ROOM RADIATION DOSE COEFFICIENTS FOR EXTERNAL EXPOSURE

A Thesis
Presented to
The Academic Faculty

by

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In Partial Fulfillment
of the Requirements for the
Masters of Science Degree in the
School of Mechanical Engineering

Georgia Institute of Technology
August 2015

ROOM RADIATION DOSE COEFFICIENTS FOR EXTERNAL EXPOSURE

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Date Approved: July 6, 2015

In memory of
Wilson McGinn

ACKNOWLEDGEMENTS

I would like to first thank Dr. Hertel, without whom I would have not found my place in the nuclear field as well as my passion for radiation protection. In undergraduate he offered mentorship and guidance, during graduate school he has offered opinions and life lessons, and now that it is all winding down I am proud to think of him as not only a role model of what I truly want to be when I grow up, but a friend. He has truly changed my life and shaped the person that I want to be. Without him I don't know how I could have made it through the ringer of Georgia Tech, especially twice.

I would like to thank Fred Dolislager and Wilson McGinn for believing in me and helping me attend graduate school. I thank Fred for his patience and optimism in every aspect of the project. I also thank Shaheen Dewji for taking me on as a lowly intern many summers ago and convincing me to pursue a graduate degree. She has acted as a mentor, manager, and friend. She made me into a go getter and a confident engineer.

Thank you to Michael Bellamy for first taking me on into his group for an internship and pushing to get me funding whenever I needed it. He made sure that I was always supported and able to achieve my academic dreams. He offered guidance in my nuclear development as well as future aspirations. He also ran a significant amount of my code on his cluster and I thank him for the countless hours he sat with me running through my inputs.

I wish to thank Keith Eckerman and Chris Wang for acting as members of my committed and providing feedback and guidance on my work. Thank you to the Environmental Protection Agency for sponsoring this project. Thank you to my Oak

Ridge team members who aided me in my time of need with computing power and kind words to keep up morale. Lastly I would like to thank my friends and family who listened to my ups, down, and in-betweens of this whole experience. Without all of these people, I would not have been able to put forth this thesis.

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SUMMARY

In situations where a room is radiologically contaminated, dose coefficients are needed to estimate the dose to an individual within the room. Currently, published dose and risk coefficients account for planar infinite contamination of soil which can misrepresent the room dose. To modify the established dose coefficients, room ratios must be derived.

Several room materials and dimensions were selected to model in MCNP5 using monoenergetic photon sources. The energies of the monoenergetic sources ranged from 10keV to 10MeV. Materials considered for the room were adobe mud brick, wood, glass, concrete, and drywall. The five room dimensions that were modeled are 10x10x10 ft^3, 50x50x10 ft^3, 100x100x10 ft^3, 200x200x20 ft^3, and 400x400x40 ft^3. Contamination depths of 1, 5, 15, and 100 cm were modeled as well as surface contamination. Contamination was assumed to uniformly cover all six surfaces of the room. Air kerma was found for corner, center, and middle of the wall positions within the room as well as a room average. From the derived air kerma, room ratios were calculated using the corresponding infinite soil dose coefficients.

Room ratios are material and energy specific as well as contamination depth specific. They can be used to modify coefficients from Federal Guideline Report 12 (FGR12) [2] for multiple contamination scenarios. Energies that were not modeled can be interpolated from the data. Specific radionuclide energy emissions can be interpolated as well. Room ratios can be applied to established risk coefficients as well in the same manner as dose coefficients.

CHAPTER 1

INTRODUCTION

Radiation clean up and risk assessment has been an ever present topic since the creation of the "device". To bring the topic to a daily concern of the average citizen, radon buildup in basements can often cause alarm and require examination. In instances of both man-made and naturally occurring radiation contamination in buildings, readily available data is necessary to assess health risk on site as well as the clean-up required to remedy said risk. The US Environmental Protection Agency has set forth Preliminary Remediation Goals (PRGs) that aid in the risk assessors' task of deciding the level and cost of remediation projects [1]. The EPA has established dose rate coefficients and risk coefficients (also called Slope Factors) for all of the radionuclides recognized for external exposure by the International Commission for Radiological Protection [2][3][9]. These numbers only account for idealized infinite contamination geometries of soil, air and water. Due to this conservative yet costly estimate, further work needs to be done to create more customizable dose coefficients that can accurately determine radiation contamination and remediation requirements.

A PRG tool was developed by the EPA to assist risk assessors in their preliminary evaluations of contaminated sites. Originally, it accounted for infinite contamination only and integrated the established coefficients into their risk calculations. In 2014, the EPA updated its PRG tool to account for additional scenarios in accordance with the infinite soil contamination case. Updated scenarios included contaminated soil that had been covered with clean soil called Gamma Shielding Factors (GSFs) and contaminated soil that varied in areal size from one meter radius to the previously established infinite case called Area Correction Factors (ACFs) [4][5].

Both updates illustrated that the infinite dose rate coefficients could greatly overestimate the individual and site risk due to radionuclides. For assessing a contaminated room, these updates still would not provide an accurate estimate for initial cleanup cost or remediation tasks. This led to the desire for factors that would integrate positioning, material composition, and room size into the already established remediation goal and risk equations.

The purpose of this research is to compute room ratios that fit specific room material, size, and receptor position to the infinite contamination soil case. Using these ratios, remediation and risk on a small level such as a building or room can be evaluated without grossly overestimating the task at hand. The various room materials that will be evaluated are concrete, drywall, adobe mud brick, glass, and wood. The room sizes are 10 x 10 x 10, 50 x 50 x10, 100 x 100 x 10, 200 x 200 x 20, and 400 x 400 x 40 in cubic feet. Individual position will be considered against the middle of the wall, in the corner of the room and in the center of the room. An average room kerma rate was taken as well for the entire air volume within the room. Further specifics will be discussed in Chapter 3.

CHAPTER 2

BACKGROUND

2.1 Federal Guidance Report 12

Dose rate coefficients were established by the Environmental Protection Agency (EPA) in Federal Guidance Report (FGR) 12 in 2001. These numbers have been integrated into many guidelines for remediation and cleanup of radionuclide contamination. The guidance provided dose coefficients for external exposure to radionuclides in air, water, and soil. Photon and electron emissions were considered for exposure scenarios. One of the modes of external exposure represented in FGR12 is exposure to contamination in or on the ground. This case was simplified to an idealized exposure geometry. For a uniform concentration of the radionuclide in the soil medium, the soil is effectively infinite in extent.

In order to calculate the dose coefficients, the procedure in FGR12 was broken into three components [2]:

- Energy and angular distributions of the incident radiations on the body were computed for a range of monoenergetic sources distributed in the soil;
- Energy deposition and transport of the incident radiation within organs and tissues of the body were calculated for each source energy considered;
- From evaluation of energy deposition within each organ and tissue, the organ and tissue specific dose for radionuclides were computed.

While this yields both monoenergetic and radionuclide specific dose coefficients, only monoenergetic dose coefficients will be considered in this work. In FGR 12, dose coefficients were derived using Equation 1:

$$h_t = \frac{H_T}{\int C(t)dt} \quad (1)$$

Here h_T represents the time independent dose coefficient for a specific radionuclide taking into account both the energy and intensity of the emitted radiation. *C(t)* signifies a uniform concentration of a given radionuclide at time t.

The calculation of computing the organ dose in response to photon sources in soil was broken into two steps: (1) calculation of the incident radiation field on a closed coupling surface that could surround the human phantom model, and (2) calculation of organ dose using the coupling surface source. To visualize this computation better, see Figure 2-1.

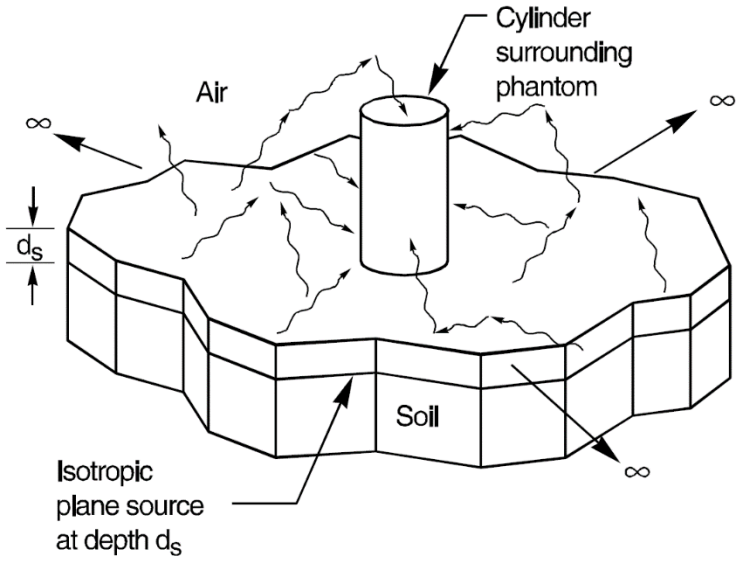

Figure 2-1: Calculation of radiation field due to a contaminated ground plane on a cylinder surrounding the phantom location [2]

Here it is illustrated that the plane of contamination is infinite in extent perpendicular to the target cylinder and the contamination depth is represented by an isotropic plane source at depth d_s. The coupling surface source represents the angular flow rate that entered the cylinder and imposes the same source the phantom would have been exposed to on the infinite plane. The second step of the calculation is illustrated in Figure 2-2.

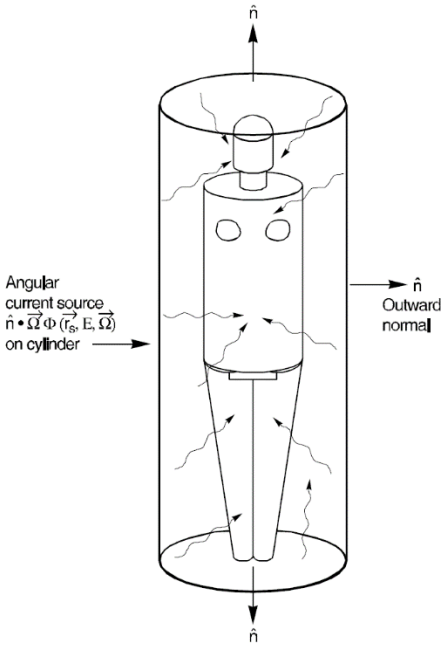

Figure 2-2: Calculation of organ dose from an angular current source on the cylinder surrounding the phantom [2]

The soil composition for the calculations was assumed to contain 30% water and 20% air by volume, see table 2.2. The air composition used in FGR12 is given in table 2.1 and represents conditions of 40% relative humidity, a pressure of 7600mmHg, a temperature of 20° C, and a density of 1.2 kg m^{-3} [2].

Table 2-1: Air Composition [2]

Element	Mass Fraction
H	0.00064
C	0.00014
N	0.75086
O	0.23555
Ar	0.01281
Total	1.00000
Density	1.2 kg/m^3

Table 2-2: Soil Composition [2]

Element	Mass Fraction
H	0.021
C	0.16
O	0.577

Al	0.050
Si	0.271
K	0.013
Ca	0.041
Fe	0.011
Total	1.000
Density	1.6E3 kg/m^3

2.2 Dose Rates in Contaminated Rooms of Various Sizes

In 2005, Eckerman [7] addressed the need for further calculations to adjust FGR12 published coefficients for buildings with room contamination. In the report, Eckerman used air kerma rates to develop the relationship between dose rate coefficients for external exposure in contaminated rooms and dose rate coefficients for an infinite source in contaminated soil. The purpose of that paper was to show how position in a room as well as the size of the room could affect dose. To do this, ratios would need to be developed to adjust the dose rate coefficients for soil contamination on a lateral infinite plane. The depth of the contamination of the soil could extent solely on the ground plane or surface or it could extent to a depth making a contaminated volume.

To evaluate contamination in the rooms, it was assumed that the contamination was uniform and covered all six surfaces (the floor, ceiling, and four walls). The air kerma rates were calculated for monoenergetic photon emitters one meter above the floor. The contamination scenario for Eckerman's report involved solely surface contamination and room sizes with dimensions of: 10 ft x 10 ft x 10 ft, 50 ft x 50 ft x 10 ft, 100 ft x 100 ft x 10 ft, 200 ft x 200 ft x 20 ft, and 400 ft x400 ft x 40 ft. Material composition of the structure was not taken into account, thus solely air was used for the materials inside the room as well as the makeup of the room.

The various room sized were broken into a 19 by 19 grid where air kerma was evaluated over the 361 locations within the room. They were then normalized to the dose above an infinite

lateral plane of contamination composed of air. To calculate the dose kernel over the surfaces of the room, the point kernel method was applied. This involved taking the integral of the dose kernel over the room surfaces. The kernel for kerma rate, $\dot{D}(r, E)$, at a distance r from the point source of photons with energy E is given by

$$\dot{D}(r, E) = \frac{1}{4\pi r^2}(\mu/\rho)_T E e^{-\mu r} \quad (2)$$

where μ and $(\mu/\rho)_T$ are the linear attenuation and mass energy transfer coefficients in air for photons of energy E [14]. The kernel of Eqn. 2 does not take into account the contribution for scattered photons; i.e. buildup has been neglected.

The kerma rate 1 meter above the floor at specified locations (x, y) can be found using this dose kernel. Integrate over the surfaces of the room as in Eqn. 3.

$$\dot{D}(x, y) = \int_S dS_a \, S_a \dot{D}(r, E) \quad (3)$$

Here r is equal to $|(x, y, 1) - \vec{r}_s|$ where $\vec{r}_s$ is the vector location of the point source and S_a is the activity of the contamination per unit surface area. The kerma rate $\dot{D}(x, y)$ is then normalized to the kerma rate above an infinite plane of surface contamination. The kerma rate taken 1 meter above the infinite plane with surface aerial contamination S_a emitting photons of energy E is given by

$$\dot{D}_P(1, E) = \frac{\dot{S_a}(\mu/\rho)_T E \, E_1(\mu h)}{2} \quad (4)$$

where E_1 is the first-order exponential integral function [8]. The relative dose rate, or room ratio, given by Eqn. 4 and was evaluated at all 361 locations in the room. This was then averaged to

yield an average relative dose rate in the room. Calculations were also made in the center of the room, the corner of the room, and at the mid-point along the wall. The results of those calculations are shown in Figures 2-3 through 2-6 where the relative dose rate in a room at 100 keV and 1 MeV is shown. Relative dose rates as a function of photon energy for all room sizes is shown in figures 2-7 through 2-10.

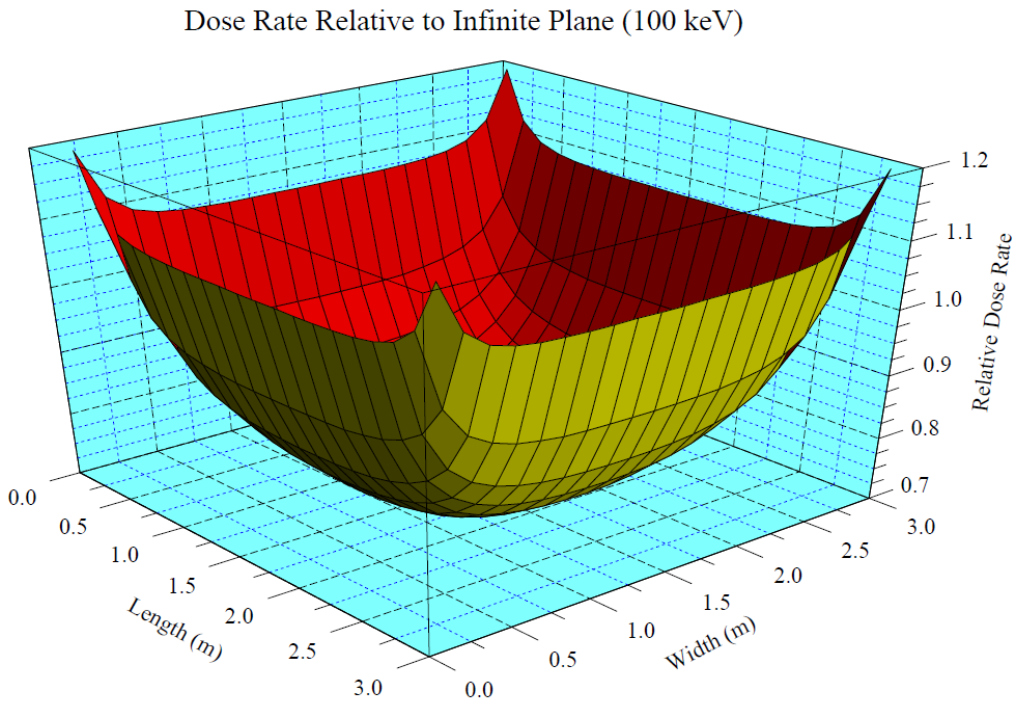

Figure 2-3: Photon dose rate inside small room (10 x 10 x 10 ft) for a 100keV source [7]

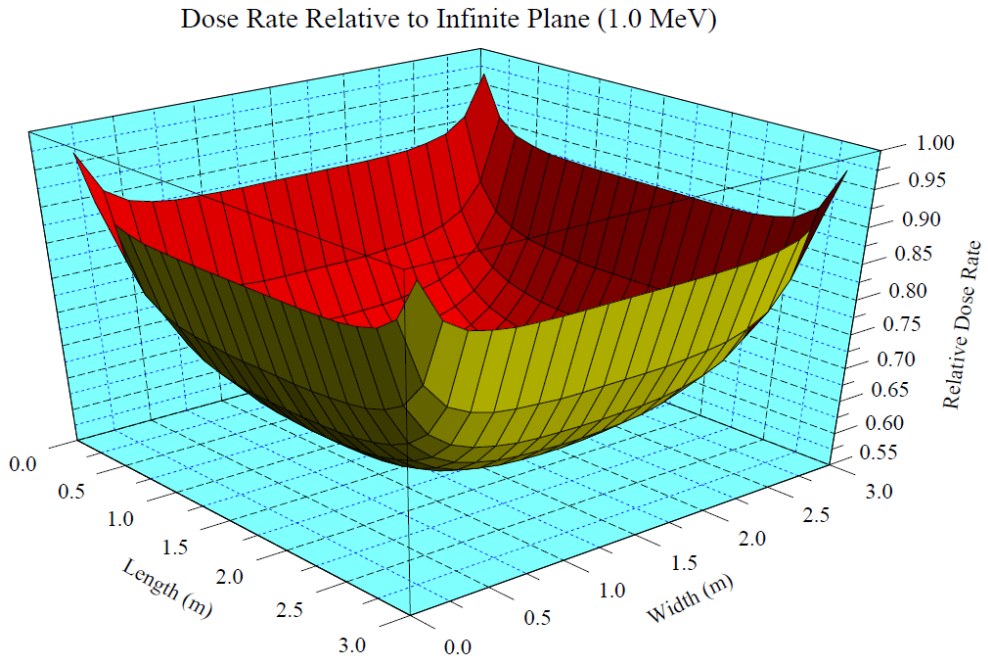

Figure 2-4: Photon dose rate inside small room (10 x 10 x 10 ft) for a 1 MeV photon source [7]

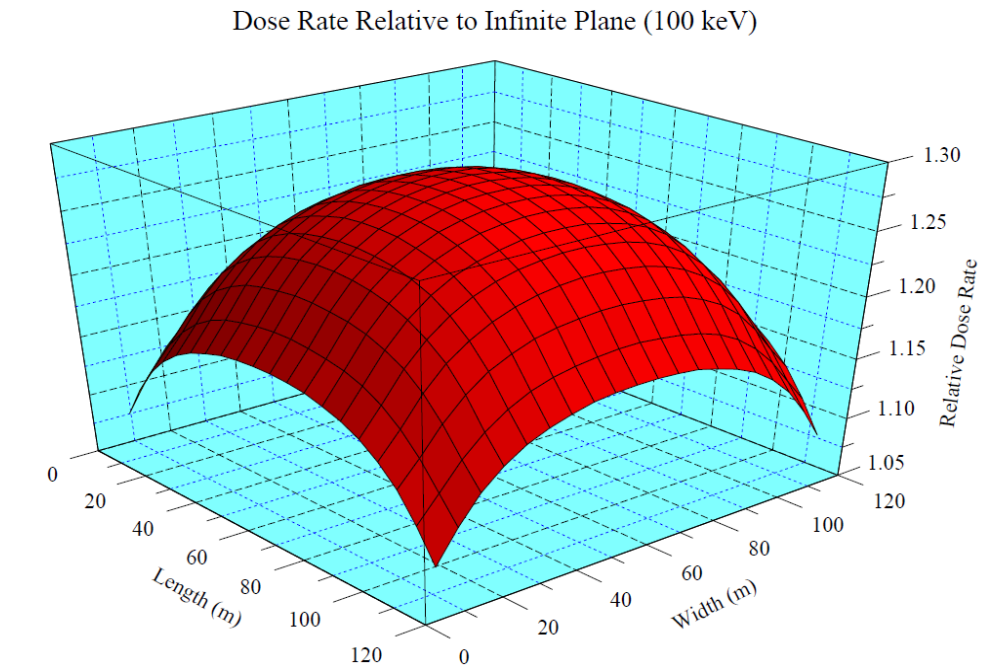

Figure 2-5: Photon dose rate inside large room (400 x 400 x 40 ft) for a 100 keV source [7]

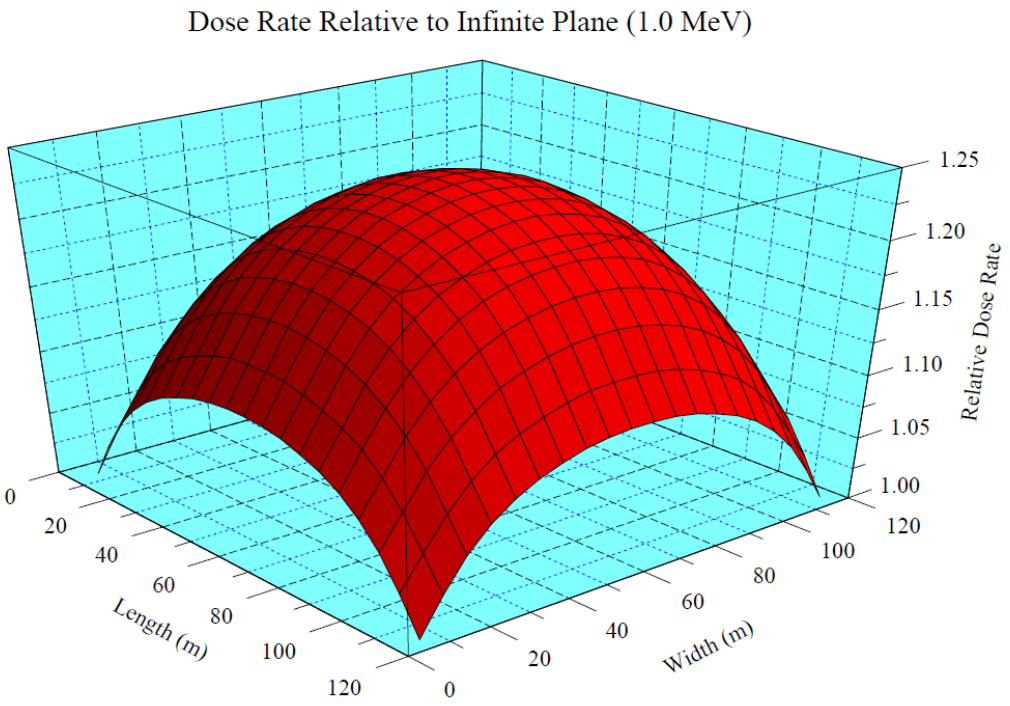

Figure 2-6: Photon dose rate inside large room (400 x 400 x 40 ft) for a 1.0 MeV source [7]

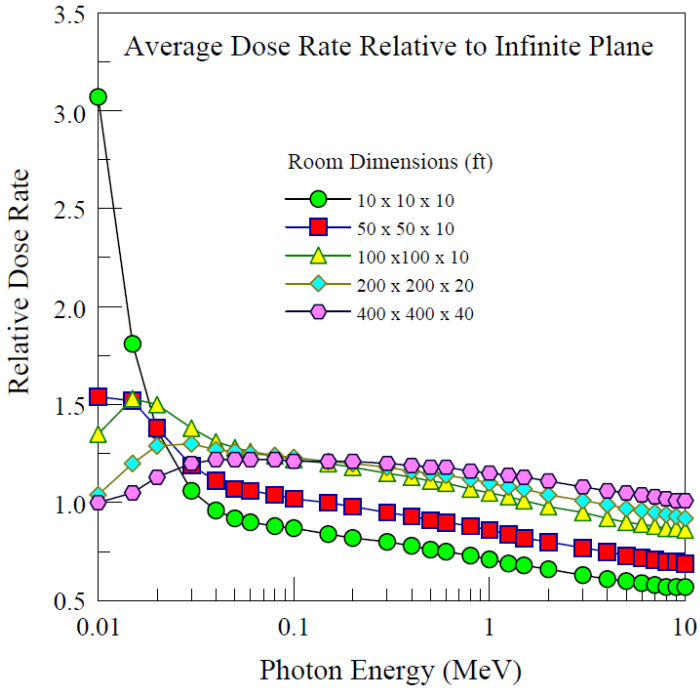

Figure 2-7: Average relative photon dose rate for various size rooms [7]

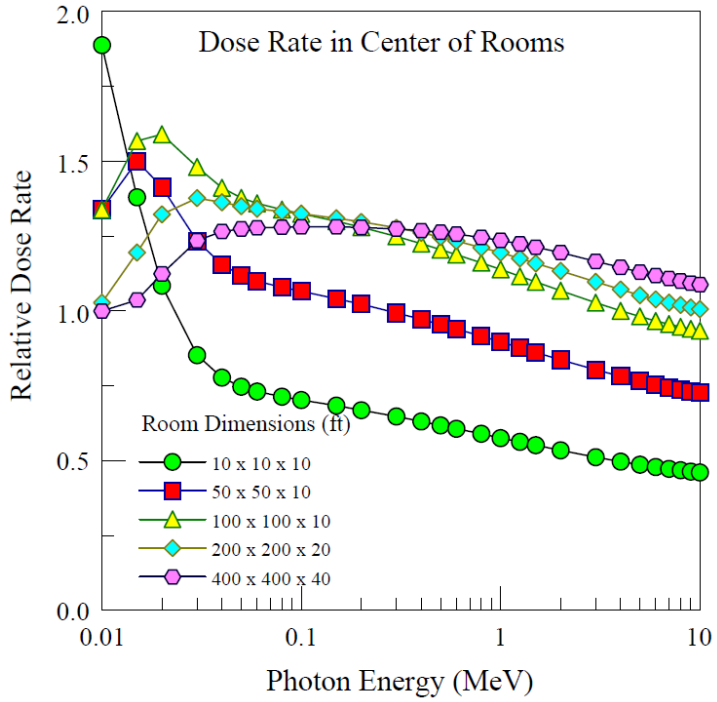

Figure 2-8: Relative dose rate in center of rooms of various sizes [7]

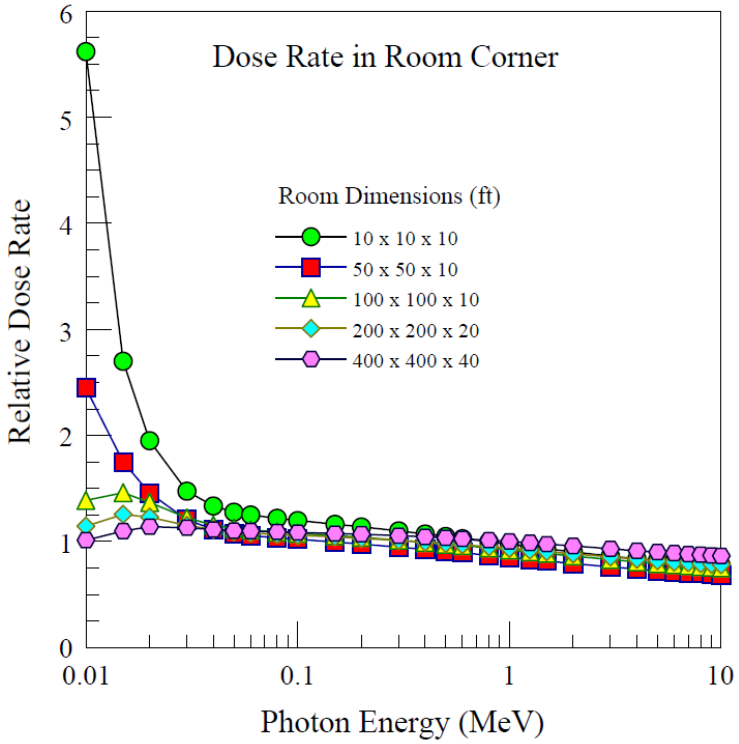

Figure 2-9: Relative dose rate in the corner of rooms of various sizes [7]

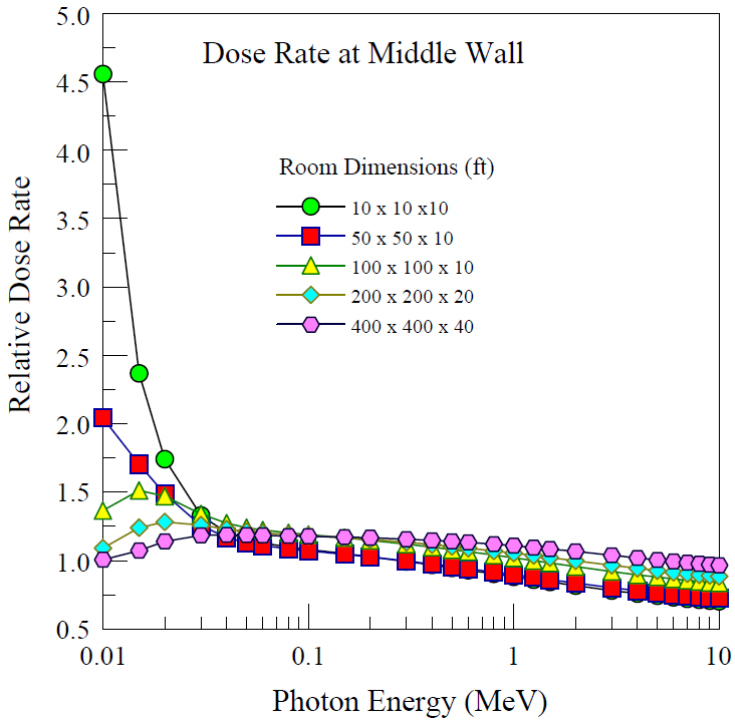

Figure 2-10: Relative dose rate at middle of wall location in rooms of various sizes [7]

2.3 Preliminary Remediation Goals overview

In 2000, the EPA created an online tool to incorporate risk of cancer and morbidity due to radiation exposure and site specific information. The Preliminary Remediation Goal (PRG) calculator was meant as a site screening tool for initial cleanup evaluation [1]. The remediation value was based on risk to exposed individual as well as various environmental factors. Cancer "slope factors" or risk coefficients were taken from Federal Guidance Report 13 [9]. These slope factors were based on dose coefficients established in FGR12 and took into account radiological contamination that was infinite in extent and penetrated to a soil depth of 1, 5, 15, or 100 cm. The surface ground contamination source was considered as well. The user could select the depth of the extent into the soil of the contamination or if they believed that only the surface of the ground had been contaminated. If a depth was given then the source becomes a volume source. If

no depth is given, then the contamination is considered surface contamination and a plane source.

In order to develop the PRG tool further and expand it for use in multiple contamination scenarios, two reports were published which evaluated the effect of changes in the contamination surface area as well as any soil coverage of the contamination. Taking into account areas ranging from one square meter to one million square meters, the Area Correction Factor (ACF) report used the previously established contamination depths and calculated kerma ratios that modified risk factors of infinite contamination to that of the decided upon area [5]. The source used to represent contamination was either planar or a volume source depending on the depth of contamination selected for the soil. For a volume source, a contamination depth of 1, 5 or 15 cm would be selected. For an area source, the contamination depth would just be considered to be the surface of the ground. A tally receptor was located 1 meter above the ground and the soil depth and lateral extent was considered infinite. The geometry for the calculation is shown in figure 2-11. Results of this study are shown in figures 2-12 through 2-13.

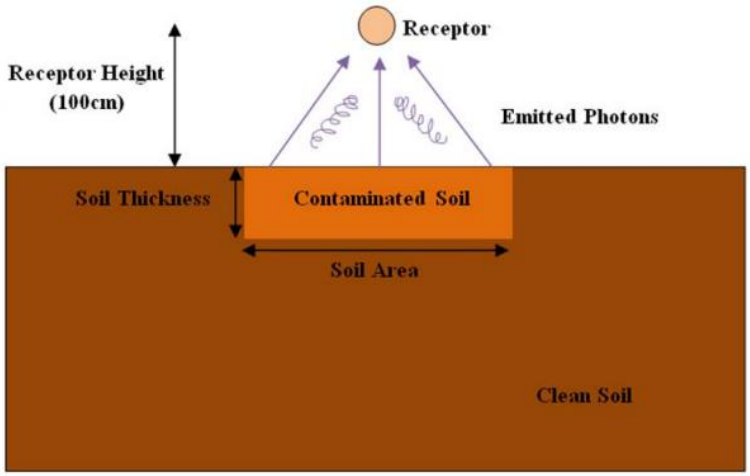

Figure 2-11: Geometry used in soil contamination ACF [5]

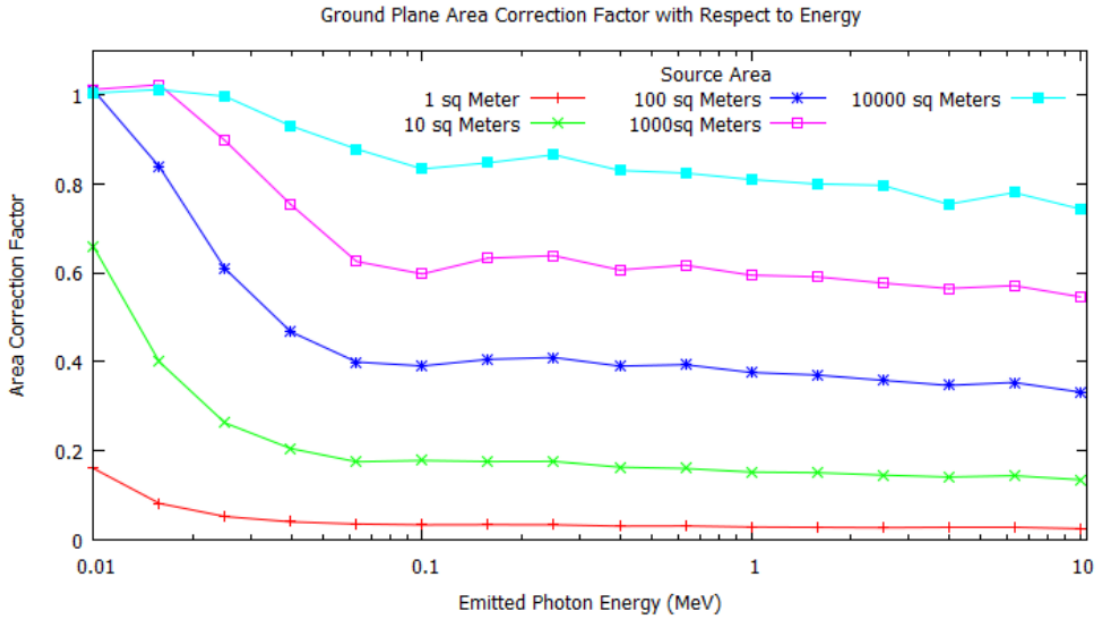

Figure 2-12: ACF for surface planar contamination case using monoenergetic photon source [5]

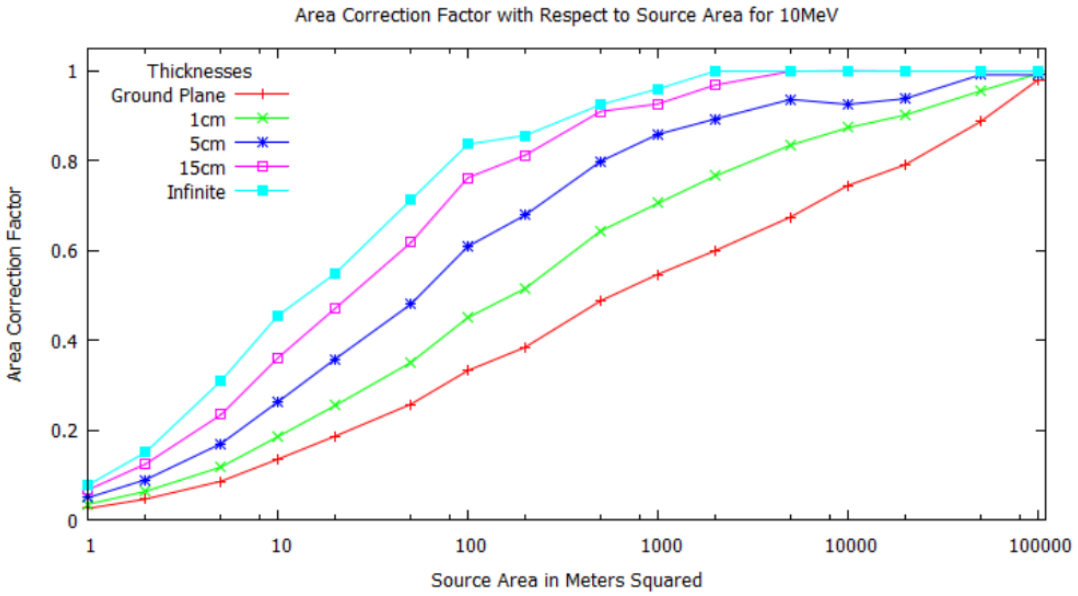

Figure 2-13: ACF for various depths of contamination at 10 MeV monoenergetic photon sources. The source area is considered the area of the ground exposed to the receptor that is contaminated. [5]

In figure 2-13, it is observed that using the dose coefficients and risk factors would overestimate the individual risk from exposure for surface contamination with any areal extent. If the individual were exposed to a contaminated area source of one square meter, the dose is twenty percent or less than the infinite case. An exposure to an area of 10 or even 100 square

meters would yield a dose less than half of the infinite case. Figure 2-12 shows that as the surface area of contamination approached the infinite area for a 10 MeV source, the ACFs approach one regardless of contamination depth. It can also be noted that at depths 5cm or less, the dose to the individual is less than eighty percent of the infinite case.

The second report that was written to broaden the capabilities of the PRG tool was the Gamma Shielding Factor (GSF) report [4]. The GSF accounted for clean soil cover over a contaminated area. This layer of clean soil cover ranged from 0 to 100 cm increasing in increments of 10 cm. The areal extent of the contamination remained infinite so as to just determine the effect of soil cover versus the uncovered cases [4]. Sources were either planar or volumetric depending on the depth of the contamination. If the depth was considered surface contamination, the source is a plane source. When a depth is selected, the source is a volumetric source. Figure 2-14 shows the GSF in relation to the monoenergetic photon sources and the ground plane contamination. Emissions of photons 0.3 MeV or less yielded a GSF of approximately zero when covered with 60 or more centimeters of clean soil. Even at the maximum photon energy of 10 MeV, 60 or more centimeters of soil cover will yield a GSF of less than two percent of the infinite case.

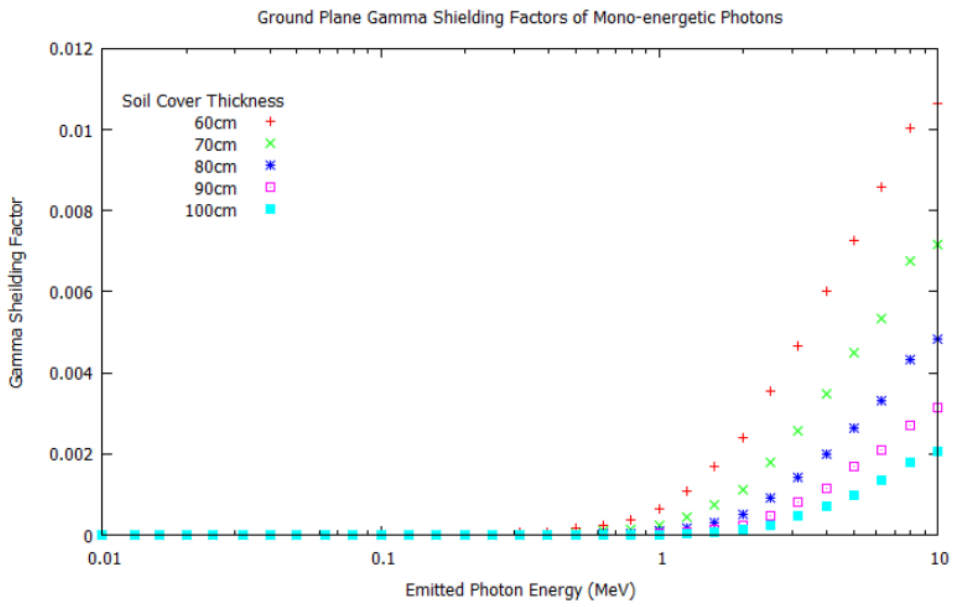

Figure 2-14: Ground plane GSF for monoenergetic photons with cover thickness 60 through 100 cm [4]

Figure 2-13 shows the GSF for a 10 MeV photon source. All contamination thicknesses yield a GSF less than at least half of the uncovered scenarios when covered with 10 cm of clean soil cover.

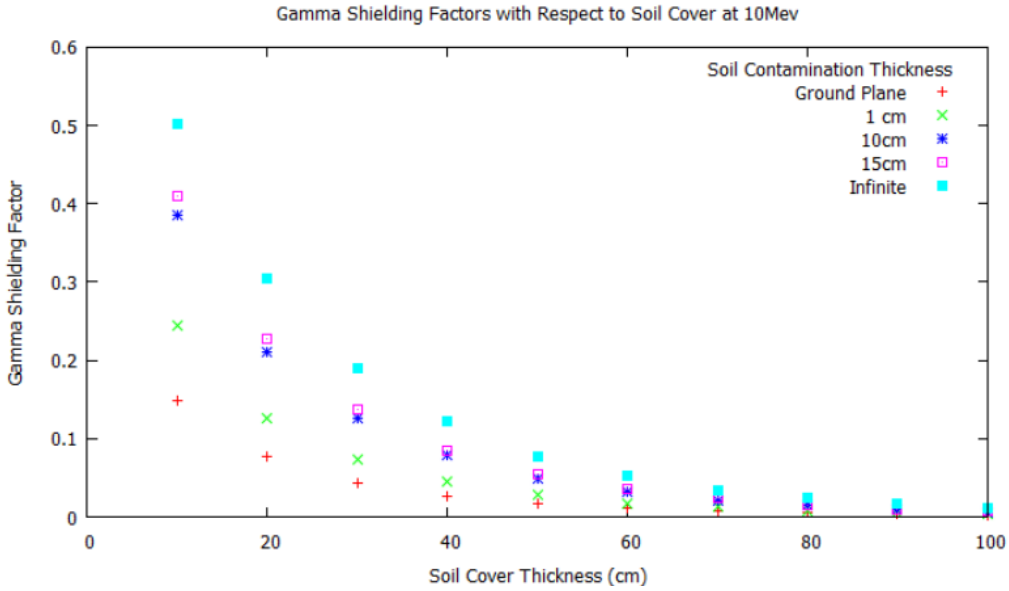

Figure 2-15: GSF at 10MeV using various soil cover depths and contamination thicknesses [4]

Both the ACF and GSF report illustrate the need for the addition of correction factors for dose and risk coefficients to properly address scenarios that may be encountered. These factors

demonstrate how modifications can be made using air kerma rates to adjust for finite sources. This leads to another tool developed by the EPA.

2.4 Building Preliminary Remediation Goals

The Building Preliminary Remediation Goal (BPRG) tool joins the ideals of the PRG tool as well as the work established by Eckerman [7] [10]. The BPRG will set initial cleanup goals for contamination inside of buildings, particularly at Superfund sites. Its primary use is to set a cleanup level where there is otherwise no appropriate government regulation for remediation. The BPRG accounts for inhalation, ingestion and external exposure in buildings for both an indoor worker and resident. Dose and risk coefficients from FGR 12 and FGR 13 [2] [9] need correction factors to be able to account for three dimensional contamination within a room using infinite surface and volume dose and risk coefficients. Once such factors are established in this work, they will be incorporated into the BPRG tool for external exposure. The ratio will modify the established Slope Factors from FGR13 [9] to fit specific room sizes and levels of contamination.

2.5 Background Summary

The need for room ratios to modify infinite contamination dose coefficients extends across many areas of remediation and cleanup. Eckerman showed that the use of FGR12 dose coefficients in building contamination scenarios can underestimate the individual risk as well as the level of remediation required for radionuclide contamination [2]. The PRG, along with the ACFs and GSFs show how the dose coefficients can be modified to fit specific scenarios. The BPRG sets to develop more modification factors that will broaden the capabilities of first response tools pertaining to room and building contamination. Calculating room ratios will help broaden the risk assessors' capabilities and allow them to base estimates on material and room dimension properties as well as the radionuclide properties.

CHAPTER 3

METHODOLOGY

In order to calculate room ratios for the various room sizes of different materials, computer simulation was employed since the actual measurement of the dose rates would be tedious and possibly inaccurate for the number of cases needed. The room sizes previously used in Eckerman's work was the basis of the room dimensions for this study. Monoenergetic photons were used as the source particles in order to provide continuity with previous works done by the EPA. Materials for the rooms and corresponding source depths were specified by the EPA and will be described in more detail later in the chapter. The Monte Carlo method was employed in this study and its verification is given in section 3.1. The simulation's initial results were verified by comparing the data to the numbers used to generate Figures 3-3 and 3-4. After verification was complete, more complex models and simulations were created and input into a Monte Carlo program. MCNP5 was used to perform the calculations for all contamination scenarios. Both F4 and F5 tallies were used to derive the air kerma rates at individual locations as well as the average air kerma in the room. An F4 tally is a track length estimator tally which averages the flux within a cell. Typically its units are particles per cm^2. An F5 tally is a next event estimator which is either a point or a ring detector [6]. Python 2.7 was used to generate, error check, and extract tallies from the files. Upon completion of the many runs, the data were input into Excel where the ratios were derived.

3.1 Surface Air Room Model

The preliminary surface room was modeled using air as the material for both inside the room as well as the surrounding walls, ceiling and floor. F5 tally positions were placed a corner of the

room, along a wall, as well as in the center. These tallies were located one meter above the floor. The corner tally was located 30 cm from both walls. The tally along the wall was located 30 cm from the middle of the wall. The tally positions are illustrated in Figure 3-1. This shows the positions for the 10ft by 10ft by 10ft case.

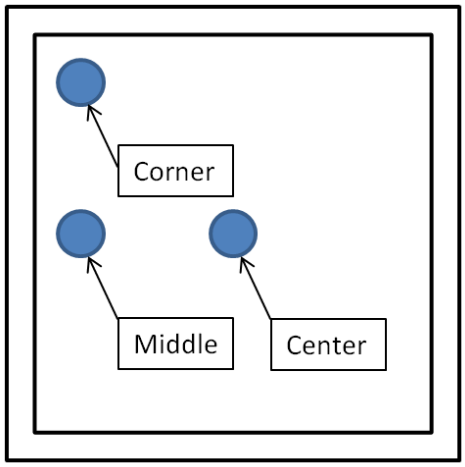

Figure 3-1: Top view of surface contaminated air room with tally position

The air composition was taken to consist of Carbon, Nitrogen, Oxygen, and Argon. Their specific composition is show in Table 3.1. This makeup of air was chosen in order to remain consistent with the tallies done for the previous updates of the PRG calculator.

Table 3-1: Air Composition [5]

Element	Mass Fraction
Carbon	0.000124
Nitrogen	0.755267
Oxygen	0.231781
Argon	0.012827

The tallies were modified with a tally multiplier card using the ICRP 74 Fluence to Air Kerma Coefficients [12]. These tally multiplier card split the photon depositions to the point detector by energy and multiplied them by set conversion coefficients relating to the specified energy. An example of the tally multiplier card is show in appendix A.

Surface contamination was the only scenario used for the air room model. Surface contamination would consist of the floor, ceiling, and four walls being covered in radiological contamination. Solely the surfaces of the room that were exposed to the inside of the room would be contaminated meaning the source would not extend into the room materials. This is shown in Figure 3-2.

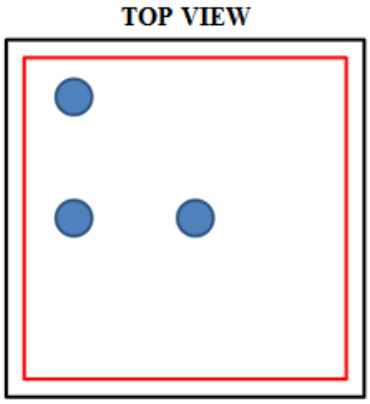

Figure 3-2: Top view of air room with surface contamination

Kerma rates were found for the 5 room dimensions previously used by Eckerman in "Dose Rates in Contaminated Rooms of Various Sizes" and the 31 monoenergetic photon energies previously [2]. The energies were logarithmically distributed from 10keV to 10MeV [7]. This energy range covers the photons emitted by most radionuclides. The results of this model and calculation were compared to Eckerman's results which used point kernel method. Side by side comparisons are shown in figures 3-3 and 3-4.

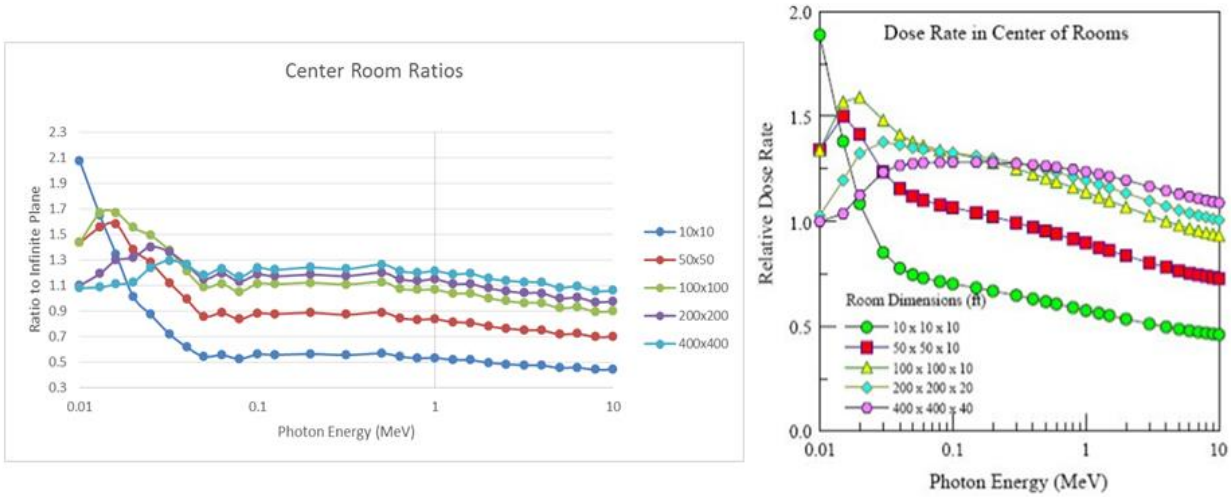

Figure 3-3: Comparison of Center Room Ratios (Left-MCNP, Right-Point Kernel)

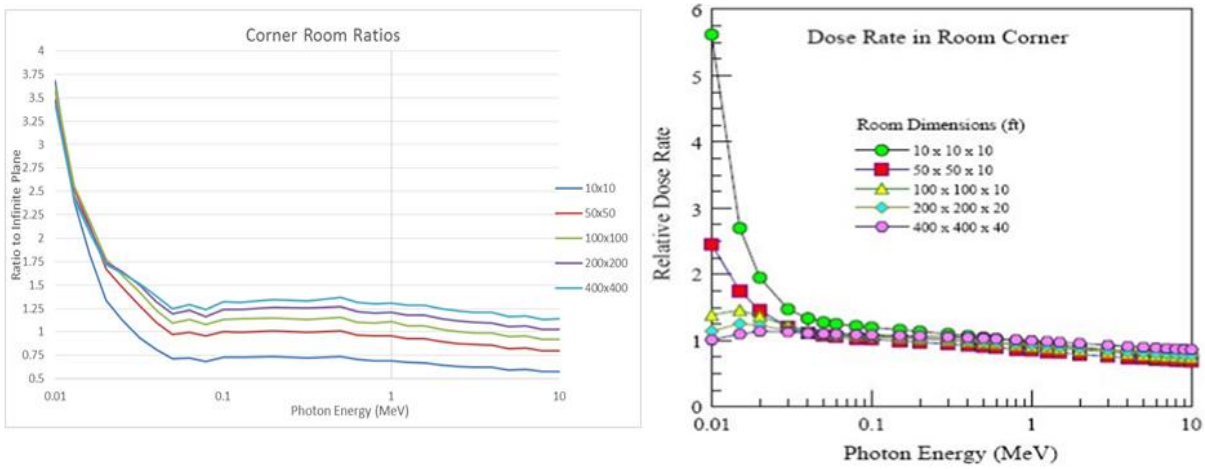

Figure 3-4: Comparison of Corner Room Ratios (Left - MCNP, Right- Point Kernel)

The difference in lower energy photons is believed to be due to secondary interactions with the wall which were not previously accounted for using the point kernel method. The present model estimates similar ratios to that of previous work. This provided assurances that the calculations were good.

3.2 Overview of cases to be evaluated

The BPRG calculator tool aims to have several options that the user can select. In order to achieve this, several materials were selected that are commonly found in rooms of buildings. These materials are adobe, concrete, drywall, glass, and wood. The details of the material selection will be discussed in section 3.3. There were also two material scenarios that consisted of multiple materials. Composite One represents a room with a concrete floor, a glass window that takes up approximately the area of one wall, a wooden door, and a drywall ceiling and walls. Composite Two represents a room that has concrete floors and walls, wooden doors and a drywall ceiling. Both of the composite cases used a homogenous material that was derived from the wall materials. Specifics of the derivation are given in section 3.3. Several source thicknesses were chosen to model for all room sizes as well. These thicknesses represent the depth into the wall, ceiling, and floor that the source contamination extends. A chart of the cases that were evaluated is shown in Table 3.2. Note that the room sizes are: 10 x 10 x 10, 50 x 50 10, 100 x 100 x 100, 200 x 200 x 20, and 400 x 400 x 40 cubic feet. There will be 4 tallies taken in each calculation: one F4 and three F5 tallies. The F4 tally averages the kerma over the volume of the air inside the room. The F5 tallies are point detectors positioned in the center of the room, corner, and against the middle of the wall. This is illustrated in Figure 3-5.

Table 3-2: Grid of materials and contamination depths to be evaluated

Material	Surface	1cm	5cm`	15 cm	Infinite
Adobe	√	√	√	√	√
Concrete	√	√	√	√	√
Drywall	√	√	√	X	X
Glass	√	√	X	X	X
Wood	√	√	√	X	X
Composite 1	√	√	√	√	√
Composite 2	√	√	√	√	√

All tallies were modified using a dose conversion factor card. The conversion coefficients are taken from ICRP 116 [13] and convert fluence to air kerma for monoenergetic photons.

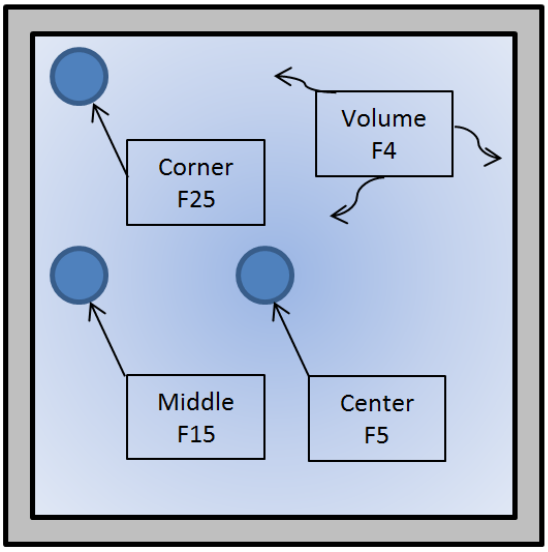

Figure 3-0-5: Tally placement for room contamination (top view)

3.2.1 Surface Contamination

To model a room with surface contamination, two rectangular parallel prisms were used. The smaller of the two prisms had the internal dimensions of the chosen room while the larger extended 200 cm past every boundary of the inside dimensions of the room. This is shown in Figure 3-6. The F4 tally calculated an average room kerma was tallied over the volume within the smaller rectangular prism.

