-15	5.97E-04
32	240.0	2.82E-15	1.08E-03	2.04E-15	7.98E-04	1.48E-15	5.89E-04	1.16E-15	4.66E-04	8.68E-16	3.54E-04
33	260.0	1.60E-15	7.19E-04	1.12E-15	5.14E-04	7.87E-16	3.68E-04	6.01E-16	2.84E-04	4.36E-16	2.09E-04
34	280.0	9.07E-16	4.74E-04	6.18E-16	3.29E-04	4.22E-16	2.28E-04	3.14E-16	1.72E-04	2.21E-16	1.23E-04
35	300.0	5.21E-16	3.12E-04	3.45E-16	2.11E-04	2.28E-16	1.42E-04	1.65E-16	1.04E-04	1.12E-16	7.16E-05
36	350.0	1.31E-16	1.07E-04	8.06E-17	6.71E-05	4.92E-17	4.16E-05	3.36E-17	2.88E-05	2.11E-17	1.83E-05
37	400.0	3.36E-17	3.58E-05	1.93E-17	2.09E-05	1.09E-17	1.20E-05	6.96E-18	7.79E-06	4.04E-18	4.57E-06
38	450.0	8.74E-18	1.18E-05	4.67E-18	6.42E-06	2.43E-18	3.39E-06	1.46E-18	2.07E-06	7.82E-19	1.12E-06
39	500.0	2.31E-18	3.85E-06	1.15E-18	1.95E-06	5.50E-19	9.50E-07	3.11E-19	5.44E-07	1.53E-19	2.70E-07
40	550.0	6.12E-19	1.23E-06	2.84E-19	5.84E-07	1.25E-19	2.61E-07	6.64E-20	1.40E-07	3.00E-20	6.42E-08
41	600.0	1.63E-19	3.90E-07	7.03E-20	1.72E-07	2.85E-20	7.08E-08	1.41E-20	3.56E-08	5.92E-21	1.51E-08
42	650.0	4.33E-20	1.22E-07	1.74E-20	5.00E-08	6.47E-21	1.89E-08	3.01E-21	8.90E-09	1.17E-21	3.51E-09
43	700.0	1.16E-20	3.80E-08	4.37E-21	1.45E-08	1.49E-21	5.04E-09	6.50E-22	2.23E-09	2.33E-22	8.08E-10
44	750.0	3.10E-21	1.16E-08	1.08E-21	4.14E-09	3.39E-22	1.32E-09	1.39E-22	5.46E-10	4.61E-23	1.84E-10

Table 3.4 (Continued) (4/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		16		17		18		19		20	
		(90.000 -	80.000)	(80.000 -	70.000)	(70.000 -	65.000)	(65.000 -	60.000)	(60.000 -	55.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.49E-11	2.67E-03	1.50E-11	2.73E-03	1.63E-11	3.00E-03	1.63E-11	3.04E-03	1.64E-11	3.08E-03
2	10.0	1.05E-11	7.55E-03	1.06E-11	7.71E-03	1.10E-11	8.12E-03	1.10E-11	8.22E-03	1.10E-11	8.32E-03
3	15.0	8.12E-12	1.31E-02	8.14E-12	1.34E-02	8.37E-12	1.39E-02	8.38E-12	1.41E-02	8.37E-12	1.42E-02
4	20.0	6.55E-12	1.88E-02	6.55E-12	1.91E-02	6.50E-12	1.92E-02	6.49E-12	1.94E-02	6.47E-12	1.95E-02
5	25.0	5.13E-12	2.30E-02	5.11E-12	2.33E-02	5.07E-12	2.34E-02	5.05E-12	2.35E-02	5.02E-12	2.36E-02
6	30.0	4.02E-12	2.60E-02	3.99E-12	2.62E-02	4.07E-12	2.71E-02	4.04E-12	2.71E-02	4.00E-12	2.71E-02
7	35.0	3.15E-12	2.77E-02	3.10E-12	2.77E-02	3.14E-12	2.84E-02	3.10E-12	2.84E-02	3.06E-12	2.83E-02
8	40.0	2.45E-12	2.82E-02	2.41E-12	2.81E-02	2.41E-12	2.85E-02	2.38E-12	2.84E-02	2.34E-12	2.82E-02
9	45.0	1.91E-12	2.78E-02	1.86E-12	2.75E-02	1.86E-12	2.78E-02	1.82E-12	2.75E-02	1.78E-12	2.71E-02
10	50.0	1.52E-12	2.73E-02	1.47E-12	2.68E-02	1.43E-12	2.63E-02	1.39E-12	2.60E-02	1.35E-12	2.55E-02
11	55.0	1.19E-12	2.58E-02	1.14E-12	2.51E-02	1.10E-12	2.45E-02	1.07E-12	2.41E-02	1.03E-12	2.35E-02
12	60.0	9.27E-13	2.40E-02	8.84E-13	2.32E-02	8.45E-13	2.25E-02	8.17E-13	2.19E-02	7.86E-13	2.13E-02
13	65.0	7.26E-13	2.20E-02	6.87E-13	2.12E-02	6.52E-13	2.03E-02	6.27E-13	1.98E-02	5.99E-13	1.91E-02
14	70.0	5.71E-13	2.01E-02	5.35E-13	1.91E-02	5.04E-13	1.83E-02	4.82E-13	1.76E-02	4.58E-13	1.69E-02
15	75.0	4.50E-13	1.82E-02	4.18E-13	1.72E-02	3.91E-13	1.62E-02	3.72E-13	1.56E-02	3.51E-13	1.49E-02
16	80.0	3.56E-13	1.64E-02	3.28E-13	1.53E-02	3.06E-13	1.45E-02	2.89E-13	1.38E-02	2.71E-13	1.31E-02
17	85.0	2.82E-13	1.47E-02	2.58E-13	1.36E-02	2.39E-13	1.27E-02	2.24E-13	1.21E-02	2.08E-13	1.13E-02
18	90.0	2.25E-13	1.31E-02	2.03E-13	1.20E-02	1.86E-13	1.12E-02	1.74E-13	1.05E-02	1.61E-13	9.81E-03
19	95.0	1.80E-13	1.16E-02	1.61E-13	1.06E-02	1.46E-13	9.74E-03	1.35E-13	9.11E-03	1.24E-13	8.43E-03
20	100.0	1.44E-13	1.03E-02	1.28E-13	9.32E-03	1.15E-13	8.49E-03	1.06E-13	7.89E-03	9.61E-14	7.24E-03
21	110.0	9.33E-14	8.10E-03	8.11E-14	7.16E-03	7.14E-14	6.39E-03	6.48E-14	5.85E-03	5.79E-14	5.28E-03
22	120.0	6.11E-14	6.31E-03	5.20E-14	5.46E-03	4.49E-14	4.78E-03	4.01E-14	4.31E-03	3.52E-14	3.82E-03
23	130.0	4.04E-14	4.90E-03	3.36E-14	4.15E-03	2.84E-14	3.55E-03	2.50E-14	3.15E-03	2.16E-14	2.75E-03
24	140.0	2.69E-14	3.79E-03	2.19E-14	3.14E-03	1.81E-14	2.63E-03	1.57E-14	2.29E-03	1.33E-14	1.96E-03
25	150.0	1.82E-14	2.94E-03	1.45E-14	2.38E-03	1.17E-14	1.94E-03	9.92E-15	1.66E-03	8.23E-15	1.40E-03
26	160.0	1.23E-14	2.26E-03	9.59E-15	1.79E-03	7.52E-15	1.42E-03	6.29E-15	1.20E-03	5.12E-15	9.88E-04
27	170.0	8.34E-15	1.73E-03	6.36E-15	1.34E-03	4.87E-15	1.04E-03	4.01E-15	8.63E-04	3.19E-15	6.96E-04
28	180.0	5.68E-15	1.32E-03	4.23E-15	1.00E-03	3.17E-15	7.60E-04	2.56E-15	6.20E-04	2.00E-15	4.89E-04
29	190.0	3.89E-15	1.01E-03	2.83E-15	7.46E-04	2.07E-15	5.53E-04	1.65E-15	4.43E-04	1.26E-15	3.42E-04
30	200.0	2.67E-15	7.67E-04	1.90E-15	5.54E-04	1.37E-15	4.05E-04	1.07E-15	3.19E-04	8.00E-16	2.41E-04
31	220.0	1.27E-15	4.42E-04	8.62E-16	3.04E-04	5.91E-16	2.11E-04	4.43E-16	1.60E-04	3.18E-16	1.16E-04
32	240.0	6.10E-16	2.52E-04	3.94E-16	1.65E-04	2.57E-16	1.09E-04	1.85E-16	7.96E-05	1.27E-16	5.51E-05
33	260.0	2.96E-16	1.43E-04	1.82E-16	8.96E-05	1.12E-16	5.60E-05	7.79E-17	3.93E-05	5.10E-17	2.60E-05
34	280.0	1.44E-16	8.10E-05	8.43E-17	4.82E-05	4.92E-17	2.85E-05	3.29E-17	1.92E-05	2.05E-17	1.21E-05
35	300.0	7.07E-17	4.57E-05	3.93E-17	2.58E-05	2.17E-17	1.44E-05	1.39E-17	9.33E-06	8.29E-18	5.62E-06
36	350.0	1.20E-17	1.06E-05	5.88E-18	5.26E-06	2.82E-18	2.55E-06	1.63E-18	1.49E-06	8.63E-19	7.97E-07
37	400.0	2.07E-18	2.38E-06	8.92E-19	1.04E-06	3.70E-19	4.37E-07	1.93E-19	2.30E-07	9.04E-20	1.09E-07
38	450.0	3.62E-19	5.26E-07	1.37E-19	2.02E-07	4.88E-20	7.30E-08	2.29E-20	3.45E-08	9.48E-21	1.45E-08
39	500.0	6.39E-20	1.15E-07	2.11E-20	3.85E-08	6.46E-21	1.19E-08	2.72E-21	5.07E-09	9.96E-22	1.88E-09
40	550.0	1.13E-20	2.46E-08	3.27E-21	7.22E-09	8.56E-22	1.91E-09	3.24E-22	7.30E-10	1.05E-22	2.39E-10
41	600.0	2.00E-21	5.16E-09	5.05E-22	1.32E-09	1.13E-22	3.02E-10	3.85E-23	1.03E-10	1.11E-23	3.00E-11
42	650.0	3.50E-22	1.06E-09	7.72E-23	2.38E-10	1.50E-23	4.69E-11	4.60E-24	1.45E-11	1.16E-24	3.69E-12
43	700.0	6.54E-23	2.30E-10	1.22E-23	4.36E-11	2.00E-24	7.24E-12	5.48E-25	2.00E-12	1.22E-25	4.51E-13
44	750.0	1.16E-23	4.70E-11	1.94E-24	7.97E-12	2.65E-25	1.10E-12	6.50E-26	2.73E-13	1.28E-26	5.43E-14

Table 3.4 (Continued) (5/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		21		22		23		24		25	
		(55.000 -	50.000)	(50.000 -	45.000)	(45.000 -	40.000)	(40.000 -	35.000)	(35.000 -	30.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.51E-11	2.88E-03	1.49E-11	2.86E-03	1.48E-11	2.86E-03	1.50E-11	2.92E-03	1.56E-11	3.08E-03
2	10.0	1.06E-11	8.10E-03	1.05E-11	8.04E-03	1.03E-11	8.00E-03	1.04E-11	8.12E-03	1.07E-11	8.48E-03
3	15.0	8.13E-12	1.39E-02	7.97E-12	1.38E-02	7.83E-12	1.37E-02	7.84E-12	1.38E-02	8.04E-12	1.43E-02
4	20.0	6.46E-12	1.97E-02	6.32E-12	1.95E-02	6.19E-12	1.92E-02	6.16E-12	1.93E-02	6.27E-12	1.98E-02
5	25.0	4.98E-12	2.37E-02	4.86E-12	2.34E-02	4.73E-12	2.29E-02	4.69E-12	2.29E-02	4.73E-12	2.33E-02
6	30.0	3.83E-12	2.62E-02	3.72E-12	2.57E-02	3.61E-12	2.52E-02	3.55E-12	2.50E-02	3.55E-12	2.52E-02
7	35.0	2.93E-12	2.73E-02	2.83E-12	2.67E-02	2.73E-12	2.60E-02	2.67E-12	2.56E-02	2.65E-12	2.56E-02
8	40.0	2.23E-12	2.72E-02	2.15E-12	2.64E-02	2.06E-12	2.56E-02	2.00E-12	2.50E-02	1.96E-12	2.48E-02
9	45.0	1.69E-12	2.61E-02	1.62E-12	2.53E-02	1.55E-12	2.43E-02	1.49E-12	2.36E-02	1.45E-12	2.32E-02
10	50.0	1.31E-12	2.50E-02	1.25E-12	2.40E-02	1.18E-12	2.30E-02	1.13E-12	2.21E-02	1.09E-12	2.14E-02
11	55.0	9.92E-13	2.29E-02	9.39E-13	2.19E-02	8.85E-13	2.08E-02	8.37E-13	1.98E-02	7.94E-13	1.90E-02
12	60.0	7.51E-13	2.06E-02	7.06E-13	1.96E-02	6.61E-13	1.84E-02	6.19E-13	1.74E-02	5.80E-13	1.65E-02
13	65.0	5.69E-13	1.83E-02	5.31E-13	1.73E-02	4.93E-13	1.62E-02	4.57E-13	1.51E-02	4.23E-13	1.41E-02
14	70.0	4.32E-13	1.61E-02	4.00E-13	1.51E-02	3.68E-13	1.40E-02	3.38E-13	1.29E-02	3.08E-13	1.19E-02
15	75.0	3.28E-13	1.41E-02	3.02E-13	1.31E-02	2.75E-13	1.20E-02	2.50E-13	1.10E-02	2.24E-13	9.97E-03
16	80.0	2.50E-13	1.22E-02	2.28E-13	1.12E-02	2.06E-13	1.02E-02	1.85E-13	9.24E-03	1.63E-13	8.26E-03
17	85.0	1.91E-13	1.05E-02	1.72E-13	9.57E-03	1.54E-13	8.64E-03	1.37E-13	7.71E-03	1.19E-13	6.79E-03
18	90.0	1.46E-13	8.99E-03	1.30E-13	8.13E-03	1.16E-13	7.26E-03	1.01E-13	6.40E-03	8.67E-14	5.54E-03
19	95.0	1.12E-13	7.67E-03	9.90E-14	6.87E-03	8.67E-14	6.07E-03	7.48E-14	5.28E-03	6.31E-14	4.50E-03
20	100.0	8.56E-14	6.53E-03	7.52E-14	5.78E-03	6.52E-14	5.05E-03	5.55E-14	4.34E-03	4.60E-14	3.63E-03
21	110.0	5.07E-14	4.68E-03	4.36E-14	4.06E-03	3.69E-14	3.46E-03	3.05E-14	2.89E-03	2.45E-14	2.34E-03
22	120.0	3.02E-14	3.32E-03	2.54E-14	2.82E-03	2.10E-14	2.35E-03	1.69E-14	1.90E-03	1.30E-14	1.48E-03
23	130.0	1.81E-14	2.34E-03	1.49E-14	1.94E-03	1.20E-14	1.57E-03	9.34E-15	1.23E-03	6.96E-15	9.29E-04
24	140.0	1.09E-14	1.63E-03	8.77E-15	1.32E-03	6.88E-15	1.05E-03	5.19E-15	7.95E-04	3.72E-15	5.76E-04
25	150.0	6.69E-15	1.15E-03	5.23E-15	9.05E-04	3.99E-15	6.96E-04	2.91E-15	5.12E-04	2.01E-15	3.57E-04
26	160.0	4.07E-15	7.94E-04	3.10E-15	6.11E-04	2.30E-15	4.57E-04	1.63E-15	3.26E-04	1.08E-15	2.18E-04
27	170.0	2.48E-15	5.46E-04	1.84E-15	4.09E-04	1.33E-15	2.97E-04	9.07E-16	2.05E-04	5.79E-16	1.32E-04
28	180.0	1.51E-15	3.74E-04	1.09E-15	2.73E-04	7.65E-16	1.92E-04	5.05E-16	1.28E-04	3.09E-16	7.92E-05
29	190.0	9.29E-16	2.56E-04	6.54E-16	1.82E-04	4.44E-16	1.24E-04	2.83E-16	8.00E-05	1.67E-16	4.76E-05
30	200.0	5.70E-16	1.74E-04	3.90E-16	1.20E-04	2.58E-16	7.99E-05	1.59E-16	4.96E-05	8.98E-17	2.84E-05
31	220.0	2.16E-16	7.97E-05	1.40E-16	5.21E-05	8.69E-17	3.26E-05	4.99E-17	1.89E-05	2.60E-17	9.96E-06
32	240.0	8.20E-17	3.60E-05	5.01E-17	2.22E-05	2.93E-17	1.31E-05	1.57E-17	7.06E-06	7.54E-18	3.43E-06
33	260.0	3.14E-17	1.62E-05	1.81E-17	9.43E-06	9.97E-18	5.23E-06	4.97E-18	2.63E-06	2.21E-18	1.18E-06
34	280.0	1.20E-17	7.18E-06	6.55E-18	3.95E-06	3.39E-18	2.06E-06	1.57E-18	9.64E-07	6.47E-19	4.01E-07
35	300.0	4.61E-18	3.16E-06	2.37E-18	1.64E-06	1.15E-18	8.04E-07	4.98E-19	3.51E-07	1.90E-19	1.35E-07
36	350.0	4.20E-19	3.92E-07	1.86E-19	1.75E-07	7.74E-20	7.35E-08	2.80E-20	2.68E-08	8.86E-21	8.57E-09
37	400.0	3.83E-20	4.67E-08	1.46E-20	1.80E-08	5.20E-21	6.46E-09	1.58E-21	1.98E-09	4.21E-22	5.32E-10
38	450.0	3.50E-21	5.40E-09	1.15E-21	1.79E-09	3.50E-22	5.50E-10	8.97E-23	1.47E-10	2.05E-23	3.28E-11
39	500.0	3.21E-22	6.11E-10	9.09E-23	1.75E-10	2.37E-23	4.59E-11	5.17E-24	1.01E-11	1.02E-24	2.01E-12
40	550.0	2.92E-23	6.74E-11	7.13E-24	1.66E-11	1.57E-24	3.69E-12	3.02E-25	7.14E-13	5.37E-26	1.28E-13
41	600.0	2.62E-24	7.19E-12	5.58E-25	1.55E-12	1.14E-25	3.17E-13	1.71E-26	4.82E-14	2.77E-27	7.89E-15
42	650.0	2.42E-25	7.80E-13	4.44E-26	1.44E-13	7.54E-27	2.47E-14	9.76E-28	3.23E-15	1.44E-28	4.80E-16
43	700.0	2.35E-26	8.76E-14	3.41E-27	1.29E-14	4.86E-28	1.85E-15	5.66E-29	2.17E-16	7.84E 30	3.03E-17
44	750.0	2.06E-27	8.82E-15	2.77E-28	1.20E-15	3.28E-29	1.43E-16	3.30E-30	1.45E-17	4.37E-31	1.94E-18

Table 3.4 (Continued) (6/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		26		27		28		29		30	
		(30.000 -	27.500)	(27.500 -	25.000)	(25.000 -	22.500)	(22.500 -	20.000)	(20.000 -	17.500)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.82E-11	3.62E-03	1.85E-11	3.72E-03	1.92E-11	3.86E-03	1.86E-11	3.78E-03	6.63E-11	1.36E-02
2	10.0	1.16E-11	9.21E-03	1.17E-11	9.36E-03	1.19E-11	9.60E-03	1.19E-11	9.69E-03	2.46E-11	2.02E-02
3	15.0	8.48E-12	1.52E-02	8.51E-12	1.53E-02	8.57E-12	1.56E-02	9.07E-12	1.66E-02	1.35E-11	2.50E-02
4	20.0	6.36E-12	2.03E-02	6.34E-12	2.03E-02	6.33E-12	2.04E-02	6.53E-12	2.13E-02	8.48E-12	2.78E-02
5	25.0	4.75E-12	2.36E-02	4.70E-12	2.36E-02	4.66E-12	2.35E-02	4.73E-12	2.41E-02	5.59E-12	2.86E-02
6	30.0	3.54E-12	2.54E-02	3.49E-12	2.51E-02	3.43E-12	2.49E-02	3.42E-12	2.50E-02	3.79E-12	2.80E-02
7	35.0	2.61E-12	2.55E-02	2.56E-12	2.51E-02	2.50E-12	2.47E-02	2.46E-12	2.45E-02	2.59E-12	2.60E-02
8	40.0	1.97E-12	2.51E-02	1.91E-12	2.46E-02	1.85E-12	2.39E-02	1.76E-12	2.28E-02	1.82E-12	2.39E-02
9	45.0	1.43E-12	2.31E-02	1.38E-12	2.25E-02	1.33E-12	2.17E-02	1.25E-12	2.05E-02	1.25E-12	2.07E-02
10	50.0	1.04E-12	2.07E-02	9.97E-13	2.00E-02	9.50E-13	1.92E-02	8.94E-13	1.82E-02	8.53E-13	1.75E-02
11	55.0	7.53E-13	1.81E-02	7.16E-13	1.74E-02	6.76E-13	1.65E-02	6.28E-13	1.55E-02	5.82E-13	1.45E-02
12	60.0	5.44E-13	1.56E-02	5.13E-13	1.48E-02	4.80E-13	1.39E-02	4.40E-13	1.29E-02	3.98E-13	1.17E-02
13	65.0	3.92E-13	1.32E-02	3.66E-13	1.24E-02	3.40E-13	1.16E-02	3.08E-13	1.06E-02	2.71E-13	9.39E-03
14	70.0	2.82E-13	1.10E-02	2.61E-13	1.02E-02	2.39E-13	9.47E-03	2.15E-13	8.55E-03	1.84E-13	7.40E-03
15	75.0	2.03E-13	9.07E-03	1.86E-13	8.39E-03	1.69E-13	7.68E-03	1.49E-13	6.84E-03	1.26E-13	5.79E-03
16	80.0	1.45E-13	7.42E-03	1.32E-13	6.79E-03	1.19E-13	6.15E-03	1.04E-13	5.41E-03	8.54E-14	4.48E-03
17	85.0	1.04E-13	6.00E-03	9.39E-14	5.44E-03	8.36E-14	4.88E-03	7.22E-14	4.24E-03	5.79E-14	3.43E-03
18	90.0	7.50E-14	4.84E-03	6.69E-14	4.34E-03	5.89E-14	3.85E-03	5.01E-14	3.30E-03	3.96E-14	2.63E-03
19	95.0	5.38E-14	3.87E-03	4.75E-14	3.44E-03	4.14E-14	3.01E-03	3.48E-14	2.56E-03	2.69E-14	1.99E-03
20	100.0	3.83E-14	3.05E-03	3.35E-14	2.68E-03	2.89E-14	2.33E-03	2.42E-14	1.97E-03	1.82E-14	1.49E-03
21	110.0	1.98E-14	1.90E-03	1.69E-14	1.64E-03	1.42E-14	1.39E-03	1.16E-14	1.15E-03	8.50E-15	8.44E-04
22	120.0	1.02E-14	1.17E-03	8.53E-15	9.84E-04	7.03E-15	8.17E-04	5.62E-15	6.58E-04	3.99E-15	4.72E-04
23	130.0	5.26E-15	7.08E-04	4.31E-15	5.83E-04	3.48E-15	4.74E-04	2.72E-15	3.74E-04	1.89E-15	2.61E-04
24	140.0	2.72E-15	4.24E-04	2.18E-15	3.42E-04	1.72E-15	2.72E-04	1.32E-15	2.10E-04	8.98E-16	1.44E-04
25	150.0	1.41E-15	2.52E-04	1.10E-15	1.99E-04	8.53E-16	1.55E-04	6.52E-16	1.19E-04	4.31E-16	7.95E-05
26	160.0	7.28E-16	1.48E-04	5.58E-16	1.15E-04	4.24E-16	8.76E-05	3.17E-16	6.60E-05	2.08E-16	4.38E-05
27	170.0	3.77E-16	8.68E-05	2.83E-16	6.56E-05	2.11E-16	4.93E-05	1.55E-16	3.64E-05	1.02E-16	2.41E-05
28	180.0	1.96E-16	5.05E-05	1.44E-16	3.74E-05	1.06E-16	2.76E-05	7.59E-17	2.00E-05	5.01E-17	1.33E-05
29	190.0	1.02E-16	2.92E-05	7.34E-17	2.12E-05	5.30E-17	1.54E-05	3.75E-17	1.10E-05	2.49E-17	7.37E-06
30	200.0	5.35E-17	1.71E-05	3.79E-17	1.22E-05	2.70E-17	8.71E-06	1.86E-17	6.06E-06	1.26E-17	4.14E-06
31	220.0	1.44E-17	5.55E-06	9.86E-18	3.82E-06	6.85E-18	2.68E-06	4.68E-18	1.84E-06	3.22E-18	1.28E-06
32	240.0	3.90E-18	1.79E-06	2.59E-18	1.19E-06	1.77E-18	8.24E-07	1.21E-18	5.67E-07	8.48E-19	4.00E-07
33	260.0	1.06E-18	5.70E-07	6.87E-19	3.72E-07	4.68E-19	2.55E-07	3.20E-19	1.76E-07	2.29E-19	1.27E-07
34	280.0	2.91E-19	1.82E-07	1.86E-19	1.17E-07	1.26E-19	7.95E-08	8.69E-20	5.54E-08	6.35E-20	4.09E-08
35	300.0	8.05E-20	5.77E-08	5.07E-20	3.65E-08	3.44E-20	2.50E-08	2.41E-20	1.76E-08	1.80E-20	1.33E-08
36	350.0	3.36E-21	3.27E-09	2.10E-21	2.06E-09	1.45E-21	1.44E-09	1.05E-21	1.05E-09	8.24E-22	8.28E-10
37	400.0	1.48E-22	1.89E-10	9.47E-23	1.21E-10	6.73E-23	8.69E-11	4.94E-23	6.43E-11	4.11E-23	5.39E-11
38	450.0	6.98E-24	1.13E-11	4.57E-24	7.41E-12	3.34E-24	5.46E-12	2.48E-24	4.08E-12	2.18E-24	3.63E-12
39	500.0	3.47E-25	6.92E-13	2.34E-25	4.69E-13	1.76E-25	3.54E-13	1.31E-25	2.66E-13	1.22E-25	2.50E-13
40	550.0	1.82E-26	4.38E-14	1.26E-26	3.06E-14	9.65E-27	2.36E-14	7.21E-27	1.77E-14	7.12E-27	1.77E-14
41	600.0	9.95E-28	2.85E-15	7.11E-28	2.05E-15	5.51E-28	1.60E-15	4.12E-28	1.21E-15	4.32E-28	1.27E-15
42	650.0	5.68E-29	1.91E-16	4.14E-29	1.40E-16	3.25E-29	1.11E-16	2.48E-29	8.52E-17	2.71E-29	9.39E-17
43	700.0	3.36E-30	1.31E-17	2.49E-30	9.79E-18	1.98E-30	7.81E-18	1.54E-30	6.12E-18	1.75E-30	7.05E-18
44	750.0	2.05E-31	9.19E-19	1.54E-31	6.96E-19	1.24E-31	5.61E-19	9.77E-32	4.47E-19	1.17E-31	5.39E-19

Table 3.4 (Continued) (7/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		31		32		33		34		35	
		(17.500 -	14.900)	(14.900 -	13.500)	(13.500 -	12.200)	(12.200 -	10.000)	(10.000 -	8.190)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	6.35E-11	1.31E-02	8.95E-11	1.87E-02	1.26E-10	2.65E-02	1.15E-10	2.45E-02	9.32E-11	1.99E-02
2	10.0	2.43E-11	2.01E-02	3.14E-11	2.63E-02	4.09E-11	3.44E-02	3.60E-11	3.06E-02	2.98E-11	2.54E-02
3	15.0	1.32E-11	2.47E-02	1.60E-11	3.01E-02	1.99E-11	3.76E-02	1.76E-11	3.36E-02	1.50E-11	2.89E-02
4	20.0	8.38E-12	2.78E-02	9.37E-12	3.13E-02	1.11E-11	3.74E-02	9.96E-12	3.38E-02	8.80E-12	3.01E-02
5	25.0	5.44E-12	2.82E-02	5.89E-12	3.08E-02	6.78E-12	3.56E-02	6.07E-12	3.22E-02	5.53E-12	2.95E-02
6	30.0	3.64E-12	2.71E-02	3.97E-12	2.99E-02	4.46E-12	3.38E-02	3.88E-12	2.97E-02	3.62E-12	2.79E-02
7	35.0	2.46E-12	2.50E-02	2.63E-12	2.70E-02	2.90E-12	2.99E-02	2.55E-12	2.65E-02	2.42E-12	2.53E-02
8	40.0	1.68E-12	2.22E-02	1.77E-12	2.36E-02	1.92E-12	2.58E-02	1.74E-12	2.37E-02	1.67E-12	2.29E-02
9	45.0	1.15E-12	1.92E-02	1.19E-12	2.02E-02	1.28E-12	2.18E-02	1.17E-12	2.01E-02	1.13E-12	1.96E-02
10	50.0	7.98E-13	1.65E-02	8.09E-13	1.69E-02	8.60E-13	1.81E-02	7.87E-13	1.67E-02	7.68E-13	1.64E-02
11	55.0	5.44E-13	1.36E-02	5.49E-13	1.39E-02	5.80E-13	1.47E-02	5.31E-13	1.36E-02	5.20E-13	1.35E-02
12	60.0	3.71E-13	1.11E-02	3.73E-13	1.12E-02	3.92E-13	1.19E-02	3.60E-13	1.10E-02	3.54E-13	1.09E-02
13	65.0	2.53E-13	8.84E-03	2.54E-13	8.96E-03	2.66E-13	9.43E-03	2.44E-13	8.74E-03	2.40E-13	8.67E-03
14	70.0	1.72E-13	6.98E-03	1.73E-13	7.07E-03	1.80E-13	7.42E-03	1.65E-13	6.86E-03	1.63E-13	6.81E-03
15	75.0	1.17E-13	5.46E-03	1.18E-13	5.53E-03	1.22E-13	5.79E-03	1.12E-13	5.35E-03	1.11E-13	5.32E-03
16	80.0	7.98E-14	4.23E-03	8.07E-14	4.32E-03	8.37E-14	4.51E-03	7.60E-14	4.13E-03	7.53E-14	4.12E-03
17	85.0	5.44E-14	3.26E-03	5.51E-14	3.33E-03	5.71E-14	3.47E-03	5.15E-14	3.16E-03	5.10E-14	3.15E-03
18	90.0	3.71E-14	2.49E-03	3.76E-14	2.54E-03	3.89E-14	2.65E-03	3.51E-14	2.41E-03	3.48E-14	2.41E-03
19	95.0	2.53E-14	1.89E-03	2.56E-14	1.93E-03	2.65E-14	2.01E-03	2.39E-14	1.83E-03	2.37E-14	1.83E-03
20	100.0	1.73E-14	1.43E-03	1.76E-14	1.47E-03	1.81E-14	1.52E-03	1.62E-14	1.37E-03	1.61E-14	1.37E-03
21	110.0	8.12E-15	8.13E-04	8.20E-15	8.29E-04	8.48E-15	8.62E-04	7.54E-15	7.75E-04	7.50E-15	7.76E-04
22	120.0	3.83E-15	4.56E-04	3.88E-15	4.67E-04	4.02E-15	4.86E-04	3.54E-15	4.33E-04	3.53E-15	4.34E-04
23	130.0	1.81E-15	2.54E-04	1.84E-15	2.60E-04	1.91E-15	2.72E-04	1.68E-15	2.41E-04	1.67E-15	2.41E-04
24	140.0	8.67E-16	1.41E-04	8.79E-16	1.44E-04	9.15E-16	1.51E-04	8.01E-16	1.33E-04	7.95E-16	1.33E-04
25	150.0	4.21E-16	7.84E-05	4.26E-16	8.00E-05	4.45E-16	8.41E-05	3.86E-16	7.37E-05	3.82E-16	7.34E-05
26	160.0	2.05E-16	4.34E-05	2.07E-16	4.43E-05	2.17E-16	4.68E-05	1.87E-16	4.07E-05	1.85E-16	4.05E-05
27	170.0	1.00E-16	2.39E-05	1.01E-16	2.45E-05	1.07E-16	2.60E-05	9.19E-17	2.25E-05	9.03E-17	2.23E-05
28	180.0	4.90E-17	1.31E-05	5.05E-17	1.37E-05	5.34E-17	1.46E-05	4.55E-17	1.25E-05	4.45E-17	1.23E-05
29	190.0	2.45E-17	7.32E-06	2.53E-17	7.62E-06	2.69E-17	8.16E-06	2.27E-17	6.96E-06	2.21E-17	6.81E-06
30	200.0	1.23E-17	4.07E-06	1.28E-17	4.29E-06	1.37E-17	4.61E-06	1.16E-17	3.93E-06	1.12E-17	3.83E-06
31	220.0	3.17E-18	1.27E-06	3.33E-18	1.34E-06	3.58E-18	1.46E-06	2.97E-18	1.22E-06	2.84E-18	1.18E-06
32	240.0	8.38E-19	4.00E-07	8.89E-19	4.28E-07	9.64E-19	4.67E-07	7.87E-19	3.85E-07	7.43E-19	3.66E-07
33	260.0	2.30E-19	1.29E-07	2.44E-19	1.38E-07	2.66E-19	1.51E-07	2.13E-19	1.22E-07	1.99E-19	1.15E-07
34	280.0	6.45E-20	4.19E-08	6.85E-20	4.49E-08	7.50E-20	4.94E-08	5.91E-20	3.93E-08	5.45E-20	3.65E-08
35	300.0	1.84E-20	1.37E-08	1.97E-20	1.48E-08	2.16E-20	1.63E-08	1.67E-20	1.27E-08	1.52E-20	1.17E-08
36	350.0	8.55E-22	8.67E-10	9.32E-22	9.54E-10	1.02E-21	1.05E-09	7.50E-22	7.80E-10	6.66E-22	6.97E-10
37	400.0	4.31E-23	5.72E-11	4.79E-23	6.40E-11	5.23E-23	7.04E-11	3.63E-23	4.93E-11	3.14E-23	4.29E-11
38	450.0	2.32E-24	3.89E-12	2.62E-24	4.44E-12	2.84E-24	4.84E-12	1.86E-24	3.19E-12	1.56E-24	2.70E-12
39	500.0	1.32E-25	2.73E-13	1.51E-25	3.16E-13	1.62E-25	3.41E-13	9.94E-26	2.11E-13	8.10E-26	1.73E-13
40	550.0	7.68E-27	1.92E-14	9.09E-27	2.30E-14	9.62E-27	2.45E-14	5.53E-27	1.42E-14	4.36E-27	1.13E-14
41	600.0	4.56E-28	1.36E-15	5.68E-28	1.71E-15	5.92E-28	1.79E-15	3.19E-28	9.74E-16	2.43E-28	7.47E-16
42	650.0	2.78E-29	9.71E-17	3.66E-29	1.29E-16	3.76E-29	1.33E-16	1.90E-29	6.80E-17	1.39E-29	5.02E-17
43	700.0	1.81E-30	7.33E-18	2.43E-30	9.95E-18	2.45E-30	1.01E-17	1.16E-30	4.84E-18	8.21E-31	3.44E-18
44	750.0	1.19E-31	5.54E-19	1.65E-31	7.77E-19	1.64E-31	7.74E-19	7.35E-32	3.51E-19	4.97E-32	2.39E-19

Table 3.4 (Continued) (8/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		36		37		38		39		40	
		(8.190 -	6.700)	(6.700 -	5.490)	(5.490 -	4.490)	(4.490 -	3.680)	(3.680 -	3.010)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	5.71E-11	1.22E-02	3.48E-11	7.25E-03	2.97E-11	6.05E-03	2.78E-11	5.96E-03	2.67E-11	6.11E-03
2	10.0	2.09E-11	1.79E-02	1.49E-11	1.24E-02	1.38E-11	1.13E-02	1.38E-11	1.18E-02	1.38E-11	1.27E-02
3	15.0	1.15E-11	2.21E-02	9.02E-12	1.69E-02	8.85E-12	1.62E-02	9.12E-12	1.76E-02	9.39E-12	1.94E-02
4	20.0	7.22E-12	2.47E-02	6.11E-12	2.04E-02	6.18E-12	2.01E-02	6.48E-12	2.22E-02	6.73E-12	2.47E-02
5	25.0	4.80E-12	2.57E-02	4.29E-12	2.24E-02	4.41E-12	2.24E-02	4.63E-12	2.49E-02	4.81E-12	2.76E-02
6	30.0	3.28E-12	2.53E-02	3.06E-12	2.30E-02	3.16E-12	2.32E-02	3.30E-12	2.55E-02	3.41E-12	2.81E-02
7	35.0	2.26E-12	2.37E-02	2.18E-12	2.22E-02	2.24E-12	2.24E-02	2.32E-12	2.44E-02	2.37E-12	2.66E-02
8	40.0	1.60E-12	2.19E-02	1.59E-12	2.12E-02	1.60E-12	2.08E-02	1.63E-12	2.23E-02	1.65E-12	2.41E-02
9	45.0	1.11E-12	1.91E-02	1.12E-12	1.88E-02	1.11E-12	1.84E-02	1.11E-12	1.94E-02	1.11E-12	2.07E-02
10	50.0	7.62E-13	1.63E-02	7.82E-13	1.63E-02	7.69E-13	1.57E-02	7.55E-13	1.62E-02	7.46E-13	1.71E-02
11	55.0	5.24E-13	1.35E-02	5.45E-13	1.37E-02	5.28E-13	1.30E-02	5.08E-13	1.32E-02	4.96E-13	1.37E-02
12	60.0	3.60E-13	1.11E-02	3.78E-13	1.13E-02	3.60E-13	1.05E-02	3.39E-13	1.05E-02	3.28E-13	1.08E-02
13	65.0	2.47E-13	8.91E-03	2.61E-13	9.19E-03	2.44E-13	8.39E-03	2.26E-13	8.19E-03	2.16E-13	8.36E-03
14	70.0	1.69E-13	7.06E-03	1.80E-13	7.33E-03	1.65E-13	6.57E-03	1.50E-13	6.30E-03	1.42E-13	6.37E-03
15	75.0	1.16E-13	5.56E-03	1.24E-13	5.79E-03	1.11E-13	5.08E-03	9.90E-14	4.78E-03	9.32E-14	4.80E-03
16	80.0	7.91E-14	4.32E-03	8.46E-14	4.51E-03	7.46E-14	3.89E-03	6.55E-14	3.60E-03	6.12E-14	3.58E-03
17	85.0	5.39E-14	3.33E-03	5.77E-14	3.48E-03	5.01E-14	2.95E-03	4.33E-14	2.68E-03	4.02E-14	2.66E-03
18	90.0	3.69E-14	2.56E-03	3.95E-14	2.67E-03	3.37E-14	2.22E-03	2.87E-14	1.99E-03	2.65E-14	1.97E-03
19	95.0	2.52E-14	1.95E-03	2.70E-14	2.03E-03	2.26E-14	1.66E-03	1.90E-14	1.47E-03	1.75E-14	1.45E-03
20	100.0	1.71E-14	1.46E-03	1.83E-14	1.52E-03	1.52E-14	1.24E-03	1.26E-14	1.08E-03	1.16E-14	1.06E-03
21	110.0	8.02E-15	8.29E-04	8.51E-15	8.58E-04	6.84E-15	6.74E-04	5.59E-15	5.81E-04	5.12E-15	5.67E-04
22	120.0	3.77E-15	4.64E-04	3.97E-15	4.77E-04	3.10E-15	3.64E-04	2.51E-15	3.10E-04	2.29E-15	3.02E-04
23	130.0	1.78E-15	2.57E-04	1.86E-15	2.62E-04	1.42E-15	1.96E-04	1.15E-15	1.66E-04	1.05E-15	1.62E-04
24	140.0	8.45E-16	1.42E-04	8.78E-16	1.43E-04	6.59E-16	1.05E-04	5.29E-16	8.91E-05	4.87E-16	8.74E-05
25	150.0	4.04E-16	7.77E-05	4.16E-16	7.81E-05	3.09E-16	5.67E-05	2.49E-16	4.82E-05	2.30E-16	4.74E-05
26	160.0	1.94E-16	4.25E-05	1.99E-16	4.25E-05	1.47E-16	3.07E-05	1.19E-16	2.63E-05	1.11E-16	2.59E-05
27	170.0	9.44E-17	2.33E-05	9.60E-17	2.31E-05	7.07E-17	1.67E-05	5.78E-17	1.44E-05	5.38E-17	1.42E-05
28	180.0	4.61E-17	1.28E-05	4.67E-17	1.26E-05	3.46E-17	9.12E-06	2.85E-17	7.93E-06	2.66E-17	7.90E-06
29	190.0	2.28E-17	7.02E-06	2.29E-17	6.90E-06	1.71E-17	5.02E-06	1.42E-17	4.40E-06	1.33E-17	4.40E-06
30	200.0	1.15E-17	3.92E-06	1.15E-17	3.83E-06	8.60E-18	2.80E-06	7.21E-18	2.48E-06	6.78E-18	2.48E-06
31	220.0	2.88E-18	1.19E-06	2.87E-18	1.16E-06	2.19E-18	8.63E-07	1.86E-18	7.73E-07	1.76E-18	7.78E-07
32	240.0	7.44E-19	3.66E-07	7.42E-19	3.56E-07	5.76E-19	2.70E-07	4.95E-19	2.45E-07	4.69E-19	2.47E-07
33	260.0	1.98E-19	1.14E-07	1.97E-19	1.11E-07	1.56E-19	8.58E-08	1.35E-19	7.84E-08	1.28E-19	7.94E-08
34	280.0	5.39E-20	3.61E-08	5.39E-20	3.52E-08	4.32E-20	2.76E-08	3.77E-20	2.53E-08	3.58E-20	2.57E-08
35	300.0	1.50E-20	1.15E-08	1.50E-20	1.13E-08	1.22E-20	8.93E-09	1.07E-20	8.25E-09	1.02E-20	8.38E-09
36	350.0	6.53E-22	6.84E-10	6.62E-22	6.76E-10	5.50E-22	5.49E-10	4.86E-22	5.11E-10	4.64E-22	5.21E-10
37	400.0	3.08E-23	4.21E-11	3.16E-23	4.21E-11	2.66E-23	3.47E-11	2.36E-23	3.24E-11	2.26E-23	3.31E-11
38	450.0	1.53E-24	2.66E-12	1.60E-24	2.69E-12	1.35E-24	2.23E-12	1.20E-24	2.09E-12	1.15E-24	2.14E-12
39	500.0	8.00E-26	1.71E-13	8.42E-26	1.75E-13	7.16E-26	1.46E-13	6.38E-26	1.37E-13	6.11E-26	1.40E-13
40	550.0	4.31E-27	1.12E-14	4.59E-27	1.16E-14	3.91E-27	9.64E-15	3.49E-27	9.06E-15	3.33E-27	9.23E-15
41	600.0	2.40E-28	7.38E-16	2.57E-28	7.72E-16	2.19E-28	6.43E-16	1.95E-28	6.04E-16	1.87E-28	6.15E-16
42	650.0	1.37E-29	4.95E-17	1.48E-29	5.21E-17	1.26E-29	4.34E-17	1.12E-29	4.07E-17	1.07E-29	4.14E-17
43	700.0	8.04E-31	3.37E-18	8.72E-31	3.56E-18	7.40E-31	2.95E-18	6.57E-31	2.76E-18	6.24E-31	2.80E-18
44	750.0	4.82E-32	2.32E-19	5.25E-32	2.46E-19	4.44E-32	2.03E-19	3.92E-32	1.89E-19	3.72E-32	1.91E-19