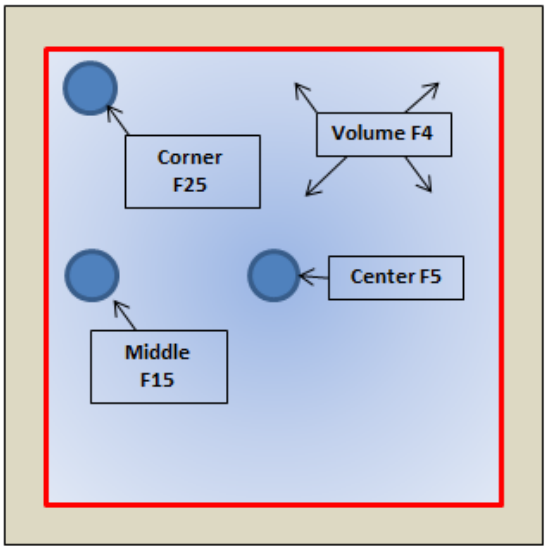

Figure 3-6: Surface contamination geometry visualization

The material between the two rectangular prisms was specified to be the given building material. The material inside the room was air. Specific compositions will be described in detail later in the chapter.

In order to model surface contamination of a room, the source definition card was used to specify the exact planes of contamination. This was achieved by setting the origin position of the source as a distribution of six points. These points were located in the center of each of the six surfaces of contamination. The x, y, and z plane extent of the source was set to be a function of the origin position. Each origin position had corresponding planar extents. All sources had a uniform distribution. An example of the input file is provided in appendix A. The outputs of the tallies were all normalized to a source strength of 1 Bq per m^2.

3.2.2 Depth Contamination

The modeling of room contamination to a specified depth is a slightly more complex case. The source definition card that was used for the surface tally was expanded to be volumetric and

account for the depth of contamination as well as the contribution from each side of the prism volume. The prism had dimensions of the specified contamination depth and extended that depth past the inner rectangular prism. For example, if the room dimensions were 10 x 10 x 10 cubic feet, this would correspond to -152.4 to 152.4 in the input file or 304.8cm. If the contamination depth were 1 cm, the new dimensions for the prism source would extend to -153.4 and 153.4. This is shown in Figure 3-7.

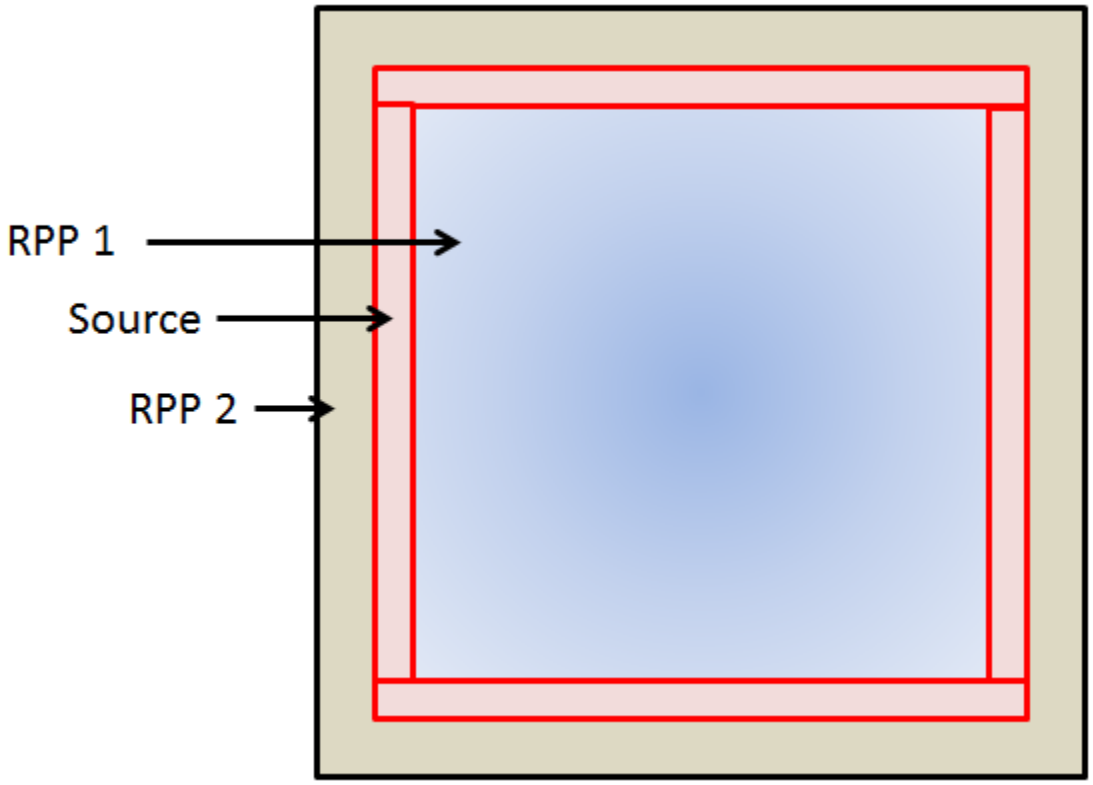

Figure 3-7: Geometry of depth contamination

The source card took into account only particles generated within the wall, ceiling, or floor within the contamination depth. The SDEF card is show below in Figure 3-8.

```
MODE P
SDEF POS=d2 PAR=2 ERG=0.2 X=FPOS d8 Y=FPOS d15 Z=FPOS d22
C
C -- This is setting the center positions for the 6 planes
SI2 L 0 0 -152.4 0 0 152.4 0 -152.4 0 0 152.4 0 -152.4 0 0 152.4 0 0
SP2 1 1 1 1 1 1
C
C --This is setting the xrange for the 6 planes
DS8 S 9 10 11 12 13 14
SI9 -153.4 153.4
SP9 0 1
SI10 -153.4 153.4
SP10 0 1
SI11 -153.4 153.4
SP11 0 1
SI12 -153.4 153.4
SP12 0 1
SI13  -153.4 -152.4
SP13 0 1
SI14 152.4 153.4
SP14 0 1
C
C --This is setting the yrange for the 6 planes
DS15 S 16 17 18 19 20 21
SI16 -153.4 153.4
SP16 0 1
SI17 -153.4 153.4
SP17 0 1
SI18 -153.4 -152.4
SP18 0 1
SI19 152.4 153.4
SP19 0 1
SI20 -152.4 152.4
SP20 0 1
SI21 -152.4 152.4
SP21 0 1
C
C --This is setting the zrange for the 6 planes
DS22 S 23 24 25 26 27 28
SI23 -153.4 -152.4
SP23 0 1
SI24 152.4 153.4
SP24 0 1
SI25 -152.4 152.4
SP25 0 1
SI26 -152.4 152.4
SP26 0 1
SI27 -152.4 152.4
SP27 0 1
SI28 -152.4 152.4
SP28 0 1
```

Figure 3-8: Source definition example from MCNP input file for 10 x 10 x 10 ft room with 1 cm contamination depth

An example of the model set up is shown below in Figure 3-9. The tally positions remain consistent with that of the surface contamination model. The contamination depth varied from 1, 5, 15, and 100 cm. The extent of the outer prism was set to be 50 cm greater than the contamination depth. To write all of the MCNP input files, a python script was written to create inputs for all desired scenarios. An example of the python script is in Appendix A.

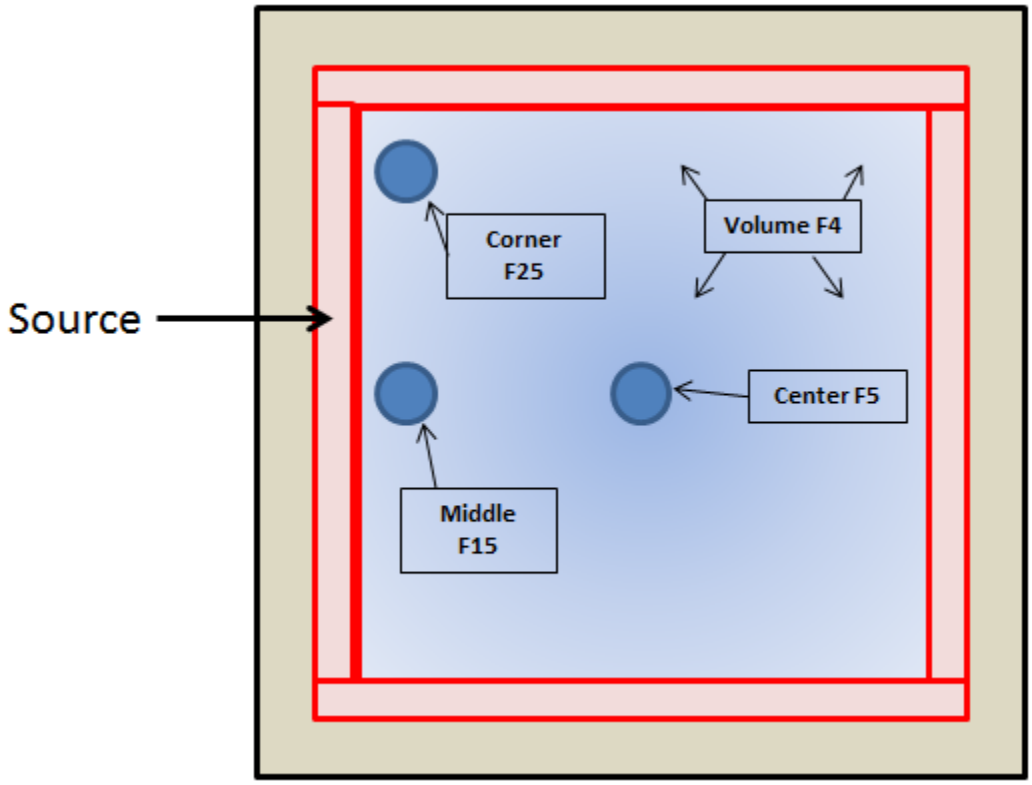

Figure 3-9: Depth contamination geometry visualization

3.2.3 Composite cases

The modeling of the composite cases involved the same geometry as the other contamination scenarios with the addition of two planes that sliced through the z axis. One plane was located at the positive z boundary of the room dimension and the other was located at the negative z boundary of the room. Above the positive z-plane and within rectangular parallel prism 2 (RPP

2), the material was set to be drywall. Below the negative z-plane and within the RPP 2, the material was set to be concrete. Material inside RPP 1 was set to be air. The material within RPP 2 that was not assigned to the floor or ceiling materials was set to the composite material. This is shown in Figure 3-10 where the green horizontal lines represent the cuts made in the z axis. Depending on the case, the composites were either made of concrete and wood, or drywall, wood, and glass.

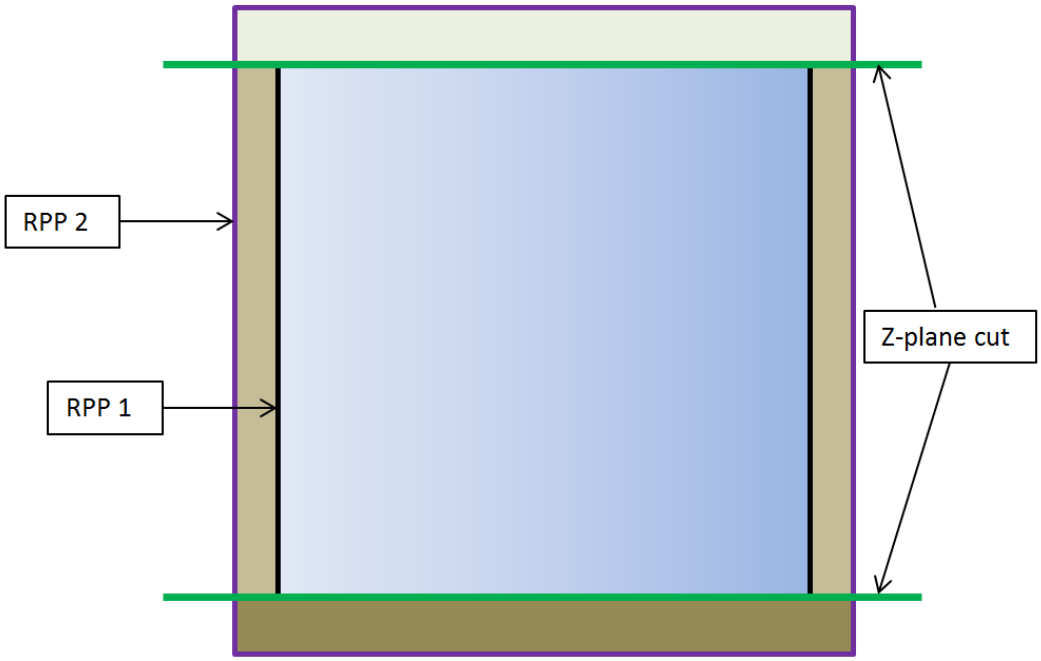

Figure 3-10: Side view of composite case with cuts on z axis

The tallies and SDEF card were set to be the same as for the depth contamination cases.

3.2.4 Special

In order to verify the validity of the method used in the composite cases, a room was modeled examine Composite 1. The outputs from the homogenous material that was used in Composite 1

would be compared to those of an actual layout of the same room with discrete locations for each material. A window was designated to take up one wall of the room. Only the 10 x 10 x 10 case was examined since it should provide sufficient insight. For this case alone there were six different room combinations with involved the placement of the door. These cases are show in Figures 3-11 through 3-16.

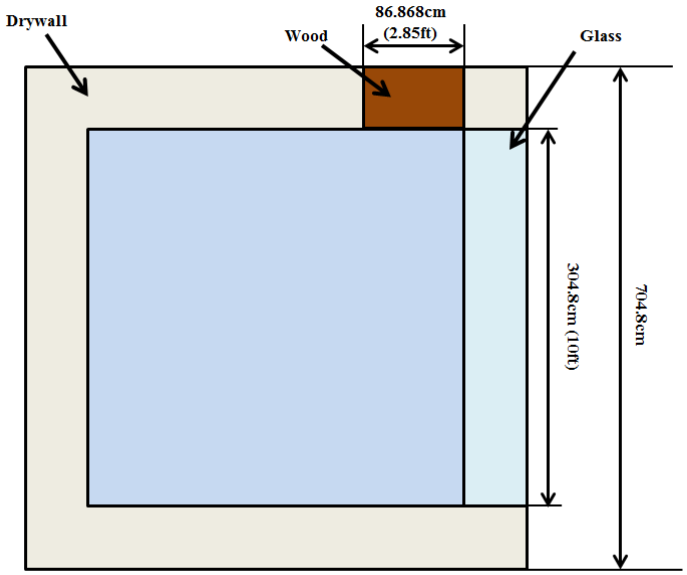

Figure 3-11: Top view of Case 1 with material dimensions

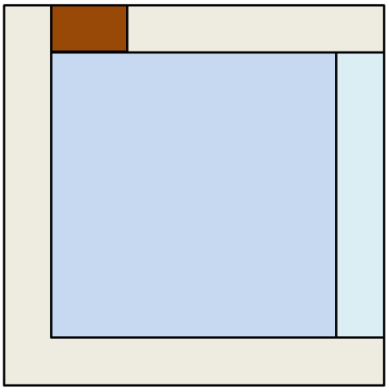

Figure 3-12: Top view of Case 2

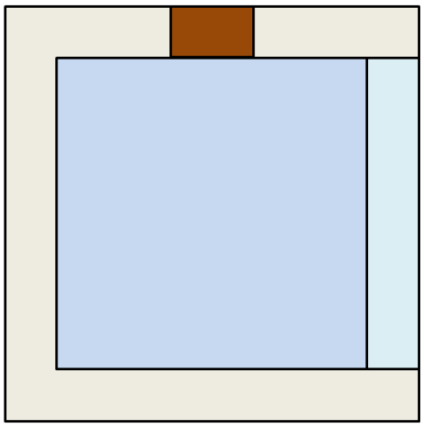

Figure 3-13: Top view of Case 3

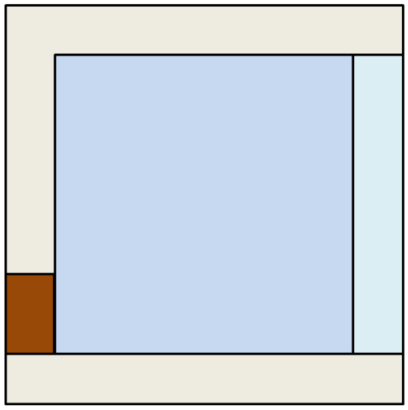

Figure 3-15: Top view of Case 5

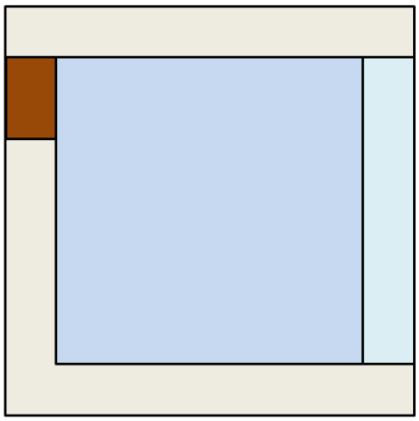

Figure 3-14: Top view of Case 4

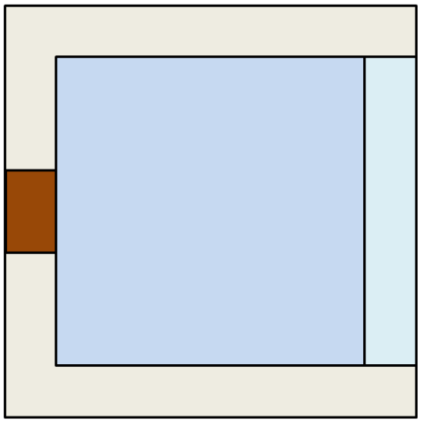

Figure 3-16: Top view of Case 6

The geometry of the special cases was an expansion of the composite cases. Planes on the x and y axis were used to make cuts for the window and door placement. The door used 2 or 3 cut planes to establish its width and height. The window extended to the ceiling and floor planes and was restricted to maintain a width of ten feet. A sample of the input file is provided in appendix A. The window position remained the same while the door was moved to the six chosen locations.

In order to take an accurate representation of kerma in the desired locations, nine F5 tallies were run along with the F4 room average tally. The placement of the tallies is shown in figure 3-17. There are four corner tally positions, four middle of the wall positions, and one room

center position. This was done because the location of the tally in relation to the door could affect the kerma taken at that spot. This complication is remedied by the multiple models with different door locations as well as the tally placement.

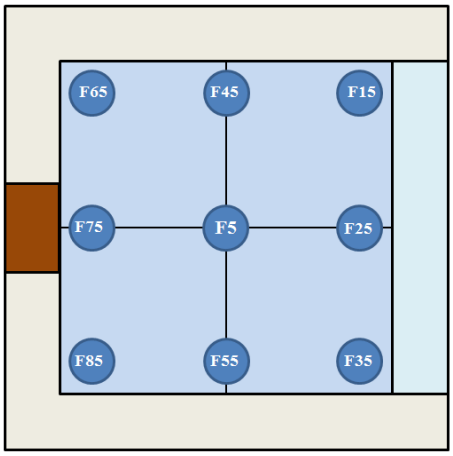

Figure 3-17: Tally placement for Special Case

3.3 Material Choices

3.3.1 Simple

The material compositions used in the room calculations were taken from the Pacific Northwest National Laboratory technical report: "Compendium of Material Composition Data for Radiation Transport Modeling" [11]. This report contained both the mass fraction and atomic fraction for most materials. Mass fractions were used for the MCNP input file.

Within the report there were many types of concrete, glass, wood and drywall. "Regular Concrete" was chosen to be the room concrete. The density of Regular Concrete is 2.3g/cm^3. The mass fraction is shown in table 3.3.

Table 3-3: Regular Concrete Composition [11]

Element	Mass Fraction
H	0.01
O	0.532

Na	0.029
Al	0.034
Si	0.337
Ca	0.044
Fe	0.014

The glass chosen for window and room material was “Plate Glass”. Of the options within the report, this was the most relevant for what a building would be made of. In table 3.4 the mass fraction of the plate glass is described. The density of the plate glass is 2.4g/cm^3.

Table 3-4: Plate Glass Composition [11]

Element	Mass Fraction
O	0.4598
Na	0.09644
Si	0.33655
Ca	0.10721

Southern Pine was the wood chosen for modeling of the room. Its density is 0.64g/cm^3. Table 3.5 shows the mass composition of the wood. While many other options exist for lumber materials, most lumber was approximately the same as the chosen southern pine.

Table 3-5: Southern Pine (Wood) Composition [11]

Element	Mass Fraction
H	0.05965
C	0.49702
N	0.00497
O	0.42744
Mg	0.00199
S	0.00497
K	0.00199
Ca	0.01988

The drywall chosen was named “Plaster of Paris”, more commonly referred to as gypsum. Drywall is described to be gypsum plastered between two thin sheets of paper. For the room calculation, the presence of paper will be ignored and solely gypsum will be used in the

modeling. The density of gypsum is 2.32g/cm^3. Table 3.6 shows the material composition of the Drywall.

Table 3-6: Gypsum (Drywall) Composition [11]

Element	Mass Fraction
H	0.02342
O	0.55757
S	0.18622
Ca	0.2328

Adobe mud brick was not present in the report however the individual components of adobe were. Adobe is typically made from sand and clay, occasionally mixed with straw. The specific mixture percentage of sand and clay were taken to be 20% clay and 80% sand [15]. The densities of sand and clay are 1.7g/cm^3 and 2.2g/cm^3, respectively. The individual compositions of sand and clay are provided in tables 3.7 and 3.8.

Table 3-7: Sand Composition [11]

Element	Mass Fraction
H	0.007833
C	0.003360
O	0.536153
Na	0.017063
Al	0.034401
Si	0.365067
K	0.011622
Ca	0.011212
Fe	0.013289

Table 3-8: Clay Composition [11]

Element	Mass Fraction
O	0.484345
Na	0.007608
Mg	0.010691
Al	0.122125
Si	0.284194
P	0.000113
K	0.020427
Ca	0.018957
Ti	0.004668
Mn	0.000064
Fe	0.36804

The adobe mud brick calculated composition is provided in table 3.9. To calculate the adobe composition, the relative percentages of each element were found with respect to their material contribution. For example, oxygen is present in both so 20% of the mass fraction from clay was added to 80% of the mass fraction from sand thus becoming the relative mass fraction for adobe.

When the element was not present in both materials, the specific fraction was taken of the single material.

Table 3-9: Calculated Adobe Mud Brick Composition

Element	Mass Fraction
H	0.0062664
C	0.0046888
O	0.5257914
Na	0.015172
Mg	0.0021382
Al	0.0519458
Si	0.3488924
P	0.0000226
K	0.013383
Ca	0.012761
Ti	0.0009336
Mn	0.0000128
Fe	0.017992

3.3.2 Composite

There were two room cases that used composite materials to represent the construction of the room. The composite was calculated in order to simplify the more complex geometry of the problem. The composite was used throughout the entirety of the wall versus having subsections of specific materials. The composite wall consisted of door and window materials mixed in proportion to their volumes. The dimension of a single door was taken to be 20 ft^2. When a window was present, it was assumed to take up the complete area of a single wall. The number of doors assumed present in each room is shown in table 3.10 along with their relative area.

Table 3-10: Door dimensions for various room sizes

Room Dimensions	Number of Doors	Ratio of Door Area to Wall Area
10 x 10 x 10	1	0.05
50 x 50 x 10	2	0.02
100 x 100 x10	3	0.015
200 x 200 x 20	4	0.005
400 x 400 x 40	5	0.001563

3.3.2.1 Case 1

For composite case 1, the room had a concrete floor, drywall ceiling, and a uniform mixture of wood, drywall, and glass. The wall material was found using the area contribution of both the window and door versus the rest of the wall. The window contribution remained the same even though the overall area increased due to it always taking up one wall. The number of doors increased as in case 1 where the wood contribution area would increase but the percent of the mixture would decrease. Table 3.12 lists the mass fraction of each element used in the composite material. The composite corrected density is located on the last row of the table as well.

Table 3-11: Case 1 Composite Wall Composition

Element	10 x 10 x 10	50 x 50 x 10	100 x 100 x 10	200 x 200 x 20	400 x 400 x 40
H	1.94E-02	1.83E-02	1.81E-02	1.77E-02	1.76E-02
C	2.49E-02	9.94E-03	7.46E-03	2.49E-03	7.77E-04
N	2.49E-04	9.94E-05	7.46E-05	2.49E-05	7.77E-06
O	5.27E-01	5.31E-01	5.31E-01	5.32E-01	5.33E-01
Na	2.41E-02	2.41E-02	2.41E-02	2.41E-02	2.41E-02
Mg	9.94E-05	3.98E-05	2.98E-05	9.94E-06	3.11E-06
Si	8.41E-02	8.41E-02	8.41E-02	8.41E-02	8.41E-02
S	1.31E-01	1.36E-01	1.37E-01	1.39E-01	1.39E-01
K	9.94E-05	3.98E-05	2.98E-05	9.94E-06	3.11E-06
Ca	1.91E-01	1.97E-01	1.98E-01	2.00E-01	2.01E-01
Density (g/cm^3)	2.256	2.3064	2.3148	2.3316	2.33737456

3.3.2.2 Case2

For composite case 2, the room had a concrete floor, drywall ceiling, and a uniform mixture of wood and concrete for the walls. The wall material was found using the area contribution of the door versus the rest of the wall. Much like the calculation of adobe mud brick, the percent of each material was factored into the mass fraction of each element. As the room size grew larger, the number of doors would increase however the actual percent of wood in the material would decrease. The material composition for each room size is shown in table 3.11. The ratios

previously stated in table 3.10 were used in the derivations. The density of the material was corrected as well and is shown in the last row of table 3.11 for each room size.

Table 3-12: Case 2 Composite Wall Composition

Element	10 x 10 x 10	50 x 50 x 10	100 x 100 x 10	200 x 200 x 20	400 x 400 x 40
H	1.25E-02	1.10E-02	1.07E-02	1.02E-02	1.01E-02
C	2.49E-02	9.94E-03	7.46E-03	2.49E-03	7.77E-04
N	2.49E-04	9.94E-05	7.46E-05	2.49E-05	7.76E-06
O	5.27E-01	5.30E-01	5.30E-01	5.31E-01	5.32E-01
Na	2.76E-02	2.84E-02	2.86E-02	2.89E-02	2.90E-02
Mg	9.94E-05	3.98E-05	2.98E-05	9.94E-06	3.11E-06
Al	3.23E-02	3.33E-02	3.35E-02	3.38E-02	3.39E-02
Si	3.20E-01	3.30E-01	3.32E-01	3.35E-01	3.36E-01
S	2.49E-04	9.94E-05	7.46E-05	2.49E-05	7.77E-06
K	9.94E-05	3.98E-05	2.98E-05	9.94E-06	3.11E-06
Ca	4.28E-02	4.35E-02	4.36E-02	4.39E-02	4.40E-02
Fe	1.33E-02	1.37E-02	1.38E-02	1.39E-02	3.98E-02
Density (g/cm^3)	2.217	2.2668	2.2751	2.2917	2.29740625

Chapter 4 RESULTS

The outcome of the various models will be presented in this order:

- Single material room ratios in response to (4.1):
    - material differences (4.1.1)
    - room dimensions (4.1.2)
    - position within the room (4.1.3)
- Composite cases (4.2)
    - Comparison between single material cases for Composite 1 :
        - Room dimensions (4.2.1)
        - Position within room (4.2.2)
    - Comparison between single material cases for Composite 2 :
        - Room dimensions (4.3.1)
        - Position within room (4.3.2)
- Special Cases
    - For all cases (4.4):
        - Compare average ratio (4.4.1)
        - Compare all corner ratios (4.4.1)
        - Compare all middle ratios (4.4.1)
        - Compare all center ratios (4.4.1)
    - Versus composite case (4.4)
        - Average (4.4.2)
        - Corner (4.4.2)
        - Middle (4.4.2)

- Center (4.4.2)

All output tallies were extracted from the room models and input into an excel spreadsheet. Raw kerma units were pGy per cm^2. In order to create a unit less ratio with consistent source strength for both the room scenario and soil scenario, their corresponding surface area was used to area correct each kerma yielding units of pGy. The room tallies were area corrected in response to the surface area of the room and then divided by the infinite planar contamination of soil corresponding case. An example of this calculation is shown below.

Equation 4:

$$Area\ Corrected\ Room\ Kerma(pGy) = Raw\ Room\ Kerma\ \left(\frac{pGy}{cm^2}\right) * Source\ Area\ of\ Room\ Room\ (cm^2)$$

Equation 5:

$$Area\ Corrected\ Soil\ Kerma\ (pGy) = Raw\ Soil\ Kerma\ \left(\frac{pGy}{cm^2}\right) * Source\ Area\ of\ Soil\ Souce\ (cm^2)$$

Equation 6:

$$Room\ Ratio\ for\ energy\ (E)\ room\ dimension\ (R) and\ contamination\ depth\ (D) = \frac{Area\ Corrected\ Room\ Kerma\ (pGy)}{Area\ Corrected\ Soil\ Kerma\ (pGy)}$$

In deriving the ratios for use in modification of the soil dose and risk coefficients, several key points were maintained throughout all calculations. These considerations were relative energy of the photon emission and relative depth of the source. Only kerma values for the same

monoenergetic photon energy were used to derive the ratio for that specific energy ie a 1MeV photon source was used for a 10x10x10 ft^3 wooden room as was for an infinite horizontal plane of contaminated soil. From these two kermas, a ratio can be calculated that can be used to modify coefficients for soil with a 1MeV photon source to coefficients usable for a 10x10x10 ft^3 room of wood. Relative depth of the source is also a key concept to keep in mind when deriving and using the room ratios. If the source contamination extended 5cm into the material of the room then the soil kerma used to derive the ratio would also need to be kerma from a 5cm contaminated soil source. Keeping the source depth consistent across all kerma used in a calculation will clarify the consistency of volume sources and area sources as well as yield a correct modification of the soil coefficients. The room ratios and raw kerma for each material and room size are provided in appendices C through J. Raw kerma values for the soil contamination cases are provided in appendix K.

4.1 Single material room ratios

Six materials were used in the modeling of the single material room cases with varying dimensions from a 10x10x10 ft^3 room to a 400x400x400 ft^3 room. Referring to table 3.2 illustrates the simple material cases performed. Table 4.1 shows the location of the output tallies for each material.

Table 4-1: Appendix location for material kerma and room ratio tables

Material	Appendix Location
Adobe Mud Brick	C
Concrete	D
Drywall	E
Glass	F
Wood	G
Composite 1	H
Composite 2	I
Special Cases	J

To compare the effect of the variables of the room ratios, each variable will be looked at individually to better examine the effect of each parameter.

4.1.1 Material differences

The room ratios for the surface contamination cases were used to compare the effect of material choice for each room size. The center of the room position was used for Figures 4-1 through 4-4. Note that the ratio is the finite room dimension air kerma to the infinite planar soil contamination air kerma.

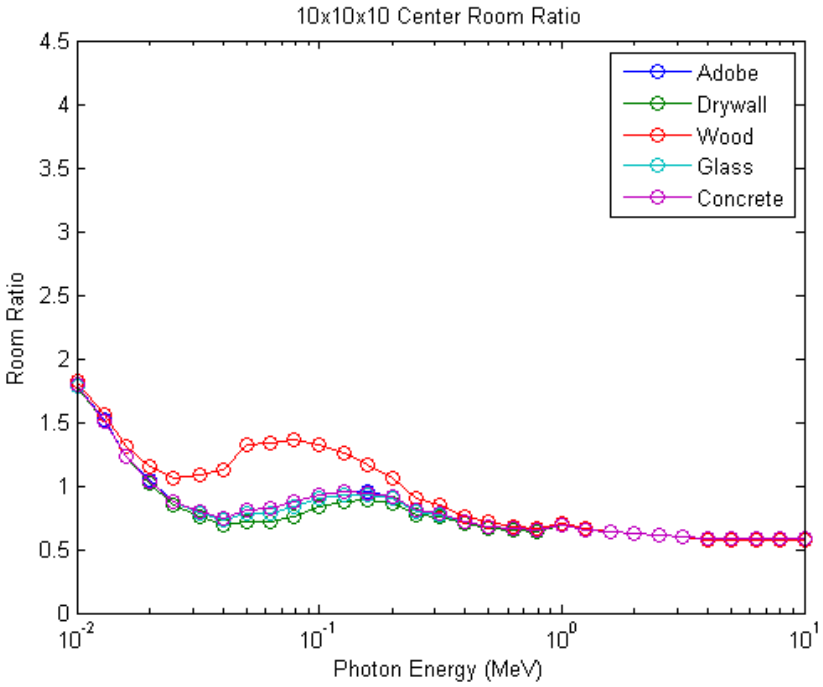

Figure 4-1: Surface contamination of 10x10x10 room ratio using center of room position

Figure 4-1 shows at lower energies the dose would be underestimated up to a factor of 1.75 if the infinite planar soil source numbers were used. For wood in particular, the room ratio is above one for energies up to 200keV. Concrete and adobe follow an approximately similar trend until roughly 800keV where the room ratios for each material converge. For all materials other than wood, using the infinite case dose coefficients would overestimate the dose to the

individual for energies as low as 20keV. All doses would be overestimated after the introduction of a 200keV and up photon source.

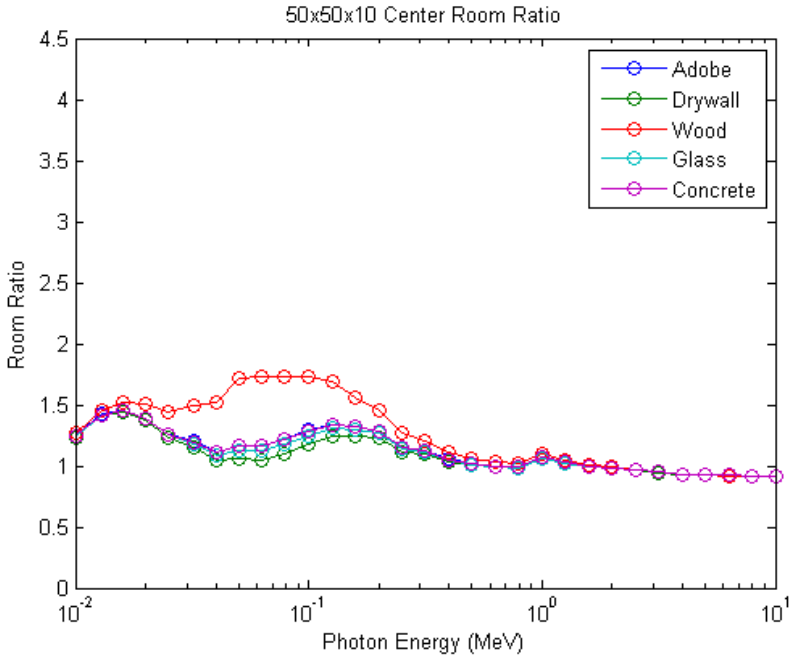

Figure 4-2: Surface contamination of 50x50x10 room ratio using center of room position

Figure 4-2 shows all materials following the same pattern with the exception of wood. The slope of the previous graph showed a decreasing room ratio with increasing energy. Here the ratio has three peaks of increase and decrease. The first decrease in the wood peak is small in comparison with the other materials. While wood's room ratio is 0.4 higher than the other materials prior to 100keV, it quickly decreases and joins the slope of the rest of the materials at 900keV. The greatest underestimate for wood using infinite dose coefficients is between 40keV and 100keV where for adobe, drywall, glass and concrete it is between 10 and 30 keV.

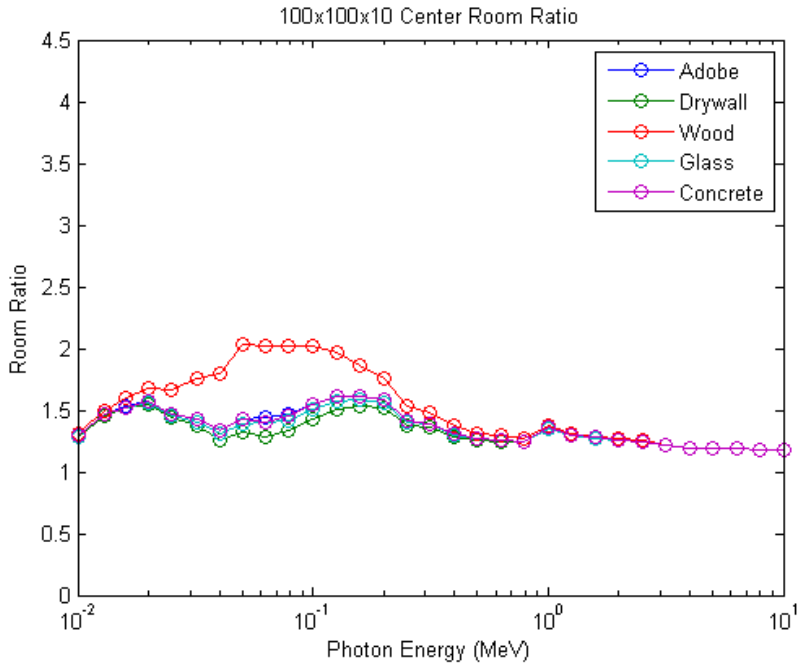

Figure 4-3: Surface contamination of 100x100x10 room ratio using center of room position

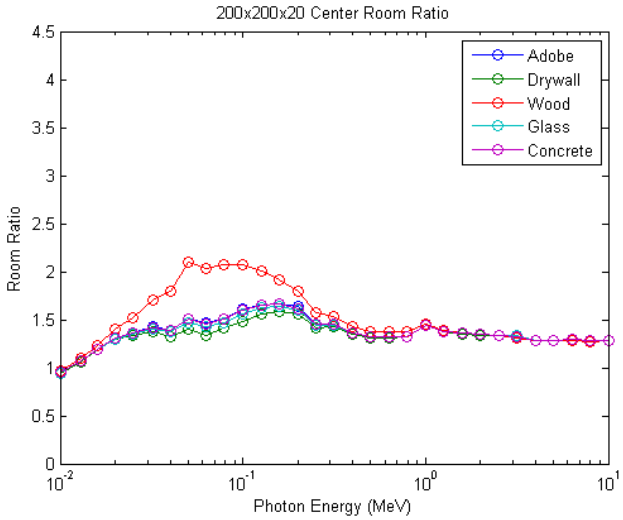

Figure 4-4: Surface contamination of 200x200x20 room ratio using center of room position

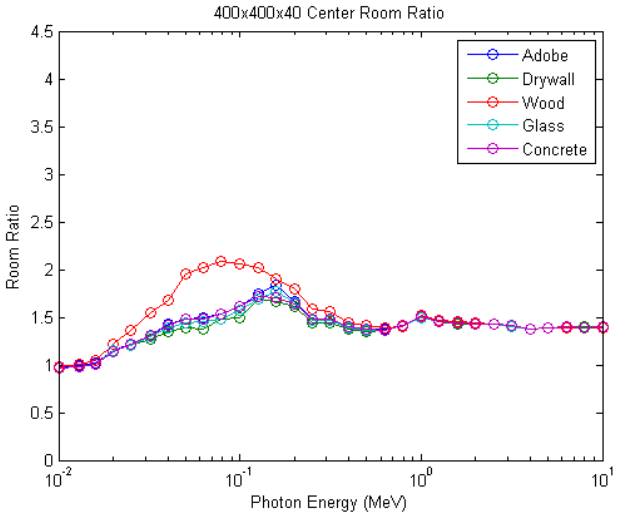

Figure 4-5: Surface contamination of 400x400x40 room ratio using center of room position

Figure 4-3 shows the decrease of the first peak for all materials except wood. The peak of the wood ratios extends past two and continues to hold above two for increasing room sizes as seen in Figures 4-4 and 4-5. Figure 4-4 also shows that at energies lower than 40keV steadily

increase whereas previously there was a peak. The values of the room ratio remains approximately constant moving from Figure 4-4 to Figure 4-5. In both figures, it is illustrated that at any energy and with any material, the dose coefficient would be overestimated by a factor of up to 2.1.

The effect of the material composition is also shown in figures 4-6 and 4-7 where the corner and middle room positions are show for the 100x100x10 room case.

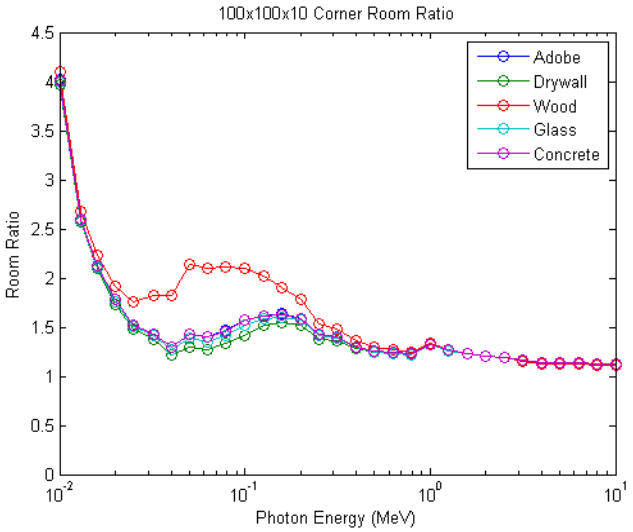

Figure 4-6: Surface contamination of 100x100x10 room ratio using corner of room position

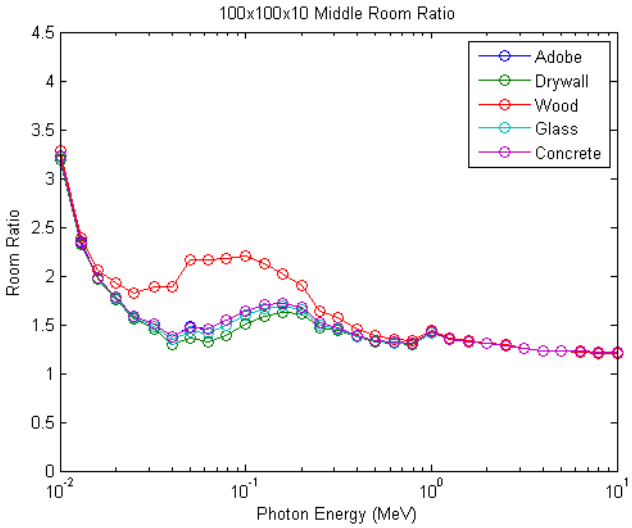

Figure 4-7: Surface contamination of 100x100x10 room ratio using middle of room position

While the slopes of both the corner and middle room ratio figures is decreasing before 40keV, the initial starting point of the ratio is 3.5 for the middle room cases and 4 for the corner of the room cases. Wood remains to overshadow the rest of the materials and then joins them at 800keV. The average cross section for photoelectric absorption is higher in wood for this energy range than the other materials. The mass attenuation coefficients for woods relative elemental components are approximately 10 to 100 cm^2 per gram through the lower energies.

For a small room of less than 100x100x10 cubic feet in size, wood would be the highest risk material while drywall would be the lowest risk material. All ratios in each position for the

100x100x10 ft^3 room are above one and show that with any source, the dose coefficient would be underestimated regardless of the material choice. To develop this idea further, effect of room dimensions and positioning of tallies will be discussed in the following sections.

4.1.2 Room Dimensions

Surface contaminated adobe rooms were used to compare the room ratios between different room dimensions. Each figure represents one tally position within the room. The adobe surface contaminated room is shown in figures 4-8 through 4-11.

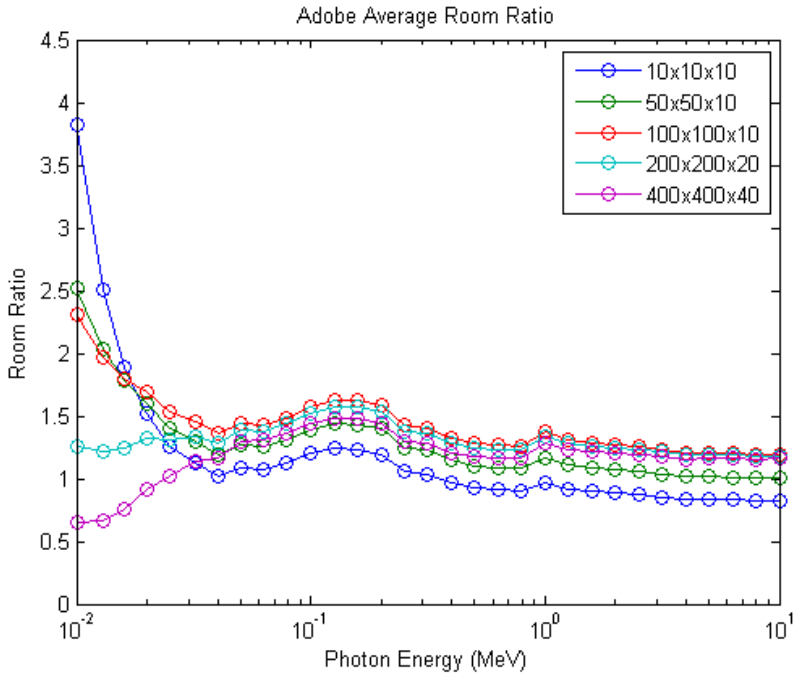

Figure 4-8: Surface contamination of adobe for average room tally

The adobe room average ratio plot (Figure 8) shows that the 10x10x10 room initially has the highest average room ratio. As the energy increases the 100x100x10 room becomes the highest room ratio for the rest of the plot while the 10x10x10 becomes the lowest room ratio. From 40kev through 10Mev the slopes of the room ratios follow the same pattern for each room dimension. This shows that similar behavior is happening within the material as well as within each room. The increase of room size however increases the overall room ratio for all

monoenergetic energies tested. This is show more in Figures 4-9 through 4-11. The source for each room is generated over the entirety of the room internal dimensions. As the room dimensions increase, the distribution within each of the 6 sources maintains its uniformity but the weight of the contribution of each source changes. In the smallest of the room dimensions, each surface contributes the same amount of source strength to the overall source strength of 1 Bq with the average source strength of the room being 1 Bq per m^2. The weighting of each of the 6 sources are provided in appendix L for each source depth and room dimension.

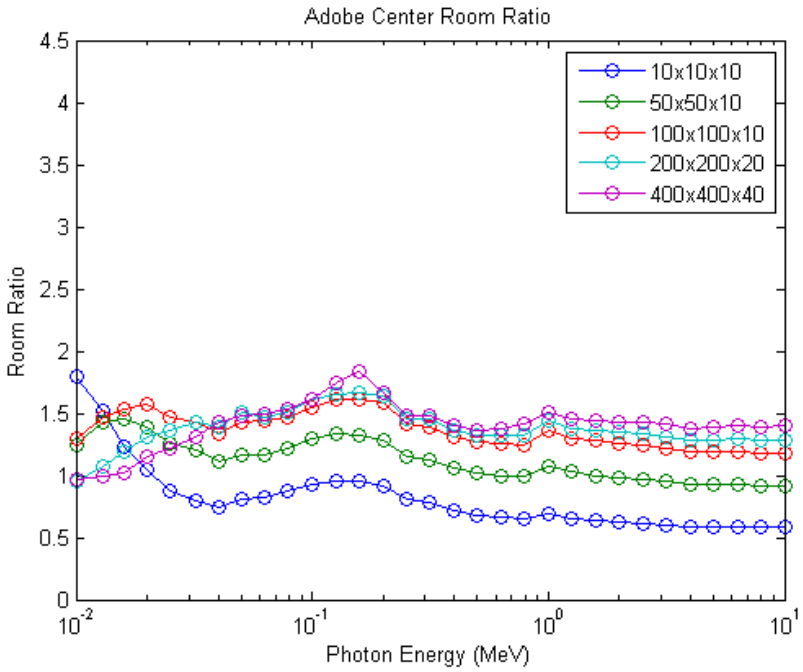

Figure 4-9: Surface contamination of adobe for center of the room position

The initial start for the 10x10x10 ratio is less than half of the average position room ratio for the 10x10x10 room. Room dimensions of 50x50x10 and 100x100x10 have similar slopes for all energies tested. The largest room has the greatest room ratio after approximately 60 keV. The reason that the room ratios for the center of the room for the larger rooms is smaller than that of the 10x10x10 room is that the lower energy photons are either attenuated in the air or do not have the range of the larger energy photons. Note that while the overall room source strength is

consistent across all room dimensions, the individual strength of each plane is weighted based off of its surface area within the dimensions of the room ie as the room size increases, the walls would contribute less while the floor and ceiling would be weighted slightly heavier.

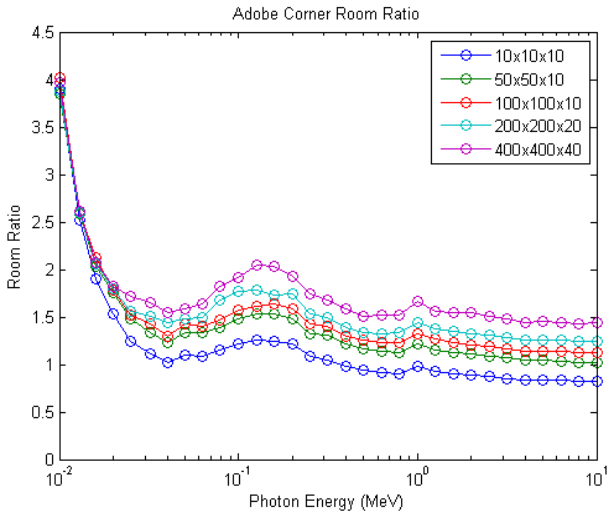

Figure 4-10: Surface contamination of adobe for corner of the room position

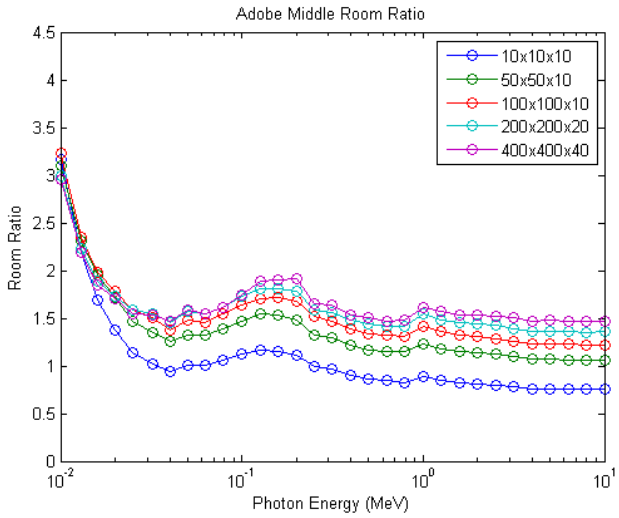

Figure 4-11: Surface contamination of adobe for middle of the room position

Both the corner and middle room ratios for all dimensions show that the rooms follow a similar pattern with increasing energy. The reason for the largeness of the initial room ratio values is due to the point detector being located closer to the source. For the corner of the room there are always 3 surfaces in or near direct contact with the tally sphere while the middle of the room is always within or near contact to two of the surfaces.

Due to the material differences that were shown for wood in the previous section, wood was plotted as well to show the room dimension effects on the room ratio for each tally position in relation to wood. This is shown in figures 4-12 through 4-15.

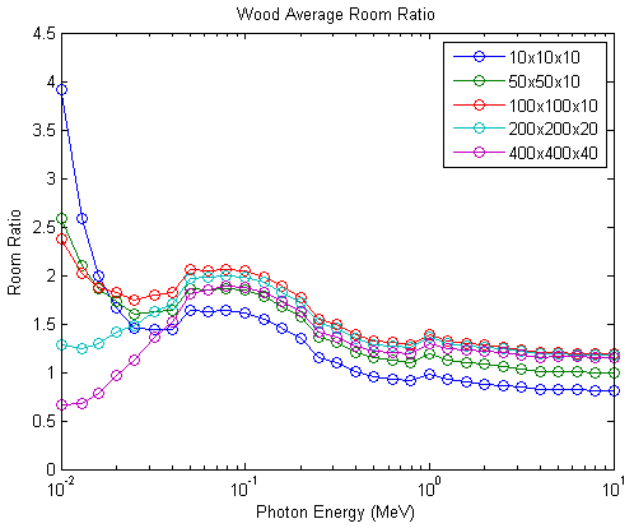

Figure 4-4-12: Surface contamination of wood for room average tally

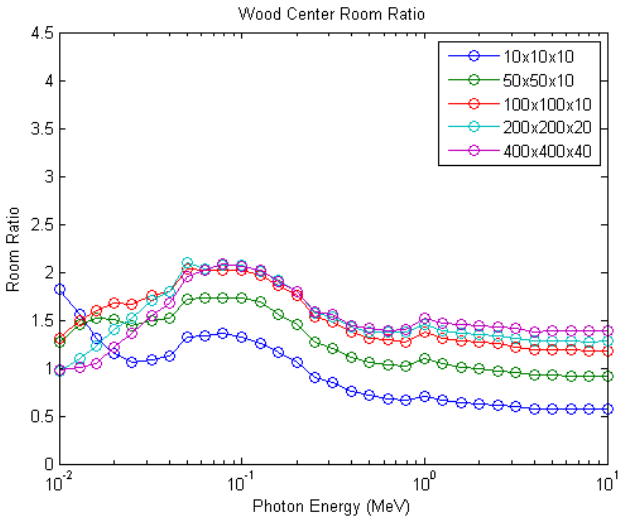

Figure 4-4-13: Surface contamination of wood for center of the room position

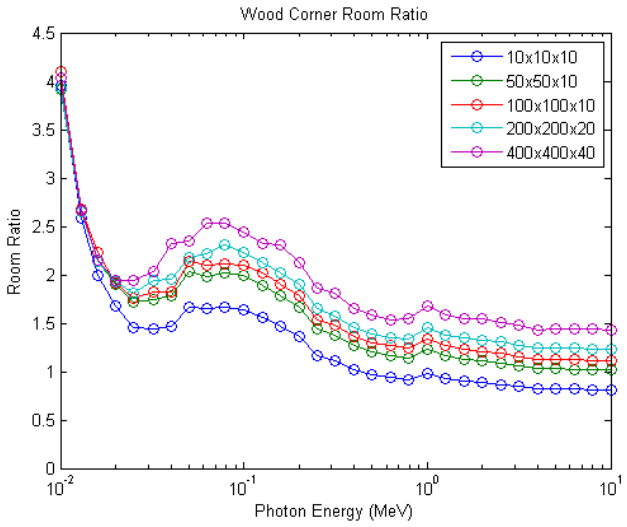

Figure 4-14: Surface contamination of wood for corner of the room position

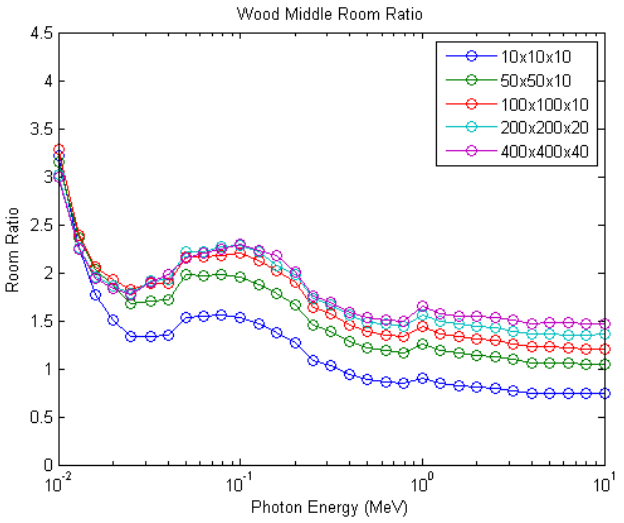

Figure 4-15: Surface contamination of wood for middle of the room position

Through examination of the plots so far, it is obvious that position within the room also has an effect on the room ratio. This is developed more in the next section.

4.1.3 Position within the room

Three different room positions were used to calculate the room ratios as well as an overall room average tally. The relation between each of the room positions specific to each room dimension is show for adobe in figures 4-16 through 4-19.

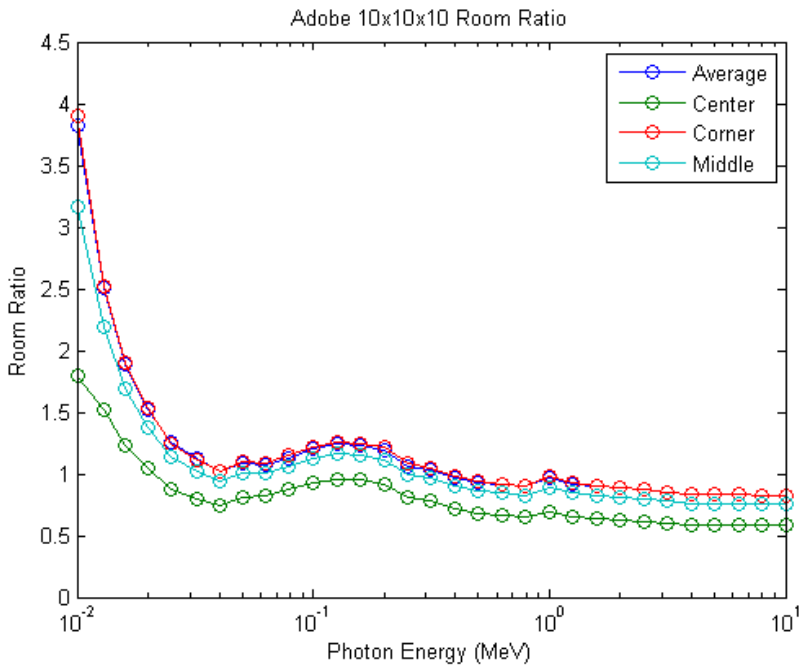

Figure 4-16: Adobe surface contamination 10x10x10 ft room for all positions

The slope for all positions is decreasing for photons of energy 10kev through 40kev and remains in similar forms of each position throughout all energies. The corner and average tallies are approximately the same with the center position having the smallest room ratio at all energies.

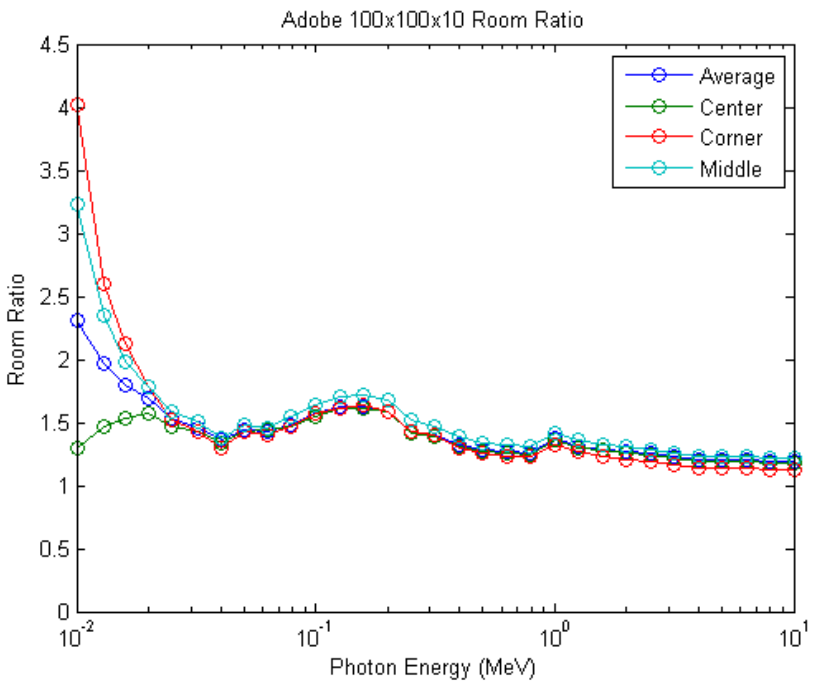

Figure 4-17: Adobe surface contamination 100x100x10 ft room for all positions

Figure 4-17 shows that the effect of room positioning begins to shift as the room size increases. This was shown in previous sections but is further developed here. The corner starts as the greatest room ratio and ends as the lowest. The middle of the room tally becomes the largest of the room ratios after 20keV and remains this way for all energies. The middle of the wall tallies have the least resistance for photons being attenuated within the wall or in the air of the room before reaching the tally sphere.

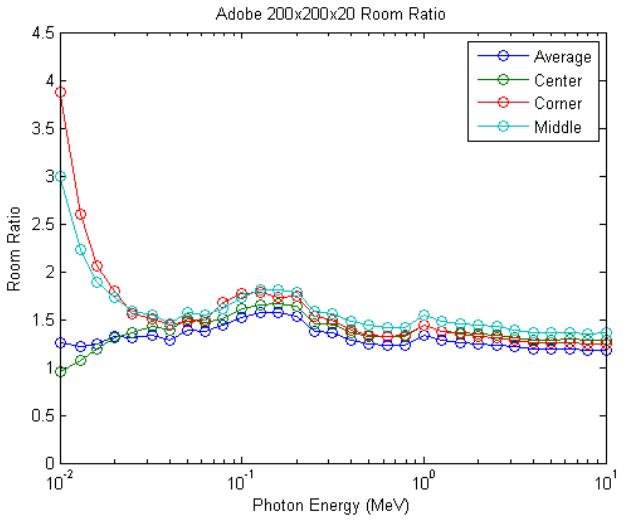

Figure 4-18: Adobe surface contamination 200x200x20 ft room with all positions

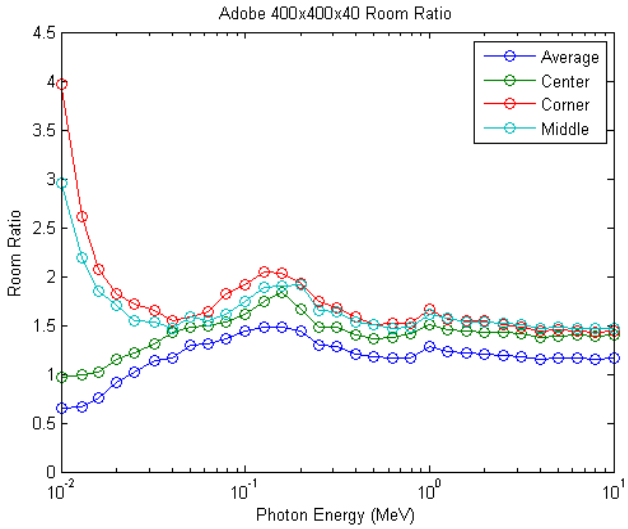

Figure 4-19: Adobe surface contamination 400x400x40 ft room with all positions

Figures 4-18 and 4-19 show the average tally room ratio becoming the lowest of the room ratios with increase in room size. This is due to the increase in the tally volume used to compute the average fluence. The corner room ratio is the largest of the room ratios for the 400x400x40 ft^3 room which is the largest of the room dimension cases. Due to the position of the tally being in contact with two walls and the floor, it has the greatest chance at exposure to the photons. The higher energy photons could reach the corner as well as scatter to the corner at lower energies with recoil electrons or bremsstrahlung. The lower energy photons could reach the point detector because of its close location to the source walls and floor.

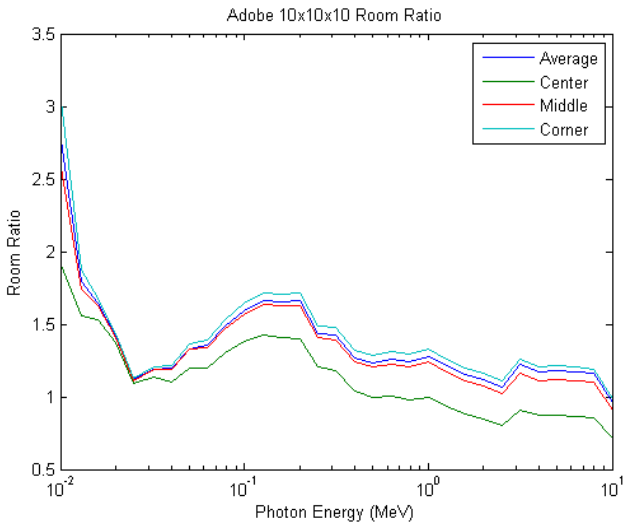

Figure 4-20: Adobe 1 cm contamination depth of 10x10x10 ft room with all positions

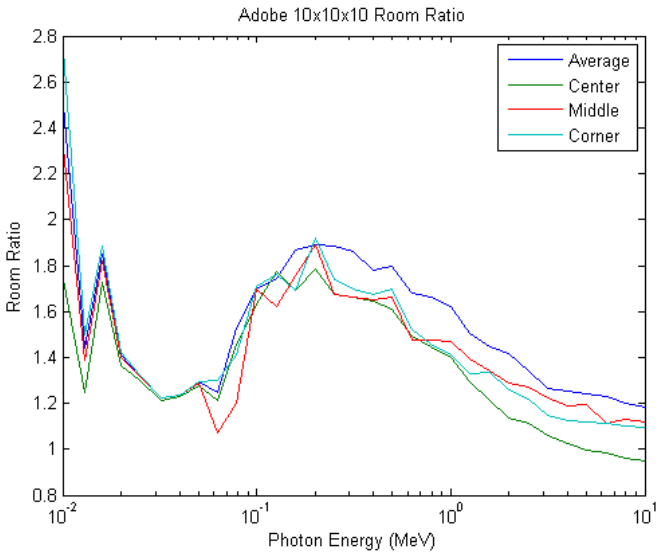

Figure 4-21: Adobe 5 cm contamination depth of 10x10x10 ft room with all positions

The center room ratios for the 10x10x10 room made of adobe are shown in figure 4-24 along with all other tally positions. The center is the lowest throughout the entire energy spectrum. The ratios converge momentarily at 20 keV. The corner of the room is the highest of all ratios. As the contamination depth expands to 5cm the behavior of the room ratios becomes less uniform in nature. The average of the room is the highest of the room ratios for the 10x10x10 adobe room and there is a sharp peak from 10 to 20keV. There is also a dip in ratios at 60keV for all tallies except for the corner tally. The 5cm contamination depth room ratios for the 10x10x10 adobe room are shown in figure 4-25. The average source strength for each depth source is the same within each of the rooms. The individual source strength per unit area in the room is altered slightly from that of the surface source. Much like for the surface source, as the room dimensions increase, the individual source plane contribution to the overall source strength changes. The walls contribute less to the overall source while the floor and ceiling contribute more. This is shown in appendix L.

4.2 Composite Cases : Composite 1

Two composite materials were used to model room ratios as well. Composite 1 is a drywall room with a glass window, wooden doors and drywall walls. The floors for case 1 are concrete and the ceiling is drywall. Composite 2 is a concrete room with wooden doors, a drywall ceiling and a concrete floor. Both composite cases used a homogeneous mix of material for the walls to represent the window and door mixed in with the wall. The modelling of the geometry of the door and window for case 1 will be discussed in section 4.4. Composite 2 results are given in section 4.3.

4.2.1 Room dimensions

Surface room contamination room ratios, shown in figures 4-22 through 4-25, illustrates the effect of room dimensions using Composite 1 on each tally position.

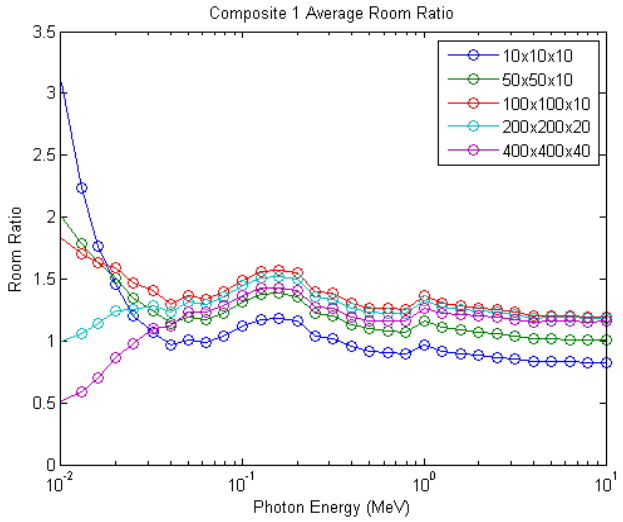

Figure 4-22: Composite 1 average room ratios for all room dimensions with surface contamination

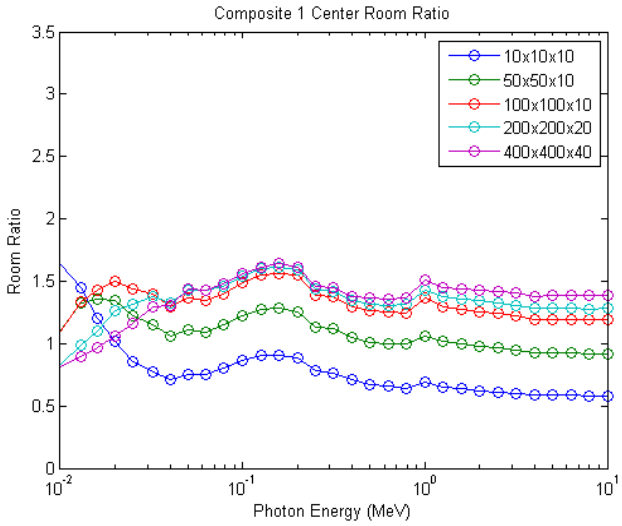

Figure 4-23: Composite 1 center room ratios for all room dimensions with surface contamination

The behavior of the room ratios for both the average and the center of the room are similar to that of the simple material cases. The average room ratios of the 100x100x10 room are the highest out of all room dimensions for energies greater than 20keV. At 40keV, the 400x400x40 room ratios become the larger for the center of the room tally position. The 400x400x40 room

for the corner and middle tally position becomes the largest of the room ratios after 20keV. The attenuation of the photons in the wall becomes less likely as energy increases and Compton scatter becomes the dominant interaction mechanism. The corner and middle of the wall positions are in closer contact with the source than the center position thus the initial value of the room ratio is higher for these positions.

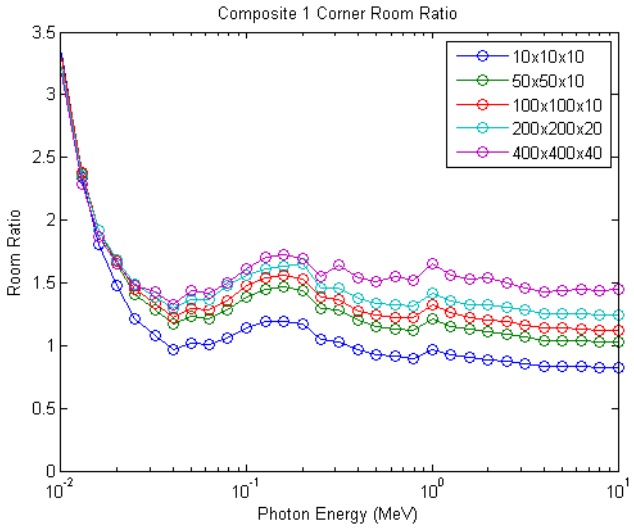

Figure 4-24: Composite 1 corner room ratios for all room dimensions with surface contamination

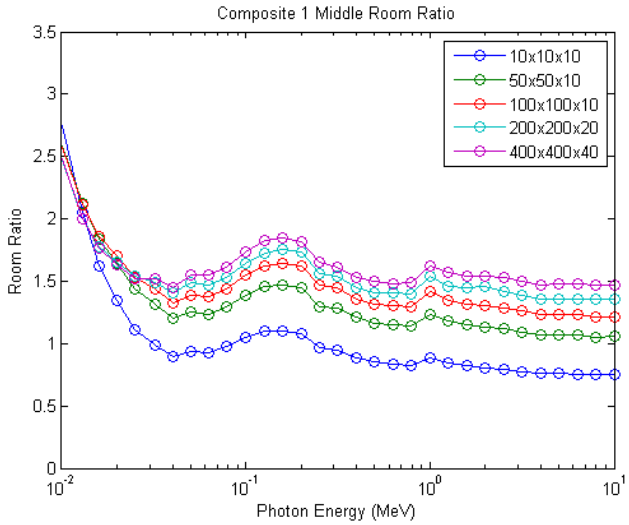

Figure 4-25: Composite 1 middle room ratios for all room dimensions with surface contamination

4.2.2 Position within the room

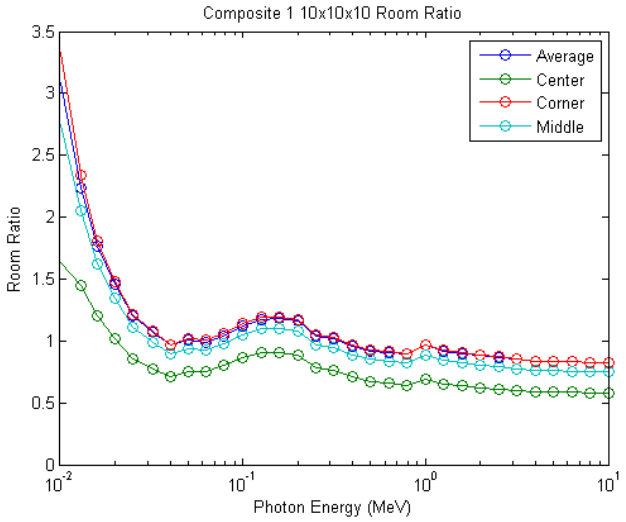

Figure 4-26: Composite 1 10x10x10 room ratios for all positions with surface contamination

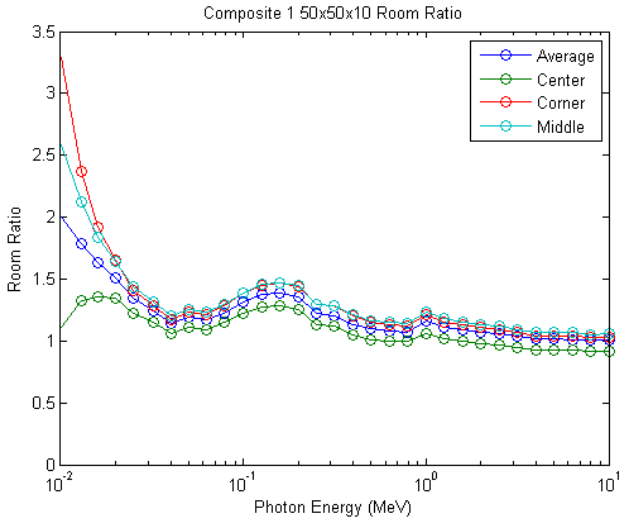

Figure 4-27: Composite 1 50x50x10 room ratios for all positions with surface contamination

The room ratio corresponding to the surface contamination of the 10x10x10 room is shown in figure 4-26. The corner of the room tally position yields the highest room ratio initially and is then approximately the same as the average room ratio for the 10x10x10 room. As the room size increases, the corner tally position continues to yield the highest room ratio and the middle of the wall yields the second highest room ratio until 30keV where is overtakes the corner room tally position. The center of the room is the lowest of all room ratios for all room dimensions. The larger room dimensions yield similar results and have an even larger ratio yield for the corner room ratios.

4.2.3 Comparison with individual composition parts

The Composite 1 room ratios were compared against its individual material components. The center of the room ratios are shown in figure 4-28 for a 10x10x10 room. The wood has the highest room ratios while the composite and drywall have the lowest. The peak at 1MeV occurs in both the composite and simple materials. Compton scatter becomes the more dominant photon interaction in all materials and is highlighted by the peak. The center of the room ratios are

shown in figure 4-29 for a 50x50x10 ft^3 room to compare the composite material with its individual components once again. Here the composite material is initially the lowest of the materials for room ratio. At 40keV the drywall becomes the lowest of the materials.

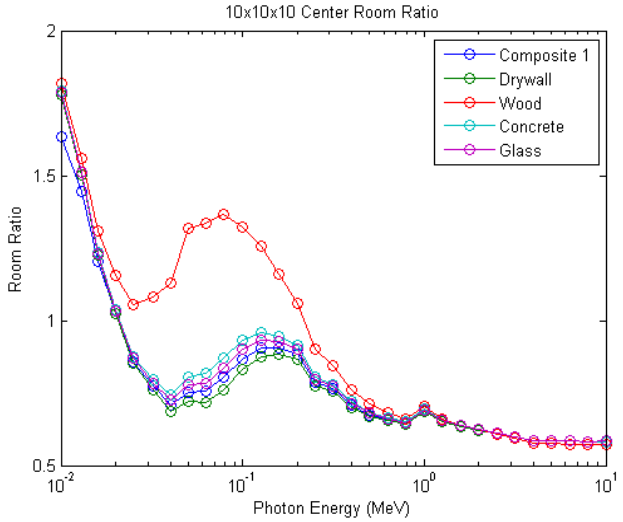

Figure 4-28: Composite 1 comparison to individual components center of the room for a 10x10x10 room with surface contamination

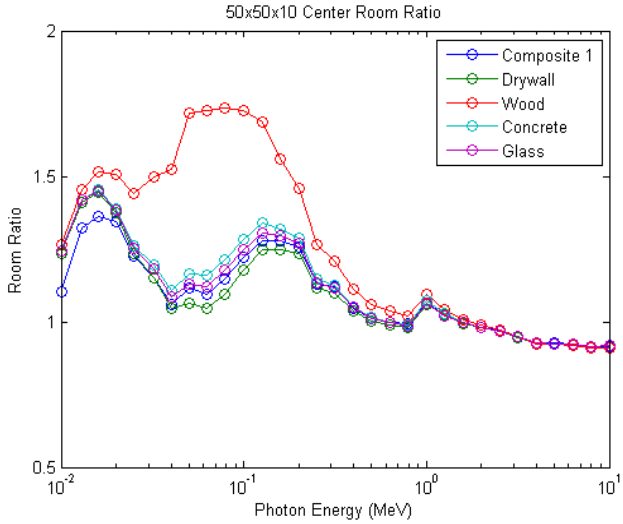

Figure 4-29: Composite 1 comparison to individual components center of the room for a 50x50x10 room with surface contamination

4.3 Composite Cases: Composite 2

4.3.1 Room Dimensions

The room dimensions were compared against each other at individual room positioning which is shown in figures 4-30 through 4-33.

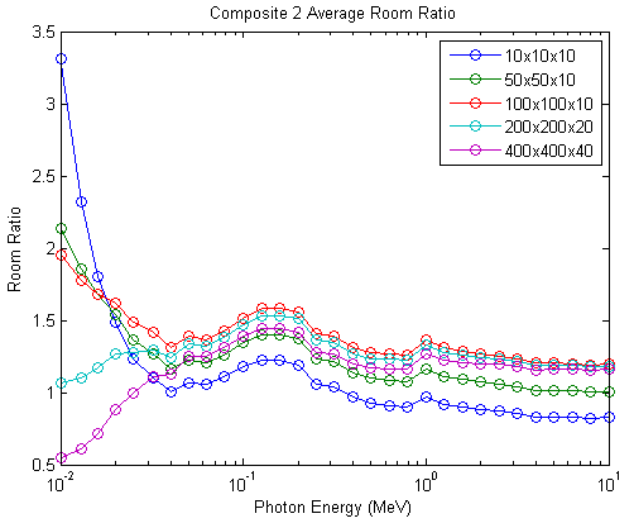

Figure 4-30: Composite 2 average room ratios for all room dimensions with surface contamination

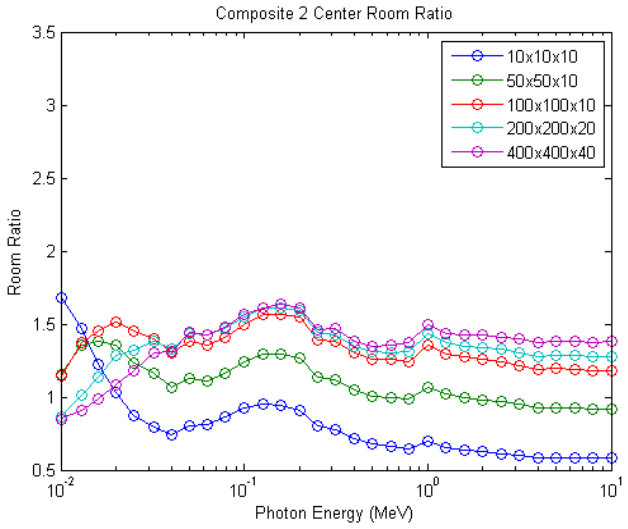

Figure 4-31: Composite 2 center room ratios for all room dimensions with surface contamination

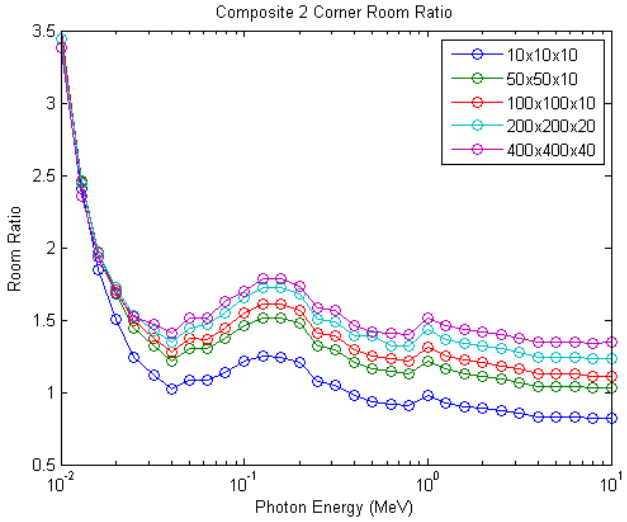

Figure 4-32: Composite 2 corner room ratios for all room dimensions with surface contamination

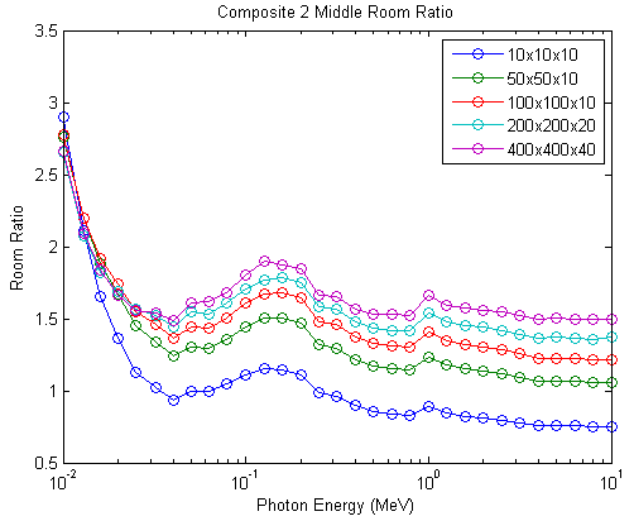

Figure 4-33: Composite 2 middle room ratios for all room dimensions with surface contamination

The Composite 2 room ratios behave in a similar manner to the simple material cases. For the average, corner and middle positions within the 10x10x10 room, the ratios approach 1. As the energy of the photon source increases, the 400x400x40 room ratios for all positions become the largest of the room ratios. The room ratios of the 10x10x10 room and the 50x50x10 room have the largest separation for each energy where the 100x100x10, 200x200x20 and 400x400x40 approach convergence.

4.3.2 Position

The room dimensions of 10x10x10, 50x50x10 and 100x100x10 are modeled in figures 4-34 through 4-36.

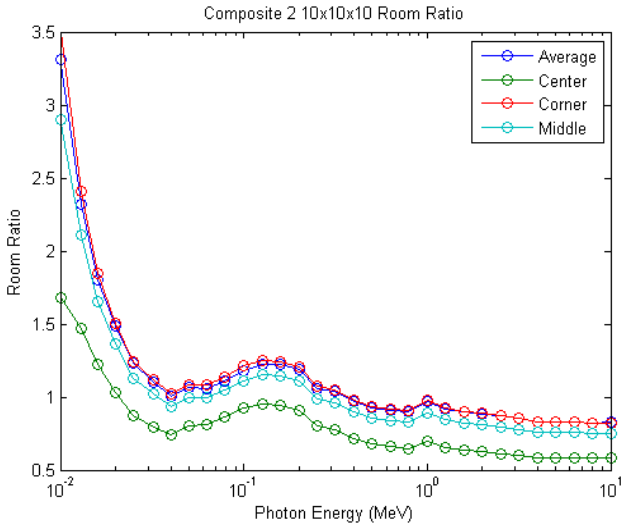

Figure 4-34: Composite 2 10x10x10 room with surface contamination all positions

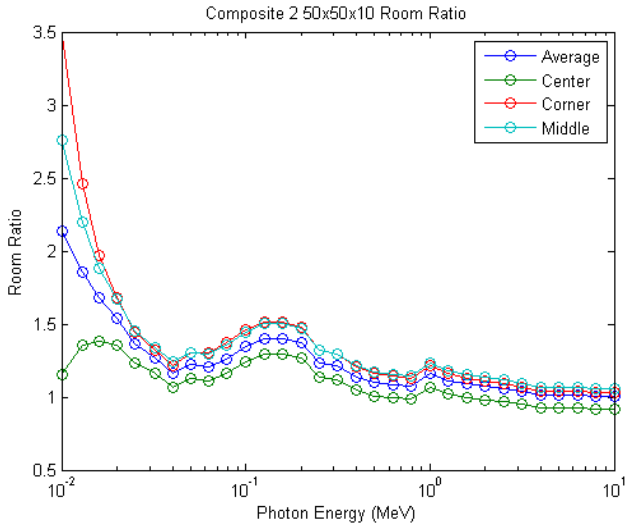

Figure 4-35: Composite 2 50x50x10 room with surface contamination all positions

The corner position yields the highest of the room ratios for the 10x10x10 surface contamination case. The corner position is initially the highest of the room ratios for the 50x50x10 room until 30keV. At 1MeV the middle of the room position yields the highest of the room ratios for the rest of the energy spectrum as shown in figure 4-36.

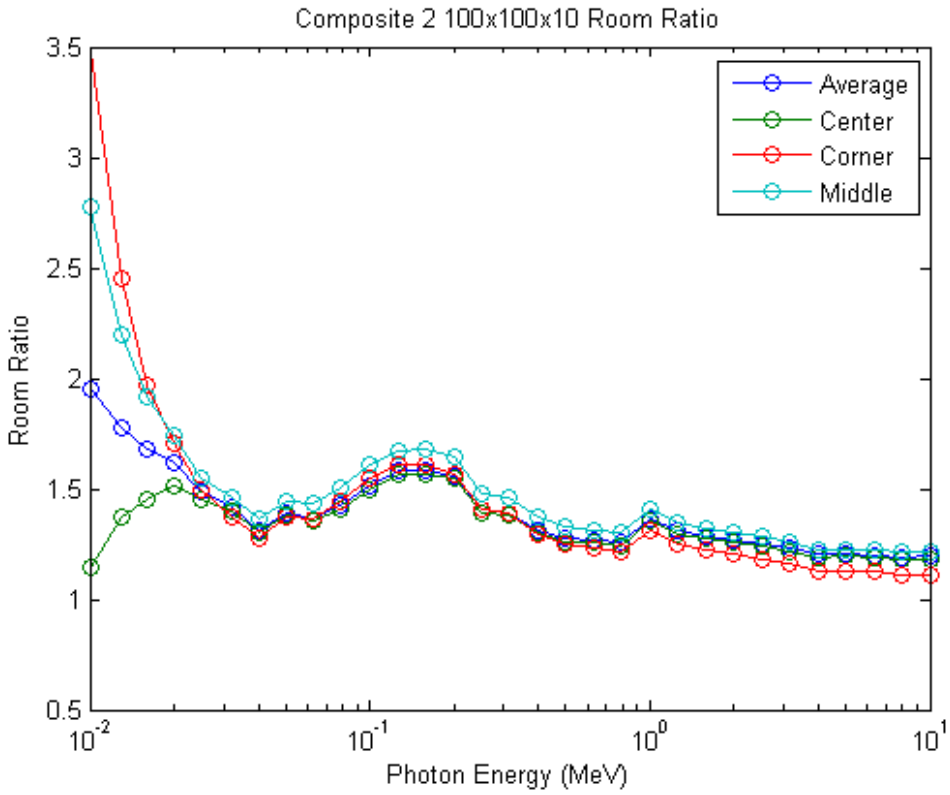

Figure 4-36: Composite 2 100x100x10 room with surface contamination all positions

With the increase of room dimension to the 100x100x10 room case for the Composite 2 material, the highest room ratio is initially the corner tally position until 20keV where the middle of the wall position become the highest of the room ratios for the rest of the energy spectrum.

4.3.3 Comparison with individual materials

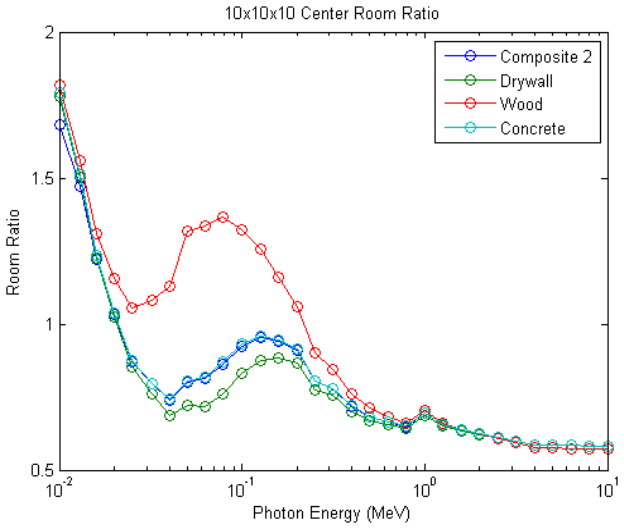

Figure 4-37: Composite 2 comparison against individual components 10x10x10 center of the room with surface contamination

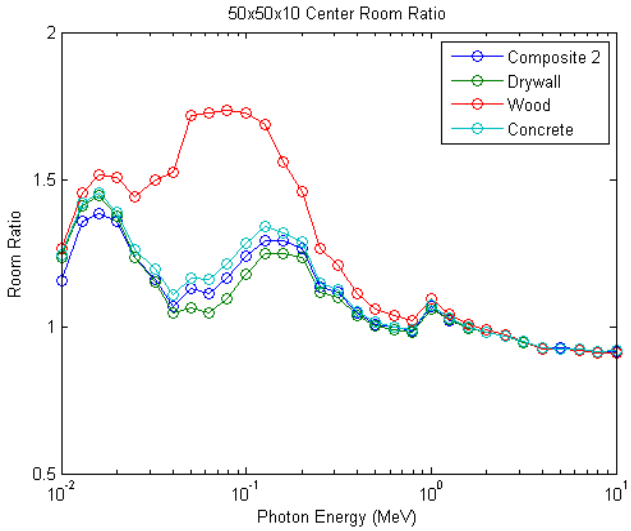

Figure 4-38: Composite 2 comparison against individual components 50x50x10 center of the room with surface contamination

Composite 2 room ratios follow closely with the concrete room ratios for the 10x10x10 ft^3 room scenario as can be seen in figure 4-37. The wood remains dominantly larger from 20keV to 800keV where they all converge at 1MeV. Drywall room ratios are initially higher than the composite ratios for the very low energies for all room dimensions but becomes the lowest as the energy of the source increases.

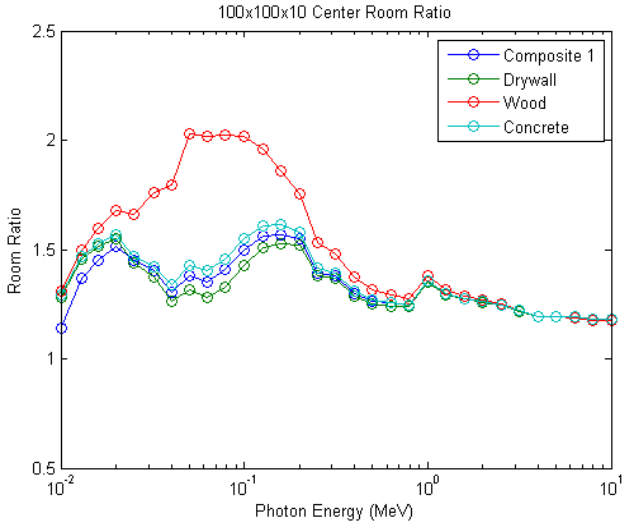

Figure 4-39: 100x100x10 Surface contamination center room comparison for Composite 2

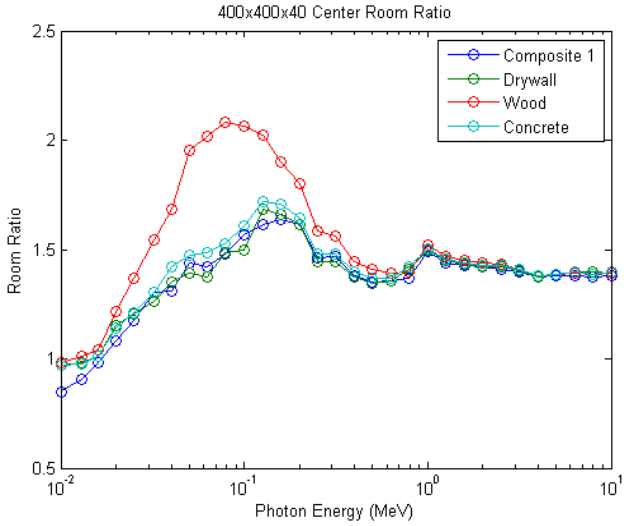

Figure 4-40: 400x400x40 Surface contamination center room comparison for Composite 2

As the size of the room increases, the composite ratios start to move towards that of the drywall and remains to weave between the concrete and drywall until all materials converge at 1MeV. As the room grows larger the wood has a smaller effect on the ratio due to the composition of the composite containing less and less wood with increase of room dimension.

4.4 Special cases

4.4.1 Compare to each other

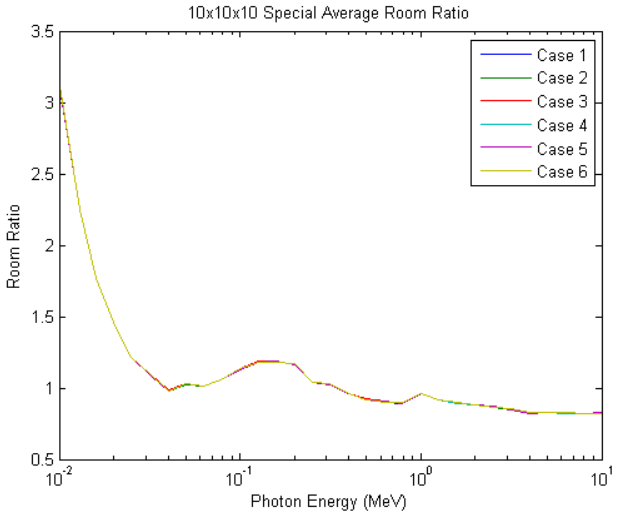

Figure 4-41: Special cases average tally for 10x10x10 room with surface contamination

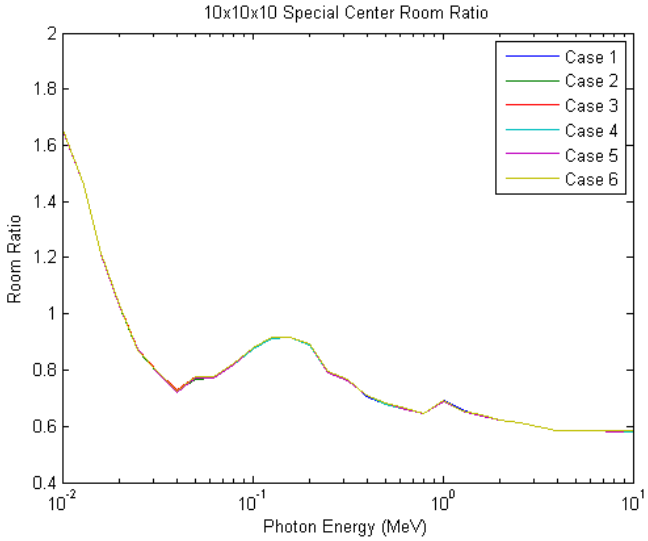

Figure 4-42: Special cases center room tally for 10x10x10 room with surface contamination

The average tally and center of the room position tally yield room ratios that are approximately the same for all energies in the spectrum for all room configuration cases. This is shown in figures 4-41 and 4-42 and illustrates that the accuracy of the room tally for both tallies is equal when comparing to the composite scenario.

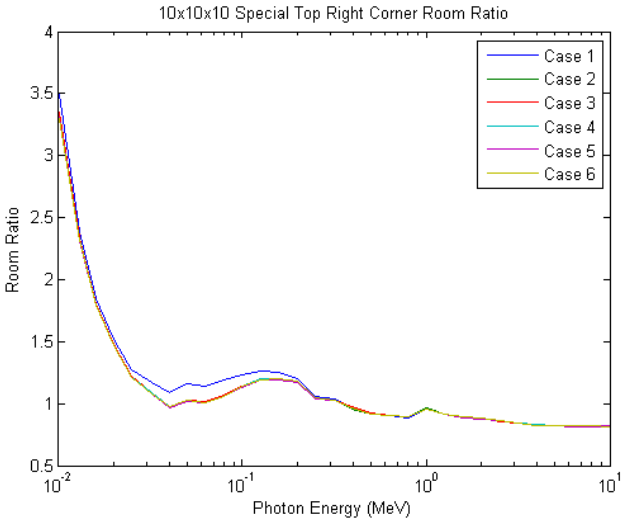

Figure 4-43: Special cases top right corner room tally for 10x10x10 room with surface contamination

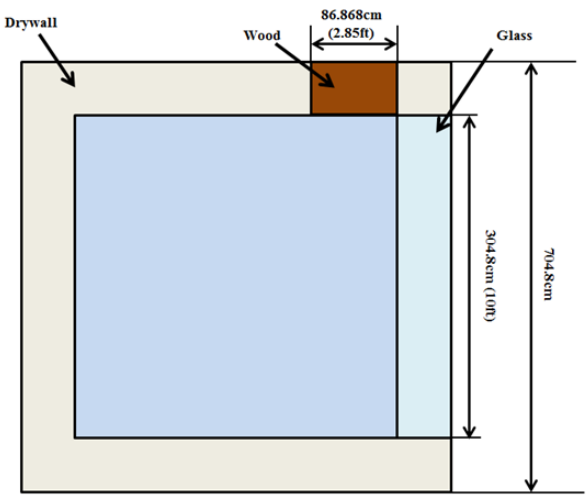

Figure 4-44: Case 1 room layout from top view (top right corner tally is closest to the door and window)

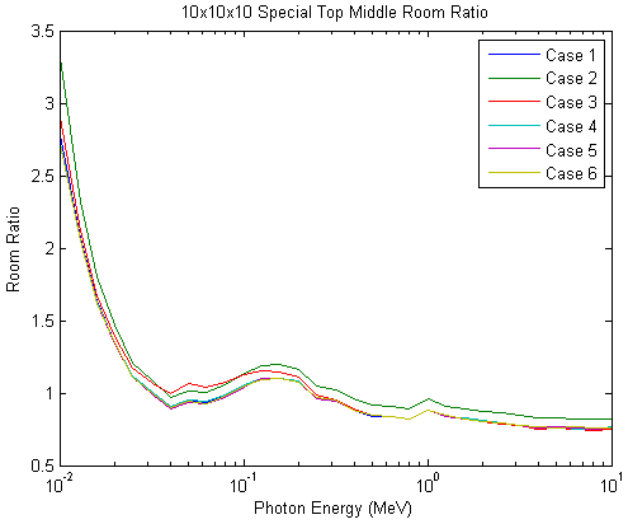

Figure 4-45: Special cases top middle room tally for 10x10x10 room with surface contamination

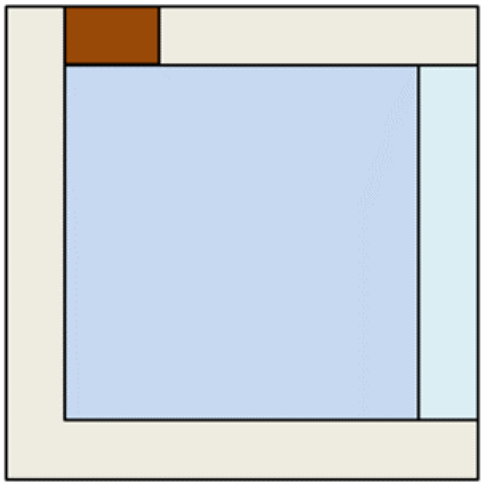

Figure 4-46: Case 2 room layout from top view (top middle tally is to the right of the door and to the left of window)

The top right room tally position room ratios are shown in figure 4-43 for each room layout case. From 20keV to 200keV, case 1 yields the highest of the room ratios. The layout of case 1 is shown in figure 4-44. The tally position is at the corner that is closest to the door and window within the layout. The cross section for Compton scatter is higher in wood and glass than in drywall which yields the slightly higher tally for this case.

The top middle tally position room ratios area shown in figure 4-45 for each room layout case. The highest of the room ratios belong to case 2 and case 3. Case 2 however is the dominantly higher room ratio for the majority of the energy spectrum. The layout for case 2 is shown in figure 4-46. The middle tally position is located to the right of the door and to the left of the window. Since the Compton scattering cross section is higher for the wood and glass materials this yields a higher tally. Also the lower secondary interactions are not being attenuated within the glass and wood respectively of each other so more interactions are able to occur.

4.4.2 Comparison of Special Cases to Composite 1 Room Ratios

The maximum room ratio for all cases was found as well as the average. The maximum and average ratios were plotted against the corresponding Composite 1 room ratios to compare the validity of using a composite material as opposed to using the exact layout of the room. Using the exact layout of the room creates many cases and layouts that would be difficult to model as well as more tedious to incorporate into the BPRG tool. For this reason, the special cases were modeled and are compared to the composite case in figures 4-47 through 4-54.

The center room ratios for the mentioned scenarios are modeled in figure 4-47. The maximum room ratios, the average room ratios as well as the composite material room ratios are all approximately equal with the exception of the composite yielding a slightly lower room ratio at the energy range of 40keV to 200keV. These ratios correspond to surface contamination

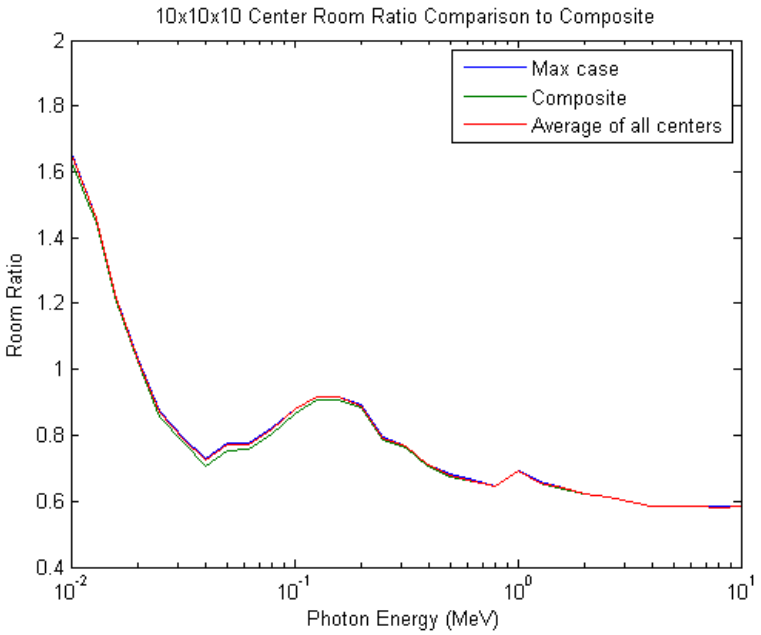

Figure 4-47: Special cases center room tally for 10x10x10 room with surface contamination with the maximum center tally for all 6 cases, the average tally of all 6 cases and the composite tally

The corner of the room ratios for surface contamination were compared to the composite material case as shown in figure 4-48. The maximum case for the room specific layout is slightly higher for energies ranging between 20 and 200keV. The composite material does however align with the average of all room cases.

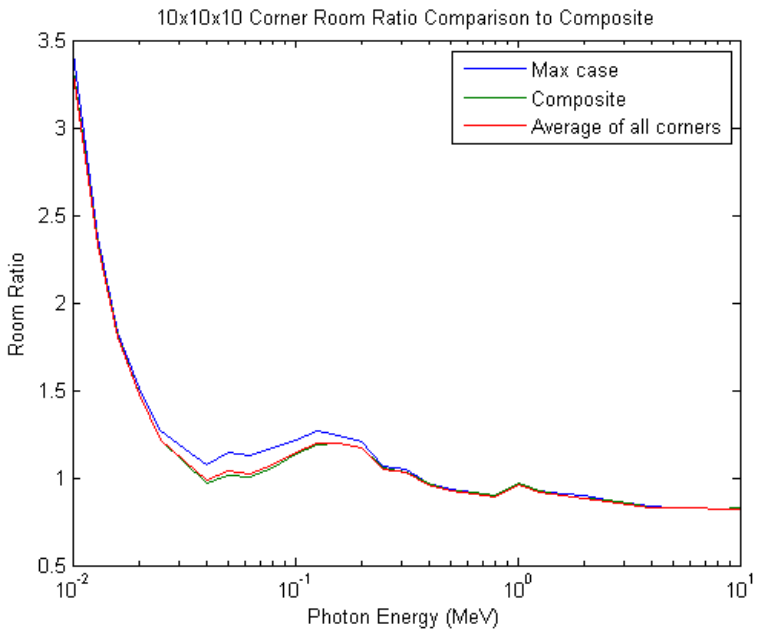

Figure 4-48 Special cases corner room tally for 10x10x10 room with surface contamination with the maximum corner tally for all 6 cases, the average tally of all 6 cases and the composite tally

To determine if contamination depth would have a significant effect between the composite case ratios and the special layout ratios the contamination depths of 1 and 5 cm were modeled. The center of the room ratios for 1cm of contamination are shown in figure 4-49. The maximum case is 0.4 higher than the average of all cases and almost twice that of the composite case for energies around 10keV. At 100keV all cases converge and continue to follow each other for the rest of the energy spectrum.

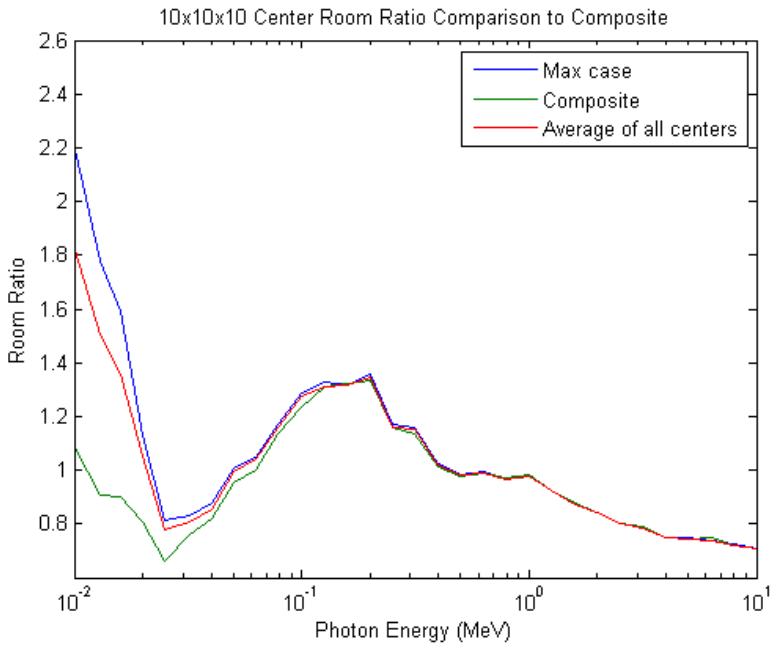

Figure 4-49: Special cases center room tally for 10x10x10 room with 1cm of contamination depth with the maximum center tally for all 6 cases, the average tally of all 6 cases and the composite tally

For 1cm of contamination depth, the maximum room ratio case yielded a higher value than that of the composite and the average for lower energies. After the energy of 200keV all cases converge for middle and corner tally positions.

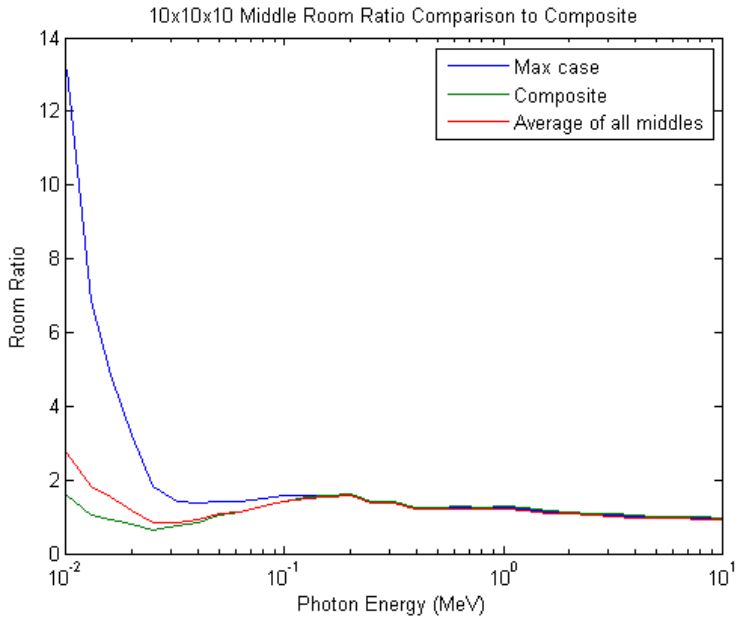

Figure 4-50: Special cases middle of the wall room tally for 10x10x10 room with 1cm of contamination depth with the maximum middle tally for all 6 cases, the average tally of all 6 cases and the composite tally

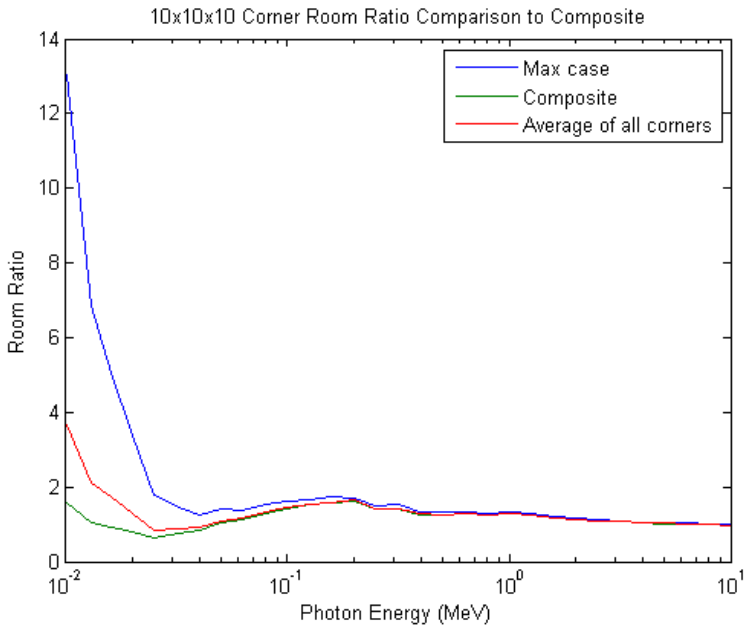

Figure 4-51: Special cases middle of the wall room tally for 10x10x10 room with 1cm of contamination depth with the maximum corner tally for all 6 cases, the average tally of all 6 cases and the composite tally

For the 5cm contamination depth room ratios, the maximum cases yielded room ratios that were approximately twice that of the composite material until the energy of 200keV was reached.