Table 3.4 (Continued) (9/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		41		42		43		44		45	
		(3.010 -	2.460)	(2.460 -	2.020)	(2.020 -	1.650)	(1.650 -	1.350)	(1.350 -	1.110)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	2.32E-11	5.66E-03	2.03E-11	5.08E-03	1.77E-11	4.36E-03	1.82E-11	4.45E-03	1.98E-11	4.78E-03
2	10.0	1.29E-11	1.26E-02	1.24E-11	1.24E-02	1.26E-11	1.25E-02	1.33E-11	1.30E-02	1.44E-11	1.39E-02
3	15.0	9.10E-12	2.00E-02	9.10E-12	2.05E-02	9.53E-12	2.12E-02	1.00E-11	2.21E-02	1.08E-11	2.34E-02
4	20.0	6.63E-12	2.59E-02	6.72E-12	2.69E-02	7.04E-12	2.78E-02	7.35E-12	2.87E-02	7.74E-12	2.99E-02
5	25.0	4.78E-12	2.92E-02	4.84E-12	3.02E-02	5.04E-12	3.11E-02	5.18E-12	3.16E-02	5.35E-12	3.23E-02
6	30.0	3.39E-12	2.98E-02	3.42E-12	3.07E-02	3.49E-12	3.10E-02	3.54E-12	3.11E-02	3.58E-12	3.11E-02
7	35.0	2.36E-12	2.82E-02	2.36E-12	2.88E-02	2.39E-12	2.89E-02	2.39E-12	2.85E-02	2.37E-12	2.80E-02
8	40.0	1.66E-12	2.59E-02	1.62E-12	2.59E-02	1.58E-12	2.50E-02	1.55E-12	2.43E-02	1.51E-12	2.34E-02
9	45.0	1.12E-12	2.21E-02	1.08E-12	2.19E-02	1.03E-12	2.06E-02	9.98E-13	1.97E-02	9.58E-13	1.87E-02
10	50.0	7.46E-13	1.82E-02	7.15E-13	1.79E-02	6.65E-13	1.64E-02	6.36E-13	1.55E-02	6.02E-13	1.45E-02
11	55.0	4.94E-13	1.46E-02	4.70E-13	1.42E-02	4.26E-13	1.27E-02	4.03E-13	1.19E-02	3.78E-13	1.10E-02
12	60.0	3.26E-13	1.15E-02	3.07E-13	1.10E-02	2.72E-13	9.68E-03	2.55E-13	8.98E-03	2.37E-13	8.25E-03
13	65.0	2.14E-13	8.85E-03	2.00E-13	8.44E-03	1.74E-13	7.26E-03	1.62E-13	6.69E-03	1.50E-13	6.11E-03
14	70.0	1.40E-13	6.71E-03	1.30E-13	6.37E-03	1.11E-13	5.39E-03	1.03E-13	4.94E-03	9.47E-14	4.48E-03
15	75.0	9.21E-14	5.06E-03	8.46E-14	4.76E-03	7.13E-14	3.96E-03	6.58E-14	3.62E-03	6.03E-14	3.28E-03
16	80.0	6.03E-14	3.77E-03	5.52E-14	3.53E-03	4.59E-14	2.90E-03	4.23E-14	2.64E-03	3.87E-14	2.39E-03
17	85.0	3.94E-14	2.78E-03	3.60E-14	2.60E-03	2.97E-14	2.12E-03	2.73E-14	1.92E-03	2.49E-14	1.74E-03
18	90.0	2.60E-14	2.06E-03	2.36E-14	1.91E-03	1.93E-14	1.54E-03	1.77E-14	1.40E-03	1.62E-14	1.27E-03
19	95.0	1.72E-14	1.51E-03	1.56E-14	1.40E-03	1.26E-14	1.12E-03	1.16E-14	1.02E-03	1.06E-14	9.24E-04
20	100.0	1.12E-14	1.10E-03	1.03E-14	1.03E-03	8.28E-15	8.18E-04	7.61E-15	7.44E-04	6.99E-15	6.75E-04
21	110.0	4.97E-15	5.88E-04	4.53E-15	5.47E-04	3.64E-15	4.36E-04	3.36E-15	3.97E-04	3.10E-15	3.62E-04
22	120.0	2.23E-15	3.14E-04	2.03E-15	2.92E-04	1.64E-15	2.34E-04	1.52E-15	2.14E-04	1.41E-15	1.96E-04
23	130.0	1.02E-15	1.69E-04	9.31E-16	1.57E-04	7.58E-16	1.27E-04	7.04E-16	1.16E-04	6.54E-16	1.07E-04
24	140.0	4.75E-16	9.09E-05	4.34E-16	8.50E-05	3.57E-16	6.91E-05	3.33E-16	6.37E-05	3.10E-16	5.86E-05
25	150.0	2.25E-16	4.94E-05	2.06E-16	4.63E-05	1.71E-16	3.80E-05	1.60E-16	3.51E-05	1.49E-16	3.24E-05
26	160.0	1.08E-16	2.70E-05	9.96E-17	2.55E-05	8.32E-17	2.11E-05	7.80E-17	1.95E-05	7.30E-17	1.81E-05
27	170.0	5.28E-17	1.49E-05	4.86E-17	1.40E-05	4.11E-17	1.17E-05	3.86E-17	1.09E-05	3.62E-17	1.01E-05
28	180.0	2.61E-17	8.26E-06	2.42E-17	7.82E-06	2.06E-17	6.59E-06	1.94E-17	6.13E-06	1.82E-17	5.69E-06
29	190.0	1.31E-17	4.60E-06	1.21E-17	4.37E-06	1.04E-17	3.71E-06	9.80E-18	3.46E-06	9.22E-18	3.21E-06
30	200.0	6.68E-18	2.61E-06	6.19E-18	2.47E-06	5.29E-18	2.09E-06	4.99E-18	1.95E-06	4.70E-18	1.82E-06
31	220.0	1.73E-18	8.19E-07	1.61E-18	7.79E-07	1.40E-18	6.71E-07	1.33E-18	6.27E-07	1.25E-18	5.85E-07
32	240.0	4.63E-19	2.60E-07	4.32E-19	2.48E-07	3.80E-19	2.17E-07	3.60E-19	2.03E-07	3.40E-19	1.89E-07
33	260.0	1.27E-19	8.36E-08	1.18E-19	8.00E-08	1.06E-19	7.09E-08	1.01E-19	6.64E-08	9.51E-20	6.21E-08
34	280.0	3.54E-20	2.71E-08	3.31E-20	2.60E-08	3.01E-20	2.33E-08	2.85E-20	2.18E-08	2.70E-20	2.04E-08
35	300.0	1.01E-20	8.84E-09	9.43E-21	8.48E-09	8.64E-21	7.68E-09	8.20E-21	7.21E-09	7.76E-21	6.75E-09
36	350.0	4.59E-22	5.49E-10	4.31E-22	5.28E-10	4.04E-22	4.89E-10	3.84E-22	4.59E-10	3.64E-22	4.30E-10
37	400.0	2.23E-23	3.49E-11	2.10E-23	3.36E-11	2.00E-23	3.16E-11	1.90E-23	2.97E-11	1.80E-23	2.79E-11
38	450.0	1.14E-24	2.25E-12	1.07E-24	2.17E-12	1.04E-24	2.07E-12	9.86E-25	1.95E-12	9.36E-25	1.83E-12
39	500.0	6.03E-26	1.47E-13	5.69E-26	1.47E-13	5.50E-26	1.36E-13	5.23E-26	1.28E-13	4.97E-26	1.20E-13
40	550.0	3.29E-27	9.73E-15	3.10E-27	9.38E-15	3.04E-27	9.08E-15	2.89E-27	8.55E-15	2.75E-27	8.02E-15
41	600.0	1.84E-28	6.48E-16	1.74E-28	6.25E-16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	650.0	1.05E-29	4.35E-17	9.93E-30	4.19E-17	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	700.0	6.15E-31	2.94E-18	5.80E-31	2.84E-18	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	750.0	3.66E-32	2.01E-19	3.44E-32	1.93E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.4 (Continued) (10/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		46		47		48		49		50	
		(1.110 - 0.907)		(0.907 - 0.743)		(0.743 - 0.498)		(0.498 - 0.334)		(0.334 - 0.224)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.89E-11	4.58E-03	1.90E-11	5.02E-03	2.02E-11	6.17E-03	2.21E-11	8.87E-03	2.39E-11	1.37E-02
2	10.0	1.46E-11	1.41E-02	1.47E-11	1.55F-02	1.55E-11	1.88E-02	1.68E-11	2.69E-02	1.78E-11	4.08E-02
3	15.0	1.10E-11	2.38E-02	1.10E-11	2.61E-02	1.15E-11	3.14E-02	1.22E-11	4.40E-02	1.27E-11	6.54E-02
4	20.0	7.81E-12	3.02E-02	7.83E-12	3.30E-02	8.04E-12	3.92E-02	8.33E-12	5.34E-02	8.54E-12	7.84E-02
5	25.0	5.32E-12	3.22E-02	5.33E-12	3.51E-02	5.39E-12	4.11E-02	5.44E-12	5.45E-02	5.52E-12	7.92E-02
6	30.0	3.50E-12	3.05E-02	3.50E-12	3.32E-02	3.50E-12	3.84E-02	3.50E-12	5.04E-02	3.47E-12	7.17E-02
7	35.0	2.25E-12	2.67E-02	2.25E-12	2.91E-02	2.23E-12	3.32E-02	2.17E-12	4.27E-02	2.15E-12	6.04E-02
8	40.0	1.45E-12	2.24E-02	1.44E-12	2.43E-02	1.41E-12	2.76E-02	1.34E-12	3.44E-02	1.34E-12	4.91E-02
9	45.0	9.07E-13	1.78E-02	9.04E-13	1.93E-02	8.80E-13	2.17E-02	8.25E-13	2.68E-02	8.19E-13	3.81E-02
10	50.0	5.67E-13	1.37E-02	5.65E-13	1.49E-02	5.47E-13	1.67E-02	5.09E-13	2.04E-02	5.04E-13	2.89E-02
11	55.0	3.54E-13	1.04E-02	3.53E-13	1.12E-02	3.40E-13	1.25E-02	3.15E-13	1.53E-02	3.11E-13	2.16E-02
12	60.0	2.22E-13	7.73E-03	2.21E-13	8.38E-03	2.13E-13	9.33E-03	1.96E-13	1.13E-02	1.94E-13	1.60E-02
13	65.0	1.40E-13	5.71E-03	1.39E-13	6.19E-03	1.34E-13	6.88E-03	1.23E-13	8.35E-03	1.21E-13	1.18E-02
14	70.0	8.84E-14	4.19E-03	8.80E-14	4.54E-03	8.45E-14	5.04E-03	7.80E-14	6.13E-03	7.67E-14	8.63E-03
15	75.0	5.64E-14	3.07E-03	5.61E-14	3.32E-03	5.39E-14	3.69E-03	5.00E-14	4.50E-03	4.90E-14	6.32E-03
16	80.0	3.62E-14	2.24E-03	3.60E-14	2.43E-03	3.46E-14	2.70E-03	3.21E-14	3.30E-03	3.15E-14	4.62E-03
17	85.0	2.34E-14	1.63E-03	2.33E-14	1.77E-03	2.24E-14	1.97E-03	2.08E-14	2.41E-03	2.04E-14	3.38E-03
18	90.0	1.52E-14	1.19E-03	1.52E-14	1.29E-03	1.46E-14	1.44E-03	1.36E-14	1.76E-03	1.33E-14	2.47E-03
19	95.0	1.00E-14	8.73E-04	9.95E-15	9.46E-04	9.58E-15	1.05E-03	8.93E-15	1.29E-03	8.75E-15	1.81E-03
20	100.0	6.63E-15	6.41E-04	6.60E-15	6.95E-04	6.36E-15	7.75E-04	5.91E-15	9.48E-04	5.82E-15	1.34E-03
21	110.0	2.95E-15	3.45E-04	2.94E-15	3.74E-04	2.83E-15	4.18E-04	2.65E-15	5.13E-04	2.60E-15	7.24E-04
22	120.0	1.34E-15	1.87E-04	1.34E-15	2.03E-04	1.29E-15	2.27E-04	1.21E-15	2.80E-04	1.19E-15	3.95E-04
23	130.0	6.26E-16	1.02E-04	6.24E-16	1.11E-04	6.04E-16	1.24E-04	5.68E-16	1.54E-04	5.59E-16	2.17E-04
24	140.0	2.97E-16	5.64E-05	2.96E-16	6.12E-05	2.87E-16	6.86E-05	2.72E-16	8.54E-05	2.66E-16	1.20E-04
25	150.0	1.44E-16	3.13E-05	1.43E-16	3.39E-05	1.39E-16	3.81E-05	1.31E-16	4.74E-05	1.29E-16	6.67E-05
26	160.0	7.04E-17	1.74E-05	7.02E-17	1.89E-05	6.81E-17	2.12E-05	6.47E-17	2.65E-05	6.35E-17	3.73E-05
27	170.0	3.50E-17	9.77E-06	3.48E-17	1.06E-05	3.38E-17	1.19E-05	3.22E-17	1.49E-05	3.16E-17	2.10E-05
28	180.0	1.76E-17	5.51E-06	1.75E-17	5.98E-06	1.70E-17	6.73E-06	1.62E-17	8.39E-06	1.59E-17	1.19E-05
29	190.0	8.91E-18	3.11E-06	8.88E-18	3.38E-06	8.63E-18	3.80E-06	8.22E-18	4.75E-06	8.08E-18	6.70E-06
30	200.0	4.55E-18	1.76E-06	4.53E-18	1.91E-06	4.41E-18	2.15E-06	4.21E-18	2.70E-06	4.13E-18	3.80E-06
31	220.0	1.21E-18	5.68E-07	1.21E-18	6.17E-07	1.18E-18	6.95E-07	1.13E-18	8.76E-07	1.11E-18	1.23E-06
32	240.0	3.32E-19	1.85E-07	3.31E-19	2.01E-07	3.22E-19	2.26E-07	3.09E-19	2.86E-07	3.03E-19	4.01E-07
33	260.0	9.28E-20	6.06E-08	9.24E-20	6.58E-08	9.01E-20	7.42E-08	8.66E-20	9.38E-08	8.47E-20	1.32E-07
34	280.0	2.64E-20	2.00E-08	2.63E-20	2.17E-08	2.57E-20	2.45E-08	2.46E-20	3.09E-08	2.42E-20	4.35E-08
35	300.0	7.63E-21	6.64E-09	7.60E-21	7.21E-09	7.41E-21	8.13E-09	0.00E+00	0.00E+00	6.98E-21	1.44E-08
36	350.0	3.58E-22	4.24E-10	3.57E-22	4.60E-10	3.48E-22	5.19E-10	0.00E+00	0.00E+00	3.28E-22	9.23E-10
37	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.4 (Continued) (11/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / CONCRETE / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		51		52		53		54		55	
		(0.224 - 0.150)		(0.150 - 0.087)		(0.087 - 0.032)		(0.032 - 0.015)		(0.015 - 0.007)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	2.52E-11	2.07E-02	2.53E-11	3.15E-02	2.83E-11	6.22E-02	2.95E-11	1.34E-01	3.13E-11	2.55E-01
2	10.0	1.85E-11	6.08E-02	1.87E-11	9.28E-02	2.02E-11	1.77E-01	2.09E-11	3.78E-01	2.17E-11	7.09E-01
3	15.0	1.30E-11	9.62E-02	1.31E-11	1.46E-01	1.38E-11	2.72E-01	1.40E-11	5.71E-01	1.43E-11	1.05E+00
4	20.0	8.65E-12	1.14E-01	8.63E-12	1.72E-01	8.89E-12	3.12E-01	8.90E-12	6.46E-01	8.98E-12	1.17E+00
5	25.0	5.53E-12	1.14E-01	5.48E-12	1.71E-01	5.55E-12	3.04E-01	5.48E-12	6.21E-01	5.47E-12	1.12E+00
6	30.0	3.45E-12	1.02E-01	3.44E-12	1.54E-01	3.39E-12	2.68E-01	3.37E-12	5.49E-01	3.33E-12	9.80E-01
7	35.0	2.12E-12	8.55E-02	2.11E-12	1.28E-01	2.06E-12	2.22E-01	2.03E-12	4.50E-01	2.00E-12	7.99E-01
8	40.0	1.31E-12	6.92E-02	1.28E-12	1.02E-01	1.26E-12	1.78E-01	1.22E-12	3.55E-01	1.20E-12	6.28E-01
9	45.0	8.03E-13	5.36E-02	7.84E-13	7.90E-02	7.69E-13	1.37E-01	7.42E-13	2.72E-01	7.28E-13	4.81E-01
10	50.0	4.93E-13	4.06E-02	4.81E-13	5.98E-02	4.70E-13	1.03E-01	4.53E-13	2.05E-01	4.44E-13	3.63E-01
11	55.0	3.04E-13	3.03E-02	2.97E-13	4.47E-02	2.89E-13	7.69E-02	2.79E-13	1.53E-01	2.74E-13	2.70E-01
12	60.0	1.89E-13	2.24E-02	1.85E-13	3.31E-02	1.80E-13	5.69E-02	1.74E-13	1.13E-01	1.70E-13	2.00E-01
13	65.0	1.19E-13	1.65E-02	1.16E-13	2.44E-02	1.13E-13	4.19E-02	1.09E-13	8.35E-02	1.07E-13	1.47E-01
14	70.0	7.50E-14	1.21E-02	7.34E-14	1.79E-02	7.13E-14	3.07E-02	6.90E-14	6.13E-02	6.76E-14	1.08E-01
15	75.0	4.79E-14	8.86E-03	4.71E-14	1.32E-02	4.55E-14	2.25E-02	4.43E-14	4.51E-02	4.34E-14	7.97E-02
16	80.0	3.08E-14	6.48E-03	3.03E-14	9.65E-03	2.93E-14	1.65E-02	2.85E-14	3.31E-02	2.80E-14	5.84E-02
17	85.0	1.99E-14	4.74E-03	1.96E-14	7.06E-03	1.90E-14	1.20E-02	1.85E-14	2.42E-02	1.82E-14	4.28E-02
18	90.0	1.30E-14	3.47E-03	1.28E-14	5.17E-03	1.24E-14	8.84E-03	1.21E-14	1.78E-02	1.19E-14	3.14E-02
19	95.0	8.57E-15	2.55E-03	8.45E-15	3.79E-03	8.19E-15	6.49E-03	7.98E-15	1.31E-02	7.83E-15	2.31E-02
20	100.0	5.70E-15	1.88E-03	5.60E-15	2.79E-03	5.45E-15	4.79E-03	5.30E-15	9.61E-03	5.20E-15	1.70E-02
21	110.0	2.55E-15	1.02E-03	2.51E-15	1.51E-03	2.45E-15	2.60E-03	2.38E-15	5.22E-03	2.34E-15	9.25E-03
22	120.0	1.17E-15	5.55E-04	1.15E-15	8.26E-04	1.12E-15	1.42E-03	1.10E-15	2.86E-03	1.08E-15	5.06E-03
23	130.0	5.49E-16	3.05E-04	5.41E-16	4.55E-04	5.27E-16	7.83E-04	5.15E-16	1.58E-03	5.07E-16	2.80E-03
24	140.0	2.62E-16	1.69E-04	2.59E-16	2.53E-04	2.52E-16	4.34E-04	2.47E-16	8.79E-04	2.43E-16	1.56E-03
25	150.0	1.27E-16	9.41E-05	1.26E-16	1.41E-04	1.22E-16	2.42E-04	1.20E-16	4.90E-04	1.18E-16	8.68E-04
26	160.0	6.25E-17	5.26E-05	6.19E-17	7.89E-05	6.02E-17	1.35E-04	5.92E-17	2.75E-04	5.83E-17	4.87E-04
27	170.0	3.11E-17	2.96E-05	3.08E-17	4.43E-05	3.00E-17	7.61E-05	2.95E-17	1.55E-04	2.91E-17	2.74E-04
28	180.0	1.57E-17	1.67E-05	1.55E-17	2.50E-05	1.51E-17	4.31E-05	1.48E-17	8.72E-05	1.46E-17	1.55E-04
29	190.0	7.96E-18	9.46E-06	7.88E-18	1.42E-05	7.69E-18	2.44E-05	7.55E-18	4.94E-05	7.45E-18	8.78E-05
30	200.0	4.07E-18	5.36E-06	4.04E-18	8.04E-06	3.93E-18	1.38E-05	3.87E-18	2.81E-05	3.82E-18	4.99E-05
31	220.0	1.09E-18	1.73E-06	1.08E-18	2.61E-06	1.05E-18	4.48E-06	1.04E-18	9.13E-06	1.03E-18	1.62E-05
32	240.0	2.98E-19	5.66E-07	2.97E-19	8.53E-07	2.89E-19	1.46E-06	2.86E-19	2.98E-06	2.82E-19	5.30E-06
33	260.0	8.35E-20	1.86E-07	8.32E-20	2.80E-07	8.09E-20	4.80E-07	8.00E-20	9.80E-07	7.89E-20	1.74E-06
34	280.0	2.38E-20	6.14E-08	2.37E-20	9.24E-08	2.31E-20	1.59E-07	2.28E-20	3.24E-07	2.25E-20	5.75E-07
35	300.0	6.88E-21	2.04E-08	0.00E+00	0.00E+00	6.67E-21	5.27E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	350.0	3.23E-22	1.30E-09	0.00E+00	0.00E+00	3.14E-22	3.37E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	450.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	500.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40	550.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	600.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	650.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	700.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	750.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.5 Dose equivalent per source neutron and attenuation factor of neutrons in iron (1/11).

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		1		2		3		4		5	
		(400.000	- 375.000)	(375.000	- 350.000)	(350.000	- 325.000)	(325.000	- 300.000)	(300.000	- 275.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	2.99E-08	3.72E+00	2.86E-08	3.65E+00	2.76E-08	3.63E+00	2.68E-08	3.63E+00	2.59E-08	3.62E+00
2	10.0	1.24E-08	6.17E+00	1.18E-08	6.04E+00	1.14E-08	5.99E+00	1.10E-08	5.97E+00	1.06E-08	5.93E+00
3	15.0	7.61E-09	8.54E+00	7.26E-09	8.36E+00	7.01E-09	8.28E+00	6.76E-09	8.23E+00	6.48E-09	8.14E+00
4	20.0	5.01E-09	9.99E+00	4.78E-09	9.78E+00	4.61E-09	9.69E+00	4.44E-09	9.61E+00	4.24E-09	9.47E+00
5	25.0	3.48E-09	1.08E+01	3.32E-09	1.06E+01	3.20E-09	1.05E+01	3.08E-09	1.04E+01	2.93E-09	1.02E+01
6	30.0	2.49E-09	1.12E+01	2.38E-09	1.09E+01	2.29E-09	1.08E+01	2.20E-09	1.07E+01	2.08E-09	1.05E+01
7	35.0	1.81E-09	1.11E+01	1.73E-09	1.08E+01	1.67E-09	1.07E+01	1.60E-09	1.06E+01	1.51E-09	1.03E+01
8	40.0	1.35E-09	1.07E+01	1.29E-09	1.05E+01	1.24E-09	1.04E+01	1.19E-09	1.03E+01	1.12E-09	9.98E+00
9	45.0	1.00E-09	1.01E+01	9.57E-10	9.91E+00	9.21E-10	9.79E+00	8.80E-10	9.64E+00	8.28E-10	9.36E+00
10	50.0	7.49E-10	9.33E+00	7.16E-10	9.16E+00	6.89E-10	9.05E+00	6.58E-10	8.90E+00	6.17E-10	8.62E+00
11	55.0	5.63E-10	8.49E+00	5.39E-10	8.34E+00	5.19E-10	8.24E+00	4.95E-10	8.09E+00	4.63E-10	7.82E+00
12	60.0	4.25E-10	7.63E+00	4.07E-10	7.49E+00	3.91E-10	7.40E+00	3.73E-10	7.26E+00	3.48E-10	7.00E+00
13	65.0	3.22E-10	6.77E+00	3.08E-10	6.65E+00	2.96E-10	6.58E+00	2.82E-10	6.45E+00	2.63E-10	6.20E+00
14	70.0	2.44E-10	5.96E+00	2.34E-10	5.86E+00	2.25E-10	5.79E+00	2.14E-10	5.67E+00	1.99E-10	5.44E+00
15	75.0	1.85E-10	5.20E+00	1.78E-10	5.11E+00	1.71E-10	5.05E+00	1.62E-10	4.94E+00	1.51E-10	4.73E+00
16	80.0	1.41E-10	4.50E+00	1.35E-10	4.43E+00	1.30E-10	4.38E+00	1.24E-10	4.28E+00	1.14E-10	4.09E+00
17	85.0	1.08E-10	3.87E+00	1.03E-10	3.81E+00	9.92E-11	3.77E+00	9.41E-11	3.68E+00	8.69E-11	3.51E+00
18	90.0	8.21E-11	3.32E+00	7.87E-11	3.26E+00	7.57E-11	3.22E+00	7.18E-11	3.15E+00	6.62E-11	2.99E+00
19	95.0	6.27E-11	2.82E+00	6.01E-11	2.78E+00	5.79E-11	2.74E+00	5.48E-11	2.68E+00	5.04E-11	2.54E+00
20	100.0	4.84E-11	2.41E+00	4.64E-11	2.37E+00	4.47E-11	2.35E+00	4.23E-11	2.29E+00	3.88E-11	2.17E+00
21	110.0	2.83E-11	1.71E+00	2.72E-11	1.68E+00	2.62E-11	1.66E+00	2.47E-11	1.62E+00	2.26E-11	1.53E+00
22	120.0	1.66E-11	1.19E+00	1.60E-11	1.18E+00	1.54E-11	1.16E+00	1.45E-11	1.13E+00	1.32E-11	1.06E+00
23	130.0	9.80E-12	8.26E-01	9.41E-12	8.13E-01	9.05E-12	8.04E-01	8.55E-12	7.81E-01	7.76E-12	7.32E-01
24	140.0	5.79E-12	5.65E-01	5.56E-12	5.57E-01	5.35E-12	5.51E-01	5.05E-12	5.35E-01	4.57E-12	5.00E-01
25	150.0	3.43E-12	3.84E-01	3.29E-12	3.78E-01	3.17E-12	3.74E-01	2.99E-12	3.63E-01	2.70E-12	3.39E-01
26	160.0	2.03E-12	2.60E-01	1.95E-12	2.56E-01	1.88E-12	2.53E-01	1.77E-12	2.45E-01	1.60E-12	2.28E-01
27	170.0	1.21E-12	1.74E-01	1.16E-12	1.72E-01	1.12E-12	1.70E-01	1.05E-12	1.65E-01	9.47E-13	1.53E-01
28	180.0	7.23E-13	1.17E-01	6.94E-13	1.15E-01	6.69E-13	1.14E-01	6.29E-13	1.10E-01	5.63E-13	1.02E-01
29	190.0	4.32E-13	7.78E-02	4.15E-13	7.66E-02	4.00E-13	7.59E-02	3.76E-13	7.35E-02	3.36E-13	6.78E-02
30	200.0	2.60E-13	5.19E-02	2.50E-13	5.11E-02	2.41E-13	5.06E-02	2.26E-13	4.90E-02	2.02E-13	4.51E-02
31	220.0	9.42E-14	2.27E-02	9.05E-14	2.24E-02	8.72E-14	2.22E-02	8.20E-14	2.15E-02	7.29E-14	1.97E-02
32	240.0	3.44E-14	9.88E-03	3.30E-14	9.73E-03	3.19E-14	9.64E-03	2.99E-14	9.32E-03	2.65E-14	8.53E-03
33	260.0	1.27E-14	4.26E-03	1.22E-14	4.20E-03	1.17E-14	4.16E-03	1.10E-14	4.02E-03	9.74E-15	3.68E-03
34	280.0	4.69E-15	1.83E-03	4.50E-15	1.81E-03	4.34E-15	1.79E-03	4.08E-15	1.73E-03	3.60E-15	1.58E-03
35	300.0	1.75E-15	7.84E-04	1.68E-15	7.72E-04	1.62E-15	7.65E-04	1.52E-15	7.40E-04	1.34E-15	6.74E-04
36	320.0	6.55E-16	3.34E-04	6.29E-16	3.30E-04	6.07E-16	3.27E-04	5.70E-16	3.16E-04	5.03E-16	2.88E-04
37	340.0	2.49E-16	1.43E-04	2.39E-16	1.41E-04	2.30E-16	1.40E-04	2.16E-16	1.35E-04	1.91E-16	1.23E-04
38	360.0	9.39E-17	6.07E-05	9.02E-17	5.98E-05	8.70E-17	5.92E-05	8.16E-17	5.72E-05	7.20E-17	5.21E-05
39	380.0	3.58E-17	2.58E-05	3.44E-17	2.54E-05	3.32E-17	2.52E-05	3.11E-17	2.43E-05	2.75E-17	2.21E-05
40	400.0	1.37E-17	1.09E-05	1.31E-17	1.08E-05	1.27E-17	1.07E-05	1.19E-17	1.03E-05	1.05E-17	9.38E-06
41	420.0	5.24E-18	4.60E-06	5.03E-18	4.53E-06	4.85E-18	4.49E-06	4.55E-18	4.34E-06	4.02E-18	3.96E-06
42	440.0	2.01E-18	1.94E-06	1.93E-18	1.91E-06	1.86E-18	1.89E-06	1.75E-18	1.83E-06	1.54E-18	1.67E-06
43	460.0	7.65E-19	8.07E-07	7.35E-19	7.95E-07	7.09E-19	7.88E-07	6.65E-19	7.61E-07	5.87E-19	6.94E-07
44	480.0	2.68E-19	3.08E-07	2.58E-19	3.04E-07	2.48E-19	3.01E-07	2.33E-19	2.91E-07	2.06E-19	2.65E-07

Table 3.5 (Continued) (2/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		6		7		8		9		10	
		(275.000	- 250.000)	(250.000	- 225.000)	(225.000	- 200.000)	(200.000	- 180.000)	(180.000	- 160.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	2.48E-08	3.59E+00	2.39E-08	3.59E+00	2.32E-08	3.63E+00	2.23E-08	3.60E+00	2.15E-08	3.52E+00
2	10.0	1.01E-08	5.85E+00	9.72E-09	5.84E+00	9.37E-09	5.87E+00	8.96E-09	5.79E+00	8.56E-09	5.61E+00
3	15.0	6.15E-09	7.99E+00	5.88E-09	7.95E+00	5.65E-09	7.96E+00	5.37E-09	7.80E+00	5.09E-09	7.51E+00
4	20.0	4.01E-09	9.27E+00	3.82E-09	9.18E+00	3.65E-09	9.15E+00	3.46E-09	8.92E+00	3.26E-09	8.54E+00
5	25.0	2.76E-09	9.97E+00	2.62E-09	9.84E+00	2.49E-09	9.76E+00	2.35E-09	9.47E+00	2.20E-09	9.03E+00
6	30.0	1.96E-09	1.02E+01	1.85E-09	1.00E+01	1.76E-09	9.90E+00	1.65E-09	9.57E+00	1.54E-09	9.07E+00
7	35.0	1.42E-09	1.00E+01	1.34E-09	9.83E+00	1.26E-09	9.68E+00	1.18E-09	9.32E+00	1.10E-09	8.80E+00
8	40.0	1.04E-09	9.65E+00	9.82E-10	9.43E+00	9.24E-10	9.26E+00	8.60E-10	8.88E+00	7.97E-10	8.36E+00
9	45.0	7.71E-10	9.03E+00	7.23E-10	8.79E+00	6.78E-10	8.61E+00	6.29E-10	8.22E+00	5.81E-10	7.71E+00
10	50.0	5.74E-10	8.29E+00	5.36E-10	8.05E+00	5.02E-10	7.85E+00	4.64E-10	7.48E+00	4.27E-10	6.99E+00
11	55.0	4.29E-10	7.50E+00	4.00E-10	7.26E+00	3.73E-10	7.06E+00	3.43E-10	6.70E+00	3.15E-10	6.24E+00
12	60.0	3.22E-10	6.70E+00	2.99E-10	6.47E+00	2.78E-10	6.27E+00	2.55E-10	5.93E+00	2.34E-10	5.51E+00
13	65.0	2.42E-10	5.92E+00	2.25E-10	5.70E+00	2.08E-10	5.51E+00	1.91E-10	5.20E+00	1.74E-10	4.81E+00
14	70.0	1.83E-10	5.18E+00	1.69E-10	4.98E+00	1.56E-10	4.80E+00	1.43E-10	4.51E+00	1.30E-10	4.16E+00
15	75.0	1.38E-10	4.50E+00	1.28E-10	4.31E+00	1.18E-10	4.14E+00	1.07E-10	3.88E+00	9.69E-11	3.57E+00
16	80.0	1.05E-10	3.87E+00	9.64E-11	3.70E+00	8.85E-11	3.55E+00	8.03E-11	3.32E+00	7.26E-11	3.04E+00
17	85.0	7.94E-11	3.32E+00	7.29E-11	3.16E+00	6.68E-11	3.02E+00	6.05E-11	2.82E+00	5.44E-11	2.58E+00
18	90.0	6.03E-11	2.82E+00	5.53E-11	2.69E+00	5.05E-11	2.56E+00	4.56E-11	2.38E+00	4.09E-11	2.17E+00
19	95.0	4.59E-11	2.39E+00	4.19E-11	2.27E+00	3.82E-11	2.16E+00	3.44E-11	2.00E+00	3.08E-11	1.82E+00
20	100.0	3.53E-11	2.04E+00	3.21E-11	1.93E+00	2.92E-11	1.83E+00	2.62E-11	1.69E+00	2.34E-11	1.54E+00
21	110.0	2.05E-11	1.43E+00	1.86E-11	1.35E+00	1.68E-11	1.27E+00	1.50E-11	1.17E+00	1.33E-11	1.06E+00
22	120.0	1.19E-11	9.91E-01	1.08E-11	9.31E-01	9.70E-12	8.75E-01	8.62E-12	8.01E-01	7.63E-12	7.19E-01
23	130.0	6.96E-12	6.80E-01	6.27E-12	6.36E-01	5.62E-12	5.95E-01	4.98E-12	5.43E-01	4.38E-12	4.85E-01
24	140.0	4.08E-12	4.62E-01	3.66E-12	4.31E-01	3.27E-12	4.02E-01	2.88E-12	3.65E-01	2.53E-12	3.25E-01
25	150.0	2.40E-12	3.12E-01	2.15E-12	2.90E-01	1.91E-12	2.69E-01	1.68E-12	2.44E-01	1.47E-12	2.16E-01
26	160.0	1.42E-12	2.10E-01	1.26E-12	1.94E-01	1.12E-12	1.80E-01	9.81E-13	1.62E-01	8.54E-13	1.43E-01
27	170.0	8.38E-13	1.40E-01	7.45E-13	1.29E-01	6.60E-13	1.19E-01	5.76E-13	1.07E-01	4.99E-13	9.46E-02
28	180.0	4.98E-13	9.32E-02	4.41E-13	8.58E-02	3.90E-13	7.91E-02	3.39E-13	7.09E-02	2.93E-13	6.23E-02
29	190.0	2.96E-13	6.18E-02	2.62E-13	5.68E-02	2.31E-13	5.22E-02	2.00E-13	4.67E-02	1.73E-13	4.09E-02
30	200.0	1.78E-13	4.11E-02	1.57E-13	3.76E-02	1.38E-13	3.45E-02	1.19E-13	3.08E-02	1.03E-13	2.70E-02
31	220.0	6.39E-14	1.79E-02	5.62E-14	1.63E-02	4.92E-14	1.49E-02	4.25E-14	1.33E-02	3.65E-14	1.16E-02
32	240.0	2.32E-14	7.72E-03	2.03E-14	7.04E-03	1.78E-14	6.42E-03	1.53E-14	5.70E-03	1.32E-14	4.96E-03
33	260.0	8.50E-15	3.32E-03	7.44E-15	3.02E-03	6.50E-15	2.75E-03	5.59E-15	2.44E-03	4.80E-15	2.12E-03
34	280.0	3.14E-15	1.42E-03	2.75E-15	1.29E-03	2.40E-15	1.18E-03	2.06E-15	1.04E-03	1.77E-15	9.08E-04
35	300.0	1.17E-15	6.08E-04	1.02E-15	5.52E-04	8.91E-16	5.02E-04	7.66E-16	4.45E-04	6.57E-16	3.88E-04
36	320.0	4.38E-16	2.59E-04	3.83E-16	2.35E-04	3.34E-16	2.14E-04	2.87E-16	1.90E-04	2.46E-16	1.65E-04
37	340.0	1.66E-16	1.11E-04	1.45E-16	1.01E-04	1.27E-16	9.17E-05	1.09E-16	8.13E-05	9.35E-17	7.08E-05
38	360.0	6.26E-17	4.69E-05	5.48E-17	4.26E-05	4.78E-17	3.88E-05	4.12E-17	3.44E-05	3.54E-17	3.01E-05
39	380.0	2.39E-17	1.99E-05	2.09E-17	1.81E-05	1.83E-17	1.65E-05	1.57E-17	1.47E-05	1.35E-17	1.28E-05
40	400.0	9.14E-18	8.45E-06	8.00E-18	7.69E-06	6.99E-18	7.00E-06	6.03E-18	6.22E-06	5.19E-18	5.44E-06
41	420.0	3.50E-18	3.57E-06	3.06E-18	3.24E-06	2.68E-18	2.96E-06	2.31E-18	2.63E-06	1.99E-18	2.30E-06
42	440.0	1.34E-18	1.50E-06	1.18E-18	1.37E-06	1.03E-18	1.25E-06	8.87E-19	1.11E-06	7.65E-19	9.70E-07
43	460.0	5.17E-19	6.26E-07	4.48E-19	5.70E-07	3.97E-19	5.20E-07	3.39E-19	4.63E-07	2.92E-19	4.05E-07
44	480.0	1.80E-19	2.39E-07	1.57E-19	2.18E-07	1.38E-19	1.99E-07	1.19E-19	1.77E-07	1.03E-19	1.55E-07

Table 3.5 (Continued) (3/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		11		12		13		14		15	
		(160.000 - 140.000)		(140.000 - 120.000)		(120.000 - 110.000)		(110.000 - 100.000)		(100.000 - 90.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	2.08E-08	3.46E+00	2.00E-08	3.40E+00	1.94E-08	3.34E+00	1.89E-08	3.31E+00	1.84E-08	3.26E+00
2	10.0	8.18E-09	5.45E+00	7.83E-09	5.32E+00	7.50E-09	5.18E+00	7.26E-09	5.08E+00	6.99E-09	4.95E+00
3	15.0	4.82E-09	7.23E+00	4.59E-09	7.01E+00	4.36E-09	6.77E+00	4.20E-09	6.60E+00	4.00E-09	6.38E+00
4	20.0	3.07E-09	8.17E+00	2.90E-09	7.87E+00	2.73E-09	7.55E+00	2.62E-09	7.32E+00	2.48E-09	7.03E+00
5	25.0	2.06E-09	8.60E+00	1.93E-09	8.21E+00	1.81E-09	7.83E+00	1.73E-09	7.55E+00	1.63E-09	7.23E+00
6	30.0	1.44E-09	8.61E+00	1.33E-09	8.16E+00	1.24E-09	7.73E+00	1.18E-09	7.43E+00	1.11E-09	7.09E+00
7	35.0	1.02E-09	8.31E+00	9.41E-10	7.83E+00	8.73E-10	7.38E+00	8.26E-10	7.07E+00	7.75E-10	6.72E+00
8	40.0	7.37E-10	7.86E+00	6.78E-10	7.36E+00	6.25E-10	6.91E+00	5.90E-10	6.59E+00	5.51E-10	6.24E+00
9	45.0	5.35E-10	7.22E+00	4.89E-10	6.73E+00	4.49E-10	6.29E+00	4.22E-10	5.98E+00	3.93E-10	5.64E+00
10	50.0	3.92E-10	6.52E+00	3.56E-10	6.05E+00	3.26E-10	5.62E+00	3.05E-10	5.33E+00	2.83E-10	5.01E+00
11	55.0	2.88E-10	5.80E+00	2.61E-10	5.36E+00	2.37E-10	4.96E+00	2.22E-10	4.69E+00	2.05E-10	4.39E+00
12	60.0	2.13E-10	5.10E+00	1.92E-10	4.69E+00	1.74E-10	4.32E+00	1.62E-10	4.07E+00	1.49E-10	3.80E+00
13	65.0	1.58E-10	4.44E+00	1.41E-10	4.06E+00	1.28E-10	3.73E+00	1.19E-10	3.50E+00	1.09E-10	3.26E+00
14	70.0	1.17E-10	3.83E+00	1.05E-10	3.48E+00	9.41E-11	3.18E+00	8.71E-11	2.98E+00	7.98E-11	2.77E+00
15	75.0	8.73E-11	3.27E+00	7.76E-11	2.97E+00	6.95E-11	2.70E+00	6.42E-11	2.53E+00	5.86E-11	2.34E+00
16	80.0	6.52E-11	2.78E+00	5.77E-11	2.51E+00	5.15E-11	2.28E+00	4.74E-11	2.12E+00	4.32E-11	1.96E+00
17	85.0	4.88E-11	2.35E+00	4.30E-11	2.11E+00	3.82E-11	1.91E+00	3.51E-11	1.77E+00	3.19E-11	1.63E+00
18	90.0	3.65E-11	1.97E+00	3.21E-11	1.77E+00	2.84E-11	1.59E+00	2.61E-11	1.48E+00	2.36E-11	1.35E+00
19	95.0	2.74E-11	1.65E+00	2.40E-11	1.47E+00	2.12E-11	1.32E+00	1.94E-11	1.22E+00	1.75E-11	1.12E+00
20	100.0	2.08E-11	1.39E+00	1.81E-11	1.23E+00	1.59E-11	1.10E+00	1.46E-11	1.02E+00	1.31E-11	9.30E-01
21	110.0	1.18E-11	9.48E-01	1.02E-11	8.36E-01	8.90E-12	7.44E-01	8.09E-12	6.85E-01	7.27E-12	6.23E-01
22	120.0	6.69E-12	6.42E-01	5.75E-12	5.62E-01	5.00E-12	4.97E-01	4.53E-12	4.56E-01	4.06E-12	4.14E-01
23	130.0	3.82E-12	4.31E-01	3.27E-12	3.75E-01	2.83E-12	3.30E-01	2.55E-12	3.02E-01	2.28E-12	2.73E-01
24	140.0	2.20E-12	2.87E-01	1.87E-12	2.49E-01	1.61E-12	2.18E-01	1.45E-12	1.99E-01	1.29E-12	1.79E-01
25	150.0	1.27E-12	1.90E-01	1.07E-12	1.64E-01	9.22E-13	1.43E-01	8.29E-13	1.30E-01	7.37E-13	1.17E-01
26	160.0	7.36E-13	1.26E-01	6.20E-13	1.08E-01	5.31E-13	9.39E-02	4.77E-13	8.53E-02	4.23E-13	7.67E-02
27	170.0	4.29E-13	8.26E-02	3.60E-13	7.07E-02	3.08E-13	6.14E-02	2.76E-13	5.58E-02	2.45E-13	5.01E-02
28	180.0	2.51E-13	5.43E-02	2.10E-13	4.63E-02	1.79E-13	4.02E-02	1.61E-13	3.64E-02	1.43E-13	3.27E-02
29	190.0	1.48E-13	3.56E-02	1.24E-13	3.03E-02	1.05E-13	2.62E-02	9.43E-14	2.38E-02	8.36E-14	2.14E-02
30	200.0	8.78E-14	2.34E-02	7.32E-14	1.99E-02	6.23E-14	1.72E-02	5.58E-14	1.56E-02	4.95E-14	1.40E-02
31	220.0	3.11E-14	1.00E-02	2.59E-14	8.51E-03	2.20E-14	7.36E-03	1.97E-14	6.68E-03	1.75E-14	6.01E-03
32	240.0	1.12E-14	4.29E-03	9.31E-15	3.64E-03	7.93E-15	3.15E-03	7.11E-15	2.86E-03	6.32E-15	2.58E-03
33	260.0	4.07E-15	1.84E-03	3.39E-15	1.56E-03	2.90E-15	1.35E-03	2.60E-15	1.23E-03	2.32E-15	1.11E-03
34	280.0	1.50E-15	7.85E-04	1.25E-15	6.67E-04	1.07E-15	5.80E-04	9.63E-16	5.28E-04	8.59E-16	4.77E-04
35	300.0	5.59E-16	3.35E-04	4.67E-16	2.86E-04	4.00E-16	2.48E-04	3.60E-16	2.27E-04	3.22E-16	2.05E-04
36	320.0	2.10E-16	1.43E-04	1.76E-16	1.22E-04	1.51E-16	1.06E-04	1.36E-16	9.72E-05	1.21E-16	8.80E-05
37	340.0	7.97E-17	6.14E-05	6.69E-17	5.25E-05	5.74E-17	4.58E-05	5.18E-17	4.19E-05	4.63E-17	3.79E-05
38	360.0	3.02E-17	2.61E-05	2.54E-17	2.23E-05	2.18E-17	1.95E-05	1.97E-17	1.78E-05	1.76E-17	1.62E-05
39	380.0	1.16E-17	1.11E-05	9.72E-18	9.53E-06	8.36E-18	8.34E-06	7.55E-18	7.63E-06	6.76E-18	6.92E-06
40	400.0	4.43E-18	4.73E-06	3.73E-18	4.06E-06	3.21E-18	3.55E-06	2.90E-18	3.25E-06	2.60E-18	2.95E-06
41	420.0	1.70E-18	2.00E-06	1.43E-18	1.72E-06	1.24E-18	1.50E-06	1.12E-18	1.38E-06	1.00E-18	1.25E-06
42	440.0	6.55E-19	8.45E-07	5.52E-19	7.26E-07	4.76E-19	6.36E-07	4.30E-19	5.82E-07	3.85E-19	5.28E-07
43	460.0	2.50E-19	3.53E-07	2.11E-19	3.03E-07	1.82E-19	2.66E-07	1.65E-19	2.43E-07	1.47E-19	2.21E-07
44	480.0	8.79E-20	1.35E-07	7.41E-20	1.16E-07	6.39E-20	1.02E-07	5.78E-20	9.32E-08	5.18E-20	8.46E-08

Table 3.5 (Continued) (4/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		16		17		18		19		20	
		(90.000 - 80.000)		(80.000 - 70.000)		(70.000 - 65.000)		(65.000 - 60.000)		(60.000 - 55.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.79E-08	3.22E+00	1.76E-08	3.20E+00	1.70E-08	3.15E+00	1.66E-08	3.10E+00	1.62E-08	3.05E+00
2	10.0	6.74E-09	4.84E+00	6.52E-09	4.76E+00	6.26E-09	4.62E+00	6.06E-09	4.52E+00	5.84E-09	4.40E+00
3	15.0	3.82E-09	6.18E+00	3.67E-09	6.02E+00	3.49E-09	5.80E+00	3.36E-09	5.63E+00	3.22E-09	5.46E+00
4	20.0	2.36E-09	6.76E+00	2.24E-09	6.54E+00	2.12E-09	6.25E+00	2.03E-09	6.05E+00	1.93E-09	5.83E+00
5	25.0	1.54E-09	6.91E+00	1.46E-09	6.63E+00	1.37E-09	6.31E+00	1.30E-09	6.08E+00	1.24E-09	5.83E+00
6	30.0	1.04E-09	6.74E+00	9.80E-10	6.43E+00	9.16E-10	6.09E+00	8.70E-10	5.84E+00	8.23E-10	5.58E+00
7	35.0	7.23E-10	6.36E+00	6.75E-10	6.03E+00	6.28E-10	5.68E+00	5.94E-10	5.43E+00	5.60E-10	5.17E+00
8	40.0	5.12E-10	5.88E+00	4.75E-10	5.54E+00	4.40E-10	5.20E+00	4.15E-10	4.95E+00	3.90E-10	4.70E+00
9	45.0	3.64E-10	5.29E+00	3.36E-10	4.96E+00	3.10E-10	4.63E+00	2.92E-10	4.40E+00	2.73E-10	4.16E+00
10	50.0	2.61E-10	4.68E+00	2.39E-10	4.37E+00	2.20E-10	4.06E+00	2.07E-10	3.85E+00	1.93E-10	3.63E+00
11	55.0	1.88E-10	4.08E+00	1.72E-10	3.79E+00	1.57E-10	3.52E+00	1.48E-10	3.33E+00	1.37E-10	3.13E+00
12	60.0	1.36E-10	3.52E+00	1.24E-10	3.26E+00	1.13E-10	3.01E+00	1.06E-10	2.85E+00	9.85E-11	2.67E+00
13	65.0	9.92E-11	3.01E+00	9.00E-11	2.77E+00	8.19E-11	2.56E+00	7.65E-11	2.41E+00	7.09E-11	2.26E+00
14	70.0	7.24E-11	2.55E+00	6.55E-11	2.34E+00	5.95E-11	2.15E+00	5.54E-11	2.02E+00	5.13E-11	1.89E+00
15	75.0	5.31E-11	2.14E+00	4.78E-11	1.96E+00	4.33E-11	1.80E+00	4.03E-11	1.69E+00	3.72E-11	1.58E+00
16	80.0	3.90E-11	1.79E+00	3.50E-11	1.63E+00	3.17E-11	1.50E+00	2.94E-11	1.40E+00	2.71E-11	1.31E+00
17	85.0	2.87E-11	1.49E+00	2.57E-11	1.35E+00	2.32E-11	1.24E+00	2.15E-11	1.16E+00	1.98E-11	1.08E+00
18	90.0	2.12E-11	1.23E+00	1.89E-11	1.12E+00	1.70E-11	1.02E+00	1.58E-11	9.53E-01	1.45E-11	8.87E-01
19	95.0	1.57E-11	1.01E+00	1.40E-11	9.19E-01	1.25E-11	8.36E-01	1.16E-11	7.81E-01	1.07E-11	7.26E-01
20	100.0	1.17E-11	8.41E-01	1.04E-11	7.60E-01	9.35E-12	6.91E-01	8.65E-12	6.45E-01	7.95E-12	5.99E-01
21	110.0	6.46E-12	5.62E-01	5.73E-12	5.05E-01	5.12E-12	4.58E-01	4.73E-12	4.27E-01	4.34E-12	3.96E-01
22	120.0	3.59E-12	3.77E-01	3.18E-12	3.33E-01	2.84E-12	3.02E-01	2.61E-12	2.81E-01	2.40E-12	2.60E-01
23	130.0	2.02E-12	2.45E-01	1.78E-12	2.19E-01	1.58E-12	1.98E-01	1.46E-12	1.84E-01	1.34E-12	1.70E-01
24	140.0	1.14E-12	1.60E-01	1.00E-12	1.43E-01	8.93E-13	1.29E-01	8.22E-13	1.20E-01	7.54E-13	1.11E-01
25	150.0	6.48E-13	1.05E-01	5.70E-13	9.35E-02	5.08E-13	8.44E-02	4.68E-13	7.85E-02	4.29E-13	7.27E-02
26	160.0	3.72E-13	6.84E-02	3.27E-13	6.10E-02	2.91E-13	5.51E-02	2.68E-13	5.12E-02	2.46E-13	4.74E-02
27	170.0	2.15E-13	4.46E-02	1.89E-13	3.98E-02	1.68E-13	3.59E-02	1.55E-13	3.34E-02	1.42E-13	3.10E-02
28	180.0	1.25E-13	2.91E-02	1.10E-13	2.60E-02	9.82E-14	2.35E-02	9.05E-14	2.19E-02	8.31E-14	2.03E-02
29	190.0	7.35E-14	1.90E-02	6.46E-14	1.70E-02	5.77E-14	1.54E-02	5.32E-14	1.43E-02	4.89E-14	1.33E-02
30	200.0	4.35E-14	1.25E-02	3.84E-14	1.12E-02	3.42E-14	1.01E-02	3.16E-14	9.43E-03	2.91E-14	8.76E-03
31	220.0	1.54E-14	5.37E-03	1.36E-14	4.81E-03	1.22E-14	4.36E-03	1.13E-14	4.07E-03	1.04E-14	3.78E-03
32	240.0	5.58E-15	2.31E-03	4.93E-15	2.07E-03	4.42E-15	1.88E-03	4.09E-15	1.76E-03	3.77E-15	1.63E-03
33	260.0	2.05E-15	9.94E-04	1.81E-15	8.94E-04	1.63E-15	8.13E-04	1.51E-15	7.60E-04	1.39E-15	7.08E-04
34	280.0	7.61E-16	4.28E-04	6.75E-16	3.86E-04	6.06E-16	3.51E-04	5.62E-16	3.28E-04	5.18E-16	3.06E-04
35	300.0	2.85E-16	1.84E-04	2.53E-16	1.66E-04	2.28E-16	1.51E-04	2.11E-16	1.42E-04	1.95E-16	1.32E-04
36	320.0	1.08E-16	7.92E-05	9.58E-17	7.15E-05	8.62E-17	6.52E-05	7.99E-17	6.10E-05	7.37E-17	5.69E-05
37	340.0	4.12E-17	3.42E-05	3.67E-17	3.09E-05	3.30E-17	2.82E-05	3.06E-17	2.64E-05	2.82E-17	2.46E-05
38	360.0	1.57E-17	1.46E-05	1.39E-17	1.32E-05	1.26E-17	1.20E-05	1.16E-17	1.12E-05	1.07E-17	1.05E-05
39	380.0	6.01E-18	6.24E-06	5.36E-18	5.64E-06	4.82E-18	5.14E-06	4.47E-18	4.81E-06	4.13E-18	4.49E-06
40	400.0	2.31E-18	2.66E-06	2.06E-18	2.40E-06	1.85E-18	2.19E-06	1.72E-18	2.05E-06	1.59E-18	1.91E-06
41	420.0	8.90E-19	1.13E-06	7.93E-19	1.02E-06	7.14E-19	9.30E-07	6.62E-19	8.71E-07	6.11E-19	8.12E-07
42	440.0	3.43E-19	4.77E-07	3.06E-19	4.31E-07	2.75E-19	3.93E-07	2.55E-19	3.68E-07	2.36E-19	3.44E-07
43	460.0	1.31E-19	1.99E-07	1.17E-19	1.80E-07	1.05E-19	1.64E-07	9.76E-20	1.54E-07	9.01E-20	1.44E-07
44	480.0	4.61E-20	7.63E-08	4.11E-20	6.91E-08	3.70E-20	6.30E-08	3.43E-20	5.90E-08	3.17E-20	5.50E-08