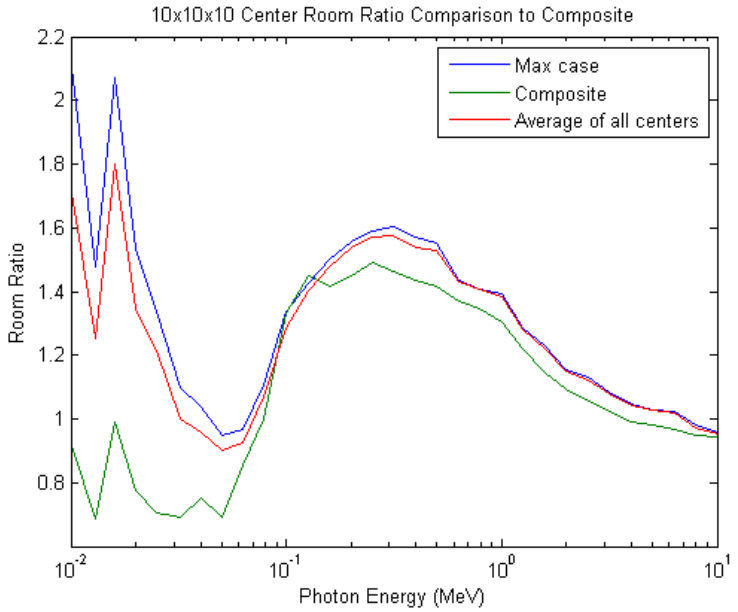

Figure 4-52: Special cases middle of the wall room tally for 10x10x10 room with 5 cm of contamination depth with the maximum center tally for all 6 cases, the average tally of all 6 cases and the composite tally

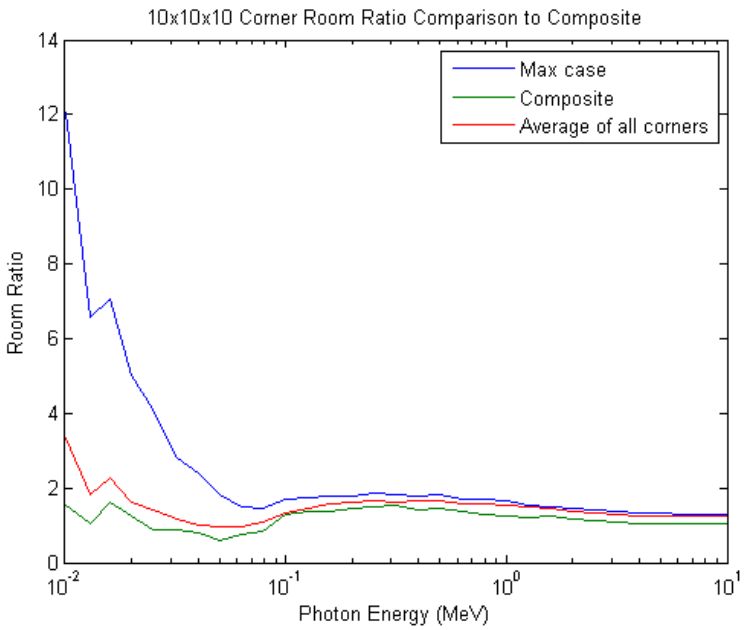

Figure 4-53: Special cases middle of the wall room tally for 10x10x10 room with 5 cm of contamination depth with the maximum corner tally for all 6 cases, the average tally of all 6 cases and the composite tally

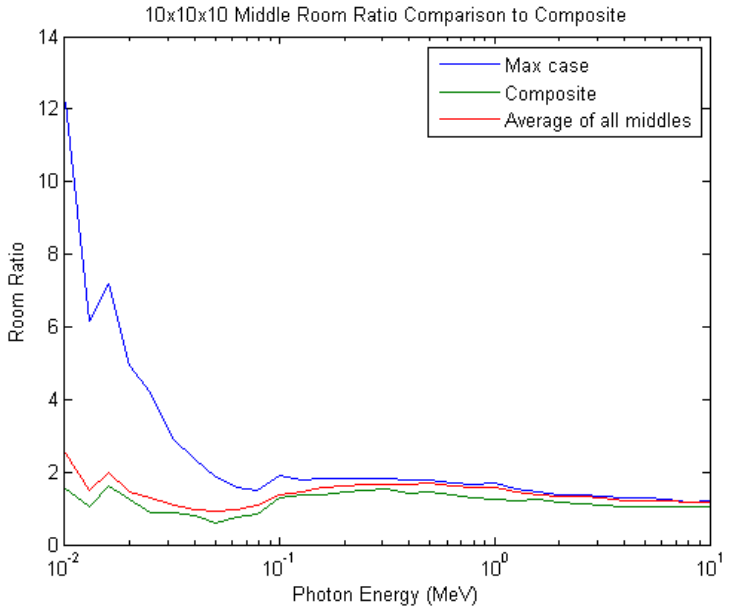

Figure 4-54: Special cases middle of the wall room tally for 10x10x10 room with 5cm of contamination depth with the maximum middle tally for all 6 cases, the average tally of all 6 cases and the composite tally

Using a composite material is valid for small contamination depths as well as energies above 100keV. Lower energy photon interactions are depended on material and position and the room ratio will be affected by using a composite material

SUMMARY

Room positioning, room dimensions, and room material all have effects on kerma as well as dose. To account for this, room ratios were developed for the BPRG risk tool to aid first response remediation workers with assessing various site locations. The tool will incorporate the derived room ratios and modify dose and risk coefficients from FGR12 and FGR13 to scenario specific cases. The use of composite materials which are homogenized mixtures of the relative room materials is appropriate for the initial review of the site. A severe difference was not observed between the finite modeling of the room with a window and a door versus its composite. Higher energy sources require less modification to account for room scenario. Depending on the dimensions of the room, the greatest case for hazard is in either the corner or center. All cases modelled are applicable for external exposure due. To account for modifications in internal exposure, further modelling needs to be developed.

APPENDIX A: PYTHON SCRIPTS AND MCNP INPUTS

A.I PYTHON SCRIPTS

A.I-1 Room Surface Python Script

```
import re
import linecache
import sys
import os
import glob

#This is the list of energies that will be run for the source (Logarithmic from 10kev to 10Mev)
ENERGY_LIST =
[0.010,0.013,0.016,0.020,0.025,0.032,0.040,0.050,0.063,0.079,0.100,0.126,0.158,0.200,0.251,0.316,0.398,0.501,0.631,0.794,1.000,1.259,1.585,1.995,2.512,3.162,3.981,5.012,6.310,7.943,10.000] # insert energies here
#The desired room dim are 10'x10'x10', 50'x50'x10', 100'x100'x10', 200'x200'x20', and 400'x400'x40'
#Room dimensions in cm divided by 2 so that everything is centered around origin
ROOM_DIM = [ [152.4, 152.4, 152.4], [762, 762, 152.4], [1524, 1524, 152.4], [3048, 3048, 304.8], [6096, 6096, 609.6]]
#This is air for the material card
air_mat = """C Materials
C Air (rho = 0.001205)
M1   6000  -0.000124 &
7000  -0.755267 &
8000  -0.231781 &
18000  -0.012827"""
adobe_mat = """C adobe
M2   1000  -0.0062664 &
6000  -0.0046888 &
8000  -0.5257914 &
11000  -0.015172 &
12000  -0.0021382 &
13000  -0.0519458 &
14000  -0.3488924 &
15000  -0.0000226 &
19000  -0.013383 &
20000  -0.012761 &
22000  -0.0009336 &
25000  -0.0000128 &
26000  -0.017992"""
weight_1 = 1
weight_2 = 1
num_dimen = len(ROOM_DIM)
num = 0
while num < num_dimen:
    #print ROOM_DIM[num]
    #this sets the dimensions for the source
    x_source = ROOM_DIM[num][0]
    y_source = ROOM_DIM[num][1]
    z_source = ROOM_DIM[num][2]
    #this sets the wall dimensions for x, y, and z. All will be +/- the bounds
    x_bound = ROOM_DIM[num][0] - 0.0001
    y_bound = ROOM_DIM[num][1] - 0.0001
    z_bound = ROOM_DIM[num][2] - 0.0001
```

```
    #for now the wall thickness will be 50 cm
    x_bound_outer = ROOM_DIM[num][0] + 50
    y_bound_outer = ROOM_DIM[num][1] + 50
    z_bound_outer = ROOM_DIM[num][2] + 50
    #might need to change this if tally volume changes. This sets the minimum of where the tally cylineder is on the z axis
    ref_person_z = z_bound - 100.0001
    ref_person_z_min = -ref_person_z
    print ref_person_z_min
    ref_person_x = x_bound - 30
    ref_person_y = ref_person_x
    #print ref_person_z_min
    if num==0:
        weight_1 = 1;
        weight_2 = 1;
    elif num==1:
        weight_1 = 0.35714;
        weight_2 = 0.07143;
    else:
        weight_1 = 0.41667;
        weight_2 = 0.041665;

    for energy in ENERGY_LIST:
        filename = "%s_%s_RAS" % (x_source, energy)
        print filename
        f = open(filename+ ".i", "w")
        f.write("%s MeV Photon Source for %s Size Room\n" % (energy, x_source))

        #write cells
        f.write("10 1 -.001205 -4 imp:p=1 $air in room \n")
        f.write("20 2 -1.8 4 -5 imp:p=1 $wall thickness \n")
        f.write("30 0 5 imp:p=0 $void \n")
        f.write("\n")

        #write surfaces
        f.write("C Surface Card \n")
        f.write("C This is the inner wall that will be contaminated \n")
        f.write("4 rpp -%s %s   -%s %s   -%s %s \n" % (x_bound, x_bound, y_bound, y_bound, z_bound, z_bound))
        f.write("C \n")
        f.write("C This is the extent of the wall thickness \n")
        f.write("5 rpp -%s %s      -%s %s      -%s %s \n" % (x_bound_outer, x_bound_outer, y_bound_outer, y_bound_outer, z_bound_outer, z_bound_outer))
        f.write("\n")

        #write sdef card
        f.write("C SDEF Card \nC \n")
        f.write("MODE P \n")
        f.write("SDEF POS=d2 PAR=2 ERG=%s X=FPOS d8 Y=FPOS d15 Z=FPOS d22 \n" % (energy))
        f.write("C \n")
        f.write("C -- This is setting the center positions for the 6 planes \n")
        f.write("SI2 L 0 0 -%s 0 0 %s 0 -%s 0 0 %s 0 -%s 0 0 %s 0 0 \n"% (x_source, x_source, y_source, y_source, z_source, z_source))
        f.write("SP2 %s %s %s %s %s %s \n" %(weight_1, weight_1, weight_2,weight_2,weight_2,weight_2))
            # here is where the weighting will change for the various room sizes (add loop or something that notices what room size it is and inputs the weighting factors)
        f.write("C \n")
```

```
    f.write("C --This is setting the xrange for the 6 planes \n")
    f.write("DS8 S 9 10 11 12 13 14 \n")
    f.write("SI9 -%s %s \nSP9 0 1 \n" %(x_source, x_source))
    f.write("SI10 -%s %s \nSP10 0 1 \n" %(x_source, x_source))
    f.write("SI11 -%s %s \nSP11 0 1 \n" %(x_source, x_source))
    f.write("SI12 -%s %s \nSP12 0 1 \n" %(x_source, x_source))
    f.write("SI13 L -%s \nSP13 1 \n" %(x_source))
    f.write("SI14 L %s \nSP14 1 \n" %(x_source))
    f.write("C \n")
    f.write("C --This is setting the yrange for the 6 planes \n")
    f.write("DS15 S 16 17 18 19 20 21 \n")
    f.write("SI16 -%s %s \nSP16 0 1 \n" %(y_source, y_source))
    f.write("SI17 -%s %s \nSP17 0 1 \n" %(y_source, y_source))
    f.write("SI18 L -%s \nSP18 1 \n" %(y_source))
    f.write("SI19 L %s \nSP19 1 \n" %(y_source))
    f.write("SI20 -%s %s \nSP20 0 1 \n" %(y_source, y_source))
    f.write("SI21 -%s %s \nSP21 0 1 \n" %(y_source, y_source))
    f.write("C \n")
    f.write("C --This is setting the zrange for the 6 planes \n")
    f.write("DS22 S 23 24 25 26 27 28 \n")
    f.write("SI23 L -%s \nSP23 1 \n" %(z_source))
    f.write("SI24 L %s \nSP24 1 \n" %(z_source))
    f.write("SI25 -%s %s \nSP25 0 1 \n" %(z_source, z_source))
    f.write("SI26 -%s %s \nSP26 0 1 \n" %(z_source, z_source))
    f.write("SI27 -%s %s \nSP27 0 1 \n" %(z_source, z_source))
    f.write("SI28 -%s %s \nSP28 0 1 \n" %(z_source, z_source))
    f.write("C \n")

    #write materials
    f.write(air_mat)
    f.write("\nC \n")
    f.write(adobe_mat)
    f.write("\nC \n")

    #write tally
    f.write("C Tally Type \n")
    f.write("F4:p 10\n")
    f.write("F5:p 0 0 %s 10 \n" % (ref_person_z_min))
    f.write("F15:p %s 0 %s 10 \n" % (ref_person_x,ref_person_z_min))
    f.write("F25:p %s %s %s 10 \n" % (ref_person_x,ref_person_y,ref_person_z_min))
    f.write("C  ICRP 74 fluence to air kerma (pGy-cm2)\nDE4  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08
0.1  &\n")
    f.write("0.15    0.2   0.3   0.4   0.5   0.6   0.8  1.  1.5  &\n2.  3.  4.  5.  6.  8.  10.\n")
    f.write("DF4  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &\n0.371   0.599   0.856   1.38   1.89
2.38   2.84   3.69  &\n")
    f.write("4.47   6.14   7.54   9.96   12.1   14.1   16.1   20.1   24.\n")
    f.write("C  ICRP 74 fluence to air kerma (pGy-cm2)\nDE5  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08
0.1  &\n")
    f.write("0.15    0.2   0.3   0.4   0.5   0.6   0.8  1.  1.5  &\n2.  3.  4.  5.  6.  8.  10.\n")
    f.write("DF5  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &\n0.371   0.599   0.856   1.38   1.89
2.38   2.84   3.69  &\n")
    f.write("4.47   6.14   7.54   9.96   12.1   14.1   16.1   20.1   24.\n")
    f.write("C  ICRP 74 fluence to air kerma (pGy-cm2)\nDE15  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08
0.1  &\n")
    f.write("0.15    0.2   0.3   0.4   0.5   0.6   0.8  1.  1.5  &\n2.  3.  4.  5.  6.  8.  10.\n")
```

```
        f.write("DF15  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &\n0.371   0.599   0.856   1.38   1.89
2.38   2.84   3.69   &\n")
        f.write("4.47   6.14   7.54   9.96   12.1   14.1   16.1   20.1   24.\n")
        f.write("C  ICRP 74 fluence to air kerma (pGy-cm2)\nDE25  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08
0.1   &\n")
        f.write("0.15    0.2   0.3   0.4   0.5   0.6   0.8   1.   1.5   &\n2.   3.   4.   5.   6.   8.   10.\n")
        f.write("DF25  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &\n0.371   0.599   0.856   1.38   1.89
2.38   2.84   3.69   &\n")
        f.write("4.47   6.14   7.54   9.96   12.1   14.1   16.1   20.1   24.\n")
        f.write("nps 1e6")

        f.close()
    num = num + 1
```

A.I-2 Room Writer 3D python Script

```
0.01 MeV Photon Source for 152.4 Size Room with 1cm source thic
10 1 -.001205 -1 imp:p=1 $air in room
30 2 -1.8 1 -3 imp:p=1 $extent of wall
40 0 3 imp:p=0 $void

C Surface Card
C This is the inner wall
1 rpp -152.4 152.4   -152.4 152.4   -152.4 152.4
C
C This is the bound of the building structure (wall)
3 rpp -202.4 202.4   -202.4 202.4   -202.4 202.4

C SDEF Card
C
MODE P
SDEF POS=d2 PAR=2 ERG=0.01 X=FPOS d8 Y=FPOS d15 Z=FPOS d22
C
C -- This is setting the center positions for the 6 planes
SI2 L 0 0 -152.4 0 0 152.4 0 -152.4 0 0 152.4 0 -152.4 0 0 152.4 0 0
SP2 1 1 1 1 1 1
C
C --This is setting the xrange for the 6 planes
DS8 S 9 10 11 12 13 14
SI9 -153.4 153.4
SP9 0 1
SI10 -153.4 153.4
SP10 0 1
SI11 -153.4 153.4
SP11 0 1
SI12 -153.4 153.4
SP12 0 1
SI13  -153.4 -152.4
SP13 0 1
SI14 152.4 153.4
SP14 0 1
C
C --This is setting the yrange for the 6 planes
DS15 S 16 17 18 19 20 21
SI16 -153.4 153.4
```

```
SP16 0 1
SI17 -153.4 153.4
SP17 0 1
SI18 -153.4 -152.4
SP18 0 1
SI19 152.4 153.4
SP19 0 1
SI20 -152.4 152.4
SP20 0 1
SI21 -152.4 152.4
SP21 0 1
C
C --This is setting the zrange for the 6 planes
DS22 S 23 24 25 26 27 28
SI23 -153.4 -152.4
SP23 0 1
SI24 152.4 153.4
SP24 0 1
SI25 -152.4 152.4
SP25 0 1
SI26 -152.4 152.4
SP26 0 1
SI27 -152.4 152.4
SP27 0 1
SI28 -152.4 152.4
SP28 0 1
C
C Materials
C Air (rho = 0.001205)
M1   6000  -0.000124 &
7000  -0.755267 &
8000  -0.231781 &
18000  -0.012827
C
C adobe
M2   1000  -0.0062664 &
6000  -0.0046888 &
8000  -0.5257914 &
11000  -0.015172 &
12000  -0.0021382 &
13000  -0.0519458 &
14000  -0.3488924 &
15000  -0.0000226 &
19000  -0.013383 &
20000  -0.012761 &
22000  -0.0009336 &
25000  -0.0000128 &
26000  -0.017992
C
C Tally Type
F4:p 10
F5:p 0 0 -52.4 20
F15:p 122.4 0 -52.4 20
F25:p 122.4 122.4 -52.4 20
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE4  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
```

```
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF4  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE5  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF5  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE15  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF15  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE25  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF25  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
nps 1e8
```

A.II MCNP INPUTS

A.II-1 MCNP Surface Input Example (Adobe 10x10x10 Room for 0.01MeV)

```
0.01 MeV Photon Source for 152.4 Size Room
10 1 -.001205 -4 imp:p=1 $air in room
20 2 -1.8 4 -5 imp:p=1 $wall thickness
30 0 5 imp:p=0 $void

C Surface Card
C This is the inner wall that will be contaminated
4 rpp -152.3999 152.3999   -152.3999 152.3999   -152.3999 152.3999
C
C This is the extent of the wall thickness
5 rpp -202.4 202.4   -202.4 202.4   -202.4 202.4

C SDEF Card
C
MODE P
SDEF POS=d2 PAR=2 ERG=0.01 X=FPOS d8 Y=FPOS d15 Z=FPOS d22
C
C -- This is setting the center positions for the 6 planes
SI2 L 0 0 -152.4 0 0 152.4 0 -152.4 0 0 152.4 0 -152.4 0 0 152.4 0 0
SP2 1 1 1 1 1 1
C
C --This is setting the xrange for the 6 planes
DS8 S 9 10 11 12 13 14
```

```
SI9 -152.4 152.4
SP9 0 1
SI10 -152.4 152.4
SP10 0 1
SI11 -152.4 152.4
SP11 0 1
SI12 -152.4 152.4
SP12 0 1
SI13 L -152.4
SP13 1
SI14 L 152.4
SP14 1
C
C --This is setting the yrange for the 6 planes
DS15 S 16 17 18 19 20 21
SI16 -152.4 152.4
SP16 0 1
SI17 -152.4 152.4
SP17 0 1
SI18 L -152.4
SP18 1
SI19 L 152.4
SP19 1
SI20 -152.4 152.4
SP20 0 1
SI21 -152.4 152.4
SP21 0 1
C
C --This is setting the zrange for the 6 planes
DS22 S 23 24 25 26 27 28
SI23 L -152.4
SP23 1
SI24 L 152.4
SP24 1
SI25 -152.4 152.4
SP25 0 1
SI26 -152.4 152.4
SP26 0 1
SI27 -152.4 152.4
SP27 0 1
SI28 -152.4 152.4
SP28 0 1
C
C Materials
C Air (rho = 0.001205)
M1   6000  -0.000124 &
7000  -0.755267 &
8000  -0.231781 &
18000  -0.012827
C
C adobe
M2   1000  -0.0062664 &
6000  -0.0046888 &
8000  -0.5257914 &
11000  -0.015172 &
12000  -0.0021382 &
```

```
13000  -0.0519458 &
14000  -0.3488924 &
15000  -0.0000226 &
19000  -0.013383 &
20000  -0.012761 &
22000  -0.0009336 &
25000  -0.0000128 &
26000  -0.017992
C
C Tally Type
F4:p 10
F5:p 0 0 -52.3998 10
F15:p 122.3999 0 -52.3998 10
F25:p 122.3999 122.3999 -52.3998 10
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE4  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF4  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE5  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF5  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE15  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF15  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE25  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF25  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
nps 1e6
```

A.II-2 MCNP5 Depth Example (50x50x10ft Composite room for 0.1 MeV 5cm)

```
0.01 MeV Photon Source for 762 Size Room with 5cm source thic
10 1 -.001205 -1 imp:p=1 $air in room
30 2 -1.8 1 -3 imp:p=1 $extent of wall
40 0 3 imp:p=0 $void

C Surface Card
C This is the inner wall
1 rpp -762 762   -762 762   -152.4 152.4
C
C This is the bound of the building structure (wall)
```

```
3 rpp -812 812   -812 812   -202.4 202.4

C SDEF Card
C
MODE P
SDEF POS=d2 PAR=2 ERG=0.01 X=FPOS d8 Y=FPOS d15 Z=FPOS d22
C
C -- This is setting the center positions for the 6 planes
SI2 L 0 0 -762 0 0 762 0 -762 0 0 762 0 -152.4 0 0 152.4 0 0
SP2 0.35814 0.35814 0.07116 0.07116 0.0707 0.0707
C
C --This is setting the xrange for the 6 planes
DS8 S 9 10 11 12 13 14
SI9 -767 767
SP9 0 1
SI10 -767 767
SP10 0 1
SI11 -767 767
SP11 0 1
SI12 -767 767
SP12 0 1
SI13  -767 -762
SP13 0 1
SI14 762 767
SP14 0 1
C
C --This is setting the yrange for the 6 planes
DS15 S 16 17 18 19 20 21
SI16 -767 767
SP16 0 1
SI17 -767 767
SP17 0 1
SI18 -767 -762
SP18 0 1
SI19 762 767
SP19 0 1
SI20 -762 762
SP20 0 1
SI21 -762 762
SP21 0 1
C
C --This is setting the zrange for the 6 planes
DS22 S 23 24 25 26 27 28
SI23 -157.4 -152.4
SP23 0 1
SI24 152.4 157.4
SP24 0 1
SI25 -152.4 152.4
SP25 0 1
SI26 -152.4 152.4
SP26 0 1
SI27 -152.4 152.4
SP27 0 1
SI28 -152.4 152.4
SP28 0 1
C
```

```
C Materials
C Air (rho = 0.001205)
M1   6000  -0.000124 &
7000  -0.755267 &
8000  -0.231781 &
18000  -0.012827
C
C adobe
M2   1000  -0.0062664 &
6000  -0.0046888 &
8000  -0.5257914 &
11000  -0.015172 &
12000  -0.0021382 &
13000  -0.0519458 &
14000  -0.3488924 &
15000  -0.0000226 &
19000  -0.013383 &
20000  -0.012761 &
22000  -0.0009336 &
25000  -0.0000128 &
26000  -0.017992
C
C Tally Type
F4:p 10
F5:p 0 0 -52.4 20
F15:p 732 0 -52.4 20
F25:p 732 732 -52.4 20
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE4  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF4  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE5  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF5  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE15  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF15  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE25  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF25  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
nps 1e8
```

A.II-3 Example of Special Case Input File (Case 1, 0.1 MeV with 1cm source thick)

```
0.01MeV Photon Source for Case 1 with 1cm source thickness
10 1 -0.001205 -3 1 4 -2 -9 10 imp:p=1 $ air in the room
20 5 -2.4 1 -3 -6 2 10 -9 imp:p=1 $glass window
30 4 -0.64 -9 10 -2 14 -1 8 imp:p=1 $ door in corner next to window
40 3 -2.32 5 -7 -6 8 9 -11 imp:p=1 $ ceiling
50 2 -2.3 -10 12 -6 8 -7 5 imp:p=1 $ floor
60 3 -2.32 -9 10 #(-1 5 -2 14) #(1 -3 2 -6) #(1 -3 -2 4) 5 -7 -6 8 imp:p=1 $ wall
70 0 11:-12:6:-8:-5:7 imp:p=0 $ void

C Surface Card
1 py -152.399
2 px 152.399
3 py 152.399
4 px -152.399
5 px -202.4
6 px 202.4
7 py 202.4
8 py -202.4
9 pz 152.399
10 pz -152.399
11 pz 202.4
12 pz -202.4
13 pz -60.96
14 px 65.532

C SDEF Card
C
MODE P
SDEF POS=d2 PAR=2 ERG=0.01 X=FPOS d8 Y=FPOS d15 Z=FPOS d22
C
C -- This is setting the center positions for the 6 planes
SI2 L 0 0 -152.4 0 0 152.4 0 -152.4 0 0 152.4 0 -152.4 0 0 152.4 0 0
SP2 1 1 1 1 1 1
C
C --This is setting the xrange for the 6 planes
DS8 S 9 10 11 12 13 14
SI9 -153.4 153.4
SP9 0 1
SI10 -153.4 153.4
SP10 0 1
SI11 -153.4 153.4
SP11 0 1
SI12 -153.4 153.4
SP12 0 1
SI13  -153.4 -152.4
SP13 0 1
SI14 152.4 153.4
SP14 0 1
C
C --This is setting the yrange for the 6 planes
DS15 S 16 17 18 19 20 21
SI16 -153.4 153.4
SP16 0 1
SI17 -153.4 153.4
```

```
SP17 0 1
SI18 -153.4 -152.4
SP18 0 1
SI19 152.4 153.4
SP19 0 1
SI20 -152.4 152.4
SP20 0 1
SI21 -152.4 152.4
SP21 0 1
C
C --This is setting the zrange for the 6 planes
DS22 S 23 24 25 26 27 28
SI23 -153.4 -152.4
SP23 0 1
SI24 152.4 153.4
SP24 0 1
SI25 -152.4 152.4
SP25 0 1
SI26 -152.4 152.4
SP26 0 1
SI27 -152.4 152.4
SP27 0 1
SI28 -152.4 152.4
SP28 0 1
C
C Materials
C Air (rho = 0.001205)
M1   6000  -0.000124 &
7000  -0.755267 &
8000  -0.231781 &
18000  -0.012827
C
C Concrete
M2   1000  -0.01 &
8000  -0.532 &
11000  -0.029 &
13000  -0.034 &
14000  -0.337 &
20000  -0.044 &
26000  -0.014
C
C drywall
M3   1000  -0.023416 &
8000  -0.557572 &
16000  -0.186215 &
20000  -0.232797
C
C Wood
M4   1000  -0.059652 &
6000  -0.497018 &
7000  -0.00497 &
8000  -0.427435 &
12000  -0.001988 &
16000  -0.00497 &
19000  -0.001988 &
20000  -0.01988
```

```
C
C Glass
M5   8000  -0.4598 &
11000  -0.096441 &
14000  -0.336553 &
20000  -0.107205
C
C Tally Type
F4:p 10
F5:p 0 0 -52.4 20
F15:p 122.4 -122.4 -52.4 20
F25:p 122.4 0 -52.4 20
F35:p 122.4 122.4 -52.4 20
F45:p 0 -122.4 -52.4 20
F55:p 0 122.4 -52.4 20
F65:p -122.4 -122.4 -52.4 20
F75:p -122.4 0 -52.4 20
F85:p -122.4 122.4 -52.4 20
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE4  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF4  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE5  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF5  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE15  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF15  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE25  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF25  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE35  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
2.   3.   4.   5.   6.   8.   10.
DF35  7.43   3.12   1.68   0.721   0.429   0.323   0.289   0.307   &
0.371   0.599   0.856   1.38   1.89    2.38    2.84    3.69   &
4.47   6.14    7.54   9.96   12.1   14.1    16.1    20.1   24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE45  0.01   0.015   0.02   0.03   0.04   0.05   0.06   0.08   0.1   &
0.15    0.2    0.3    0.4    0.5    0.6    0.8   1.   1.5   &
```

```
2.  3.  4.  5.  6.  8.  10.
DF45 7.43  3.12  1.68  0.721  0.429  0.323  0.289  0.307  &
0.371  0.599  0.856  1.38  1.89  2.38  2.84  3.69  &
4.47  6.14  7.54  9.96  12.1  14.1  16.1  20.1  24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE55 0.01  0.015  0.02  0.03  0.04  0.05  0.06  0.08  0.1  &
0.15  0.2  0.3  0.4  0.5  0.6  0.8  1.  1.5  &
2.  3.  4.  5.  6.  8.  10.
DF55 7.43  3.12  1.68  0.721  0.429  0.323  0.289  0.307  &
0.371  0.599  0.856  1.38  1.89  2.38  2.84  3.69  &
4.47  6.14  7.54  9.96  12.1  14.1  16.1  20.1  24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE65 0.01  0.015  0.02  0.03  0.04  0.05  0.06  0.08  0.1  &
0.15  0.2  0.3  0.4  0.5  0.6  0.8  1.  1.5  &
2.  3.  4.  5.  6.  8.  10.
DF65 7.43  3.12  1.68  0.721  0.429  0.323  0.289  0.307  &
0.371  0.599  0.856  1.38  1.89  2.38  2.84  3.69  &
4.47  6.14  7.54  9.96  12.1  14.1  16.1  20.1  24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE75 0.01  0.015  0.02  0.03  0.04  0.05  0.06  0.08  0.1  &
0.15  0.2  0.3  0.4  0.5  0.6  0.8  1.  1.5  &
2.  3.  4.  5.  6.  8.  10.
DF75 7.43  3.12  1.68  0.721  0.429  0.323  0.289  0.307  &
0.371  0.599  0.856  1.38  1.89  2.38  2.84  3.69  &
4.47  6.14  7.54  9.96  12.1  14.1  16.1  20.1  24.
C  ICRP 74 fluence to air kerma (pGy-cm2)
DE85 0.01  0.015  0.02  0.03  0.04  0.05  0.06  0.08  0.1  &
0.15  0.2  0.3  0.4  0.5  0.6  0.8  1.  1.5  &
2.  3.  4.  5.  6.  8.  10.
DF85 7.43  3.12  1.68  0.721  0.429  0.323  0.289  0.307  &
0.371  0.599  0.856  1.38  1.89  2.38  2.84  3.69  &
4.47  6.14  7.54  9.96  12.1  14.1  16.1  20.1  24.
stop F55 0.03
```

APPENDIX B: SURFACE AIR TABLES

Table B.0-1: Air 10x10x10 Room with surface contamination

Energy (MeV)	Center	Corner	Middle
0.01	2.342344	9.181135	9.100581
0.013	4.801881	4.863928	4.765411
0.016	3.416374	3.441085	3.345536
0.02	2.411817	2.419287	2.346381
0.025	1.973626	1.978265	1.919029
0.032	1.629810	1.634614	1.583005
0.04	1.382073	1.384905	1.341067
0.05	1.211137	1.212829	1.174719
0.063	1.240122	1.241493	1.204127
0.079	1.172175	1.174125	1.139044
0.1	1.252058	1.254477	1.215378
0.126	1.249767	1.252159	1.214099
0.2	1.267339	1.269990	1.231473
0.316	1.248696	1.251598	1.214217
0.501	1.268238	1.272117	1.233953
0.631	1.209966	1.213393	1.177472
0.794	1.192067	1.195249	1.159750
1	1.194963	1.198769	1.162789
1.259	1.160557	1.163896	1.129452
1.585	1.155614	1.158865	1.124284
1.995	1.115673	1.118702	1.085635
2.512	1.089189	1.091994	1.059977
3.162	1.072561	1.075643	1.043920
3.981	1.066332	1.069438	1.037559
5.012	1.022304	1.025327	0.994808
6.31	1.028610	1.032157	1.000870
7.943	0.991060	0.994145	0.964416
10	0.992802	0.995679	0.966055

Table B.0-2: Air 50x50x10 room with surface contamination

Energy (MeV)	Center	Corner	Middle
0.01	8.974380	8.865442	8.922265
0.013	5.076446	4.919024	4.782409
0.016	3.876837	3.662049	3.472345
0.02	2.928733	2.709973	2.503414
0.025	2.506459	2.292473	2.107856
0.032	2.119995	1.928505	1.765436
0.04	1.822099	1.652052	1.510563
0.05	1.603076	1.453968	1.324266
0.063	1.644292	1.491517	1.359050
0.079	1.550342	1.411022	1.285584
0.1	1.656098	1.507741	1.374328
0.126	1.651190	1.505414	1.371622
0.2	1.672841	1.528922	1.392861
0.316	1.649742	1.505867	1.375752
0.501	1.675974	1.533727	1.400128
0.631	1.598027	1.462000	1.337526
0.794	1.573661	1.439729	1.318280
1	1.578240	1.445271	1.321732
1.259	1.533484	1.403137	1.283750
1.585	1.529886	1.397563	1.279282
1.995	1.475580	1.349710	1.235414
2.512	1.442099	1.318419	1.206878
3.162	1.419505	1.299299	1.189593
3.981	1.412060	1.291787	1.184643
5.012	1.354579	1.239121	1.134009
6.31	1.362609	1.246617	1.141627
7.943	1.313212	1.201594	1.099444
10	1.315600	1.203528	1.101266

Table B.0-3: Air 100x100x10 room with surface contamination

Energy (MeV)	Center	Corner	Middle
0.01	8.895088	9.019796	9.213275
0.013	5.089865	4.977572	4.919551
0.016	3.991947	3.736341	3.569377
0.02	3.088668	2.808211	2.588485
0.025	2.735134	2.419388	2.189044
0.032	2.370214	2.075984	1.863541
0.04	2.063930	1.789406	1.597309
0.05	1.825620	1.580035	1.409762

0.063	1.875719	1.628665	1.452009
0.079	1.767372	1.541570	1.371621
0.1	1.884145	1.644482	1.466301
0.126	1.877097	1.641840	1.469235
0.2	1.905683	1.667747	1.490670
0.316	1.879826	1.647989	1.471124
0.501	1.911408	1.678268	1.503028
0.631	1.825008	1.603554	1.432146
0.794	1.801085	1.581855	1.412530
1	1.807267	1.588639	1.418509
1.259	1.764593	1.546152	1.379253
1.585	1.756601	1.540742	1.375645
1.995	1.693139	1.487221	1.329416
2.512	1.652347	1.452958	1.299203
3.162	1.627854	1.432740	1.280632
3.981	1.619676	1.424960	1.273581
5.012	1.554152	1.366981	1.221655
6.31	1.565001	1.376054	1.229642
7.943	1.507954	1.326608	1.185377
10	1.510987	1.329019	1.187807

Table B.0-4: Air 200x200x20 room with surface contamination

Energy (MeV)	Center	Corner	Middle
0.01	3.051123	8.831364	8.244889
0.013	4.828382	4.866186	4.735343
0.016	3.728695	3.674972	3.244493
0.02	2.940087	2.758380	2.407813
0.025	2.708521	2.469764	2.088098
0.032	2.432162	2.134293	1.786181
0.04	2.147776	1.867431	1.550507
0.05	1.918505	1.676160	1.378489
0.063	1.981762	1.724634	1.425363
0.079	1.874231	1.629278	1.348276
0.1	1.989681	1.744685	1.439983
0.126	1.975839	1.734290	1.438972
0.2	2.006379	1.766899	1.467230
0.316	1.985415	1.747768	1.455855
0.501	2.023781	1.787705	1.487625
0.631	1.934233	1.713416	1.423129
0.794	1.910804	1.688115	1.404665
1	1.920965	1.694740	1.412079

1.259	1.870215	1.649797	1.374421
1.585	1.864206	1.646232	1.371847
1.995	1.805274	1.593064	1.327851
2.512	1.764369	1.562364	1.298250
3.162	1.741560	1.537347	1.281648
3.981	1.736332	1.532026	1.276223
5.012	1.671247	1.470001	1.225114
6.31	1.688685	1.480089	1.235493
7.943	1.620818	1.429177	1.190534
10	1.619459	1.431163	1.192654

Table B.0-5: Air 400x400x40 room with surface contamination

Energy (MeV)	Center	Corner	Middle
0.01	8.384335	9.360634	7.731313
0.013	4.597693	5.057319	4.220100
0.016	3.556579	3.732364	3.229305
0.02	2.732279	2.797058	2.323222
0.025	2.547562	2.489024	2.014103
0.032	2.348683	2.224792	1.747795
0.04	2.110141	1.952674	1.537900
0.05	1.943719	1.770047	1.408004
0.063	2.010277	1.818805	1.420525
0.079	1.912947	1.730635	1.353269
0.1	2.042426	1.846884	1.464010
0.126	2.018001	1.844353	1.452757
0.2	2.041206	1.880993	1.508648
0.316	2.024448	1.874257	1.491496
0.501	2.072937	1.921217	1.519688
0.631	1.985908	1.838889	1.457300
0.794	1.966570	1.818784	1.436763
1	1.980904	1.839366	1.444274
1.259	1.934889	1.785150	1.409453
1.585	1.935094	1.786189	1.408495
1.995	1.877958	1.729786	1.363492
2.512	1.838697	1.695608	1.336841
3.162	1.819178	1.674465	1.323392
3.981	1.812860	1.668775	1.319082
5.012	1.744484	1.604544	1.266896
6.31	1.757434	1.616824	1.276748
7.943	1.695844	1.561714	1.232036
10	1.701209	1.567746	1.236695

APPENDIX C: Adobe Mud Brick Tables

First tables will be presented for raw air kerma values. These units are in pGy per cm^2. Room ratio values are presented following the Kerma tables. Room ratios are unitless.

Surface Contamination Kerma

Table C-1: Kerma Adobe Mud Brick Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.28E-05	6.02E-06	1.06E-05	1.31E-05
0.013	1.02E-05	6.15E-06	8.91E-06	1.02E-05
0.016	7.58E-06	4.95E-06	6.77E-06	7.60E-06
0.02	5.18E-06	3.53E-06	4.67E-06	5.20E-06
0.025	3.49E-06	2.45E-06	3.18E-06	3.49E-06
0.032	2.30E-06	1.64E-06	2.10E-06	2.30E-06
0.04	1.69E-06	1.24E-06	1.55E-06	1.70E-06
0.05	1.42E-06	1.07E-06	1.32E-06	1.45E-06
0.063	1.42E-06	1.09E-06	1.32E-06	1.44E-06
0.079	1.62E-06	1.25E-06	1.51E-06	1.64E-06
0.1	2.02E-06	1.57E-06	1.89E-06	2.05E-06
0.126	2.63E-06	2.03E-06	2.46E-06	2.66E-06
0.158	3.37E-06	2.60E-06	3.16E-06	3.42E-06
0.2	4.37E-06	3.33E-06	4.08E-06	4.43E-06
0.251	5.49E-06	4.16E-06	5.12E-06	5.58E-06
0.316	6.87E-06	5.16E-06	6.39E-06	6.95E-06
0.398	8.49E-06	6.31E-06	7.88E-06	8.59E-06
0.501	1.03E-05	7.61E-06	9.59E-06	1.05E-05
0.631	1.24E-05	9.07E-06	1.15E-05	1.25E-05
0.794	1.48E-05	1.07E-05	1.37E-05	1.50E-05
1	1.76E-05	1.26E-05	1.62E-05	1.77E-05
1.259	2.05E-05	1.46E-05	1.88E-05	2.06E-05
1.585	2.39E-05	1.69E-05	2.20E-05	2.40E-05
1.995	2.77E-05	1.96E-05	2.53E-05	2.78E-05
2.512	3.19E-05	2.25E-05	2.92E-05	3.20E-05
3.162	3.68E-05	2.59E-05	3.38E-05	3.70E-05
3.981	4.26E-05	3.00E-05	3.90E-05	4.27E-05
5.012	4.94E-05	3.48E-05	4.52E-05	4.95E-05
6.31	5.81E-05	4.09E-05	5.31E-05	5.81E-05
7.943	6.88E-05	4.85E-05	6.28E-05	6.88E-05
10	8.20E-05	5.79E-05	7.49E-05	8.21E-05

Table C-2: Kerma Adobe Mud Brick Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	7.24E-07	3.59E-07	8.92E-07	1.11E-06
0.013	7.09E-07	4.95E-07	8.03E-07	9.00E-07
0.016	6.11E-07	5.00E-07	6.69E-07	7.00E-07
0.02	4.66E-07	4.04E-07	4.99E-07	5.09E-07
0.025	3.35E-07	3.02E-07	3.50E-07	3.54E-07
0.032	2.28E-07	2.11E-07	2.39E-07	2.35E-07
0.04	1.70E-07	1.58E-07	1.78E-07	1.75E-07
0.05	1.43E-07	1.32E-07	1.49E-07	1.51E-07
0.063	1.42E-07	1.32E-07	1.50E-07	1.51E-07
0.079	1.61E-07	1.49E-07	1.70E-07	1.70E-07
0.1	2.01E-07	1.87E-07	2.12E-07	2.14E-07
0.126	2.62E-07	2.42E-07	2.81E-07	2.79E-07
0.158	3.37E-07	3.11E-07	3.59E-07	3.60E-07
0.2	4.37E-07	4.03E-07	4.64E-07	4.65E-07
0.251	5.52E-07	5.08E-07	5.87E-07	5.88E-07
0.316	6.95E-07	6.38E-07	7.38E-07	7.40E-07
0.398	8.63E-07	7.92E-07	9.15E-07	9.17E-07
0.501	1.06E-06	9.70E-07	1.12E-06	1.11E-06
0.631	1.28E-06	1.17E-06	1.35E-06	1.34E-06
0.794	1.53E-06	1.40E-06	1.62E-06	1.60E-06
1	1.82E-06	1.67E-06	1.92E-06	1.89E-06
1.259	2.13E-06	1.97E-06	2.25E-06	2.21E-06
1.585	2.49E-06	2.27E-06	2.63E-06	2.58E-06
1.995	2.89E-06	2.64E-06	3.05E-06	2.98E-06
2.512	3.34E-06	3.04E-06	3.52E-06	3.43E-06
3.162	3.86E-06	3.52E-06	4.07E-06	3.96E-06
3.981	4.46E-06	4.08E-06	4.70E-06	4.58E-06
5.012	5.18E-06	4.71E-06	5.44E-06	5.31E-06
6.31	6.08E-06	5.53E-06	6.38E-06	6.22E-06
7.943	7.20E-06	6.56E-06	7.56E-06	7.35E-06
10	8.58E-06	7.82E-06	9.00E-06	8.75E-06

Table C-3: Kerma Adobe Mud Brick Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.94E-07	1.09E-07	2.72E-07	3.38E-07
0.013	1.99E-07	1.49E-07	2.38E-07	2.64E-07
0.016	1.80E-07	1.53E-07	1.99E-07	2.13E-07
0.02	1.44E-07	1.33E-07	1.51E-07	1.51E-07
0.025	1.07E-07	1.02E-07	1.11E-07	1.06E-07
0.032	7.50E-08	7.32E-08	7.74E-08	7.37E-08
0.04	5.63E-08	5.55E-08	5.72E-08	5.39E-08
0.05	4.74E-08	4.71E-08	4.85E-08	4.71E-08
0.063	4.71E-08	4.77E-08	4.82E-08	4.62E-08
0.079	5.30E-08	5.23E-08	5.54E-08	5.24E-08
0.1	6.61E-08	6.53E-08	6.89E-08	6.63E-08
0.126	8.61E-08	8.53E-08	9.05E-08	8.57E-08
0.158	1.11E-07	1.11E-07	1.17E-07	1.13E-07
0.2	1.45E-07	1.44E-07	1.53E-07	1.44E-07
0.251	1.84E-07	1.83E-07	1.96E-07	1.84E-07
0.316	2.33E-07	2.30E-07	2.44E-07	2.31E-07
0.398	2.90E-07	2.87E-07	3.04E-07	2.85E-07
0.501	3.57E-07	3.54E-07	3.72E-07	3.50E-07
0.631	4.34E-07	4.29E-07	4.50E-07	4.22E-07
0.794	5.21E-07	5.16E-07	5.40E-07	5.08E-07
1	6.22E-07	6.16E-07	6.45E-07	6.01E-07
1.259	7.31E-07	7.24E-07	7.56E-07	7.05E-07
1.585	8.56E-07	8.49E-07	8.80E-07	8.18E-07
1.995	9.94E-07	9.88E-07	1.02E-06	9.48E-07
2.512	1.15E-06	1.14E-06	1.18E-06	1.09E-06
3.162	1.33E-06	1.32E-06	1.36E-06	1.26E-06
3.981	1.54E-06	1.53E-06	1.58E-06	1.46E-06
5.012	1.79E-06	1.77E-06	1.83E-06	1.69E-06
6.31	2.10E-06	2.08E-06	2.15E-06	1.98E-06
7.943	2.49E-06	2.47E-06	2.54E-06	2.34E-06
10	2.97E-06	2.94E-06	3.03E-06	2.79E-06

Table C-4: Kerma Adobe Mud Brick Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.63E-08	2.00E-08	6.27E-08	8.14E-08
0.013	3.08E-08	2.72E-08	5.66E-08	6.60E-08
0.016	3.12E-08	2.99E-08	4.74E-08	5.15E-08
0.02	2.80E-08	2.77E-08	3.68E-08	3.80E-08
0.025	2.29E-08	2.37E-08	2.76E-08	2.72E-08
0.032	1.71E-08	1.83E-08	1.98E-08	1.93E-08
0.04	1.33E-08	1.44E-08	1.50E-08	1.50E-08
0.05	1.14E-08	1.24E-08	1.29E-08	1.21E-08
0.063	1.14E-08	1.21E-08	1.28E-08	1.23E-08
0.079	1.28E-08	1.35E-08	1.44E-08	1.50E-08
0.1	1.60E-08	1.69E-08	1.82E-08	1.86E-08
0.126	2.08E-08	2.19E-08	2.39E-08	2.36E-08
0.158	2.69E-08	2.86E-08	3.10E-08	2.97E-08
0.2	3.51E-08	3.74E-08	4.07E-08	3.98E-08
0.251	4.45E-08	4.70E-08	5.10E-08	4.96E-08
0.316	5.63E-08	6.00E-08	6.47E-08	6.18E-08
0.398	7.03E-08	7.48E-08	8.14E-08	7.63E-08
0.501	8.67E-08	9.22E-08	1.00E-07	9.35E-08
0.631	1.05E-07	1.13E-07	1.21E-07	1.13E-07
0.794	1.27E-07	1.37E-07	1.46E-07	1.37E-07
1	1.52E-07	1.64E-07	1.75E-07	1.63E-07
1.259	1.79E-07	1.92E-07	2.05E-07	1.91E-07
1.585	2.10E-07	2.26E-07	2.41E-07	2.23E-07
1.995	2.44E-07	2.63E-07	2.81E-07	2.59E-07
2.512	2.83E-07	3.06E-07	3.27E-07	3.01E-07
3.162	3.28E-07	3.55E-07	3.77E-07	3.46E-07
3.981	3.81E-07	4.12E-07	4.36E-07	4.02E-07
5.012	4.42E-07	4.78E-07	5.07E-07	4.68E-07
6.31	5.20E-07	5.65E-07	5.95E-07	5.49E-07
7.943	6.16E-07	6.67E-07	7.06E-07	6.50E-07
10	7.35E-07	7.99E-07	8.48E-07	7.73E-07

Table C-5: Kerma Adobe Mud Brick Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	3.38E-09	5.10E-09	1.55E-08	2.08E-08
0.013	4.23E-09	6.27E-09	1.39E-08	1.66E-08
0.016	4.77E-09	6.36E-09	1.16E-08	1.30E-08
0.02	4.86E-09	6.13E-09	9.07E-09	9.68E-09
0.025	4.44E-09	5.30E-09	6.77E-09	7.51E-09
0.032	3.66E-09	4.20E-09	4.93E-09	5.31E-09
0.04	3.01E-09	3.69E-09	3.80E-09	4.01E-09
0.05	2.66E-09	3.04E-09	3.25E-09	3.26E-09
0.063	2.70E-09	3.08E-09	3.20E-09	3.38E-09
0.079	3.05E-09	3.43E-09	3.60E-09	4.07E-09
0.1	3.79E-09	4.23E-09	4.59E-09	5.02E-09
0.126	4.91E-09	5.77E-09	6.24E-09	6.79E-09
0.158	6.33E-09	7.87E-09	8.16E-09	8.70E-09
0.2	8.24E-09	9.50E-09	1.09E-08	1.10E-08
0.251	1.05E-08	1.20E-08	1.33E-08	1.40E-08
0.316	1.33E-08	1.53E-08	1.69E-08	1.74E-08
0.398	1.66E-08	1.92E-08	2.11E-08	2.17E-08
0.501	2.05E-08	2.39E-08	2.62E-08	2.64E-08
0.631	2.50E-08	2.92E-08	3.14E-08	3.23E-08
0.794	3.02E-08	3.67E-08	3.81E-08	3.94E-08
1	3.62E-08	4.27E-08	4.59E-08	4.73E-08
1.259	4.28E-08	5.07E-08	5.48E-08	5.44E-08
1.585	5.04E-08	5.97E-08	6.37E-08	6.43E-08
1.995	5.89E-08	6.99E-08	7.51E-08	7.54E-08
2.512	6.85E-08	8.19E-08	8.74E-08	8.65E-08
3.162	7.97E-08	9.54E-08	1.02E-07	1.00E-07
3.981	9.26E-08	1.11E-07	1.18E-07	1.15E-07
5.012	1.08E-07	1.29E-07	1.37E-07	1.35E-07
6.31	1.27E-07	1.53E-07	1.61E-07	1.58E-07
7.943	1.51E-07	1.81E-07	1.91E-07	1.87E-07
10	1.80E-07	2.17E-07	2.28E-07	2.24E-07

Kerma for 1 cm contamination depth in adobe mud brick

Table C-6: Kerma Adobe Mud Brick 1cm Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.79E-07	1.23E-07	1.66E-07	1.97E-07
0.013	3.08E-07	2.68E-07	3.00E-07	3.22E-07
0.016	4.26E-07	3.97E-07	4.20E-07	4.36E-07
0.02	5.63E-07	5.44E-07	5.59E-07	5.69E-07
0.025	7.09E-07	6.92E-07	7.06E-07	7.14E-07
0.032	8.23E-07	7.87E-07	8.21E-07	8.32E-07
0.04	8.68E-07	8.04E-07	8.65E-07	8.83E-07
0.05	9.22E-07	8.31E-07	9.16E-07	9.44E-07
0.063	1.06E-06	9.41E-07	1.05E-06	1.09E-06
0.079	1.30E-06	1.14E-06	1.29E-06	1.34E-06
0.1	1.70E-06	1.48E-06	1.68E-06	1.75E-06
0.126	2.26E-06	1.94E-06	2.22E-06	2.33E-06
0.158	2.94E-06	2.51E-06	2.89E-06	3.03E-06
0.2	3.82E-06	3.23E-06	3.76E-06	3.96E-06
0.251	4.84E-06	4.05E-06	4.75E-06	5.02E-06
0.316	6.08E-06	5.03E-06	5.96E-06	6.31E-06
0.398	7.54E-06	6.16E-06	7.37E-06	7.82E-06
0.501	9.23E-06	7.45E-06	9.00E-06	9.58E-06
0.631	1.12E-05	8.89E-06	1.09E-05	1.16E-05
0.794	1.34E-05	1.05E-05	1.30E-05	1.39E-05
1	1.59E-05	1.24E-05	1.54E-05	1.65E-05
1.259	1.86E-05	1.43E-05	1.80E-05	1.93E-05
1.585	2.18E-05	1.66E-05	2.10E-05	2.26E-05
1.995	2.54E-05	1.92E-05	2.43E-05	2.63E-05
2.512	2.94E-05	2.21E-05	2.81E-05	3.04E-05
3.162	3.96E-05	2.95E-05	3.76E-05	4.08E-05
3.981	4.61E-05	3.42E-05	4.37E-05	4.75E-05
5.012	5.42E-05	4.02E-05	5.13E-05	5.58E-05
6.31	6.44E-05	4.76E-05	6.08E-05	6.61E-05
7.943	7.68E-05	5.68E-05	7.25E-05	7.89E-05
10	7.68E-05	5.68E-05	7.25E-05	7.89E-05

Table C-7: Kerma Adobe Mud Brick 1cm Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	9.59E-09	5.93E-09	1.24E-08	1.64E-08
0.013	1.96E-08	1.55E-08	2.24E-08	2.67E-08
0.016	3.02E-08	2.67E-08	3.26E-08	3.62E-08
0.02	4.35E-08	4.09E-08	4.51E-08	4.76E-08
0.025	5.80E-08	5.64E-08	5.90E-08	6.07E-08
0.032	7.05E-08	6.97E-08	7.18E-08	7.24E-08
0.04	7.70E-08	7.67E-08	7.92E-08	7.86E-08
0.05	8.38E-08	8.36E-08	8.72E-08	8.61E-08
0.063	9.79E-08	9.76E-08	1.03E-07	1.02E-07
0.079	1.21E-07	1.21E-07	1.28E-07	1.27E-07
0.1	1.59E-07	1.57E-07	1.69E-07	1.67E-07
0.126	2.12E-07	2.09E-07	2.26E-07	2.24E-07
0.158	2.77E-07	2.73E-07	2.96E-07	2.93E-07
0.2	3.63E-07	3.57E-07	3.89E-07	3.85E-07
0.251	4.62E-07	4.55E-07	4.96E-07	4.90E-07
0.316	5.85E-07	5.74E-07	6.29E-07	6.19E-07
0.398	7.30E-07	7.16E-07	7.87E-07	7.73E-07
0.501	9.00E-07	8.82E-07	9.72E-07	9.52E-07
0.631	1.10E-06	1.07E-06	1.18E-06	1.16E-06
0.794	1.32E-06	1.29E-06	1.43E-06	1.40E-06
1	1.58E-06	1.54E-06	1.71E-06	1.67E-06
1.259	1.87E-06	1.82E-06	2.02E-06	1.97E-06
1.585	2.20E-06	2.13E-06	2.39E-06	2.32E-06
1.995	2.57E-06	2.49E-06	2.79E-06	2.71E-06
2.512	2.99E-06	2.89E-06	3.24E-06	3.15E-06
3.162	3.49E-06	3.35E-06	3.77E-06	3.66E-06
3.981	4.06E-06	3.89E-06	4.39E-06	4.25E-06
5.012	4.73E-06	4.53E-06	5.11E-06	4.95E-06
6.31	5.58E-06	5.32E-06	6.01E-06	5.83E-06
7.943	6.63E-06	6.31E-06	7.13E-06	6.92E-06
10	7.91E-06	7.53E-06	8.50E-06	8.25E-06