Table 3.5 (Continued) (5/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		21		22		23		24		25	
		(55.000 -	50.000)	(50.000 -	45.000)	(45.000 -	40.000)	(40.000 -	35.000)	(35.000 -	30.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.58E-08	3.00E+00	1.52E-08	2.93E+00	1.48E-08	2.87E+00	1.42E-08	2.78E+00	1.35E-08	2.67E+00
2	10.0	5.61E-09	4.27E+00	5.35E-09	4.11E+00	5.11E-09	3.96E+00	4.81E-09	3.76E+00	4.50E-09	3.56E+00
3	15.0	3.07E-09	5.26E+00	2.90E-09	5.03E+00	2.75E-09	4.80E+00	2.58E-09	4.53E+00	2.38E-09	4.23E+00
4	20.0	1.83E-09	5.59E+00	1.73E-09	5.31E+00	1.63E-09	5.04E+00	1.51E-09	4.73E+00	1.39E-09	4.38E+00
5	25.0	1.17E-09	5.56E+00	1.09E-09	5.26E+00	1.03E-09	4.97E+00	9.48E-10	4.63E+00	8.63E-10	4.26E+00
6	30.0	7.73E-10	5.30E+00	7.21E-10	4.99E+00	6.73E-10	4.69E+00	6.19E-10	4.36E+00	5.61E-10	3.99E+00
7	35.0	5.24E-10	4.89E+00	4.87E-10	4.59E+00	4.52E-10	4.30E+00	4.15E-10	3.98E+00	3.74E-10	3.62E+00
8	40.0	3.64E-10	4.43E+00	3.37E-10	4.14E+00	3.12E-10	3.87E+00	2.85E-10	3.57E+00	2.56E-10	3.24E+00
9	45.0	2.54E-10	3.92E+00	2.34E-10	3.65E+00	2.17E-10	3.40E+00	1.98E-10	3.13E+00	1.77E-10	2.83E+00
10	50.0	1.79E-10	3.41E+00	1.65E-10	3.17E+00	1.52E-10	2.94E+00	1.38E-10	2.70E+00	1.24E-10	2.44E+00
11	55.0	1.27E-10	2.93E+00	1.17E-10	2.72E+00	1.07E-10	2.52E+00	9.77E-11	2.31E+00	8.71E-11	2.08E+00
12	60.0	9.09E-11	2.49E+00	8.33E-11	2.31E+00	7.66E-11	2.14E+00	6.95E-11	1.96E+00	6.19E-11	1.76E+00
13	65.0	6.53E-11	2.10E+00	5.98E-11	1.94E+00	5.49E-11	1.80E+00	4.97E-11	1.64E+00	4.43E-11	1.48E+00
14	70.0	4.72E-11	1.76E+00	4.31E-11	1.62E+00	3.95E-11	1.50E+00	3.58E-11	1.37E+00	3.18E-11	1.23E+00
15	75.0	3.42E-11	1.47E+00	3.12E-11	1.35E+00	2.86E-11	1.25E+00	2.59E-11	1.14E+00	2.30E-11	1.02E+00
16	80.0	2.49E-11	1.21E+00	2.27E-11	1.12E+00	2.08E-11	1.03E+00	1.88E-11	9.39E-01	1.67E-11	8.42E-01
17	85.0	1.82E-11	1.00E+00	1.65E-11	9.19E-01	1.51E-11	8.47E-01	1.37E-11	7.72E-01	1.21E-11	6.92E-01
18	90.0	1.33E-11	8.21E-01	1.21E-11	7.54E-01	1.11E-11	6.95E-01	9.99E-12	6.33E-01	8.86E-12	5.67E-01
19	95.0	9.77E-12	6.72E-01	8.89E-12	6.17E-01	8.12E-12	5.68E-01	7.33E-12	5.17E-01	6.50E-12	4.63E-01
20	100.0	7.26E-12	5.53E-01	6.60E-12	5.08E-01	6.03E-12	4.67E-01	5.44E-12	4.26E-01	4.82E-12	3.81E-01
21	110.0	3.96E-12	3.65E-01	3.60E-12	3.35E-01	3.29E-12	3.08E-01	2.97E-12	2.81E-01	2.63E-12	2.51E-01
22	120.0	2.19E-12	2.40E-01	1.99E-12	2.20E-01	1.81E-12	2.02E-01	1.64E-12	1.84E-01	1.45E-12	1.65E-01
23	130.0	1.22E-12	1.57E-01	1.11E-12	1.44E-01	1.01E-12	1.32E-01	9.12E-13	1.21E-01	8.09E-13	1.08E-01
24	140.0	6.87E-13	1.03E-01	6.24E-13	9.41E-02	5.69E-13	8.65E-02	5.14E-13	7.88E-02	4.56E-13	7.06E-02
25	150.0	3.91E-13	6.70E-02	3.55E-13	6.15E-02	3.24E-13	5.65E-02	2.93E-13	5.15E-02	2.60E-13	4.62E-02
26	160.0	2.24E-13	4.38E-02	2.04E-13	4.02E-02	1.86E-13	3.70E-02	1.68E-13	3.37E-02	1.49E-13	3.02E-02
27	170.0	1.30E-13	2.86E-02	1.18E-13	2.63E-02	1.08E-13	2.42E-02	9.77E-14	2.21E-02	8.67E-14	1.98E-02
28	180.0	7.59E-14	1.87E-02	6.91E-14	1.72E-02	6.32E-14	1.59E-02	5.71E-14	1.45E-02	5.08E-14	1.30E-02
29	190.0	4.47E-14	1.23E-02	4.07E-14	1.13E-02	3.72E-14	1.04E-02	3.37E-14	9.51E-03	2.99E-14	8.54E-03
30	200.0	2.66E-14	8.10E-03	2.42E-14	7.45E-03	2.21E-14	6.87E-03	2.00E-14	6.27E-03	1.78E-14	5.63E-03
31	220.0	9.49E-15	3.50E-03	8.65E-15	3.22E-03	7.92E-15	2.97E-03	7.18E-15	2.72E-03	6.39E-15	2.44E-03
32	240.0	3.45E-15	1.51E-03	3.15E-15	1.40E-03	2.89E-15	1.29E-03	2.62E-15	1.18E-03	2.33E-15	1.06E-03
33	260.0	1.27E-15	6.56E-04	1.16E-15	6.05E-04	1.07E-15	5.59E-04	9.67E-16	5.11E-04	8.62E-16	4.60E-04
34	280.0	4.75E-16	2.84E-04	4.34E-16	2.62E-04	3.98E-16	2.42E-04	3.61E-16	2.21E-04	3.22E-16	1.99E-04
35	300.0	1.79E-16	1.23E-04	1.63E-16	1.13E-04	1.50E-16	1.05E-04	1.36E-16	9.57E-05	1.21E-16	8.62E-05
36	320.0	6.77E-17	5.28E-05	6.18E-17	4.87E-05	5.67E-17	4.50E-05	5.15E-17	4.12E-05	4.59E-17	3.71E-05
37	340.0	2.59E-17	2.28E-05	2.37E-17	2.11E-05	2.17E-17	1.95E-05	1.97E-17	1.78E-05	1.76E-17	1.60E-05
38	360.0	9.87E-18	9.74E-06	9.02E-18	8.99E-06	8.28E-18	8.31E-06	7.51E-18	7.61E-06	6.70E-18	6.85E-06
39	380.0	3.79E-18	4.17E-06	3.46E-18	3.85E-06	3.18E-18	3.56E-06	2.89E-18	3.26E-06	2.57E-18	2.93E-06
40	400.0	1.46E-18	1.78E-06	1.33E-18	1.64E-06	1.22E-18	1.52E-06	1.11E-18	1.39E-06	9.90E-19	1.25E-06
41	420.0	5.61E-19	7.54E-07	5.13E-19	6.96E-07	4.71E-19	6.44E-07	4.27E-19	5.89E-07	3.81E-19	5.31E-07
42	440.0	2.16E-19	3.19E-07	1.98E-19	2.95E-07	1.81E-19	2.72E-07	1.65E-19	2.49E-07	1.47E-19	2.25E-07
43	460.0	8.28E-20	1.33E-07	7.57E-20	1.23E-07	6.94E-20	1.14E-07	6.30E-20	1.04E-07	5.62E-20	9.39E-08
44	480.0	2.91E-20	5.11E-08	2.66E-20	4.71E-08	2.44E-20	4.36E-08	2.22E-20	3.99E-08	1.98E-20	3.60E-08

Table 3.5 (Continued) (6/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		26		27		28		29		30	
		(30.000 -	27.500)	(27.500 -	25.000)	(25.000 -	22.500)	(22.500 -	20.000)	(20.000 -	17.500)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.30E-08	2.59E+00	1.29E-08	2.59E+00	1.26E-08	2.54E+00	1.19E-08	2.43E+00	1.30E-08	2.67E+00
2	10.0	4.24E-09	3.38E+00	4.05E-09	3.24E+00	3.88E-09	3.13E+00	3.61E-09	2.93E+00	4.00E-09	3.28E+00
3	15.0	2.22E-09	3.97E+00	2.10E-09	3.79E+00	1.97E-09	3.58E+00	1.83E-09	3.34E+00	1.98E-09	3.66E+00
4	20.0	1.28E-09	4.07E+00	1.20E-09	3.85E+00	1.12E-09	3.61E+00	1.03E-09	3.34E+00	1.10E-09	3.61E+00
5	25.0	7.92E-10	3.94E+00	7.39E-10	3.70E+00	6.82E-10	3.44E+00	6.24E-10	3.17E+00	6.63E-10	3.40E+00
6	30.0	5.11E-10	3.67E+00	4.75E-10	3.42E+00	4.36E-10	3.17E+00	3.97E-10	2.91E+00	4.21E-10	3.11E+00
7	35.0	3.40E-10	3.32E+00	3.14E-10	3.09E+00	2.88E-10	2.84E+00	2.61E-10	2.60E+00	2.77E-10	2.78E+00
8	40.0	2.32E-10	2.96E+00	2.14E-10	2.75E+00	1.95E-10	2.52E+00	1.77E-10	2.31E+00	1.87E-10	2.46E+00
9	45.0	1.60E-10	2.58E+00	1.47E-10	2.39E+00	1.34E-10	2.19E+00	1.21E-10	2.00E+00	1.28E-10	2.13E+00
10	50.0	1.11E-10	2.22E+00	1.02E-10	2.05E+00	9.30E-11	1.88E+00	8.44E-11	1.72E+00	8.92E-11	1.83E+00
11	55.0	7.84E-11	1.89E+00	7.19E-11	1.74E+00	6.53E-11	1.60E+00	5.92E-11	1.46E+00	6.26E-11	1.55E+00
12	60.0	5.56E-11	1.60E+00	5.10E-11	1.47E+00	4.63E-11	1.35E+00	4.20E-11	1.23E+00	4.43E-11	1.31E+00
13	65.0	3.97E-11	1.34E+00	3.64E-11	1.23E+00	3.30E-11	1.13E+00	2.99E-11	1.03E+00	3.16E-11	1.10E+00
14	70.0	2.85E-11	1.11E+00	2.61E-11	1.03E+00	2.37E-11	9.37E-01	2.15E-11	8.56E-01	2.27E-11	9.12E-01
15	75.0	2.06E-11	9.23E-01	1.89E-11	8.50E-01	1.71E-11	7.76E-01	1.55E-11	7.09E-01	1.64E-11	7.55E-01
16	80.0	1.49E-11	7.61E-01	1.37E-11	7.01E-01	1.24E-11	6.40E-01	1.12E-11	5.84E-01	1.19E-11	6.22E-01
17	85.0	1.09E-11	6.25E-01	9.94E-12	5.75E-01	9.01E-12	5.25E-01	8.16E-12	4.80E-01	8.62E-12	5.11E-01
18	90.0	7.94E-12	5.12E-01	7.26E-12	4.71E-01	6.58E-12	4.30E-01	5.96E-12	3.93E-01	6.29E-12	4.18E-01
19	95.0	5.82E-12	4.18E-01	5.32E-12	3.85E-01	4.82E-12	3.51E-01	4.37E-12	3.21E-01	4.61E-12	3.41E-01
20	100.0	4.32E-12	3.44E-01	3.95E-12	3.17E-01	3.58E-12	2.89E-01	3.24E-12	2.64E-01	3.42E-12	2.81E-01
21	110.0	2.35E-12	2.27E-01	2.15E-12	2.09E-01	1.95E-12	1.91E-01	1.77E-12	1.74E-01	1.87E-12	1.85E-01
22	120.0	1.30E-12	1.49E-01	1.19E-12	1.37E-01	1.08E-12	1.25E-01	9.75E-13	1.14E-01	1.03E-12	1.22E-01
23	130.0	7.24E-13	9.75E-02	6.62E-13	8.97E-02	6.01E-13	8.20E-02	5.45E-13	7.49E-02	5.75E-13	7.96E-02
24	140.0	4.08E-13	6.38E-02	3.74E-13	5.87E-02	3.39E-13	5.37E-02	3.08E-13	4.90E-02	3.24E-13	5.22E-02
25	150.0	2.33E-13	4.17E-02	2.13E-13	3.84E-02	1.93E-13	3.51E-02	1.75E-13	3.21E-02	1.85E-13	3.47E-02
26	160.0	1.34E-13	2.73E-02	1.23E-13	2.52E-02	1.11E-13	2.30E-02	1.01E-13	2.11E-02	1.07E-13	2.24E-02
27	170.0	7.78E-14	1.79E-02	7.13E-14	1.65E-02	6.48E-14	1.51E-02	5.88E-14	1.38E-02	6.21E-14	1.47E-02
28	180.0	4.56E-14	1.18E-02	4.18E-14	1.09E-02	3.80E-14	9.94E-03	3.45E-14	9.09E-03	3.64E-14	9.68E-03
29	190.0	2.69E-14	7.73E-03	2.47E-14	7.14E-03	2.24E-14	6.54E-03	2.04E-14	5.98E-03	2.15E-14	6.37E-03
30	200.0	1.60E-14	5.10E-03	1.47E-14	4.71E-03	1.34E-14	4.32E-03	1.22E-14	3.95E-03	1.28E-14	4.21E-03
31	220.0	5.74E-15	2.21E-03	5.27E-15	2.05E-03	4.80E-15	1.88E-03	4.36E-15	1.72E-03	4.61E-15	1.83E-03
32	240.0	2.10E-15	9.62E-04	1.93E-15	8.90E-04	1.76E-15	8.16E-04	1.60E-15	7.48E-04	1.69E-15	7.96E-04
33	260.0	7.76E-16	4.18E-04	7.13E-16	3.86E-04	6.50E-16	3.55E-04	5.91E-16	3.25E-04	6.24E-16	3.46E-04
34	280.0	2.90E-16	1.81E-04	2.66E-16	1.67E-04	2.43E-16	1.54E-04	2.21E-16	1.41E-04	2.33E-16	1.50E-04
35	300.0	1.09E-16	7.82E-05	1.00E-16	7.24E-05	9.15E-17	6.65E-05	8.32E-17	6.09E-05	8.79E-17	6.49E-05
36	320.0	4.13E-17	3.37E-05	3.80E-17	3.12E-05	3.46E-17	2.86E-05	3.15E-17	2.62E-05	3.33E-17	2.80E-05
37	340.0	1.58E-17	1.46E-05	1.46E-17	1.35E-05	1.33E-17	1.24E-05	1.21E-17	1.13E-05	1.27E-17	1.21E-05
38	360.0	6.03E-18	6.22E-06	5.55E-18	5.76E-06	5.06E-18	5.29E-06	4.60E-18	4.85E-06	4.86E-18	5.16E-06
39	380.0	2.32E-18	2.66E-06	2.13E-18	2.47E-06	1.94E-18	2.26E-06	1.77E-18	2.08E-06	1.87E-18	2.21E-06
40	400.0	8.92E-19	1.14E-06	8.20E-19	1.05E-06	7.48E-19	9.66E-07	6.80E-19	8.85E-07	7.19E-19	9.43E-07
41	420.0	3.43E-19	4.82E-07	3.16E-19	4.46E-07	2.88E-19	4.10E-07	2.62E-19	3.76E-07	2.76E-19	4.00E-07
42	440.0	1.32E-19	2.04E-07	1.22E-19	1.89E-07	1.11E-19	1.73E-07	1.01E-19	1.59E-07	1.07E-19	1.69E-07
43	460.0	5.06E-20	8.53E-08	4.65E-20	7.89E-08	4.24E-20	7.25E-08	3.86E-20	6.64E-08	4.08E-20	7.08E-08
44	480.0	1.78E-20	3.27E-08	1.64E-20	3.02E-08	1.49E-20	2.77E-08	1.36E-20	2.54E-08	1.43E-20	2.71E-08

Table 3.5 (Continued) (7/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		31 (17.500 - 14.900)		32 (14.900 - 13.500)		33 (13.500 - 12.200)		34 (12.200 - 10.000)		35 (10.000 - 8.190)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.23E-08	2.54E+00	1.11E-08	2.32E+00	1.01E-08	2.12E+00	9.67E-09	2.05E+00	9.86E-09	2.11E+00
2	10.0	3.72E-09	3.08E+00	3.28E-09	2.74E+00	2.88E-09	2.42E+00	2.72E-09	2.31E+00	2.79E-09	2.38E+00
3	15.0	1.83E-09	3.42E+00	1.60E-09	3.01E+00	1.39E-09	2.63E+00	1.30E-09	2.49E+00	1.33E-09	2.56E+00
4	20.0	1.02E-09	3.36E+00	8.83E-10	2.95E+00	7.60E-10	2.56E+00	7.09E-10	2.41E+00	7.25E-10	2.48E+00
5	25.0	6.12E-10	3.17E+00	5.31E-10	2.77E+00	4.55E-10	2.39E+00	4.23E-10	2.25E+00	4.33E-10	2.31E+00
6	30.0	3.88E-10	2.89E+00	3.36E-10	2.53E+00	2.87E-10	2.17E+00	2.67E-10	2.04E+00	2.73E-10	2.10E+00
7	35.0	2.55E-10	2.59E+00	2.21E-10	2.26E+00	1.88E-10	1.94E+00	1.75E-10	1.82E+00	1.79E-10	1.87E+00
8	40.0	1.73E-10	2.29E+00	1.49E-10	2.00E+00	1.27E-10	1.71E+00	1.18E-10	1.61E+00	1.21E-10	1.65E+00
9	45.0	1.18E-10	1.98E+00	1.02E-10	1.73E+00	8.71E-11	1.48E+00	8.09E-11	1.39E+00	8.28E-11	1.43E+00
10	50.0	8.22E-11	1.70E+00	7.11E-11	1.48E+00	6.05E-11	1.27E+00	5.61E-11	1.19E+00	5.75E-11	1.23E+00
11	55.0	5.77E-11	1.45E+00	4.99E-11	1.26E+00	4.24E-11	1.08E+00	3.94E-11	1.01E+00	4.03E-11	1.04E+00
12	60.0	4.09E-11	1.22E+00	3.53E-11	1.06E+00	3.00E-11	9.09E-01	2.79E-11	8.53E-01	2.86E-11	8.79E-01
13	65.0	2.91E-11	1.02E+00	2.52E-11	8.89E-01	2.14E-11	7.61E-01	1.99E-11	7.14E-01	2.04E-11	7.36E-01
14	70.0	2.09E-11	8.48E-01	1.81E-11	7.40E-01	1.54E-11	6.33E-01	1.43E-11	5.94E-01	1.46E-11	6.12E-01
15	75.0	1.51E-11	7.02E-01	1.30E-11	6.12E-01	1.11E-11	5.24E-01	1.03E-11	4.92E-01	1.05E-11	5.07E-01
16	80.0	1.09E-11	5.79E-01	9.44E-12	5.05E-01	8.03E-12	4.32E-01	7.46E-12	4.05E-01	7.64E-12	4.18E-01
17	85.0	7.94E-12	4.75E-01	6.86E-12	4.14E-01	5.84E-12	3.54E-01	5.42E-12	3.33E-01	5.55E-12	3.43E-01
18	90.0	5.80E-12	3.89E-01	5.01E-12	3.39E-01	4.26E-12	2.90E-01	3.96E-12	2.72E-01	4.05E-12	2.81E-01
19	95.0	4.25E-12	3.18E-01	3.67E-12	2.77E-01	3.12E-12	2.37E-01	2.90E-12	2.22E-01	2.97E-12	2.29E-01
20	100.0	3.15E-12	2.61E-01	2.73E-12	2.28E-01	2.32E-12	1.95E-01	2.15E-12	1.83E-01	2.21E-12	1.88E-01
21	110.0	1.72E-12	1.72E-01	1.49E-12	1.50E-01	1.27E-12	1.29E-01	1.17E-12	1.21E-01	1.20E-12	1.24E-01
22	120.0	9.49E-13	1.13E-01	8.21E-13	9.87E-02	6.99E-13	8.46E-02	6.48E-13	7.92E-02	6.63E-13	8.16E-02
23	130.0	5.30E-13	7.41E-02	4.59E-13	6.47E-02	3.90E-13	5.55E-02	3.62E-13	5.19E-02	3.70E-13	5.34E-02
24	140.0	2.99E-13	4.86E-02	2.59E-13	4.24E-02	2.21E-13	3.63E-02	2.04E-13	3.40E-02	2.09E-13	3.50E-02
25	150.0	1.71E-13	3.18E-02	1.48E-13	2.78E-02	1.26E-13	2.38E-02	1.17E-13	2.23E-02	1.19E-13	2.29E-02
26	160.0	9.85E-14	2.09E-02	8.53E-14	1.82E-02	7.27E-14	1.56E-02	6.72E-14	1.46E-02	6.87E-14	1.50E-02
27	170.0	5.73E-14	1.37E-02	4.97E-14	1.20E-02	4.23E-14	1.03E-02	3.91E-14	9.59E-03	4.00E-14	9.87E-03
28	180.0	3.36E-14	9.02E-03	2.91E-14	7.89E-03	2.48E-14	6.76E-03	2.29E-14	6.31E-03	2.34E-14	6.49E-03
29	190.0	1.99E-14	5.94E-03	1.72E-14	5.19E-03	1.47E-14	4.45E-03	1.35E-14	4.15E-03	1.38E-14	4.27E-03
30	200.0	1.18E-14	3.92E-03	1.03E-14	3.43E-03	8.76E-15	2.94E-03	8.08E-15	2.74E-03	8.26E-15	2.82E-03
31	220.0	4.26E-15	1.71E-03	3.70E-15	1.49E-03	3.15E-15	1.28E-03	2.90E-15	1.19E-03	2.97E-15	1.23E-03
32	240.0	1.56E-15	7.43E-04	1.35E-15	6.50E-04	1.15E-15	5.58E-04	1.06E-15	5.19E-04	1.09E-15	5.34E-04
33	260.0	5.77E-16	3.23E-04	5.01E-16	2.83E-04	4.27E-16	2.43E-04	3.93E-16	2.26E-04	4.02E-16	2.32E-04
34	280.0	2.16E-16	1.40E-04	1.87E-16	1.23E-04	1.60E-16	1.05E-04	1.47E-16	9.78E-05	1.50E-16	1.01E-04
35	300.0	8.12E-17	6.05E-05	7.06E-17	5.30E-05	6.01E-17	4.55E-05	5.54E-17	4.23E-05	5.66E-17	4.35E-05
36	320.0	3.08E-17	2.61E-05	2.67E-17	2.29E-05	2.28E-17	1.96E-05	2.10E-17	1.82E-05	2.14E-17	1.88E-05
37	340.0	1.18E-17	1.13E-05	1.02E-17	9.88E-06	8.72E-18	8.48E-06	8.03E-18	7.88E-06	8.21E-18	8.11E-06
38	360.0	4.49E-18	4.82E-06	3.90E-18	4.22E-06	3.32E-18	3.62E-06	3.07E-18	3.38E-06	3.13E-18	3.47E-06
39	380.0	1.73E-18	2.06E-06	1.50E-18	1.81E-06	1.28E-18	1.55E-06	1.18E-18	1.44E-06	1.20E-18	1.48E-06
40	400.0	6.64E-19	8.80E-07	5.77E-19	7.71E-07	4.92E-19	6.61E-07	4.53E-19	6.15E-07	4.63E-19	6.33E-07
41	420.0	2.56E-19	3.73E-07	2.22E-19	3.27E-07	1.89E-19	2.81E-07	1.75E-19	2.61E-07	1.78E-19	2.68E-07
42	440.0	9.85E-20	1.58E-07	8.56E-20	1.38E-07	7.29E-20	1.19E-07	6.71E-20	1.10E-07	6.86E-20	1.14E-07
43	460.0	3.77E-20	6.60E-08	3.27E-20	5.79E-08	2.79E-20	4.96E-08	2.51E-20	4.50E-08	2.63E-20	4.75E-08
44	480.0	1.33E-20	2.53E-08	1.15E-20	2.22E-08	9.81E-21	1.90E-08	7.28E-21	1.42E-08	9.23E-21	1.82E-08

Table 3.5 (Continued) (8/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		36 (8.190 - 6.700)		37 (6.700 - 5.490)		38 (5.490 - 4.490)		39 (4.490 - 3.000)		40 (3.000 - 3.010)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.01E-08	2.15E+00	1.04E-08	2.16E+00	1.06E-08	2.16E+00	1.02E-08	2.19E+00	1.03E-08	2.35E+00
2	10.0	2.85E-09	2.43E+00	2.91E-09	2.42E+00	2.94E-09	2.40E+00	2.88E-09	2.48E+00	2.98E-09	2.72E+00
3	15.0	1.36E-09	2.61E+00	1.38E-09	2.58E+00	1.39E-09	2.55E+00	1.37E-09	2.65E+00	1.42E-09	2.94E+00
4	20.0	7.38E-10	2.52E+00	7.45E-10	2.48E+00	7.54E-10	2.46E+00	7.47E-10	2.56E+00	7.74E-10	2.84E+00
5	25.0	4.40E-10	2.35E+00	4.43E-10	2.31E+00	4.49E-10	2.29E+00	4.46E-10	2.39E+00	4.61E-10	2.64E+00
6	30.0	2.78E-10	2.13E+00	2.79E-10	2.09E+00	2.84E-10	2.08E+00	2.82E-10	2.18E+00	2.91E-10	2.40E+00
7	35.0	1.82E-10	1.90E+00	1.82E-10	1.86E+00	1.86E-10	1.85E+00	1.85E-10	1.94E+00	1.90E-10	2.13E+00
8	40.0	1.23E-10	1.68E+00	1.23E-10	1.64E+00	1.26E-10	1.64E+00	1.25E-10	1.72E+00	1.29E-10	1.88E+00
9	45.0	8.41E-11	1.46E+00	8.43E-11	1.42E+00	8.62E-11	1.42E+00	8.57E-11	1.49E+00	8.80E-11	1.63E+00
10	50.0	5.84E-11	1.25E+00	5.85E-11	1.22E+00	5.99E-11	1.22E+00	5.95E-11	1.28E+00	6.11E-11	1.40E+00
11	55.0	4.10E-11	1.06E+00	4.10E-11	1.03E+00	4.20E-11	1.04E+00	4.18E-11	1.09E+00	4.29E-11	1.19E+00
12	60.0	2.90E-11	8.93E-01	2.91E-11	8.72E-01	2.98E-11	8.73E-01	2.96E-11	9.15E-01	3.03E-11	1.00E+00
13	65.0	2.07E-11	7.48E-01	2.07E-11	7.30E-01	2.12E-11	7.31E-01	2.11E-11	7.66E-01	2.16E-11	8.37E-01
14	70.0	1.49E-11	6.22E-01	1.49E-11	6.07E-01	1.52E-11	6.08E-01	1.51E-11	6.37E-01	1.55E-11	6.96E-01
15	75.0	1.07E-11	5.15E-01	1.07E-11	5.03E-01	1.10E-11	5.03E-01	1.09E-11	5.27E-01	1.12E-11	5.76E-01
16	80.0	7.76E-12	4.24E-01	7.77E-12	4.14E-01	7.96E-12	4.15E-01	7.91E-12	4.34E-01	8.10E-12	4.74E-01
17	85.0	5.64E-12	3.48E-01	5.65E-12	3.40E-01	5.79E-12	3.41E-01	5.75E-12	3.57E-01	5.88E-12	3.89E-01
18	90.0	4.12E-12	2.85E-01	4.13E-12	2.79E-01	4.23E-12	2.79E-01	4.20E-12	2.92E-01	4.30E-12	3.19E-01
19	95.0	3.02E-12	2.33E-01	3.03E-12	2.27E-01	3.10E-12	2.28E-01	3.08E-12	2.38E-01	3.15E-12	2.60E-01
20	100.0	2.24E-12	1.92E-01	2.25E-12	1.87E-01	2.30E-12	1.87E-01	2.28E-12	1.96E-01	2.34E-12	2.14E-01
21	110.0	1.22E-12	1.26E-01	1.22E-12	1.23E-01	1.25E-12	1.24E-01	1.24E-12	1.29E-01	1.27E-12	1.41E-01
22	120.0	6.74E-13	8.29E-02	6.76E-13	8.11E-02	6.92E-13	8.11E-02	6.87E-13	8.49E-02	7.03E-13	9.27E-02
23	130.0	3.76E-13	5.43E-02	3.77E-13	5.31E-02	3.86E-13	5.32E-02	3.84E-13	5.57E-02	3.92E-13	6.07E-02
24	140.0	2.12E-13	3.56E-02	2.13E-13	3.48E-02	2.18E-13	3.48E-02	2.17E-13	3.65E-02	2.22E-13	3.98E-02
25	150.0	1.21E-13	2.33E-02	1.22E-13	2.28E-02	1.25E-13	2.28E-02	1.24E-13	2.39E-02	1.26E-13	2.61E-02
26	160.0	6.99E-14	1.53E-02	7.02E-14	1.50E-02	7.18E-14	1.50E-02	7.14E-14	1.57E-02	7.29E-14	1.71E-02
27	170.0	4.07E-14	1.00E-02	4.09E-14	9.84E-03	4.18E-14	9.83E-03	4.16E-14	1.03E-02	4.24E-14	1.12E-02
28	180.0	2.39E-14	6.61E-03	2.40E-14	6.47E-03	2.45E-14	6.47E-03	2.44E-14	6.78E-03	2.49E-14	7.39E-03
29	190.0	1.41E-14	4.35E-03	1.42E-14	4.26E-03	1.45E-14	4.26E-03	1.44E-14	4.47E-03	1.47E-14	4.86E-03
30	200.0	8.41E-15	2.87E-03	8.45E-15	2.82E-03	8.64E-15	2.81E-03	8.60E-15	2.95E-03	8.78E-15	3.21E-03
31	220.0	3.02E-15	1.25E-03	3.04E-15	1.22E-03	3.11E-15	1.22E-03	3.09E-15	1.29E-03	3.15E-15	1.40E-03
32	240.0	1.11E-15	5.44E-04	1.11E-15	5.33E-04	1.14E-15	5.33E-04	1.13E-15	5.60E-04	1.15E-15	6.09E-04
33	260.0	4.09E-16	2.36E-04	4.11E-16	2.32E-04	4.21E-16	2.32E-04	4.19E-16	2.43E-04	4.27E-16	2.65E-04
34	280.0	1.53E-16	1.03E-04	1.54E-16	1.00E-04	1.57E-16	1.00E-04	1.57E-16	1.06E-04	1.60E-16	1.15E-04
35	300.0	5.76E-17	4.43E-05	5.80E-17	4.35E-05	5.93E-17	4.34E-05	5.91E-17	4.56E-05	6.02E-17	4.96E-05
36	320.0	2.18E-17	1.91E-05	2.20E-17	1.87E-05	2.24E-17	1.87E-05	2.24E-17	1.97E-05	2.28E-17	2.14E-05
37	340.0	8.36E-18	8.26E-06	8.41E-18	8.10E-06	8.60E-18	8.09E-06	8.57E-18	8.50E-06	8.74E-18	9.25E-06
38	360.0	3.19E-18	3.53E-06	3.20E-18	3.46E-06	3.28E-18	3.46E-06	3.26E-18	3.63E-06	3.33E-18	3.95E-06
39	380.0	1.22E-18	1.51E-06	1.23E-18	1.48E-06	1.26E-18	1.48E-06	1.25E-18	1.56E-06	1.28E-18	1.69E-06
40	400.0	4.71E-19	6.44E-07	4.74E-19	6.32E-07	4.85E-19	6.31E-07	4.83E-19	6.64E-07	4.92E-19	7.21E-07
41	420.0	1.81E-19	2.73E-07	1.82E-19	2.68E-07	1.86E-19	2.68E-07	1.86E-19	2.81E-07	1.89E-19	3.06E-07
42	440.0	6.99E-20	1.16E-07	7.03E-20	1.13E-07	7.19E-20	1.13E-07	7.16E-20	1.19E-07	7.30E-20	1.29E-07
43	460.0	2.67E-20	4.84E-08	2.69E-20	4.74E-08	2.75E-20	4.74E-08	2.74E-20	4.98E-08	2.79E-20	5.41E-08
44	480.0	9.40E-21	1.85E-08	9.45E-21	1.82E-08	9.67E-21	1.81E-08	9.64E-21	1.91E-08	9.82E-21	2.07E-08

Table 3.5 (Continued) (9/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		41 (3.010 - 2.460)		42 (2.460 - 2.020)		43 (2.020 - 1.650)		44 (1.650 - 1.350)		45 (1.350 - 1.110)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.07E-08	2.62E+00	1.05E-08	2.62E+00	1.02E-08	2.52E+00	9.94E-09	2.43E+00	9.02E-09	2.18E+00
2	10.0	3.13E-09	3.06E+00	3.03E-09	3.03E+00	2.92E-09	2.89E+00	2.90E-09	2.83E+00	2.52E-09	2.44E+00
3	15.0	1.50E-09	3.29E+00	1.45E-09	3.25E+00	1.39E-09	3.10E+00	1.43E-09	3.14E+00	1.20E-09	2.61E+00
4	20.0	8.11E-10	3.17E+00	7.85E-10	3.14E+00	7.59E-10	3.00E+00	8.00E-10	3.13E+00	6.54E-10	2.53E+00
5	25.0	4.82E-10	2.94E+00	4.68E-10	2.92E+00	4.54E-10	2.80E+00	4.90E-10	2.99E+00	3.89E-10	2.35E+00
6	30.0	3.04E-10	2.67E+00	2.96E-10	2.66E+00	2.87E-10	2.55E+00	3.16E-10	2.77E+00	2.45E-10	2.13E+00
7	35.0	1.99E-10	2.38E+00	1.94E-10	2.37E+00	1.89E-10	2.28E+00	2.10E-10	2.51E+00	1.59E-10	1.89E+00
8	40.0	1.34E-10	2.10E+00	1.31E-10	2.09E+00	1.28E-10	2.02E+00	1.44E-10	2.25E+00	1.07E-10	1.66E+00
9	45.0	9.20E-11	1.82E+00	8.97E-11	1.81E+00	8.78E-11	1.76E+00	9.92E-11	1.96E+00	7.28E-11	1.42E+00
10	50.0	6.39E-11	1.56E+00	6.23E-11	1.56E+00	6.11E-11	1.51E+00	6.93E-11	1.69E+00	5.02E-11	1.21E+00
11	55.0	4.49E-11	1.33E+00	4.37E-11	1.32E+00	4.30E-11	1.28E+00	4.89E-11	1.44E+00	3.50E-11	1.02E+00
12	60.0	3.18E-11	1.12E+00	3.09E-11	1.11E+00	3.05E-11	1.08E+00	3.47E-11	1.22E+00	2.46E-11	8.56E-01
13	65.0	2.27E-11	9.37E-01	2.21E-11	9.31E-01	2.18E-11	9.09E-01	2.48E-11	1.02E+00	1.75E-11	7.12E-01
14	70.0	1.63E-11	7.80E-01	1.58E-11	7.74E-01	1.56E-11	7.57E-01	1.78E-11	8.52E-01	1.25E-11	5.90E-01
15	75.0	1.18E-11	6.46E-01	1.14E-11	6.41E-01	1.13E-11	6.27E-01	1.28E-11	7.06E-01	8.95E-12	4.86E-01
16	80.0	8.51E-12	5.32E-01	8.25E-12	5.28E-01	8.18E-12	5.17E-01	9.30E-12	5.82E-01	6.46E-12	4.00E-01
17	85.0	6.19E-12	4.37E-01	6.00E-12	4.33E-01	5.95E-12	4.25E-01	6.76E-12	4.77E-01	4.69E-12	3.27E-01
18	90.0	4.52E-12	3.58E-01	4.38E-12	3.54E-01	4.35E-12	3.48E-01	4.93E-12	3.90E-01	3.42E-12	2.68E-01
19	95.0	3.31E-12	2.92E-01	3.21E-12	2.89E-01	3.19E-12	2.84E-01	3.61E-12	3.18E-01	2.51E-12	2.18E-01
20	100.0	2.46E-12	2.40E-01	2.37E-12	2.37E-01	2.36E-12	2.33E-01	2.67E-12	2.60E-01	1.85E-12	1.79E-01
21	110.0	1.34E-12	1.58E-01	1.29E-12	1.56E-01	1.29E-12	1.54E-01	1.45E-12	1.71E-01	1.01E-12	1.18E-01
22	120.0	7.39E-13	1.04E-01	7.13E-13	1.03E-01	7.10E-13	1.01E-01	7.99E-13	1.12E-01	5.61E-13	7.81E-02
23	130.0	4.12E-13	6.81E-02	3.98E-13	6.72E-02	3.97E-13	6.63E-02	4.45E-13	7.35E-02	3.15E-13	5.15E-02
24	140.0	2.33E-13	4.45E-02	2.25E-13	4.41E-02	2.24E-13	4.34E-02	2.51E-13	4.80E-02	1.79E-13	3.40E-02
25	150.0	1.33E-13	2.91E-02	1.29E-13	2.89E-02	1.28E-13	2.84E-02	1.43E-13	3.14E-02	1.03E-13	2.24E-02
26	160.0	7.64E-14	1.91E-02	7.41E-14	1.90E-02	7.38E-14	1.87E-02	8.22E-14	2.06E-02	5.99E-14	1.48E-02
27	170.0	4.44E-14	1.25E-02	4.32E-14	1.25E-02	4.29E-14	1.23E-02	4.77E-14	1.35E-02	3.51E-14	9.80E-03
28	180.0	2.60E-14	8.24E-03	2.54E-14	8.22E-03	2.52E-14	8.08E-03	2.80E-14	8.88E-03	2.08E-14	6.50E-03
29	190.0	1.54E-14	5.42E-03	1.50E-14	5.41E-03	1.49E-14	5.32E-03	1.65E-14	5.83E-03	1.23E-14	4.30E-03
30	200.0	9.16E-15	3.58E-03	8.92E-15	3.57E-03	8.86E-15	3.50E-03	9.82E-15	3.84E-03	7.37E-15	2.85E-03
31	220.0	3.29E-15	1.55E-03	3.21E-15	1.55E-03	3.18E-15	1.52E-03	3.52E-15	1.67E-03	2.67E-15	1.25E-03
32	240.0	1.20E-15	6.76E-04	1.17E-15	6.75E-04	1.16E-15	6.62E-04	1.29E-15	7.24E-04	9.82E-16	5.47E-04
33	260.0	4.45E-16	2.94E-04	4.35E-16	2.94E-04	4.31E-16	2.88E-04	4.77E-16	3.15E-04	3.65E-16	2.39E-04
34	280.0	1.66E-16	1.27E-04	1.63E-16	1.28E-04	1.62E-16	1.25E-04	1.79E-16	1.37E-04	1.37E-16	1.04E-04
35	300.0	6.26E-17	5.51E-05	6.16E-17	5.54E-05	6.10E-17	5.42E-05	6.74E-17	5.93E-05	5.19E-17	4.52E-05
36	320.0	2.37E-17	2.37E-05	2.34E-17	2.39E-05	2.31E-17	2.34E-05	2.56E-17	2.56E-05	1.97E-17	1.95E-05
37	340.0	9.08E-18	1.03E-05	8.87E-18	1.02E-05	8.78E-18	1.00E-05	9.70E-18	1.10E-05	7.49E-18	8.36E-06
38	360.0	3.46E-18	4.38E-06	3.35E-18	4.34E-06	3.32E-18	4.25E-06	3.67E-18	4.64E-06	2.83E-18	3.54E-06
39	380.0	1.33E-18	1.88E-06	1.17E-18	1.68E-06	1.15E-18	1.65E-06	1.28E-18	1.80E-06	9.85E-19	1.37E-06
40	400.0	5.12E-19	8.00E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	420.0	1.97E-19	3.39E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	440.0	7.59E-20	1.44E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	460.0	2.90E-20	6.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	480.0	1.02E-20	2.30E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.5 (Continued) (10/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		46 (1.110 - 0.907)		47 (0.907 - 0.743)		48 (0.743 - 0.498)		49 (0.498 - 0.334)		50 (0.334 - 0.224)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	8.35E-09	2.02E+00	9.70E-09	2.56E+00	8.00E-09	2.44E+00	6.99E-09	2.80E+00	4.12E-09	2.36E+00
2	10.0	2.27E-09	2.20E+00	2.89E-09	3.05E+00	2.57E-09	3.13E+00	2.23E-09	3.58E+00	1.29E-09	2.96E+00
3	15.0	1.07E-09	2.32E+00	1.43E-09	3.39E+00	1.35E-09	3.69E+00	1.13E-09	4.08E+00	6.54E-10	3.38E+00
4	20.0	5.76E-10	2.23E+00	8.06E-10	3.39E+00	7.84E-10	3.82E+00	6.38E-10	4.09E+00	3.69E-10	3.38E+00
5	25.0	3.41E-10	2.06E+00	4.95E-10	3.26E+00	4.92E-10	3.74E+00	3.88E-10	3.88E+00	2.23E-10	3.21E+00
6	30.0	2.14E-10	1.87E+00	3.20E-10	3.04E+00	3.21E-10	3.53E+00	2.47E-10	3.56E+00	1.41E-10	2.92E+00
7	35.0	1.40E-10	1.66E+00	2.14E-10	2.76E+00	2.16E-10	3.22E+00	1.62E-10	3.17E+00	9.19E-11	2.59E+00
8	40.0	9.42E-11	1.46E+00	1.47E-10	2.48E+00	1.49E-10	2.90E+00	1.09E-10	2.79E+00	6.14E-11	2.26E+00
9	45.0	6.43E-11	1.26E+00	1.02E-10	2.18E+00	1.03E-10	2.54E+00	7.41E-11	2.40E+00	4.14E-11	1.92E+00
10	50.0	4.46E-11	1.08E+00	7.15E-11	1.88E+00	7.22E-11	2.20E+00	5.10E-11	2.04E+00	2.83E-11	1.62E+00
11	55.0	3.13E-11	9.14E-01	5.06E-11	1.61E+00	5.09E-11	1.88E+00	3.55E-11	1.72E+00	1.95E-11	1.36E+00
12	60.0	2.21E-11	7.71E-01	3.60E-11	1.37E+00	3.62E-11	1.59E+00	2.49E-11	1.44E+00	1.36E-11	1.13E+00
13	65.0	1.58E-11	6.45E-01	2.58E-11	1.15E+00	2.59E-11	1.33E+00	1.76E-11	1.19E+00	9.61E-12	9.32E-01
14	70.0	1.13E-11	5.37E-01	1.85E-11	9.57E-01	1.86E-11	1.11E+00	1.25E-11	9.82E-01	6.83E-12	7.68E-01
15	75.0	8.19E-12	4.46E-01	1.34E-11	7.93E-01	1.34E-11	9.18E-01	8.95E-12	8.07E-01	4.90E-12	6.32E-01
16	80.0	5.95E-12	3.68E-01	9.71E-12	6.55E-01	9.70E-12	7.57E-01	6.44E-12	6.61E-01	3.54E-12	5.20E-01
17	85.0	4.33E-12	3.03E-01	7.06E-12	5.37E-01	7.05E-12	6.20E-01	4.66E-12	5.40E-01	2.57E-12	4.27E-01
18	90.0	3.18E-12	2.49E-01	5.16E-12	4.40E-01	5.14E-12	5.07E-01	3.39E-12	4.40E-01	1.88E-12	3.50E-01
19	95.0	2.33E-12	2.04E-01	3.78E-12	3.59E-01	3.76E-12	4.14E-01	2.48E-12	3.58E-01	1.39E-12	2.88E-01
20	100.0	1.73E-12	1.67E-01	2.79E-12	2.94E-01	2.77E-12	3.38E-01	1.83E-12	2.92E-01	1.03E-12	2.37E-01
21	110.0	9.51E-13	1.11E-01	1.52E-12	1.93E-01	1.51E-12	2.22E-01	9.94E-13	1.93E-01	5.75E-13	1.60E-01
22	120.0	5.29E-13	7.37E-02	8.34E-13	1.27E-01	8.30E-13	1.46E-01	5.51E-13	1.27E-01	3.26E-13	1.08E-01
23	130.0	2.98E-13	4.87E-02	4.64E-13	8.27E-02	4.62E-13	9.51E-02	3.09E-13	8.37E-02	1.87E-13	7.26E-02
24	140.0	1.70E-13	3.21E-02	2.61E-13	5.40E-02	2.60E-13	6.21E-02	1.76E-13	5.53E-02	1.09E-13	4.90E-02
25	150.0	9.75E-14	2.12E-02	1.49E-13	3.52E-02	1.48E-13	4.06E-02	1.01E-13	3.66E-02	6.39E-14	3.30E-02
26	160.0	5.66E-14	1.40E-02	8.54E-14	2.30E-02	8.51E-14	2.66E-02	5.90E-14	2.42E-02	3.78E-14	2.22E-02
27	170.0	3.31E-14	9.25E-03	4.95E-14	1.51E-02	4.94E-14	1.74E-02	3.46E-14	1.60E-02	2.25E-14	1.50E-02
28	180.0	1.96E-14	6.13E-03	2.90E-14	9.90E-03	2.90E-14	1.15E-02	2.05E-14	1.07E-02	1.35E-14	1.01E-02
29	190.0	1.16E-14	4.05E-03	1.71E-14	6.50E-03	1.71E-14	7.53E-03	1.22E-14	7.07E-03	8.13E-15	6.74E-03
30	200.0	6.91E-15	2.67E-03	1.01E-14	4.27E-03	1.02E-14	4.95E-03	7.32E-15	4.69E-03	4.90E-15	4.50E-03
31	220.0	2.49E-15	1.17E-03	3.63E-15	1.85E-03	3.64E-15	2.15E-03	2.66E-15	2.06E-03	1.80E-15	2.00E-03
32	240.0	9.15E-16	5.10E-04	1.32E-15	8.03E-04	1.33E-15	9.34E-04	9.80E-16	9.05E-04	6.70E-16	8.86E-04
33	260.0	3.40E-16	2.22E-04	4.90E-16	3.49E-04	4.93E-16	4.06E-04	3.65E-16	3.96E-04	2.51E-16	3.89E-04
34	280.0	1.28E-16	9.67E-05	1.84E-16	1.52E-04	1.85E-16	1.76E-04	1.37E-16	1.73E-04	9.45E-17	1.70E-04
35	300.0	4.82E-17	4.19E-05	6.93E-17	6.57E-05	6.97E-17	7.65E-05	5.20E-17	7.50E-05	3.58E-17	7.40E-05
36	320.0	1.83E-17	1.81E-05	2.62E-17	2.83E-05	2.64E-17	3.30E-05	1.98E-17	3.24E-05	1.36E-17	3.20E-05
37	340.0	6.94E-18	7.76E-06	9.96E-18	1.21E-05	1.00E-17	1.41E-05	7.50E-18	1.39E-05	5.18E-18	1.37E-05
38	360.0	2.62E-18	3.29E-06	3.76E-18	5.14E-06	3.79E-18	5.99E-06	2.84E-18	5.89E-06	1.96E-18	5.82E-06
39	380.0	9.14E-19	1.28E-06	1.31E-18	1.99E-06	1.32E-18	2.32E-06	9.88E-19	2.29E-06	6.82E-19	2.26E-06
40	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	420.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	440.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	460.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	480.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.5 (Continued) (11/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / TOTAL NEUTRON

INCIDENT NEUTRON ENERGY(MEV)

		51		52		53		54		55	
		(0.224 -	0.150)	(0.150 -	0.087)	(0.087 -	0.032)	(0.032 -	0.015)	(0.015 -	0.007)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	3.39E-09	2.79E+00	2.26E-09	2.81E+00	1.43E-09	3.14E+00	6.24E-10	2.83E+00	8.60E-10	7.02E+00
2	10.0	1.04E-09	3.43E+00	6.57E-10	3.27E+00	4.08E-10	3.58E+00	2.23E-10	4.04E+00	2.84E-10	9.27E+00
3	15.0	5.03E-10	3.73E+00	3.02E-10	3.38E+00	1.89E-10	3.74E+00	1.24E-10	5.07E+00	1.25E-10	9.17E+00
4	20.0	2.69E-10	3.54E+00	1.56E-10	3.11E+00	1.02E-10	3.57E+00	7.58E-11	5.49E+00	5.84E-11	7.63E+00
5	25.0	1.55E-10	3.20E+00	8.88E-11	2.76E+00	6.07E-11	3.33E+00	4.91E-11	5.56E+00	2.76E-11	5.63E+00
6	30.0	9.43E-11	2.79E+00	5.39E-11	2.41E+00	3.87E-11	3.06E+00	3.30E-11	5.38E+00	1.31E-11	3.84E+00
7	35.0	5.93E-11	2.39E+00	3.43E-11	2.09E+00	2.59E-11	2.78E+00	2.27E-11	5.04E+00	6.01E-12	2.40E+00
8	40.0	3.86E-11	2.04E+00	2.29E-11	1.82E+00	1.79E-11	2.52E+00	1.60E-11	4.63E+00	2.71E-12	1.42E+00
9	45.0	2.56E-11	1.71E+00	1.56E-11	1.57E+00	1.26E-11	2.24E+00	1.13E-11	4.16E+00	1.21E-12	7.97E-01
10	50.0	1.73E-11	1.42E+00	1.08E-11	1.35E+00	8.98E-12	1.97E+00	8.13E-12	3.69E+00	5.28E-13	4.31E-01
11	55.0	1.19E-11	1.19E+00	7.69E-12	1.16E+00	6.48E-12	1.72E+00	5.89E-12	3.23E+00	2.28E-13	2.25E-01
12	60.0	8.33E-12	9.87E-01	5.54E-12	9.92E-01	4.73E-12	1.49E+00	4.30E-12	2.81E+00	9.74E-14	1.14E-01
13	65.0	5.90E-12	8.21E-01	4.03E-12	8.48E-01	3.47E-12	1.29E+00	3.17E-12	2.42E+00	4.11E-14	5.67E-02
14	70.0	4.23E-12	6.82E-01	2.96E-12	7.23E-01	2.57E-12	1.11E+00	2.34E-12	2.08E+00	1.72E-14	2.76E-02
15	75.0	3.07E-12	5.68E-01	2.19E-12	6.14E-01	1.91E-12	9.44E-01	1.74E-12	1.78E+00	7.17E-15	1.32E-02
16	80.0	2.24E-12	4.73E-01	1.63E-12	5.20E-01	1.43E-12	8.03E-01	1.30E-12	1.51E+00	2.97E-15	6.20E-03
17	85.0	1.65E-12	3.93E-01	1.22E-12	4.40E-01	1.07E-12	6.80E-01	9.78E-13	1.28E+00	1.21E-15	2.86E-03
18	90.0	1.23E-12	3.28E-01	9.20E-13	3.71E-01	8.08E-13	5.75E-01	7.37E-13	1.08E+00	4.91E-16	1.30E-03
19	95.0	9.18E-13	2.73E-01	6.94E-13	3.12E-01	6.10E-13	4.84E-01	5.57E-13	9.11E-01	2.00E-16	5.90E-04
20	100.0	6.92E-13	2.28E-01	5.28E-13	2.63E-01	4.65E-13	4.08E-01	4.24E-13	7.68E-01	8.09E-17	2.64E-04
21	110.0	3.94E-13	1.57E-01	3.05E-13	1.84E-01	2.69E-13	2.85E-01	2.45E-13	5.37E-01	1.31E-17	5.17E-05
22	120.0	2.28E-13	1.08E-01	1.78E-13	1.27E-01	1.57E-13	1.98E-01	1.43E-13	3.73E-01	2.08E-18	9.79E-06
23	130.0	1.33E-13	7.41E-02	1.04E-13	8.78E-02	9.20E-14	1.37E-01	8.39E-14	2.57E-01	3.34E-19	1.84E-06
24	140.0	7.84E-14	5.06E-02	6.17E-14	6.02E-02	5.44E-14	9.36E-02	4.96E-14	1.76E-01	5.33E-20	3.41E-07
25	150.0	4.65E-14	3.44E-02	3.67E-14	4.10E-02	3.23E-14	6.39E-02	2.95E-14	1.20E-01	8.28E-21	6.09E-08
26	160.0	2.77E-14	2.34E-02	2.19E-14	2.79E-02	1.93E-14	4.34E-02	1.76E-14	8.17E-02	1.32E-21	1.10E-08
27	170.0	1.66E-14	1.58E-02	1.31E-14	1.89E-02	1.16E-14	2.93E-02	1.05E-14	5.53E-02	2.07E-22	1.96E-09
28	180.0	1.00E-14	1.07E-02	7.91E-15	1.28E-02	6.97E-15	1.98E-02	6.36E-15	3.74E-02	3.23E-23	3.41E-10
29	190.0	6.03E-15	7.16E-03	4.77E-15	8.57E-03	4.21E-15	1.33E-02	3.84E-15	2.51E-02	5.14E-24	6.06E-11
30	200.0	3.64E-15	4.80E-03	2.89E-15	5.74E-03	2.54E-15	8.94E-03	2.32E-15	1.68E-02	8.12E-25	1.06E-11
31	220.0	1.34E-15	2.14E-03	1.06E-15	2.56E-03	9.38E-16	3.99E-03	8.55E-16	7.50E-03	2.03E-26	3.21E-13
32	240.0	4.99E-16	9.47E-04	3.95E-16	1.13E-03	3.49E-16	1.76E-03	3.18E-16	3.32E-03	5.01E-28	9.42E-15
33	260.0	1.87E-16	4.16E-04	1.48E-16	4.98E-04	1.31E-16	7.75E-04	1.19E-16	1.46E-03	1.24E-29	2.74E-16
34	280.0	7.06E-17	1.82E-04	5.59E-17	2.18E-04	4.93E-17	3.39E-04	4.49E-17	6.39E-04	3.11E-31	7.97E-18
35	300.0	2.68E-17	7.93E-05	2.12E-17	9.49E-05	1.87E-17	1.48E-04	1.70E-17	2.78E-04	0.00E+00	0.00E+00
36	320.0	1.02E-17	3.43E-05	8.05E-18	4.10E-05	7.10E-18	6.38E-05	6.47E-18	1.20E-04	0.00E+00	0.00E+00
37	340.0	3.86E-18	1.47E-05	3.06E-18	1.76E-05	2.70E-18	2.74E-05	2.46E-18	5.15E-05	0.00E+00	0.00E+00
38	360.0	1.46E-18	6.24E-06	1.16E-18	7.46E-06	1.02E-18	1.16E-05	9.30E-19	2.19E-05	0.00E+00	0.00E+00
39	380.0	5.09E-19	2.42E-06	4.03E-19	2.90E-06	3.55E-19	4.51E-06	3.24E-19	8.49E-06	0.00E+00	0.00E+00
40	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	420.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	440.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	460.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	480.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.6 Dose equivalent per source neutrons and attenuation factor of secondary gamma rays in iron (1/11).

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		1		2		3		4		5	
		(400.000	- 375.000)	(375.000	- 350.000)	(350.000	- 325.000)	(325.000	- 300.000)	(300.000	- 275.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.30E-10	1.61E-02	1.22E-10	1.55E-02	1.17E-10	1.53E-02	1.13E-10	1.53E-02	1.09E-10	1.52E-02
2	10.0	5.27E-11	2.62E-02	4.96E-11	2.54E-02	4.76E-11	2.50E-02	4.61E-11	2.49E-02	4.43E-11	2.47E-02
3	15.0	2.82E-11	3.16E-02	2.67E-11	3.07E-02	2.56E-11	3.02E-02	2.47E-11	3.01E-02	2.36E-11	2.97E-02
4	20.0	1.66E-11	3.31E-02	1.57E-11	3.22E-02	1.51E-11	3.18E-02	1.46E-11	3.15E-02	1.38E-11	3.09E-02
5	25.0	1.08E-11	3.35E-02	1.02E-11	3.27E-02	9.82E-12	3.22E-02	9.43E-12	3.19E-02	8.93E-12	3.12E-02
6	30.0	7.45E-12	3.34E-02	7.09E-12	3.26E-02	6.82E-12	3.22E-02	6.53E-12	3.18E-02	6.17E-12	3.10E-02
7	35.0	5.42E-12	3.31E-02	5.17E-12	3.24E-02	4.97E-12	3.20E-02	4.75E-12	3.15E-02	4.48E-12	3.06E-02
8	40.0	4.11E-12	3.28E-02	3.93E-12	3.21E-02	3.77E-12	3.17E-02	3.61E-12	3.12E-02	3.39E-12	3.03E-02
9	45.0	3.18E-12	3.21E-02	3.04E-12	3.14E-02	2.92E-12	3.11E-02	2.79E-12	3.06E-02	2.62E-12	2.96E-02
10	50.0	2.50E-12	3.12E-02	2.39E-12	3.06E-02	2.30E-12	3.02E-02	2.20E-12	2.97E-02	2.06E-12	2.88E-02
11	55.0	2.00E-12	3.01E-02	1.91E-12	2.95E-02	1.84E-12	2.92E-02	1.75E-12	2.87E-02	1.64E-12	2.77E-02
12	60.0	1.60E-12	2.88E-02	1.53E-12	2.82E-02	1.48E-12	2.79E-02	1.41E-12	2.74E-02	1.32E-12	2.65E-02
13	65.0	1.30E-12	2.73E-02	1.24E-12	2.68E-02	1.19E-12	2.65E-02	1.14E-12	2.61E-02	1.07E-12	2.52E-02
14	70.0	1.05E-12	2.57E-02	1.01E-12	2.53E-02	9.71E-13	2.50E-02	9.26E-13	2.45E-02	8.65E-13	2.37E-02
15	75.0	8.58E-13	2.41E-02	8.21E-13	2.36E-02	7.90E-13	2.33E-02	7.54E-13	2.29E-02	7.04E-13	2.21E-02
16	80.0	6.99E-13	2.23E-02	6.69E-13	2.19E-02	6.44E-13	2.16E-02	6.14E-13	2.13E-02	5.73E-13	2.05E-02
17	85.0	5.70E-13	2.05E-02	5.45E-13	2.01E-02	5.25E-13	1.99E-02	5.01E-13	1.96E-02	4.67E-13	1.88E-02
18	90.0	4.65E-13	1.88E-02	4.45E-13	1.84E-02	4.28E-13	1.82E-02	4.08E-13	1.79E-02	3.80E-13	1.72E-02
19	95.0	3.78E-13	1.70E-02	3.62E-13	1.67E-02	3.49E-13	1.65E-02	3.32E-13	1.62E-02	3.10E-13	1.56E-02
20	100.0	3.11E-13	1.55E-02	2.98E-13	1.52E-02	2.87E-13	1.51E-02	2.73E-13	1.48E-02	2.54E-13	1.42E-02
21	110.0	2.05E-13	1.24E-02	1.97E-13	1.22E-02	1.89E-13	1.20E-02	1.80E-13	1.18E-02	1.67E-13	1.13E-02
22	120.0	1.35E-13	9.68E-03	1.29E-13	9.50E-03	1.24E-13	9.40E-03	1.18E-13	9.21E-03	1.10E-13	8.82E-03
23	130.0	8.81E-14	7.42E-03	8.44E-14	7.29E-03	8.12E-14	7.21E-03	7.72E-14	7.06E-03	7.15E-14	6.75E-03
24	140.0	5.72E-14	5.59E-03	5.48E-14	5.49E-03	5.28E-14	5.43E-03	5.02E-14	5.32E-03	4.64E-14	5.08E-03
25	150.0	3.70E-14	4.15E-03	3.55E-14	4.08E-03	3.42E-14	4.04E-03	3.24E-14	3.95E-03	2.99E-14	3.76E-03
26	160.0	2.39E-14	3.04E-03	2.29E-14	2.99E-03	2.20E-14	2.96E-03	2.09E-14	2.89E-03	1.93E-14	2.75E-03
27	170.0	1.53E-14	2.20E-03	1.47E-14	2.17E-03	1.41E-14	2.14E-03	1.34E-14	2.09E-03	1.23E-14	1.99E-03
28	180.0	9.79E-15	1.58E-03	9.38E-15	1.55E-03	9.03E-15	1.54E-03	8.56E-15	1.50E-03	7.86E-15	1.42E-03
29	190.0	6.24E-15	1.12E-03	5.98E-15	1.10E-03	5.76E-15	1.09E-03	5.46E-15	1.07E-03	5.00E-15	1.01E-03
30	200.0	3.98E-15	7.93E-04	3.82E-15	7.80E-04	3.67E-15	7.72E-04	3.48E-15	7.53E-04	3.18E-15	7.11E-04
31	220.0	1.60E-15	3.85E-04	1.53E-15	3.79E-04	1.47E-15	3.75E-04	1.39E-15	3.65E-04	1.27E-15	3.43E-04
32	240.0	6.35E-16	1.82E-04	6.09E-16	1.79E-04	5.87E-16	1.78E-04	5.55E-16	1.73E-04	5.04E-16	1.62E-04
33	260.0	2.51E-16	8.47E-05	2.41E-16	8.33E-05	2.32E-16	8.24E-05	2.19E-16	8.02E-05	1.99E-16	7.50E-05
34	280.0	9.89E-17	3.87E-05	9.49E-17	3.80E-05	9.14E-17	3.77E-05	8.63E-17	3.66E-05	7.79E-17	3.41E-05
35	300.0	3.88E-17	1.74E-05	3.72E-17	1.71E-05	3.59E-17	1.70E-05	3.38E-17	1.65E-05	3.05E-17	1.53E-05
36	320.0	1.52E-17	7.75E-06	1.46E-17	7.63E-06	1.40E-17	7.55E-06	1.32E-17	7.33E-06	1.19E-17	6.80E-06
37	340.0	5.97E-18	3.44E-06	5.73E-18	3.39E-06	5.52E-18	3.35E-06	5.20E-18	3.25E-06	4.66E-18	3.01E-06
38	360.0	2.32E-18	1.50E-06	2.23E-18	1.48E-06	2.15E-18	1.46E-06	2.02E-18	1.42E-06	1.81E-18	1.31E-06
39	380.0	9.07E-19	6.53E-07	8.71E-19	6.43E-07	8.40E-19	6.37E-07	7.90E-19	6.17E-07	7.06E-19	5.70E-07
40	400.0	3.54E-19	2.82E-07	3.40E-19	2.78E-07	3.28E-19	2.75E-07	3.08E-19	2.67E-07	2.75E-19	2.46E-07
41	420.0	1.38E-19	1.21E-07	1.32E-19	1.19E-07	1.28E-19	1.18E-07	1.20E-19	1.14E-07	1.07E-19	1.05E-07
42	440.0	5.36E-20	5.17E-08	5.14E-20	5.09E-08	4.96E-20	5.04E-08	4.66E-20	4.88E-08	4.15E-20	4.49E-08
43	460.0	2.06E-20	2.18E-08	1.98E-20	2.14E-08	1.91E-20	2.12E-08	1.80E-20	2.06E-08	1.60E-20	1.89E-08
44	480.0	7.18E-21	8.25E-09	6.90E-21	8.12E-09	6.65E-21	8.05E-09	6.25E-21	7.79E-09	5.56E-21	7.15E-09

Table 3.6 (Continued) (2/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		6		7		8		9		10	
		(275.000 - 250.000)		(250.000 - 225.000)		(225.000 - 200.000)		(200.000 - 180.000)		(180.000 - 160.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.03E-10	1.49E-02	9.98E-11	1.50E-02	9.73E-11	1.52E-02	9.32E-11	1.50E-02	8.84E-11	1.45E-02
2	10.0	4.18E-11	2.42E-02	4.01E-11	2.41E-02	3.88E-11	2.43E-02	3.70E-11	2.38E-02	3.49E-11	2.28E-02
3	15.0	2.22E-11	2.89E-02	2.12E-11	2.87E-02	2.04E-11	2.87E-02	1.93E-11	2.80E-02	1.81E-11	2.66E-02
4	20.0	1.30E-11	3.00E-02	1.23E-11	2.96E-02	1.18E-11	2.95E-02	1.11E-11	2.86E-02	1.03E-11	2.70E-02
5	25.0	8.36E-12	3.02E-02	7.90E-12	2.97E-02	7.49E-12	2.93E-02	7.00E-12	2.82E-02	6.50E-12	2.66E-02
6	30.0	5.76E-12	3.00E-02	5.42E-12	2.93E-02	5.11E-12	2.88E-02	4.76E-12	2.76E-02	4.40E-12	2.60E-02
7	35.0	4.17E-12	2.95E-02	3.92E-12	2.88E-02	3.68E-12	2.82E-02	3.42E-12	2.70E-02	3.15E-12	2.53E-02
8	40.0	3.16E-12	2.92E-02	2.96E-12	2.84E-02	2.77E-12	2.78E-02	2.57E-12	2.65E-02	2.36E-12	2.48E-02
9	45.0	2.43E-12	2.85E-02	2.28E-12	2.77E-02	2.13E-12	2.70E-02	1.97E-12	2.57E-02	1.81E-12	2.40E-02
10	50.0	1.91E-12	2.76E-02	1.79E-12	2.68E-02	1.67E-12	2.61E-02	1.54E-12	2.49E-02	1.42E-12	2.32E-02
11	55.0	1.52E-12	2.66E-02	1.42E-12	2.58E-02	1.33E-12	2.51E-02	1.22E-12	2.39E-02	1.12E-12	2.23E-02
12	60.0	1.22E-12	2.54E-02	1.14E-12	2.46E-02	1.06E-12	2.40E-02	9.80E-13	2.28E-02	8.99E-13	2.12E-02
13	65.0	9.88E-13	2.41E-02	9.21E-13	2.34E-02	8.58E-13	2.27E-02	7.90E-13	2.15E-02	7.24E-13	2.01E-02
14	70.0	8.01E-13	2.27E-02	7.46E-13	2.20E-02	6.95E-13	2.13E-02	6.39E-13	2.02E-02	5.86E-13	1.88E-02
15	75.0	6.51E-13	2.12E-02	6.06E-13	2.05E-02	5.64E-13	1.99E-02	5.19E-13	1.88E-02	4.75E-13	1.75E-02
16	80.0	5.30E-13	1.96E-02	4.93E-13	1.89E-02	4.58E-13	1.84E-02	4.21E-13	1.74E-02	3.86E-13	1.62E-02
17	85.0	4.31E-13	1.80E-02	4.01E-13	1.74E-02	3.73E-13	1.69E-02	3.42E-13	1.60E-02	3.13E-13	1.48E-02
18	90.0	3.51E-13	1.64E-02	3.26E-13	1.59E-02	3.03E-13	1.54E-02	2.78E-13	1.45E-02	2.54E-13	1.35E-02
19	95.0	2.86E-13	1.49E-02	2.65E-13	1.44E-02	2.46E-13	1.39E-02	2.25E-13	1.31E-02	2.06E-13	1.22E-02
20	100.0	2.34E-13	1.35E-02	2.17E-13	1.31E-02	2.01E-13	1.26E-02	1.85E-13	1.19E-02	1.68E-13	1.10E-02
21	110.0	1.54E-13	1.08E-02	1.43E-13	1.04E-02	1.32E-13	1.00E-02	1.21E-13	9.42E-03	1.10E-13	8.72E-03
22	120.0	1.01E-13	8.39E-03	9.31E-14	8.05E-03	8.60E-14	7.76E-03	7.85E-14	7.29E-03	7.14E-14	6.73E-03
23	130.0	6.56E-14	6.41E-03	6.05E-14	6.14E-03	5.57E-14	5.90E-03	5.08E-14	5.54E-03	4.60E-14	5.10E-03
24	140.0	4.25E-14	4.81E-03	3.91E-14	4.60E-03	3.59E-14	4.41E-03	3.27E-14	4.13E-03	2.96E-14	3.80E-03
25	150.0	2.74E-14	3.56E-03	2.51E-14	3.39E-03	2.31E-14	3.25E-03	2.09E-14	3.04E-03	1.89E-14	2.78E-03
26	160.0	1.76E-14	2.60E-03	1.61E-14	2.47E-03	1.47E-14	2.36E-03	1.33E-14	2.20E-03	1.20E-14	2.01E-03
27	170.0	1.12E-14	1.87E-03	1.03E-14	1.78E-03	9.37E-15	1.70E-03	8.46E-15	1.58E-03	7.60E-15	1.44E-03
28	180.0	7.14E-15	1.34E-03	6.52E-15	1.27E-03	5.94E-15	1.21E-03	5.35E-15	1.12E-03	4.80E-15	1.02E-03
29	190.0	4.53E-15	9.46E-04	4.13E-15	8.95E-04	3.76E-15	8.49E-04	3.37E-15	7.86E-04	3.02E-15	7.14E-04
30	200.0	2.88E-15	6.66E-04	2.62E-15	6.29E-04	2.38E-15	5.95E-04	2.13E-15	5.50E-04	1.90E-15	4.98E-04
31	220.0	1.15E-15	3.20E-04	1.04E-15	3.01E-04	9.38E-16	2.84E-04	8.37E-16	2.61E-04	7.44E-16	2.36E-04
32	240.0	4.53E-16	1.51E-04	4.08E-16	1.41E-04	3.68E-16	1.33E-04	3.27E-16	1.22E-04	2.90E-16	1.09E-04
33	260.0	1.78E-16	6.95E-05	1.60E-16	6.49E-05	1.43E-16	6.08E-05	1.27E-16	5.55E-05	1.12E-16	4.97E-05
34	280.0	6.96E-17	3.15E-05	6.24E-17	2.94E-05	5.58E-17	2.74E-05	4.93E-17	2.49E-05	4.33E-17	2.23E-05
35	300.0	2.71E-17	1.41E-05	2.43E-17	1.31E-05	2.16E-17	1.22E-05	1.90E-17	1.11E-05	1.67E-17	9.85E-06
36	320.0	1.06E-17	6.25E-06	9.42E-18	5.79E-06	8.38E-18	5.37E-06	7.36E-18	4.86E-06	6.44E-18	4.32E-06
37	340.0	4.13E-18	2.76E-06	3.68E-18	2.55E-06	3.26E-18	2.36E-06	2.86E-18	2.13E-06	2.50E-18	1.89E-06
38	360.0	1.60E-18	1.20E-06	1.42E-18	1.11E-06	1.26E-18	1.02E-06	1.10E-18	9.21E-07	9.60E-19	8.15E-07
39	380.0	6.23E-19	5.20E-07	5.53E-19	4.79E-07	4.89E-19	4.42E-07	4.27E-19	3.98E-07	3.71E-19	3.51E-07
40	400.0	2.42E-19	2.24E-07	2.15E-19	2.06E-07	1.90E-19	1.90E-07	1.65E-19	1.71E-07	1.44E-19	1.51E-07
41	420.0	9.41E-20	9.59E-08	8.32E-20	8.81E-08	7.34E-20	8.11E-08	6.39E-20	7.27E-08	5.55E-20	6.41E-08
42	440.0	3.65E-20	4.08E-08	3.22E-20	3.75E-08	2.84E-20	3.45E-08	2.47E-20	3.09E-08	2.14E-20	2.72E-08
43	460.0	1.40E-20	1.72E-08	1.24E-20	1.57E-08	1.09E-20	1.45E-08	9.48E-21	1.29E-08	8.21E-21	1.14E-08
44	480.0	4.88E-21	6.49E-09	4.30E-21	5.95E-09	3.78E-21	5.46E-09	3.29E-21	4.89E-09	2.85E-21	4.30E-09

Table 3.6 (Continued) (3/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		11		12		13		14		15	
		(160.000 - 140.000)		(140.000 - 120.000)		(120.000 - 110.000)		(110.000 - 100.000)		(100.000 - 90.000)	
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	8.40E-11	1.40E-02	7.96E-11	1.35E-02	7.59E-11	1.31E-02	7.36E-11	1.29E-02	7.06E-11	1.25E-02
2	10.0	3.30E-11	2.20E-02	3.11E-11	2.11E-02	2.95E-11	2.04E-02	2.85E-11	1.99E-02	2.71E-11	1.92E-02
3	15.0	1.70E-11	2.54E-02	1.59E-11	2.44E-02	1.50E-11	2.33E-02	1.44E-11	2.26E-02	1.36E-11	2.17E-02
4	20.0	9.61E-12	2.56E-02	8.97E-12	2.44E-02	8.39E-12	2.32E-02	7.99E-12	2.23E-02	7.51E-12	2.13E-02
5	25.0	6.03E-12	2.51E-02	5.58E-12	2.37E-02	5.18E-12	2.24E-02	4.90E-12	2.14E-02	4.59E-12	2.03E-02
6	30.0	4.07E-12	2.44E-02	3.74E-12	2.29E-02	3.45E-12	2.15E-02	3.26E-12	2.05E-02	3.04E-12	1.94E-02
7	35.0	2.91E-12	2.37E-02	2.66E-12	2.21E-02	2.44E-12	2.07E-02	2.30E-12	1.97E-02	2.14E-12	1.86E-02
8	40.0	2.17E-12	2.32E-02	1.98E-12	2.15E-02	1.82E-12	2.01E-02	1.71E-12	1.91E-02	1.59E-12	1.80E-02
9	45.0	1.66E-12	2.24E-02	1.51E-12	2.08E-02	1.39E-12	1.94E-02	1.30E-12	1.84E-02	1.21E-12	1.73E-02
10	50.0	1.30E-12	2.16E-02	1.18E-12	2.00E-02	1.08E-12	1.86E-02	1.01E-12	1.77E-02	9.40E-13	1.66E-02
11	55.0	1.03E-12	2.07E-02	9.35E-13	1.92E-02	8.54E-13	1.78E-02	8.00E-13	1.69E-02	7.43E-13	1.59E-02
12	60.0	8.23E-13	1.97E-02	7.47E-13	1.83E-02	6.83E-13	1.70E-02	6.39E-13	1.61E-02	5.93E-13	1.51E-02
13	65.0	6.63E-13	1.87E-02	6.01E-13	1.73E-02	5.49E-13	1.60E-02	5.14E-13	1.52E-02	4.77E-13	1.43E-02
14	70.0	5.36E-13	1.75E-02	4.86E-13	1.62E-02	4.43E-13	1.50E-02	4.15E-13	1.42E-02	3.85E-13	1.34E-02
15	75.0	4.34E-13	1.63E-02	3.93E-13	1.50E-02	3.59E-13	1.39E-02	3.36E-13	1.32E-02	3.11E-13	1.24E-02
16	80.0	3.52E-13	1.50E-02	3.19E-13	1.39E-02	2.91E-13	1.28E-02	2.72E-13	1.22E-02	2.52E-13	1.14E-02
17	85.0	2.86E-13	1.38E-02	2.58E-13	1.27E-02	2.35E-13	1.17E-02	2.20E-13	1.11E-02	2.04E-13	1.04E-02
18	90.0	2.32E-13	1.25E-02	2.09E-13	1.15E-02	1.90E-13	1.07E-02	1.78E-13	1.01E-02	1.65E-13	9.44E-03
19	95.0	1.88E-13	1.13E-02	1.69E-13	1.04E-02	1.54E-13	9.59E-03	1.44E-13	9.07E-03	1.33E-13	8.50E-03
20	100.0	1.53E-13	1.02E-02	1.38E-13	9.39E-03	1.25E-13	8.67E-03	1.17E-13	8.19E-03	1.08E-13	7.66E-03
21	110.0	9.98E-14	8.05E-03	8.97E-14	7.38E-03	8.13E-14	6.79E-03	7.58E-14	6.41E-03	6.99E-14	5.99E-03
22	120.0	6.46E-14	6.20E-03	5.79E-14	5.67E-03	5.24E-14	5.21E-03	4.87E-14	4.90E-03	4.49E-14	4.58E-03
23	130.0	4.16E-14	4.69E-03	3.72E-14	4.27E-03	3.35E-14	3.91E-03	3.11E-14	3.68E-03	2.86E-14	3.43E-03
24	140.0	2.66E-14	3.48E-03	2.37E-14	3.16E-03	2.13E-14	2.89E-03	1.98E-14	2.71E-03	1.82E-14	2.52E-03
25	150.0	1.70E-14	2.54E-03	1.51E-14	2.30E-03	1.35E-14	2.10E-03	1.25E-14	1.97E-03	1.15E-14	1.83E-03
26	160.0	1.08E-14	1.84E-03	9.53E-15	1.66E-03	8.53E-15	1.51E-03	7.88E-15	1.41E-03	7.20E-15	1.31E-03
27	170.0	6.80E-15	1.31E-03	6.00E-15	1.18E-03	5.35E-15	1.07E-03	4.94E-15	9.98E-04	4.51E-15	9.22E-04
28	180.0	4.28E-15	9.24E-04	3.77E-15	8.29E-04	3.35E-15	7.50E-04	3.09E-15	6.99E-04	2.81E-15	6.45E-04
29	190.0	2.69E-15	6.46E-04	2.36E-15	5.78E-04	2.09E-15	5.21E-04	1.92E-15	4.85E-04	1.75E-15	4.47E-04
30	200.0	1.69E-15	4.50E-04	1.48E-15	4.01E-04	1.31E-15	3.61E-04	1.20E-15	3.35E-04	1.09E-15	3.09E-04
31	220.0	6.58E-16	2.12E-04	5.72E-16	1.88E-04	5.04E-16	1.68E-04	4.61E-16	1.56E-04	4.18E-16	1.43E-04
32	240.0	2.55E-16	9.78E-05	2.20E-16	8.63E-05	1.94E-16	7.70E-05	1.77E-16	7.12E-05	1.60E-16	6.51E-05
33	260.0	9.83E-17	4.43E-05	8.47E-17	3.89E-05	7.41E-17	3.46E-05	6.75E-17	3.19E-05	6.09E-17	2.91E-05
34	280.0	3.78E-17	1.98E-05	3.25E-17	1.73E-05	2.83E-17	1.53E-05	2.58E-17	1.41E-05	2.32E-17	1.29E-05
35	300.0	1.45E-17	8.72E-06	1.24E-17	7.61E-06	1.08E-17	6.73E-06	9.83E-18	6.19E-06	8.85E-18	5.64E-06
36	320.0	5.59E-18	3.81E-06	4.77E-18	3.32E-06	4.14E-18	2.93E-06	3.76E-18	2.69E-06	3.38E-18	2.45E-06
37	340.0	2.16E-18	1.67E-06	1.84E-18	1.45E-06	1.60E-18	1.27E-06	1.45E-18	1.17E-06	1.30E-18	1.06E-06
38	360.0	8.30E-19	7.17E-07	7.05E-19	6.21E-07	6.11E-19	5.47E-07	5.54E-19	5.02E-07	4.97E-19	4.56E-07
39	380.0	3.21E-19	3.08E-07	2.72E-19	2.67E-07	2.35E-19	2.35E-07	2.13E-19	2.15E-07	1.91E-19	1.96E-07
40	400.0	1.24E-19	1.32E-07	1.05E-19	1.14E-07	9.08E-20	1.00E-07	8.22E-20	9.20E-08	7.37E-20	8.35E-08
41	420.0	4.78E-20	5.62E-08	4.05E-20	4.85E-08	3.50E-20	4.26E-08	3.17E-20	3.90E-08	2.84E-20	3.55E-08
42	440.0	1.84E-20	2.38E-08	1.56E-20	2.05E-08	1.35E-20	1.80E-08	1.22E-20	1.65E-08	1.09E-20	1.50E-08
43	460.0	7.06E-21	9.96E-09	5.98E-21	8.59E-09	5.16E-21	7.54E-09	4.67E-21	6.91E-09	4.19E-21	6.28E-09
44	480.0	2.45E-21	3.76E-09	2.07E-21	3.24E-09	1.79E-21	2.84E-09	1.62E-21	2.60E-09	1.45E-21	2.37E-09

Table 3.6 (Continued) (4/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		16		17		18		19		20	
		(90.000 -	80.000)	(80.000 -	70.000)	(70.000 -	65.000)	(65.000 -	60.000)	(60.000 -	55.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	6.76E-11	1.21E-02	6.55E-11	1.19E-02	6.28E-11	1.16E-02	6.09E-11	1.13E-02	5.90E-11	1.11E-02
2	10.0	2.58E-11	1.85E-02	2.48E-11	1.81E-02	2.36E-11	1.74E-02	2.28E-11	1.70E-02	2.19E-11	1.65E-02
3	15.0	1.29E-11	2.08E-02	1.22E-11	2.00E-02	1.15E-11	1.92E-02	1.11E-11	1.85E-02	1.06E-11	1.79E-02
4	20.0	7.04E-12	2.02E-02	6.62E-12	1.93E-02	6.20E-12	1.83E-02	5.91E-12	1.76E-02	5.62E-12	1.69E-02
5	25.0	4.28E-12	1.92E-02	3.99E-12	1.82E-02	3.72E-12	1.72E-02	3.53E-12	1.64E-02	3.33E-12	1.57E-02
6	30.0	2.82E-12	1.83E-02	2.62E-12	1.72E-02	2.43E-12	1.61E-02	2.29E-12	1.54E-02	2.16E-12	1.46E-02
7	35.0	1.98E-12	1.74E-02	1.83E-12	1.64E-02	1.69E-12	1.53E-02	1.60E-12	1.46E-02	1.50E-12	1.38E-02
8	40.0	1.47E-12	1.69E-02	1.35E-12	1.58E-02	1.25E-12	1.47E-02	1.17E-12	1.40E-02	1.10E-12	1.33E-02
9	45.0	1.11E-12	1.62E-02	1.03E-12	1.52E-02	9.46E-13	1.42E-02	8.91E-13	1.34E-02	8.33E-13	1.27E-02
10	50.0	8.67E-13	1.56E-02	7.99E-13	1.46E-02	7.36E-13	1.36E-02	6.93E-13	1.29E-02	6.48E-13	1.22E-02
11	55.0	6.85E-13	1.49E-02	6.31E-13	1.39E-02	5.82E-13	1.30E-02	5.48E-13	1.24E-02	5.13E-13	1.17E-02
12	60.0	5.47E-13	1.41E-02	5.04E-13	1.32E-02	4.65E-13	1.24E-02	4.38E-13	1.18E-02	4.10E-13	1.11E-02
13	65.0	4.40E-13	1.33E-02	4.06E-13	1.25E-02	3.74E-13	1.17E-02	3.52E-13	1.11E-02	3.30E-13	1.05E-02
14	70.0	3.55E-13	1.25E-02	3.27E-13	1.17E-02	3.02E-13	1.09E-02	2.84E-13	1.04E-02	2.66E-13	9.84E-03
15	75.0	2.87E-13	1.16E-02	2.65E-13	1.09E-02	2.44E-13	1.01E-02	2.30E-13	9.64E-03	2.15E-13	9.13E-03
16	80.0	2.32E-13	1.07E-02	2.14E-13	9.98E-03	1.97E-13	9.32E-03	1.86E-13	8.87E-03	1.74E-13	8.40E-03
17	85.0	1.88E-13	9.73E-03	1.73E-13	9.11E-03	1.59E-13	8.50E-03	1.50E-13	8.09E-03	1.41E-13	7.66E-03
18	90.0	1.52E-13	8.81E-03	1.40E-13	8.24E-03	1.29E-13	7.69E-03	1.21E-13	7.31E-03	1.13E-13	6.92E-03
19	95.0	1.22E-13	7.92E-03	1.13E-13	7.41E-03	1.04E-13	6.91E-03	9.75E-14	6.56E-03	9.13E-14	6.21E-03
20	100.0	9.95E-14	7.14E-03	9.15E-14	6.67E-03	8.42E-14	6.22E-03	7.92E-14	5.91E-03	7.41E-14	5.59E-03
21	110.0	6.42E-14	5.58E-03	5.89E-14	5.20E-03	5.41E-14	4.84E-03	5.09E-14	4.59E-03	4.76E-14	4.34E-03
22	120.0	4.11E-14	4.25E-03	3.77E-14	3.96E-03	3.46E-14	3.68E-03	3.25E-14	3.48E-03	3.03E-14	3.29E-03
23	130.0	2.62E-14	3.18E-03	2.39E-14	2.95E-03	2.19E-14	2.74E-03	2.06E-14	2.59E-03	1.92E-14	2.44E-03
24	140.0	1.66E-14	2.33E-03	1.51E-14	2.16E-03	1.38E-14	2.00E-03	1.30E-14	1.89E-03	1.21E-14	1.78E-03
25	150.0	1.04E-14	1.69E-03	9.50E-15	1.56E-03	8.67E-15	1.44E-03	8.12E-15	1.36E-03	7.56E-15	1.28E-03
26	160.0	6.54E-15	1.20E-03	5.94E-15	1.11E-03	5.42E-15	1.02E-03	5.06E-15	9.67E-04	4.71E-15	9.08E-04
27	170.0	4.09E-15	8.48E-04	3.70E-15	7.80E-04	3.37E-15	7.19E-04	3.15E-15	6.78E-04	2.92E-15	6.37E-04
28	180.0	2.54E-15	5.92E-04	2.30E-15	5.43E-04	2.09E-15	5.00E-04	1.95E-15	4.71E-04	1.81E-15	4.42E-04
29	190.0	1.58E-15	4.09E-04	1.43E-15	3.75E-04	1.29E-15	3.45E-04	1.21E-15	3.25E-04	1.12E-15	3.05E-04
30	200.0	9.83E-16	2.82E-04	8.86E-16	2.58E-04	8.03E-16	2.37E-04	7.49E-16	2.23E-04	6.94E-16	2.09E-04
31	220.0	3.76E-16	1.31E-04	3.38E-16	1.19E-04	3.06E-16	1.09E-04	2.85E-16	1.03E-04	2.64E-16	9.61E-05
32	240.0	1.43E-16	5.92E-05	1.28E-16	5.39E-05	1.16E-16	4.94E-05	1.08E-16	4.63E-05	9.98E-17	4.33E-05
33	260.0	5.45E-17	2.64E-05	4.88E-17	2.40E-05	4.40E-17	2.20E-05	4.09E-17	2.06E-05	3.78E-17	1.93E-05
34	280.0	2.07E-17	1.17E-05	1.85E-17	1.06E-05	1.67E-17	9.68E-06	1.55E-17	9.08E-06	1.43E-17	8.47E-06
35	300.0	7.90E-18	5.10E-06	7.05E-18	4.63E-06	6.36E-18	4.23E-06	5.90E-18	3.96E-06	5.45E-18	3.70E-06
36	320.0	3.01E-18	2.22E-06	2.69E-18	2.01E-06	2.42E-18	1.83E-06	2.25E-18	1.72E-06	2.08E-18	1.60E-06
37	340.0	1.16E-18	9.62E-07	1.03E-18	8.71E-07	9.31E-19	7.95E-07	8.64E-19	7.45E-07	7.98E-19	6.95E-07
38	360.0	4.43E-19	4.12E-07	3.95E-19	3.73E-07	3.55E-19	3.40E-07	3.30E-19	3.19E-07	3.05E-19	2.97E-07
39	380.0	1.70E-19	1.77E-07	1.52E-19	1.60E-07	1.37E-19	1.46E-07	1.27E-19	1.37E-07	1.17E-19	1.27E-07
40	400.0	6.56E-20	7.54E-08	5.85E-20	6.82E-08	5.27E-20	6.22E-08	4.89E-20	5.83E-08	4.51E-20	5.44E-08
41	420.0	2.53E-20	3.20E-08	2.25E-20	2.90E-08	2.03E-20	2.64E-08	1.88E-20	2.47E-08	1.74E-20	2.31E-08
42	440.0	9.74E-21	1.35E-08	8.68E-21	1.23E-08	7.82E-21	1.12E-08	7.25E-21	1.05E-08	6.69E-21	9.77E-09
43	460.0	3.73E-21	5.66E-09	3.32E-21	5.12E-09	2.99E-21	4.67E-09	2.77E-21	4.38E-09	2.56E-21	4.08E-09
44	480.0	1.29E-21	2.14E-09	1.15E-21	1.93E-09	1.04E-21	1.76E-09	9.60E-22	1.65E-09	8.87E-22	1.54E-09

Table 3.6 (Continued) (5/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		21		22		23		24		25	
		(55.000 -	50.000)	(50.000 -	45.000)	(45.000 -	40.000)	(40.000 -	35.000)	(35.000 -	30.000)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	5.70E-11	1.09E-02	5.36E-11	1.03E-02	5.10E-11	9.88E-03	4.83E-11	9.44E-03	4.48E-11	8.85E-03
2	10.0	2.10E-11	1.60E-02	1.97E-11	1.51E-02	1.86E-11	1.44E-02	1.74E-11	1.36E-02	1.62E-11	1.28E-02
3	15.0	1.01E-11	1.72E-02	9.38E-12	1.62E-02	8.79E-12	1.53E-02	8.16E-12	1.44E-02	7.54E-12	1.34E-02
4	20.0	5.30E-12	1.62E-02	4.93E-12	1.52E-02	4.60E-12	1.43E-02	4.24E-12	1.32E-02	3.87E-12	1.22E-02
5	25.0	3.13E-12	1.49E-02	2.90E-12	1.39E-02	2.69E-12	1.30E-02	2.46E-12	1.20E-02	2.23E-12	1.10E-02
6	30.0	2.01E-12	1.38E-02	1.86E-12	1.29E-02	1.72E-12	1.20E-02	1.57E-12	1.10E-02	1.41E-12	1.00E-02
7	35.0	1.39E-12	1.30E-02	1.28E-12	1.21E-02	1.19E-12	1.13E-02	1.08E-12	1.04E-02	9.68E-13	9.37E-03
8	40.0	1.02E-12	1.25E-02	9.42E-13	1.16E-02	8.70E-13	1.08E-02	7.93E-13	9.92E-03	7.10E-13	8.97E-03
9	45.0	7.74E-13	1.20E-02	7.14E-13	1.11E-02	6.60E-13	1.04E-02	6.02E-13	9.54E-03	5.40E-13	8.64E-03
10	50.0	6.03E-13	1.15E-02	5.56E-13	1.07E-02	5.15E-13	9.97E-03	4.70E-13	9.20E-03	4.22E-13	8.34E-03
11	55.0	4.77E-13	1.10E-02	4.41E-13	1.03E-02	4.08E-13	9.57E-03	3.74E-13	8.84E-03	3.36E-13	8.03E-03
12	60.0	3.82E-13	1.05E-02	3.53E-13	9.78E-03	3.27E-13	9.13E-03	3.00E-13	8.44E-03	2.70E-13	7.68E-03
13	65.0	3.07E-13	9.89E-03	2.84E-13	9.24E-03	2.64E-13	8.64E-03	2.42E-13	7.99E-03	2.18E-13	7.28E-03
14	70.0	2.48E-13	9.27E-03	2.30E-13	8.66E-03	2.13E-13	8.10E-03	1.96E-13	7.50E-03	1.76E-13	6.83E-03
15	75.0	2.01E-13	8.60E-03	1.86E-13	8.04E-03	1.73E-13	7.52E-03	1.58E-13	6.96E-03	1.43E-13	6.34E-03
16	80.0	1.62E-13	7.91E-03	1.50E-13	7.40E-03	1.39E-13	6.92E-03	1.28E-13	6.40E-03	1.15E-13	5.84E-03
17	85.0	1.31E-13	7.21E-03	1.21E-13	6.74E-03	1.13E-13	6.31E-03	1.03E-13	5.84E-03	9.32E-14	5.32E-03
18	90.0	1.06E-13	6.52E-03	9.78E-14	6.09E-03	9.08E-14	5.70E-03	8.32E-14	5.27E-03	7.51E-14	4.80E-03
19	95.0	8.50E-14	5.85E-03	7.87E-14	5.46E-03	7.30E-14	5.11E-03	6.69E-14	4.72E-03	6.04E-14	4.30E-03
20	100.0	6.90E-14	5.26E-03	6.38E-14	4.91E-03	5.92E-14	4.59E-03	5.43E-14	4.24E-03	4.89E-14	3.86E-03
21	110.0	4.42E-14	4.08E-03	4.09E-14	3.81E-03	3.79E-14	3.55E-03	3.47E-14	3.28E-03	3.12E-14	2.98E-03
22	120.0	2.81E-14	3.09E-03	2.60E-14	2.88E-03	2.41E-14	2.69E-03	2.20E-14	2.48E-03	1.98E-14	2.25E-03
23	130.0	1.78E-14	2.29E-03	1.64E-14	2.13E-03	1.52E-14	1.99E-03	1.39E-14	1.83E-03	1.25E-14	1.66E-03
24	140.0	1.12E-14	1.67E-03	1.03E-14	1.55E-03	9.52E-15	1.45E-03	8.69E-15	1.33E-03	7.80E-15	1.21E-03
25	150.0	6.99E-15	1.20E-03	6.43E-15	1.11E-03	5.94E-15	1.04E-03	5.42E-15	9.53E-04	4.86E-15	8.63E-04
26	160.0	4.35E-15	8.49E-04	4.00E-15	7.88E-04	3.69E-15	7.33E-04	3.37E-15	6.74E-04	3.02E-15	6.10E-04
27	170.0	2.70E-15	5.95E-04	2.48E-15	5.52E-04	2.29E-15	5.13E-04	2.08E-15	4.71E-04	1.87E-15	4.26E-04
28	180.0	1.67E-15	4.13E-04	1.54E-15	3.83E-04	1.41E-15	3.55E-04	1.29E-15	3.26E-04	1.15E-15	2.95E-04
29	190.0	1.03E-15	2.84E-04	9.48E-16	2.63E-04	8.73E-16	2.44E-04	7.94E-16	2.24E-04	7.10E-16	2.03E-04
30	200.0	6.40E-16	1.95E-04	5.87E-16	1.81E-04	5.40E-16	1.67E-04	4.91E-16	1.54E-04	4.39E-16	1.39E-04
31	220.0	2.43E-16	8.95E-05	2.22E-16	8.27E-05	2.04E-16	7.67E-05	1.86E-16	7.03E-05	1.66E-16	6.34E-05
32	240.0	9.18E-17	4.03E-05	8.41E-17	3.73E-05	7.73E-17	3.45E-05	7.02E-17	3.16E-05	6.26E-17	2.85E-05
33	260.0	3.48E-17	1.79E-05	3.18E-17	1.65E-05	2.92E-17	1.53E-05	2.65E-17	1.40E-05	2.37E-17	1.26E-05
34	280.0	1.32E-17	7.88E-06	1.21E-17	7.27E-06	1.11E-17	6.73E-06	1.01E-17	6.16E-06	8.97E-18	5.55E-06
35	300.0	5.01E-18	3.43E-06	4.58E-18	3.17E-06	4.21E-18	2.93E-06	3.82E-18	2.69E-06	3.41E-18	2.42E-06
36	320.0	1.91E-18	1.49E-06	1.74E-18	1.37E-06	1.60E-18	1.27E-06	1.45E-18	1.16E-06	1.30E-18	1.05E-06
37	340.0	7.33E-19	6.46E-07	6.70E-19	5.96E-07	6.15E-19	5.51E-07	5.58E-19	5.04E-07	4.98E-19	4.54E-07
38	360.0	2.80E-19	2.76E-07	2.56E-19	2.55E-07	2.35E-19	2.36E-07	2.13E-19	2.16E-07	1.90E-19	1.94E-07
39	380.0	1.08E-19	1.18E-07	9.83E-20	1.09E-07	9.03E-20	1.01E-07	8.19E-20	9.25E-08	7.31E-20	8.33E-08
40	400.0	4.14E-20	5.05E-08	3.79E-20	4.66E-08	3.48E-20	4.31E-08	3.15E-20	3.95E-08	2.81E-20	3.56E-08
41	420.0	1.59E-20	2.14E-08	1.46E-20	1.98E-08	1.34E-20	1.83E-08	1.21E-20	1.68E-08	1.08E-20	1.51E-08
42	440.0	6.15E-21	9.07E-09	5.62E-21	8.37E-09	5.16E-21	7.74E-09	4.68E-21	7.09E-09	4.17E-21	6.38E-09
43	460.0	2.35E-21	3.79E-09	2.15E-21	3.50E-09	1.97E-21	3.24E-09	1.79E-21	2.96E-09	1.60E-21	2.67E-09
44	480.0	8.14E-22	1.43E-09	7.44E-22	1.32E-09	6.83E-22	1.22E-09	6.20E-22	1.12E-09	5.53E-22	1.01E-09