Table C-8: Kerma Adobe Mud Brick 1cm Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.53E-09	1.68E-09	3.55E-09	4.75E-09
0.013	5.29E-09	4.33E-09	6.47E-09	7.88E-09
0.016	8.32E-09	7.44E-09	9.28E-09	1.04E-08
0.02	1.22E-08	1.15E-08	1.29E-08	1.38E-08
0.025	1.66E-08	1.60E-08	1.71E-08	1.77E-08
0.032	2.06E-08	2.04E-08	2.10E-08	2.13E-08
0.04	2.29E-08	2.31E-08	2.35E-08	2.31E-08
0.05	2.53E-08	2.58E-08	2.60E-08	2.54E-08
0.063	2.99E-08	3.07E-08	3.11E-08	3.01E-08
0.079	3.73E-08	3.83E-08	3.93E-08	3.76E-08
0.1	4.91E-08	5.04E-08	5.15E-08	4.96E-08
0.126	6.57E-08	6.75E-08	6.93E-08	6.67E-08
0.158	8.63E-08	8.88E-08	9.09E-08	8.76E-08
0.2	1.14E-07	1.17E-07	1.20E-07	1.15E-07
0.251	1.45E-07	1.50E-07	1.54E-07	1.47E-07
0.316	1.85E-07	1.91E-07	1.96E-07	1.86E-07
0.398	2.32E-07	2.40E-07	2.46E-07	2.33E-07
0.501	2.88E-07	2.98E-07	3.05E-07	2.87E-07
0.631	3.52E-07	3.66E-07	3.73E-07	3.51E-07
0.794	4.27E-07	4.44E-07	4.53E-07	4.23E-07
1	5.14E-07	5.35E-07	5.45E-07	5.07E-07
1.259	6.11E-07	6.36E-07	6.46E-07	6.00E-07
1.585	7.23E-07	7.54E-07	7.65E-07	7.08E-07
1.995	8.50E-07	8.86E-07	8.98E-07	8.29E-07
2.512	9.94E-07	1.03E-06	1.05E-06	9.66E-07
3.162	1.16E-06	1.21E-06	1.22E-06	1.13E-06
3.981	1.36E-06	1.41E-06	1.43E-06	1.31E-06
5.012	1.58E-06	1.64E-06	1.67E-06	1.53E-06
6.31	1.87E-06	1.94E-06	1.96E-06	1.80E-06
7.943	2.23E-06	2.30E-06	2.33E-06	2.14E-06
10	2.66E-06	2.75E-06	2.79E-06	2.56E-06

Table C-9: Kerma Adobe Mud Brick 1cm Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	3.49E-10	3.06E-10	7.94E-10	1.17E-09
0.013	8.54E-10	8.01E-10	1.45E-09	1.86E-09
0.016	1.54E-09	1.43E-09	2.12E-09	2.51E-09
0.02	2.53E-09	2.41E-09	2.98E-09	3.35E-09
0.025	3.72E-09	3.61E-09	4.05E-09	4.26E-09
0.032	4.87E-09	4.83E-09	5.11E-09	5.18E-09
0.04	5.56E-09	5.60E-09	5.79E-09	5.67E-09
0.05	6.22E-09	6.35E-09	6.46E-09	6.33E-09
0.063	7.37E-09	7.56E-09	7.78E-09	7.52E-09
0.079	9.17E-09	9.44E-09	9.73E-09	9.47E-09
0.1	1.20E-08	1.24E-08	1.29E-08	1.25E-08
0.126	1.61E-08	1.66E-08	1.73E-08	1.68E-08
0.158	2.11E-08	2.18E-08	2.28E-08	2.21E-08
0.2	2.77E-08	2.88E-08	3.01E-08	2.91E-08
0.251	3.55E-08	3.70E-08	3.87E-08	3.73E-08
0.316	4.51E-08	4.71E-08	4.93E-08	4.73E-08
0.398	5.66E-08	5.94E-08	6.21E-08	5.94E-08
0.501	7.03E-08	7.39E-08	7.74E-08	7.35E-08
0.631	8.61E-08	9.09E-08	9.52E-08	8.99E-08
0.794	1.05E-07	1.11E-07	1.16E-07	1.09E-07
1	1.26E-07	1.34E-07	1.40E-07	1.31E-07
1.259	1.50E-07	1.60E-07	1.67E-07	1.56E-07
1.585	1.78E-07	1.91E-07	1.99E-07	1.85E-07
1.995	2.09E-07	2.26E-07	2.34E-07	2.17E-07
2.512	2.45E-07	2.64E-07	2.75E-07	2.54E-07
3.162	2.87E-07	3.12E-07	3.22E-07	2.97E-07
3.981	3.35E-07	3.63E-07	3.77E-07	3.47E-07
5.012	3.92E-07	4.26E-07	4.42E-07	4.06E-07
6.31	4.64E-07	5.04E-07	5.23E-07	4.80E-07
7.943	5.52E-07	6.00E-07	6.23E-07	5.71E-07
10	6.60E-07	7.19E-07	7.46E-07	6.84E-07

Table C-10: Kerma Adobe Mud Brick 1cm Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	4.48E-11	7.26E-11	1.98E-10	3.12E-10
0.013	1.20E-10	1.74E-10	3.34E-10	4.73E-10
0.016	2.45E-10	2.89E-10	4.87E-10	6.27E-10
0.02	4.65E-10	4.85E-10	6.87E-10	8.07E-10
0.025	7.67E-10	7.70E-10	9.43E-10	1.05E-09
0.032	1.10E-09	1.09E-09	1.23E-09	1.29E-09
0.04	1.31E-09	1.33E-09	1.40E-09	1.40E-09
0.05	1.50E-09	1.54E-09	1.60E-09	1.57E-09
0.063	1.79E-09	1.85E-09	1.90E-09	1.87E-09
0.079	2.22E-09	2.31E-09	2.41E-09	2.36E-09
0.1	2.91E-09	3.03E-09	3.17E-09	3.12E-09
0.126	3.86E-09	4.04E-09	4.27E-09	4.21E-09
0.158	5.04E-09	5.29E-09	5.63E-09	5.53E-09
0.2	6.62E-09	6.98E-09	7.41E-09	7.30E-09
0.251	8.46E-09	8.95E-09	9.55E-09	9.38E-09
0.316	1.08E-08	1.14E-08	1.22E-08	1.19E-08
0.398	1.35E-08	1.44E-08	1.54E-08	1.49E-08
0.501	1.68E-08	1.80E-08	1.91E-08	1.85E-08
0.631	2.06E-08	2.22E-08	2.37E-08	2.26E-08
0.794	2.51E-08	2.71E-08	2.88E-08	2.77E-08
1	3.03E-08	3.30E-08	3.50E-08	3.35E-08
1.259	3.61E-08	3.96E-08	4.20E-08	3.96E-08
1.585	4.30E-08	4.73E-08	5.02E-08	4.71E-08
1.995	5.07E-08	5.62E-08	5.94E-08	5.54E-08
2.512	5.96E-08	6.63E-08	6.99E-08	6.52E-08
3.162	6.99E-08	7.85E-08	8.24E-08	7.64E-08
3.981	8.18E-08	9.22E-08	9.67E-08	8.97E-08
5.012	9.59E-08	1.09E-07	1.14E-07	1.06E-07
6.31	1.14E-07	1.29E-07	1.35E-07	1.26E-07
7.943	1.35E-07	1.54E-07	1.62E-07	1.50E-07
10	1.62E-07	1.85E-07	1.94E-07	1.80E-07

Kerma for 5cm Contamination Depth

Table C-11: Kerma Adobe Mud Brick 5 cm Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.47E-08	2.41E-08	3.21E-08	3.81E-08
0.013	6.01E-08	5.21E-08	5.79E-08	6.25E-08
0.016	8.30E-08	7.75E-08	8.16E-08	8.45E-08
0.02	1.10E-07	1.06E-07	1.09E-07	1.11E-07
0.025	1.42E-07	1.40E-07	1.42E-07	1.43E-07
0.032	1.88E-07	1.86E-07	1.87E-07	1.88E-07
0.04	2.47E-07	2.46E-07	2.47E-07	2.47E-07
0.05	3.39E-07	3.36E-07	3.39E-07	3.39E-07
0.063	4.57E-07	4.45E-07	3.93E-07	4.77E-07
0.079	7.38E-07	7.03E-07	5.79E-07	6.82E-07
0.1	1.01E-06	9.77E-07	1.01E-06	1.02E-06
0.126	1.42E-06	1.45E-06	1.32E-06	1.44E-06
0.158	1.95E-06	1.77E-06	1.84E-06	1.77E-06
0.2	2.60E-06	2.46E-06	2.60E-06	2.64E-06
0.251	3.36E-06	2.99E-06	2.99E-06	3.10E-06
0.316	4.32E-06	3.85E-06	3.85E-06	3.94E-06
0.398	5.27E-06	4.87E-06	4.89E-06	4.96E-06
0.501	6.70E-06	6.01E-06	6.20E-06	6.33E-06
0.631	8.03E-06	7.13E-06	7.06E-06	7.26E-06
0.794	9.83E-06	8.58E-06	8.74E-06	8.62E-06
1	1.18E-05	1.02E-05	1.07E-05	1.03E-05
1.259	1.40E-05	1.20E-05	1.29E-05	1.23E-05
1.585	1.69E-05	1.41E-05	1.56E-05	1.55E-05
1.995	2.05E-05	1.65E-05	1.86E-05	1.82E-05
2.512	2.32E-05	1.92E-05	2.19E-05	2.10E-05
3.162	2.66E-05	2.23E-05	2.58E-05	2.42E-05
3.981	3.18E-05	2.60E-05	3.01E-05	2.86E-05
5.012	3.74E-05	2.99E-05	3.59E-05	3.37E-05
6.31	4.42E-05	3.54E-05	4.00E-05	3.99E-05
7.943	5.26E-05	4.21E-05	4.95E-05	4.82E-05
10	6.28E-05	5.03E-05	5.93E-05	5.79E-05

Table C-12: Kerma Adobe Mud Brick 5cm Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.91E-09	1.19E-09	2.49E-09	2.37E-09
0.013	4.50E-09	2.80E-09	3.18E-09	2.99E-09
0.016	6.35E-09	4.37E-09	5.34E-09	3.73E-09
0.02	9.64E-09	7.34E-09	1.11E-08	7.79E-09
0.025	1.20E-08	9.90E-09	1.58E-08	1.45E-08
0.032	1.78E-08	1.22E-08	1.31E-08	1.32E-08
0.04	2.01E-08	1.62E-08	2.04E-08	2.04E-08
0.05	3.09E-08	2.41E-08	2.75E-08	3.94E-08
0.063	4.84E-08	3.55E-08	3.47E-08	4.74E-08
0.079	6.40E-08	4.54E-08	4.24E-08	8.22E-08
0.1	9.26E-08	7.64E-08	8.08E-08	9.78E-08
0.126	1.30E-07	1.09E-07	1.41E-07	1.30E-07
0.158	1.78E-07	1.63E-07	1.50E-07	1.95E-07
0.2	2.50E-07	2.09E-07	2.41E-07	2.74E-07
0.251	3.06E-07	2.65E-07	3.08E-07	3.50E-07
0.316	3.79E-07	3.37E-07	3.70E-07	4.85E-07
0.398	4.71E-07	4.39E-07	4.77E-07	6.75E-07
0.501	5.96E-07	5.63E-07	6.19E-07	9.09E-07
0.631	7.49E-07	7.11E-07	6.74E-07	1.21E-06
0.794	9.13E-07	8.84E-07	8.59E-07	1.59E-06
1	1.15E-06	1.07E-06	1.05E-06	1.93E-06
1.259	1.38E-06	1.27E-06	1.28E-06	2.43E-06
1.585	1.69E-06	1.52E-06	1.67E-06	2.94E-06
1.995	1.95E-06	1.78E-06	1.84E-06	3.61E-06
2.512	2.33E-06	2.14E-06	2.16E-06	4.19E-06
3.162	2.68E-06	2.50E-06	2.73E-06	5.17E-06
3.981	3.13E-06	2.95E-06	3.11E-06	6.34E-06
5.012	3.83E-06	3.46E-06	3.61E-06	7.55E-06
6.31	4.45E-06	4.06E-06	4.39E-06	8.89E-06
7.943	5.33E-06	4.86E-06	5.27E-06	1.09E-05
10	6.44E-06	5.85E-06	6.29E-06	8.07E-06

Table C-13: Kerma Adobe Mud Brick 5cm Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	4.81E-10	3.89E-10	5.81E-10	4.99E-10
0.013	1.02E-09	8.98E-10	1.09E-09	7.79E-10
0.016	1.83E-09	1.35E-09	1.46E-09	1.77E-09
0.02	2.47E-09	1.70E-09	1.68E-09	2.46E-09
0.025	3.53E-09	2.79E-09	2.42E-09	3.96E-09
0.032	4.76E-09	4.00E-09	3.35E-09	6.02E-09
0.04	6.11E-09	5.68E-09	5.60E-09	7.25E-09
0.05	8.45E-09	8.81E-09	9.19E-09	1.00E-08
0.063	1.35E-08	1.34E-08	1.55E-08	2.22E-08
0.079	1.84E-08	1.31E-08	2.19E-08	2.03E-08
0.1	2.64E-08	2.80E-08	2.94E-08	3.03E-08
0.126	3.83E-08	3.22E-08	5.17E-08	4.23E-08
0.158	5.35E-08	4.02E-08	5.91E-08	5.11E-08
0.2	6.91E-08	6.91E-08	8.49E-08	7.61E-08
0.251	8.87E-08	7.31E-08	8.57E-08	9.26E-08
0.316	1.08E-07	9.63E-08	1.84E-07	1.31E-07
0.398	1.44E-07	1.07E-07	1.59E-07	1.81E-07
0.501	1.82E-07	1.40E-07	1.90E-07	2.55E-07
0.631	2.28E-07	1.79E-07	2.92E-07	3.22E-07
0.794	2.80E-07	2.22E-07	3.53E-07	4.19E-07
1	3.50E-07	2.80E-07	4.05E-07	4.28E-07
1.259	4.31E-07	3.49E-07	4.87E-07	5.31E-07
1.585	5.01E-07	4.31E-07	4.94E-07	5.48E-07
1.995	5.94E-07	5.03E-07	6.28E-07	6.59E-07
2.512	7.12E-07	6.09E-07	7.38E-07	7.85E-07
3.162	8.23E-07	7.23E-07	9.04E-07	1.06E-06
3.981	9.89E-07	8.66E-07	1.07E-06	1.29E-06
5.012	1.23E-06	1.02E-06	1.25E-06	1.46E-06
6.31	1.41E-06	1.24E-06	1.57E-06	1.65E-06
7.943	1.67E-06	1.50E-06	1.87E-06	1.92E-06
10	1.99E-06	1.85E-06	2.23E-06	2.28E-06

Table C-14: Kerma Adobe Mud Brick 5cm Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	7.01E-11	6.45E-11	1.44E-10	1.61E-10
0.013	1.69E-10	1.61E-10	1.91E-10	2.96E-10
0.016	3.04E-10	3.05E-10	3.29E-10	4.16E-10
0.02	4.99E-10	4.96E-10	5.21E-10	6.04E-10
0.025	7.47E-10	4.58E-10	1.12E-09	6.74E-10
0.032	1.10E-09	7.93E-10	1.40E-09	9.03E-10
0.04	1.49E-09	1.21E-09	1.68E-09	1.25E-09
0.05	2.05E-09	1.52E-09	3.35E-09	1.50E-09
0.063	3.19E-09	2.91E-09	4.55E-09	1.91E-09
0.079	4.41E-09	2.32E-09	9.62E-09	4.52E-09
0.1	6.73E-09	6.76E-09	1.19E-08	4.54E-09
0.126	9.36E-09	7.59E-09	1.71E-08	8.58E-09
0.158	1.26E-08	1.22E-08	2.09E-08	9.24E-09
0.2	1.65E-08	1.43E-08	2.61E-08	1.34E-08
0.251	2.19E-08	2.08E-08	3.60E-08	1.77E-08
0.316	2.85E-08	2.81E-08	4.81E-08	2.02E-08
0.398	3.62E-08	3.44E-08	6.33E-08	3.07E-08
0.501	4.52E-08	2.86E-08	1.35E-07	9.56E-08
0.631	5.68E-08	3.71E-08	1.80E-07	1.21E-07
0.794	6.97E-08	4.59E-08	2.30E-07	1.46E-07
1	8.72E-08	5.85E-08	2.70E-07	2.01E-07
1.259	1.04E-07	8.77E-08	2.08E-07	1.11E-07
1.585	1.24E-07	8.85E-08	3.54E-07	1.56E-07
1.995	1.48E-07	1.07E-07	4.27E-07	1.84E-07
2.512	1.77E-07	1.31E-07	5.01E-07	2.16E-07
3.162	2.06E-07	1.56E-07	6.01E-07	2.78E-07
3.981	2.49E-07	1.89E-07	7.11E-07	3.76E-07
5.012	3.07E-07	2.24E-07	8.50E-07	3.98E-07
6.31	3.53E-07	2.76E-07	1.08E-06	4.37E-07
7.943	4.18E-07	3.29E-07	1.41E-06	5.39E-07
10	4.97E-07	4.01E-07	1.94E-06	6.20E-07

Table C-15: Kerma Adobe Mud Brick 5cm Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	8.95E-12	1.22E-11	4.71E-11	5.94E-11
0.013	2.40E-11	3.06E-11	6.60E-11	7.62E-11
0.016	4.93E-11	4.99E-11	8.92E-11	8.16E-11
0.02	9.23E-11	9.15E-11	1.27E-10	1.76E-10
0.025	1.56E-10	1.46E-10	1.45E-10	2.68E-10
0.032	2.45E-10	2.40E-10	2.27E-10	2.11E-10
0.04	3.64E-10	2.12E-10	3.32E-10	2.04E-10
0.05	5.20E-10	3.48E-10	3.40E-10	3.96E-10
0.063	7.63E-10	6.62E-10	8.20E-10	5.17E-10
0.079	1.11E-09	9.48E-10	1.00E-09	7.77E-10
0.1	1.71E-09	8.35E-10	3.37E-09	1.08E-09
0.126	2.26E-09	2.20E-09	1.96E-09	2.19E-09
0.158	3.08E-09	2.95E-09	2.90E-09	2.43E-09
0.2	4.12E-09	3.07E-09	3.66E-09	1.52E-09
0.251	5.43E-09	4.71E-09	4.68E-09	5.45E-09
0.316	6.86E-09	4.69E-09	7.89E-09	3.63E-09
0.398	8.74E-09	4.22E-09	2.06E-08	7.36E-09
0.501	1.08E-08	5.93E-09	1.97E-08	1.15E-08
0.631	1.34E-08	7.83E-09	2.83E-08	1.09E-08
0.794	1.71E-08	9.23E-09	2.95E-08	2.78E-08
1	2.15E-08	1.18E-08	3.78E-08	3.54E-08
1.259	2.67E-08	1.50E-08	5.26E-08	4.66E-08
1.585	3.02E-08	1.92E-08	7.87E-08	2.24E-08
1.995	3.69E-08	2.17E-08	6.61E-08	4.56E-08
2.512	4.40E-08	2.67E-08	7.88E-08	5.06E-08
3.162	5.09E-08	3.21E-08	9.56E-08	6.71E-08
3.981	6.25E-08	4.13E-08	8.29E-08	8.14E-08
5.012	7.58E-08	4.70E-08	1.37E-07	1.01E-07
6.31	8.70E-08	5.70E-08	1.69E-07	1.17E-07
7.943	1.03E-07	6.98E-08	2.14E-07	1.45E-07
10	1.23E-07	8.44E-08	2.93E-07	1.67E-07

Kerma for 15 cm Contamination Depth

Table C-16: Kerma Adobe Mud Brick 15cm Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.15E-08	7.35E-09	1.01E-08	1.21E-08
0.013	1.31E-08	1.29E-08	2.20E-08	2.38E-08
0.016	1.97E-08	2.24E-08	3.27E-08	3.31E-08
0.02	4.09E-08	3.27E-08	3.56E-08	4.73E-08
0.025	4.16E-08	4.18E-08	4.62E-08	5.76E-08
0.032	6.90E-08	5.25E-08	5.42E-08	6.78E-08
0.04	8.81E-08	6.78E-08	6.79E-08	7.08E-08
0.05	9.45E-08	9.08E-08	9.07E-08	1.05E-07
0.063	1.67E-07	1.47E-07	1.08E-07	1.44E-07
0.079	2.56E-07	2.46E-07	1.81E-07	2.11E-07
0.1	4.38E-07	4.14E-07	3.69E-07	3.71E-07
0.126	5.84E-07	6.09E-07	5.68E-07	5.79E-07
0.158	8.50E-07	8.23E-07	7.24E-07	6.68E-07
0.2	1.21E-06	1.18E-06	1.00E-06	9.79E-07
0.251	1.62E-06	1.57E-06	1.47E-06	1.31E-06
0.316	2.27E-06	2.07E-06	2.06E-06	1.62E-06
0.398	2.80E-06	2.63E-06	2.83E-06	2.07E-06
0.501	3.55E-06	3.38E-06	3.02E-06	2.76E-06
0.631	4.55E-06	4.25E-06	3.64E-06	3.40E-06
0.794	5.61E-06	5.29E-06	4.66E-06	4.38E-06
1	6.85E-06	6.53E-06	5.87E-06	5.27E-06
1.259	8.34E-06	8.00E-06	7.12E-06	6.57E-06
1.585	1.06E-05	9.52E-06	8.99E-06	8.54E-06
1.995	1.33E-05	1.18E-05	1.12E-05	1.04E-05
2.512	1.60E-05	1.38E-05	1.37E-05	1.22E-05
3.162	1.84E-05	1.62E-05	1.69E-05	1.46E-05
3.981	2.15E-05	1.96E-05	2.09E-05	1.73E-05
5.012	2.58E-05	2.35E-05	2.56E-05	2.08E-05
6.31	3.10E-05	2.74E-05	2.69E-05	2.53E-05
7.943	3.86E-05	3.28E-05	3.22E-05	3.09E-05
10	4.61E-05	4.00E-05	3.95E-05	3.81E-05

Table C-17: Kerma Adobe Mud Brick 15cm Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	6.41E-10	4.05E-10	7.14E-10	9.53E-10
0.013	1.44E-09	1.05E-09	1.74E-09	1.50E-09
0.016	2.25E-09	1.76E-09	1.70E-09	1.05E-09
0.02	3.71E-09	2.52E-09	2.38E-09	1.42E-09
0.025	4.31E-09	3.27E-09	3.57E-09	2.65E-09
0.032	5.86E-09	4.28E-09	6.42E-09	5.20E-09
0.04	7.94E-09	5.34E-09	9.46E-09	5.34E-09
0.05	1.13E-08	7.54E-09	8.17E-09	6.69E-09
0.063	1.60E-08	1.66E-08	1.74E-08	1.14E-08
0.079	2.53E-08	1.74E-08	2.66E-08	1.77E-08
0.1	3.57E-08	3.26E-08	4.33E-08	3.85E-08
0.126	5.65E-08	4.44E-08	6.15E-08	4.99E-08
0.158	8.42E-08	6.40E-08	7.28E-08	6.52E-08
0.2	1.17E-07	9.75E-08	9.03E-08	1.06E-07
0.251	1.55E-07	1.48E-07	1.31E-07	1.62E-07
0.316	2.10E-07	1.65E-07	2.13E-07	2.09E-07
0.398	2.72E-07	2.08E-07	2.16E-07	3.25E-07
0.501	3.56E-07	2.69E-07	2.86E-07	4.09E-07
0.631	4.46E-07	3.54E-07	3.90E-07	5.78E-07
0.794	5.47E-07	4.52E-07	4.53E-07	7.72E-07
1	6.92E-07	5.51E-07	6.07E-07	9.24E-07
1.259	8.40E-07	6.74E-07	7.46E-07	1.21E-06
1.585	1.04E-06	8.90E-07	9.57E-07	1.54E-06
1.995	1.27E-06	1.07E-06	1.23E-06	2.01E-06
2.512	1.50E-06	1.32E-06	1.51E-06	2.44E-06
3.162	1.82E-06	1.59E-06	1.90E-06	3.10E-06
3.981	2.14E-06	1.95E-06	2.31E-06	3.86E-06
5.012	2.55E-06	2.34E-06	2.85E-06	4.82E-06
6.31	3.08E-06	2.77E-06	2.82E-06	5.70E-06
7.943	3.82E-06	3.34E-06	3.72E-06	6.95E-06
10	4.54E-06	4.12E-06	4.18E-06	8.32E-06

Table C-18: Kerma Adobe Mud Brick 15cm Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.61E-10	1.16E-10	2.09E-10	1.59E-10
0.013	3.38E-10	3.10E-10	2.97E-10	2.16E-10
0.016	5.38E-10	5.10E-10	4.87E-10	2.84E-10
0.02	8.01E-10	7.84E-10	7.33E-10	5.25E-10
0.025	1.19E-09	8.96E-10	6.42E-10	1.38E-09
0.032	1.51E-09	1.30E-09	9.04E-10	1.71E-09
0.04	2.25E-09	1.72E-09	1.42E-09	1.84E-09
0.05	2.99E-09	2.54E-09	2.44E-09	4.80E-09
0.063	4.47E-09	4.09E-09	3.70E-09	3.78E-09
0.079	6.99E-09	6.45E-09	5.92E-09	6.31E-09
0.1	1.10E-08	9.96E-09	1.06E-08	1.06E-08
0.126	1.66E-08	1.74E-08	1.63E-08	1.68E-08
0.158	2.38E-08	2.66E-08	2.16E-08	2.18E-08
0.2	3.37E-08	3.77E-08	3.68E-08	2.65E-08
0.251	4.55E-08	4.99E-08	5.22E-08	3.61E-08
0.316	5.87E-08	5.55E-08	8.28E-08	6.14E-08
0.398	7.67E-08	7.53E-08	1.09E-07	7.14E-08
0.501	9.83E-08	9.28E-08	1.36E-07	1.04E-07
0.631	1.28E-07	1.35E-07	1.51E-07	1.25E-07
0.794	1.54E-07	1.20E-07	2.93E-07	2.19E-07
1	2.03E-07	1.52E-07	3.69E-07	2.44E-07
1.259	2.45E-07	1.71E-07	3.01E-07	3.09E-07
1.585	3.01E-07	2.15E-07	2.88E-07	3.46E-07
1.995	3.77E-07	2.56E-07	3.55E-07	5.12E-07
2.512	4.45E-07	3.31E-07	4.50E-07	6.05E-07
3.162	5.39E-07	3.92E-07	5.64E-07	7.60E-07
3.981	6.50E-07	4.85E-07	6.79E-07	9.43E-07
5.012	7.83E-07	6.15E-07	8.42E-07	1.10E-06
6.31	9.39E-07	7.42E-07	9.92E-07	1.30E-06
7.943	1.17E-06	8.94E-07	1.21E-06	1.58E-06
10	1.37E-06	1.08E-06	1.47E-06	1.86E-06

Table C-19: Kerma Adobe Mud Brick 15cm Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.30E-11	1.96E-11	4.38E-11	5.74E-11
0.013	5.51E-11	5.50E-11	7.70E-11	9.80E-11
0.016	1.01E-10	1.02E-10	1.03E-10	1.29E-10
0.02	1.66E-10	1.65E-10	1.34E-10	1.61E-10
0.025	2.49E-10	2.51E-10	2.16E-10	2.28E-10
0.032	3.54E-10	2.42E-10	2.90E-10	2.04E-10
0.04	5.33E-10	3.45E-10	6.39E-10	3.73E-10
0.05	7.25E-10	5.35E-10	7.26E-10	4.64E-10
0.063	1.12E-09	8.57E-10	1.07E-09	7.18E-10
0.079	1.76E-09	1.47E-09	2.45E-09	1.08E-09
0.1	2.73E-09	2.29E-09	3.95E-09	1.29E-09
0.126	4.10E-09	3.85E-09	6.23E-09	3.46E-09
0.158	5.87E-09	6.31E-09	7.77E-09	3.57E-09
0.2	8.22E-09	8.13E-09	1.24E-08	5.76E-09
0.251	1.10E-08	9.88E-09	2.17E-08	1.01E-08
0.316	1.45E-08	1.52E-08	2.63E-08	1.07E-08
0.398	1.92E-08	1.65E-08	4.19E-08	1.75E-08
0.501	2.52E-08	1.98E-08	5.51E-08	2.68E-08
0.631	3.02E-08	2.02E-08	1.13E-07	4.83E-08
0.794	3.96E-08	3.16E-08	9.90E-08	4.85E-08
1	5.14E-08	4.04E-08	1.18E-07	4.92E-08
1.259	6.14E-08	4.02E-08	2.02E-07	7.84E-08
1.585	7.35E-08	6.25E-08	1.48E-07	6.46E-08
1.995	8.86E-08	5.85E-08	2.38E-07	9.31E-08
2.512	1.10E-07	7.21E-08	2.89E-07	1.36E-07
3.162	1.30E-07	8.44E-08	3.49E-07	1.68E-07
3.981	1.64E-07	1.07E-07	4.15E-07	2.12E-07
5.012	1.94E-07	1.28E-07	4.91E-07	2.46E-07
6.31	2.33E-07	1.65E-07	5.82E-07	3.02E-07
7.943	2.95E-07	1.96E-07	9.96E-07	4.47E-07
10	3.43E-07	2.37E-07	1.24E-06	5.00E-07

Table C-20: Kerma Adobe Mud Brick 15cm Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.97E-12	3.96E-12	1.31E-11	2.27E-11
0.013	7.89E-12	9.59E-12	2.45E-11	3.33E-11
0.016	1.64E-11	1.69E-11	2.92E-11	3.65E-11
0.02	3.10E-11	2.99E-11	3.81E-11	3.41E-11
0.025	5.18E-11	4.42E-11	6.14E-11	7.42E-11
0.032	8.27E-11	7.13E-11	8.35E-11	1.10E-10
0.04	1.27E-10	8.90E-11	1.13E-10	1.12E-10
0.05	1.79E-10	1.00E-10	3.50E-10	4.90E-11
0.063	2.83E-10	1.98E-10	2.66E-10	1.56E-10
0.079	4.42E-10	2.97E-10	3.40E-10	1.73E-10
0.1	6.66E-10	4.62E-10	4.36E-10	2.84E-10
0.126	1.00E-09	8.25E-10	7.06E-10	4.95E-10
0.158	1.44E-09	1.36E-09	1.42E-09	2.46E-09
0.2	1.98E-09	1.71E-09	1.21E-09	1.17E-09
0.251	2.68E-09	2.22E-09	1.65E-09	1.40E-09
0.316	3.48E-09	2.73E-09	6.31E-09	3.82E-09
0.398	4.64E-09	3.89E-09	3.20E-09	3.04E-09
0.501	5.91E-09	5.30E-09	5.15E-09	4.05E-09
0.631	7.69E-09	6.13E-09	6.11E-09	1.08E-08
0.794	9.73E-09	7.53E-09	8.30E-09	1.73E-08
1	1.23E-08	8.16E-09	1.36E-08	7.95E-09
1.259	1.48E-08	1.02E-08	2.06E-08	9.35E-09
1.585	1.81E-08	1.29E-08	5.28E-08	9.15E-09
1.995	2.24E-08	1.91E-08	3.06E-08	2.30E-08
2.512	2.80E-08	1.99E-08	3.82E-08	1.37E-08
3.162	3.29E-08	2.40E-08	4.85E-08	1.85E-08
3.981	3.99E-08	3.03E-08	4.94E-08	2.17E-08
5.012	4.80E-08	3.03E-08	1.10E-07	4.49E-08
6.31	5.73E-08	3.55E-08	1.28E-07	5.30E-08
7.943	7.38E-08	4.18E-08	1.42E-07	1.04E-07
10	8.58E-08	5.03E-08	1.76E-07	1.21E-07

Kerma for Infinite Contamination Depth

Table C-21: Kerma Adobe Mud Brick Infinite Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.04E-09	7.39E-10	3.60E-09	9.98E-10
0.013	1.58E-09	1.49E-09	1.54E-09	1.54E-09
0.016	2.37E-09	2.09E-09	2.39E-09	2.95E-09
0.02	4.20E-09	2.98E-09	3.29E-09	3.20E-09
0.025	4.98E-09	3.95E-09	3.55E-09	2.89E-09
0.032	4.76E-09	5.29E-09	5.10E-09	5.21E-09
0.04	5.89E-09	7.16E-09	7.63E-09	7.46E-09
0.05	1.01E-08	1.11E-08	1.08E-08	9.92E-09
0.063	1.66E-08	1.76E-08	2.11E-08	2.56E-08
0.079	2.34E-08	2.55E-08	2.49E-08	2.43E-08
0.1	3.92E-08	3.89E-08	7.24E-08	4.63E-08
0.126	5.94E-08	6.07E-08	7.42E-08	7.82E-08
0.158	7.89E-08	7.93E-08	8.54E-08	1.15E-07
0.2	1.11E-07	1.03E-07	1.13E-07	1.68E-07
0.251	1.49E-07	1.49E-07	1.67E-07	2.38E-07
0.316	1.88E-07	1.99E-07	1.78E-07	2.48E-07
0.398	2.63E-07	2.73E-07	2.66E-07	3.77E-07
0.501	3.79E-07	3.79E-07	4.03E-07	5.07E-07
0.631	4.72E-07	5.02E-07	5.00E-07	7.06E-07
0.794	6.87E-07	7.03E-07	7.26E-07	8.70E-07
1	8.14E-07	8.66E-07	8.70E-07	1.19E-06
1.259	1.03E-06	1.12E-06	1.14E-06	1.52E-06
1.585	1.35E-06	1.25E-06	1.35E-06	1.87E-06
1.995	1.87E-06	1.63E-06	1.73E-06	2.56E-06
2.512	2.16E-06	2.15E-06	2.29E-06	3.34E-06
3.162	2.99E-06	2.84E-06	2.86E-06	3.80E-06
3.981	3.38E-06	3.44E-06	3.17E-06	4.99E-06
5.012	4.16E-06	4.64E-06	4.24E-06	6.96E-06
6.31	4.90E-06	5.73E-06	5.45E-06	5.81E-06
7.943	6.20E-06	6.88E-06	5.51E-06	8.37E-06
10	7.36E-06	8.75E-06	7.32E-06	1.07E-05

Table C-22: Kerma Adobe Mud Brick Infinite Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	8.20E-11	5.01E-11	6.09E-11	1.52E-10
0.013	1.66E-10	1.36E-10	1.57E-10	2.32E-10
0.016	2.54E-10	2.38E-10	2.44E-10	2.66E-10
0.02	3.83E-10	3.41E-10	2.98E-10	1.84E-10
0.025	5.64E-10	4.77E-10	4.61E-10	3.43E-10
0.032	7.66E-10	5.59E-10	6.61E-10	4.30E-10
0.04	1.11E-09	6.48E-10	8.56E-10	6.90E-10
0.05	1.44E-09	1.02E-09	1.41E-09	1.56E-09
0.063	2.28E-09	1.50E-09	2.42E-09	3.24E-09
0.079	3.18E-09	2.44E-09	3.72E-09	3.09E-09
0.1	4.66E-09	4.30E-09	5.30E-09	4.80E-09
0.126	6.95E-09	6.77E-09	7.39E-09	8.14E-09
0.158	9.44E-09	1.01E-08	1.06E-08	1.48E-08
0.2	1.48E-08	1.65E-08	1.71E-08	1.54E-08
0.251	1.87E-08	2.01E-08	2.85E-08	2.88E-08
0.316	2.59E-08	2.57E-08	3.97E-08	4.20E-08
0.398	3.52E-08	3.38E-08	4.04E-08	4.41E-08
0.501	4.60E-08	4.45E-08	6.75E-08	8.33E-08
0.631	6.36E-08	5.93E-08	7.18E-08	8.17E-08
0.794	8.78E-08	7.61E-08	1.01E-07	9.58E-08
1	1.17E-07	1.01E-07	1.54E-07	1.43E-07
1.259	1.45E-07	1.30E-07	1.57E-07	1.51E-07
1.585	1.77E-07	1.71E-07	2.00E-07	1.49E-07
1.995	2.28E-07	2.10E-07	2.46E-07	1.70E-07
2.512	2.80E-07	2.59E-07	3.18E-07	2.34E-07
3.162	3.50E-07	2.88E-07	2.80E-07	3.46E-07
3.981	4.46E-07	3.68E-07	3.84E-07	4.17E-07
5.012	5.44E-07	4.62E-07	4.43E-07	5.44E-07
6.31	6.84E-07	5.73E-07	5.63E-07	6.47E-07
7.943	8.40E-07	7.07E-07	6.54E-07	7.53E-07
10	1.00E-06	1.01E-06	1.08E-06	9.17E-07

Table C-23: Kerma Adobe Mud Brick Infinite Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.25E-11	1.49E-11	3.69E-11	5.84E-11
0.013	4.74E-11	4.20E-11	4.04E-11	5.02E-11
0.016	7.30E-11	6.43E-11	5.65E-11	4.33E-11
0.02	1.12E-10	1.09E-10	1.00E-10	4.77E-11
0.025	1.50E-10	1.54E-10	1.40E-10	7.74E-11
0.032	2.15E-10	2.03E-10	1.84E-10	1.14E-10
0.04	2.88E-10	2.70E-10	2.83E-10	1.64E-10
0.05	4.25E-10	3.72E-10	3.11E-10	2.82E-10
0.063	6.61E-10	6.66E-10	4.10E-10	8.44E-10
0.079	1.03E-09	9.72E-10	6.56E-10	1.02E-09
0.1	1.61E-09	1.39E-09	1.14E-09	2.11E-09
0.126	2.31E-09	1.93E-09	1.51E-09	3.10E-09
0.158	3.36E-09	2.69E-09	2.66E-09	6.74E-09
0.2	5.07E-09	4.72E-09	4.47E-09	5.93E-09
0.251	6.54E-09	5.96E-09	6.03E-09	5.92E-09
0.316	8.05E-09	6.58E-09	5.60E-09	9.36E-09
0.398	1.16E-08	9.33E-09	8.36E-09	1.30E-08
0.501	1.52E-08	1.29E-08	1.01E-08	1.63E-08
0.631	2.04E-08	1.75E-08	1.40E-08	1.94E-08
0.794	2.63E-08	2.27E-08	1.85E-08	2.56E-08
1	3.40E-08	3.04E-08	3.11E-08	4.05E-08
1.259	4.45E-08	3.81E-08	4.35E-08	5.68E-08
1.585	5.50E-08	5.00E-08	5.02E-08	4.14E-08
1.995	6.93E-08	6.26E-08	6.21E-08	5.49E-08
2.512	8.60E-08	7.10E-08	7.61E-08	1.12E-07
3.162	1.10E-07	8.67E-08	9.55E-08	1.40E-07
3.981	1.34E-07	1.05E-07	1.31E-07	1.74E-07
5.012	1.66E-07	1.38E-07	1.75E-07	2.10E-07
6.31	2.11E-07	1.79E-07	2.15E-07	2.59E-07
7.943	2.51E-07	2.26E-07	2.51E-07	3.50E-07
10	3.12E-07	3.25E-07	2.72E-07	2.78E-07

Table C-24: Kerma Adobe Mud Brick Infinite Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	3.38E-12	3.06E-12	3.35E-12	9.56E-12
0.013	7.97E-12	7.51E-12	1.22E-11	2.23E-11
0.016	1.45E-11	1.38E-11	1.72E-11	2.57E-11
0.02	2.35E-11	2.29E-11	2.21E-11	2.96E-11
0.025	3.57E-11	3.56E-11	4.08E-11	3.33E-11
0.032	5.24E-11	4.94E-11	5.77E-11	3.04E-11
0.04	7.33E-11	7.91E-11	7.72E-11	5.87E-11
0.05	1.07E-10	9.53E-11	8.51E-11	7.06E-11
0.063	1.68E-10	1.35E-10	8.05E-11	1.69E-10
0.079	2.56E-10	2.59E-10	2.79E-10	2.25E-10
0.1	4.05E-10	4.20E-10	4.12E-10	3.64E-10
0.126	6.47E-10	5.13E-10	4.44E-10	5.62E-10
0.158	9.19E-10	8.18E-10	5.87E-10	9.78E-10
0.2	1.30E-09	1.18E-09	1.01E-09	1.02E-09
0.251	1.75E-09	1.45E-09	1.52E-09	1.45E-09
0.316	2.16E-09	1.59E-09	1.69E-09	2.29E-09
0.398	2.97E-09	2.18E-09	3.20E-09	3.11E-09
0.501	3.99E-09	3.16E-09	2.83E-09	3.02E-09
0.631	5.13E-09	3.88E-09	4.01E-09	8.79E-09
0.794	6.75E-09	4.84E-09	6.13E-09	6.82E-09
1	8.67E-09	6.29E-09	8.48E-09	1.26E-08
1.259	1.12E-08	7.97E-09	1.07E-08	1.42E-08
1.585	1.48E-08	1.02E-08	1.52E-08	1.31E-08
1.995	1.88E-08	1.40E-08	2.51E-08	1.54E-08
2.512	2.22E-08	1.67E-08	2.67E-08	1.85E-08
3.162	2.77E-08	2.17E-08	3.54E-08	2.42E-08
3.981	3.50E-08	2.83E-08	4.03E-08	3.15E-08
5.012	4.21E-08	3.53E-08	5.21E-08	3.98E-08
6.31	5.26E-08	4.72E-08	7.30E-08	4.48E-08
7.943	6.51E-08	5.71E-08	8.97E-08	6.19E-08
10	8.37E-08	7.82E-08	1.00E-07	6.86E-08

Table C-25: Kerma Adobe Mud Brick Infinite Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	4.44E-13	7.64E-13	1.52E-13	1.17E-12
0.013	1.16E-12	1.45E-12	1.06E-12	3.08E-12
0.016	2.38E-12	2.39E-12	3.02E-12	4.68E-12
0.02	4.51E-12	5.27E-12	6.75E-12	9.82E-12
0.025	7.58E-12	7.35E-12	6.66E-12	9.01E-12
0.032	1.22E-11	1.17E-11	1.04E-11	8.10E-12
0.04	1.78E-11	1.54E-11	1.77E-11	1.08E-11
0.05	2.55E-11	2.06E-11	2.45E-11	1.14E-11
0.063	4.06E-11	3.39E-11	1.86E-11	2.11E-11
0.079	6.40E-11	5.52E-11	3.36E-11	3.12E-11
0.1	1.07E-10	5.64E-11	3.67E-11	3.80E-11
0.126	1.54E-10	8.67E-11	5.40E-11	5.11E-11
0.158	2.21E-10	1.29E-10	6.72E-11	7.35E-11
0.2	3.17E-10	2.56E-10	1.70E-10	3.05E-10
0.251	4.08E-10	2.65E-10	2.07E-10	1.33E-10
0.316	5.60E-10	4.00E-10	3.74E-10	3.82E-10
0.398	7.44E-10	4.15E-10	3.36E-10	4.23E-10
0.501	1.03E-09	5.99E-10	7.89E-10	6.40E-10
0.631	1.33E-09	7.65E-10	7.26E-10	7.77E-10
0.794	1.62E-09	9.50E-10	9.19E-10	1.04E-09
1	2.18E-09	1.29E-09	1.47E-09	1.34E-09
1.259	2.67E-09	1.57E-09	1.18E-09	2.60E-09
1.585	3.54E-09	1.92E-09	1.83E-09	2.09E-09
1.995	4.62E-09	2.74E-09	5.00E-09	2.65E-09
2.512	5.56E-09	3.67E-09	1.02E-08	5.11E-09
3.162	7.17E-09	4.32E-09	7.18E-09	3.92E-09
3.981	8.74E-09	6.58E-09	1.13E-08	4.98E-09
5.012	1.06E-08	6.35E-09	1.13E-08	7.73E-09
6.31	1.28E-08	9.42E-09	1.16E-08	8.23E-09
7.943	1.70E-08	1.24E-08	2.38E-08	9.75E-09
10	2.10E-08	1.62E-08	2.08E-08	1.22E-08

Surface Contamination Room Ratios

Table C-26: Room Ratio Adobe Mud Brick Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.821	1.793	3.163	3.895
0.013	2.507	1.514	2.194	2.523
0.016	1.892	1.235	1.691	1.896
0.02	1.526	1.040	1.376	1.532
0.025	1.252	0.877	1.141	1.249
0.032	1.119	0.799	1.024	1.118
0.04	1.019	0.748	0.937	1.023
0.05	1.081	0.810	1.000	1.099
0.063	1.075	0.820	1.001	1.088
0.079	1.129	0.873	1.053	1.146
0.1	1.200	0.933	1.120	1.216
0.126	1.239	0.959	1.161	1.256
0.158	1.229	0.948	1.152	1.247
0.2	1.195	0.913	1.115	1.213
0.251	1.063	0.806	0.991	1.079
0.316	1.038	0.780	0.965	1.050
0.398	0.967	0.719	0.898	0.978
0.501	0.927	0.682	0.859	0.937
0.631	0.911	0.663	0.843	0.918
0.794	0.898	0.648	0.829	0.905
1	0.968	0.693	0.893	0.974
1.259	0.921	0.655	0.845	0.926
1.585	0.898	0.636	0.827	0.903
1.995	0.882	0.624	0.809	0.886
2.512	0.869	0.613	0.796	0.873
3.162	0.851	0.599	0.779	0.854
3.981	0.830	0.584	0.759	0.833
5.012	0.831	0.585	0.759	0.832
6.31	0.829	0.584	0.758	0.830
7.943	0.823	0.580	0.752	0.823
10	0.825	0.582	0.753	0.825

Table C-27: Room Ratio Adobe Mud Brick Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.514	1.249	3.100	3.849
0.013	2.037	1.421	2.306	2.585
0.016	1.780	1.455	1.949	2.038
0.02	1.600	1.388	1.716	1.750
0.025	1.398	1.262	1.464	1.479
0.032	1.297	1.198	1.354	1.332
0.04	1.195	1.111	1.250	1.232
0.05	1.268	1.168	1.320	1.337
0.063	1.255	1.162	1.326	1.330
0.079	1.312	1.218	1.387	1.390
0.1	1.390	1.293	1.466	1.486
0.126	1.439	1.334	1.544	1.537
0.158	1.434	1.321	1.527	1.529
0.2	1.397	1.286	1.482	1.486
0.251	1.247	1.148	1.325	1.327
0.316	1.225	1.124	1.300	1.304
0.398	1.147	1.053	1.217	1.219
0.501	1.105	1.014	1.170	1.160
0.631	1.091	0.999	1.156	1.142
0.794	1.080	0.988	1.146	1.127
1	1.169	1.074	1.235	1.215
1.259	1.116	1.030	1.177	1.157
1.585	1.092	0.997	1.154	1.129
1.995	1.075	0.981	1.137	1.109
2.512	1.061	0.968	1.119	1.092
3.162	1.039	0.948	1.095	1.067
3.981	1.015	0.927	1.067	1.041
5.012	1.015	0.925	1.068	1.041
6.31	1.013	0.922	1.063	1.036
7.943	1.005	0.915	1.055	1.026
10	1.006	0.917	1.056	1.026

Table C-28: Room Ratio Adobe Mud Brick Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.307	1.296	3.236	4.025
0.013	1.962	1.467	2.344	2.603
0.016	1.795	1.527	1.986	2.131
0.02	1.694	1.569	1.783	1.781
0.025	1.536	1.468	1.591	1.523
0.032	1.460	1.425	1.507	1.434
0.04	1.358	1.339	1.381	1.301
0.05	1.443	1.433	1.475	1.432
0.063	1.422	1.442	1.456	1.396
0.079	1.481	1.463	1.549	1.467
0.1	1.570	1.552	1.638	1.574
0.126	1.626	1.610	1.708	1.616
0.158	1.622	1.612	1.711	1.641
0.2	1.587	1.581	1.681	1.581
0.251	1.425	1.418	1.520	1.426
0.316	1.405	1.390	1.472	1.397
0.398	1.322	1.308	1.387	1.299
0.501	1.280	1.267	1.335	1.253
0.631	1.269	1.254	1.318	1.235
0.794	1.262	1.248	1.308	1.229
1	1.370	1.357	1.420	1.324
1.259	1.312	1.300	1.358	1.265
1.585	1.286	1.276	1.323	1.229
1.995	1.269	1.262	1.305	1.210
2.512	1.255	1.246	1.287	1.192
3.162	1.231	1.221	1.260	1.165
3.981	1.203	1.195	1.231	1.138
5.012	1.204	1.193	1.233	1.137
6.31	1.202	1.190	1.227	1.132
7.943	1.193	1.181	1.218	1.122
10	1.194	1.181	1.219	1.123

Table C-29: Room Ratio Adobe Mud Brick Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.254	0.953	2.990	3.877
0.013	1.212	1.072	2.230	2.598
0.016	1.247	1.193	1.891	2.057
0.02	1.321	1.304	1.737	1.792
0.025	1.310	1.359	1.584	1.558
0.032	1.332	1.423	1.545	1.501
0.04	1.284	1.393	1.449	1.444
0.05	1.389	1.513	1.573	1.476
0.063	1.378	1.462	1.550	1.491
0.079	1.437	1.507	1.609	1.673
0.1	1.521	1.606	1.731	1.764
0.126	1.573	1.656	1.807	1.780
0.158	1.568	1.669	1.809	1.733
0.2	1.535	1.639	1.781	1.743
0.251	1.379	1.454	1.579	1.536
0.316	1.360	1.450	1.564	1.493
0.398	1.281	1.363	1.485	1.392
0.501	1.242	1.321	1.437	1.341
0.631	1.235	1.323	1.416	1.324
0.794	1.229	1.323	1.413	1.330
1	1.338	1.447	1.540	1.435
1.259	1.283	1.377	1.475	1.369
1.585	1.261	1.359	1.448	1.343
1.995	1.246	1.345	1.435	1.325
2.512	1.235	1.333	1.425	1.314
3.162	1.213	1.311	1.394	1.279
3.981	1.187	1.283	1.360	1.252
5.012	1.189	1.286	1.363	1.258
6.31	1.188	1.291	1.360	1.254
7.943	1.180	1.277	1.351	1.245
10	1.182	1.285	1.364	1.244

Table C-30: Room Ratio Adobe Mud Brick Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.645	0.972	2.958	3.967
0.013	0.667	0.988	2.194	2.616
0.016	0.762	1.016	1.854	2.076
0.02	0.917	1.156	1.709	1.826
0.025	1.018	1.215	1.551	1.722
0.032	1.139	1.308	1.536	1.654
0.04	1.162	1.424	1.469	1.550
0.05	1.296	1.478	1.583	1.585
0.063	1.303	1.491	1.549	1.635
0.079	1.365	1.534	1.609	1.821
0.1	1.439	1.609	1.746	1.908
0.126	1.483	1.742	1.884	2.049
0.158	1.477	1.835	1.902	2.028
0.2	1.443	1.665	1.918	1.931
0.251	1.296	1.481	1.647	1.738
0.316	1.281	1.478	1.637	1.683
0.398	1.209	1.397	1.538	1.580
0.501	1.175	1.368	1.502	1.512
0.631	1.170	1.369	1.469	1.514
0.794	1.169	1.420	1.475	1.524
1	1.277	1.504	1.617	1.668
1.259	1.230	1.458	1.574	1.562
1.585	1.213	1.435	1.533	1.546
1.995	1.203	1.427	1.535	1.541
2.512	1.195	1.428	1.524	1.508
3.162	1.177	1.409	1.506	1.483
3.981	1.155	1.380	1.470	1.437
5.012	1.161	1.389	1.478	1.448
6.31	1.161	1.396	1.471	1.447
7.943	1.155	1.387	1.464	1.431
10	1.158	1.396	1.469	1.442

1 cm Contamination Depth Room Ratios

Table C-31: Room Ratio Adobe Mud Brick 1cm Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.794373	1.919904	2.596194	3.071528
0.013	1.790574	1.55665	1.740207	1.871909
0.016	1.645055	1.535078	1.62367	1.684148
0.02	1.417765	1.370365	1.407809	1.43259
0.025	1.11585	1.088643	1.111725	1.123655
0.032	1.191015	1.138529	1.187723	1.204474
0.04	1.192989	1.10511	1.189367	1.213904
0.05	1.332811	1.201659	1.324804	1.365319
0.063	1.351367	1.197148	1.339661	1.388662
0.079	1.489615	1.30575	1.473343	1.534924
0.1	1.590648	1.382092	1.569675	1.640794
0.126	1.65948	1.429058	1.635008	1.713404
0.158	1.653314	1.411652	1.627028	1.709371
0.2	1.658141	1.401594	1.629366	1.716241
0.251	1.438388	1.203258	1.411499	1.490242
0.316	1.423458	1.176992	1.394252	1.475769
0.398	1.269263	1.036802	1.240567	1.31664
0.501	1.236176	0.997304	1.20581	1.28318
0.631	1.261166	1.005201	1.227303	1.309869
0.794	1.245481	0.981019	1.209001	1.293424
1	1.277883	0.994999	1.236879	1.327035
1.259	1.211851	0.933343	1.169425	1.257894
1.585	1.151065	0.878078	1.107293	1.194024
1.995	1.119008	0.846529	1.073273	1.15956
2.512	1.069019	0.803086	1.02199	1.10667
3.162	1.220089	0.907984	1.160243	1.259023
3.981	1.171422	0.869251	1.111255	1.207001
5.012	1.178229	0.872722	1.11561	1.212195
6.31	1.173706	0.868297	1.109347	1.20612
7.943	1.161789	0.85874	1.096682	1.192425
10	0.962228	0.711234	0.908305	0.987603

Table C-32: Room Ratio Adobe Mud Brick 1cm Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.746067	1.07878	2.249937	2.989606
0.013	1.325563	1.05167	1.519832	1.807222
0.016	1.362726	1.202585	1.469348	1.632786
0.02	1.278605	1.202672	1.327111	1.400466
0.025	1.064433	1.035163	1.083565	1.115516
0.032	1.19022	1.175883	1.212366	1.22225
0.04	1.23478	1.229835	1.270057	1.261434
0.05	1.413702	1.410731	1.470263	1.452728
0.063	1.453807	1.448101	1.528409	1.509082
0.079	1.615858	1.607459	1.705915	1.688743
0.1	1.735059	1.717163	1.841158	1.824059
0.126	1.818587	1.796264	1.936052	1.918422
0.158	1.821208	1.794432	1.94618	1.924233
0.2	1.837119	1.808181	1.967016	1.945165
0.251	1.603243	1.576528	1.721254	1.697586
0.316	1.597204	1.568146	1.717864	1.690316
0.398	1.434263	1.406241	1.546371	1.518126
0.501	1.406705	1.378063	1.518685	1.488097
0.631	1.445669	1.41425	1.563136	1.528761
0.794	1.437641	1.404168	1.556789	1.518724
1	1.485059	1.447759	1.608586	1.567942
1.259	1.417501	1.378444	1.536826	1.495575
1.585	1.354517	1.313495	1.468032	1.426683
1.995	1.323628	1.280469	1.434501	1.394054
2.512	1.270079	1.225547	1.375388	1.334884
3.162	1.254113	1.206694	1.356955	1.31619
3.981	1.203897	1.155524	1.301857	1.262339
5.012	1.199372	1.147884	1.296059	1.255435
6.31	1.18671	1.132863	1.278761	1.240687
7.943	1.168811	1.113641	1.257546	1.220372
10	1.156272	1.099662	1.242128	1.206043

Table C-33: Room Ratio Adobe Mud Brick 1cm Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.579466	1.045668	2.21349	2.967363
0.013	1.228461	1.00555	1.503537	1.8306
0.016	1.286399	1.150285	1.434331	1.61103
0.02	1.230144	1.157044	1.304413	1.389406
0.025	1.042582	1.010059	1.077851	1.11317
0.032	1.190792	1.179946	1.217892	1.23117
0.04	1.259393	1.270053	1.291208	1.270889
0.05	1.465341	1.491461	1.506441	1.469962
0.063	1.52303	1.560225	1.580965	1.530934
0.079	1.703379	1.749234	1.796721	1.71801
0.1	1.837155	1.885822	1.928016	1.858097
0.126	1.933631	1.986847	2.039504	1.96093
0.158	1.94429	1.99953	2.048407	1.972489
0.2	1.969805	2.029513	2.080222	1.994482
0.251	1.72758	1.783422	1.8262	1.745861
0.316	1.729544	1.789655	1.830622	1.741452
0.398	1.561836	1.616905	1.654941	1.568625
0.501	1.540843	1.597622	1.634121	1.539653
0.631	1.592727	1.653659	1.68854	1.58694
0.794	1.593236	1.656939	1.691518	1.579763
1	1.655499	1.723218	1.756611	1.632807
1.259	1.589255	1.656238	1.682413	1.561558
1.585	1.526682	1.591901	1.614167	1.494609
1.995	1.499317	1.562369	1.583811	1.463089
2.512	1.444907	1.504842	1.524283	1.404469
3.162	1.432101	1.490528	1.509199	1.388558
3.981	1.379134	1.433275	1.451458	1.333856
5.012	1.377529	1.429346	1.447879	1.329797
6.31	1.365649	1.41539	1.431928	1.315902
7.943	1.346948	1.393783	1.411071	1.296635
10	1.333902	1.379104	1.395286	1.282737