Table 3.6 (Continued) (6/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		26		27		28		29		30	
		(30.000 -	27.500)	(27.500 -	25.000)	(25.000 -	22.500)	(22.500 -	20.000)	(20.000 -	17.500)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	4.31E-11	8.59E-03	4.41E-11	8.84E-03	4.43E-11	8.94E-03	4.74E-11	9.63E-03	1.64E-10	3.36E-02
2	10.0	1.52E-11	1.21E-02	1.47E-11	1.17E-02	1.44E-11	1.16E-02	1.42E-11	1.15E-02	3.20E-11	2.62E-02
3	15.0	6.99E-12	1.25E-02	6.60E-12	1.19E-02	6.27E-12	1.14E-02	6.11E-12	1.12E-02	9.95E-12	1.84E-02
4	20.0	3.55E-12	1.13E-02	3.31E-12	1.06E-02	3.08E-12	9.95E-03	2.93E-12	9.54E-03	3.81E-12	1.25E-02
5	25.0	2.02E-12	1.01E-02	1.87E-12	9.38E-03	1.72E-12	8.66E-03	1.60E-12	8.13E-03	1.80E-12	9.24E-03
6	30.0	1.28E-12	9.15E-03	1.17E-12	8.46E-03	1.07E-12	7.77E-03	9.83E-13	7.20E-03	1.03E-12	7.59E-03
7	35.0	8.74E-13	8.52E-03	8.03E-13	7.89E-03	7.30E-13	7.22E-03	6.68E-13	6.65E-03	6.80E-13	6.84E-03
8	40.0	6.41E-13	8.17E-03	5.91E-13	7.57E-03	5.38E-13	6.95E-03	4.91E-13	6.39E-03	5.00E-13	6.56E-03
9	45.0	4.88E-13	7.88E-03	4.51E-13	7.32E-03	4.12E-13	6.74E-03	3.77E-13	6.21E-03	3.86E-13	6.41E-03
10	50.0	3.83E-13	7.62E-03	3.54E-13	7.10E-03	3.25E-13	6.56E-03	2.98E-13	6.06E-03	3.07E-13	6.29E-03
11	55.0	3.05E-13	7.35E-03	2.83E-13	6.86E-03	2.60E-13	6.36E-03	2.39E-13	5.88E-03	2.48E-13	6.15E-03
12	60.0	2.45E-13	7.04E-03	2.28E-13	6.58E-03	2.10E-13	6.11E-03	1.93E-13	5.65E-03	2.01E-13	5.94E-03
13	65.0	1.98E-13	6.68E-03	1.84E-13	6.25E-03	1.70E-13	5.80E-03	1.56E-13	5.37E-03	1.64E-13	5.67E-03
14	70.0	1.61E-13	6.27E-03	1.49E-13	5.87E-03	1.38E-13	5.46E-03	1.27E-13	5.05E-03	1.33E-13	5.35E-03
15	75.0	1.30E-13	5.83E-03	1.21E-13	5.45E-03	1.12E-13	5.07E-03	1.03E-13	4.69E-03	1.08E-13	4.98E-03
16	80.0	1.05E-13	5.36E-03	9.78E-14	5.02E-03	9.03E-14	4.66E-03	8.29E-14	4.31E-03	8.73E-14	4.58E-03
17	85.0	8.48E-14	4.88E-03	7.89E-14	4.57E-03	7.28E-14	4.25E-03	6.68E-14	3.93E-03	7.04E-14	4.17E-03
18	90.0	6.83E-14	4.41E-03	6.35E-14	4.12E-03	5.86E-14	3.83E-03	5.37E-14	3.54E-03	5.67E-14	3.77E-03
19	95.0	5.49E-14	3.95E-03	5.10E-14	3.69E-03	4.70E-14	3.43E-03	4.31E-14	3.16E-03	4.55E-14	3.37E-03
20	100.0	4.45E-14	3.54E-03	4.13E-14	3.31E-03	3.80E-14	3.07E-03	3.48E-14	2.83E-03	3.68E-14	3.02E-03
21	110.0	2.84E-14	2.73E-03	2.63E-14	2.55E-03	2.42E-14	2.36E-03	2.22E-14	2.18E-03	2.34E-14	2.32E-03
22	120.0	1.80E-14	2.06E-03	1.66E-14	1.92E-03	1.53E-14	1.78E-03	1.40E-14	1.64E-03	1.48E-14	1.75E-03
23	130.0	1.13E-14	1.52E-03	1.05E-14	1.42E-03	9.60E-15	1.31E-03	8.77E-15	1.21E-03	9.27E-15	1.29E-03
24	140.0	7.06E-15	1.10E-03	6.53E-15	1.03E-03	5.99E-15	9.48E-04	5.47E-15	8.72E-04	5.78E-15	9.30E-04
25	150.0	4.40E-15	7.88E-04	4.06E-15	7.33E-04	3.72E-15	6.76E-04	3.40E-15	6.22E-04	3.59E-15	6.63E-04
26	160.0	2.73E-15	5.56E-04	2.52E-15	5.17E-04	2.31E-15	4.76E-04	2.10E-15	4.38E-04	2.22E-15	4.67E-04
27	170.0	1.69E-15	3.88E-04	1.56E-15	3.61E-04	1.42E-15	3.32E-04	1.30E-15	3.05E-04	1.37E-15	3.25E-04
28	180.0	1.04E-15	2.69E-04	9.60E-16	2.49E-04	8.78E-16	2.30E-04	8.00E-16	2.11E-04	8.46E-16	2.25E-04
29	190.0	6.41E-16	1.84E-04	5.91E-16	1.71E-04	5.40E-16	1.57E-04	4.92E-16	1.44E-04	5.20E-16	1.54E-04
30	200.0	3.96E-16	1.26E-04	3.65E-16	1.17E-04	3.33E-16	1.08E-04	3.03E-16	9.87E-05	3.21E-16	1.05E-04
31	220.0	1.50E-16	5.76E-05	1.38E-16	5.34E-05	1.26E-16	4.91E-05	1.14E-16	4.51E-05	1.21E-16	4.80E-05
32	240.0	5.65E-17	2.59E-05	5.20E-17	2.40E-05	4.74E-17	2.21E-05	4.32E-17	2.02E-05	4.56E-17	2.15E-05
33	260.0	2.13E-17	1.15E-05	1.96E-17	1.06E-05	1.79E-17	9.78E-06	1.63E-17	8.96E-06	1.72E-17	9.55E-06
34	280.0	8.08E-18	5.05E-06	7.43E-18	4.67E-06	6.78E-18	4.29E-06	6.17E-18	3.93E-06	6.52E-18	4.19E-06
35	300.0	3.07E-18	2.20E-06	2.82E-18	2.04E-06	2.57E-18	1.87E-06	2.34E-18	1.71E-06	2.47E-18	1.83E-06
36	320.0	1.17E-18	9.52E-07	1.07E-18	8.81E-07	9.79E-19	8.09E-07	8.90E-19	7.42E-07	9.41E-19	7.90E-07
37	340.0	4.48E-19	4.13E-07	4.12E-19	3.82E-07	3.76E-19	3.51E-07	3.42E-19	3.22E-07	3.61E-19	3.42E-07
38	360.0	1.71E-19	1.77E-07	1.57E-19	1.63E-07	1.43E-19	1.50E-07	1.30E-19	1.38E-07	1.38E-19	1.47E-07
39	380.0	6.58E-20	7.57E-08	6.05E-20	7.00E-08	5.52E-20	6.43E-08	5.02E-20	5.89E-08	5.30E-20	6.28E-08
40	400.0	2.53E-20	3.23E-08	2.33E-20	2.99E-08	2.13E-20	2.74E-08	1.93E-20	2.52E-08	2.04E-20	2.68E-08
41	420.0	9.75E-21	1.37E-08	8.97E-21	1.27E-08	8.18E-21	1.16E-08	7.44E-21	1.07E-08	7.86E-21	1.14E-08
42	440.0	3.76E-21	5.80E-09	3.46E-21	5.37E-09	3.15E-21	4.93E-09	2.87E-21	4.52E-09	3.03E-21	4.81E-09
43	460.0	1.44E-21	2.42E-09	1.32E-21	2.24E-09	1.21E-21	2.06E-09	1.10E-21	1.89E-09	1.16E-21	2.01E-09
44	480.0	4.98E-22	9.13E-10	4.58E-22	8.45E-10	4.17E-22	7.76E-10	3.80E-22	7.12E-10	4.01E-22	7.58E-10

Table 3.6 (Continued) (7/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		31		32		33		34		35	
		(17.500 -	14.900)	(14.900 -	13.500)	(13.500 -	12.200)	(12.200 -	10.000)	(10.000 -	8.190)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.75E-10	3.63E-02	2.15E-10	4.48E-02	2.39E-10	5.03E-02	2.30E-10	4.87E-02	2.03E-10	4.35E-02
2	10.0	3.31E-11	2.74E-02	3.88E-11	3.24E-02	4.22E-11	3.54E-02	4.00E-11	3.40E-02	3.50E-11	2.99E-02
3	15.0	1.00E-11	1.87E-02	1.12E-11	2.10E-02	1.18E-11	2.23E-02	1.10E-11	2.11E-02	9.57E-12	1.84E-02
4	20.0	3.74E-12	1.24E-02	3.94E-12	1.32E-02	4.00E-12	1.35E-02	3.68E-12	1.25E-02	3.20E-12	1.10E-02
5	25.0	1.73E-12	8.98E-03	1.73E-12	9.01E-03	1.68E-12	8.81E-03	1.51E-12	8.02E-03	1.35E-12	7.19E-03
6	30.0	9.76E-13	7.27E-03	9.26E-13	6.96E-03	8.62E-13	6.52E-03	7.66E-13	5.86E-03	7.05E-13	5.42E-03
7	35.0	6.40E-13	6.50E-03	5.88E-13	6.01E-03	5.29E-13	5.45E-03	4.68E-13	4.87E-03	4.45E-13	4.66E-03
8	40.0	4.69E-13	6.21E-03	4.22E-13	5.64E-03	3.72E-13	5.01E-03	3.29E-13	4.47E-03	3.21E-13	4.39E-03
9	45.0	3.61E-13	6.06E-03	3.22E-13	5.44E-03	2.81E-13	4.78E-03	2.49E-13	4.27E-03	2.47E-13	4.27E-03
10	50.0	2.87E-13	5.95E-03	2.55E-13	5.32E-03	2.21E-13	4.64E-03	1.96E-13	4.16E-03	1.97E-13	4.20E-03
11	55.0	2.32E-13	5.80E-03	2.05E-13	5.17E-03	1.77E-13	4.50E-03	1.58E-13	4.05E-03	1.59E-13	4.11E-03
12	60.0	1.88E-13	5.61E-03	1.66E-13	4.99E-03	1.43E-13	4.33E-03	1.28E-13	3.90E-03	1.29E-13	3.97E-03
13	65.0	1.53E-13	5.35E-03	1.35E-13	4.75E-03	1.16E-13	4.11E-03	1.04E-13	3.72E-03	1.05E-13	3.80E-03
14	70.0	1.24E-13	5.04E-03	1.09E-13	4.47E-03	9.38E-14	3.86E-03	8.42E-14	3.50E-03	8.55E-14	3.58E-03
15	75.0	1.01E-13	4.69E-03	8.84E-14	4.15E-03	7.59E-14	3.59E-03	6.83E-14	3.26E-03	6.94E-14	3.34E-03
16	80.0	8.13E-14	4.31E-03	7.14E-14	3.82E-03	6.12E-14	3.29E-03	5.52E-14	3.00E-03	5.62E-14	3.07E-03
17	85.0	6.56E-14	3.92E-03	5.75E-14	3.47E-03	4.93E-14	2.99E-03	4.45E-14	2.73E-03	4.53E-14	2.80E-03
18	90.0	5.28E-14	3.54E-03	4.62E-14	3.13E-03	3.96E-14	2.70E-03	3.58E-14	2.46E-03	3.65E-14	2.53E-03
19	95.0	4.23E-14	3.16E-03	3.71E-14	2.79E-03	3.17E-14	2.41E-03	2.87E-14	2.20E-03	2.93E-14	2.26E-03
20	100.0	3.42E-14	2.83E-03	2.99E-14	2.50E-03	2.56E-14	2.15E-03	2.32E-14	1.97E-03	2.37E-14	2.03E-03
21	110.0	2.18E-14	2.18E-03	1.90E-14	1.92E-03	1.62E-14	1.65E-03	1.48E-14	1.52E-03	1.51E-14	1.56E-03
22	120.0	1.37E-14	1.64E-03	1.20E-14	1.44E-03	1.02E-14	1.24E-03	9.33E-15	1.14E-03	9.52E-15	1.17E-03
23	130.0	8.60E-15	1.20E-03	7.50E-15	1.06E-03	6.40E-15	9.10E-04	5.85E-15	8.39E-04	5.97E-15	8.63E-04
24	140.0	5.36E-15	8.70E-04	4.67E-15	7.65E-04	3.99E-15	6.57E-04	3.65E-15	6.07E-04	3.73E-15	6.24E-04
25	150.0	3.33E-15	6.20E-04	2.90E-15	5.45E-04	2.47E-15	4.68E-04	2.26E-15	4.33E-04	2.31E-15	4.45E-04
26	160.0	2.06E-15	4.36E-04	1.79E-15	3.83E-04	1.53E-15	3.29E-04	1.40E-15	3.05E-04	1.43E-15	3.13E-04
27	170.0	1.27E-15	3.04E-04	1.11E-15	2.67E-04	9.43E-16	2.29E-04	8.65E-16	2.12E-04	8.84E-16	2.18E-04
28	180.0	7.83E-16	2.10E-04	6.81E-16	1.84E-04	5.80E-16	1.58E-04	5.33E-16	1.47E-04	5.45E-16	1.51E-04
29	190.0	4.81E-16	1.44E-04	4.19E-16	1.26E-04	3.57E-16	1.08E-04	3.28E-16	1.00E-04	3.35E-16	1.03E-04
30	200.0	2.97E-16	9.83E-05	2.58E-16	8.62E-05	2.20E-16	7.39E-05	2.02E-16	6.86E-05	2.07E-16	7.06E-05
31	220.0	1.12E-16	4.48E-05	9.72E-17	3.93E-05	8.28E-17	3.37E-05	7.62E-17	3.13E-05	7.79E-17	3.22E-05
32	240.0	4.22E-17	2.01E-05	3.66E-17	1.76E-05	3.12E-17	1.51E-05	2.87E-17	1.41E-05	2.94E-17	1.45E-05
33	260.0	1.59E-17	8.92E-06	1.38E-17	7.81E-06	1.18E-17	6.70E-06	1.09E-17	6.23E-06	1.11E-17	6.41E-06
34	280.0	6.03E-18	3.91E-06	5.23E-18	3.43E-06	4.46E-18	2.94E-06	4.11E-18	2.73E-06	4.20E-18	2.81E-06
35	300.0	2.29E-18	1.70E-06	1.99E-18	1.49E-06	1.69E-18	1.28E-06	1.56E-18	1.19E-06	1.59E-18	1.22E-06
36	320.0	8.70E-19	7.37E-07	7.55E-19	6.46E-07	6.44E-19	5.54E-07	5.93E-19	5.15E-07	6.06E-19	5.30E-07
37	340.0	3.34E-19	3.20E-07	2.90E-19	2.80E-07	2.47E-19	2.40E-07	2.27E-19	2.23E-07	2.33E-19	2.30E-07
38	360.0	1.27E-19	1.37E-07	1.11E-19	1.20E-07	9.43E-20	1.03E-07	8.71E-20	9.58E-08	8.88E-20	9.83E-08
39	380.0	4.90E-20	5.86E-08	4.26E-20	5.13E-08	3.63E-20	4.40E-08	3.34E-20	4.10E-08	3.41E-20	4.21E-08
40	400.0	1.89E-20	2.50E-08	1.64E-20	2.19E-08	1.40E-20	1.88E-08	1.29E-20	1.75E-08	1.32E-20	1.80E-08
41	420.0	7.26E-21	1.06E-08	6.31E-21	9.30E-09	5.38E-21	7.97E-09	4.96E-21	7.43E-09	5.06E-21	7.63E-09
42	440.0	2.80E-21	4.49E-09	2.43E-21	3.93E-09	2.07E-21	3.37E-09	1.91E-21	3.13E-09	1.95E-21	3.23E-09
43	460.0	1.07E-21	1.88E-09	9.30E-22	1.64E-09	7.93E-22	1.41E-09	7.11E-22	1.28E-09	7.46E-22	1.35E-09
44	480.0	3.71E-22	7.07E-10	3.22E-22	6.20E 10	2.74E-22	5.32E-10	1.89E-22	3.69E-10	2.58E 22	5.09E-10

Table 3.6 (Continued) (8/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		36		37		38		39		40	
		(8.190 -	6.700)	(6.700 -	5.490)	(5.490 -	4.490)	(4.490 -	3.000)	(3.000 -	3.010)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.72E-10	3.67E-02	1.39E-10	2.89E-02	1.08E-10	2.19E-02	7.59E-11	1.63E-02	4.97E-11	1.14E-02
2	10.0	2.94E-11	2.51E-02	2.39E-11	1.99E-02	1.88E-11	1.53E-02	1.38E-11	1.18E-02	1.01E-11	9.23E-03
3	15.0	8.07E-12	1.55E-02	6.68E-12	1.25E-02	5.36E-12	9.82E-03	4.18E-12	8.08E-03	3.43E-12	7.08E-03
4	20.0	2.75E-12	9.41E-03	2.36E-12	7.88E-03	1.98E-12	6.44E-03	1.67E-12	5.73E-03	1.51E-12	5.54E-03
5	25.0	1.20E-12	6.40E-03	1.08E-12	5.65E-03	9.62E-13	4.89E-03	8.74E-13	4.69E-03	8.42E-13	4.82E-03
6	30.0	6.57E-13	5.05E-03	6.27E-13	4.70E-03	5.86E-13	4.29E-03	5.61E-13	4.33E-03	5.55E-13	4.57E-03
7	35.0	4.32E-13	4.52E-03	4.27E-13	4.36E-03	4.14E-13	4.13E-03	4.07E-13	4.29E-03	4.07E-13	4.56E-03
8	40.0	3.19E-13	4.37E-03	3.22E-13	4.30E-03	3.19E-13	4.16E-03	3.18E-13	4.37E-03	3.18E-13	4.67E-03
9	45.0	2.49E-13	4.31E-03	2.54E-13	4.28E-03	2.54E-13	4.18E-03	2.54E-13	4.42E-03	2.55E-13	4.73E-03
10	50.0	2.00E-13	4.27E-03	2.04E-13	4.25E-03	2.05E-13	4.18E-03	2.06E-13	4.43E-03	2.07E-13	4.74E-03
11	55.0	1.62E-13	4.19E-03	1.66E-13	4.18E-03	1.67E-13	4.12E-03	1.68E-13	4.37E-03	1.69E-13	4.68E-03
12	60.0	1.32E-13	4.06E-03	1.35E-13	4.04E-03	1.36E-13	4.00E-03	1.37E-13	4.24E-03	1.38E-13	4.54E-03
13	65.0	1.08E-13	3.88E-03	1.10E-13	3.86E-03	1.11E-13	3.83E-03	1.12E-13	4.06E-03	1.12E-13	4.35E-03
14	70.0	8.75E-14	3.66E-03	8.91E-14	3.64E-03	9.04E-14	3.61E-03	9.09E-14	3.83E-03	9.15E-14	4.11E-03
15	75.0	7.09E-14	3.41E-03	7.22E-14	3.38E-03	7.33E-14	3.36E-03	7.37E-14	3.56E-03	7.43E-14	3.83E-03
16	80.0	5.74E-14	3.14E-03	5.83E-14	3.11E-03	5.93E-14	3.09E-03	5.96E-14	3.28E-03	6.01E-14	3.52E-03
17	85.0	4.63E-14	2.86E-03	4.70E-14	2.83E-03	4.78E-14	2.82E-03	4.81E-14	2.98E-03	4.85E-14	3.21E-03
18	90.0	3.73E-14	2.58E-03	3.78E-14	2.55E-03	3.85E-14	2.54E-03	3.86E-14	2.69E-03	3.91E-14	2.90E-03
19	95.0	2.99E-14	2.31E-03	3.03E-14	2.28E-03	3.09E-14	2.27E-03	3.10E-14	2.40E-03	3.14E-14	2.59E-03
20	100.0	2.42E-14	2.07E-03	2.45E-14	2.04E-03	2.50E-14	2.03E-03	2.50E-14	2.15E-03	2.54E-14	2.32E-03
21	110.0	1.54E-14	1.59E-03	1.56E-14	1.57E-03	1.59E-14	1.56E-03	1.59E-14	1.65E-03	1.61E-14	1.79E-03
22	120.0	9.72E-15	1.20E-03	9.81E-15	1.18E-03	1.00E-14	1.17E-03	1.00E-14	1.24E-03	1.02E-14	1.34E-03
23	130.0	6.09E-15	8.80E-04	6.15E-15	8.66E-04	6.28E-15	8.64E-04	6.28E-15	9.11E-04	6.38E-15	9.87E-04
24	140.0	3.80E-15	6.36E-04	3.83E-15	6.25E-04	3.91E-15	6.24E-04	3.91E-15	6.58E-04	3.98E-15	7.14E-04
25	150.0	2.36E-15	4.54E-04	2.38E-15	4.46E-04	2.43E-15	4.45E-04	2.43E-15	4.69E-04	2.47E-15	5.09E-04
26	160.0	1.46E-15	3.19E-04	1.47E-15	3.14E-04	1.50E-15	3.13E-04	1.50E-15	3.30E-04	1.53E-15	3.58E-04
27	170.0	9.01E-16	2.23E-04	9.07E-16	2.18E-04	9.27E-16	2.18E-04	9.26E-16	2.30E-04	9.43E-16	2.49E-04
28	180.0	5.55E-16	1.54E-04	5.59E-16	1.51E-04	5.71E-16	1.51E-04	5.70E-16	1.59E-04	5.80E-16	1.72E-04
29	190.0	3.41E-16	1.05E-04	3.44E-16	1.03E-04	3.51E-16	1.03E-04	3.50E-16	1.09E-04	3.57E-16	1.18E-04
30	200.0	2.10E-16	7.20E-05	2.12E-16	7.06E-05	2.17E-16	7.05E-05	2.16E-16	7.42E-05	2.20E-16	8.06E-05
31	220.0	7.93E-17	3.28E-05	7.98E-17	3.22E-05	8.16E-17	3.22E-05	8.14E-17	3.38E-05	8.29E-17	3.68E-05
32	240.0	2.99E-17	1.47E-05	3.01E-17	1.44E-05	3.08E-17	1.44E-05	3.07E-17	1.52E-05	3.13E-17	1.65E-05
33	260.0	1.13E-17	6.53E-06	1.14E-17	6.40E-06	1.16E-17	6.40E-06	1.16E-17	6.72E-06	1.18E-17	7.31E-06
34	280.0	4.27E-18	2.86E-06	4.30E-18	2.81E-06	4.40E-18	2.81E-06	4.38E-18	2.95E-06	4.47E-18	3.21E-06
35	300.0	1.62E-18	1.25E-06	1.63E-18	1.22E-06	1.67E-18	1.22E-06	1.66E-18	1.28E-06	1.69E-18	1.40E-06
36	320.0	6.17E-19	5.40E-07	6.20E-19	5.29E-07	6.34E-19	5.29E-07	6.32E-19	5.56E-07	6.45E-19	6.04E-07
37	340.0	2.37E-19	2.34E-07	2.38E-19	2.29E-07	2.44E-19	2.29E-07	2.43E-19	2.41E-07	2.48E-19	2.62E-07
38	360.0	9.04E-20	1.00E-07	9.09E-20	9.82E-08	9.29E-20	9.81E-08	9.26E-20	1.03E-07	9.44E-20	1.12E-07
39	380.0	3.48E-20	4.29E-08	3.50E-20	4.21E-08	3.57E-20	4.20E-08	3.56E-20	4.42E-08	3.63E-20	4.80E-08
40	400.0	1.34E-20	1.83E-08	1.35E-20	1.80E-08	1.38E-20	1.79E-08	1.37E-20	1.89E-08	1.40E-20	2.05E-08
41	420.0	5.15E-21	7.77E-09	5.18E-21	7.62E-09	5.30E-21	7.61E-09	5.28E-21	8.00E-09	5.38E-21	8.70E-09
42	440.0	1.99E-21	3.29E-09	2.00E-21	3.22E-09	2.04E-21	3.22E-09	2.04E-21	3.38E-09	2.08E-21	3.68E-09
43	460.0	7.60E-22	1.37E-09	7.64E-22	1.35E-09	7.81E-22	1.35E-09	7.79E-22	1.61E-09	7.94E-22	1.54E-09
44	480.0	2.63E-22	5.18E-10	2.65E-22	5.08E-10	2.70E-22	5.07E-10	2.70E-22	5.33E-10	2.75E-22	5.80E-10

Table 3.6 (Continued) (9/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		41		42		43		44		45	
		(3.010 -	2.460)	(2.460 -	2.020)	(2.020 -	1.650)	(1.650 -	1.350)	(1.350 -	1.110)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	3.56E-11	8.69E-03	2.84E-11	7.09E-03	2.25E-11	5.57E-03	1.93E-11	4.71E-03	1.50E-11	3.61E-03
2	10.0	7.97E-12	7.78E-03	6.42E-12	6.41E-03	5.14E-12	5.07E-03	4.09E-12	4.00E-03	3.66E-12	3.53E-03
3	15.0	2.95E-12	6.49E-03	2.46E-12	5.54E-03	2.08E-12	4.62E-03	1.65E-12	3.62E-03	1.65E-12	3.58E-03
4	20.0	1.39E-12	5.42E-03	1.22E-12	4.86E-03	1.10E-12	4.34E-03	8.98E-13	3.51E-03	9.59E-13	3.71E-03
5	25.0	8.04E-13	4.91E-03	7.41E-13	4.63E-03	7.06E-13	4.36E-03	6.02E-13	3.68E-03	6.67E-13	4.00E-03
6	30.0	5.42E-13	4.77E-03	5.18E-13	4.66E-03	5.10E-13	4.54E-03	4.51E-13	3.97E-03	5.00E-13	4.35E-03
7	35.0	4.02E-13	4.81E-03	3.93E-13	4.81E-03	3.94E-13	4.77E-03	3.58E-13	4.28E-03	3.95E-13	4.68E-03
8	40.0	3.16E-13	4.95E-03	3.14E-13	5.01E-03	3.16E-13	4.99E-03	2.93E-13	4.58E-03	3.21E-13	4.97E-03
9	45.0	2.54E-13	5.03E-03	2.54E-13	5.13E-03	2.56E-13	5.12E-03	2.42E-13	4.78E-03	2.62E-13	5.12E-03
10	50.0	2.07E-13	5.05E-03	2.07E-13	5.17E-03	2.08E-13	5.15E-03	2.00E-13	4.88E-03	2.14E-13	5.16E-03
11	55.0	1.69E-13	5.00E-03	1.70E-13	5.13E-03	1.70E-13	5.09E-03	1.66E-13	4.89E-03	1.74E-13	5.09E-03
12	60.0	1.38E-13	4.87E-03	1.39E-13	5.00E-03	1.39E-13	4.94E-03	1.37E-13	4.82E-03	1.42E-13	4.93E-03
13	65.0	1.13E-13	4.67E-03	1.14E-13	4.80E-03	1.13E-13	4.72E-03	1.13E-13	4.66E-03	1.15E-13	4.69E-03
14	70.0	9.22E-14	4.41E-03	9.27E-14	4.54E-03	9.20E-14	4.45E-03	9.28E-14	4.44E-03	9.29E-14	4.40E-03
15	75.0	7.50E-14	4.12E-03	7.53E-14	4.23E-03	7.46E-14	4.14E-03	7.59E-14	4.17E-03	7.48E-14	4.07E-03
16	80.0	6.08E-14	3.80E-03	6.10E-14	3.90E-03	6.03E-14	3.81E-03	6.20E-14	3.87E-03	6.01E-14	3.71E-03
17	85.0	4.92E-14	3.47E-03	4.93E-14	3.56E-03	4.86E-14	3.47E-03	5.04E-14	3.56E-03	4.81E-14	3.36E-03
18	90.0	3.96E-14	3.14E-03	3.97E-14	3.21E-03	3.91E-14	3.13E-03	4.08E-14	3.23E-03	3.84E-14	3.00E-03
19	95.0	3.19E-14	2.81E-03	3.19E-14	2.87E-03	3.14E-14	2.80E-03	3.30E-14	2.91E-03	3.05E-14	2.66E-03
20	100.0	2.58E-14	2.52E-03	2.57E-14	2.56E-03	2.52E-14	2.49E-03	2.67E-14	2.61E-03	2.44E-14	2.35E-03
21	110.0	1.65E-14	1.95E-03	1.63E-14	1.98E-03	1.61E-14	1.92E-03	1.71E-14	2.03E-03	1.53E-14	1.78E-03
22	120.0	1.04E-14	1.47E-03	1.03E-14	1.49E-03	1.01E-14	1.44E-03	1.09E-14	1.54E-03	9.50E-15	1.32E-03
23	130.0	6.55E-15	1.08E-03	6.48E-15	1.09E-03	6.36E-15	1.06E-03	6.89E-15	1.14E-03	5.88E-15	9.60E-04
24	140.0	4.09E-15	7.83E-04	4.04E-15	7.91E-04	3.97E-15	7.69E-04	4.32E-15	8.27E-04	3.63E-15	6.87E-04
25	150.0	2.54E-15	5.59E-04	2.51E-15	5.64E-04	2.47E-15	5.48E-04	2.70E-15	5.92E-04	2.23E-15	4.85E-04
26	160.0	1.58E-15	3.94E-04	1.55E-15	3.97E-04	1.53E-15	3.86E-04	1.67E-15	4.19E-04	1.37E-15	3.38E-04
27	170.0	9.74E-16	2.75E-04	9.59E-16	2.77E-04	9.44E-16	2.69E-04	1.04E-15	2.93E-04	8.39E-16	2.34E-04
28	180.0	6.00E-16	1.90E-04	5.92E-16	1.92E-04	5.84E-16	1.87E-04	6.42E-16	2.03E-04	5.15E-16	1.61E-04
29	190.0	3.69E-16	1.30E-04	3.64E-16	1.31E-04	3.59E-16	1.28E-04	3.96E-16	1.40E-04	3.15E-16	1.10E-04
30	200.0	2.28E-16	8.91E-05	2.24E-16	8.94E-05	2.21E-16	8.72E-05	2.43E-16	9.51E-05	1.93E-16	7.44E-05
31	220.0	8.60E-17	4.07E-05	8.44E-17	4.08E-05	8.33E-17	3.98E-05	9.19E-17	4.35E-05	7.21E-17	3.37E-05
32	240.0	3.25E-17	1.83E-05	3.18E-17	1.83E-05	3.14E-17	1.79E-05	3.47E-17	1.95E-05	2.71E-17	1.51E-05
33	260.0	1.23E-17	8.10E-06	1.20E-17	8.12E-06	1.19E-17	7.93E-06	1.31E-17	8.67E-06	1.02E-17	6.66E-06
34	280.0	4.64E-18	3.55E-06	4.56E-18	3.57E-06	4.51E-18	3.49E-06	4.98E-18	3.82E-06	3.86E-18	2.92E-06
35	300.0	1.76E-18	1.55E-06	1.73E-18	1.56E-06	1.72E-18	1.53E-06	1.90E-18	1.67E-06	1.47E-18	1.28E-06
36	320.0	6.70E-19	6.70E-07	6.60E-19	6.76E-07	6.53E-19	6.61E-07	7.22E-19	7.22E-07	5.58E-19	5.52E-07
37	340.0	2.57E-19	2.91E-07	2.51E-19	2.90E-07	2.49E-19	2.84E-07	2.75E-19	3.10E-07	2.12E-19	2.37E-07
38	360.0	9.82E-20	1.24E-07	9.51E-20	1.23E-07	9.40E-20	1.20E-07	1.04E-19	1.32E-07	8.03E-20	1.01E-07
39	380.0	3.78E-20	5.33E-08	3.27E-20	4.72E-08	3.24E-20	4.62E-08	3.58E-20	5.05E-08	2.76E-20	3.85E-08
40	400.0	1.45E-20	2.27E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	420.0	5.60E-21	9.65E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	440.0	2.16E-21	4.08E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	460.0	8.25E-22	1.71E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	480.0	2.86E-22	6.43E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.6 (Continued) (10/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		46		47		48		49		50	
		(1.110 -	0.907)	(0.907 -	0.743)	(0.743 -	0.498)	(0.498 -	0.334)	(0.334 -	0.224)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	1.24E-11	2.99E-03	4.97E-12	1.31E-03	3.05E-12	9.29E-04	2.74E-12	1.10E-03	2.29E-12	1.32E-03
2	10.0	3.25E-12	3.14E-03	1.79E-12	1.88E-03	1.33E-12	1.62E-03	1.29E-12	2.07E-03	1.25E-12	2.88E-03
3	15.0	1.59E-12	3.46E-03	1.05E-12	2.50E-03	8.76E-13	2.40E-03	8.92E-13	3.22E-03	9.53E-13	4.92E-03
4	20.0	9.89E-13	3.82E-03	7.22E-13	3.04E-03	6.38E-13	3.11E-03	6.70E-13	4.29E-03	7.55E-13	6.94E-03
5	25.0	7.06E-13	4.27E-03	5.44E-13	3.58E-03	4.99E-13	3.80E-03	5.33E-13	5.34E-03	6.16E-13	8.84E-03
6	30.0	5.39E-13	4.69E-03	4.30E-13	4.08E-03	4.05E-13	4.44E-03	4.36E-13	6.29E-03	5.07E-13	1.05E-02
7	35.0	4.25E-13	5.03E-03	3.49E-13	4.50E-03	3.34E-13	4.99E-03	3.61E-13	7.09E-03	4.17E-13	1.17E-02
8	40.0	3.41E-13	5.28E-03	2.88E-13	4.86E-03	2.80E-13	5.46E-03	3.02E-13	7.74E-03	3.44E-13	1.26E-02
9	45.0	2.74E-13	5.36E-03	2.38E-13	5.07E-03	2.34E-13	5.78E-03	2.50E-13	8.13E-03	2.80E-13	1.30E-02
10	50.0	2.20E-13	5.32E-03	1.97E-13	5.18E-03	1.96E-13	5.96E-03	2.07E-13	8.30E-03	2.27E-13	1.30E-02
11	55.0	1.77E-13	5.16E-03	1.63E-13	5.19E-03	1.63E-13	6.02E-03	1.71E-13	8.28E-03	1.82E-13	1.27E-02
12	60.0	1.41E-13	4.92E-03	1.34E-13	5.10E-03	1.36E-13	5.96E-03	1.40E-13	8.08E-03	1.46E-13	1.21E-02
13	65.0	1.13E-13	4.62E-03	1.11E-13	4.93E-03	1.13E-13	5.79E-03	1.14E-13	7.75E-03	1.16E-13	1.13E-02
14	70.0	9.02E-14	4.28E-03	9.11E-14	4.70E-03	9.29E-14	5.55E-03	9.30E-14	7.30E-03	9.21E-14	1.04E-02
15	75.0	7.19E-14	3.91E-03	7.47E-14	4.42E-03	7.64E-14	5.23E-03	7.53E-14	6.79E-03	7.27E-14	9.39E-03
16	80.0	5.71E-14	3.53E-03	6.10E-14	4.11E-03	6.25E-14	4.87E-03	6.07E-14	6.22E-03	5.72E-14	8.41E-03
17	85.0	4.53E-14	3.17E-03	4.97E-14	3.78E-03	5.10E-14	4.49E-03	4.87E-14	5.64E-03	4.49E-14	7.45E-03
18	90.0	3.59E-14	2.81E-03	4.03E-14	3.44E-03	4.14E-14	4.09E-03	3.90E-14	5.06E-03	3.51E-14	6.53E-03
19	95.0	2.84E-14	2.48E-03	3.26E-14	3.10E-03	3.35E-14	3.69E-03	3.11E-14	4.50E-03	2.74E-14	5.68E-03
20	100.0	2.26E-14	2.18E-03	2.65E-14	2.79E-03	2.72E-14	3.31E-03	2.49E-14	3.99E-03	2.15E-14	4.93E-03
21	110.0	1.40E-14	1.64E-03	1.71E-14	2.18E-03	1.75E-14	2.58E-03	1.56E-14	3.03E-03	1.30E-14	3.61E-03
22	120.0	8.69E-15	1.21E-03	1.09E-14	1.66E-03	1.12E-14	1.96E-03	9.72E-15	2.24E-03	7.83E-15	2.59E-03
23	130.0	5.37E-15	8.78E-04	6.92E-15	1.23E-03	7.08E-15	1.46E-03	6.02E-15	1.63E-03	4.71E-15	1.83E-03
24	140.0	3.31E-15	6.27E-04	4.36E-15	9.00E-04	4.45E-15	1.06E-03	3.71E-15	1.16E-03	2.84E-15	1.28E-03
25	150.0	2.04E-15	4.43E-04	2.73E-15	6.46E-04	2.78E-15	7.61E-04	2.28E-15	8.20E-04	1.71E-15	8.82E-04
26	160.0	1.25E-15	3.09E-04	1.70E-15	4.58E-04	1.73E-15	5.39E-04	1.39E-15	5.72E-04	1.03E-15	6.05E-04
27	170.0	7.67E-16	2.14E-04	1.05E-15	3.21E-04	1.07E-15	3.77E-04	8.52E-16	3.95E-04	6.21E-16	4.12E-04
28	180.0	4.72E-16	1.48E-04	6.54E-16	2.23E-04	6.63E-16	2.62E-04	5.22E-16	2.71E-04	3.76E-16	2.80E-04
29	190.0	2.89E-16	1.01E-04	4.03E-16	1.53E-04	4.09E-16	1.80E-04	3.19E-16	1.84E-04	2.28E-16	1.89E-04
30	200.0	1.77E-16	6.84E-05	2.48E-16	1.05E-04	2.51E-16	1.23E-04	1.95E-16	1.25E-04	1.38E-16	1.27E-04
31	220.0	6.64E-17	3.11E-05	9.40E-17	4.79E-05	9.50E-17	5.60E-05	7.27E-17	5.64E-05	5.10E-17	5.67E-05
32	240.0	2.50E-17	1.39E-05	3.56E-17	2.16E-05	3.59E-17	2.52E-05	2.73E-17	2.52E-05	1.90E-17	2.51E-05
33	260.0	9.43E-18	6.16E-06	1.35E-17	9.58E-06	1.36E-17	1.12E-05	1.03E-17	1.11E-05	7.12E-18	1.10E-05
34	280.0	3.57E-18	2.71E-06	5.11E-18	4.22E-06	5.15E-18	4.92E-06	3.88E-18	4.87E-06	2.69E-18	4.83E-06
35	300.0	1.36E-18	1.18E-06	1.95E-18	1.84E-06	1.96E-18	2.15E-06	1.47E-18	2.12E-06	1.02E-18	2.10E-06
36	320.0	5.17E-19	5.12E-07	7.41E-19	7.99E-07	7.47E-19	9.31E-07	5.60E-19	9.19E-07	3.87E-19	9.10E-07
37	340.0	1.97E-19	2.20E-07	2.82E-19	3.43E-07	2.84E-19	4.00E-07	2.13E-19	3.95E-07	1.47E-19	3.91E-07
38	360.0	7.44E-20	9.33E-08	1.07E-19	1.46E-07	1.07E-19	1.70E-07	8.06E-20	1.67E-07	5.56E-20	1.66E-07
39	380.0	2.56E-20	3.58E-08	3.67E-20	5.58E-08	3.70E-20	6.51E-08	2.77E-20	6.41E-08	1.91E-20	6.34E-08
40	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	420.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	440.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	460.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	480.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.6 (Continued) (11/11)

DOSE EQUIVALENT AND ATTENUATION FACTOR / IRON / SECONDARY GAMMA

INCIDENT NEUTRON ENERGY(MEV)

		51		52		53		54		55	
		(0.224 -	0.150)	(0.150 -	0.087)	(0.087 -	0.032)	(0.032 -	0.015)	(0.015 -	0.007)
I	R(CM)	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F	H	ATT.F
1	5.0	2.68E-12	2.20E-03	3.42E-12	4.26E-03	3.97E-12	8.72E-03	4.28E-12	1.94E-02	1.94E-11	1.58E-01
2	10.0	1.57E-12	5.18E-03	2.01E-12	9.99E-03	2.38E-12	2.09E-02	2.79E-12	5.06E-02	1.10E-11	3.58E-01
3	15.0	1.20E-12	8.89E-03	1.51E-12	1.69E-02	1.79E-12	3.54E-02	2.12E-12	8.63E-02	6.70E-12	4.93E-01
4	20.0	9.37E-13	1.23E-02	1.16E-12	2.30E-02	1.34E-12	4.72E-02	1.55E-12	1.13E-01	3.97E-12	5.19E-01
5	25.0	7.49E-13	1.54E-02	8.97E-13	2.79E-02	1.02E-12	5.58E-02	1.13E-12	1.29E-01	2.25E-12	4.59E-01
6	30.0	6.01E-13	1.78E-02	6.97E-13	3.12E-02	7.66E-13	6.05E-02	8.24E-13	1.34E-01	1.23E-12	3.62E-01
7	35.0	4.81E-13	1.94E-02	5.39E-13	3.28E-02	5.73E-13	6.17E-02	5.96E-13	1.32E-01	6.39E-13	2.56E-01
8	40.0	3.85E-13	2.03E-02	4.16E-13	3.32E-02	4.30E-13	6.04E-02	4.33E-13	1.26E-01	3.20E-13	1.67E-01
9	45.0	3.04E-13	2.03E-02	3.18E-13	3.20E-02	3.19E-13	5.67E-02	3.13E-13	1.15E-01	1.55E-13	1.03E-01
10	50.0	2.39E-13	1.97E-02	2.41E-13	3.00E-02	2.36E-13	5.18E-02	2.28E-13	1.03E-01	7.34E-14	6.00E-02
11	55.0	1.87E-13	1.86E-02	1.83E-13	2.75E-02	1.75E-13	4.65E-02	1.66E-13	9.11E-02	3.39E-14	3.35E-02
12	60.0	1.45E-13	1.72E-02	1.38E-13	2.47E-02	1.30E-13	4.10E-02	1.22E-13	7.95E-02	1.54E-14	1.81E-02
13	65.0	1.12E-13	1.56E-02	1.04E-13	2.19E-02	9.66E-14	3.58E-02	8.98E-14	6.88E-02	6.83E-15	9.43E-03
14	70.0	8.69E-14	1.40E-02	7.85E-14	1.92E-02	7.20E-14	3.10E-02	6.65E-14	5.91E-02	3.00E-15	4.80E-03
15	75.0	6.69E-14	1.24E-02	5.93E-14	1.66E-02	5.38E-14	2.66E-02	4.95E-14	5.05E-02	1.30E-15	2.39E-03
16	80.0	5.15E-14	1.08E-02	4.48E-14	1.43E-02	4.04E-14	2.27E-02	3.70E-14	4.30E-02	5.59E-16	1.17E-03
17	85.0	3.96E-14	9.41E-03	3.39E-14	1.22E-02	3.04E-14	1.93E-02	2.78E-14	3.64E-02	2.36E-16	5.58E-04
18	90.0	3.04E-14	8.10E-03	2.57E-14	1.03E-02	2.29E-14	1.63E-02	2.09E-14	3.08E-02	9.86E-17	2.61E-04
19	95.0	2.33E-14	6.92E-03	1.95E-14	8.74E-03	1.73E-14	1.37E-02	1.58E-14	2.59E-02	4.12E-17	1.22E-04
20	100.0	1.80E-14	5.92E-03	1.49E-14	7.40E-03	1.32E-14	1.16E-02	1.21E-14	2.18E-02	1.71E-17	5.57E-05
21	110.0	1.06E-14	4.22E-03	8.63E-15	5.20E-03	7.63E-15	8.11E-03	6.97E-15	1.53E-02	2.87E-18	1.13E-05
22	120.0	6.25E-15	2.96E-03	5.04E-15	3.61E-03	4.45E-15	5.63E-03	4.06E-15	1.06E-02	4.71E-19	2.22E-06
23	130.0	3.70E-15	2.06E-03	2.97E-15	2.49E-03	2.62E-15	3.88E-03	2.39E-15	7.31E-03	7.76E-20	4.28E-07
24	140.0	2.20E-15	1.42E-03	1.75E-15	1.71E-03	1.55E-15	2.66E-03	1.41E-15	5.01E-03	1.26E-20	8.07E-08
25	150.0	1.31E-15	9.70E-04	1.04E-15	1.17E-03	9.19E-16	1.82E-03	8.38E-16	3.42E-03	1.99E-21	1.46E-08
26	160.0	7.83E-16	6.60E-04	6.22E-16	7.92E-04	5.49E-16	1.23E-03	5.00E-16	2.32E-03	3.20E-22	2.68E-09
27	170.0	4.70E-16	4.47E-04	3.73E-16	5.36E-04	3.29E-16	8.34E-04	3.00E-16	1.57E-03	5.09E-23	4.80E-10
28	180.0	2.84E-16	3.03E-04	7.25E-16	3.63E-04	1.98E-16	5.64E-04	1.81E-16	1.06E-03	7.97E-24	8.44E-11
29	190.0	1.71E-16	2.03E-04	1.36E-16	2.44E-04	1.20E-16	3.79E-04	1.09E-16	7.14E-04	1.28E-24	1.51E-11
30	200.0	1.04E-16	1.36E-04	8.20E-17	1.63E-04	7.23E-17	2.54E-04	6.60E-17	4.78E-04	2.02E-25	2.64E-12
31	220.0	3.82E-17	6.09E-05	3.02E-17	7.28E-05	2.67E-17	1.13E-04	2.43E-17	2.13E-04	5.09E-27	8.04E-14
32	240.0	1.42E-17	2.69E-05	1.12E-17	3.22E-05	9.91E-18	5.01E-05	9.04E-18	9.44E-05	1.26E-28	2.37E-15
33	260.0	5.32E-18	1.18E-05	4.21E-18	1.42E-05	3.71E-18	2.20E-05	3.39E-18	4.15E-05	3.13E-30	6.90E-17
34	280.0	2.01E-18	5.18E-06	1.59E-18	6.20E-06	1.40E-18	9.64E-06	1.78E-18	1.82E-05	7.81E-32	2.00E-18
35	300.0	7.61E-19	2.25E-06	6.02E-19	2.70E-06	5.31E-19	4.20E-06	4.84E-19	7.90E-06	0.00E+00	0.00E+00
36	320.0	2.89E-19	9.74E-07	2.29E-19	1.17E-06	2.02E-19	1.81E-06	1.84E-19	3.42E-06	0.00E+00	0.00E+00
37	340.0	1.10E-19	4.18E-07	8.70E-20	5.00E-07	7.67E-20	7.79E-07	6.99E-20	1.47E-06	0.00E+00	0.00E+00
38	360.0	4.15E-20	1.77E-07	3.29E-20	2.12E-07	2.90E-20	3.30E-07	2.64E-20	6.21E-07	0.00E+00	0.00E+00
39	380.0	1.43E-20	6.79E-08	1.13E-20	8.13E-08	9.97E-21	1.26E-07	9.10E-21	2.38E-07	0.00E+00	0.00E+00
40	400.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
41	420.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42	440.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
43	460.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
44	480.0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 3.7 Fitting parameter to dose equivalent of neutrons in water

Hn / Total neutron / Dose Equivalent in Water

Group	Up. Bound. Energy(MeV)	a_{1j}	a_{2j}	a_{3j}	a_{4j}	a_{5j}	r_{cj}	b_j
E(1)=	4.00E+02	-1.249E+01	-2.793E-03	-8.683E-06	5.410E-09	-1.368E-12	9.50E+02	-1.144E-02
E(2)=	3.75E+02	-1.251E+01	-2.936E-03	-8.703E-06	5.464E-09	-1.390E-12	9.50E+02	-1.156E-02
E(3)=	3.50E+02	-1.253E+01	-3.145E-03	-8.742E-06	5.563E-09	-1.431E-12	9.50E+02	-1.172E-02
E(4)=	3.25E+02	-1.255E+01	-3.380E-03	-8.778E-06	5.645E-09	-1.464E-12	9.50E+02	-1.192E-02
E(5)=	3.00E+02	-1.257E+01	-3.713E-03	-8.733E-06	5.689E-09	-1.491E-12	9.50E+02	-1.214E-02
E(6)=	2.75E+02	-1.260E+01	-4.091E-03	-8.708E-06	5.769E-09	-1.531E-12	9.50E+02	-1.240E-02
E(7)=	2.50E+02	-1.263E+01	-4.392E-03	-8.821E-06	5.941E-09	-1.594E-12	9.50E+02	-1.267E-02
E(8)=	2.25E+02	-1.267E+01	-4.715E-03	-8.955E-06	6.113E-09	-1.653E-12	9.50E+02	-1.299E-02
E(9)=	2.00E+02	-1.269E+01	-5.149E-03	-9.050E-06	6.224E-09	-1.689E-12	9.50E+02	-1.343E-02
E(10)=	1.80E+02	-1.269E+01	-5.714E-03	-9.087E-06	6.287E-09	-1.712E-12	9.50E+02	-1.397E-02
E(11)=	1.60E+02	-1.270E+01	-6.438E-03	-9.240E-06	6.445E-09	-1.758E-12	9.50E+02	-1.472E-02
E(12)=	1.40E+02	-1.270E+01	-7.504E-03	-9.283E-06	6.509E-09	-1.784E-12	9.50E+02	-1.579E-02
E(13)=	1.20E+02	-1.270E+01	-8.489E-03	-9.486E-06	6.594E-09	-1.813E-12	9.50E+02	-1.705E-02
E(14)=	1.10E+02	-1.270E+01	-9.259E-03	-9.648E-06	6.675E-09	-1.828E-12	9.50E+02	-1.796E-02
E(15)=	1.00E+02	-1.271E+01	-1.008E-02	-1.013E-05	7.027E-09	-1.925E-12	9.50E+02	-1.908E-02
E(16)=	9.00E+01	-1.271E+01	-1.103E-02	-1.094E-05	7.658E-09	-2.105E-12	9.50E+02	-2.051E-02
E(17)=	8.00E+01	-1.271E+01	-1.223E-02	-1.215E-05	8.627E-09	-2.387E-12	9.50E+02	-2.235E-02
E(18)=	7.00E+01	-1.270E+01	-1.339E-02	-1.364E-05	9.508E-09	-2.615E-12	9.50E+02	-2.478E-02
E(19)=	6.50E+01	-1.237E+01	-1.622E-02	-1.103E-05	7.036E-09	-1.840E-12	9.50E+02	-2.669E-02
E(20)=	6.00E+01	-1.269E+01	-1.543E-02	-1.625E-05	1.161E-08	-3.228E-12	9.50E+02	-2.824E-02
E(21)=	5.50E+01	-1.269E+01	-1.676E-02	-1.794E-05	1.309E-08	-3.686E-12	9.50E+02	-3.036E-02
E(22)=	5.00E+01	-1.251E+01	-1.974E-02	-1.654E-05	1.144E-08	-3.087E-12	9.50E+02	-3.304E-02
E(23)=	4.50E+01	-1.248E+01	-2.196E-02	-1.810E-05	1.305E-08	-3.614E-12	9.50E+02	-3.572E-02
E(24)=	4.00E+01	-1.244E+01	-2.510E-02	-1.983E-05	1.502E-08	-4.309E-12	9.50E+02	-3.934E-02
E(25)=	3.50E+01	-1.236E+01	-2.961E-02	-2.194E-05	1.716E-08	-5.068E-12	9.50E+02	-4.473E-02
E(26)=	3.00E+01	-1.228E+01	-3.412E-02	-2.657E-05	2.051E-08	-6.059E-12	9.50E+02	-5.255E-02
E(27)=	2.75E+01	-1.219E+01	-3.863E-02	-2.685E-05	2.037E-08	-5.917E-12	9.50E+02	-5.765E-02
E(28)=	2.50E+01	-1.209E+01	-4.423E-02	-2.708E-05	2.044E-08	-5.967E-12	9.50E+02	-6.384E-02
E(29)=	2.25E+01	-1.197E+01	-5.161E-02	-2.716E-05	2.117E-08	-6.527E-12	9.50E+02	-7.156E-02
E(30)=	2.00E+01	-1.214E+01	-5.753E-02	-4.637E-05	4.123E-08	-1.325E-11	9.50E+02	-8.280E-02
E(31)=	1.75E+01	-1.208E+01	-6.193E-02	-4.826E-05	4.126E-08	-1.222E-11	9.50E+02	-8.657E-02
E(32)=	1.49E+01	-1.207E+01	-6.598E-02	-5.175E-05	4.113E-08	-1.025E-11	9.50E+02	-8.927E-02
E(33)=	1.35E+01	-1.207E+01	-6.936E-02	-5.369E-05	4.193E-08	-9.471E-12	9.50E+02	-9.034E-02
E(34)=	1.22E+01	-1.205E+01	-7.492E-02	-5.100E-05	3.763E-08	-6.745E-12	9.50E+02	-9.136E-02
E(35)=	1.00E+01	-1.199E+01	-8.328E-02	-4.134E-05	2.729E-08	-1.428E-12	9.50E+02	-8.886E-02
E(36)=	8.19E+00	-1.169E+01	-9.808E-02	-1.818E-05	1.336E-08	5.434E-13	9.50E+02	-9.176E-02
E(37)=	6.70E+00	-1.135E+01	-1.159E-01	1.462E-05	-1.131E-08	7.064E-12	9.50E+02	-9.180E-02
E(38)=	5.49E+00	-1.085E+01	-1.510E-01	1.002E-04	-9.104E-08	3.231E-11	9.50E+02	-9.167E-02
E(39)=	4.49E+00	-1.287E+01	-6.334E-02	-1.664E-03	1.222E-05	-3.369E-08	6.00E+01	-1.896E-01
E(40)=	3.68E+00	-1.283E+01	-8.086E-02	-1.698E-03	1.279E-05	-3.578E-08	6.00E+01	-2.061E-01
E(41)=	3.01E+00	-1.289E+01	-8.898E-02	-1.720E-03	1.349E-05	-3.851E-08	6.00E+01	-2.104E-01
E(42)=	2.46E+00	-1.285E+01	-1.064E-01	-1.831E-03	1.494E-05	-4.324E-08	6.00E+01	-2.281E-01
E(43)=	2.02E+00	-1.277E+01	-1.278E-01	-2.243E-03	1.776E-05	-5.083E-08	6.00E+01	-2.757E-01
E(44)=	1.65E+00	-1.276E+01	-1.435E-01	-2.578E-03	2.058E-05	-5.864E-08	6.00E+01	-3.066E-01
E(45)=	1.35E+00	-1.308E+01	-1.146E-01	-4.881E-03	5.137E-05	-2.061E-07	3.00E+01	-3.589E-01
E(46)=	1.11E+00	-1.316E+01	-1.305E-01	-5.083E-03	5.280E-05	-2.112E-07	3.00E+01	-3.845E-01
E(47)=	9.07E-01	-1.334E+01	-1.209E-01	-5.558E-03	5.940E-05	-2.413E-07	3.00E+01	-3.882E-01
E(48)=	7.43E-01	-1.355E+01	-1.194E-01	-6.197E-03	6.946E-05	-2.892E-07	3.00E+01	-4.008E-01
E(49)=	4.98E-01	-1.388E+01	-1.161E-01	-6.958E-03	8.328E-05	-3.609E-07	3.00E+01	-4.101E-01
E(50)=	3.34E-01	-1.412E+01	-1.039E-01	-7.516E-03	9.182E-05	-4.025E-07	3.00E+01	-4.116E-01
E(51)=	2.24E-01	-1.422E+01	-1.069E-01	-7.486E-03	9.117E-05	-3.930E-07	3.00E+01	-4.128E-01
E(52)=	1.50E-01	-1.427E+01	-1.114E-01	-7.504E-03	9.349E-05	-4.109E-07	3.00E+01	-4.129E-01
E(53)=	8.65E-02	-1.421E+01	-1.305E-01	-6.880E-03	8.544E-05	-3.710E-07	3.00E+01	-4.110E-01
E(54)=	3.18E-02	-1.416E+01	-1.473E-01	-6.303E-03	7.723E-05	-3.268E-07	3.00E+01	-4.105E-01
E(55)=	1.50E-02	-1.412E+01	-1.571E-01	-5.984E-03	7.310E-05	-3.079E-07	3.00E+01	-4.104E-01

Table 3.8 Fitting parameter to dose equivalent of secondary gamma rays in water

Hγ / Secondary Gamma Ray/ Dose Equivalent in Water

Group	Up. Bound. Energy(MeV)	a_{1j}	a_{2j}	a_{3j}	a_{4j}	a_{5j}	r_{cj}	b_j
E(1)=	4.00E+02	-1.843E+01	1.004E-02	-4.313E-05	4.042E-08	-1.325E-11	9.50E+02	-1.135E-02
E(2)=	3.75E+02	-1.843E+01	9.871E-03	-4.306E-05	4.032E-08	-1.320E-11	9.50E+02	-1.152E-02
E(3)=	3.50E+02	-1.843E+01	9.658E-03	-4.320E-05	4.060E-08	-1.333E-11	9.50E+02	-1.164E-02
E(4)=	3.25E+02	-1.843E+01	9.370E-03	-4.312E-05	4.053E-08	-1.329E-11	9.50E+02	-1.191E-02
E(5)=	3.00E+02	-1.841E+01	8.941E-03	-4.292E-05	4.048E-08	-1.330E-11	9.50E+02	-1.207E-02
E(6)=	2.75E+02	-1.839E+01	8.453E-03	-4.272E-05	4.043E-08	-1.331E-11	9.50E+02	-1.236E-02
E(7)=	2.50E+02	-1.838E+01	8.096E-03	-4.275E-05	4.055E-08	-1.336E-11	9.50E+02	-1.262E-02
E(8)=	2.25E+02	-1.837E+01	7.691E-03	-4.278E-05	4.065E-08	-1.339E-11	9.50E+02	-1.296E-02
E(9)=	2.00E+02	-1.834E+01	7.154E-03	-4.260E-05	4.044E-08	-1.331E-11	9.50E+02	-1.342E-02
E(10)=	1.80E+02	-1.831E+01	6.595E-03	-4.276E-05	4.072E-08	-1.343E-11	9.50E+02	-1.395E-02
E(11)=	1.60E+02	-1.826E+01	5.880E-03	-4.302E-05	4.101E-08	-1.351E-11	9.50E+02	-1.467E-02
E(12)=	1.40E+02	-1.819E+01	4.807E-03	-4.321E-05	4.132E-08	-1.365E-11	9.50E+02	-1.581E-02
E(13)=	1.20E+02	-1.812E+01	3.829E-03	-4.345E-05	4.142E-08	-1.368E-11	9.50E+02	-1.699E-02
E(14)=	1.10E+02	-1.808E+01	3.063E-03	-4.361E-05	4.147E-08	-1.366E-11	9.50E+02	-1.789E-02
E(15)=	1.00E+02	-1.804E+01	2.373E-03	-4.442E-05	4.218E-08	-1.390E-11	9.50E+02	-1.898E-02
E(16)=	9.00E+01	-1.800E+01	1.636E-03	-4.570E-05	4.319E-08	-1.418E-11	9.50E+02	-2.047E-02
E(17)=	8.00E+01	-1.795E+01	7.684E-04	-4.764E-05	4.487E-08	-1.470E-11	9.50E+02	-2.226E-02
E(18)=	7.00E+01	-1.790E+01	-1.866E-04	-4.927E-05	4.578E-08	-1.490E-11	9.50E+02	-2.459E-02
E(19)=	6.50E+01	-1.777E+01	-7.888E-04	-5.176E-05	4.811E-08	-1.563E-11	9.50E+02	-2.623E-02
E(20)=	6.00E+01	-1.782E+01	-1.717E-03	-5.225E-05	4.793E-08	-1.522E-11	9.50E+02	-2.701E-02
E(21)=	5.50E+01	-1.778E+01	-2.393E-03	-5.542E-05	5.139E-08	-1.601E-11	9.50E+02	-2.667E-02
E(22)=	5.00E+01	-1.772E+01	-2.997E-03	-6.090E-05	5.968E-08	-1.906E-11	9.50E+02	-2.582E-02
E(23)=	4.50E+01	-1.764E+01	-4.699E-03	-6.251E-05	6.507E-08	-2.159E-11	9.50E+02	-2.509E-02
E(24)=	4.00E+01	-1.748E+01	-8.390E-03	-5.671E-05	6.240E-08	-2.140E-11	9.50E+02	-2.476E-02
E(25)=	3.50E+01	-1.729E+01	-1.320E-02	-4.554E-05	5.303E-08	-1.873E-11	9.50E+02	-2.460E-02
E(26)=	3.00E+01	-1.716E+01	-1.701E-02	-3.526E-05	4.319E-08	-1.559E-11	9.50E+02	-2.452E-02
E(27)=	2.75E+01	-1.708E+01	-1.930E-02	-2.857E-05	3.638E-08	-1.330E-11	9.50E+02	-2.448E-02
E(28)=	2.50E+01	-1.700E+01	-2.157E-02	-2.184E-05	2.943E-08	-1.095E-11	9.50E+02	-2.445E-02
E(29)=	2.25E+01	-1.689E+01	-2.406E-02	-1.427E-05	2.145E-08	-8.187E-12	9.50E+02	-2.438E-02
E(30)=	2.00E+01	-1.680E+01	-2.649E-02	-6.598E-06	1.326E-08	-5.228E-12	9.50E+02	-2.382E-02
E(31)=	1.75E+01	-1.683E+01	-2.651E-02	-4.752E-06	1.102E-08	-4.494E-12	9.50E+02	-2.382E-02
E(32)=	1.49E+01	-1.669E+01	-2.574E-02	-2.625E-06	7.857E-09	-3.361E-12	9.50E+02	-2.352E-02
E(33)=	1.35E+01	-1.645E+01	-2.474E-02	-2.343E-06	5.919E-09	-2.464E-12	9.50E+02	-2.397E-02
E(34)=	1.22E+01	-1.657E+01	-2.634E-02	-7.121E-07	3.143E-09	-1.389E-12	9.50E+02	-2.626E-02
E(35)=	1.00E+01	-1.658E+01	-2.813E-02	2.412E-06	4.683E-11	-6.009E-13	9.50E+02	-2.794E-02
E(36)=	8.19E+00	-1.662E+01	-3.112E-02	6.222E-06	-2.063E-09	-2.566E-13	9.50E+02	-2.837E-02
E(37)=	6.70E+00	-1.661E+01	-3.280E-02	-2.266E-05	4.051E-08	-1.681E-11	9.50E+02	-2.887E-02
E(38)=	5.49E+00	-1.688E+01	-2.574E-02	-5.187E-05	5.710E-08	-1.783E-11	9.50E+02	-3.271E-02
E(39)=	4.49E+00	-1.860E+01	1.099E-01	-3.137E-03	2.742E-05	-8.345E-08	6.00E+01	-6.361E-02
E(40)=	3.68E+00	-1.841E+01	9.700E-02	-2.874E-03	2.526E-05	-7.728E-08	6.00E+01	-6.344E-02
E(41)=	3.01E+00	-1.831E+01	8.985E-02	-2.722E-03	2.397E-05	-7.351E-08	6.00E+01	-6.335E-02
E(42)=	2.46E+00	-1.817E+01	7.884E-02	-2.485E-03	2.196E-05	-6.757E-08	6.00E+01	-6.321E-02
E(43)=	2.02E+00	-1.800E+01	6.606E-02	-2.203E-03	1.951E-05	-6.028E-08	6.00E+01	-6.307E-02
E(44)=	1.65E+00	-1.789E+01	5.716E-02	-2.000E-03	1.771E-05	-5.483E-08	6.00E+01	-6.299E-02
E(45)=	1.35E+00	-1.829E+01	1.333E-01	-5.545E-03	7.513E-05	-3.539E-07	3.00E+01	-9.177E-02
E(46)=	1.11E+00	-1.815E+01	1.177E-01	-5.029E-03	6.838E-05	-3.233E-07	3.00E+01	-9.183E-02
E(47)=	9.07E-01	-1.811E+01	1.134E-01	-4.888E-03	6.651E-05	-3.148E-07	3.00E+01	-9.183E-02
E(48)=	7.43E-01	-1.799E+01	9.951E-02	-4.416E-03	6.021E-05	-2.858E-07	3.00E+01	-9.175E-02
E(49)=	4.98E-01	-1.781E+01	7.944E-02	-3.723E-03	5.083E-05	-2.423E-07	3.00E+01	-9.151E-02
E(50)=	3.34E-01	-1.774E+01	7.038E-02	-3.405E-03	4.648E-05	-2.220E-07	3.00E+01	-9.135E-02
E(51)=	2.24E-01	-1.766E+01	6.108E-02	-3.075E-03	4.195E-05	-2.007E-07	3.00E+01	-9.116E-02
E(52)=	1.50E-01	-1.759E+01	5.285E-02	-2.782E-03	3.789E-05	-1.815E-07	3.00E+01	-9.098E-02
E(53)=	8.65E-02	-1.752E+01	4.423E-02	-2.472E-03	3.358E-05	-1.612E-07	3.00E+01	-9.079E-02
E(54)=	3.18E-02	-1.746E+01	3.694E-02	-2.209E-03	2.991E-05	-1.438E-07	3.00E+01	-9.063E-02
E(55)=	1.50E-02	-1.743E+01	3.250E-02	-2.048E-03	2.765E-05	-1.330E-07	3.00E+01	-9.053E-02

Table 3.9 Fitting parameter to dose equivalent of neutrons in ordinary concrete

Hn / Total Neutron / Dose Equivalent in Concrete

Group	Up. Bound. Energy(MeV)	a_{1j}	a_{2j}	a_{3j}	a_{4j}	a_{5j}	r_{cj}	b_j
E(1)=	4.00E+02	-1.227E+01	1.322E-03	-6.400E-05	9.570E-08	-5.312E-11	7.00E+02	-2.208E-02
E(2)=	3.75E+02	-1.229E+01	1.104E-03	-6.444E-05	9.690E-08	-5.389E-11	7.00E+02	-2.223E-02
E(3)=	3.50E+02	-1.222E+01	-7.706E-04	-5.716E-05	8.413E-08	-4.626E-11	7.00E+02	-2.242E-02
E(4)=	3.25E+02	-1.224E+01	-1.224E-03	-5.693E-05	8.420E-08	-4.641E-11	7.00E+02	-2.264E-02
E(5)=	3.00E+02	-1.234E+01	-3.756E-04	-6.344E-05	9.697E-08	-5.447E-11	7.00E+02	-2.289E-02
E(6)=	2.75E+02	-1.237E+01	-8.812E-04	-6.361E-05	9.769E-08	-5.514E-11	7.00E+02	-2.313E-02
E(7)=	2.50E+02	-1.239E+01	-1.405E-03	-6.376E-05	9.881E-08	-5.588E-11	7.00E+02	-2.354E-02
E(8)=	2.25E+02	-1.241E+01	-2.061E-03	-6.359E-05	9.906E-08	-5.618E-11	7.00E+02	-2.398E-02
E(9)=	2.00E+02	-1.243E+01	-2.850E-03	-6.350E-05	9.933E-08	-5.644E-11	7.00E+02	-2.451E-02
E(10)=	1.80E+02	-1.243E+01	-3.732E-03	-6.347E-05	9.968E-08	-5.674E-11	7.00E+02	-2.532E-02
E(11)=	1.60E+02	-1.243E+01	-4.831E-03	-6.369E-05	1.005E-07	-5.730E-11	7.00E+02	-2.630E-02
E(12)=	1.40E+02	-1.242E+01	-6.415E-03	-6.350E-05	1.006E-07	-5.756E-11	7.00E+02	-2.770E-02
E(13)=	1.20E+02	-1.242E+01	-7.880E-03	-6.380E-05	1.010E-07	-5.786E-11	7.00E+02	-2.942E-02
E(14)=	1.10E+02	-1.241E+01	-8.967E-03	-6.432E-05	1.017E-07	-5.827E-11	7.00E+02	-3.070E-02
E(15)=	1.00E+02	-1.234E+01	-1.133E-02	-5.967E-05	9.224E-08	-5.212E-11	7.00E+02	-3.236E-02
E(16)=	9.00E+01	-1.240E+01	-1.140E-02	-6.815E-05	1.069E-07	-6.091E-11	7.00E+02	-3.433E-02
E(17)=	8.00E+01	-1.240E+01	-1.292E-02	-7.156E-05	1.116E-07	-6.336E-11	7.00E+02	-3.715E-02
E(18)=	7.00E+01	-1.232E+01	-1.543E-02	-7.006E-05	1.056E-07	-5.886E-11	7.00E+02	-4.045E-02
E(19)=	6.50E+01	-1.232E+01	-1.640E-02	-7.384E-05	1.109E-07	-6.159E-11	7.00E+02	-4.263E-02
E(20)=	6.00E+01	-1.232E+01	-1.751E-02	-7.853E-05	1.178E-07	-6.520E-11	7.00E+02	-4.509E-02
E(21)=	5.50E+01	-1.238E+01	-1.767E-02	-8.974E-05	1.371E-07	-7.689E-11	7.00E+02	-4.809E-02
E(22)=	5.00E+01	-1.238E+01	-1.919E-02	-9.601E-05	1.473E-07	-8.274E-11	7.00E+02	-5.110E-02
E(23)=	4.50E+01	-1.237E+01	-2.102E-02	-1.027E-04	1.592E-07	-8.964E-11	7.00E+02	-5.436E-02
E(24)=	4.00E+01	-1.235E+01	-2.346E-02	-1.103E-04	1.727E-07	-9.761E-11	7.00E+02	-5.808E-02
E(25)=	3.50E+01	-1.231E+01	-2.655E-02	-1.206E-04	1.917E-07	-1.093E-10	7.00E+02	-6.344E-02
E(26)=	3.00E+01	-1.213E+01	-3.192E-02	-1.200E-04	1.826E-07	-1.010E-10	7.00E+02	-7.066E-02
E(27)=	2.75E+01	-1.211E+01	-3.421E-02	-1.281E-04	1.960E-07	-1.086E-10	7.00E+02	-7.467E-02
E(28)=	2.50E+01	-1.208E+01	-3.692E-02	-1.359E-04	2.091E-07	-1.159E-10	7.00E+02	-7.935E-02
E(29)=	2.25E+01	-1.221E+01	-3.808E-02	-1.547E-04	2.451E-07	-1.392E-10	7.00E+02	-8.386E-02
E(30)=	2.00E+01	-1.197E+01	-5.009E-02	-1.215E-04	1.872E-07	-1.047E-10	7.00E+02	-8.907E-02
E(31)=	1.75E+01	-1.221E+01	-4.670E-02	-1.367E-04	2.061E-07	-1.058E-10	7.00E+02	-8.707E-02
E(32)=	1.49E+01	-1.217E+01	-4.745E-02	-1.398E-04	2.220E-07	-1.257E-10	7.00E+02	-8.941E-02
E(33)=	1.35E+01	-1.217E+01	-4.843E-02	-1.379E-04	2.198E-07	-1.247E-10	7.00E+02	-8.975E-02
E(34)=	1.22E+01	-1.207E+01	-5.177E-02	-1.221E-04	1.915E-07	-1.077E-10	7.00E+02	-8.931E-02
E(35)=	1.00E+01	-1.211E+01	-5.021E-02	-1.255E-04	1.940E-07	-1.080E-10	7.00E+02	-8.878E-02
E(36)=	8.19E+00	-1.205E+01	-4.748E-02	-1.418E-04	2.234E-07	-1.252E-10	7.00E+02	-9.028E-02
E(37)=	6.70E+00	-1.191E+01	-4.755E-02	-1.513E-04	2.467E-07	-1.408E-10	7.00E+02	-8.908E-02
E(38)=	5.49E+00	-1.175E+01	-5.608E-02	-1.718E-04	2.766E-07	-1.552E-10	7.00E+02	-1.040E-01
E(39)=	4.49E+00	-1.159E+01	-6.759E-02	-1.638E-04	2.929E-07	-1.733E-10	7.00E+02	-1.018E-01
E(40)=	3.68E+00	-1.160E+01	-7.259E-02	-1.497E-04	2.882E-07	-1.807E-10	7.00E+02	-1.031E-01
E(41)=	3.01E+00	-1.172E+01	-7.099E-02	-1.620E-04	3.133E-07	-1.985E-10	7.00E+02	-1.082E-01
E(42)=	2.46E+00	-1.164E+01	-8.036E-02	-1.161E-04	2.307E-07	-1.495E-10	7.00E+02	-1.069E-01
E(43)=	2.02E+00	-1.177E+01	-9.143E-02	-1.076E-04	1.997E-07	-1.030E-10	5.00E+02	-1.049E-01
E(44)=	1.65E+00	-1.193E+01	-9.438E-02	-9.904E-05	2.130E-07	-1.246E-10	5.00E+02	-1.035E-01
E(45)=	1.35E+00	-1.211E+01	-9.845E-02	-7.258E-05	1.763E-07	-9.707E-11	5.00E+02	-9.311E-02
E(46)=	1.11E+00	-1.251E+01	-9.595E-02	-6.186E-05	6.109E-08	6.540E-11	3.00E+02	-1.170E-01
E(47)=	9.07E-01	-1.264E+01	-9.237E-02	-9.360E-05	1.655E-07	-4.527E-11	3.00E+02	-1.171E-01
E(48)=	7.43E-01	-1.291E+01	-8.831E-02	-1.296E-04	2.989E-07	-2.146E-10	3.00E+02	-1.171E-01
E(49)=	4.98E-01	-1.353E+01	-7.524E-02	-2.675E-04	9.157E-07	-1.171E-09	2.60E+02	-1.188E-01
E(50)=	3.34E-01	-1.377E+01	-6.914E-02	-3.192E-04	1.031E-06	-1.095E-09	3.00E+02	-1.094E-01
E(51)=	2.24E-01	-1.403E+01	-6.242E-02	-3.857E-04	1.287E-06	-1.427E-09	3.00E+02	-1.088E-01
E(52)=	1.50E-01	-1.448E+01	-4.291E-02	-6.660E-04	2.815E-06	-4.224E-09	2.60E+02	-1.188E-01
E(53)=	8.65E-02	-1.449E+01	-5.103E-02	-5.012E-04	1.734E-06	-1.996E-09	3.00E+02	-1.077E-01
E(54)=	3.18E-02	-1.435E+01	-3.240E-02	-7.919E-04	3.371E-06	-5.007E-09	2.60E+02	-1.138E-01
E(55)=	1.50E-02	-1.432E+01	-3.242E-02	-7.937E-04	3.387E-06	-5.042E-09	2.60E+02	-1.138E-01

Table 3.10 Fitting parameter to dose equivalent of secondary gamma rays in ordinary concrete

Hγ /Secondary Gamma ray/ Dose Equivalent in Concrete

Group	Up. Bound. Energy(MeV)	a_{1j}	a_{2j}	a_{3j}	a_{4j}	a_{5j}	r_{cj}	b_j
E(1)=	4.00E+02	-1.773E+01	2.505E-02	-1.824E-04	3.159E-07	-1.887E-10	7.00E+02	-2.202E-02
E(2)=	3.75E+02	-1.773E+01	2.480E-02	-1.828E-04	3.172E-07	-1.895E-10	7.00E+02	-2.218E-02
E(3)=	3.50E+02	-1.769E+01	2.355E-02	-1.790E-04	3.112E-07	-1.861E-10	7.00E+02	-2.236E-02
E(4)=	3.25E+02	-1.769E+01	2.303E-02	-1.787E-04	3.111E-07	-1.862E-10	7.00E+02	-2.259E-02
E(5)=	3.00E+02	-1.773E+01	2.321E-02	-1.818E-04	3.176E-07	-1.904E-10	7.00E+02	-2.284E-02
E(6)=	2.75E+02	-1.774E+01	2.274E-02	-1.822E-04	3.185E-07	-1.907E-10	7.00E+02	-2.239E-02
E(7)=	2.50E+02	-1.775E+01	2.230E-02	-1.831E-04	3.213E-07	-1.930E-10	7.00E+02	-2.349E-02
E(8)=	2.25E+02	-1.775E+01	2.161E-02	-1.830E-04	3.220E-07	-1.936E-10	7.00E+02	-2.394E-02
E(9)=	2.00E+02	-1.774E+01	2.088E-02	-1.834E-04	3.230E-07	-1.941E-10	7.00E+02	-2.367E-02
E(10)=	1.80E+02	-1.773E+01	2.015E-02	-1.843E-04	3.252E-07	-1.958E-10	7.00E+02	-2.529E-02
E(11)=	1.60E+02	-1.770E+01	1.921E-02	-1.854E-04	3.278E-07	-1.975E-10	7.00E+02	-2.628E-02
E(12)=	1.40E+02	-1.767E+01	1.786E-02	-1.866E-04	3.307E-07	-1.994E-10	7.00E+02	-2.767E-02
E(13)=	1.20E+02	-1.764E+01	1.667E-02	-1.883E-04	3.337E-07	-2.013E-10	7.00E+02	-2.939E-02
E(14)=	1.10E+02	-1.761E+01	1.581E-02	-1.901E-04	3.367E-07	-2.031E-10	7.00E+02	-3.067E-02
E(15)=	1.00E+02	-1.755E+01	1.440E-02	-1.902E-04	3.361E-07	-2.025E-10	7.00E+02	-3.233E-02
E(16)=	9.00E+01	-1.756E+01	1.407E-02	-1.968E-04	3.463E-07	-2.080E-10	7.00E+02	-3.355E-02
E(17)=	8.00E+01	-1.754E+01	1.310E-02	-2.024E-04	3.548E-07	-2.127E-10	7.00E+02	-3.687E-02
E(18)=	7.00E+01	-1.749E+01	1.188E-02	-2.069E-04	3.601E-07	-2.153E-10	7.00E+02	-4.035E-02
E(19)=	6.50E+01	-1.747E+01	1.139E-02	-2.122E-04	3.678E-07	-2.194E-10	7.00E+02	-4.253E-02
E(20)=	6.00E+01	-1.746E+01	1.087E-02	-2.188E-04	3.774E-07	-2.244E-10	7.00E+02	-4.502E-02
E(21)=	5.50E+01	-1.749E+01	1.083E-02	-2.288E-04	3.925E-07	-2.325E-10	7.00E+02	-4.668E-02
E(22)=	5.00E+01	-1.749E+01	1.031E-02	-2.380E-04	4.069E-07	-2.406E-10	7.00E+02	-5.133E-02
E(23)=	4.50E+01	-1.750E+01	9.909E-03	-2.497E-04	4.276E-07	-2.531E-10	7.00E+02	-5.485E-02
E(24)=	4.00E+01	-1.747E+01	8.761E-03	-2.593E-04	4.428E-07	-2.609E-10	7.00E+02	-5.694E-02
E(25)=	3.50E+01	-1.741E+01	7.351E-03	-2.720E-04	4.667E-07	-2.735E-10	7.00E+02	-5.818E-02
E(26)=	3.00E+01	-1.733E+01	5.487E-03	-2.833E-04	4.958E-07	-2.903E-10	7.00E+02	-5.655E-02
E(27)=	2.75E+01	-1.729E+01	3.976E-03	-2.885E-04	5.166E-07	-3.064E-10	7.00E+02	-5.620E-02
E(28)=	2.50E+01	-1.722E+01	1.438E-03	-2.864E-04	5.235E-07	-3.144E-10	7.00E+02	-5.600E-02
E(29)=	2.25E+01	-1.714E+01	-2.166E-03	-2.770E-04	5.151E-07	-3.123E-10	7.00E+02	-5.564E-02
E(30)=	2.00E+01	-1.645E+01	-1.829E-02	-2.028E-04	3.890E-07	-2.392E-10	7.00E+02	-5.474E-02
E(31)=	1.75E+01	-1.648E+01	-1.903E-02	-1.969E-04	3.777E-07	-2.328E-10	7.00E+02	-5.464E-02
E(32)=	1.49E+01	-1.628E+01	-2.250E-02	-1.785E-04	3.441E-07	-2.119E-10	7.00E+02	-5.425E-02
E(33)=	1.35E+01	-1.604E+01	-2.616E-02	-1.583E-04	3.052E-07	-1.879E-10	7.00E+02	-5.460E-02
E(34)=	1.22E+01	-1.616E+01	-2.577E-02	-1.626E-04	3.105E-07	-1.904E-10	7.00E+02	-5.582E-02
E(35)=	1.00E+01	-1.632E+01	-2.282E-02	-1.786E-04	3.388E-07	-2.075E-10	7.00E+02	-5.661E-02
E(36)=	8.19E+00	-1.664E+01	-1.624E-02	-2.134E-04	4.044E-07	-2.480E-10	7.00E+02	-5.674E-02
E(37)=	6.70E+00	-1.691E+01	-1.032E-02	-2.457E-04	4.675E-07	-2.879E-10	7.00E+02	-5.664E-02
E(38)=	5.49E+00	-1.684E+01	-1.397E-02	-2.327E-04	4.510E-07	-2.810E-10	7.00E+02	-5.670E-02
E(39)=	4.49E+00	-1.675E+01	-1.789E-02	-2.149E-04	4.211E-07	-2.643E-10	7.00E+02	-5.675E-02
E(40)=	3.68E+00	-1.670E+01	-1.973E-02	-2.060E-04	4.053E-07	-2.550E-10	7.00E+02	-5.680E-02
E(41)=	3.01E+00	-1.674E+01	-1.923E-02	-2.087E-04	4.106E-07	-2.585E-10	7.00E+02	-5.683E-02
E(42)=	2.46E+00	-1.675E+01	-2.043E-02	-2.028E-04	4.002E-07	-2.524E-10	7.00E+02	-5.683E-02
E(43)=	2.02E+00	-1.723E+01	-1.484E-03	-4.006E-04	1.044E-06	-8.832E-10	5.00E+02	-5.874E-02
E(44)=	1.65E+00	-1.715E+01	-4.614E-03	-3.802E-04	9.952E-07	-8.436E-10	5.00E+02	-5.873E-02
E(45)=	1.35E+00	-1.705E+01	-8.520E-03	-3.543E-04	9.316E-07	-7.918E-10	5.00E+02	-5.873E-02
E(46)=	1.11E+00	-1.783E+01	3.534E-02	-9.509E-04	3.646E-06	-4.645E-09	3.00E+02	-6.210E-02
E(47)=	9.07E-01	-1.783E+01	3.496E-02	-9.474E-04	3.633E-06	-4.630E-09	3.00E+02	-6.210E-02
E(48)=	7.43E-01	-1.775E+01	3.165E-02	-9.167E-04	3.523E-06	-4.496E-09	3.00E+02	-6.209E-02
E(49)=	4.98E-01	-1.804E+01	5.708E-02	-1.415E-03	6.632E-06	-1.045E-08	2.60E+02	-6.370E-02
E(50)=	3.34E-01	-1.756E+01	2.321E-02	-8.358E-04	3.234E-06	-4.139E-09	3.00E+02	-6.206E-02
E(51)=	2.24E-01	-1.750E+01	2.096E-02	-8.152E-04	3.154E-06	-4.040E-09	3.00E+02	-6.205E-02
E(52)=	1.50E-01	-1.788E+01	4.956E-02	-1.329E-03	6.254E-06	-9.878E-09	2.60E+02	-6.367E-02
E(53)=	8.65E-02	-1.739E+01	1.591E-02	-7.660E-04	2.972E-06	-3.812E-09	3.00E+02	-6.204E-02
E(54)=	3.18E-02	-1.771E+01	4.133E-02	-1.234E-03	5.826E-06	-9.220E-09	2.60E+02	-6.364E-02
E(55)=	1.50E-02	-1.765E+01	3.839E-02	-1.200E-03	5.670E-06	-8.977E-09	2.60E+02	-6.364E-02

Table 3.11 Fitting parameter to dose equivalent of neutrons in iron

Hn / Total Neutron / Dose Equivalent in Iron

Group	Up. Bound. Energy(MeV)	a_{1j}	a_{2j}	a_{3j}	a_{4j}	a_{5j}	r_{cj}	b_j
E(1)=	4.00E+02	-1.126E+01	3.641E-02	-6.059E-04	2.006E-06	-2.368E-09	3.00E+02	-4.293E-02
E(2)=	3.75E+02	-1.131E+01	3.646E-02	-6.060E-04	2.006E-06	-2.367E-09	3.00E+02	-4.293E-02
E(3)=	3.50E+02	-1.134E+01	3.633E-02	-6.046E-04	2.001E-06	-2.361E-09	3.00E+02	-4.293E-02
E(4)=	3.25E+02	-1.137E+01	3.587E-02	-6.020E-04	1.994E-06	-2.353E-09	3.00E+02	-4.292E-02
E(5)=	3.00E+02	-1.141E+01	3.515E-02	-5.999E-04	1.990E-06	-2.350E-09	3.00E+02	-4.292E-02
E(6)=	2.75E+02	-1.145E+01	3.446E-02	-5.984E-04	1.989E-06	-2.350E-09	3.00E+02	-4.291E-02
E(7)=	2.50E+02	-1.148E+01	3.371E-02	-5.969E-04	1.989E-06	-2.352E-09	3.00E+02	-4.289E-02
E(8)=	2.25E+02	-1.151E+01	3.286E-02	-5.949E-04	1.989E-06	-2.353E-09	3.00E+02	-4.287E-02
E(9)=	2.00E+02	-1.155E+01	3.188E-02	-5.920E-04	1.985E-06	-2.351E-09	3.00E+02	-4.284E-02
E(10)=	1.80E+02	-1.158E+01	3.079E-02	-5.884E-04	1.979E-06	-2.346E-09	3.00E+02	-4.280E-02
E(11)=	1.60E+02	-1.162E+01	2.966E-02	-5.853E-04	1.977E-06	-2.347E-09	3.00E+02	-4.275E-02
E(12)=	1.40E+02	-1.165E+01	2.820E-02	-5.814E-04	1.976E-06	-2.352E-09	3.00E+02	-4.269E-02
E(13)=	1.20E+02	-1.168E+01	2.684E-02	-5.774E-04	1.975E-06	-2.358E-09	3.00E+02	-4.265E-02
E(14)=	1.10E+02	-1.170E+01	2.578E-02	-5.733E-04	1.970E-06	-2.358E-09	3.00E+02	-4.261E-02
E(15)=	1.00E+02	-1.173E+01	2.461E-02	-5.686E-04	1.964E-06	-2.357E-09	3.00E+02	-4.259E-02
E(16)=	9.00E+01	-1.175E+01	2.309E-02	-5.612E-04	1.950E-06	-2.349E-09	3.00E+02	-4.258E-02
E(17)=	8.00E+01	-1.177E+01	2.123E-02	-5.506E-04	1.926E-06	-2.329E-09	3.00E+02	-4.257E-02
E(18)=	7.00E+01	-1.179E+01	1.966E-02	-5.407E-04	1.900E-06	-2.305E-09	3.00E+02	-4.257E-02
E(19)=	6.50E+01	-1.182E+01	1.849E-02	-5.328E-04	1.878E-06	-2.283E-09	3.00E+02	-4.256E-02
E(20)=	6.00E+01	-1.184E+01	1.719E-02	-5.235E-04	1.851E-06	-2.254E-09	3.00E+02	-4.256E-02
E(21)=	5.50E+01	-1.187E+01	1.577E-02	-5.127E-04	1.817E-06	-2.217E-09	3.00E+02	-4.255E-02
E(22)=	5.00E+01	-1.190E+01	1.434E-02	-5.014E-04	1.781E-06	-2.177E-09	3.00E+02	-4.255E-02
E(23)=	4.50E+01	-1.193E+01	1.286E-02	-4.891E-04	1.740E-06	-2.129E-09	3.00E+02	-4.255E-02
E(24)=	4.00E+01	-1.198E+01	1.138E-02	-4.763E-04	1.696E-06	-2.077E-09	3.00E+02	-4.255E-02
E(25)=	3.50E+01	-1.203E+01	9.564E-03	-4.603E-04	1.641E-06	-2.011E-09	3.00E+02	-4.254E-02
E(26)=	3.00E+01	-1.208E+01	7.726E-03	-4.438E-04	1.583E-06	-1.940E-09	3.00E+02	-4.254E-02
E(27)=	2.75E+01	-1.210E+01	5.855E-03	-4.264E-04	1.520E-06	-1.863E-09	3.00E+02	-4.254E-02
E(28)=	2.50E+01	-1.214E+01	3.967E-03	-4.087E-04	1.456E-06	-1.784E-09	3.00E+02	-4.254E-02
E(29)=	2.25E+01	-1.220E+01	2.814E-03	-3.976E-04	1.415E-06	-1.733E-09	3.00E+02	-4.254E-02
E(30)=	2.00E+01	-1.210E+01	1.667E-03	-3.869E-04	1.376E-06	-1.684E-09	3.00E+02	-4.254E-02
E(31)=	1.75E+01	-1.217E+01	1.147E-03	-3.817E-04	1.356E-06	-1.660E-09	3.00E+02	-4.254E-02
E(32)=	1.49E+01	-1.229E+01	2.005E-04	-3.722E-04	1.321E-06	-1.615E-09	3.00E+02	-4.254E-02
E(33)=	1.35E+01	-1.241E+01	-1.244E-03	-3.579E-04	1.267E-06	-1.546E-09	3.00E+02	-4.246E-02
E(34)=	1.22E+01	-1.246E+01	-1.874E-03	-3.518E-04	1.243E-06	-1.515E-09	3.00E+02	-4.254E-02
E(35)=	1.00E+01	-1.244E+01	-1.783E-03	-3.528E-04	1.247E-06	-1.519E-09	3.00E+02	-4.254E-02
E(36)=	8.19E+00	-1.242E+01	-1.930E-03	-3.514E-04	1.241E-06	-1.513E-09	3.00E+02	-4.254E-02
E(37)=	6.70E+00	-1.239E+01	-2.678E-03	-3.438E-04	1.213E-06	-1.478E-09	3.00E+02	-4.254E-02
E(38)=	5.49E+00	-1.238E+01	-2.369E-03	-3.465E-04	1.222E-06	-1.488E-09	3.00E+02	-4.254E-02
E(39)=	4.49E+00	-1.241E+01	-1.730E-03	-3.530E-04	1.248E-06	-1.522E-09	3.00E+02	-4.254E-02
E(40)=	3.68E+00	-1.238E+01	-1.694E-03	-3.544E-04	1.255E-06	-1.531E-09	3.00E+02	-4.254E-02
E(41)=	3.01E+00	-1.234E+01	-1.565E-03	-3.550E-04	1.254E-06	-1.527E-09	3.00E+02	-4.179E-02
E(42)=	2.46E+00	-1.236E+01	-1.612E-03	-3.553E-04	1.258E-06	-1.536E-09	3.00E+02	-4.179E-02
E(43)=	2.02E+00	-1.240E+01	-1.019E-03	-3.582E-04	1.262E-06	-1.535E-09	3.00E+02	-4.180E-02
E(44)=	1.65E+00	-1.244E+01	4.012E-03	-4.076E-04	1.445E-06	-1.762E-09	3.00E+02	-4.181E-02
E(45)=	1.35E+00	-1.250E+01	-4.191E-03	-3.340E-04	1.198E-06	-1.480E-09	3.00E+02	-4.172E-02
E(46)=	1.11E+00	-1.261E+01	-4.728E-03	-3.184E-04	1.117E-06	-1.359E-09	3.00E+02	-4.176E-02
E(47)=	9.07E-01	-1.246E+01	5.706E-03	-4.218E-04	1.490E-06	-1.812E-09	3.00E+02	-4.182E-02
E(48)=	7.43E-01	-1.260E+01	1.035E-02	-4.699E-04	1.678E-06	-2.058E-09	3.00E+02	-4.181E-02
E(49)=	4.98E-01	-1.266E+01	1.636E-03	-3.973E-04	1.452E-06	-1.816E-09	3.00E+02	-4.167E-02
E(50)=	3.34E-01	-1.315E+01	-2.943E-03	-3.405E-04	1.245E-06	-1.573E-09	3.00E+02	-4.160E-02
E(51)=	2.24E-01	-1.330E+01	-1.434E-02	-2.108E-04	7.375E-07	-9.238E-10	3.00E+02	-4.159E-02
E(52)=	1.50E-01	-1.383E+01	-1.329E-02	-1.841E-04	5.647E-07	-6.503E-10	3.00E+02	-4.160E-02
E(53)=	8.65E-02	-1.440E+01	-2.450E-03	-2.736E-04	8.649E-07	-1.002E-09	3.00E+02	-4.161E-02
E(54)=	3.18E-02	-1.509E+01	1.618E-02	-4.538E-04	1.539E-06	-1.855E-09	3.00E+02	-4.161E-02
E(55)=	1.50E-02	-1.459E+01	-3.481E-03	-1.558E-03	6.191E-06	-8.911E-09	2.60E+02	-1.768E-01