Table C-34: Room Ratio Adobe Mud Brick 1cm Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.871961	0.764331	1.981927	2.920868
0.013	0.793887	0.744251	1.34742	1.730526
0.016	0.950889	0.883077	1.310304	1.554641
0.02	1.019717	0.973041	1.200805	1.349513
0.025	0.93558	0.909138	1.021109	1.072751
0.032	1.126744	1.117828	1.184064	1.198965
0.04	1.223534	1.232344	1.273406	1.247316
0.05	1.440059	1.469733	1.49571	1.465441
0.063	1.500514	1.539407	1.583326	1.530341
0.079	1.676558	1.726484	1.779548	1.730839
0.1	1.803639	1.858969	1.927118	1.871173
0.126	1.893357	1.953727	2.037015	1.980988
0.158	1.900471	1.966841	2.057218	1.992064
0.2	1.923657	2.000344	2.090093	2.01555
0.251	1.686556	1.758435	1.839223	1.771457
0.316	1.688608	1.763651	1.844251	1.770578
0.398	1.525496	1.599282	1.674429	1.599937
0.501	1.506113	1.584415	1.65904	1.57589
0.631	1.558419	1.645803	1.723639	1.626704
0.794	1.560676	1.653861	1.728123	1.625117
1	1.62379	1.726355	1.801134	1.688032
1.259	1.561303	1.666471	1.73809	1.621519
1.585	1.50203	1.60875	1.676995	1.560121
1.995	1.477256	1.594286	1.65327	1.531554
2.512	1.425668	1.536739	1.600662	1.47655
3.162	1.414896	1.537433	1.588555	1.467182
3.981	1.364135	1.477601	1.534271	1.414118
5.012	1.363824	1.482031	1.535349	1.411432
6.31	1.353075	1.471865	1.526388	1.400343
7.943	1.335417	1.452544	1.508265	1.382401
10	1.323142	1.440796	1.494558	1.370077

Table C-35: Room Ratio Adobe Mud Brick 1cm Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.447867	0.724798	1.972719	3.119154
0.013	0.445326	0.645668	1.240605	1.758954
0.016	0.605469	0.713864	1.205092	1.550304
0.02	0.750346	0.78225	1.107359	1.301319
0.025	0.773032	0.775716	0.950321	1.056571
0.032	1.014395	1.010663	1.13989	1.194103
0.04	1.153538	1.166546	1.231171	1.232676
0.05	1.3888	1.426603	1.480759	1.45271
0.063	1.455848	1.505425	1.548756	1.519456
0.079	1.625629	1.691136	1.760087	1.723556
0.1	1.740357	1.816008	1.898187	1.867466
0.126	1.817321	1.899558	2.008696	1.980058
0.158	1.818428	1.905548	2.028602	1.993627
0.2	1.836738	1.937015	2.054952	2.02693
0.251	1.609177	1.701167	1.815507	1.784332
0.316	1.610876	1.707833	1.822344	1.776704
0.398	1.456115	1.554755	1.655583	1.607174
0.501	1.439294	1.542134	1.640936	1.584664
0.631	1.491857	1.607648	1.714281	1.634677
0.794	1.497025	1.620416	1.721344	1.654234
1	1.561213	1.700656	1.805859	1.726878
1.259	1.505078	1.650052	1.750218	1.649911
1.585	1.451832	1.598452	1.69427	1.58947
1.995	1.431858	1.586857	1.675504	1.563823
2.512	1.385566	1.54247	1.62636	1.516523
3.162	1.378296	1.548139	1.624949	1.508139
3.981	1.331769	1.501556	1.574107	1.460985
5.012	1.333937	1.513662	1.582926	1.470032
6.31	1.325507	1.506282	1.579061	1.469898
7.943	1.30978	1.492161	1.564803	1.455868
10	1.299103	1.482988	1.554398	1.445259

5 cm Contamination Depth Room Ratios

Table C-36: Room Ratio Adobe Mud Brick 5 cm Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.52981	1.75481	2.34043	2.77713
0.013	1.44214	1.24928	1.38858	1.49969
0.016	1.84873	1.72739	1.81816	1.88299
0.02	1.41104	1.36572	1.39687	1.42191
0.025	1.31884	1.29737	1.31497	1.32303
0.032	1.22445	1.21454	1.22105	1.22481
0.04	1.23670	1.22962	1.23501	1.23586
0.05	1.29129	1.27855	1.28932	1.29138
0.063	1.24691	1.21508	1.07093	1.30015
0.079	1.52833	1.45701	1.19873	1.41267
0.1	1.69749	1.63497	1.69503	1.71138
0.126	1.74712	1.77562	1.62393	1.76139
0.158	1.86673	1.69129	1.75365	1.69235
0.2	1.89236	1.78800	1.89196	1.91989
0.251	1.88490	1.67521	1.67573	1.74067
0.316	1.86413	1.66136	1.66180	1.69885
0.398	1.77942	1.64548	1.65091	1.67367
0.501	1.79504	1.60982	1.66167	1.69622
0.631	1.67975	1.49241	1.47759	1.52012
0.794	1.66049	1.44864	1.47546	1.45548
1	1.61980	1.39789	1.46969	1.40873
1.259	1.50599	1.29371	1.39140	1.32666
1.585	1.44720	1.21109	1.33919	1.33238
1.995	1.41730	1.13902	1.28840	1.26096
2.512	1.33915	1.11319	1.26843	1.21584
3.162	1.26433	1.05836	1.22507	1.14980
3.981	1.25429	1.02715	1.18882	1.12600
5.012	1.24341	0.99431	1.19479	1.11914
6.31	1.23169	0.98507	1.11457	1.11182
7.943	1.20166	0.96029	1.13043	1.10027
10	1.18544	0.94945	1.11900	1.09303

Table C-37: Room Ratio Adobe Mud Brick 5 cm Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.62937	1.01248	2.11501	2.01384
0.013	1.25935	0.78370	0.88965	0.83729
0.016	1.64990	1.13522	1.38776	0.96865
0.02	1.44438	1.10022	1.65818	1.16737
0.025	1.29650	1.07140	1.71381	1.56922
0.032	1.35278	0.93016	0.99470	1.00046
0.04	1.17484	0.94729	1.19264	1.19043
0.05	1.37278	1.07144	1.22270	1.74850
0.063	1.54011	1.12984	1.10470	1.51034
0.079	1.54756	1.09599	1.02439	1.98616
0.1	1.80817	1.49138	1.57730	1.91026
0.126	1.86811	1.55509	2.01946	1.85857
0.158	1.97879	1.81953	1.67038	2.17809
0.2	2.11988	1.77768	2.04928	2.32531
0.251	2.00540	1.73455	2.01779	2.28730
0.316	1.90918	1.69384	1.86343	2.44003
0.398	1.85400	1.72942	1.87729	2.65835
0.501	1.86245	1.76090	1.93482	2.84173
0.631	1.82803	1.73733	1.64528	2.95297
0.794	1.79951	1.74227	1.69299	3.14176
1	1.84551	1.71356	1.67720	3.08462
1.259	1.73963	1.59316	1.60375	3.05665
1.585	1.68610	1.51864	1.67525	2.93938
1.995	1.56973	1.43267	1.48610	2.90791
2.512	1.57248	1.44654	1.45879	2.82760
3.162	1.48685	1.38587	1.51222	2.86716
3.981	1.44033	1.35556	1.42892	2.91863
5.012	1.48640	1.34057	1.39898	2.92770
6.31	1.44774	1.31855	1.42751	2.89020
7.943	1.41998	1.29357	1.40288	2.89910
10	1.41643	1.28731	1.38481	1.77537

Table C-38: Room Ratio Adobe Mud Brick 5 cm Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.40396	1.13496	1.69658	1.45629
0.013	0.98006	0.86175	1.04169	0.74765
0.016	1.63157	1.20368	1.30007	1.57532
0.02	1.26952	0.87119	0.86323	1.26612
0.025	1.30893	1.03416	0.89810	1.46736
0.032	1.24065	1.04222	0.87207	1.56908
0.04	1.22354	1.13723	1.12049	1.45084
0.05	1.28651	1.34218	1.39887	1.52953
0.063	1.46854	1.46233	1.69520	2.41917
0.079	1.52740	1.08514	1.81618	1.68284
0.1	1.76917	1.87531	1.96931	2.02652
0.126	1.87984	1.58091	2.53631	2.07781
0.158	2.04532	1.53695	2.25711	1.95441
0.2	2.01363	2.01370	2.47293	2.21750
0.251	1.99083	1.63949	1.92242	2.07668
0.316	1.85616	1.66251	3.17816	2.25575
0.398	1.94834	1.43842	2.14522	2.45031
0.501	1.94614	1.49767	2.03733	2.73722
0.631	1.90860	1.49549	2.44759	2.69516
0.794	1.89219	1.49718	2.38433	2.83057
1	1.92268	1.53686	2.22108	2.34754
1.259	1.85770	1.50198	2.10002	2.28581
1.585	1.71940	1.47795	1.69498	1.87957
1.995	1.64203	1.39204	1.73582	1.82358
2.512	1.64627	1.40843	1.70620	1.81536
3.162	1.56448	1.37458	1.71753	2.01163
3.981	1.56057	1.36636	1.68360	2.03923
5.012	1.63202	1.36314	1.66142	1.94389
6.31	1.56873	1.38084	1.74463	1.83701
7.943	1.52407	1.37055	1.70296	1.75539
10	1.50289	1.39451	1.68236	1.71830

Table C-39: Room Ratio Adobe Mud Brick 5 cm Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.81856	0.75282	1.68415	1.88152
0.013	0.64738	0.61808	0.73432	1.13434
0.016	1.08416	1.08758	1.17141	1.48418
0.02	1.02474	1.01872	1.07144	1.24229
0.025	1.10849	0.67966	1.66533	1.00013
0.032	1.14778	0.82713	1.45859	0.94191
0.04	1.19490	0.97045	1.34832	1.00158
0.05	1.24648	0.92574	2.04228	0.91347
0.063	1.39102	1.27049	1.98601	0.83282
0.079	1.46280	0.76770	3.18910	1.49836
0.1	1.80131	1.81037	3.17627	1.21612
0.126	1.83797	1.49040	3.34826	1.68480
0.158	1.93201	1.86426	3.19201	1.41219
0.2	1.92661	1.66192	3.03770	1.55920
0.251	1.96749	1.86742	3.23358	1.58905
0.316	1.96652	1.94167	3.32228	1.39621
0.398	1.95451	1.85539	3.41642	1.65701
0.501	1.93717	1.22600	5.78708	4.09703
0.631	1.90133	1.24153	6.01339	4.04928
0.794	1.88341	1.24037	6.21992	3.94098
1	1.91443	1.28357	5.92847	4.41755
1.259	1.79337	1.51191	3.58431	1.91821
1.585	1.70569	1.21382	4.85414	2.13702
1.995	1.63295	1.18771	4.72575	2.03426
2.512	1.63876	1.20765	4.63917	1.99556
3.162	1.56278	1.18532	4.56382	2.11055
3.981	1.56896	1.19392	4.48895	2.37463
5.012	1.63447	1.18951	4.52447	2.11779
6.31	1.57181	1.23095	4.80063	1.94926
7.943	1.52754	1.20330	5.16446	1.96764
10	1.50081	1.21047	5.84969	1.87223

Table C-40: Room Ratio Adobe Mud Brick 5 cm Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.41806	0.56917	2.20085	2.77456
0.013	0.36915	0.46978	1.01341	1.16996
0.016	0.70269	0.71147	1.27233	1.16400
0.02	0.75896	0.75262	1.04548	1.44526
0.025	0.92484	0.86699	0.86195	1.59267
0.032	1.02168	0.99992	0.94472	0.88088
0.04	1.16474	0.67968	1.06285	0.65354
0.05	1.26750	0.84869	0.82831	0.96440
0.063	1.33315	1.15653	1.43250	0.90321
0.079	1.47554	1.25662	1.32869	1.03003
0.1	1.83071	0.89413	3.60433	1.15221
0.126	1.77783	1.72973	1.53834	1.72301
0.158	1.88106	1.80210	1.77161	1.48835
0.2	1.92093	1.43036	1.70364	0.70937
0.251	1.94992	1.69230	1.67901	1.95564
0.316	1.89412	1.29528	2.17790	1.00312
0.398	1.88924	0.91134	4.44632	1.58921
0.501	1.84957	1.01684	3.37054	1.96498
0.631	1.79402	1.04843	3.79360	1.45939
0.794	1.85315	0.99752	3.19191	3.00193
1	1.88874	1.03402	3.32086	3.10521
1.259	1.83745	1.03661	3.62272	3.20901
1.585	1.65774	1.05171	4.32132	1.22802
1.995	1.63182	0.95854	2.92593	2.01809
2.512	1.62914	0.98964	2.91548	1.87133
3.162	1.54752	0.97625	2.90596	2.03855
3.981	1.57671	1.04355	2.09255	2.05433
5.012	1.61360	0.99973	2.90650	2.15957
6.31	1.55140	1.01621	3.00567	2.08489
7.943	1.50991	1.01993	3.12365	2.11835
10	1.47956	1.01851	3.53444	2.01785

15 cm Contamination Depth Room Ratios

Table C-41: Room Ratio Adobe Mud Brick 15cm Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.913179	1.864773	2.562823	3.083332
0.013	0.940955	0.929334	1.580795	1.710901
0.016	1.002042	1.138613	1.665952	1.684708
0.02	1.666197	1.331167	1.449372	1.925781
0.025	1.345874	1.35437	1.497287	1.867221
0.032	1.514614	1.153077	1.190282	1.489258
0.04	1.472711	1.132831	1.134362	1.184023
0.05	1.005363	0.96538	0.965055	1.115967
0.063	1.40708	1.240232	0.908844	1.216418
0.079	1.452673	1.397461	1.029898	1.201055
0.1	1.598988	1.510448	1.345975	1.355766
0.126	1.64349	1.714651	1.597232	1.630141
0.158	1.820426	1.762711	1.551132	1.430471
0.2	1.725713	1.677608	1.434056	1.397396
0.251	1.904837	1.838753	1.728058	1.53428
0.316	2.048329	1.867273	1.859146	1.463038
0.398	1.922404	1.806176	1.941879	1.422123
0.501	2.264246	2.15732	1.926732	1.762747
0.631	1.702989	1.592083	1.363604	1.271764
0.794	1.707435	1.609614	1.419263	1.332295
1	1.638683	1.562462	1.404509	1.2624
1.259	1.532283	1.470518	1.309014	1.206502
1.585	1.479422	1.327887	1.252782	1.191039
1.995	1.559303	1.379981	1.314873	1.220945
2.512	1.511762	1.307923	1.300608	1.15266
3.162	1.395898	1.229837	1.284271	1.104342
3.981	1.341705	1.225077	1.301779	1.078778
5.012	1.342436	1.219244	1.332503	1.082382
6.31	1.359844	1.202852	1.177342	1.108813
7.943	1.389111	1.1791	1.158964	1.110855
10	1.33719	1.158583	1.14386	1.103049

Table C-42: Room Ratio Adobe Mud Brick 15cm Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.90E+00	1.20E+00	2.11E+00	2.82E+00
0.013	1.20E+00	8.80E-01	1.46E+00	1.26E+00
0.016	1.33E+00	1.04E+00	1.01E+00	6.22E-01
0.02	1.76E+00	1.20E+00	1.13E+00	6.74E-01
0.025	1.63E+00	1.23E+00	1.35E+00	1.00E+00
0.032	1.50E+00	1.10E+00	1.64E+00	1.33E+00
0.04	1.55E+00	1.04E+00	1.85E+00	1.04E+00
0.05	1.41E+00	9.36E-01	1.01E+00	8.31E-01
0.063	1.58E+00	1.63E+00	1.71E+00	1.12E+00
0.079	1.68E+00	1.15E+00	1.76E+00	1.17E+00
0.1	1.52E+00	1.39E+00	1.85E+00	1.64E+00
0.126	1.85E+00	1.46E+00	2.02E+00	1.64E+00
0.158	2.10E+00	1.60E+00	1.82E+00	1.63E+00
0.2	1.95E+00	1.62E+00	1.50E+00	1.77E+00
0.251	2.12E+00	2.03E+00	1.79E+00	2.22E+00
0.316	2.21E+00	1.73E+00	2.23E+00	2.20E+00
0.398	2.18E+00	1.66E+00	1.73E+00	2.60E+00
0.501	2.65E+00	2.00E+00	2.12E+00	3.04E+00
0.631	1.95E+00	1.55E+00	1.70E+00	2.53E+00
0.794	1.94E+00	1.61E+00	1.61E+00	2.74E+00
1	1.93E+00	1.54E+00	1.69E+00	2.58E+00
1.259	1.80E+00	1.44E+00	1.60E+00	2.60E+00
1.585	1.69E+00	1.45E+00	1.56E+00	2.51E+00
1.995	1.74E+00	1.46E+00	1.67E+00	2.75E+00
2.512	1.65E+00	1.46E+00	1.67E+00	2.70E+00
3.162	1.61E+00	1.41E+00	1.68E+00	2.74E+00
3.981	1.56E+00	1.42E+00	1.68E+00	2.81E+00
5.012	1.55E+00	1.42E+00	1.73E+00	2.92E+00
6.31	1.57E+00	1.42E+00	1.44E+00	2.91E+00
7.943	1.60E+00	1.40E+00	1.56E+00	2.92E+00
10	1.53E+00	1.39E+00	1.41E+00	2.81E+00

Table C-43: Room Ratio Adobe Mud Brick 15cm Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.638004	1.181972	2.120015	1.610653
0.013	0.972529	0.892859	0.854695	0.62089
0.016	1.095527	1.039491	0.991684	0.57915
0.02	1.303926	1.276886	1.19404	0.854433
0.025	1.538477	1.160656	0.831943	1.793877
0.032	1.329674	1.141455	0.794368	1.503743
0.04	1.506962	1.149271	0.94742	1.228525
0.05	1.271208	1.082301	1.037936	2.042815
0.063	1.508105	1.378897	1.247241	1.27389
0.079	1.588907	1.464868	1.344474	1.432972
0.1	1.60027	1.45419	1.551189	1.552065
0.126	1.873018	1.958628	1.831777	1.895709
0.158	2.035628	2.275447	1.853637	1.865507
0.2	1.926492	2.149686	2.102051	1.511007
0.251	2.134501	2.343395	2.451097	1.694201
0.316	2.114133	2.000581	2.98582	2.21107
0.398	2.10388	2.06679	2.988072	1.960014
0.501	2.506586	2.367753	3.465325	2.642428
0.631	1.916102	2.023926	2.26083	1.870563
0.794	1.871397	1.466621	3.565979	2.672548
1	1.942509	1.452323	3.533872	2.333225
1.259	1.80408	1.257307	2.21296	2.271399
1.585	1.679084	1.19893	1.608844	1.930677
1.995	1.764242	1.200989	1.664063	2.397332
2.512	1.687229	1.255662	1.704007	2.2911
3.162	1.632776	1.18906	1.710568	2.30261
3.981	1.622754	1.210748	1.695953	2.353103
5.012	1.627423	1.279248	1.75039	2.295643
6.31	1.646155	1.301956	1.739916	2.285533
7.943	1.687891	1.286659	1.73698	2.273482
10	1.583614	1.256733	1.703476	2.156386

Table C-44: Room Ratio Adobe Mud Brick 15cm Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.933484	0.793935	1.77851	2.329004
0.013	0.63404	0.63309	0.885431	1.127669
0.016	0.821808	0.834218	0.838438	1.052576
0.02	1.082173	1.07431	0.870186	1.048065
0.025	1.288176	1.302055	1.119677	1.179253
0.032	1.242259	0.848507	1.018288	0.715793
0.04	1.424886	0.922525	1.707886	0.998689
0.05	1.234021	0.910076	1.23495	0.788886
0.063	1.503443	1.155123	1.441746	0.968159
0.079	1.600606	1.332997	2.230331	0.985864
0.1	1.593133	1.340843	2.309995	0.752867
0.126	1.84737	1.734494	2.802781	1.557979
0.158	2.011551	2.161118	2.662251	1.222924
0.2	1.877658	1.856477	2.839183	1.314014
0.251	2.060709	1.855778	4.076957	1.892069
0.316	2.085423	2.197349	3.789773	1.543251
0.398	2.111078	1.812797	4.601141	1.920668
0.501	2.570107	2.023179	5.624093	2.734355
0.631	1.812055	1.207671	6.787853	2.89364
0.794	1.930117	1.538219	4.821376	2.362137
1	1.968341	1.545288	4.530962	1.884291
1.259	1.806387	1.182488	5.937638	2.303791
1.585	1.640407	1.393742	3.293231	1.440052
1.995	1.659663	1.096171	4.457985	1.743355
2.512	1.6703	1.093575	4.383777	2.068118
3.162	1.570568	1.02321	4.233658	2.036027
3.981	1.633831	1.073279	4.139388	2.115871
5.012	1.612745	1.067005	4.083818	2.047394
6.31	1.637198	1.158659	4.085106	2.116858
7.943	1.700956	1.126142	5.733049	2.573445
10	1.590475	1.096871	5.7452	2.317621

Table C-45: Room Ratio Adobe Mud Brick 15cm Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.010	0.48252	0.64381	2.13007	3.68446
0.013	0.36323	0.44154	1.12572	1.53332
0.016	0.53431	0.54935	0.95008	1.19033
0.020	0.80718	0.77867	0.99208	0.88859
0.025	1.07481	0.91691	1.27215	1.53778
0.032	1.16151	1.00245	1.17364	1.54946
0.040	1.36003	0.95255	1.20923	1.19991
0.050	1.21867	0.68289	2.38252	0.33361
0.063	1.52421	1.06771	1.43698	0.84372
0.079	1.60816	1.07950	1.23603	0.62858
0.100	1.55658	1.07913	1.01961	0.66393
0.126	1.80681	1.48504	1.27219	0.89223
0.158	1.96729	1.85894	1.94117	3.37330
0.200	1.80564	1.56481	1.10819	1.06707
0.251	2.01336	1.66568	1.23661	1.05446
0.316	2.00631	1.57681	3.64078	2.20196
0.398	2.03683	1.70677	1.40627	1.33616
0.501	2.41164	2.16452	2.09947	1.65347
0.631	1.84330	1.46856	1.46339	2.58346
0.794	1.89662	1.46785	1.61665	3.37602
1.000	1.88263	1.25068	2.07647	1.21822
1.259	1.74409	1.20263	2.42536	1.09963
1.585	1.61063	1.14836	4.71354	0.81661
1.995	1.68103	1.43168	2.29260	1.72629
2.512	1.69792	1.20596	2.31519	0.83108
3.162	1.59329	1.16421	2.34986	0.89687
3.981	1.59518	1.21078	1.97252	0.86621
5.012	1.59616	1.00629	3.64662	1.49291
6.310	1.60668	0.99694	3.58508	1.48812
7.943	1.70021	0.96285	3.27858	2.40194
10.000	1.59240	0.93285	3.27259	2.24948

Infinite Contamination Depth Room Ratios

Table C-46: Room Ratio Adobe Mud Brick Infinite Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.93494	0.66538	3.24505	0.89870
0.013	1.01427	0.95848	0.98887	0.98697
0.016	0.92815	0.81913	0.93836	1.15678
0.02	0.90442	0.64064	0.70811	0.68959
0.025	0.85111	0.67449	0.60557	0.49386
0.032	0.65261	0.72476	0.69951	0.71477
0.04	0.57515	0.69979	0.74578	0.72927
0.05	0.73709	0.81023	0.78655	0.72253
0.063	0.88235	0.93196	1.11739	1.35786
0.079	0.88697	0.96530	0.94410	0.92109
0.1	1.06319	1.05399	1.96001	1.25333
0.126	0.80741	0.82463	1.00765	1.06210
0.158	0.98318	0.98893	1.06400	1.43560
0.2	0.97772	0.90353	0.99641	1.47482
0.251	1.20420	1.20457	1.34359	1.91818
0.316	1.01146	1.07226	0.96123	1.33707
0.398	1.06311	1.10338	1.07292	1.52323
0.501	1.19628	1.19586	1.27409	1.60013
0.631	1.11819	1.18946	1.18426	1.67397
0.794	1.28048	1.31094	1.35420	1.62146
1	1.23215	1.31021	1.31638	1.80154
1.259	1.03443	1.12817	1.14628	1.52152
1.585	1.37051	1.26524	1.37008	1.89542
1.995	1.41359	1.22852	1.30312	1.93234
2.512	1.28505	1.28016	1.36013	1.98695
3.162	1.27114	1.20600	1.21546	1.61236
3.981	1.10799	1.12502	1.03880	1.63294
5.012	1.01634	1.13434	1.03592	1.70122
6.31	1.06396	1.24314	1.18325	1.26069
7.943	1.11800	1.24081	0.99445	1.50916
10	1.07942	1.28312	1.07374	1.56756

Table C-47: Room Ratio Adobe Mud Brick Infinite Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.86087	0.526322	0.639425	1.592308
0.013	1.243665	1.021074	1.174988	1.740613
0.016	1.161871	1.087855	1.114129	1.214665
0.02	0.961941	0.857	0.746973	0.462145
0.025	1.123322	0.951235	0.918626	0.683647
0.032	1.225653	0.894721	1.056512	0.687652
0.04	1.264062	0.73852	0.976334	0.786513
0.05	1.226523	0.864543	1.20248	1.325194
0.063	1.410014	0.925859	1.495511	2.003993
0.079	1.404335	1.075671	1.641994	1.364173
0.1	1.473723	1.360493	1.673983	1.518106
0.126	1.10127	1.072325	1.171261	1.290449
0.158	1.372798	1.463132	1.548171	2.156999
0.2	1.519322	1.690181	1.751319	1.583643
0.251	1.760857	1.886059	2.67827	2.703694
0.316	1.630327	1.614625	2.496064	2.642757
0.398	1.660805	1.593	1.906991	2.08003
0.501	1.694264	1.640921	2.488714	3.069828
0.631	1.75843	1.640822	1.98662	2.258426
0.794	1.909855	1.654935	2.195531	2.084827
1	2.07084	1.782041	2.710629	2.521228
1.259	1.692961	1.526557	1.839149	1.772937
1.585	2.086982	2.0213	2.356912	1.757877
1.995	2.008483	1.852571	2.167812	1.499272
2.512	1.945305	1.796788	2.203342	1.622129
3.162	1.731924	1.429221	1.386502	1.713996
3.981	1.702046	1.404019	1.465576	1.593395
5.012	1.550918	1.315574	1.264092	1.550374
6.31	1.730078	1.451275	1.425504	1.636361
7.943	1.768315	1.488451	1.376327	1.58435
10	1.713001	1.736739	1.85613	1.569567

Table C-48: Room Ratio Adobe Mud Brick Infinite Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.135497	0.089851	0.222048	0.35116
0.013	0.203329	0.180316	0.173147	0.215209
0.016	0.191096	0.168264	0.147747	0.113349
0.02	0.160394	0.157056	0.14401	0.068586
0.025	0.170893	0.175251	0.159195	0.088204
0.032	0.197068	0.185444	0.168147	0.104726
0.04	0.188018	0.176157	0.184482	0.106925
0.05	0.206882	0.181077	0.151165	0.137305
0.063	0.234077	0.235934	0.145206	0.29886
0.079	0.259634	0.245567	0.16572	0.257693
0.1	0.291526	0.252304	0.206556	0.381762
0.126	0.209931	0.175272	0.136841	0.281599
0.158	0.279727	0.224283	0.221241	0.56116
0.2	0.297645	0.277394	0.262576	0.348655
0.251	0.351794	0.320992	0.324284	0.318697
0.316	0.289826	0.236792	0.201394	0.336879
0.398	0.312598	0.251884	0.225472	0.350906
0.501	0.320542	0.272782	0.213025	0.344302
0.631	0.323336	0.277405	0.22147	0.306658
0.794	0.327596	0.282251	0.23003	0.318733
1	0.343999	0.307442	0.314305	0.409124
1.259	0.298003	0.25547	0.291426	0.380828
1.585	0.371985	0.338106	0.339507	0.279527
1.995	0.3493	0.31552	0.313261	0.276768
2.512	0.341323	0.281824	0.302154	0.445922
3.162	0.313273	0.245826	0.270924	0.39778
3.981	0.293996	0.23055	0.286176	0.38029
5.012	0.271604	0.224365	0.285984	0.341805
6.31	0.305385	0.25867	0.310733	0.374835
7.943	0.302461	0.272196	0.301745	0.42147
10	0.305463	0.317896	0.266566	0.272013

Table C-49: Room Ratio Adobe Mud Brick Infinite Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.486607	0.441369	0.483232	1.377538
0.013	0.81923	0.771478	1.253486	2.286661
0.016	0.906119	0.86551	1.077039	1.61274
0.02	0.807561	0.78696	0.760743	1.018587
0.025	0.975672	0.973404	1.114457	0.910629
0.032	1.150156	1.084394	1.264924	0.66691
0.04	1.146403	1.236921	1.207015	0.917568
0.05	1.246138	1.110943	0.991664	0.823393
0.063	1.423778	1.145102	0.683354	1.432063
0.079	1.549402	1.567048	1.689155	1.360583
0.1	1.754331	1.82186	1.784273	1.578512
0.126	1.407132	1.115789	0.964945	1.220935
0.158	1.832957	1.631771	1.170584	1.949445
0.2	1.832763	1.657099	1.422117	1.437408
0.251	2.253527	1.869912	1.959852	1.874696
0.316	1.863054	1.374687	1.453294	1.976079
0.398	1.917096	1.407126	2.069551	2.00951
0.501	2.016347	1.596837	1.431519	1.524408
0.631	1.945706	1.470529	1.519544	3.333856
0.794	2.013307	1.444087	1.829209	2.033783
1	2.098842	1.522875	2.054312	3.039289
1.259	1.794369	1.280465	1.723385	2.286163
1.585	2.396842	1.647781	2.457817	2.118754
1.995	2.275462	1.689583	3.037126	1.861854
2.512	2.110839	1.592708	2.541444	1.759443
3.162	1.882142	1.472837	2.405444	1.645162
3.981	1.831658	1.483958	2.110561	1.651267
5.012	1.645155	1.378694	2.035315	1.556256
6.31	1.826353	1.63819	2.534522	1.554868
7.943	1.879605	1.646842	2.5894	1.787477
10	1.965385	1.835493	2.349729	1.609167

Table C-50: Room Ratio Adobe Mud Brick Infinite Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.255611	0.440332	0.08756	0.672903
0.013	0.478584	0.59407	0.43384	1.26419
0.016	0.595823	0.59968	0.758311	1.17356
0.02	0.621676	0.725447	0.930024	1.352777
0.025	0.828824	0.803538	0.727419	0.984144
0.032	1.068166	1.024848	0.913433	0.710548
0.04	1.113898	0.960219	1.105617	0.673257
0.05	1.188234	0.960187	1.141862	0.532445
0.063	1.37854	1.152683	0.630576	0.716748
0.079	1.549265	1.336045	0.812747	0.756393
0.1	1.847667	0.977968	0.63549	0.659212
0.126	1.335815	0.753528	0.469618	0.444676
0.158	1.764089	1.03053	0.535705	0.58606
0.2	1.784257	1.440759	0.958584	1.717799
0.251	2.10259	1.368825	1.068427	0.687608
0.316	1.930772	1.379166	1.29184	1.318198
0.398	1.924661	1.073316	0.867869	1.092821
0.501	2.07636	1.210558	1.595735	1.294067
0.631	2.015206	1.160375	1.102192	1.178142
0.794	1.937539	1.133506	1.096266	1.238096
1	2.109977	1.248583	1.426286	1.296484
1.259	1.714239	1.007845	0.761151	1.668953
1.585	2.293921	1.246085	1.185891	1.356362
1.995	2.231475	1.321696	2.416656	1.280995
2.512	2.115016	1.396331	3.869921	1.943744
3.162	1.949091	1.175358	1.951603	1.065219
3.981	1.832219	1.37868	2.360694	1.043517
5.012	1.66162	0.99298	1.770859	1.208257
6.31	1.775088	1.307134	1.608458	1.1428
7.943	1.962407	1.431432	2.744385	1.124945
10	1.970363	1.520438	1.94922	1.143115

APPENDIX D: CONCRETE TABLES

First tables will be presented for raw air kerma values. These units are in pGy per cm^2. Room ratio values are presented following the Kerma tables.

Surface Contamination Kerma

Table D-1: Kerma Concrete Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.28E-05	6.01E-06	1.06E-05	1.30E-05
0.013	1.01E-05	6.14E-06	8.90E-06	1.02E-05
0.016	7.56E-06	4.94E-06	6.76E-06	7.58E-06
0.02	5.17E-06	3.53E-06	4.67E-06	5.19E-06
0.025	3.49E-06	2.45E-06	3.18E-06	3.48E-06
0.032	2.29E-06	1.64E-06	2.10E-06	2.29E-06
0.04	1.68E-06	1.24E-06	1.55E-06	1.69E-06
0.05	1.42E-06	1.06E-06	1.31E-06	1.44E-06
0.063	1.42E-06	1.08E-06	1.32E-06	1.43E-06
0.079	1.61E-06	1.24E-06	1.50E-06	1.63E-06
0.1	2.02E-06	1.57E-06	1.88E-06	2.04E-06
0.126	2.62E-06	2.03E-06	2.45E-06	2.66E-06
0.158	3.37E-06	2.60E-06	3.16E-06	3.42E-06
0.2	4.37E-06	3.33E-06	4.08E-06	4.44E-06
0.251	5.50E-06	4.17E-06	5.12E-06	5.58E-06
0.316	6.88E-06	5.17E-06	6.40E-06	6.95E-06
0.398	8.50E-06	6.32E-06	7.89E-06	8.61E-06
0.501	1.04E-05	7.62E-06	9.60E-06	1.05E-05
0.631	1.25E-05	9.08E-06	1.15E-05	1.26E-05
0.794	1.49E-05	1.07E-05	1.37E-05	1.50E-05
1	1.76E-05	1.26E-05	1.62E-05	1.77E-05
1.259	2.05E-05	1.46E-05	1.89E-05	2.07E-05
1.585	2.39E-05	1.70E-05	2.20E-05	2.41E-05
1.995	2.77E-05	1.96E-05	2.54E-05	2.78E-05
2.512	3.19E-05	2.25E-05	2.92E-05	3.21E-05
3.162	3.69E-05	2.60E-05	3.38E-05	3.70E-05
3.981	4.27E-05	3.00E-05	3.90E-05	4.28E-05
5.012	4.95E-05	3.48E-05	4.52E-05	4.96E-05
6.31	5.81E-05	4.09E-05	5.31E-05	5.82E-05
7.943	6.89E-05	4.86E-05	6.29E-05	6.89E-05
10	8.21E-05	5.80E-05	7.50E-05	8.22E-05

Table D-2: Kerma Concrete Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	7.19E-07	3.58E-07	8.89E-07	1.10E-06
0.013	7.07E-07	4.95E-07	8.01E-07	8.98E-07
0.016	6.10E-07	4.99E-07	6.68E-07	6.98E-07
0.02	4.65E-07	4.04E-07	4.98E-07	5.09E-07
0.025	3.34E-07	3.02E-07	3.50E-07	3.53E-07
0.032	2.28E-07	2.11E-07	2.38E-07	2.34E-07
0.04	1.69E-07	1.57E-07	1.77E-07	1.75E-07
0.05	1.42E-07	1.31E-07	1.48E-07	1.50E-07
0.063	1.42E-07	1.31E-07	1.49E-07	1.52E-07
0.079	1.60E-07	1.49E-07	1.70E-07	1.70E-07
0.1	2.00E-07	1.85E-07	2.11E-07	2.13E-07
0.126	2.61E-07	2.43E-07	2.79E-07	2.79E-07
0.158	3.37E-07	3.10E-07	3.59E-07	3.59E-07
0.2	4.37E-07	4.03E-07	4.64E-07	4.65E-07
0.251	5.52E-07	5.08E-07	5.86E-07	5.88E-07
0.316	6.95E-07	6.38E-07	7.39E-07	7.42E-07
0.398	8.63E-07	7.92E-07	9.15E-07	9.17E-07
0.501	1.06E-06	9.70E-07	1.12E-06	1.11E-06
0.631	1.28E-06	1.17E-06	1.35E-06	1.34E-06
0.794	1.53E-06	1.40E-06	1.63E-06	1.60E-06
1	1.82E-06	1.67E-06	1.92E-06	1.89E-06
1.259	2.13E-06	1.96E-06	2.25E-06	2.21E-06
1.585	2.49E-06	2.27E-06	2.64E-06	2.58E-06
1.995	2.89E-06	2.64E-06	3.06E-06	2.99E-06
2.512	3.34E-06	3.04E-06	3.52E-06	3.44E-06
3.162	3.86E-06	3.52E-06	4.07E-06	3.97E-06
3.981	4.47E-06	4.08E-06	4.70E-06	4.59E-06
5.012	5.18E-06	4.72E-06	5.45E-06	5.31E-06
6.31	6.08E-06	5.54E-06	6.39E-06	6.22E-06
7.943	7.20E-06	6.56E-06	7.56E-06	7.36E-06
10	8.58E-06	7.82E-06	9.01E-06	8.76E-06

Table D-3: Kerma Concrete Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.92E-07	1.09E-07	2.71E-07	3.37E-07
0.013	1.99E-07	1.49E-07	2.37E-07	2.64E-07
0.016	1.79E-07	1.53E-07	1.98E-07	2.13E-07
0.02	1.44E-07	1.33E-07	1.51E-07	1.51E-07
0.025	1.07E-07	1.02E-07	1.11E-07	1.06E-07
0.032	7.49E-08	7.30E-08	7.74E-08	7.36E-08
0.04	5.61E-08	5.54E-08	5.71E-08	5.37E-08
0.05	4.73E-08	4.70E-08	4.83E-08	4.70E-08
0.063	4.69E-08	4.64E-08	4.80E-08	4.62E-08
0.079	5.28E-08	5.21E-08	5.51E-08	5.21E-08
0.1	6.59E-08	6.52E-08	6.88E-08	6.59E-08
0.126	8.60E-08	8.52E-08	9.05E-08	8.56E-08
0.158	1.11E-07	1.11E-07	1.17E-07	1.11E-07
0.2	1.45E-07	1.44E-07	1.53E-07	1.45E-07
0.251	1.84E-07	1.83E-07	1.96E-07	1.84E-07
0.316	2.32E-07	2.30E-07	2.43E-07	2.31E-07
0.398	2.90E-07	2.87E-07	3.05E-07	2.86E-07
0.501	3.57E-07	3.54E-07	3.73E-07	3.50E-07
0.631	4.34E-07	4.29E-07	4.51E-07	4.23E-07
0.794	5.21E-07	5.16E-07	5.41E-07	5.08E-07
1	6.22E-07	6.16E-07	6.45E-07	6.02E-07
1.259	7.31E-07	7.24E-07	7.54E-07	7.05E-07
1.585	8.56E-07	8.49E-07	8.81E-07	8.18E-07
1.995	9.95E-07	9.88E-07	1.02E-06	9.48E-07
2.512	1.15E-06	1.14E-06	1.18E-06	1.09E-06
3.162	1.33E-06	1.32E-06	1.36E-06	1.26E-06
3.981	1.54E-06	1.53E-06	1.58E-06	1.46E-06
5.012	1.79E-06	1.77E-06	1.83E-06	1.69E-06
6.31	2.10E-06	2.08E-06	2.15E-06	1.98E-06
7.943	2.49E-06	2.47E-06	2.54E-06	2.35E-06
10	2.97E-06	2.94E-06	3.03E-06	2.79E-06

Table D-4: Kerma Concrete Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.61E-08	1.99E-08	6.25E-08	8.11E-08
0.013	3.07E-08	2.72E-08	5.64E-08	6.58E-08
0.016	3.12E-08	2.99E-08	4.72E-08	5.14E-08
0.02	2.80E-08	2.77E-08	3.68E-08	3.79E-08
0.025	2.28E-08	2.37E-08	2.75E-08	2.72E-08
0.032	1.71E-08	1.82E-08	1.98E-08	1.93E-08
0.04	1.33E-08	1.44E-08	1.50E-08	1.49E-08
0.05	1.14E-08	1.24E-08	1.29E-08	1.21E-08
0.063	1.14E-08	1.20E-08	1.27E-08	1.23E-08
0.079	1.28E-08	1.35E-08	1.46E-08	1.42E-08
0.1	1.60E-08	1.69E-08	1.82E-08	1.84E-08
0.126	2.08E-08	2.19E-08	2.40E-08	2.33E-08
0.158	2.68E-08	2.85E-08	3.10E-08	2.96E-08
0.2	3.50E-08	3.68E-08	4.06E-08	4.00E-08
0.251	4.45E-08	4.69E-08	5.12E-08	4.93E-08
0.316	5.63E-08	6.04E-08	6.47E-08	6.18E-08
0.398	7.02E-08	7.48E-08	8.11E-08	7.64E-08
0.501	8.66E-08	9.21E-08	1.00E-07	9.37E-08
0.631	1.05E-07	1.13E-07	1.21E-07	1.14E-07
0.794	1.27E-07	1.37E-07	1.46E-07	1.37E-07
1	1.52E-07	1.64E-07	1.75E-07	1.63E-07
1.259	1.79E-07	1.92E-07	2.05E-07	1.91E-07
1.585	2.10E-07	2.26E-07	2.41E-07	2.23E-07
1.995	2.44E-07	2.63E-07	2.81E-07	2.60E-07
2.512	2.83E-07	3.06E-07	3.27E-07	3.01E-07
3.162	3.28E-07	3.57E-07	3.78E-07	3.47E-07
3.981	3.81E-07	4.12E-07	4.37E-07	4.01E-07
5.012	4.42E-07	4.78E-07	5.08E-07	4.67E-07
6.31	5.20E-07	5.65E-07	5.95E-07	5.49E-07
7.943	6.16E-07	6.67E-07	7.05E-07	6.50E-07
10	7.35E-07	7.98E-07	8.47E-07	7.75E-07

Table D-5: Kerma Concrete Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	3.36E-09	5.09E-09	1.57E-08	2.02E-08
0.013	4.22E-09	6.21E-09	1.36E-08	1.67E-08
0.016	4.76E-09	6.34E-09	1.14E-08	1.31E-08
0.02	4.86E-09	6.06E-09	8.93E-09	9.80E-09
0.025	4.43E-09	5.29E-09	6.77E-09	7.51E-09
0.032	3.65E-09	4.19E-09	4.92E-09	5.31E-09
0.04	3.00E-09	3.67E-09	3.80E-09	3.97E-09
0.05	2.66E-09	3.03E-09	3.24E-09	3.26E-09
0.063	2.69E-09	3.07E-09	3.19E-09	3.36E-09
0.079	3.04E-09	3.41E-09	3.59E-09	4.01E-09
0.1	3.78E-09	4.23E-09	4.59E-09	5.01E-09
0.126	4.90E-09	5.70E-09	6.21E-09	6.84E-09
0.158	6.32E-09	7.31E-09	8.11E-09	7.89E-09
0.2	8.24E-09	9.39E-09	1.06E-08	1.03E-08
0.251	1.05E-08	1.20E-08	1.33E-08	1.41E-08
0.316	1.32E-08	1.53E-08	1.69E-08	1.73E-08
0.398	1.66E-08	1.92E-08	2.12E-08	2.16E-08
0.501	2.05E-08	2.39E-08	2.63E-08	2.64E-08
0.631	2.50E-08	2.92E-08	3.14E-08	3.23E-08
0.794	3.02E-08	3.67E-08	3.83E-08	3.94E-08
1	3.62E-08	4.26E-08	4.57E-08	4.71E-08
1.259	4.28E-08	5.07E-08	5.46E-08	5.50E-08
1.585	5.04E-08	5.97E-08	6.38E-08	6.43E-08
1.995	5.89E-08	6.98E-08	7.52E-08	7.55E-08
2.512	6.85E-08	8.18E-08	8.72E-08	8.65E-08
3.162	7.97E-08	9.54E-08	1.02E-07	1.01E-07
3.981	9.26E-08	1.11E-07	1.18E-07	1.15E-07
5.012	1.08E-07	1.29E-07	1.37E-07	1.35E-07
6.31	1.27E-07	1.53E-07	1.61E-07	1.58E-07
7.943	1.51E-07	1.81E-07	1.91E-07	1.88E-07
10	1.80E-07	2.17E-07	2.28E-07	2.24E-07

Kerma for 1 cm contamination depth

Table D-6: Kerma Concrete 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.37E-07	9.41E-08	1.28E-07	1.51E-07
0.013	2.36E-07	2.05E-07	2.27E-07	2.46E-07
0.016	3.27E-07	3.05E-07	3.22E-07	3.34E-07
0.02	4.32E-07	4.17E-07	4.30E-07	4.35E-07
0.025	5.53E-07	5.43E-07	5.51E-07	5.56E-07
0.032	6.75E-07	6.56E-07	6.75E-07	6.79E-07
0.04	7.51E-07	7.09E-07	7.49E-07	7.60E-07
0.05	8.32E-07	7.65E-07	8.28E-07	8.48E-07
0.063	9.66E-07	8.51E-07	8.33E-07	9.73E-07
0.079	1.25E-06	1.14E-06	1.18E-06	1.19E-06
0.1	1.63E-06	1.44E-06	1.61E-06	1.68E-06
0.126	2.10E-06	1.83E-06	2.10E-06	1.90E-06
0.158	2.79E-06	2.45E-06	2.88E-06	2.66E-06
0.2	3.72E-06	3.19E-06	3.67E-06	3.84E-06
0.251	4.57E-06	3.94E-06	4.40E-06	4.39E-06
0.316	5.83E-06	4.97E-06	5.41E-06	5.51E-06
0.398	7.09E-06	6.21E-06	6.62E-06	6.93E-06
0.501	8.65E-06	7.36E-06	8.02E-06	8.72E-06
0.631	1.04E-05	8.81E-06	9.47E-06	1.03E-05
0.794	1.25E-05	1.03E-05	1.14E-05	1.25E-05
1	1.50E-05	1.21E-05	1.36E-05	1.42E-05
1.259	1.75E-05	1.40E-05	1.61E-05	1.64E-05
1.585	2.05E-05	1.63E-05	1.92E-05	1.94E-05
1.995	2.41E-05	1.88E-05	2.27E-05	2.28E-05
2.512	2.78E-05	2.17E-05	2.64E-05	2.74E-05
3.162	3.23E-05	2.49E-05	3.01E-05	3.00E-05
3.981	3.80E-05	2.88E-05	3.51E-05	3.49E-05
5.012	4.42E-05	3.34E-05	4.07E-05	4.07E-05
6.31	5.25E-05	3.91E-05	4.76E-05	4.74E-05
7.943	6.21E-05	4.64E-05	5.65E-05	5.67E-05
10	7.60E-05	5.66E-05	7.21E-05	7.84E-05

Table D-7: Kerma Concrete 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	7.20E-09	3.51E-09	7.29E-09	7.26E-09
0.013	1.56E-08	9.50E-09	1.84E-08	1.45E-08
0.016	2.39E-08	1.92E-08	3.46E-08	2.66E-08
0.02	3.37E-08	2.74E-08	3.88E-08	3.32E-08
0.025	4.38E-08	3.13E-08	3.67E-08	5.38E-08
0.032	6.33E-08	4.39E-08	4.34E-08	9.29E-08
0.04	6.44E-08	5.57E-08	5.23E-08	1.05E-07
0.05	7.48E-08	6.54E-08	6.00E-08	1.03E-07
0.063	9.03E-08	8.27E-08	7.30E-08	1.05E-07
0.079	1.14E-07	1.01E-07	9.74E-08	1.34E-07
0.1	1.54E-07	1.40E-07	1.29E-07	1.53E-07
0.126	1.97E-07	1.81E-07	2.08E-07	2.51E-07
0.158	2.72E-07	2.45E-07	2.40E-07	3.37E-07
0.2	3.60E-07	3.30E-07	3.28E-07	4.67E-07
0.251	4.53E-07	4.19E-07	4.05E-07	6.33E-07
0.316	5.85E-07	5.28E-07	5.14E-07	8.30E-07
0.398	7.22E-07	6.66E-07	6.49E-07	1.11E-06
0.501	8.83E-07	8.21E-07	7.89E-07	1.06E-06
0.631	1.08E-06	9.94E-07	9.83E-07	1.33E-06
0.794	1.30E-06	1.21E-06	1.22E-06	1.70E-06
1	1.53E-06	1.43E-06	1.49E-06	2.04E-06
1.259	1.85E-06	1.69E-06	1.75E-06	2.39E-06
1.585	2.19E-06	1.98E-06	2.16E-06	2.54E-06
1.995	2.56E-06	2.31E-06	2.35E-06	2.90E-06
2.512	3.00E-06	2.66E-06	2.80E-06	3.54E-06
3.162	3.44E-06	3.12E-06	3.41E-06	4.04E-06
3.981	4.00E-06	3.60E-06	3.94E-06	4.58E-06
5.012	4.75E-06	4.18E-06	4.63E-06	5.57E-06
6.31	5.60E-06	4.85E-06	5.42E-06	6.91E-06
7.943	6.57E-06	5.74E-06	6.63E-06	7.92E-06
10	7.88E-06	6.94E-06	7.77E-06	8.99E-06

Table D-8: Kerma Concrete 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.95E-09	1.32E-09	2.78E-09	2.41E-09
0.013	4.22E-09	2.53E-09	2.78E-09	7.60E-09
0.016	6.55E-09	4.30E-09	4.79E-09	8.41E-09
0.02	8.87E-09	7.53E-09	7.74E-09	1.12E-08
0.025	1.29E-08	1.08E-08	1.44E-08	2.83E-08
0.032	1.67E-08	1.07E-08	2.67E-08	2.40E-08
0.04	2.04E-08	1.27E-08	2.10E-08	2.01E-08
0.05	2.23E-08	1.74E-08	2.36E-08	2.20E-08
0.063	2.65E-08	2.21E-08	3.34E-08	2.62E-08
0.079	3.62E-08	2.77E-08	2.86E-08	3.26E-08
0.1	4.94E-08	3.76E-08	4.51E-08	4.34E-08
0.126	6.05E-08	5.45E-08	5.95E-08	5.32E-08
0.158	7.94E-08	7.30E-08	7.94E-08	7.27E-08
0.2	1.06E-07	9.72E-08	1.10E-07	9.89E-08
0.251	1.38E-07	1.24E-07	1.34E-07	1.33E-07
0.316	1.81E-07	1.55E-07	1.85E-07	1.67E-07
0.398	2.24E-07	1.96E-07	2.40E-07	2.17E-07
0.501	2.75E-07	2.42E-07	2.89E-07	2.79E-07
0.631	3.38E-07	2.96E-07	4.12E-07	3.50E-07
0.794	4.12E-07	3.60E-07	4.93E-07	4.21E-07
1	4.82E-07	4.43E-07	5.87E-07	4.92E-07
1.259	5.86E-07	5.26E-07	6.56E-07	6.94E-07
1.585	7.07E-07	6.26E-07	7.43E-07	6.69E-07
1.995	8.10E-07	7.30E-07	8.68E-07	7.92E-07
2.512	9.67E-07	8.56E-07	1.04E-06	9.84E-07
3.162	1.10E-06	1.01E-06	1.22E-06	1.19E-06
3.981	1.31E-06	1.19E-06	1.43E-06	1.42E-06
5.012	1.57E-06	1.38E-06	1.67E-06	1.52E-06
6.31	1.85E-06	1.64E-06	2.01E-06	1.76E-06
7.943	2.18E-06	1.95E-06	2.47E-06	2.11E-06
10	2.58E-06	2.35E-06	2.90E-06	2.51E-06

Table D-9: Kerma Concrete 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.67E-10	2.22E-10	4.66E-10	7.97E-10
0.013	6.48E-10	6.03E-10	1.08E-09	1.23E-09
0.016	1.17E-09	9.67E-10	1.56E-09	2.35E-09
0.02	1.94E-09	1.17E-09	2.67E-09	2.26E-09
0.025	2.87E-09	2.28E-09	4.92E-09	2.44E-09
0.032	3.94E-09	2.83E-09	7.87E-09	6.26E-09
0.04	4.66E-09	3.56E-09	9.60E-09	2.93E-09
0.05	5.75E-09	3.15E-09	1.17E-08	5.16E-09
0.063	6.46E-09	4.61E-09	1.26E-08	5.18E-09
0.079	8.79E-09	5.15E-09	1.81E-08	9.52E-09
0.1	1.16E-08	1.16E-08	1.83E-08	8.62E-09
0.126	1.43E-08	1.08E-08	2.23E-08	2.13E-08
0.158	1.98E-08	1.50E-08	3.93E-08	2.24E-08
0.2	2.58E-08	2.00E-08	5.73E-08	2.53E-08
0.251	3.40E-08	2.69E-08	5.67E-08	4.25E-08
0.316	4.30E-08	4.41E-08	8.08E-08	3.99E-08
0.398	5.49E-08	4.18E-08	1.36E-07	7.57E-08
0.501	6.69E-08	5.17E-08	1.11E-07	9.72E-08
0.631	8.29E-08	6.28E-08	2.31E-07	1.26E-07
0.794	1.01E-07	7.56E-08	2.73E-07	1.56E-07
1	1.19E-07	9.54E-08	3.25E-07	1.77E-07
1.259	1.46E-07	1.13E-07	3.83E-07	2.19E-07
1.585	1.75E-07	1.35E-07	4.29E-07	1.88E-07
1.995	2.01E-07	1.61E-07	5.03E-07	2.21E-07
2.512	2.41E-07	1.91E-07	6.00E-07	2.72E-07
3.162	2.74E-07	2.27E-07	7.06E-07	3.24E-07
3.981	3.27E-07	2.72E-07	8.15E-07	4.41E-07
5.012	3.91E-07	3.16E-07	9.63E-07	4.12E-07
6.31	4.62E-07	3.77E-07	1.15E-06	4.72E-07
7.943	5.43E-07	4.47E-07	1.40E-06	5.55E-07
10	6.43E-07	5.38E-07	1.69E-06	6.57E-07

Table D-10: Kerma Concrete 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	3.44E-11	5.63E-11	1.55E-10	2.38E-10
0.013	9.20E-11	1.44E-10	2.56E-10	3.68E-10
0.016	1.88E-10	2.21E-10	3.67E-10	4.82E-10
0.02	3.57E-10	3.80E-10	5.64E-10	6.20E-10
0.025	5.97E-10	5.98E-10	7.24E-10	8.14E-10
0.032	8.90E-10	8.76E-10	9.90E-10	1.05E-09
0.04	1.12E-09	1.12E-09	1.18E-09	1.20E-09
0.05	1.33E-09	1.36E-09	1.40E-09	1.38E-09
0.063	1.63E-09	1.68E-09	1.72E-09	1.68E-09
0.079	2.07E-09	2.14E-09	2.20E-09	2.19E-09
0.1	2.74E-09	2.88E-09	2.96E-09	2.96E-09
0.126	3.67E-09	3.80E-09	4.00E-09	3.96E-09
0.158	4.81E-09	5.00E-09	5.34E-09	5.27E-09
0.2	6.33E-09	6.61E-09	7.08E-09	6.91E-09
0.251	8.10E-09	8.49E-09	9.05E-09	8.95E-09
0.316	1.03E-08	1.08E-08	1.16E-08	1.14E-08
0.398	1.30E-08	1.37E-08	1.46E-08	1.42E-08
0.501	1.61E-08	1.71E-08	1.82E-08	1.77E-08
0.631	1.98E-08	2.12E-08	2.25E-08	2.17E-08
0.794	2.42E-08	2.59E-08	2.75E-08	2.65E-08
1	2.92E-08	3.16E-08	3.34E-08	3.21E-08
1.259	3.49E-08	3.80E-08	4.11E-08	3.77E-08
1.585	4.16E-08	4.54E-08	4.88E-08	4.49E-08
1.995	4.92E-08	5.40E-08	5.80E-08	5.31E-08
2.512	5.79E-08	6.41E-08	6.71E-08	6.46E-08
3.162	6.80E-08	7.54E-08	8.20E-08	7.39E-08
3.981	7.97E-08	8.87E-08	9.46E-08	8.67E-08
5.012	9.36E-08	1.08E-07	1.11E-07	1.01E-07
6.31	1.11E-07	1.25E-07	1.33E-07	1.20E-07
7.943	1.32E-07	1.49E-07	1.58E-07	1.43E-07
10	1.58E-07	1.79E-07	1.84E-07	1.87E-07