Table 3.12 Fitting parameter to dose equivalent of secondary gamma rays in iron

Hγ /Secondary Gamma Ray/ Dose Equivalent in Iron

Group	Up. Bound. Energy(MeV)	a_{1j}	a_{2j}	a_{3j}	a_{4j}	a_{5j}	r_{cj}	b_j
E(1)=	4.00E+02	-1.677E+01	2.345E-02	-3.415E-04	8.959E-07	-9.284E-10	3.00E+02	-4.174E-02
E(2)=	3.75E+02	-1.684E+01	2.398E-02	-3.462E-04	9.133E-07	-9.501E-10	3.00E+02	-4.173E-02
E(3)=	3.50E+02	-1.688E+01	2.409E-02	-3.471E-04	9.163E-07	-9.537E-10	3.00E+02	-4.173E-02
E(4)=	3.25E+02	-1.691E+01	2.361E-02	-3.431E-04	9.012E-07	-9.342E-10	3.00E+02	-4.175E-02
E(5)=	3.00E+02	-1.695E+01	2.285E-02	-3.372E-04	8.783E-07	-9.043E-10	3.00E+02	-4.183E-02
E(6)=	2.75E+02	-1.700E+01	2.232E-02	-3.335E-04	8.636E-07	-8.842E-10	3.00E+02	-4.191E-02
E(7)=	2.50E+02	-1.704E+01	2.145E-02	-3.266E-04	8.369E-07	-8.490E-10	3.00E+02	-4.199E-02
E(8)=	2.25E+02	-1.706E+01	2.029E-02	-3.171E-04	8.004E-07	-8.014E-10	3.00E+02	-4.207E-02
E(9)=	2.00E+02	-1.711E+01	1.929E-02	-3.090E-04	7.687E-07	-7.594E-10	3.00E+02	-4.215E-02
E(10)=	1.80E+02	-1.716E+01	1.848E-02	-3.027E-04	7.436E-07	-7.254E-10	3.00E+02	-4.223E-02
E(11)=	1.60E+02	-1.721E+01	1.757E-02	-2.956E-04	7.148E-07	-6.865E-10	3.00E+02	-4.230E-02
E(12)=	1.40E+02	-1.727E+01	1.644E-02	-2.868E-04	6.800E-07	-6.394E-10	3.00E+02	-4.237E-02
E(13)=	1.20E+02	-1.731E+01	1.534E-02	-2.780E-04	6.455E-07	-5.929E-10	3.00E+02	-4.241E-02
E(14)=	1.10E+02	-1.735E+01	1.444E-02	-2.704E-04	6.160E-07	-5.538E-10	3.00E+02	-4.243E-02
E(15)=	1.00E+02	-1.739E+01	1.367E-02	-2.641E-04	5.912E-07	-5.202E-10	3.00E+02	-4.246E-02
E(16)=	9.00E+01	-1.744E+01	1.275E-02	-2.564E-04	5.608E-07	-4.791E-10	3.00E+02	-4.247E-02
E(17)=	8.00E+01	-1.748E+01	1.154E-02	-2.459E-04	5.192E-07	-4.234E-10	3.00E+02	-4.249E-02
E(18)=	7.00E+01	-1.752E+01	1.055E-02	-2.371E-04	4.851E-07	-3.782E-10	3.00E+02	-4.249E-02
E(19)=	6.50E+01	-1.756E+01	9.829E-03	-2.306E-04	4.600E-07	-3.449E-10	3.00E+02	-4.250E-02
E(20)=	6.00E+01	-1.760E+01	8.966E-03	-2.228E-04	4.297E-07	-3.052E-10	3.00E+02	-4.250E-02
E(21)=	5.50E+01	-1.763E+01	8.002E-03	-2.138E-04	3.951E-07	-2.598E-10	3.00E+02	-4.250E-02
E(22)=	5.00E+01	-1.770E+01	7.658E-03	-2.106E-04	3.818E-07	-2.411E-10	3.00E+02	-4.250E-02
E(23)=	4.50E+01	-1.776E+01	7.112E-03	-2.052E-04	3.597E-07	-2.110E-10	3.00E+02	-4.250E-02
E(24)=	4.00E+01	-1.783E+01	6.399E-03	-1.982E-04	3.314E-07	-1.730E-10	3.00E+02	-4.250E-02
E(25)=	3.50E+01	-1.790E+01	5.479E-03	-1.893E-04	2.964E-07	-1.269E-10	3.00E+02	-4.250E-02
E(26)=	3.00E+01	-1.796E+01	4.226E-03	-1.767E-04	2.470E-07	-6.162E-11	3.00E+02	-4.250E-02
E(27)=	2.75E+01	-1.798E+01	2.482E-03	-1.589E-04	1.768E-07	3.098E-11	3.00E+02	-4.250E-02
E(28)=	2.50E+01	-1.801E+01	4.851E-04	-1.388E-04	9.807E-08	1.342E-10	3.00E+02	-4.250E-02
E(29)=	2.25E+01	-1.799E+01	-2.886E-03	-1.061E-04	-2.595E-08	2.929E-10	3.00E+02	-4.250E-02
E(30)=	2.00E+01	-1.707E+01	-3.165E-02	1.819E-04	-1.126E-06	1.703E-09	3.00E+02	-4.250E-02
E(31)=	1.75E+01	-1.702E+01	-3.527E-02	2.156E-04	-1.250E-06	1.858E-09	3.00E+02	-4.250E-02
E(32)=	1.49E+01	-1.681E+01	-4.521E-02	3.070E-04	-1.582E-06	2.271E-09	3.00E+02	-4.250E-02
E(33)=	1.35E+01	-1.667E+01	-5.338E-02	3.808E-04	-1.847E-06	2.597E-09	3.00E+02	-4.250E-02
E(34)=	1.22E+01	-1.672E+01	-5.571E-02	4.076E-04	-1.954E-06	2.736E-09	3.00E+02	-4.250E-02
E(35)=	1.00E+01	-1.691E+01	-5.054E-02	3.645E-04	-1.808E-06	2.565E-09	3.00E+02	-4.250E-02
E(36)=	8.19E+00	-1.713E+01	-4.361E-02	3.022E-04	-1.587E-06	2.295E-09	3.00E+02	-4.250E-02
E(37)=	6.70E+00	-1.739E+01	-3.544E-02	2.246E-04	-1.302E-06	1.940E-09	3.00E+02	-4.250E-02
E(38)=	5.49E+00	-1.769E+01	-2.657E-02	1.442E-04	-1.013E-06	1.584E-09	3.00E+02	-4.250E-02
E(39)=	4.49E+00	-1.804E+01	-1.560E-02	3.894E-05	-6.224E-07	1.094E-09	3.00E+02	-4.250E-02
E(40)=	3.68E+00	-1.838E+01	-4.647E-03	-6.664E-05	-2.266E-07	5.919E-10	3.00E+02	-4.250E-02
E(41)=	3.01E+00	-1.865E+01	3.746E-03	-1.447E-04	6.220E-08	2.275E-10	3.00E+02	-4.250E-02
E(42)=	2.46E+00	-1.890E+01	1.144E-02	-2.186E-04	3.341E-07	-1.108E-10	3.00E+02	-4.144E-02
E(43)=	2.02E+00	-1.913E+01	1.865E-02	-2.913E-04	6.129E-07	-4.690E-10	3.00E+02	-4.143E-02
E(44)=	1.65E+00	-1.939E+01	2.452E-02	-3.260E-04	7.019E-07	-5.525E-10	3.00E+02	-4.142E-02
E(45)=	1.35E+00	-1.951E+01	3.232E-02	-4.381E-04	1.173E-06	-1.177E-09	3.00E+02	-4.149E-02
E(46)=	1.11E+00	-1.960E+01	3.661E-02	-5.005E-04	1.452E-06	-1.565E-09	3.00E+02	-4.146E-02
E(47)=	9.07E-01	-2.035E+01	5.478E-02	-6.226E-04	1.827E-06	-1.992E-09	3.00E+02	-4.140E-02
E(48)=	7.43E-01	-2.073E+01	6.690E-02	-7.364E-04	2.242E-06	-2.508E-09	3.00E+02	-4.142E-02
E(49)=	4.98E-01	-2.078E+01	7.192E-02	-8.185E-04	2.590E-06	-2.965E-09	3.00E+02	-4.152E-02
E(50)=	3.34E-01	-2.081E+01	7.840E-02	-9.350E-04	3.105E-06	-3.661E-09	3.00E+02	-4.159E-02
E(51)=	2.24E-01	-2.052E+01	7.314E-02	-9.330E-04	3.184E-06	-3.821E-09	3.00E+02	-4.159E-02
E(52)=	1.50E-01	-2.017E+01	6.373E-02	-8.810E-04	3.067E-06	-3.730E-09	3.00E+02	-4.160E-02
E(53)=	8.65E-02	-1.992E+01	5.600E-02	-8.261E-04	2.904E-06	-3.558E-09	3.00E+02	-4.160E-02
E(54)=	3.18E-02	-1.971E+01	4.919E-02	-7.738E-04	2.739E-06	-3.374E-09	3.00E+02	-4.161E-02
E(55)=	1.50E-02	-1.837E+01	5.525E-02	-2.115E-03	8.475E-06	-1.227E-08	2.60E+02	-1.768E-01

Table 3.13 Reproduction ratio of dose equivalent of neutrons and secondary gamma rays in water

Group No.	1		15		29	
En(MeV)	400.～ 375.		100. ～ 90.		22.5～ 19.6	
R(cm)	n	2nd.γ	n	2nd.γ	n	2nd.γ
5.0	0.642	5.023	0.695	5.313	0.960	6.909
10.0	1.000	1.990	1.035	2.064	1.286	2.490
15.0	1.075	1.266	1.090	1.298	1.238	1.459
20.0	1.095	0.977	1.096	0.992	1.163	1.060
25.0	1.095	0.839	1.085	0.845	1.095	0.862
30.0	1.088	0.763	1.074	0.763	1.039	0.749
35.0	1.079	0.721	1.062	0.716	1.000	0.682
40.0	1.050	0.682	1.027	0.673	0.968	0.642
45.0	1.045	0.675	1.022	0.664	0.932	0.607
50.0	1.040	0.672	1.015	0.657	0.910	0.588
60.0	1.029	0.676	1.009	0.660	0.889	0.581
70.0	1.018	0.696	1.002	0.681	0.874	0.588
80.0	1.010	0.733	0.996	0.709	0.882	0.619
90.0	1.003	0.771	0.993	0.749	0.889	0.657
100.0	0.990	0.808	0.983	0.789	0.894	0.698
120.0	0.984	0.892	0.981	0.882	0.918	0.815
140.0	0.982	0.987	0.982	0.984	0.953	0.955
160.0	0.983	1.071	0.985	1.075	0.998	1.112
180.0	0.984	1.149	0.989	1.158	1.024	1.263
200.0	0.986	1.219	0.994	1.236	1.044	1.400
250.0	0.980	1.314	0.991	1.339	1.079	1.576
300.0	0.989	1.323	1.004	1.378	1.091	1.569
350.0	0.999	1.310	1.012	1.325	1.118	1.431
400.0	1.007	1.218	1.020	1.252	1.137	1.262
450.0	1.011	1.140	1.018	1.142	1.105	1.104
500.0	1.012	1.032	1.016	1.039	1.046	0.978
550.0	1.010	0.964	1.008	0.950	1.012	0.890
600.0	1.008	0.894	1.004	0.893	1.015	0.839
650.0	1.005	0.851	0.997	0.835	0.967	0.805
700.0	1.003	0.830	0.994	0.819	0.939	0.799
750.0	1.001	0.837	0.991	0.820	0.934	0.820
800.0	0.998	0.865	0.989	0.862	0.897	0.856
850.0	0.997	0.907	0.988	0.886	0.890	0.916
900.0	0.992	0.969	0.992	0.986	0.919	0.989
950.0	0.993	1.046	0.999	1.069	0.968	1.087
1000.0	0.996	1.143	1.001	1.141	1.063	1.187
1100.0	1.003	1.297	1.017	1.309	1.215	1.316
1200.0	1.005	1.190	1.014	1.203	1.175	1.199
1300.0	0.999	0.796	0.987	0.785	0.849	0.774

Table 3.14 Reproduction ratio of dose equivalent of neutrons and secondary gamma rays in ordinary concrete

Group No.	1		15		29	
En(MeV)	400.～ 375.		100. ～ 90.		22.5～ 19.6	
R(cm)	n	2nd.γ	n	2nd.γ	n	2nd.γ
5.0	1.180	4.856	1.162	5.090	1.722	6.039
10.0	1.173	1.880	1.220	1.993	1.425	2.286
15.0	1.092	1.168	1.115	1.216	1.122	1.276
20.0	1.007	0.867	1.037	0.909	1.009	0.942
25.0	0.974	0.743	0.987	0.762	0.936	0.776
30.0	0.953	0.682	0.928	0.665	0.890	0.688
35.0	0.940	0.656	0.915	0.635	0.862	0.641
40.0	0.935	0.652	0.910	0.626	0.847	0.619
45.0	0.934	0.662	0.910	0.632	0.841	0.613
50.0	0.917	0.668	0.914	0.650	0.830	0.611
60.0	0.931	0.727	0.929	0.705	0.848	0.650
70.0	0.947	0.801	0.948	0.780	0.876	0.712
80.0	0.965	0.882	0.962	0.859	0.911	0.789
90.0	0.983	0.963	0.981	0.947	0.948	0.876
100.0	0.999	1.040	0.999	1.032	0.985	0.968
110.0	1.013	1.110	1.015	1.112	1.020	1.061
120.0	1.026	1.170	1.028	1.181	1.051	1.151
130.0	1.036	1.219	1.039	1.238	1.077	1.233
140.0	1.044	1.256	1.049	1.282	1.098	1.305
150.0	1.042	1.270	1.055	1.311	1.095	1.341
160.0	1.047	1.284	1.059	1.327	1.115	1.392
170.0	1.051	1.287	1.062	1.331	1.130	1.427
180.0	1.052	1.280	1.062	1.323	1.140	1.445
190.0	1.052	1.265	1.060	1.305	1.144	1.446
200.0	1.050	1.243	1.047	1.267	1.143	1.432
220.0	1.043	1.183	1.039	1.200	1.129	1.363
240.0	1.032	1.111	1.028	1.119	1.101	1.257
260.0	1.018	1.034	1.013	1.035	1.065	1.133
280.0	1.003	0.961	0.997	0.954	1.019	1.007
300.0	0.979	0.887	0.980	0.881	0.976	0.893
350.0	0.948	0.769	0.946	0.751	0.873	0.679
400.0	0.931	0.723	0.928	0.701	0.835	0.596
450.0	0.936	0.751	0.933	0.730	0.818	0.617
500.0	0.961	0.856	0.960	0.842	0.869	0.753
550.0	1.003	1.033	1.004	1.035	1.017	1.024
600.0	1.047	1.240	1.050	1.265	1.090	1.404
650.0	1.072	1.352	1.075	1.393	1.272	1.631
700.0	1.044	1.192	1.046	1.215	1.131	1.348

Taale 3.15 Reproduction ratio of dose equivalent of neutrons and secondary gamma rays in iron

Group No.	1		15		29	
En(MeV)	400.～ 375.		100. ～ 90.		22.5～ 19.6	
R(cm)	n	2nd.γ	n	2nd.γ	n	2nd.γ
5.0	1.855	1.483	1.783	1.358	1.501	0.973
10.0	1.225	0.985	1.214	0.923	1.180	0.807
15.0	0.950	0.872	0.958	0.846	0.972	0.821
20.0	0.855	0.877	0.868	0.881	0.903	0.942
25.0	0.815	0.901	0.829	0.931	0.873	1.073
30.0	0.804	0.927	0.817	0.977	0.864	1.170
35.0	0.810	0.950	0.822	1.009	0.867	1.211
40.0	0.821	0.962	0.831	1.022	0.873	1.198
45.0	0.845	0.976	0.852	1.031	0.888	1.165
50.0	0.875	0.987	0.878	1.033	0.906	1.121
55.0	0.904	0.995	0.905	1.030	0.926	1.076
60.0	0.936	1.002	0.934	1.025	0.947	1.037
65.0	0.967	1.007	0.963	1.019	0.968	1.004
70.0	0.998	1.012	0.992	1.013	0.989	0.978
75.0	1.027	1.016	1.018	1.008	1.009	0.958
80.0	1.053	1.020	1.044	1.004	1.028	0.943
85.0	1.077	1.024	1.067	1.001	1.045	0.933
90.0	1.098	1.027	1.087	0.998	1.061	0.927
95.0	1.115	1.029	1.104	0.997	1.075	0.924
100.0	1.118	1.022	1.107	0.987	1.076	0.914
110.0	1.136	1.026	1.128	0.989	1.094	0.921
120.0	1.140	1.028	1.135	0.993	1.103	0.933
130.0	1.133	1.028	1.132	0.997	1.102	0.949
140.0	1.116	1.027	1.118	1.001	1.094	0.967
150.0	1.092	1.023	1.097	1.004	1.078	0.985
160.0	1.063	1.018	1.070	1.007	1.057	1.003
170.0	1.031	1.011	1.040	1.009	1.033	1.018
180.0	0.999	1.003	1.008	1.009	1.008	1.031
190.0	0.969	0.995	0.977	1.008	0.983	1.042
200.0	0.938	0.984	0.944	1.003	0.956	1.046
220.0	0.894	0.970	0.897	0.997	0.918	1.053
240.0	0.871	0.961	0.870	0.991	0.897	1.048
260.0	0.872	0.959	0.868	0.987	0.896	1.034
280.0	0.897	0.966	0.891	0.985	0.916	1.015
300.0	0.948	0.981	0.941	0.988	0.956	0.994
350.0	1.148	1.040	1.147	1.007	1.113	0.946
400.0	1.263	1.079	1.272	1.031	1.199	0.949
450.0	0.870	0.957	0.868	0.985	0.898	1.040

Table 3.16 Attenuation lengths (λ_0) vs. source neutron energies

unit(kg/m^2)

Energy		Attenuation Lengths(λ_o)		
Group	En(MeV)	Water	Concrete	Iron
1	400 - 375	880	1030	1820
2	375 - 350	870	1020	1820
3	350 - 325	860	1010	1820
4	325 - 300	840	1000	1820
5	300 - 275	830	990	1820
6	275 - 250	810	980	1820
7	250 - 225	790	960	1820
8	225 - 200	770	950	1820
9	200 - 180	750	930	1820
10	180 - 160	720	890	1820
11	160 - 140	690	860	1820
12	140 - 120	640	820	1820
13	120 - 110	590	770	1820
14	110 - 100	560	740	1820
15	100 - 90	530	700	1820
16	90 - 80	490	660	1820
17	80 - 70	450	610	1820
18	70 - 65	400	560	1820
19	65 - 60	380	530	1820
20	60 - 55	350	500	1820
21	55 - 50	330	470	1820
22	50 - 45	310	440	1820
23	45 - 40	280	420	1820
24	40 - 35	260	390	1820
25	35 - 30	230	360	1820
26	30 - 27.5	190	320	1820
27	27.5 - 25.0	180	310	1820
28	25.0 - 22.5	160	300	1820
29	22.5 - 20.0	140	290	1820
30	20.0 - 19.6	120	270	1820
31	19.6 - 17.5	120	250	1820
32	17.5 - 14.9	120	250	1820

Table 3.17 Infinite medium effect C_H (E_n,r) of neutrons and secondary gamma rays for water (1/2)

neutron

MeV / cm	400.	200.	100.	50.	20.	10.
5.	0.99	0.98	0.97	0.96	0.93	0.90
15.	0.97	0.95	0.94	0.92	0.87	0.83
30.	0.95	0.94	0.92	0.90	0.85	0.80
50.	0.94	0.92	0.91	0.89	0.83	0.79
100.	0.92	0.91	0.90	0.88	0.81	0.78
200.	0.91	0.90	0.89	0.86	0.81	0.78
400.	0.89	0.89	0.88	0.85	0.80	

Secondary gamma ray

MeV / cm	400.	200.	100.	50.	20.	10.
5.	0.05	0.05	0.06	0.06	0.09	0.38
15.	0.22	0.23	0.24	0.26	0.31	0.48
30.	0.35	0.37	0.40	0.43	0.52	0.68
50.	0.41	0.43	0.47	0.52	0.65	0.80
100.	0.41	0.44	0.49	0.58	0.78	0.85
200.	0.38	0.41	0.47	0.60	0.86	0.87
400.	0.37	0.39	0.45	0.67	0.91	

Table 3.17 Infinite medium effect C_H (E_n,r) of neutrons and secondary gamma rays for water (2/2)

neutron

MeV / cm	5.0	2.0	1.0	0.1	0.01
5.	0.88	0.81	0.74	0.26	0.20
15.	0.79	0.64	0.41	0.16	0.16
30.	0.76	0.57	0.27	0.16	0.16
50.	0.75	0.56	0.21	0.20	0.24
100.	0.74	0.56	0.20	0.27	0.27
200.	0.74	0.55	0.20	0.29	0.29
400.	0.74	0.55	0.20		

Secondary gamma ray

MeV / cm	5.0	2.0	1.0	0.1	0.01
5.	0.04	0.06	0.09	0.19	0.25
15.	0.41	0.58	0.69	0.81	0.84
30.	0.72	0.85	0.87	0.87	0.87
50.	0.82	0.84	0.84	0.84	0.84
100.	0.81	0.81	0.81	0.81	0.81
200.	0.80	0.80	0.81	0.80	0.80
400.	0.80	0.80	0.81		

Table 3.18 Infinite medium effect C_H (E_n,r) of neutrons and secondary gamma rays for ordinary concrete (1/2)

neutron

MeV / cm	400.	200.	100.	50.	20.	10.
5.	0.93	0.91	0.89	0.87	0.83	0.81
15.	0.80	0.77	0.74	0.72	0.68	0.66
30.	0.74	0.71	0.69	0.67	0.62	0.60
50.	0.71	0.69	0.67	0.64	0.59	0.57
100.	0.69	0.67	0.66	0.63	0.57	0.55
200.	0.67	0.66	0.64	0.62	0.56	0.53
400.	0.65	0.65	0.64	0.61	0.55	0.53

Secondary gamma ray

MeV / cm	400.	200.	100.	50.	20.	10.
5.	0.13	0.13	0.15	0.15	0.21	0.37
15.	0.15	0.15	0.16	0.17	0.23	0.23
30.	0.22	0.24	0.26	0.29	0.35	0.32
50.	0.30	0.32	0.36	0.41	0.50	0.50
100.	0.33	0.36	0.41	0.51	0.68	0.76
200.	0.32	0.35	0.40	0.54	0.86	0.92
400.	0.32	0.35	0.40	0.56	0.93	0.94

Table 3.18 Infinite medium effect C_H (E_n,r) of neutrons and secondary gamma rays for ordinary concrete (2/2)

neutron

MeV / cm	5.	2.	1.	0.1	0.01
5.	0.77	0.70	0.66	0.63	0.38
15.	0.61	0.57	0.56	0.31	0.26
30.	0.57	0.51	0.38	0.25	0.24
50.	0.54	0.41	0.26	0.24	0.24
100.	0.50	0.27	0.24	0.24	0.24
200.	0.47	0.24	0.24	0.27	0.26
400.	0.46	0.24	0.27	0.29	0.27

Secondary gamma ray

MeV / cm	5.	2.	1.	0.1	0.01
5.	0.37	0.05	0.01	0.01	0.04
15.	0.23	0.09	0.12	0.20	0.30
30.	0.32	0.37	0.45	0.53	0.60
50.	0.50	0.63	0.70	0.75	0.78
100.	0.76	0.88	0.90	0.91	0.91
200.	0.93	0.94	0.94	0.94	0.94
400.	0.94	0.94	0.94	0.94	0.94

Table 3.19 Infinite medium effect C_H (E_n, r) of neutrons and secondary gamma rays for iron (1/2)

neutron

MeV / cm	400.	200.	100.	50.	20.	10.
5.	0.54	0.55	0.57	0.58	0.58	0.61
15.	0.34	0.35	0.36	0.37	0.38	0.38
30.	0.30	0.30	0.31	0.32	0.32	0.32
50.	0.29	0.29	0.30	0.30	0.29	0.29
100.	0.28	0.28	0.28	0.27	0.27	0.27
200.	0.26	0.25	0.24	0.23	0.23	0.23
400.	0.23	0.23	0.22	0.22	0.22	0.22

Secondary gamma ray

MeV / cm	400.	200.	100.	50.	20.	10.
5.	0.36	0.37	0.39	0.40	0.39	0.67
15.	0.33	0.34	0.36	0.38	0.42	0.59
30.	0.25	0.25	0.25	0.25	0.24	0.30
50.	0.17	0.16	0.15	0.13	0.11	0.10
100.	0.14	0.13	0.13	0.13	0.13	0.13
200.	0.15	0.15	0.16	0.16	0.16	0.16
400.	0.16	0.16	0.16	0.16	0.16	0.16

Table 3.19 Infinite medium effect C_H (E_n, r) of neutrons and secondary gamma rays for iron (2/2)

neutron

MeV / cm	5.	2.	1.	0.1	0.01
5.	0.57	0.53	0.59	0.48	0.23
15.	0.38	0.38	0.39	0.33	0.16
30.	0.31	0.31	0.32	0.27	0.17
50.	0.29	0.29	0.29	0.23	0.19
100.	0.27	0.27	0.26	0.22	0.20
200.	0.24	0.23	0.23	0.22	0.21
400.	0.23	0.22	0.22	0.22	0.21

Secondary gamma ray

MeV / cm	5.	2.	1.	0.1	0.01
5.	0.59	0.45	0.45	0.19	0.13
15.	0.51	0.30	0.23	0.08	0.14
30.	0.19	0.12	0.10	0.09	0.29
50.	0.10	0.09	0.10	0.13	0.40
100.	0.13	0.13	0.14	0.16	0.52
200.	0.15	0.16	0.16	0.16	0.56
400.	0.16	0.16	0.16	0.16	0.57

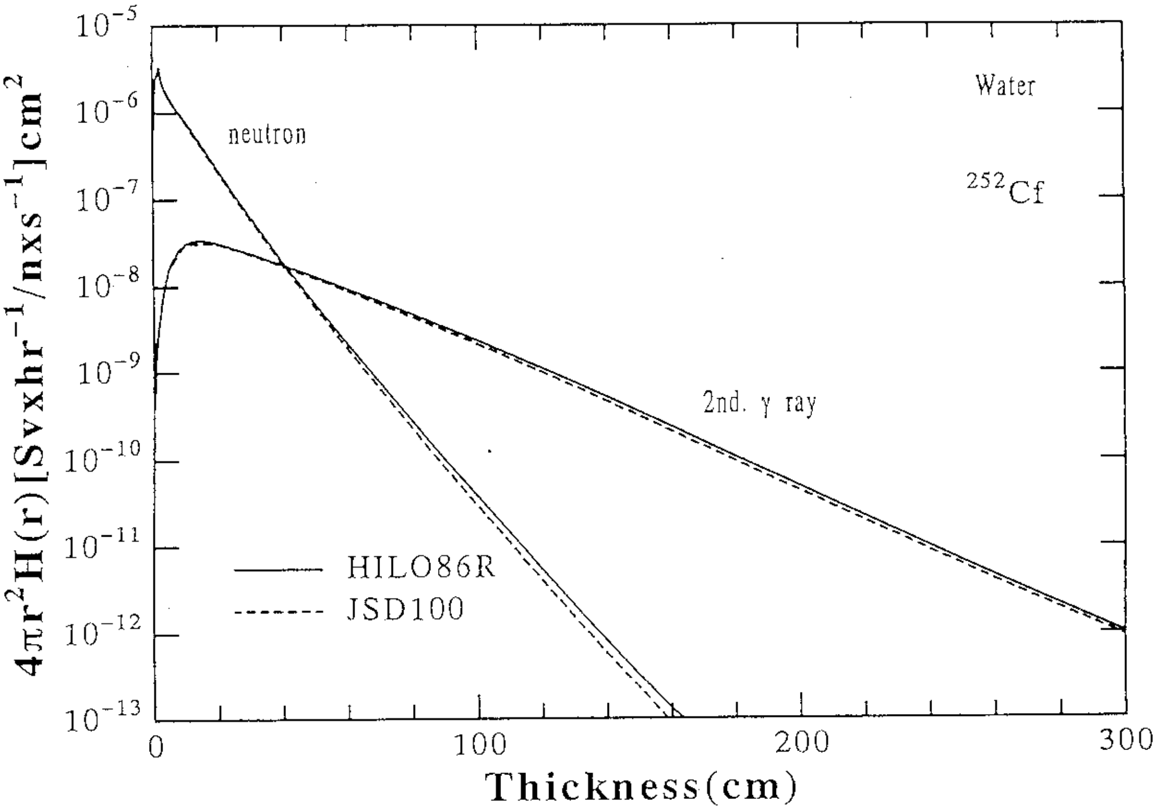

Fig.2.1 Comparison of dose equivalent in water calculated with HILO86R and JSD100 for ^{252}Cf neutron source.

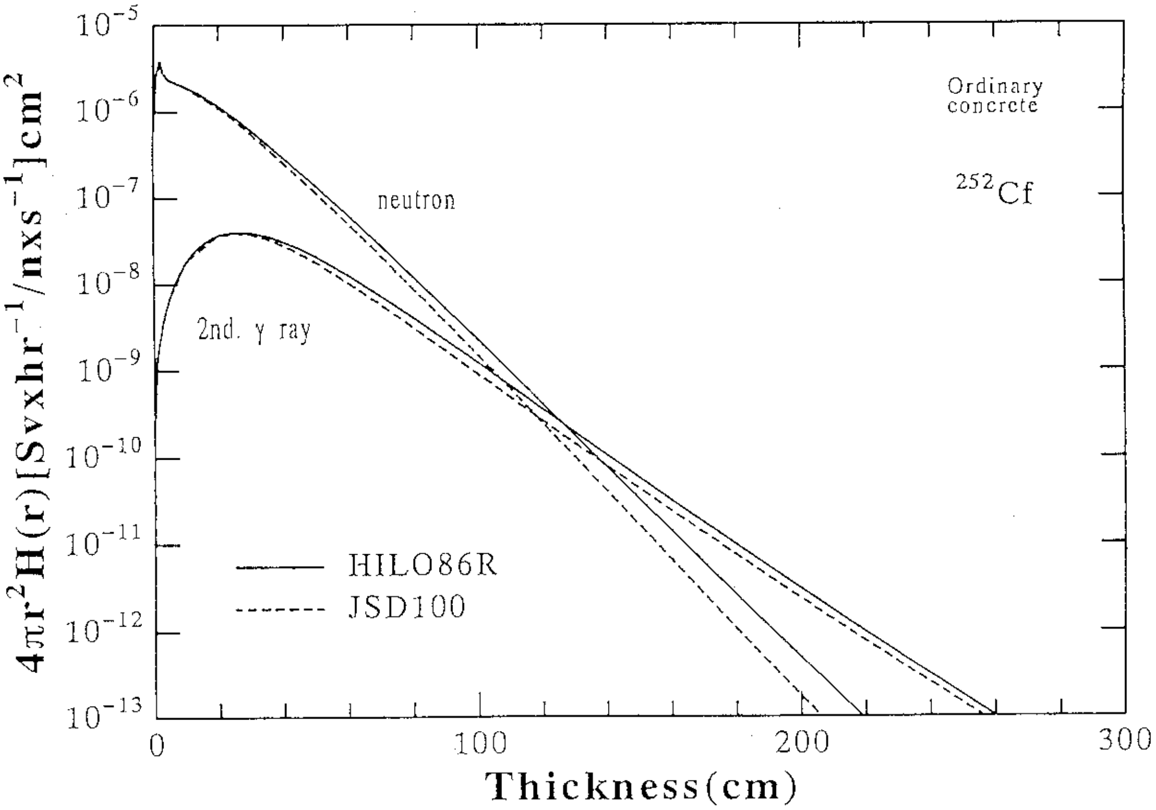

Fig.2.2 Comparison of dose equivalent in ordinary concrete calculated with HILO86R and JSD100 for ^{252}Cf neutron source.

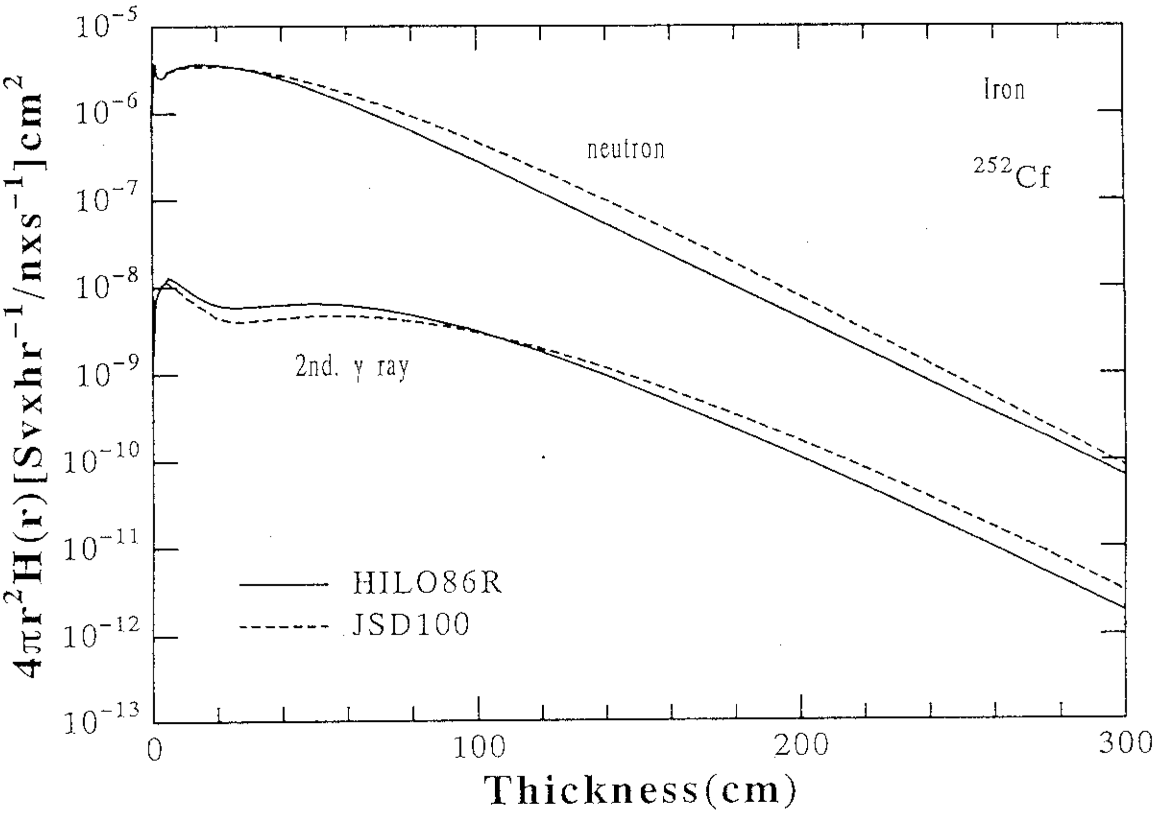

Fig.2.3 Comparison of dose equivalent in iron calculated with HILO86R and JSD100 for ^{252}Cf neutron source.

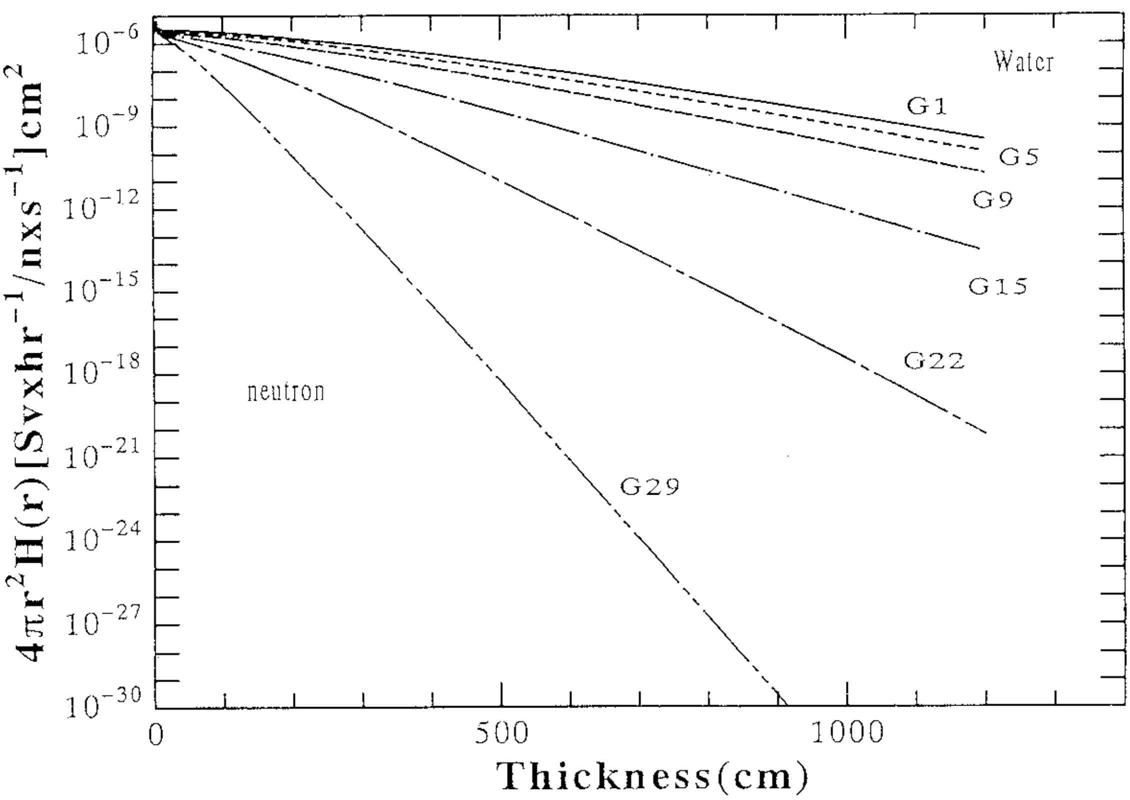

Fig.3.1 Neutron dose equivalent in water for monoenergetic neutron sources (G1=400.-375., G5=300.-275., G9=200.-180., G15=100.-90., G22=50.-45., G29=22.5-19.6MeV).

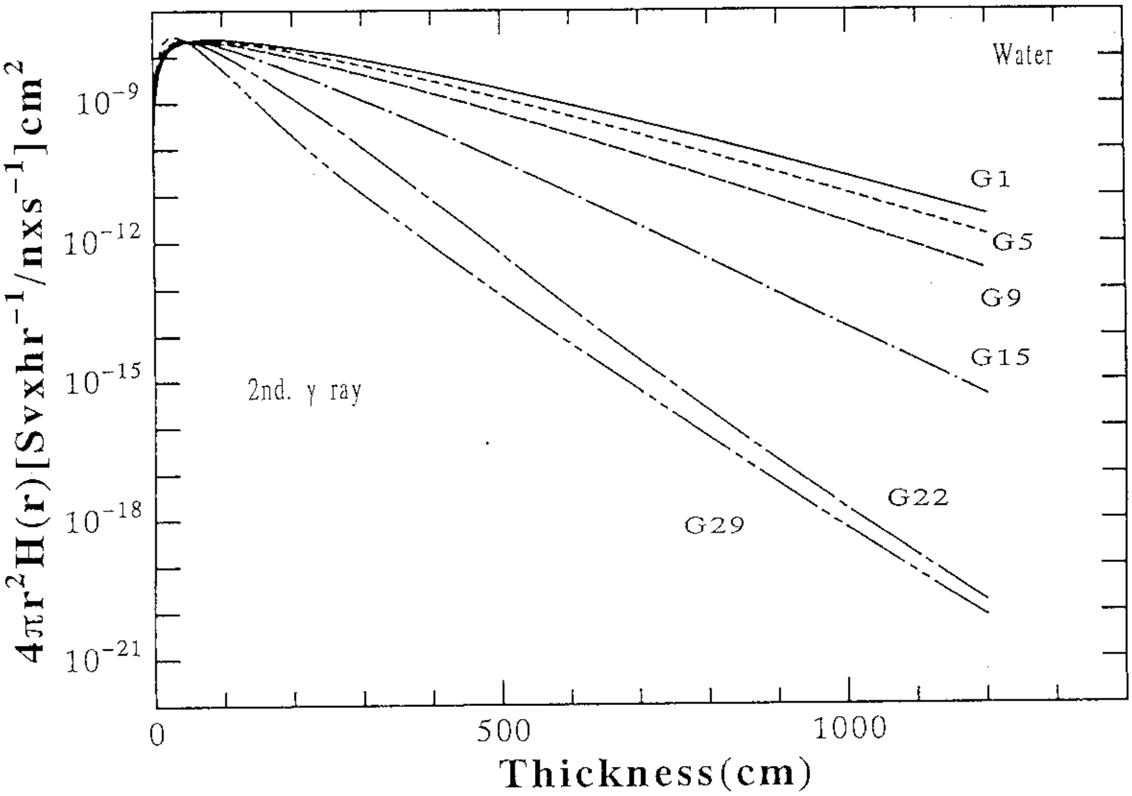

Fig.3.2 Secondary gamma-ray dose equivalent in water for monoenergetic neutron sources (G1=400.-375., G5=300.-275., G9=200.-180., G15=100. -90., G22=50.-45., G29=22.5-19.6MeV).

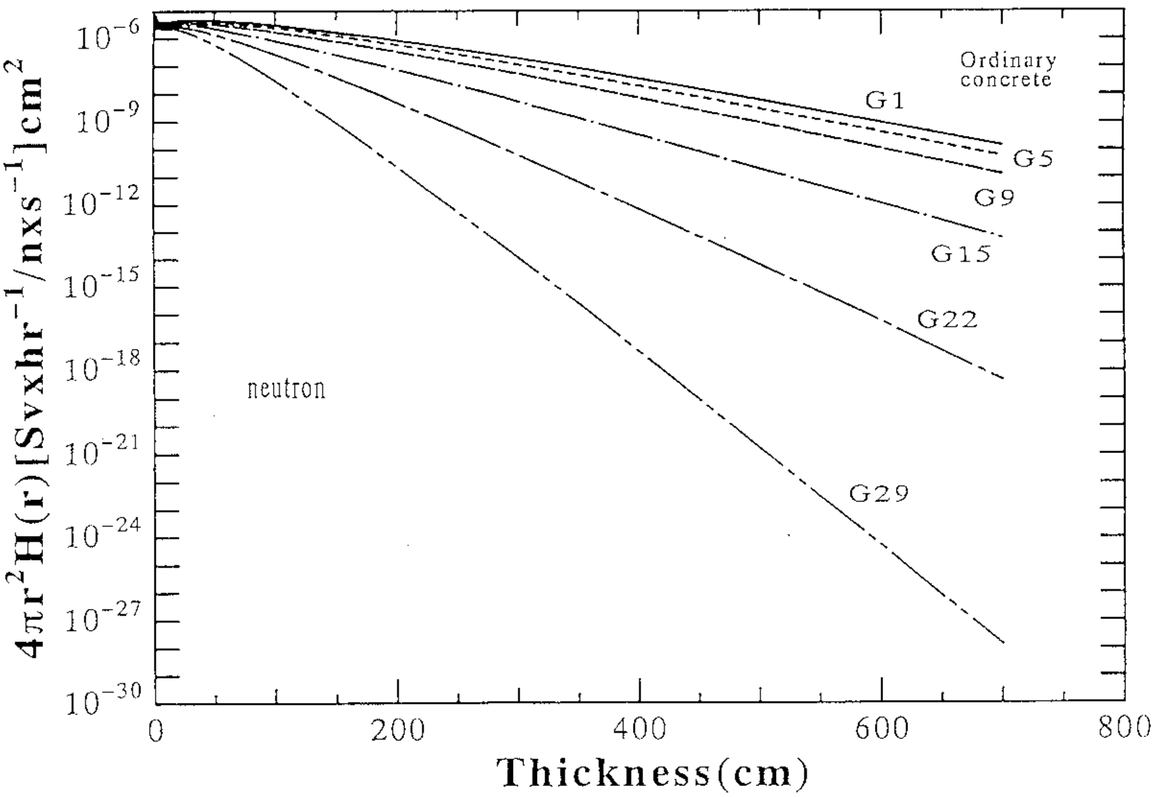

Fig.3.3 Neutron dose equivalent in ordinary concrete for monoenergetic neutron sources (G1=400.-375., G5=300.-275., G9=200.-180., G15=100. -90., G22=50.-45., G29=22.5-19.6MeV).

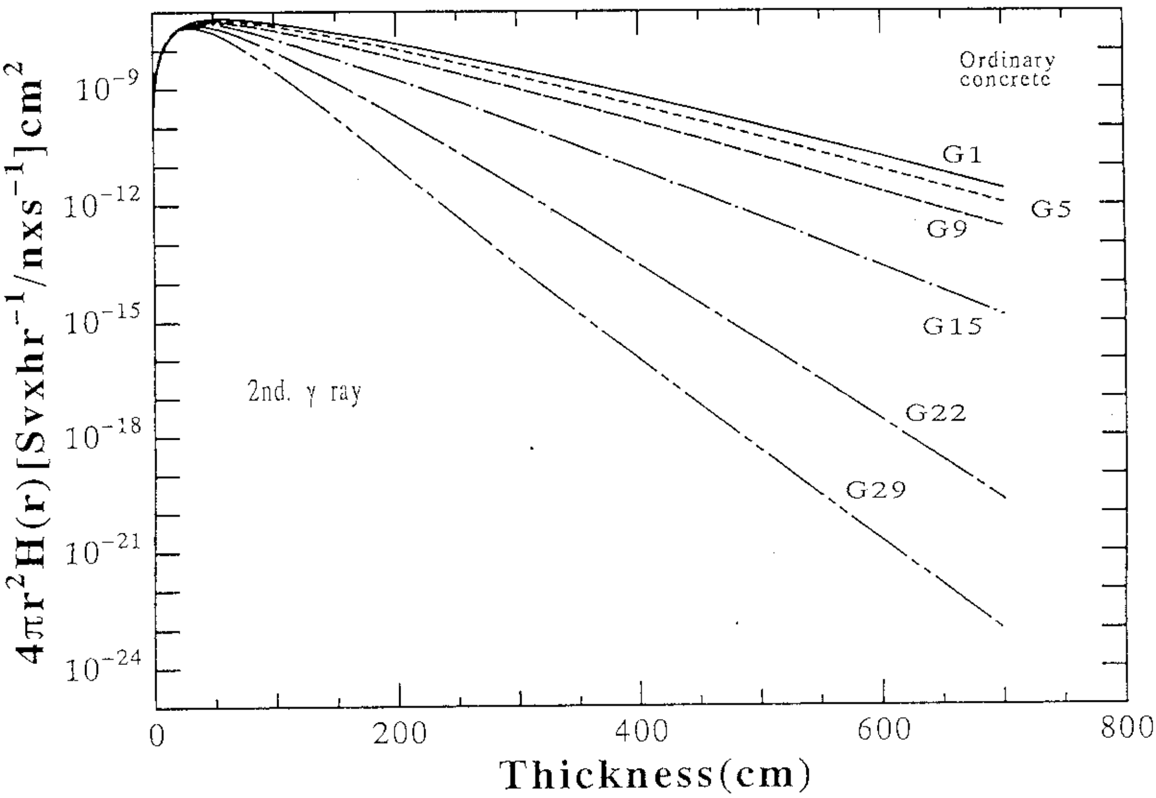

Fig.3.4 Secondary gamma-ray dose equivalent in ordinary concrete for monoenergetic neutron sources (G1=400.-375., G5=300.-275., G9=200. -180., G15=100.-90., G22=50.-45., G29=22.5-19.6MeV).

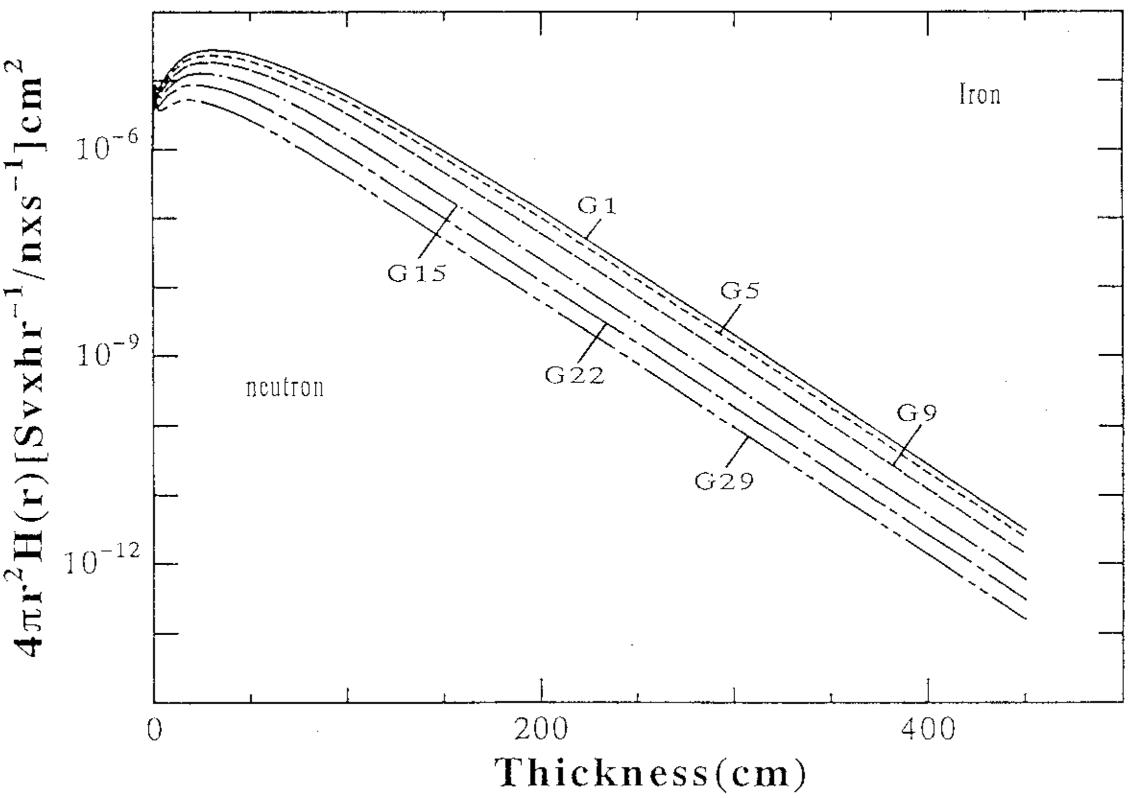

Fig.3.5 Neutron dose equivalent in iron for monoenergetic neutron sources (G1=400.-375., G5=300.-275., G9=200.-180., G15=100.-90., G22=50.-45., G29=22.5-19.6MeV)

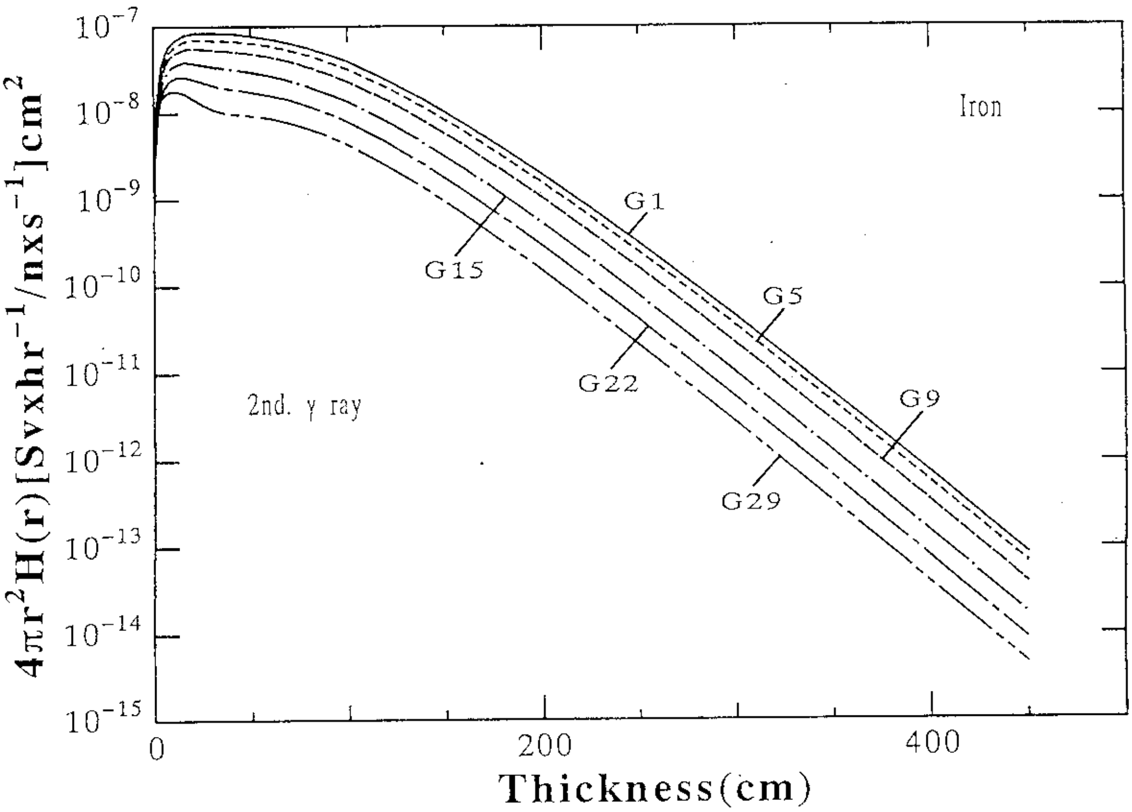

Fig.3.6 Secondary gamma-ray dose equivalent in iron for monoenergetic neutron sources (G1=400.-375., G5=300.-275., G9=200.-180., G15=100. -90., G22=50.-45., G29=22.5-19.6MeV).

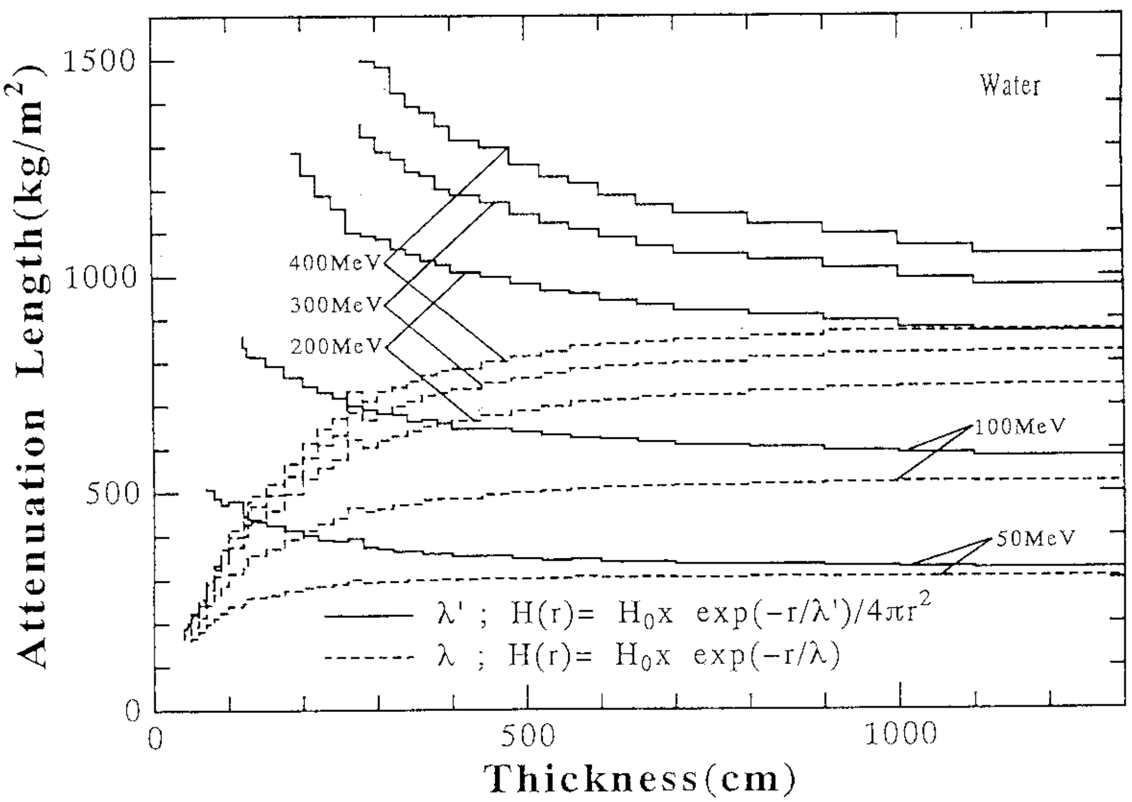

Fig.3.7 Attenuation length vs. thickness for different sources in water.

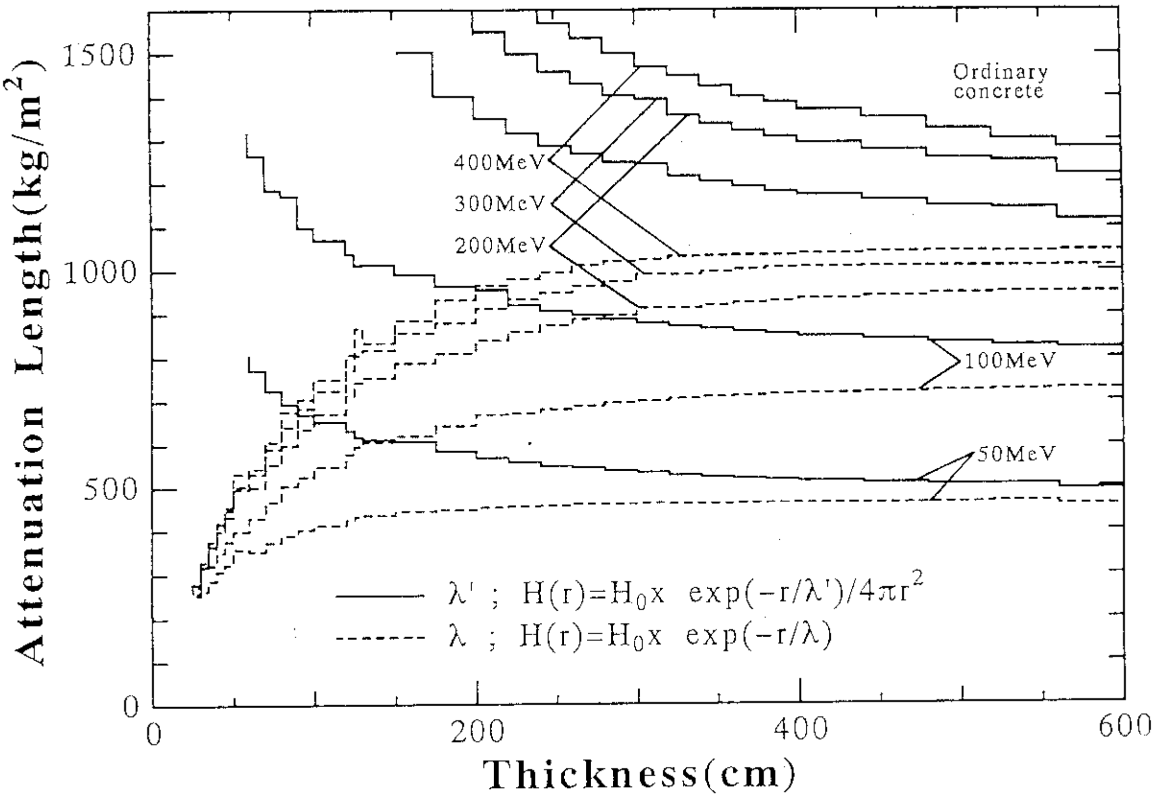

Fig.3.8 Attenuation length vs. thickness for different sources in ordinary concrete.

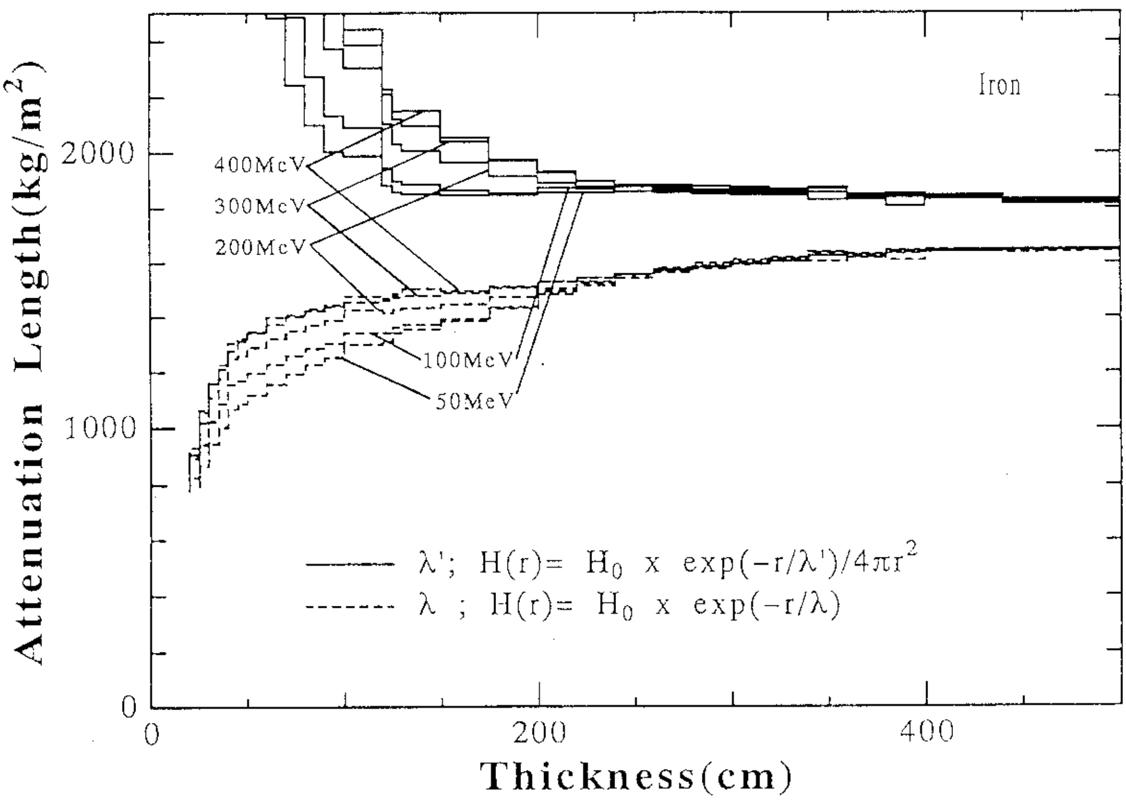

Fig.3.9 Attenuation length vs. thickness for different sources in iron.

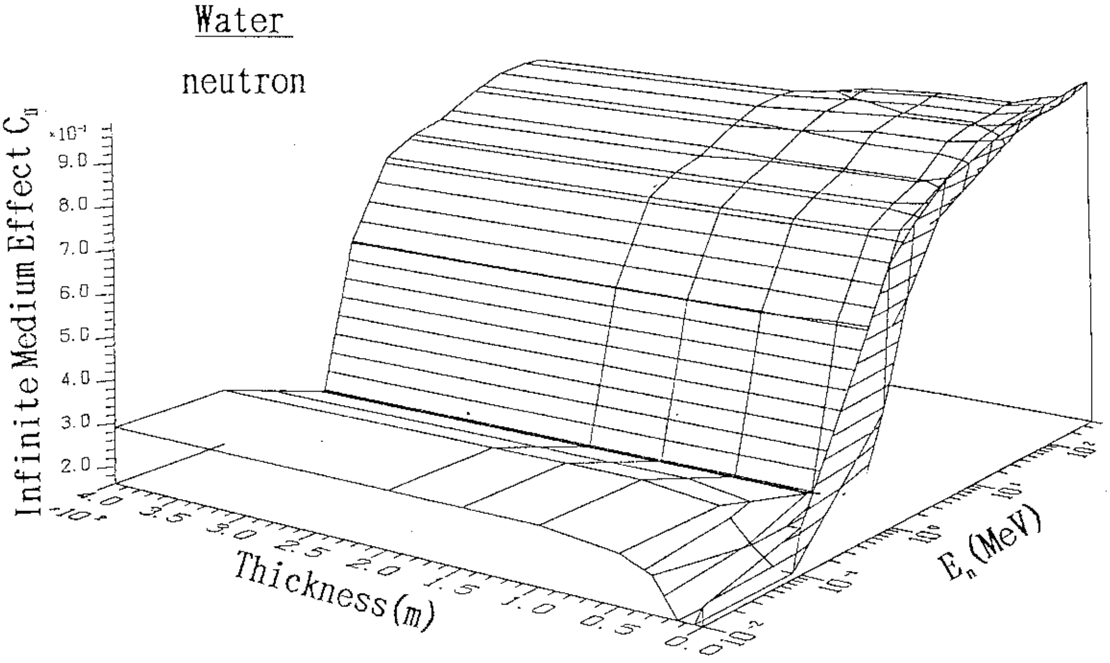

Fig.3.10 Infinite medium effect C_H (E_n, r) of dose equivalent for neutrons in water.

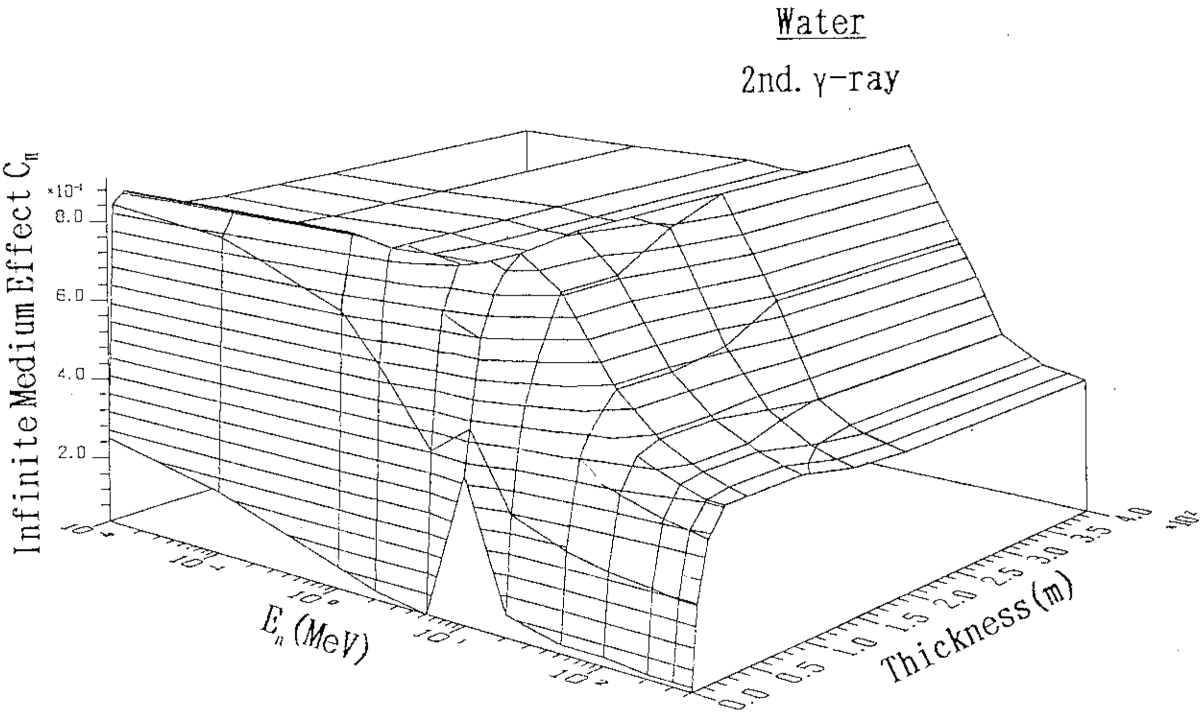

Fig.3.11 Infinite medium effect C_H (E_n, r) of dose equivalent for secondary gamma rays in water.

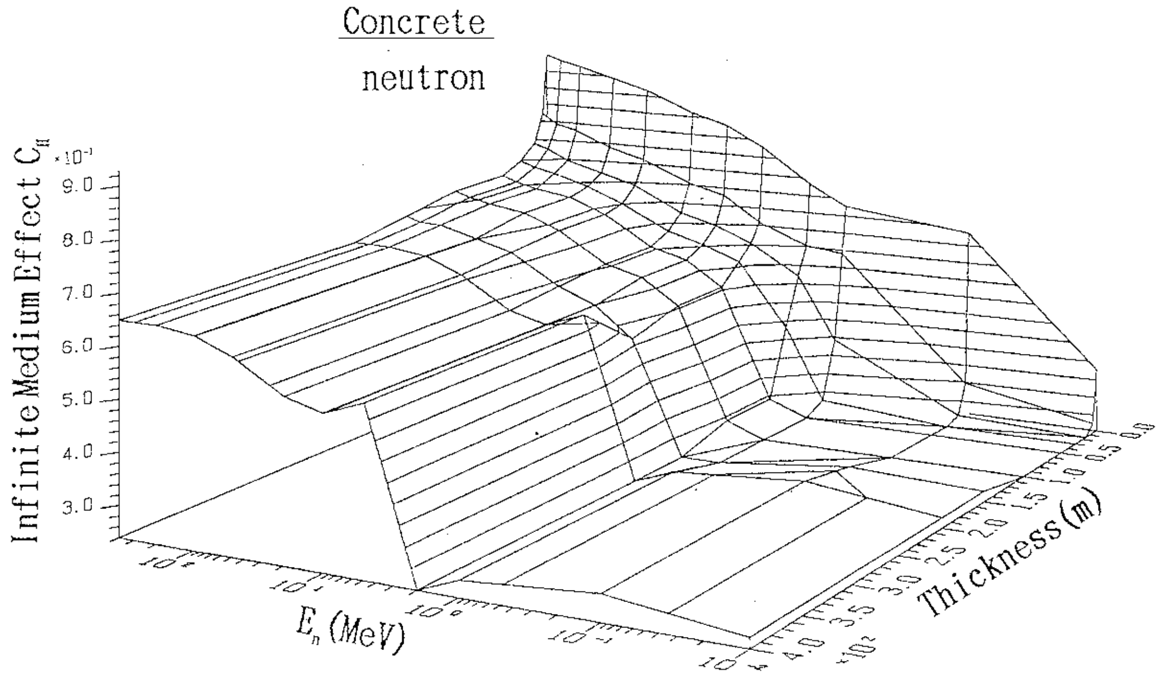

Fig.3.12 Infinite medium effect C_H (E_n, r) of dose equivalent for neutrons in ordinary concrete.

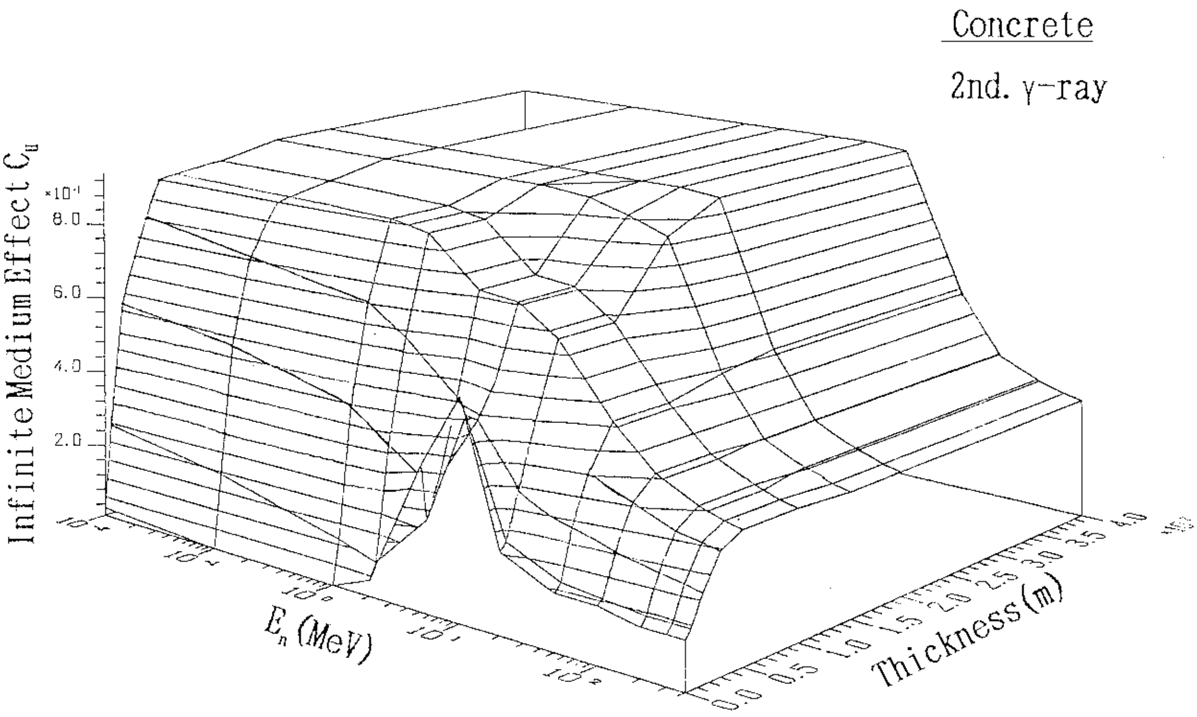

Fig.3.13 Infinite medium effect C_H (E_n, r) of dose equivalent for secondary gamma rays in ordinary concrete.

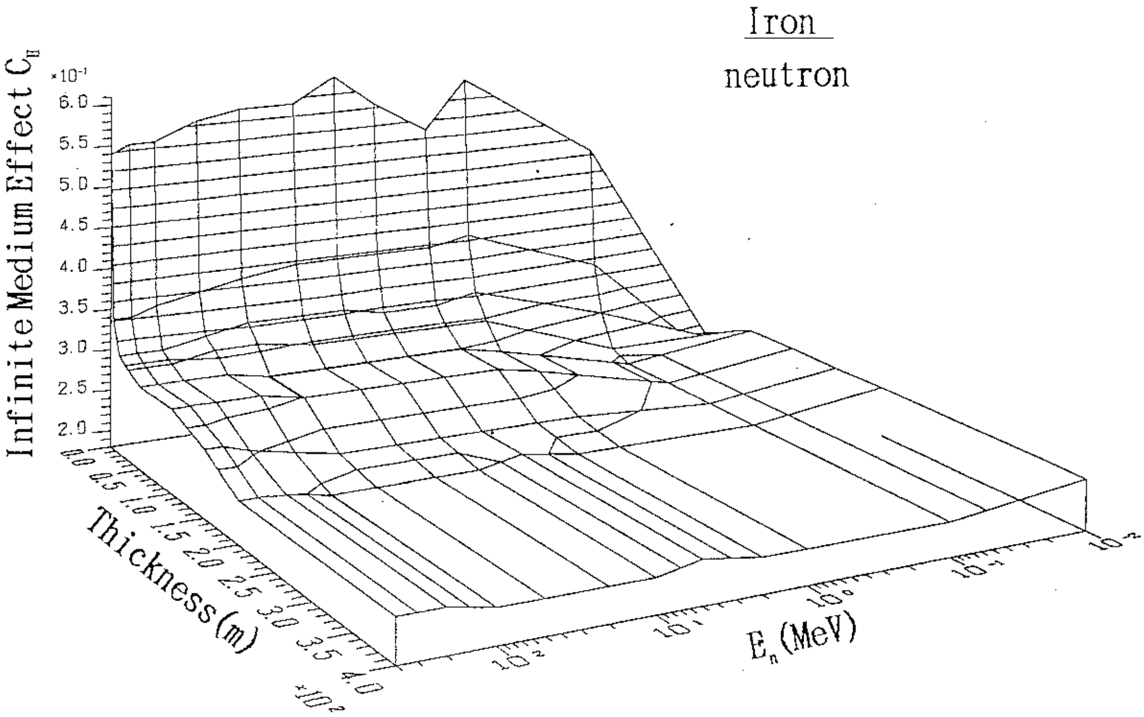

Fig.3.14 Infinite medium effect C_H (E_n, r) of dose equivalent for neutrons in iron.

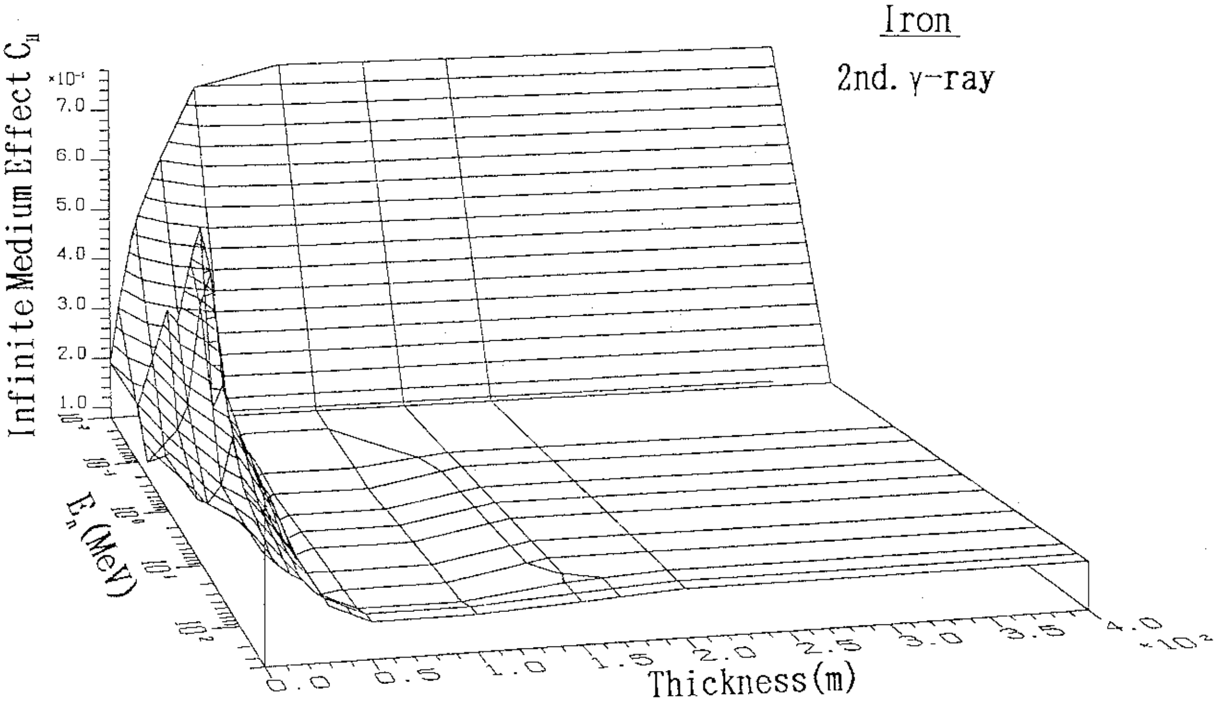

Fig.3.15 Infinite medium effect C_H (E_n, r) of dose equivalent for secondary gamma rays in iron.

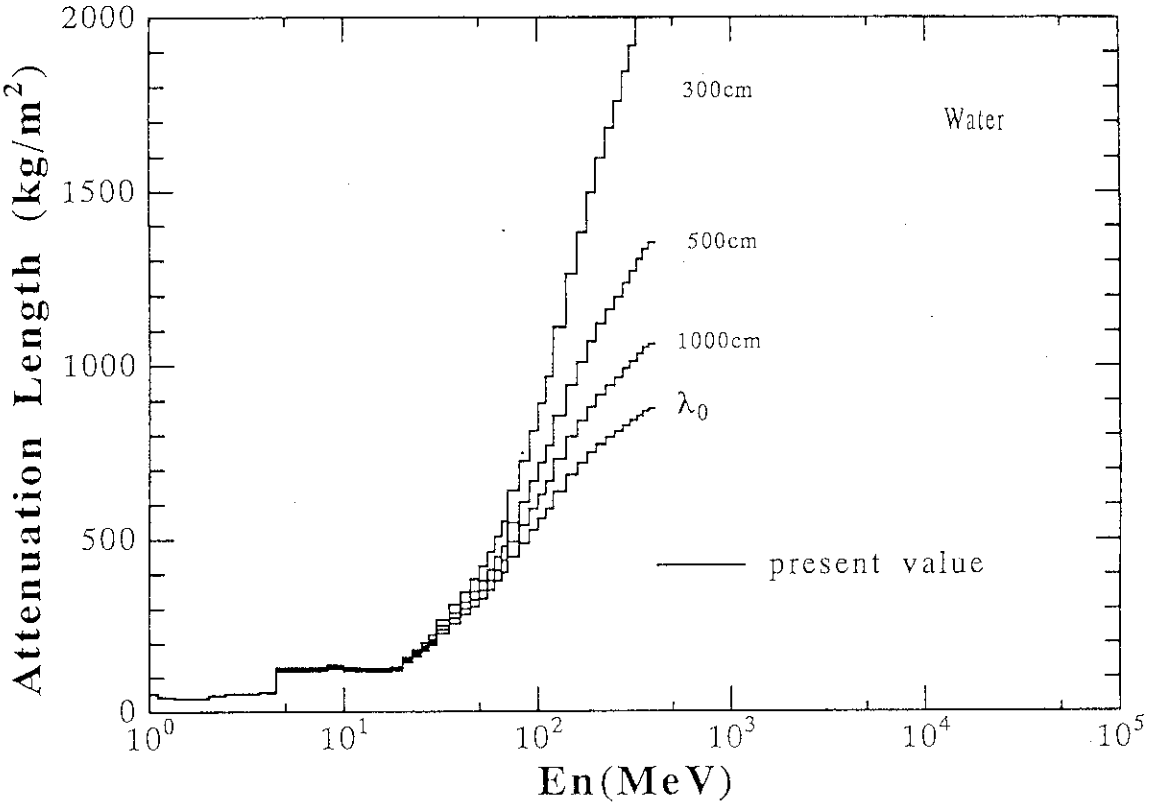

Fig.4.1 Energy dependence of attenuation length obtained at different thicknesses in water.

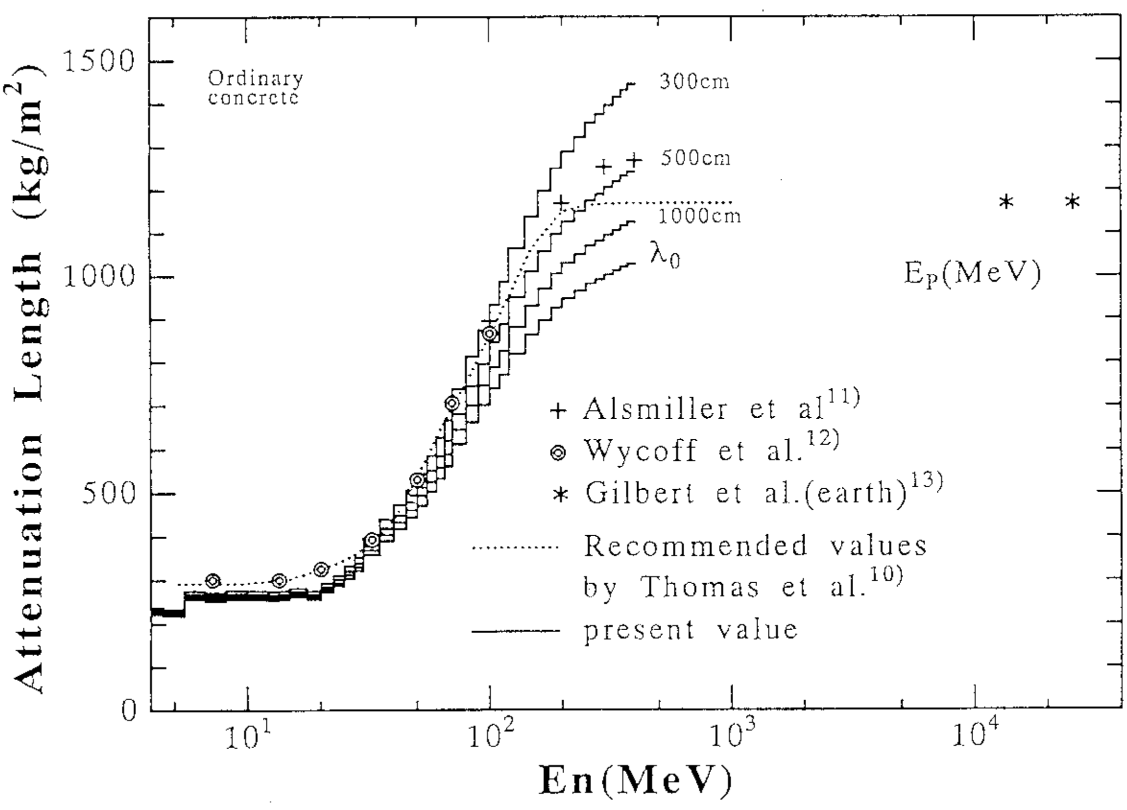

Fig.4.2 Energy dependence of attenuation length obtained at different thicknesses in ordinary concrete, in wrich other data are compared. Gilbert et al.'s data denotes for 14.6 and 26.4 GeV/c protons.

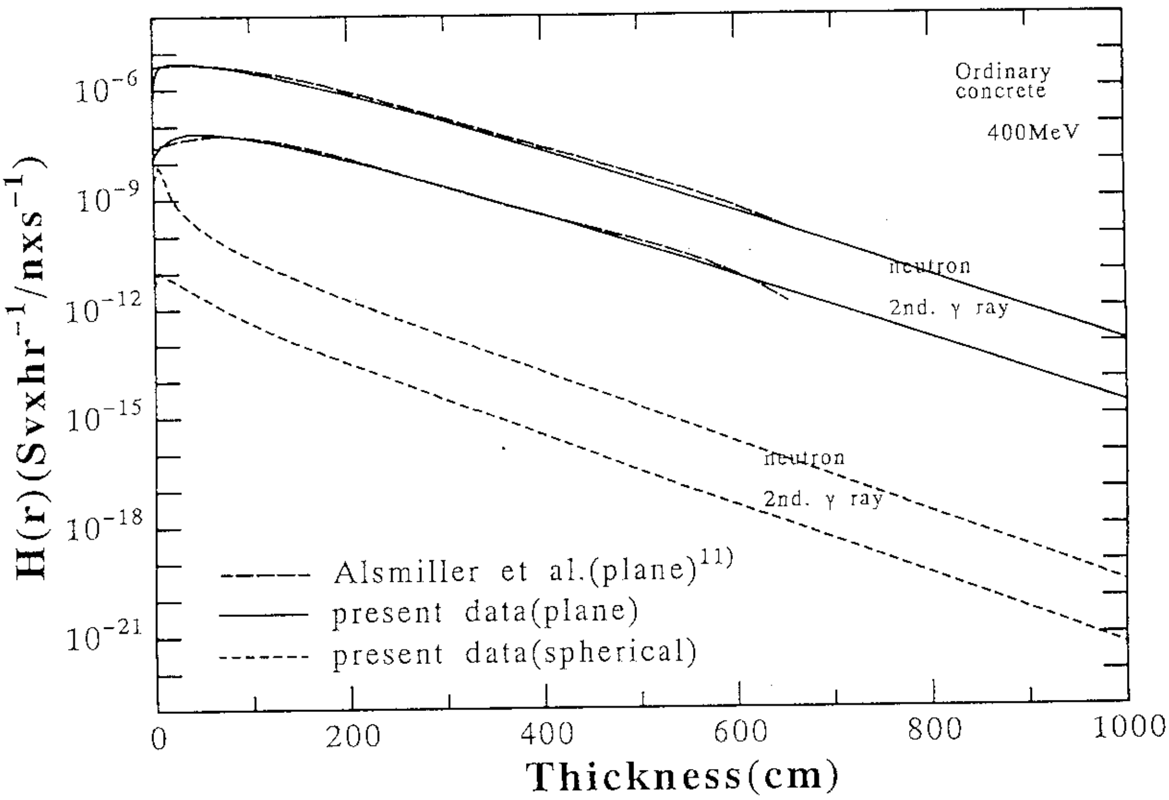

Fig.4.3 Comparison with Alsmiller et al.'s data for dose equivalent in plane geometry.

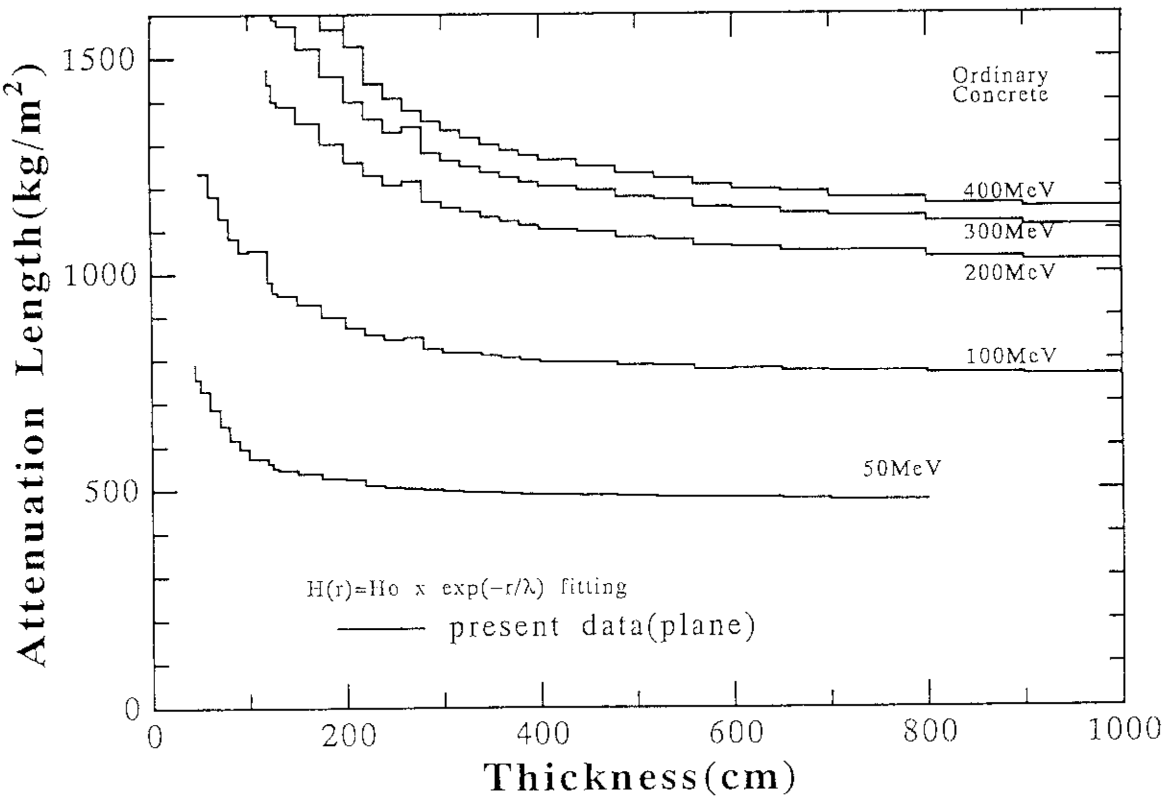

Fig.4.4 Attenuation length of ordinary concrete for different neutron energies in plane geometry.

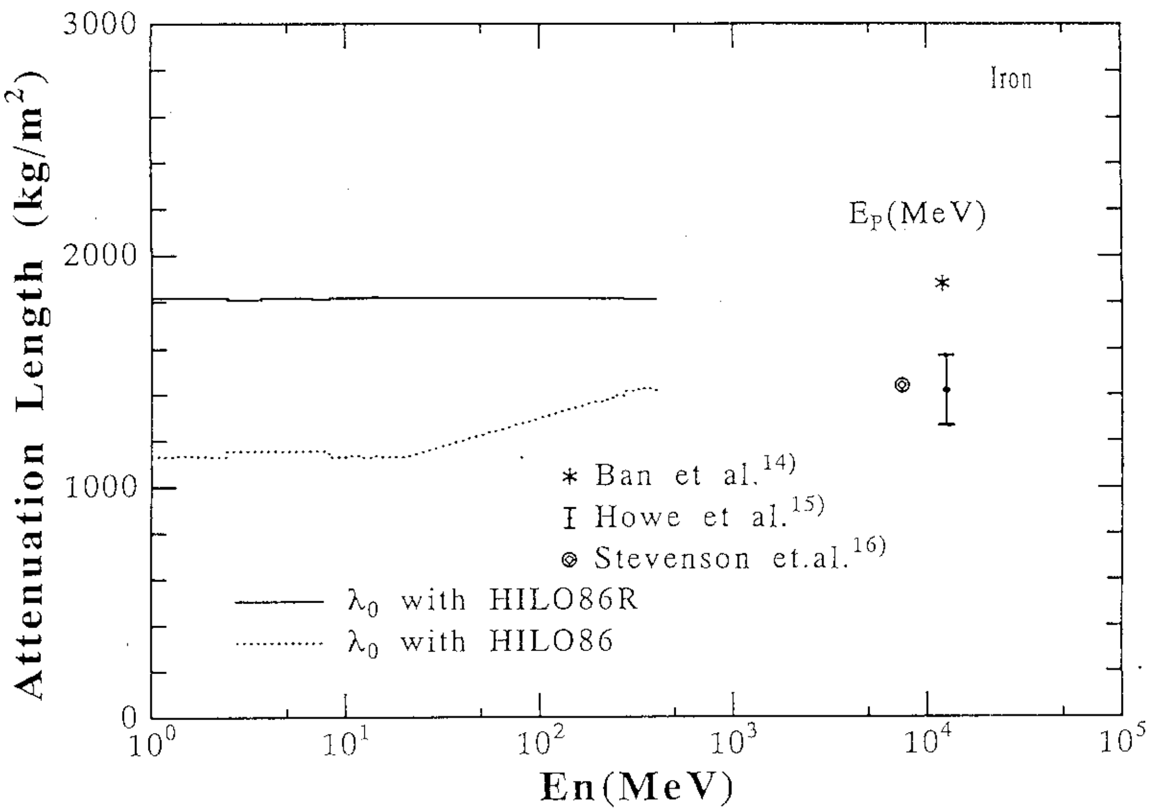

Fig.4.5 Energy dependence of attenuation length obtained in iron, in which other data are compared. Experimental data by Ban et al. and Howe et al. and evaluated data by Stevenson et al. were given for incident proton energy in MeV.

Appendix

Table A.1 Attenuation lengths in concrete (from refs. [0] and [11])

	Incident particle	Beam energy [GeV]	Shields material	density [gcm^{-3}]	Detector	λ_{att} [gcm^{-2}]	Ref.	Remarks
BNL	p	1.5	concrete	4.～4.3	CT	130± 15	[1]	
BNL	p	2.5	concrete	4.～4.3	CT	169± 32	[1]	
CERN	p	24	concrete	2.5	G5	145± 10	[2]	wide beam
CERN	p	20	heavy con	3.6	G5	115± 15	[2]	narrow beam
UCRL	p	6.2	concrete	2.4	^{11}C	108± 20	[3]	
UCRL	p	6.2	concrete	2.4	^{27}Al	112± 20	[3]	
UCRL	p	6.2	concrete	2.4	^{198}Au	116± 20	[3]	
ANL	p	12.5	concrete	3.8	IC	173± 18	[5]	
CERN	p	15 27	earth	2.2	^{11}C ^{27}Al	117± 2 117± 2	[6]	
KEK	p	0.74	concrete	3.5	MP	120	[9]	
KEK	p	12	concrete	2.35	MP	143	[11]	

CT: Counter Telescope,/^{11}C,^{27}Al,^{32}S,: Activation detectors,
/G5: Nuclear emulsion,/IC: Ionisation Chamber,
/MP: Estimated value for Moyer Parameter

Table A.2 Attenuation lengths in iron (from refs. [0] and [11])

	Incident particle	Beam energy [GeV]	Shields		Detector	λ_{att} [gcm^{-2}]	Ref.	Remarks
			material	density [gcm^{-3}]				
CERN	p	20	steel	7.8	G5	120± 10	[4-II]	beam axis
CERN	p	20	steel	7.8	G5	185± 20	[4-II]	Integ.beam
CERN	p	10	steel	7.8	G5	119± 5	[4-III]	beam axis
CERN	p	10	steel	7.8	G5	165±	[4-III]	Integ.beam
CERN	p	10 & 20	steel	7.8	IC	155± 16	[4-IV]	
CERN	p	10 & 20	steel	7.8	MC	128± 8	[4-VI]	beam axis
CERN	p	10 & 20	steel	7.8	MC	185± 10	[4-VI]	Integ.beam
ANL	p	12.5	steel	7.8	IC	142± 15	[5]	
KEK	p	12	steel	7.0～7.2	^{11}C	188± 12	[10]	
CERN	p	7	steel	7.8	MP	147± 10	[7]	
RHEL	p	7.4	steel	7.8	MP	165	[8]	
KEK	p	0.74	steel	7.5	MP	160	[9]	

G5: Nuclear emulsion,/MC: Monte Carlo calculation,
/^{11}C,^{27}Al,^{32}S,: Activation detectors,/IC: Ionisation Chamber,
/MP: Estimated value for Moyer Parameter

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