Kerma for 5cm Contamination Depth

Table D-11: Kerma Concrete 5cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.66E-08	1.85E-08	2.45E-08	2.93E-08
0.013	4.60E-08	3.99E-08	4.42E-08	4.78E-08
0.016	6.36E-08	5.94E-08	6.25E-08	6.47E-08
0.02	8.42E-08	8.15E-08	8.33E-08	8.49E-08
0.025	1.09E-07	1.07E-07	1.09E-07	1.09E-07
0.032	1.44E-07	1.43E-07	1.44E-07	1.44E-07
0.04	1.90E-07	1.89E-07	1.90E-07	1.90E-07
0.05	2.66E-07	2.65E-07	2.66E-07	2.66E-07
0.063	3.74E-07	3.70E-07	3.00E-07	3.57E-07
0.079	5.86E-07	6.16E-07	5.29E-07	5.93E-07
0.1	8.70E-07	8.47E-07	8.69E-07	8.77E-07
0.126	1.24E-06	1.30E-06	1.18E-06	1.25E-06
0.158	1.74E-06	1.60E-06	1.56E-06	1.56E-06
0.2	2.32E-06	2.23E-06	2.32E-06	2.35E-06
0.251	3.14E-06	2.72E-06	2.71E-06	2.80E-06
0.316	4.09E-06	3.57E-06	3.42E-06	3.56E-06
0.398	5.01E-06	4.45E-06	4.29E-06	4.32E-06
0.501	6.20E-06	5.58E-06	5.50E-06	5.64E-06
0.631	7.41E-06	6.77E-06	6.68E-06	6.70E-06
0.794	8.99E-06	8.12E-06	8.35E-06	7.81E-06
1	1.09E-05	9.64E-06	1.02E-05	9.31E-06
1.259	1.30E-05	1.14E-05	1.18E-05	1.13E-05
1.585	1.58E-05	1.34E-05	1.45E-05	1.44E-05
1.995	1.94E-05	1.58E-05	1.74E-05	1.70E-05
2.512	2.24E-05	1.84E-05	2.02E-05	1.96E-05
3.162	2.60E-05	2.14E-05	2.38E-05	2.24E-05
3.981	3.08E-05	2.51E-05	2.81E-05	2.66E-05
5.012	3.56E-05	2.94E-05	3.41E-05	3.16E-05
6.31	4.21E-05	3.48E-05	4.11E-05	3.77E-05
7.943	5.02E-05	4.14E-05	5.00E-05	4.55E-05
10	6.02E-05	5.00E-05	5.87E-05	5.55E-05

Table D-12: Kerma Concrete 5cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.45E-09	8.98E-10	1.75E-09	1.80E-09
0.013	3.48E-09	2.27E-09	2.78E-09	2.04E-09
0.016	5.19E-09	3.50E-09	4.11E-09	2.24E-09
0.02	7.48E-09	5.81E-09	7.10E-09	4.76E-09
0.025	8.54E-09	7.30E-09	1.12E-08	1.05E-08
0.032	1.12E-08	9.62E-09	1.44E-08	9.85E-09
0.04	1.74E-08	1.25E-08	1.52E-08	1.52E-08
0.05	2.26E-08	2.05E-08	2.12E-08	1.71E-08
0.063	3.60E-08	2.92E-08	3.12E-08	4.21E-08
0.079	5.30E-08	3.55E-08	3.75E-08	5.99E-08
0.1	8.22E-08	6.34E-08	5.70E-08	8.37E-08
0.126	1.16E-07	9.42E-08	1.18E-07	1.18E-07
0.158	1.59E-07	1.34E-07	1.15E-07	1.53E-07
0.2	2.18E-07	1.85E-07	1.91E-07	2.26E-07
0.251	2.80E-07	2.31E-07	2.39E-07	2.85E-07
0.316	3.55E-07	2.96E-07	2.97E-07	4.00E-07
0.398	4.35E-07	3.82E-07	3.86E-07	5.44E-07
0.501	5.45E-07	4.88E-07	5.46E-07	7.57E-07
0.631	6.79E-07	6.38E-07	7.09E-07	1.09E-06
0.794	8.32E-07	8.13E-07	8.73E-07	1.44E-06
1	1.01E-06	9.95E-07	1.09E-06	1.71E-06
1.259	1.25E-06	1.14E-06	1.15E-06	2.16E-06
1.585	1.53E-06	1.38E-06	1.52E-06	2.64E-06
1.995	1.77E-06	1.66E-06	1.65E-06	3.28E-06
2.512	2.20E-06	1.96E-06	1.97E-06	3.82E-06
3.162	2.51E-06	2.33E-06	2.47E-06	4.99E-06
3.981	2.96E-06	2.76E-06	2.78E-06	5.89E-06
5.012	3.57E-06	3.28E-06	3.34E-06	7.06E-06
6.31	4.21E-06	3.79E-06	4.06E-06	8.34E-06
7.943	5.06E-06	4.55E-06	4.91E-06	1.04E-05
10	6.16E-06	5.48E-06	5.78E-06	1.21E-05

Table D-13: Kerma Concrete 5cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.77E-10	2.79E-10	3.86E-10	4.21E-10
0.013	7.90E-10	6.98E-10	8.29E-10	7.24E-10
0.016	1.29E-09	1.10E-09	1.01E-09	1.08E-09
0.02	1.90E-09	1.34E-09	1.26E-09	2.38E-09
0.025	2.57E-09	2.16E-09	1.64E-09	3.20E-09
0.032	3.77E-09	2.95E-09	2.84E-09	4.31E-09
0.04	4.81E-09	4.34E-09	3.98E-09	5.79E-09
0.05	6.19E-09	6.58E-09	6.14E-09	7.40E-09
0.063	1.03E-08	1.01E-08	1.39E-08	1.06E-08
0.079	1.55E-08	1.36E-08	1.90E-08	1.24E-08
0.1	2.30E-08	2.44E-08	2.39E-08	1.92E-08
0.126	3.29E-08	2.99E-08	3.92E-08	3.59E-08
0.158	4.43E-08	4.47E-08	5.54E-08	4.57E-08
0.2	6.10E-08	4.65E-08	6.33E-08	7.05E-08
0.251	7.92E-08	8.49E-08	8.73E-08	9.76E-08
0.316	9.71E-08	8.46E-08	1.46E-07	1.17E-07
0.398	1.32E-07	9.20E-08	1.40E-07	1.74E-07
0.501	1.65E-07	1.17E-07	1.64E-07	2.24E-07
0.631	2.06E-07	1.58E-07	2.59E-07	2.87E-07
0.794	2.51E-07	1.98E-07	3.36E-07	3.67E-07
1	3.10E-07	2.52E-07	3.70E-07	3.93E-07
1.259	3.89E-07	3.02E-07	4.48E-07	5.43E-07
1.585	4.63E-07	3.77E-07	4.32E-07	5.20E-07
1.995	5.40E-07	4.43E-07	5.58E-07	6.29E-07
2.512	6.70E-07	5.43E-07	6.72E-07	7.34E-07
3.162	7.68E-07	6.53E-07	8.06E-07	9.85E-07
3.981	9.18E-07	7.81E-07	9.49E-07	1.21E-06
5.012	1.11E-06	9.51E-07	1.16E-06	1.38E-06
6.31	1.30E-06	1.13E-06	1.47E-06	1.59E-06
7.943	1.57E-06	1.37E-06	1.76E-06	1.84E-06
10	1.88E-06	1.68E-06	2.04E-06	2.19E-06

Table D-14: Kerma Concrete 5cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	5.32E-11	4.84E-11	9.77E-11	1.68E-10
0.013	1.32E-10	1.17E-10	1.98E-10	2.02E-10
0.016	2.33E-10	2.37E-10	2.31E-10	2.98E-10
0.02	3.80E-10	3.55E-10	3.98E-10	4.55E-10
0.025	6.00E-10	4.95E-10	9.73E-10	8.17E-10
0.032	8.63E-10	6.26E-10	8.27E-10	7.87E-10
0.04	1.23E-09	9.28E-10	1.38E-09	7.18E-10
0.05	1.54E-09	1.30E-09	1.94E-09	8.54E-10
0.063	2.50E-09	2.22E-09	2.79E-09	1.97E-09
0.079	3.78E-09	2.79E-09	6.95E-09	2.99E-09
0.1	5.54E-09	5.51E-09	6.09E-09	3.85E-09
0.126	8.15E-09	7.37E-09	1.25E-08	8.76E-09
0.158	1.10E-08	1.09E-08	1.70E-08	8.97E-09
0.2	1.50E-08	1.27E-08	2.42E-08	1.67E-08
0.251	1.96E-08	1.64E-08	4.00E-08	3.17E-08
0.316	2.55E-08	2.50E-08	4.18E-08	2.16E-08
0.398	3.19E-08	3.09E-08	5.61E-08	3.20E-08
0.501	4.10E-08	2.43E-08	1.26E-07	8.06E-08
0.631	5.11E-08	3.29E-08	1.71E-07	1.03E-07
0.794	6.24E-08	4.14E-08	2.22E-07	1.31E-07
1	7.72E-08	5.30E-08	2.59E-07	1.46E-07
1.259	9.80E-08	6.42E-08	3.08E-07	1.77E-07
1.585	1.15E-07	7.84E-08	3.36E-07	1.50E-07
1.995	1.35E-07	9.41E-08	4.08E-07	1.78E-07
2.512	1.67E-07	1.16E-07	4.84E-07	2.08E-07
3.162	1.92E-07	1.40E-07	5.74E-07	2.64E-07
3.981	2.30E-07	1.70E-07	6.78E-07	3.60E-07
5.012	2.77E-07	2.09E-07	8.15E-07	3.84E-07
6.31	3.26E-07	2.51E-07	1.01E-06	4.22E-07
7.943	3.93E-07	2.98E-07	1.33E-06	4.92E-07
10	4.70E-07	3.63E-07	1.74E-06	5.79E-07

Table D-15: Kerma Concrete 5cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	6.85E-12	9.33E-12	3.42E-11	5.84E-11
0.013	1.84E-11	2.48E-11	5.24E-11	5.72E-11
0.016	3.79E-11	4.13E-11	5.87E-11	5.91E-11
0.02	7.09E-11	6.44E-11	1.13E-10	1.17E-10
0.025	1.20E-10	1.03E-10	1.12E-10	1.94E-10
0.032	1.92E-10	1.84E-10	1.55E-10	2.53E-10
0.04	2.81E-10	1.80E-10	3.52E-10	1.25E-10
0.05	3.95E-10	2.57E-10	2.28E-10	2.45E-10
0.063	6.12E-10	4.57E-10	8.10E-10	4.47E-10
0.079	9.29E-10	7.34E-10	8.70E-10	8.11E-10
0.1	1.37E-09	1.19E-09	1.07E-09	1.22E-09
0.126	1.96E-09	1.88E-09	1.98E-09	1.83E-09
0.158	2.73E-09	2.45E-09	2.58E-09	2.15E-09
0.2	3.62E-09	2.89E-09	3.15E-09	4.21E-09
0.251	4.80E-09	3.97E-09	4.03E-09	4.18E-09
0.316	6.17E-09	4.81E-09	5.65E-09	7.34E-09
0.398	7.91E-09	4.04E-09	1.75E-08	5.91E-09
0.501	9.54E-09	5.93E-09	2.13E-08	6.59E-09
0.631	1.23E-08	7.57E-09	2.45E-08	1.00E-08
0.794	1.52E-08	8.37E-09	2.65E-08	2.58E-08
1	1.89E-08	1.08E-08	3.40E-08	3.25E-08
1.259	2.39E-08	1.31E-08	4.80E-08	4.28E-08
1.585	2.85E-08	1.72E-08	5.54E-08	3.04E-08
1.995	3.38E-08	1.90E-08	6.05E-08	4.27E-08
2.512	4.17E-08	2.37E-08	7.34E-08	4.78E-08
3.162	4.76E-08	2.87E-08	8.81E-08	6.33E-08
3.981	5.61E-08	3.75E-08	7.58E-08	7.27E-08
5.012	6.88E-08	4.36E-08	1.27E-07	9.62E-08
6.31	8.09E-08	5.20E-08	1.56E-07	1.12E-07
7.943	9.74E-08	6.31E-08	1.97E-07	1.33E-07
10	1.16E-07	7.63E-08	2.53E-07	1.54E-07

Kerma for 15cm Contamination Depth

Table D-16: Kerma Concrete 15cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	6.20E-09	5.24E-09	6.99E-09	9.68E-09
0.013	1.15E-08	1.08E-08	1.67E-08	1.68E-08
0.016	1.73E-08	1.67E-08	2.42E-08	2.86E-08
0.02	2.52E-08	2.38E-08	2.35E-08	3.74E-08
0.025	3.14E-08	3.11E-08	3.21E-08	4.44E-08
0.032	4.19E-08	4.26E-08	4.52E-08	6.56E-08
0.04	6.91E-08	5.09E-08	5.41E-08	5.81E-08
0.05	7.87E-08	7.25E-08	6.53E-08	7.76E-08
0.063	1.35E-07	1.10E-07	8.31E-08	1.04E-07
0.079	2.00E-07	1.73E-07	1.24E-07	1.49E-07
0.1	3.10E-07	3.10E-07	3.04E-07	2.81E-07
0.126	4.71E-07	4.65E-07	4.16E-07	4.20E-07
0.158	6.64E-07	6.37E-07	6.03E-07	6.03E-07
0.2	1.03E-06	9.45E-07	7.95E-07	8.15E-07
0.251	1.34E-06	1.21E-06	1.06E-06	9.90E-07
0.316	1.80E-06	1.68E-06	1.52E-06	1.36E-06
0.398	2.35E-06	2.17E-06	2.11E-06	1.61E-06
0.501	3.09E-06	2.87E-06	2.97E-06	2.29E-06
0.631	3.81E-06	3.58E-06	3.87E-06	2.77E-06
0.794	4.75E-06	4.45E-06	4.12E-06	3.67E-06
1	5.91E-06	5.54E-06	4.87E-06	4.54E-06
1.259	6.96E-06	6.93E-06	6.07E-06	5.62E-06
1.585	9.19E-06	8.73E-06	7.67E-06	7.37E-06
1.995	1.16E-05	1.08E-05	9.79E-06	9.05E-06
2.512	1.41E-05	1.24E-05	1.19E-05	1.04E-05
3.162	1.66E-05	1.49E-05	1.49E-05	1.27E-05
3.981	2.02E-05	1.74E-05	1.75E-05	1.50E-05
5.012	2.35E-05	2.11E-05	2.18E-05	1.85E-05
6.31	2.81E-05	2.60E-05	2.72E-05	2.25E-05
7.943	3.39E-05	3.09E-05	3.35E-05	2.74E-05
10	4.05E-05	3.84E-05	4.19E-05	3.40E-05

Table D-17: Kerma Concrete 15cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	4.78E-10	3.06E-10	5.35E-10	7.95E-10
0.013	1.03E-09	7.69E-10	1.23E-09	9.83E-10
0.016	1.55E-09	1.37E-09	1.33E-09	1.21E-09
0.02	2.74E-09	2.00E-09	2.04E-09	1.08E-09
0.025	3.44E-09	2.34E-09	2.46E-09	1.70E-09
0.032	4.15E-09	3.17E-09	5.15E-09	3.58E-09
0.04	6.14E-09	4.33E-09	6.84E-09	5.43E-09
0.05	8.41E-09	6.61E-09	7.90E-09	5.98E-09
0.063	1.27E-08	1.15E-08	1.39E-08	9.96E-09
0.079	1.77E-08	1.36E-08	1.55E-08	1.28E-08
0.1	3.24E-08	2.39E-08	2.50E-08	4.17E-08
0.126	4.43E-08	3.31E-08	3.37E-08	3.58E-08
0.158	6.46E-08	5.13E-08	5.14E-08	1.44E-07
0.2	9.22E-08	7.54E-08	7.19E-08	9.23E-08
0.251	1.24E-07	1.13E-07	1.02E-07	1.47E-07
0.316	1.62E-07	1.48E-07	1.30E-07	1.36E-07
0.398	2.08E-07	1.96E-07	1.69E-07	2.24E-07
0.501	2.83E-07	2.23E-07	2.33E-07	3.18E-07
0.631	3.84E-07	2.91E-07	3.22E-07	4.49E-07
0.794	4.76E-07	3.68E-07	4.04E-07	6.07E-07
1	5.81E-07	4.40E-07	4.93E-07	7.92E-07
1.259	7.34E-07	5.43E-07	5.64E-07	1.04E-06
1.585	8.89E-07	7.31E-07	7.74E-07	1.30E-06
1.995	1.09E-06	9.09E-07	1.04E-06	1.67E-06
2.512	1.30E-06	1.11E-06	1.53E-06	2.04E-06
3.162	1.60E-06	1.34E-06	1.77E-06	2.64E-06
3.981	1.94E-06	1.65E-06	1.85E-06	3.30E-06
5.012	2.30E-06	2.00E-06	2.32E-06	4.09E-06
6.31	2.75E-06	2.44E-06	2.85E-06	5.05E-06
7.943	3.40E-06	2.97E-06	3.76E-06	6.15E-06
10	3.99E-06	3.66E-06	4.35E-06	7.32E-06

Table D-18: Kerma Concrete 15cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.23E-10	9.04E-11	1.39E-10	1.84E-10
0.013	2.59E-10	2.42E-10	2.46E-10	1.68E-10
0.016	4.06E-10	3.91E-10	3.75E-10	2.10E-10
0.02	6.16E-10	6.14E-10	5.67E-10	3.62E-10
0.025	9.26E-10	8.19E-10	6.54E-10	8.31E-10
0.032	1.14E-09	8.69E-10	6.59E-10	1.12E-09
0.04	1.59E-09	1.30E-09	8.83E-10	1.45E-09
0.05	2.24E-09	1.83E-09	1.70E-09	1.68E-09
0.063	3.51E-09	3.02E-09	2.79E-09	2.58E-09
0.079	5.56E-09	4.86E-09	5.52E-09	5.93E-09
0.1	8.60E-09	8.16E-09	8.85E-09	8.33E-09
0.126	1.25E-08	1.23E-08	1.80E-08	1.18E-08
0.158	1.80E-08	1.62E-08	2.89E-08	1.72E-08
0.2	2.76E-08	2.60E-08	3.63E-08	2.67E-08
0.251	3.75E-08	3.74E-08	4.74E-08	3.35E-08
0.316	4.84E-08	4.86E-08	5.80E-08	4.67E-08
0.398	6.39E-08	6.37E-08	8.44E-08	5.71E-08
0.501	7.88E-08	7.08E-08	1.15E-07	9.11E-08
0.631	1.07E-07	1.01E-07	1.50E-07	1.14E-07
0.794	1.32E-07	1.24E-07	1.94E-07	1.34E-07
1	1.69E-07	1.38E-07	2.81E-07	1.83E-07
1.259	2.04E-07	1.60E-07	3.04E-07	2.38E-07
1.585	2.58E-07	1.75E-07	2.45E-07	3.01E-07
1.995	3.26E-07	2.12E-07	3.07E-07	3.83E-07
2.512	3.82E-07	2.91E-07	5.21E-07	4.51E-07
3.162	4.63E-07	3.12E-07	4.63E-07	7.18E-07
3.981	5.71E-07	4.05E-07	5.73E-07	8.36E-07
5.012	6.97E-07	4.98E-07	7.20E-07	9.97E-07
6.31	8.26E-07	6.23E-07	9.06E-07	1.20E-06
7.943	1.01E-06	7.76E-07	1.10E-06	1.45E-06
10	1.21E-06	9.45E-07	1.33E-06	1.75E-06

Table D-19: Kerma Concrete 15cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.77E-11	1.43E-11	3.20E-11	5.79E-11
0.013	4.28E-11	4.35E-11	5.80E-11	7.28E-11
0.016	7.77E-11	7.86E-11	1.06E-10	9.63E-11
0.02	1.29E-10	1.32E-10	1.12E-10	1.34E-10
0.025	1.91E-10	1.87E-10	1.44E-10	1.35E-10
0.032	2.76E-10	2.43E-10	3.70E-10	2.48E-10
0.04	3.80E-10	2.59E-10	3.79E-10	2.63E-10
0.05	5.53E-10	4.40E-10	5.72E-10	3.16E-10
0.063	9.16E-10	7.08E-10	7.68E-10	5.88E-10
0.079	1.42E-09	9.74E-10	1.57E-09	7.83E-10
0.1	2.29E-09	1.86E-09	2.71E-09	1.00E-09
0.126	3.10E-09	2.73E-09	7.04E-09	1.62E-09
0.158	4.58E-09	3.37E-09	1.46E-08	4.33E-09
0.2	6.69E-09	6.21E-09	1.19E-08	3.57E-09
0.251	9.08E-09	7.44E-09	1.66E-08	1.36E-08
0.316	1.16E-08	9.85E-09	2.58E-08	2.11E-08
0.398	1.52E-08	1.45E-08	2.29E-08	1.44E-08
0.501	2.00E-08	1.93E-08	3.03E-08	2.10E-08
0.631	2.57E-08	2.50E-08	3.95E-08	1.73E-08
0.794	3.36E-08	2.49E-08	7.14E-08	3.16E-08
1	4.09E-08	4.13E-08	5.68E-08	2.99E-08
1.259	5.09E-08	5.20E-08	7.15E-08	3.07E-08
1.585	6.28E-08	5.18E-08	1.12E-07	5.29E-08
1.995	7.79E-08	6.35E-08	1.60E-07	6.34E-08
2.512	9.60E-08	5.75E-08	2.62E-07	1.21E-07
3.162	1.15E-07	6.89E-08	3.20E-07	1.46E-07
3.981	1.39E-07	8.83E-08	3.77E-07	1.76E-07
5.012	1.69E-07	1.05E-07	4.54E-07	2.29E-07
6.31	2.09E-07	1.89E-07	4.22E-07	1.65E-07
7.943	2.55E-07	1.69E-07	9.40E-07	4.01E-07
10	3.04E-07	2.09E-07	8.18E-07	3.84E-07

Table D-20: Kerma Concrete 15cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.28E-12	1.28E-12	9.44E-12	6.10E-12
0.013	6.08E-12	7.59E-12	1.75E-11	3.24E-11
0.016	1.24E-11	1.40E-11	2.58E-11	2.64E-11
0.02	2.40E-11	2.32E-11	2.35E-11	2.41E-11
0.025	3.99E-11	3.33E-11	4.69E-11	5.05E-11
0.032	6.25E-11	5.95E-11	6.16E-11	7.93E-11
0.04	9.44E-11	8.60E-11	6.57E-11	6.56E-11
0.05	1.37E-10	1.23E-10	1.13E-10	1.29E-10
0.063	2.17E-10	1.73E-10	2.55E-10	9.31E-11
0.079	3.47E-10	2.16E-10	2.30E-10	1.55E-10
0.1	5.28E-10	3.91E-10	1.19E-09	5.07E-10
0.126	7.92E-10	5.30E-10	5.07E-10	3.55E-10
0.158	1.07E-09	7.28E-10	8.05E-10	7.03E-10
0.2	1.59E-09	1.27E-09	1.72E-09	6.49E-10
0.251	2.13E-09	1.96E-09	1.86E-09	2.97E-09
0.316	2.80E-09	2.21E-09	1.68E-09	1.80E-09
0.398	3.67E-09	2.90E-09	4.63E-09	2.68E-09
0.501	4.74E-09	4.09E-09	3.82E-09	3.09E-09
0.631	6.20E-09	4.23E-09	5.29E-09	3.17E-09
0.794	8.03E-09	6.78E-09	8.70E-09	7.26E-09
1	1.01E-08	9.38E-09	1.24E-08	9.17E-09
1.259	1.26E-08	9.57E-09	1.18E-08	1.74E-08
1.585	1.53E-08	1.21E-08	2.90E-08	1.70E-08
1.995	1.94E-08	1.70E-08	2.22E-08	1.44E-08
2.512	2.41E-08	1.87E-08	3.40E-08	2.94E-08
3.162	2.93E-08	2.38E-08	4.57E-08	3.20E-08
3.981	3.54E-08	2.59E-08	5.05E-08	1.74E-08
5.012	4.31E-08	3.55E-08	5.14E-08	6.12E-08
6.31	5.00E-08	3.00E-08	1.10E-07	4.60E-08
7.943	6.41E-08	3.59E-08	1.27E-07	9.41E-08
10	7.65E-08	4.35E-08	1.57E-07	1.11E-07

Kerma for Infinite Contamination Depth

Table D-21: Kerma Concrete Infinite Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	8.32E-10	5.53E-10	2.80E-09	1.01E-09
0.013	1.52E-09	1.22E-09	1.39E-09	1.04E-09
0.016	1.68E-09	1.75E-09	1.60E-09	1.87E-09
0.02	2.36E-09	2.51E-09	2.36E-09	2.70E-09
0.025	5.01E-09	2.94E-09	2.57E-09	2.03E-09
0.032	4.99E-09	4.42E-09	4.12E-09	3.12E-09
0.04	4.92E-09	5.40E-09	5.34E-09	5.42E-09
0.05	6.35E-09	8.13E-09	8.11E-09	8.07E-09
0.063	1.31E-08	1.33E-08	1.29E-08	1.89E-08
0.079	2.22E-08	2.21E-08	2.79E-08	2.10E-08
0.1	2.88E-08	3.09E-08	3.19E-08	3.11E-08
0.126	4.10E-08	4.76E-08	5.37E-08	5.38E-08
0.158	5.90E-08	6.54E-08	6.98E-08	8.89E-08
0.2	9.68E-08	9.49E-08	9.80E-08	1.18E-07
0.251	1.36E-07	1.30E-07	1.39E-07	1.59E-07
0.316	1.38E-07	1.46E-07	1.42E-07	2.48E-07
0.398	1.68E-07	2.02E-07	2.13E-07	3.46E-07
0.501	2.43E-07	2.75E-07	2.75E-07	4.63E-07
0.631	3.93E-07	3.55E-07	3.51E-07	5.75E-07
0.794	4.80E-07	4.64E-07	4.66E-07	7.99E-07
1	5.24E-07	6.12E-07	6.00E-07	9.73E-07
1.259	6.97E-07	7.74E-07	7.69E-07	1.30E-06
1.585	9.16E-07	1.01E-06	9.92E-07	1.27E-06
1.995	1.35E-06	1.40E-06	1.44E-06	1.87E-06
2.512	1.66E-06	1.58E-06	1.77E-06	2.31E-06
3.162	2.22E-06	2.16E-06	2.08E-06	3.33E-06
3.981	2.87E-06	2.56E-06	2.64E-06	4.61E-06
5.012	3.59E-06	3.29E-06	3.45E-06	6.58E-06
6.31	4.32E-06	4.14E-06	4.58E-06	6.62E-06
7.943	5.00E-06	5.27E-06	4.70E-06	1.18E-05
10	5.57E-06	6.72E-06	5.43E-06	1.57E-05

Table D-22: Kerma Concrete Infinite Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	5.96E-11	3.63E-11	6.78E-11	1.12E-10
0.013	1.30E-10	1.05E-10	1.12E-10	1.81E-10
0.016	1.91E-10	1.83E-10	1.65E-10	1.92E-10
0.02	2.99E-10	2.59E-10	2.23E-10	1.53E-10
0.025	4.01E-10	4.19E-10	3.31E-10	4.04E-10
0.032	6.03E-10	4.62E-10	4.34E-10	6.33E-10
0.04	8.70E-10	6.22E-10	7.10E-10	4.64E-10
0.05	1.24E-09	7.63E-10	1.17E-09	1.01E-09
0.063	1.92E-09	1.14E-09	1.88E-09	2.44E-09
0.079	2.54E-09	2.01E-09	2.86E-09	2.74E-09
0.1	4.01E-09	3.33E-09	4.27E-09	4.34E-09
0.126	5.47E-09	5.18E-09	5.57E-09	7.03E-09
0.158	9.10E-09	7.43E-09	9.02E-09	1.36E-08
0.2	1.26E-08	1.16E-08	1.33E-08	2.11E-08
0.251	1.52E-08	1.51E-08	1.68E-08	1.90E-08
0.316	2.18E-08	1.90E-08	3.75E-08	3.59E-08
0.398	2.58E-08	2.59E-08	3.93E-08	4.51E-08
0.501	3.66E-08	3.50E-08	5.07E-08	6.43E-08
0.631	5.06E-08	4.71E-08	6.83E-08	7.13E-08
0.794	6.48E-08	5.63E-08	6.95E-08	8.29E-08
1	8.73E-08	7.76E-08	1.22E-07	1.44E-07
1.259	1.10E-07	1.02E-07	1.49E-07	1.37E-07
1.585	1.29E-07	1.29E-07	1.73E-07	1.64E-07
1.995	1.64E-07	1.67E-07	2.49E-07	2.07E-07
2.512	2.21E-07	2.21E-07	2.67E-07	2.01E-07
3.162	2.64E-07	2.31E-07	3.06E-07	2.32E-07
3.981	3.39E-07	2.86E-07	2.57E-07	3.32E-07
5.012	4.41E-07	3.72E-07	4.44E-07	3.20E-07
6.31	5.35E-07	4.36E-07	4.41E-07	4.73E-07
7.943	6.45E-07	5.19E-07	5.80E-07	6.43E-07
10	7.74E-07	6.51E-07	6.92E-07	8.38E-07

Table D-23: Kerma Concrete Infinite Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.70E-11	1.14E-11	2.90E-11	4.01E-11
0.013	3.78E-11	3.01E-11	3.86E-11	4.49E-11
0.016	5.54E-11	5.07E-11	4.59E-11	4.07E-11
0.02	8.25E-11	8.40E-11	7.08E-11	4.83E-11
0.025	1.21E-10	1.13E-10	1.09E-10	5.48E-11
0.032	1.59E-10	1.63E-10	1.40E-10	7.76E-11
0.04	2.24E-10	2.02E-10	1.98E-10	1.33E-10
0.05	3.28E-10	2.54E-10	2.33E-10	1.76E-10
0.063	5.20E-10	4.29E-10	3.88E-10	5.09E-10
0.079	8.10E-10	6.44E-10	4.27E-10	1.01E-09
0.1	1.24E-09	1.22E-09	7.94E-10	1.17E-09
0.126	1.86E-09	1.56E-09	1.15E-09	2.59E-09
0.158	2.69E-09	2.07E-09	1.36E-09	4.00E-09
0.2	3.83E-09	3.64E-09	1.99E-09	2.97E-09
0.251	5.15E-09	4.00E-09	3.11E-09	5.39E-09
0.316	6.56E-09	5.07E-09	4.18E-09	6.18E-09
0.398	9.35E-09	7.47E-09	5.91E-09	1.02E-08
0.501	1.17E-08	1.00E-08	7.02E-09	1.24E-08
0.631	1.55E-08	1.29E-08	9.51E-09	1.50E-08
0.794	1.96E-08	1.68E-08	1.24E-08	2.33E-08
1	2.51E-08	2.22E-08	1.85E-08	2.97E-08
1.259	3.31E-08	2.92E-08	3.09E-08	4.05E-08
1.585	4.13E-08	3.80E-08	3.81E-08	5.75E-08
1.995	5.52E-08	4.70E-08	6.16E-08	6.85E-08
2.512	6.51E-08	5.88E-08	5.39E-08	5.34E-08
3.162	8.50E-08	6.40E-08	6.23E-08	1.03E-07
3.981	1.07E-07	8.45E-08	8.15E-08	1.35E-07
5.012	1.41E-07	1.08E-07	1.06E-07	1.65E-07
6.31	1.75E-07	1.52E-07	1.34E-07	1.76E-07
7.943	2.15E-07	1.67E-07	2.08E-07	2.62E-07
10	2.50E-07	2.08E-07	2.60E-07	4.57E-07

Table D-24: Kerma Concrete Infinite Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.64E-12	2.95E-12	5.80E-13	1.79E-12
0.013	6.09E-12	5.51E-12	1.03E-11	1.64E-11
0.016	1.11E-11	1.07E-11	1.23E-11	1.43E-11
0.02	1.80E-11	1.65E-11	1.49E-11	1.92E-11
0.025	2.69E-11	2.83E-11	2.52E-11	2.94E-11
0.032	4.00E-11	4.36E-11	4.32E-11	2.76E-11
0.04	5.63E-11	5.42E-11	5.58E-11	3.96E-11
0.05	7.96E-11	7.38E-11	5.67E-11	4.82E-11
0.063	1.30E-10	1.16E-10	9.80E-11	1.01E-10
0.079	2.04E-10	1.67E-10	9.15E-11	1.76E-10
0.1	3.18E-10	3.09E-10	1.97E-10	3.42E-10
0.126	4.91E-10	4.11E-10	3.18E-10	4.72E-10
0.158	7.09E-10	6.61E-10	5.34E-10	9.46E-10
0.2	9.77E-10	6.78E-10	6.49E-10	5.37E-10
0.251	1.37E-09	9.66E-10	9.52E-10	8.35E-10
0.316	1.76E-09	1.35E-09	1.10E-09	1.47E-09
0.398	2.38E-09	1.61E-09	2.14E-09	2.58E-09
0.501	3.19E-09	2.55E-09	1.85E-09	3.12E-09
0.631	3.99E-09	3.03E-09	3.01E-09	7.81E-09
0.794	5.23E-09	3.84E-09	4.62E-09	8.04E-09
1	6.69E-09	4.65E-09	7.67E-09	8.45E-09
1.259	8.55E-09	6.23E-09	1.03E-08	1.05E-08
1.585	1.10E-08	7.63E-09	9.66E-09	1.45E-08
1.995	1.47E-08	9.95E-09	1.63E-08	1.75E-08
2.512	1.83E-08	1.35E-08	2.19E-08	1.35E-08
3.162	2.22E-08	1.64E-08	3.72E-08	1.92E-08
3.981	2.81E-08	1.98E-08	3.07E-08	2.52E-08
5.012	3.55E-08	2.56E-08	4.39E-08	3.06E-08
6.31	4.23E-08	3.31E-08	5.79E-08	3.80E-08
7.943	5.19E-08	4.36E-08	7.30E-08	5.08E-08
10	6.31E-08	5.32E-08	9.11E-08	6.08E-08

Table D-25: Kerma Concrete Infinite Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.99E-13	1.64E-13	4.26E-15	3.07E-12
0.013	8.47E-13	5.23E-13	2.55E-13	3.34E-12
0.016	1.80E-12	1.25E-12	8.58E-12	6.61E-12
0.02	3.43E-12	3.33E-12	4.92E-12	6.16E-12
0.025	5.76E-12	5.34E-12	5.00E-12	7.61E-12
0.032	9.30E-12	8.61E-12	8.74E-12	5.45E-12
0.04	1.35E-11	1.25E-11	1.38E-11	7.66E-12
0.05	1.97E-11	1.55E-11	1.87E-11	7.81E-12
0.063	3.12E-11	2.55E-11	2.60E-11	1.20E-11
0.079	4.92E-11	4.27E-11	3.67E-11	1.97E-11
0.1	8.13E-11	5.87E-11	3.96E-11	6.36E-11
0.126	1.16E-10	6.14E-11	3.31E-11	2.56E-11
0.158	1.75E-10	1.08E-10	6.33E-11	7.59E-11
0.2	2.37E-10	1.69E-10	9.42E-11	9.25E-11
0.251	3.27E-10	2.08E-10	1.34E-10	7.65E-11
0.316	4.41E-10	3.31E-10	2.59E-10	1.89E-10
0.398	5.96E-10	4.79E-10	3.59E-10	6.42E-10
0.501	7.73E-10	6.30E-10	6.30E-10	6.08E-10
0.631	1.01E-09	5.80E-10	5.09E-10	5.76E-10
0.794	1.30E-09	7.64E-10	6.19E-10	8.06E-10
1	1.70E-09	9.56E-10	9.79E-10	9.51E-10
1.259	2.14E-09	1.23E-09	1.61E-09	1.56E-09
1.585	2.74E-09	1.60E-09	2.21E-09	3.85E-09
1.995	3.51E-09	2.16E-09	4.44E-09	5.01E-09
2.512	4.38E-09	2.79E-09	5.16E-09	2.64E-09
3.162	5.45E-09	3.72E-09	6.81E-09	3.19E-09
3.981	6.98E-09	3.75E-09	7.95E-09	5.95E-09
5.012	9.00E-09	4.63E-09	3.23E-08	6.76E-09
6.31	1.09E-08	6.18E-09	9.21E-09	7.74E-09
7.943	1.35E-08	8.01E-09	3.27E-08	1.05E-08
10	1.60E-08	1.11E-08	1.44E-08	1.02E-08

Surface Contamination Room Ratios

Table D-26: Room Ratio Concrete Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.798	1.790	3.153	3.882
0.013	2.498	1.512	2.190	2.518
0.016	1.888	1.234	1.688	1.893
0.02	1.523	1.039	1.374	1.530
0.025	1.249	0.876	1.139	1.247
0.032	1.117	0.797	1.022	1.116
0.04	1.016	0.745	0.934	1.019
0.05	1.077	0.807	0.996	1.093
0.063	1.072	0.817	0.997	1.084
0.079	1.126	0.870	1.049	1.142
0.1	1.197	0.931	1.117	1.212
0.126	1.238	0.958	1.158	1.254
0.158	1.229	0.947	1.151	1.247
0.2	1.196	0.913	1.116	1.215
0.251	1.064	0.806	0.992	1.081
0.316	1.039	0.780	0.966	1.050
0.398	0.968	0.720	0.899	0.981
0.501	0.929	0.683	0.860	0.938
0.631	0.912	0.664	0.843	0.920
0.794	0.899	0.649	0.831	0.907
1	0.969	0.694	0.892	0.976
1.259	0.922	0.656	0.847	0.928
1.585	0.900	0.638	0.828	0.905
1.995	0.884	0.625	0.810	0.888
2.512	0.871	0.614	0.797	0.874
3.162	0.852	0.600	0.780	0.855
3.981	0.831	0.585	0.760	0.834
5.012	0.832	0.586	0.760	0.833
6.31	0.830	0.585	0.758	0.831
7.943	0.824	0.581	0.753	0.825
10	0.826	0.583	0.754	0.826

Table D-27: Room Ratio Concrete Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.499	1.246	3.091	3.836
0.013	2.030	1.420	2.300	2.580
0.016	1.776	1.454	1.946	2.034
0.02	1.597	1.388	1.713	1.748
0.025	1.397	1.260	1.462	1.475
0.032	1.294	1.196	1.352	1.328
0.04	1.191	1.108	1.248	1.229
0.05	1.263	1.165	1.316	1.334
0.063	1.250	1.158	1.316	1.338
0.079	1.308	1.214	1.383	1.383
0.1	1.386	1.284	1.460	1.479
0.126	1.436	1.339	1.535	1.536
0.158	1.432	1.318	1.525	1.525
0.2	1.396	1.286	1.480	1.485
0.251	1.246	1.147	1.322	1.328
0.316	1.224	1.124	1.302	1.307
0.398	1.147	1.053	1.217	1.219
0.501	1.105	1.014	1.170	1.162
0.631	1.092	0.999	1.155	1.144
0.794	1.081	0.988	1.147	1.129
1	1.169	1.074	1.237	1.216
1.259	1.117	1.029	1.179	1.158
1.585	1.092	0.997	1.156	1.132
1.995	1.076	0.982	1.138	1.112
2.512	1.061	0.968	1.120	1.093
3.162	1.039	0.948	1.096	1.069
3.981	1.015	0.928	1.068	1.043
5.012	1.016	0.925	1.068	1.042
6.31	1.013	0.922	1.064	1.036
7.943	1.006	0.915	1.055	1.027
10	1.007	0.917	1.057	1.028

Table D-28: Room Ratio Concrete Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.292	1.293	3.227	4.011
0.013	1.955	1.466	2.338	2.597
0.016	1.790	1.525	1.982	2.127
0.02	1.691	1.568	1.779	1.778
0.025	1.533	1.467	1.587	1.520
0.032	1.458	1.422	1.506	1.432
0.04	1.355	1.338	1.378	1.297
0.05	1.438	1.429	1.470	1.429
0.063	1.418	1.403	1.450	1.397
0.079	1.477	1.458	1.541	1.458
0.1	1.565	1.548	1.635	1.566
0.126	1.623	1.608	1.708	1.615
0.158	1.619	1.615	1.711	1.619
0.2	1.586	1.580	1.679	1.586
0.251	1.424	1.416	1.516	1.427
0.316	1.404	1.390	1.471	1.398
0.398	1.321	1.308	1.390	1.302
0.501	1.279	1.267	1.338	1.255
0.631	1.270	1.257	1.320	1.238
0.794	1.262	1.247	1.308	1.229
1	1.370	1.358	1.422	1.326
1.259	1.312	1.300	1.354	1.265
1.585	1.287	1.277	1.324	1.230
1.995	1.270	1.260	1.306	1.210
2.512	1.255	1.246	1.288	1.193
3.162	1.231	1.221	1.260	1.167
3.981	1.203	1.195	1.231	1.139
5.012	1.205	1.193	1.233	1.139
6.31	1.202	1.190	1.228	1.133
7.943	1.193	1.181	1.218	1.123
10	1.194	1.181	1.219	1.124

Table D-29: Room Ratio Concrete Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.245	0.950	2.977	3.865
0.013	1.208	1.071	2.223	2.590
0.016	1.245	1.193	1.884	2.054
0.02	1.319	1.304	1.733	1.789
0.025	1.308	1.357	1.578	1.557
0.032	1.330	1.420	1.540	1.501
0.04	1.280	1.390	1.445	1.434
0.05	1.384	1.507	1.569	1.470
0.063	1.372	1.454	1.535	1.490
0.079	1.436	1.508	1.631	1.586
0.1	1.517	1.602	1.730	1.751
0.126	1.570	1.651	1.814	1.761
0.158	1.565	1.664	1.810	1.726
0.2	1.532	1.612	1.779	1.750
0.251	1.377	1.452	1.586	1.528
0.316	1.359	1.459	1.563	1.494
0.398	1.281	1.363	1.478	1.393
0.501	1.242	1.320	1.439	1.343
0.631	1.234	1.322	1.418	1.330
0.794	1.229	1.322	1.412	1.329
1	1.338	1.445	1.539	1.435
1.259	1.283	1.377	1.475	1.373
1.585	1.261	1.359	1.448	1.340
1.995	1.246	1.344	1.434	1.328
2.512	1.235	1.332	1.424	1.314
3.162	1.213	1.320	1.395	1.282
3.981	1.187	1.284	1.362	1.250
5.012	1.189	1.286	1.365	1.257
6.31	1.188	1.290	1.360	1.255
7.943	1.180	1.277	1.350	1.243
10	1.182	1.284	1.362	1.247

Table D-30: Room Ratio Concrete Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.640	0.971	2.995	3.854
0.013	0.665	0.979	2.136	2.637
0.016	0.760	1.013	1.817	2.095
0.02	0.915	1.143	1.683	1.847
0.025	1.017	1.213	1.552	1.721
0.032	1.137	1.305	1.534	1.653
0.04	1.159	1.418	1.466	1.534
0.05	1.292	1.474	1.578	1.584
0.063	1.299	1.486	1.544	1.624
0.079	1.360	1.528	1.608	1.796
0.1	1.435	1.607	1.743	1.905
0.126	1.480	1.721	1.874	2.066
0.158	1.475	1.705	1.890	1.840
0.2	1.443	1.644	1.866	1.803
0.251	1.295	1.480	1.645	1.746
0.316	1.280	1.480	1.637	1.676
0.398	1.208	1.397	1.544	1.578
0.501	1.174	1.369	1.508	1.516
0.631	1.170	1.366	1.471	1.512
0.794	1.169	1.419	1.484	1.526
1	1.276	1.503	1.611	1.662
1.259	1.229	1.456	1.569	1.581
1.585	1.212	1.436	1.534	1.546
1.995	1.203	1.426	1.535	1.542
2.512	1.195	1.427	1.520	1.508
3.162	1.177	1.409	1.506	1.485
3.981	1.155	1.380	1.472	1.435
5.012	1.161	1.386	1.478	1.454
6.31	1.161	1.396	1.472	1.448
7.943	1.155	1.386	1.465	1.436
10	1.158	1.396	1.470	1.442

1 cm Contamination Depth Room Ratios

Table D-31: Room Ratio Concrete 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.142941	1.468906	1.993698	2.357084
0.013	1.371927	1.191849	1.318818	1.42949
0.016	1.262592	1.178005	1.24631	1.290459
0.02	1.089379	1.051722	1.083026	1.096204
0.025	0.871035	0.854504	0.867357	0.87539
0.032	0.976919	0.948525	0.97739	0.982966
0.04	1.032219	0.975346	1.030469	1.045782
0.05	1.202886	1.105641	1.197445	1.225744
0.063	1.229071	1.08259	1.059977	1.238629
0.079	1.427508	1.305533	1.349345	1.360921
0.1	1.523703	1.344862	1.50813	1.568093
0.126	1.544839	1.345206	1.543508	1.397306
0.158	1.573105	1.37796	1.622697	1.499582
0.2	1.611131	1.381729	1.589626	1.663851
0.251	1.359271	1.171828	1.306704	1.303334
0.316	1.36452	1.164305	1.265783	1.290392
0.398	1.194594	1.046279	1.114049	1.166694
0.501	1.158118	0.986258	1.073818	1.167843
0.631	1.175421	0.996813	1.070777	1.161962
0.794	1.163483	0.96464	1.065815	1.161711
1	1.209247	0.972359	1.097594	1.140668
1.259	1.13943	0.908678	1.050909	1.066535
1.585	1.080952	0.860532	1.013086	1.023369
1.995	1.064407	0.827938	1.000526	1.004743
2.512	1.009353	0.78873	0.961105	0.994608
3.162	0.995246	0.767446	0.92723	0.924036
3.981	0.96727	0.733553	0.893052	0.887148
5.012	0.961271	0.725274	0.884775	0.883964
6.31	0.95709	0.713526	0.867357	0.864255
7.943	0.939165	0.702305	0.854011	0.857911
10	0.951733	0.709228	0.90353	0.982023

Table D-32: Room Ratio Concrete 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.310256	0.638669	1.326869	1.32182
0.013	1.053764	0.643631	1.244305	0.983585
0.016	1.078509	0.867641	1.559848	1.201313
0.02	0.991683	0.804272	1.140168	0.974972
0.025	0.804644	0.574032	0.673088	0.988583
0.032	1.068021	0.740831	0.731941	1.567914
0.04	1.033933	0.892969	0.83983	1.689482
0.05	1.261838	1.103196	1.012557	1.732966
0.063	1.340859	1.22737	1.083035	1.565922
0.079	1.523629	1.340636	1.299023	1.780906
0.1	1.680356	1.526564	1.411993	1.666172
0.126	1.693615	1.551923	1.783439	2.15149
0.158	1.785929	1.610426	1.574924	2.212184
0.2	1.823194	1.669503	1.659123	2.363213
0.251	1.57052	1.452326	1.405347	2.193452
0.316	1.596778	1.441578	1.402524	2.2671
0.398	1.41781	1.308839	1.274295	2.179961
0.501	1.380049	1.282893	1.233624	1.661392
0.631	1.419713	1.311552	1.296817	1.751265
0.794	1.412983	1.320518	1.328614	1.847961
1	1.435004	1.344615	1.39931	1.911754
1.259	1.403523	1.281016	1.329259	1.812103
1.585	1.348996	1.218371	1.327866	1.563851
1.995	1.316089	1.189593	1.210063	1.492819
2.512	1.273748	1.129429	1.18766	1.501949
3.162	1.237932	1.123793	1.227847	1.454614
3.981	1.186595	1.069182	1.169991	1.35902
5.012	1.20479	1.059936	1.173509	1.41255
6.31	1.192487	1.032657	1.154254	1.471094
7.943	1.158387	1.01211	1.170071	1.397212
10	1.150884	1.014584	1.134627	1.313855

Table D-33: Room Ratio Concrete 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.214292	0.824076	1.735057	1.502136
0.013	0.98117	0.586709	0.645588	1.765123
0.016	1.013113	0.664646	0.740712	1.300997
0.02	0.893777	0.758679	0.780283	1.127433
0.025	0.810006	0.677645	0.905839	1.781711
0.032	0.967106	0.61981	1.543101	1.387546
0.04	1.122864	0.699421	1.15744	1.104223
0.05	1.290712	1.004749	1.36374	1.270636
0.063	1.346751	1.124997	1.700917	1.330938
0.079	1.652833	1.267738	1.306801	1.488975
0.1	1.848367	1.405742	1.688624	1.624515
0.126	1.779987	1.602761	1.750682	1.565232
0.158	1.788052	1.645528	1.78923	1.638177
0.2	1.843641	1.685475	1.902153	1.715906
0.251	1.644745	1.474356	1.592945	1.579716
0.316	1.693783	1.44716	1.734927	1.567017
0.398	1.507972	1.317699	1.616703	1.462143
0.501	1.471183	1.294892	1.546227	1.493333
0.631	1.530564	1.339752	1.86531	1.581249
0.794	1.538167	1.342177	1.840008	1.570343
1	1.553101	1.425484	1.889877	1.584204
1.259	1.525595	1.368181	1.706677	1.807287
1.585	1.49211	1.320522	1.568383	1.412469
1.995	1.428844	1.287497	1.53227	1.397912
2.512	1.406139	1.244962	1.518801	1.430722
3.162	1.359998	1.243513	1.50598	1.467505
3.981	1.332971	1.212714	1.457756	1.446777
5.012	1.360483	1.202744	1.455911	1.322452
6.31	1.351365	1.194462	1.463984	1.284035
7.943	1.315804	1.17819	1.491397	1.275386
10	1.290532	1.178315	1.451134	1.255595

Table D-34: Room Ratio Concrete 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.665438	0.553244	1.162717	1.990613
0.013	0.602149	0.560454	1.008001	1.143982
0.016	0.723623	0.598111	0.967799	1.453282
0.02	0.782297	0.471368	1.07685	0.909679
0.025	0.722821	0.573982	1.23922	0.613467
0.032	0.911877	0.655618	1.821957	1.449489
0.04	1.026306	0.783134	2.111918	0.644124
0.05	1.33133	0.729723	2.716225	1.194522
0.063	1.315088	0.938052	2.575098	1.054905
0.079	1.606887	0.940946	3.312578	1.740008
0.1	1.733004	1.734008	2.733116	1.290072
0.126	1.686859	1.26638	2.626825	2.503945
0.158	1.779906	1.354633	3.537057	2.015936
0.2	1.792037	1.388986	3.972684	1.755418
0.251	1.614326	1.276852	2.695031	2.019004
0.316	1.609281	1.650906	3.025779	1.493552
0.398	1.477844	1.125928	3.651737	2.038423
0.501	1.433123	1.107536	2.375633	2.083497
0.631	1.500269	1.136208	4.179728	2.279473
0.794	1.513829	1.128147	4.076591	2.322978
1	1.536336	1.228748	4.191507	2.283158
1.259	1.521401	1.175637	3.988005	2.281456
1.585	1.480886	1.143576	3.620083	1.588457
1.995	1.415527	1.13748	3.547388	1.556537
2.512	1.399511	1.109605	3.488403	1.58376
3.162	1.353731	1.120731	3.481382	1.598914
3.981	1.330582	1.107194	3.317961	1.79559
5.012	1.358734	1.098491	3.348994	1.433265
6.31	1.349509	1.099079	3.362413	1.377573
7.943	1.314307	1.081091	3.376456	1.343367
10	1.288869	1.078133	3.377569	1.315669

Table D-35: Room Ratio Concrete 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.343919	0.562307	1.547413	2.381566
0.013	0.342104	0.533772	0.952086	1.369627
0.016	0.4648	0.546256	0.908812	1.191324
0.02	0.576043	0.613235	0.910264	0.999528
0.025	0.601652	0.602156	0.729518	0.819903
0.032	0.823966	0.811244	0.916852	0.972962
0.04	0.983145	0.988997	1.039655	1.05584
0.05	1.232819	1.260146	1.300088	1.279932
0.063	1.331393	1.367818	1.398185	1.369968
0.079	1.515569	1.563669	1.608706	1.602767
0.1	1.641448	1.723807	1.773474	1.770246
0.126	1.725728	1.788509	1.883933	1.865292
0.158	1.733896	1.801173	1.925929	1.900725
0.2	1.755866	1.835279	1.964934	1.916315
0.251	1.5411	1.61501	1.721409	1.701874
0.316	1.544985	1.624462	1.731139	1.700628
0.398	1.398329	1.479544	1.570231	1.532964
0.501	1.38363	1.468236	1.563086	1.514366
0.631	1.436039	1.533002	1.626251	1.568906
0.794	1.442982	1.547904	1.639328	1.582366
1	1.507094	1.628049	1.722725	1.655786
1.259	1.455226	1.581437	1.710217	1.570495
1.585	1.405943	1.532696	1.646282	1.517631
1.995	1.389185	1.525245	1.637113	1.497993
2.512	1.345949	1.490717	1.561894	1.503127
3.162	1.341462	1.488353	1.617579	1.45886
3.981	1.29813	1.444238	1.54009	1.410846
5.012	1.301934	1.499309	1.546834	1.408084
6.31	1.295274	1.454852	1.548736	1.401846
7.943	1.280834	1.444332	1.530137	1.384068
10	1.267907	1.436225	1.47389	1.495476

5 cm Contamination Depth Room Ratios

Table D-36: Room Ratio Concrete 5cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.94277	1.34980	1.78952	2.13529
0.013	1.10392	0.95756	1.06130	1.14631
0.016	1.41759	1.32395	1.39333	1.44138
0.02	1.08167	1.04643	1.06996	1.09012
0.025	1.01030	0.99504	1.00719	1.01196
0.032	0.93857	0.93221	0.93592	0.93774
0.04	0.95265	0.94800	0.95173	0.95100
0.05	1.01268	1.00750	1.01114	1.01140
0.063	1.02053	1.00963	0.81735	0.97308
0.079	1.21321	1.27560	1.09536	1.22862
0.1	1.45512	1.41803	1.45494	1.46685
0.126	1.52658	1.59311	1.45127	1.53436
0.158	1.66125	1.52759	1.48684	1.49432
0.2	1.69155	1.62261	1.69234	1.71137
0.251	1.76020	1.52758	1.51909	1.57155
0.316	1.76329	1.54085	1.47485	1.53571
0.398	1.69248	1.50143	1.44949	1.45755
0.501	1.66114	1.49464	1.47420	1.51168
0.631	1.55110	1.41779	1.39814	1.40229
0.794	1.51829	1.37162	1.41064	1.31834
1	1.49690	1.32334	1.40570	1.27819
1.259	1.39489	1.22767	1.26845	1.21383
1.585	1.35865	1.15319	1.24561	1.23691
1.995	1.33818	1.09399	1.20383	1.17258
2.512	1.29758	1.06492	1.16630	1.13598
3.162	1.23698	1.01876	1.12858	1.06594
3.981	1.21588	0.99154	1.10640	1.04828
5.012	1.18422	0.97600	1.13263	1.05027
6.31	1.17177	0.96857	1.14554	1.05131
7.943	1.14513	0.94552	1.14038	1.03813
10	1.13559	0.94409	1.10774	1.04703

Table D-37: Room Ratio Concrete 5cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.23379	0.76453	1.49068	1.53010
0.013	0.97427	0.63451	0.77891	0.57009
0.016	1.34824	0.90899	1.06957	0.58349
0.02	1.12134	0.87077	1.06352	0.71406
0.025	0.92405	0.78963	1.20746	1.13398
0.032	0.84880	0.73125	1.09311	0.74911
0.04	1.01667	0.73164	0.88570	0.88777
0.05	1.00523	0.91153	0.93995	0.75982
0.063	1.14732	0.92842	0.99317	1.34106
0.079	1.28077	0.85735	0.90717	1.44678
0.1	1.60540	1.23838	1.11289	1.63419
0.126	1.65707	1.34869	1.68231	1.68337
0.158	1.77183	1.49224	1.28524	1.70378
0.2	1.85390	1.57169	1.62556	1.91882
0.251	1.83411	1.51471	1.56613	1.86810
0.316	1.78540	1.48973	1.49474	2.01180
0.398	1.71431	1.50378	1.52050	2.14186
0.501	1.70499	1.52457	1.70563	2.36718
0.631	1.65786	1.55912	1.73062	2.66355
0.794	1.63995	1.60242	1.71995	2.83184
1	1.62116	1.59346	1.74001	2.73113
1.259	1.57234	1.43427	1.44144	2.71322
1.585	1.52901	1.37700	1.51741	2.63970
1.995	1.42535	1.34011	1.33424	2.64832
2.512	1.48605	1.32510	1.32809	2.57901
3.162	1.39234	1.29089	1.37018	2.76484
3.981	1.36374	1.27001	1.27761	2.70820
5.012	1.38390	1.27312	1.29421	2.73948
6.31	1.36669	1.23191	1.32103	2.70959
7.943	1.34825	1.21120	1.30853	2.77676
10	1.35496	1.20537	1.27153	2.65437

Table D-38: Room Ratio Concrete 5cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.10006	0.81449	1.12561	1.22857
0.013	0.75762	0.66926	0.79577	0.69464
0.016	1.15163	0.98118	0.90300	0.96551
0.02	0.97486	0.69000	0.64984	1.22374
0.025	0.95260	0.79982	0.60978	1.18840
0.032	0.98246	0.76777	0.74053	1.12355
0.04	0.96208	0.86913	0.79701	1.15854
0.05	0.94280	1.00219	0.93437	1.12740
0.063	1.12437	1.09729	1.51302	1.15420
0.079	1.28327	1.12980	1.57364	1.02548
0.1	1.53669	1.63142	1.60067	1.28653
0.126	1.61494	1.46780	1.92244	1.76430
0.158	1.69335	1.70822	2.11690	1.74593
0.2	1.77664	1.35382	1.84456	2.05206
0.251	1.77733	1.90445	1.95912	2.18946
0.316	1.67570	1.46048	2.52753	2.02027
0.398	1.77760	1.24222	1.89722	2.34671
0.501	1.76764	1.25041	1.76247	2.40615
0.631	1.72497	1.32008	2.17103	2.40265
0.794	1.69804	1.33885	2.26926	2.47960
1	1.70112	1.38490	2.03255	2.15941
1.259	1.67523	1.30254	1.93190	2.33857
1.585	1.58790	1.29314	1.48111	1.78275
1.995	1.49341	1.22528	1.54203	1.73954
2.512	1.55000	1.25684	1.55385	1.69895
3.162	1.45957	1.24154	1.53215	1.87089
3.981	1.44887	1.23222	1.49745	1.91630
5.012	1.47696	1.26493	1.54776	1.83278
6.31	1.45154	1.26004	1.63300	1.77132
7.943	1.43170	1.24656	1.61156	1.68272
10	1.41765	1.26741	1.53888	1.65235

Table D-39: Room Ratio Concrete 5cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.62082	0.56459	1.14027	1.96524
0.013	0.50696	0.44927	0.75828	0.77448
0.016	0.82965	0.84357	0.82311	1.06234
0.02	0.78207	0.72945	0.81888	0.93592
0.025	0.88989	0.73506	1.44399	1.21166
0.032	0.89943	0.65258	0.86209	0.82094
0.04	0.98830	0.74286	1.10625	0.57485
0.05	0.93993	0.79326	1.17895	0.52040
0.063	1.09198	0.96727	1.21724	0.85821
0.079	1.25364	0.92539	2.30433	0.99191
0.1	1.48314	1.47602	1.63004	1.03172
0.126	1.59944	1.44793	2.45849	1.71964
0.158	1.68756	1.66225	2.60425	1.37064
0.2	1.74455	1.47362	2.82287	1.94870
0.251	1.76287	1.47283	3.58772	2.84623
0.316	1.75677	1.72490	2.88717	1.49067
0.398	1.72548	1.66772	3.02878	1.72639
0.501	1.75777	1.04315	5.38124	3.45606
0.631	1.71234	1.10028	5.71834	3.44456
0.794	1.68712	1.11785	6.00948	3.53221
1	1.69515	1.16462	5.68171	3.21582
1.259	1.68873	1.10649	5.30186	3.05000
1.585	1.57858	1.07643	4.61527	2.06266
1.995	1.49275	1.04133	4.51312	1.97160
2.512	1.54975	1.06914	4.48090	1.92128
3.162	1.45886	1.06494	4.36018	2.00883
3.981	1.45163	1.07330	4.28136	2.27071
5.012	1.47600	1.11029	4.33519	2.04307
6.31	1.45247	1.11902	4.49975	1.88276
7.943	1.43400	1.08955	4.84181	1.79601
10	1.41754	1.09649	5.24186	1.74795

Table D-40: Room Ratio Concrete 5cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.31980	0.43565	1.59519	2.72698
0.013	0.28187	0.38129	0.80383	0.87775
0.016	0.54019	0.58852	0.83739	0.84283
0.02	0.58310	0.52970	0.93224	0.96323
0.025	0.71004	0.61214	0.66244	1.15318
0.032	0.80096	0.76737	0.64515	1.05692
0.04	0.89981	0.57683	1.12861	0.40103
0.05	0.96248	0.62517	0.55656	0.59770
0.063	1.06892	0.79746	1.41382	0.78060
0.079	1.23164	0.97331	1.15335	1.07449
0.1	1.47088	1.27626	1.14304	1.30514
0.126	1.53625	1.47484	1.55253	1.43443
0.158	1.66697	1.50062	1.57510	1.31698
0.2	1.68496	1.34787	1.46998	1.96271
0.251	1.72143	1.42398	1.44571	1.50050
0.316	1.70362	1.32856	1.55863	2.02632
0.398	1.70815	0.87353	3.79134	1.27752
0.501	1.63689	1.01648	3.64673	1.13013
0.631	1.65297	1.01403	3.27636	1.34326
0.794	1.64543	0.90442	2.86940	2.78492
1	1.65560	0.95167	2.98352	2.85459
1.259	1.65053	0.90404	3.31017	2.95285
1.585	1.56642	0.94429	3.04016	1.66965
1.995	1.49754	0.84028	2.67676	1.88855
2.512	1.54445	0.87802	2.71685	1.76780
3.162	1.44688	0.87216	2.67779	1.92451
3.981	1.41685	0.94655	1.91301	1.83621
5.012	1.46325	0.92865	2.70710	2.04747
6.31	1.44230	0.92766	2.78686	1.99492
7.943	1.42306	0.92237	2.88080	1.93889
10	1.40152	0.92172	3.05367	1.86210

15 cm Contamination Depth Room Ratios

Table D-41: Room Ratio Concrete 15cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.573197	1.328798	1.773235	2.455823
0.013	0.82426	0.773153	1.19904	1.205109
0.016	0.879792	0.852369	1.230701	1.456956
0.02	1.024176	0.968977	0.956413	1.521601
0.025	1.018387	1.006037	1.03948	1.43756
0.032	0.920008	0.935971	0.993007	1.44081
0.04	1.154642	0.851522	0.90384	0.971766
0.05	0.836538	0.770946	0.694561	0.825404
0.063	1.138421	0.930517	0.700035	0.879654
0.079	1.135478	0.983216	0.704827	0.846628
0.1	1.133472	1.131127	1.110691	1.027702
0.126	1.326461	1.307132	1.170227	1.180995
0.158	1.42274	1.363952	1.290346	1.2908
0.2	1.473742	1.348455	1.134243	1.163452
0.251	1.570064	1.419817	1.238836	1.162401
0.316	1.623128	1.51581	1.367847	1.226048
0.398	1.611046	1.486689	1.449206	1.105806
0.501	1.967942	1.831632	1.895519	1.459991
0.631	1.428287	1.33897	1.449011	1.03735
0.794	1.447298	1.354418	1.25576	1.118143
1	1.415227	1.326411	1.166222	1.085798
1.259	1.279161	1.27315	1.114593	1.033569
1.585	1.281531	1.216978	1.068945	1.027872
1.995	1.355094	1.265322	1.145765	1.058801
2.512	1.339673	1.177853	1.125193	0.985611
3.162	1.255027	1.130676	1.129486	0.965221
3.981	1.261016	1.086149	1.092721	0.936205
5.012	1.223433	1.097871	1.132145	0.962677
6.31	1.232198	1.1379	1.191441	0.98652
7.943	1.21846	1.110462	1.20549	0.98443
10	1.174483	1.111639	1.213923	0.9861

Table D-42: Room Ratio Concrete 15cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.42E+00	9.06E-01	1.58E+00	2.35E+00
0.013	8.60E-01	6.45E-01	1.03E+00	8.24E-01
0.016	9.20E-01	8.11E-01	7.89E-01	7.21E-01
0.02	1.30E+00	9.48E-01	9.71E-01	5.14E-01
0.025	1.30E+00	8.86E-01	9.28E-01	6.41E-01
0.032	1.06E+00	8.12E-01	1.32E+00	9.17E-01
0.04	1.20E+00	8.44E-01	1.33E+00	1.06E+00
0.05	1.04E+00	8.20E-01	9.80E-01	7.42E-01
0.063	1.25E+00	1.13E+00	1.37E+00	9.79E-01
0.079	1.17E+00	8.98E-01	1.03E+00	8.50E-01
0.1	1.38E+00	1.02E+00	1.07E+00	1.78E+00
0.126	1.46E+00	1.09E+00	1.11E+00	1.17E+00
0.158	1.61E+00	1.28E+00	1.28E+00	3.60E+00
0.2	1.54E+00	1.25E+00	1.20E+00	1.54E+00
0.251	1.70E+00	1.55E+00	1.39E+00	2.01E+00
0.316	1.70E+00	1.55E+00	1.37E+00	1.43E+00
0.398	1.67E+00	1.57E+00	1.35E+00	1.79E+00
0.501	2.11E+00	1.66E+00	1.73E+00	2.36E+00
0.631	1.68E+00	1.27E+00	1.41E+00	1.96E+00
0.794	1.69E+00	1.31E+00	1.44E+00	2.16E+00
1	1.62E+00	1.23E+00	1.38E+00	2.21E+00
1.259	1.57E+00	1.16E+00	1.21E+00	2.22E+00
1.585	1.45E+00	1.19E+00	1.26E+00	2.11E+00
1.995	1.49E+00	1.24E+00	1.42E+00	2.28E+00
2.512	1.44E+00	1.22E+00	1.69E+00	2.25E+00
3.162	1.42E+00	1.18E+00	1.57E+00	2.34E+00
3.981	1.41E+00	1.20E+00	1.34E+00	2.40E+00
5.012	1.40E+00	1.21E+00	1.41E+00	2.48E+00
6.31	1.41E+00	1.25E+00	1.46E+00	2.58E+00
7.943	1.43E+00	1.25E+00	1.58E+00	2.58E+00
10	1.35E+00	1.24E+00	1.47E+00	2.47E+00

Table D-43: Room Ratio Concrete 15cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.251079	0.918009	1.412044	1.872634
0.013	0.746289	0.695112	0.708324	0.482288
0.016	0.826294	0.797067	0.764526	0.428143
0.02	1.003612	0.99965	0.923101	0.590167
0.025	1.200038	1.060488	0.847702	1.076144
0.032	0.99989	0.762896	0.578681	0.985188
0.04	1.060076	0.871409	0.590312	0.966722
0.05	0.954995	0.777316	0.723467	0.714333
0.063	1.181712	1.017236	0.940008	0.869038
0.079	1.262979	1.103012	1.253402	1.347297
0.1	1.256591	1.192156	1.292365	1.217201
0.126	1.411761	1.381427	2.020748	1.325149
0.158	1.53924	1.386179	2.478096	1.475607
0.2	1.573055	1.485241	2.071142	1.522178
0.251	1.762498	1.754337	2.226523	1.571886
0.316	1.743219	1.75251	2.090613	1.681508
0.398	1.75229	1.747634	2.316458	1.566282
0.501	2.009954	1.805221	2.939925	2.323095
0.631	1.597887	1.508174	2.247483	1.715089
0.794	1.607818	1.506648	2.368113	1.629335
1	1.619481	1.322445	2.693295	1.751675
1.259	1.496795	1.174728	2.236012	1.749148
1.585	1.436269	0.974401	1.364595	1.676875
1.995	1.524234	0.991519	1.436585	1.795108
2.512	1.447238	1.104104	1.975629	1.710586
3.162	1.404426	0.945048	1.404141	2.177858
3.981	1.425232	1.010518	1.43052	2.087924
5.012	1.44997	1.035824	1.497593	2.072031
6.31	1.448894	1.093062	1.58874	2.103093
7.943	1.460228	1.11752	1.588577	2.093237
10	1.406169	1.095862	1.542389	2.028919

Table D-44: Room Ratio Concrete 15cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.719872	0.578783	1.300226	2.350324
0.013	0.492555	0.501002	0.667403	0.837847
0.016	0.632989	0.640263	0.863265	0.784617
0.02	0.839466	0.862056	0.731469	0.875189
0.025	0.987718	0.970331	0.747401	0.698806
0.032	0.970974	0.854532	1.299261	0.872852
0.04	1.015016	0.693169	1.01281	0.703291
0.05	0.940487	0.749049	0.973762	0.537434
0.063	1.235628	0.955151	1.035733	0.793128
0.079	1.289954	0.885132	1.422409	0.711565
0.1	1.339307	1.084399	1.582405	0.584366
0.126	1.395524	1.228864	3.169175	0.730725
0.158	1.570241	1.152922	5.000161	1.482234
0.2	1.527606	1.41782	2.720659	0.815243
0.251	1.705961	1.396925	3.121184	2.560658
0.316	1.667733	1.419708	3.724151	3.03469
0.398	1.666478	1.589625	2.517185	1.580932
0.501	2.041642	1.965689	3.092799	2.139709
0.631	1.541899	1.497559	2.367444	1.036951
0.794	1.637216	1.214373	3.480065	1.540231
1	1.567702	1.581561	2.173829	1.146536
1.259	1.496687	1.529348	2.101338	0.903599
1.585	1.401027	1.154656	2.50634	1.180885
1.995	1.458914	1.188463	2.990445	1.188317
2.512	1.454597	0.871448	3.977651	1.830067
3.162	1.397712	0.835495	3.879956	1.771445
3.981	1.388118	0.881919	3.765889	1.761506
5.012	1.402805	0.874663	3.774373	1.907977
6.31	1.464367	1.325962	2.95698	1.15713
7.943	1.468499	0.973648	5.411582	2.307959
10	1.411875	0.971321	3.792976	1.782504

Table D-45: Room Ratio Concrete 15cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.010	0.37062	0.20822	1.53420	0.99135
0.013	0.27981	0.34912	0.80684	1.49006
0.016	0.40253	0.45643	0.84234	0.86032
0.020	0.62592	0.60555	0.61352	0.62694
0.025	0.82810	0.69126	0.97306	1.04683
0.032	0.87763	0.83665	0.86570	1.11401
0.040	1.00986	0.91968	0.70309	0.70127
0.050	0.93327	0.83908	0.76959	0.87633
0.063	1.17002	0.93072	1.37688	0.50198
0.079	1.26093	0.78558	0.83419	0.56475
0.100	1.23475	0.91399	2.78632	1.18583
0.126	1.42589	0.95473	0.91216	0.63879
0.158	1.46347	0.99696	1.10313	0.96392
0.200	1.45047	1.16213	1.57509	0.59256
0.251	1.60383	1.47502	1.40116	2.22864
0.316	1.61440	1.27427	0.96854	1.03821
0.398	1.61127	1.27112	2.03387	1.17510
0.501	1.93396	1.66884	1.55761	1.26228
0.631	1.48633	1.01289	1.26792	0.75859
0.794	1.56366	1.32086	1.69536	1.41403
1.000	1.55225	1.43684	1.90526	1.40495
1.259	1.48686	1.12519	1.38230	2.04885
1.585	1.36834	1.08117	2.59008	1.51669
1.995	1.45013	1.27184	1.66485	1.07916
2.512	1.45924	1.13285	2.06015	1.78416
3.162	1.42139	1.15435	2.21805	1.54989
3.981	1.41261	1.03272	2.01783	0.69594
5.012	1.43510	1.17964	1.70833	2.03428
6.310	1.40324	0.84230	3.09086	1.29076
7.943	1.47536	0.82651	2.91815	2.16678
10.000	1.41815	0.80711	2.90831	2.06214

Infinite Contamination Depth Room Ratios

Table D-46: Room Ratio Concrete Infinite Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.74937	0.49794	2.52123	0.91142
0.013	0.97653	0.78401	0.89415	0.67050
0.016	0.65702	0.68546	0.62867	0.73134
0.02	0.50787	0.54069	0.50881	0.58083
0.025	0.85621	0.50213	0.43804	0.34624
0.032	0.68356	0.60625	0.56440	0.42818
0.04	0.48122	0.52749	0.52194	0.52946
0.05	0.46285	0.59251	0.59099	0.58829
0.063	0.69482	0.70378	0.68701	1.00351
0.079	0.83881	0.83778	1.05602	0.79492
0.1	0.78071	0.83711	0.86429	0.84282
0.126	0.55652	0.64728	0.73016	0.73044
0.158	0.73578	0.81523	0.87021	1.10830
0.2	0.85183	0.83556	0.86203	1.03574
0.251	1.09761	1.04706	1.12065	1.27916
0.316	0.74538	0.78862	0.76375	1.33801
0.398	0.67733	0.81512	0.86149	1.40001
0.501	0.76600	0.86757	0.86860	1.46136
0.631	0.93126	0.84254	0.83187	1.36286
0.794	0.89552	0.86498	0.86839	1.48979
1	0.79285	0.92615	0.90805	1.47294
1.259	0.70018	0.77692	0.77183	1.30674
1.585	0.92737	1.02343	1.00361	1.28566
1.995	1.02074	1.05647	1.08373	1.41384
2.512	0.98447	0.94247	1.05389	1.37329
3.162	0.94229	0.91572	0.88288	1.41404
3.981	0.93925	0.83747	0.86373	1.51005
5.012	0.87661	0.80318	0.84193	1.60715
6.31	0.93780	0.89772	0.99362	1.43664
7.943	0.90094	0.94983	0.84778	2.12172
10	0.81746	0.98545	0.79728	2.30976

Table D-47: Room Ratio Concrete Infinite Contamination Depth 50x50x10 ft room

0.01	0.626304	0.381426	0.712251	1.174435
0.013	0.977462	0.783293	0.838849	1.357408
0.016	0.873351	0.836928	0.755698	0.876958
0.02	0.751213	0.65106	0.558771	0.383469
0.025	0.798407	0.835184	0.65945	0.804322
0.032	0.964708	0.739115	0.69493	1.013212
0.04	0.99184	0.709327	0.809039	0.528825
0.05	1.05142	0.648615	0.997587	0.862477
0.063	1.189945	0.705654	1.160994	1.511778
0.079	1.121039	0.886219	1.261912	1.209868
0.1	1.267699	1.050856	1.34842	1.370626
0.126	0.866463	0.821483	0.883196	1.114894
0.158	1.323929	1.08095	1.31168	1.976697
0.2	1.297899	1.186033	1.365434	2.166845
0.251	1.426116	1.419403	1.580615	1.786253
0.316	1.370852	1.197496	2.3563	2.258202
0.398	1.217823	1.222	1.850987	2.128199
0.501	1.349373	1.290174	1.868782	2.368685
0.631	1.399623	1.303637	1.890128	1.972977
0.794	1.410681	1.224483	1.51105	1.804153
1	1.541641	1.37075	2.147935	2.543495
1.259	1.293343	1.191055	1.742062	1.609379
1.585	1.525204	1.527448	2.038329	1.935425
1.995	1.440913	1.469599	2.192174	1.821048
2.512	1.530925	1.533242	1.851125	1.395382
3.162	1.307343	1.144129	1.516373	1.151121
3.981	1.294443	1.092287	0.983281	1.267356
5.012	1.258331	1.061682	1.266971	0.911908
6.31	1.353931	1.104499	1.115683	1.196619
7.943	1.356497	1.091742	1.220976	1.353389
10	1.324026	1.113438	1.184182	1.435012

Table D-48: Room Ratio Concrete Infinite Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.102363	0.068486	0.174481	0.240847
0.013	0.162052	0.128937	0.165463	0.192623
0.016	0.144871	0.132646	0.120124	0.106607
0.02	0.118574	0.120758	0.101712	0.069368
0.025	0.137497	0.128914	0.123992	0.062504
0.032	0.145293	0.149675	0.128277	0.071002
0.04	0.145952	0.131849	0.129147	0.0866
0.05	0.159763	0.123809	0.113311	0.085636
0.063	0.184368	0.151865	0.137352	0.180286
0.079	0.20481	0.162781	0.10792	0.254744
0.1	0.223473	0.22137	0.143683	0.210757
0.126	0.16914	0.141734	0.104331	0.234694
0.158	0.224124	0.172383	0.113445	0.332657
0.2	0.224803	0.213965	0.11682	0.174375
0.251	0.277156	0.21552	0.167125	0.289901
0.316	0.235971	0.182599	0.150521	0.22239
0.398	0.252305	0.201691	0.159483	0.276331
0.501	0.247117	0.211186	0.14809	0.261499
0.631	0.24531	0.204634	0.150583	0.23667
0.794	0.244095	0.208831	0.154554	0.290113
1	0.253819	0.22446	0.186695	0.299707
1.259	0.221878	0.195602	0.207125	0.271786
1.585	0.279284	0.256727	0.257587	0.388716
1.995	0.278187	0.236898	0.310759	0.345409
2.512	0.258698	0.233302	0.214229	0.2119
3.162	0.240989	0.181434	0.176721	0.293466
3.981	0.234239	0.184684	0.178287	0.29543
5.012	0.230132	0.176535	0.172386	0.269827
6.31	0.253329	0.220039	0.193422	0.255363
7.943	0.258925	0.200765	0.250091	0.315193
10	0.244845	0.204122	0.254448	0.448083

Table D-49: Room Ratio Concrete Infinite Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.380089	0.424507	0.083594	0.257586
0.013	0.626245	0.566148	1.055815	1.680379
0.016	0.698972	0.668633	0.7731	0.893655
0.02	0.620267	0.569658	0.51473	0.660385
0.025	0.734017	0.772778	0.688787	0.803981
0.032	0.878124	0.957478	0.94717	0.605603
0.04	0.881069	0.847818	0.872011	0.619222
0.05	0.928501	0.860724	0.660709	0.561595
0.063	1.100236	0.985539	0.832341	0.857521
0.079	1.237174	1.010647	0.553873	1.068567
0.1	1.379032	1.34076	0.856001	1.483919
0.126	1.068174	0.894133	0.690249	1.025137
0.158	1.414678	1.318713	1.064664	1.886801
0.2	1.375582	0.955096	0.913668	0.755468
0.251	1.770018	1.245084	1.227381	1.07703
0.316	1.514697	1.167686	0.946705	1.27163
0.398	1.540216	1.040566	1.384729	1.666757
0.501	1.611866	1.287186	0.93721	1.577458
0.631	1.51214	1.150566	1.142025	2.960808
0.794	1.561666	1.146432	1.379872	2.398359
1	1.620258	1.125518	1.858613	2.046434
1.259	1.373645	1.000028	1.66032	1.687757
1.585	1.775076	1.235524	1.564731	2.343835
1.995	1.770923	1.201719	1.964296	2.109533
2.512	1.743877	1.282958	2.083047	1.288657
3.162	1.509296	1.112713	2.527637	1.301633
3.981	1.473736	1.039057	1.60832	1.320421
5.012	1.388717	1.00229	1.717017	1.196448
6.31	1.468627	1.1503	2.010649	1.317974
7.943	1.497215	1.257445	2.105288	1.465102
10	1.480469	1.249451	2.138051	1.427685

Table D-50: Room Ratio Concrete Infinite Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.17215	0.09449	0.002452	1.77071
0.013	0.348019	0.214881	0.104644	1.374545
0.016	0.450287	0.312239	2.151262	1.657317
0.02	0.472134	0.458286	0.67734	0.849013
0.025	0.629897	0.583205	0.546035	0.831464
0.032	0.81627	0.75514	0.76705	0.47807
0.04	0.842422	0.783192	0.865939	0.478884
0.05	0.917331	0.721754	0.87171	0.364013
0.063	1.059006	0.864596	0.882739	0.406861
0.079	1.191854	1.03319	0.889856	0.477733
0.1	1.410299	1.017327	0.686942	1.102919
0.126	1.010882	0.534289	0.287734	0.222899
0.158	1.395666	0.858273	0.50495	0.605106
0.2	1.332973	0.949026	0.530608	0.520812
0.251	1.686914	1.074719	0.690011	0.394567
0.316	1.520233	1.142269	0.892584	0.652676
0.398	1.54119	1.239927	0.928533	1.661305
0.501	1.563034	1.273033	1.273965	1.228926
0.631	1.535095	0.879879	0.772642	0.873206
0.794	1.552337	0.911542	0.739213	0.962269
1	1.642349	0.926222	0.94809	0.921531
1.259	1.373362	0.788478	1.037542	1.002859
1.585	1.778156	1.036636	1.432388	2.495027
1.995	1.694584	1.041595	2.144164	2.420226
2.512	1.666749	1.060482	1.963051	1.003409
3.162	1.48101	1.011378	1.852041	0.867282
3.981	1.462852	0.785288	1.665953	1.247017
5.012	1.408052	0.724027	5.051646	1.056997
6.31	1.516494	0.858314	1.278795	1.074077
7.943	1.563737	0.924867	3.769737	1.208799
10	1.504825	1.044404	1.349709	0.952951

APPENDIX E: DRYWALL TABLES

First tables will be presented for raw air kerma values. These units are in pGy per cm^2. Room ratio values are presented following the Kerma tables.

Surface Contamination Kerma

Table E-1: Kerma Drywall Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.26E-05	5.97E-06	1.05E-05	1.29E-05
0.013	1.00E-05	6.11E-06	8.83E-06	1.01E-05
0.016	7.48E-06	4.91E-06	6.71E-06	7.51E-06
0.02	5.10E-06	3.48E-06	4.61E-06	5.12E-06
0.025	3.41E-06	2.39E-06	3.11E-06	3.40E-06
0.032	2.20E-06	1.56E-06	2.01E-06	2.20E-06
0.04	1.58E-06	1.14E-06	1.45E-06	1.58E-06
0.05	1.29E-06	9.50E-07	1.19E-06	1.31E-06
0.063	1.27E-06	9.50E-07	1.18E-06	1.28E-06
0.079	1.44E-06	1.09E-06	1.34E-06	1.46E-06
0.1	1.83E-06	1.40E-06	1.70E-06	1.85E-06
0.126	2.43E-06	1.85E-06	2.27E-06	2.46E-06
0.158	3.18E-06	2.42E-06	2.97E-06	3.23E-06
0.2	4.18E-06	3.16E-06	3.89E-06	4.24E-06
0.251	5.32E-06	4.00E-06	4.95E-06	5.40E-06
0.316	6.71E-06	5.00E-06	6.24E-06	6.79E-06
0.398	8.34E-06	6.16E-06	7.72E-06	8.44E-06
0.501	1.02E-05	7.48E-06	9.45E-06	1.03E-05
0.631	1.23E-05	8.95E-06	1.14E-05	1.24E-05
0.794	1.47E-05	1.06E-05	1.36E-05	1.49E-05
1	1.75E-05	1.25E-05	1.61E-05	1.76E-05
1.259	2.04E-05	1.45E-05	1.87E-05	2.05E-05
1.585	2.38E-05	1.69E-05	2.19E-05	2.40E-05
1.995	2.76E-05	1.95E-05	2.53E-05	2.77E-05
2.512	3.19E-05	2.24E-05	2.92E-05	3.20E-05
3.162	3.68E-05	2.59E-05	3.37E-05	3.70E-05
3.981	4.26E-05	3.00E-05	3.90E-05	4.28E-05
5.012	4.95E-05	3.48E-05	4.52E-05	4.96E-05
6.31	5.81E-05	4.09E-05	5.31E-05	5.82E-05
7.943	6.89E-05	4.86E-05	6.29E-05	6.89E-05
10	8.22E-05	5.80E-05	7.50E-05	8.22E-05

Table E-2: Kerma Drywall Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	7.08E-07	3.56E-07	8.81E-07	1.09E-06
0.013	6.99E-07	4.91E-07	7.95E-07	8.90E-07
0.016	6.04E-07	4.96E-07	6.63E-07	6.91E-07
0.02	4.59E-07	4.00E-07	4.92E-07	5.00E-07
0.025	3.27E-07	2.96E-07	3.42E-07	3.45E-07
0.032	2.20E-07	2.03E-07	2.29E-07	2.24E-07
0.04	1.59E-07	1.48E-07	1.66E-07	1.63E-07
0.05	1.31E-07	1.20E-07	1.36E-07	1.34E-07
0.063	1.28E-07	1.19E-07	1.34E-07	1.33E-07
0.079	1.45E-07	1.34E-07	1.54E-07	1.52E-07
0.1	1.83E-07	1.70E-07	1.94E-07	1.93E-07
0.126	2.43E-07	2.26E-07	2.57E-07	2.60E-07
0.158	3.19E-07	2.94E-07	3.40E-07	3.39E-07
0.2	4.20E-07	3.86E-07	4.46E-07	4.48E-07
0.251	5.36E-07	4.94E-07	5.70E-07	5.70E-07
0.316	6.79E-07	6.24E-07	7.21E-07	7.23E-07
0.398	8.48E-07	7.79E-07	8.99E-07	8.95E-07
0.501	1.04E-06	9.58E-07	1.11E-06	1.10E-06
0.631	1.27E-06	1.16E-06	1.34E-06	1.32E-06
0.794	1.52E-06	1.39E-06	1.61E-06	1.58E-06
1	1.81E-06	1.65E-06	1.91E-06	1.88E-06
1.259	2.12E-06	1.95E-06	2.24E-06	2.20E-06
1.585	2.48E-06	2.26E-06	2.63E-06	2.57E-06
1.995	2.88E-06	2.63E-06	3.04E-06	2.98E-06
2.512	3.33E-06	3.04E-06	3.51E-06	3.43E-06
3.162	3.85E-06	3.52E-06	4.06E-06	3.97E-06
3.981	4.46E-06	4.07E-06	4.71E-06	4.58E-06
5.012	5.18E-06	4.71E-06	5.44E-06	5.31E-06
6.31	6.08E-06	5.53E-06	6.39E-06	6.22E-06
7.943	7.20E-06	6.56E-06	7.56E-06	7.36E-06
10	8.58E-06	7.82E-06	9.01E-06	8.77E-06

Table E-3: Kerma Drywall Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.90E-07	1.08E-07	2.68E-07	3.33E-07
0.013	1.96E-07	1.48E-07	2.36E-07	2.62E-07
0.016	1.77E-07	1.52E-07	1.97E-07	2.11E-07
0.02	1.42E-07	1.32E-07	1.49E-07	1.47E-07
0.025	1.05E-07	1.00E-07	1.09E-07	1.03E-07
0.032	7.22E-08	7.06E-08	7.45E-08	7.10E-08
0.04	5.31E-08	5.22E-08	5.38E-08	5.06E-08
0.05	4.36E-08	4.34E-08	4.47E-08	4.27E-08
0.063	4.28E-08	4.23E-08	4.38E-08	4.21E-08
0.079	4.81E-08	4.76E-08	4.98E-08	4.78E-08
0.1	6.08E-08	6.00E-08	6.35E-08	5.97E-08
0.126	8.06E-08	8.00E-08	8.39E-08	8.03E-08
0.158	1.06E-07	1.05E-07	1.12E-07	1.06E-07
0.2	1.40E-07	1.39E-07	1.47E-07	1.39E-07
0.251	1.79E-07	1.78E-07	1.90E-07	1.78E-07
0.316	2.28E-07	2.26E-07	2.39E-07	2.24E-07
0.398	2.85E-07	2.83E-07	3.01E-07	2.81E-07
0.501	3.53E-07	3.49E-07	3.68E-07	3.45E-07
0.631	4.30E-07	4.24E-07	4.46E-07	4.18E-07
0.794	5.18E-07	5.12E-07	5.37E-07	5.01E-07
1	6.18E-07	6.13E-07	6.41E-07	5.99E-07
1.259	7.27E-07	7.21E-07	7.48E-07	7.02E-07
1.585	8.53E-07	8.46E-07	8.78E-07	8.15E-07
1.995	9.92E-07	9.85E-07	1.02E-06	9.45E-07
2.512	1.15E-06	1.14E-06	1.18E-06	1.09E-06
3.162	1.33E-06	1.32E-06	1.36E-06	1.26E-06
3.981	1.54E-06	1.53E-06	1.57E-06	1.46E-06
5.012	1.79E-06	1.77E-06	1.83E-06	1.69E-06
6.31	2.10E-06	2.08E-06	2.15E-06	1.98E-06
7.943	2.49E-06	2.47E-06	2.55E-06	2.35E-06
10	2.97E-06	2.94E-06	3.03E-06	2.80E-06

Table E-4: Kerma Drywall Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.57E-08	1.98E-08	6.17E-08	8.03E-08
0.013	3.04E-08	2.70E-08	5.60E-08	6.52E-08
0.016	3.09E-08	2.97E-08	4.68E-08	5.07E-08
0.02	2.77E-08	2.75E-08	3.65E-08	3.73E-08
0.025	2.24E-08	2.34E-08	2.70E-08	2.65E-08
0.032	1.65E-08	1.77E-08	1.91E-08	1.84E-08
0.04	1.26E-08	1.37E-08	1.41E-08	1.36E-08
0.05	1.05E-08	1.15E-08	1.22E-08	1.12E-08
0.063	1.04E-08	1.11E-08	1.16E-08	1.13E-08
0.079	1.17E-08	1.26E-08	1.32E-08	1.27E-08
0.1	1.47E-08	1.55E-08	1.66E-08	1.70E-08
0.126	1.95E-08	2.06E-08	2.24E-08	2.18E-08
0.158	2.55E-08	2.73E-08	3.03E-08	2.80E-08
0.2	3.37E-08	3.56E-08	3.95E-08	3.76E-08
0.251	4.32E-08	4.56E-08	5.02E-08	4.82E-08
0.316	5.50E-08	5.89E-08	6.35E-08	6.07E-08
0.398	6.91E-08	7.37E-08	7.98E-08	7.51E-08
0.501	8.56E-08	9.12E-08	9.93E-08	9.59E-08
0.631	1.04E-07	1.12E-07	1.20E-07	1.13E-07
0.794	1.26E-07	1.36E-07	1.45E-07	1.37E-07
1	1.51E-07	1.63E-07	1.73E-07	1.61E-07
1.259	1.78E-07	1.91E-07	2.04E-07	1.90E-07
1.585	2.09E-07	2.25E-07	2.40E-07	2.23E-07
1.995	2.44E-07	2.62E-07	2.81E-07	2.58E-07
2.512	2.83E-07	3.05E-07	3.27E-07	3.00E-07
3.162	3.28E-07	3.54E-07	3.77E-07	3.47E-07
3.981	3.80E-07	4.11E-07	4.36E-07	4.02E-07
5.012	4.42E-07	4.78E-07	5.07E-07	4.66E-07
6.31	5.20E-07	5.64E-07	5.95E-07	5.50E-07
7.943	6.16E-07	6.67E-07	7.07E-07	6.51E-07
10	7.35E-07	7.98E-07	8.47E-07	7.74E-07

Table E-5: Kerma Drywall Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	3.34E-09	5.08E-09	1.53E-08	2.07E-08
0.013	4.20E-09	6.25E-09	1.38E-08	1.64E-08
0.016	4.74E-09	6.34E-09	1.15E-08	1.29E-08
0.02	4.84E-09	6.11E-09	9.00E-09	9.55E-09
0.025	4.36E-09	5.24E-09	6.66E-09	7.32E-09
0.032	3.54E-09	4.06E-09	4.81E-09	5.06E-09
0.04	2.85E-09	3.50E-09	3.63E-09	3.77E-09
0.05	2.46E-09	2.86E-09	3.02E-09	3.00E-09
0.063	2.45E-09	2.85E-09	2.96E-09	2.96E-09
0.079	2.95E-09	3.32E-09	3.58E-09	3.85E-09
0.1	3.48E-09	3.94E-09	4.24E-09	4.71E-09
0.126	4.81E-09	5.58E-09	5.89E-09	6.64E-09
0.158	6.23E-09	7.12E-09	8.30E-09	7.61E-09
0.2	7.92E-09	9.20E-09	1.01E-08	1.07E-08
0.251	1.02E-08	1.17E-08	1.30E-08	1.37E-08
0.316	1.29E-08	1.50E-08	1.66E-08	1.72E-08
0.398	1.63E-08	1.88E-08	2.09E-08	2.12E-08
0.501	2.02E-08	2.35E-08	2.57E-08	2.68E-08
0.631	2.47E-08	2.90E-08	3.13E-08	3.20E-08
0.794	3.00E-08	3.64E-08	3.80E-08	3.91E-08
1	3.60E-08	4.24E-08	4.55E-08	4.66E-08
1.259	4.26E-08	5.05E-08	5.41E-08	5.45E-08
1.585	5.02E-08	5.95E-08	6.33E-08	6.39E-08
1.995	5.87E-08	6.97E-08	7.47E-08	7.44E-08
2.512	6.84E-08	8.16E-08	8.72E-08	8.65E-08
3.162	7.96E-08	9.52E-08	1.01E-07	1.00E-07
3.981	9.25E-08	1.10E-07	1.18E-07	1.16E-07
5.012	1.08E-07	1.29E-07	1.37E-07	1.35E-07
6.31	1.27E-07	1.53E-07	1.61E-07	1.59E-07
7.943	1.51E-07	1.82E-07	1.91E-07	1.89E-07
10	1.80E-07	2.16E-07	2.29E-07	2.25E-07

Kerma for 1cm Contamination Depth

Table E-6: Kerma Drywall 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	8.81E-08	6.03E-08	8.18E-08	9.66E-08
0.013	1.50E-07	1.30E-07	1.45E-07	1.56E-07
0.016	2.04E-07	1.91E-07	2.01E-07	2.07E-07
0.02	2.67E-07	2.59E-07	2.65E-07	2.69E-07
0.025	3.43E-07	3.37E-07	3.42E-07	3.44E-07
0.032	4.39E-07	4.33E-07	4.39E-07	4.41E-07
0.04	5.26E-07	5.09E-07	5.25E-07	5.30E-07
0.05	6.23E-07	5.85E-07	6.22E-07	6.32E-07
0.063	7.82E-07	7.14E-07	7.78E-07	7.98E-07
0.079	1.02E-06	9.16E-07	1.02E-06	1.05E-06
0.1	1.41E-06	1.24E-06	1.40E-06	1.45E-06
0.126	1.95E-06	1.70E-06	1.93E-06	2.02E-06
0.158	2.62E-06	2.27E-06	2.59E-06	2.71E-06
0.2	3.50E-06	3.00E-06	3.45E-06	3.62E-06
0.251	4.51E-06	3.82E-06	4.44E-06	4.66E-06
0.316	5.73E-06	4.80E-06	5.64E-06	5.94E-06
0.398	7.17E-06	5.94E-06	7.04E-06	7.44E-06
0.501	8.84E-06	7.23E-06	8.66E-06	9.18E-06
0.631	1.07E-05	8.68E-06	1.05E-05	1.12E-05
0.794	1.29E-05	1.03E-05	1.26E-05	1.34E-05
1	1.54E-05	1.22E-05	1.50E-05	1.60E-05
1.259	1.81E-05	1.42E-05	1.76E-05	1.89E-05
1.585	2.13E-05	1.65E-05	2.06E-05	2.22E-05
1.995	2.48E-05	1.90E-05	2.40E-05	2.58E-05
2.512	2.89E-05	2.19E-05	2.78E-05	3.00E-05
3.162	3.35E-05	2.53E-05	3.22E-05	3.47E-05
3.981	3.90E-05	2.93E-05	3.73E-05	4.03E-05
5.012	4.54E-05	3.40E-05	4.33E-05	4.69E-05
6.31	5.35E-05	4.00E-05	5.09E-05	5.52E-05
7.943	6.35E-05	4.74E-05	6.04E-05	6.55E-05
10	7.58E-05	5.66E-05	7.20E-05	7.81E-05

Table E-7: Kerma Drywall 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	4.62E-09	2.83E-09	5.57E-09	6.86E-09
0.013	9.69E-09	7.23E-09	1.02E-08	1.25E-08
0.016	1.46E-08	1.29E-08	1.48E-08	1.66E-08
0.02	2.06E-08	2.13E-08	2.08E-08	2.19E-08
0.025	2.79E-08	2.70E-08	2.78E-08	2.97E-08
0.032	3.70E-08	3.64E-08	3.66E-08	3.77E-08
0.04	4.52E-08	4.58E-08	4.55E-08	4.50E-08
0.05	5.51E-08	5.53E-08	5.70E-08	5.53E-08
0.063	7.06E-08	7.07E-08	7.32E-08	7.18E-08
0.079	9.39E-08	9.47E-08	9.92E-08	9.41E-08
0.1	1.30E-07	1.30E-07	1.37E-07	1.31E-07
0.126	1.82E-07	1.79E-07	1.94E-07	1.91E-07
0.158	2.45E-07	2.42E-07	2.59E-07	2.51E-07
0.2	3.29E-07	3.26E-07	3.51E-07	3.41E-07
0.251	4.26E-07	4.20E-07	4.49E-07	4.50E-07
0.316	5.45E-07	5.38E-07	5.77E-07	5.88E-07
0.398	6.86E-07	6.77E-07	7.38E-07	7.18E-07
0.501	8.52E-07	8.31E-07	9.09E-07	9.03E-07
0.631	1.04E-06	1.02E-06	1.12E-06	1.11E-06
0.794	1.27E-06	1.25E-06	1.35E-06	1.30E-06
1	1.52E-06	1.48E-06	1.63E-06	1.61E-06
1.259	1.79E-06	1.77E-06	1.95E-06	1.91E-06
1.585	2.12E-06	2.06E-06	2.31E-06	2.28E-06
1.995	2.48E-06	2.40E-06	2.73E-06	2.68E-06
2.512	2.90E-06	2.78E-06	3.18E-06	3.11E-06
3.162	3.38E-06	3.26E-06	3.73E-06	3.59E-06
3.981	3.94E-06	3.80E-06	4.37E-06	4.13E-06
5.012	4.63E-06	4.46E-06	4.98E-06	4.77E-06
6.31	5.46E-06	5.25E-06	5.87E-06	5.63E-06
7.943	6.48E-06	6.22E-06	7.28E-06	6.87E-06
10	7.76E-06	7.38E-06	8.67E-06	8.16E-06

Table E-8: Kerma Drywall 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.25E-09	8.02E-10	1.77E-09	2.28E-09
0.013	2.56E-09	2.10E-09	3.11E-09	3.61E-09
0.016	3.99E-09	3.56E-09	4.49E-09	4.93E-09
0.02	5.81E-09	5.49E-09	6.16E-09	6.46E-09
0.025	7.97E-09	7.72E-09	8.18E-09	8.58E-09
0.032	1.07E-08	1.06E-08	1.11E-08	1.11E-08
0.04	1.34E-08	1.34E-08	1.36E-08	1.35E-08
0.05	1.65E-08	1.66E-08	1.67E-08	1.65E-08
0.063	2.13E-08	2.17E-08	2.19E-08	2.13E-08
0.079	2.85E-08	2.91E-08	2.94E-08	2.87E-08
0.1	3.99E-08	4.08E-08	4.15E-08	4.01E-08
0.126	5.59E-08	5.73E-08	5.84E-08	5.62E-08
0.158	7.58E-08	7.79E-08	7.95E-08	7.65E-08
0.2	1.02E-07	1.05E-07	1.07E-07	1.03E-07
0.251	1.33E-07	1.37E-07	1.40E-07	1.34E-07
0.316	1.71E-07	1.77E-07	1.80E-07	1.71E-07
0.398	2.17E-07	2.24E-07	2.27E-07	2.20E-07
0.501	2.70E-07	2.79E-07	2.80E-07	2.78E-07
0.631	3.34E-07	3.44E-07	3.47E-07	3.26E-07
0.794	4.05E-07	4.24E-07	4.26E-07	3.92E-07
1	4.89E-07	5.13E-07	5.17E-07	4.74E-07
1.259	5.83E-07	6.11E-07	6.14E-07	5.62E-07
1.585	6.92E-07	7.34E-07	7.36E-07	6.65E-07
1.995	8.15E-07	8.59E-07	8.66E-07	7.88E-07
2.512	9.57E-07	1.00E-06	1.03E-06	9.25E-07
3.162	1.12E-06	1.15E-06	1.21E-06	1.16E-06
3.981	1.31E-06	1.36E-06	1.43E-06	1.33E-06
5.012	1.54E-06	1.60E-06	1.63E-06	1.48E-06
6.31	1.81E-06	1.88E-06	1.98E-06	1.78E-06
7.943	2.16E-06	2.25E-06	2.41E-06	2.17E-06
10	2.60E-06	2.68E-06	2.75E-06	2.52E-06

Table E-9: Kerma Drywall 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.70E-10	1.66E-10	2.10E-10	4.34E-10
0.013	4.09E-10	3.72E-10	5.12E-10	7.46E-10
0.016	7.39E-10	6.53E-10	9.68E-10	1.03E-09
0.02	1.20E-09	1.14E-09	1.40E-09	1.46E-09
0.025	1.78E-09	1.64E-09	1.96E-09	1.98E-09
0.032	2.55E-09	2.48E-09	2.72E-09	2.58E-09
0.04	3.25E-09	3.19E-09	3.36E-09	3.38E-09
0.05	4.04E-09	4.17E-09	4.07E-09	3.95E-09
0.063	5.26E-09	5.27E-09	5.25E-09	5.05E-09
0.079	7.04E-09	7.29E-09	7.35E-09	6.76E-09
0.1	9.81E-09	1.00E-08	1.05E-08	9.89E-09
0.126	1.37E-08	1.40E-08	1.49E-08	1.34E-08
0.158	1.85E-08	1.91E-08	2.10E-08	1.74E-08
0.2	2.49E-08	2.55E-08	2.75E-08	2.36E-08
0.251	3.24E-08	3.33E-08	3.66E-08	3.58E-08
0.316	4.16E-08	4.33E-08	4.83E-08	4.22E-08
0.398	5.27E-08	5.53E-08	5.70E-08	5.60E-08
0.501	6.59E-08	6.97E-08	7.43E-08	7.09E-08
0.631	8.14E-08	8.43E-08	9.77E-08	8.62E-08
0.794	9.93E-08	1.02E-07	1.24E-07	1.06E-07
1	1.20E-07	1.24E-07	1.46E-07	1.26E-07
1.259	1.43E-07	1.49E-07	1.76E-07	1.47E-07
1.585	1.70E-07	1.79E-07	2.04E-07	1.70E-07
1.995	2.01E-07	2.12E-07	2.42E-07	2.04E-07
2.512	2.36E-07	2.50E-07	2.86E-07	2.45E-07
3.162	2.77E-07	2.99E-07	3.25E-07	2.86E-07
3.981	3.26E-07	3.50E-07	3.83E-07	3.44E-07
5.012	3.80E-07	4.05E-07	4.71E-07	4.00E-07
6.31	4.49E-07	4.79E-07	5.57E-07	4.33E-07
7.943	5.37E-07	5.72E-07	6.63E-07	5.35E-07
10	6.45E-07	6.85E-07	8.32E-07	6.53E-07

Table E-10: Kerma Drywall 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.20E-11	2.37E-11	1.28E-10	1.42E-10
0.013	5.72E-11	6.47E-11	1.74E-10	2.91E-10
0.016	1.18E-10	1.15E-10	2.24E-10	2.62E-10
0.02	2.22E-10	2.11E-10	3.27E-10	3.64E-10
0.025	3.71E-10	3.57E-10	4.00E-10	6.62E-10
0.032	5.76E-10	5.42E-10	5.97E-10	6.44E-10
0.04	7.70E-10	7.77E-10	7.87E-10	9.92E-10
0.05	9.86E-10	1.02E-09	9.99E-10	1.05E-09
0.063	1.29E-09	1.26E-09	1.23E-09	1.49E-09
0.079	1.72E-09	1.77E-09	1.77E-09	1.84E-09
0.1	2.38E-09	2.73E-09	2.54E-09	2.80E-09
0.126	3.29E-09	3.33E-09	3.76E-09	3.61E-09
0.158	4.43E-09	4.50E-09	5.44E-09	4.05E-09
0.2	5.96E-09	6.25E-09	7.00E-09	6.28E-09
0.251	7.73E-09	8.34E-09	8.97E-09	8.79E-09
0.316	9.93E-09	1.05E-08	1.12E-08	1.11E-08
0.398	1.26E-08	1.30E-08	1.50E-08	1.40E-08
0.501	1.58E-08	1.74E-08	1.91E-08	1.90E-08
0.631	1.95E-08	2.07E-08	2.39E-08	2.52E-08
0.794	2.38E-08	2.46E-08	2.79E-08	3.00E-08
1	2.88E-08	3.07E-08	3.42E-08	3.88E-08
1.259	3.45E-08	3.99E-08	4.02E-08	4.79E-08
1.585	4.11E-08	4.43E-08	4.96E-08	5.05E-08
1.995	4.85E-08	5.22E-08	5.78E-08	5.71E-08
2.512	5.76E-08	6.21E-08	7.62E-08	6.41E-08
3.162	6.76E-08	7.25E-08	8.99E-08	7.73E-08
3.981	7.90E-08	8.55E-08	9.65E-08	9.81E-08
5.012	9.32E-08	1.02E-07	1.10E-07	1.17E-07
6.31	1.11E-07	1.19E-07	1.36E-07	1.43E-07
7.943	1.32E-07	1.45E-07	1.57E-07	1.65E-07
10	1.59E-07	1.72E-07	1.77E-07	2.08E-07

Kerma for 5cm Contamination Depth

Table E-11: Kerma Drywall 5cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.73E-08	1.16E-08	1.53E-08	1.87E-08
0.013	2.90E-08	2.52E-08	2.79E-08	3.01E-08
0.016	3.97E-08	3.71E-08	3.89E-08	4.04E-08
0.02	5.20E-08	5.04E-08	5.15E-08	5.25E-08
0.025	6.69E-08	6.59E-08	6.65E-08	6.69E-08
0.032	8.79E-08	8.73E-08	8.77E-08	8.79E-08
0.04	1.16E-07	1.16E-07	1.16E-07	1.16E-07
0.05	1.67E-07	1.67E-07	1.67E-07	1.67E-07
0.063	2.59E-07	2.44E-07	2.01E-07	2.21E-07
0.079	4.12E-07	3.94E-07	3.24E-07	3.32E-07
0.1	6.85E-07	6.70E-07	6.84E-07	6.92E-07
0.126	1.04E-06	1.09E-06	1.00E-06	1.04E-06
0.158	1.56E-06	1.37E-06	1.34E-06	1.36E-06
0.2	2.11E-06	2.02E-06	2.11E-06	2.14E-06
0.251	2.93E-06	2.54E-06	2.54E-06	2.89E-06
0.316	3.96E-06	3.31E-06	3.22E-06	3.47E-06
0.398	4.76E-06	4.30E-06	4.13E-06	4.22E-06
0.501	6.02E-06	5.35E-06	5.26E-06	5.30E-06
0.631	7.17E-06	6.46E-06	6.56E-06	6.50E-06
0.794	8.84E-06	7.91E-06	8.13E-06	7.69E-06
1	1.08E-05	9.47E-06	1.00E-05	9.06E-06
1.259	1.29E-05	1.12E-05	1.14E-05	1.09E-05
1.585	1.56E-05	1.33E-05	1.43E-05	1.43E-05
1.995	1.91E-05	1.57E-05	1.73E-05	1.69E-05
2.512	2.21E-05	1.82E-05	2.00E-05	1.94E-05
3.162	2.60E-05	2.13E-05	2.36E-05	2.21E-05
3.981	3.05E-05	2.50E-05	2.78E-05	2.63E-05
5.012	3.52E-05	2.94E-05	3.34E-05	3.11E-05
6.31	4.15E-05	3.45E-05	4.12E-05	3.71E-05
7.943	4.99E-05	4.13E-05	4.94E-05	4.52E-05
10	6.00E-05	4.96E-05	5.83E-05	5.49E-05

Table E-12: Kerma Drywall 5cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.04E-09	5.95E-10	1.11E-09	1.36E-09
0.013	1.88E-09	1.48E-09	1.98E-09	2.14E-09
0.016	3.68E-09	2.50E-09	2.51E-09	1.46E-09
0.02	4.60E-09	3.30E-09	3.80E-09	2.59E-09
0.025	5.43E-09	4.68E-09	6.43E-09	4.98E-09
0.032	7.17E-09	5.96E-09	1.14E-08	6.87E-09
0.04	1.13E-08	7.93E-09	8.56E-09	8.14E-09
0.05	1.45E-08	1.08E-08	1.23E-08	1.27E-08
0.063	2.20E-08	1.87E-08	1.85E-08	2.16E-08
0.079	3.87E-08	2.65E-08	3.16E-08	4.49E-08
0.1	6.57E-08	4.55E-08	5.46E-08	8.19E-08
0.126	9.94E-08	7.74E-08	1.06E-07	9.97E-08
0.158	1.39E-07	1.08E-07	1.02E-07	1.33E-07
0.2	1.99E-07	1.67E-07	1.50E-07	2.07E-07
0.251	2.60E-07	2.26E-07	2.18E-07	2.66E-07
0.316	3.40E-07	2.86E-07	2.73E-07	3.74E-07
0.398	4.15E-07	3.68E-07	3.76E-07	5.06E-07
0.501	5.29E-07	4.67E-07	5.09E-07	6.99E-07
0.631	6.61E-07	6.10E-07	6.64E-07	1.01E-06
0.794	8.20E-07	7.89E-07	8.42E-07	1.38E-06
1	9.93E-07	9.64E-07	1.05E-06	1.64E-06
1.259	1.22E-06	1.11E-06	1.13E-06	2.03E-06
1.585	1.50E-06	1.35E-06	1.48E-06	2.58E-06
1.995	1.73E-06	1.65E-06	1.66E-06	3.23E-06
2.512	2.17E-06	1.95E-06	1.93E-06	3.77E-06
3.162	2.49E-06	2.27E-06	2.45E-06	4.88E-06
3.981	2.90E-06	2.75E-06	2.77E-06	5.87E-06
5.012	3.53E-06	3.23E-06	3.36E-06	7.03E-06
6.31	4.18E-06	3.74E-06	4.05E-06	8.38E-06
7.943	5.02E-06	4.53E-06	4.89E-06	1.03E-05
10	6.02E-06	5.43E-06	5.69E-06	1.19E-05

Table E-13: Kerma Drywall 5cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.48E-10	1.76E-10	2.45E-10	2.54E-10
0.013	5.00E-10	4.26E-10	4.91E-10	3.80E-10
0.016	7.98E-10	7.50E-10	8.31E-10	4.60E-10
0.02	1.24E-09	1.00E-09	9.83E-10	1.14E-09
0.025	1.58E-09	1.20E-09	1.05E-09	1.91E-09
0.032	2.25E-09	1.82E-09	1.63E-09	2.24E-09
0.04	3.01E-09	2.44E-09	2.40E-09	3.46E-09
0.05	4.34E-09	4.18E-09	3.56E-09	4.90E-09
0.063	7.00E-09	6.03E-09	9.48E-09	6.73E-09
0.079	1.11E-08	8.31E-09	1.44E-08	1.11E-08
0.1	1.77E-08	1.89E-08	1.90E-08	1.64E-08
0.126	2.76E-08	2.59E-08	3.07E-08	2.83E-08
0.158	3.89E-08	3.92E-08	3.96E-08	3.76E-08
0.2	5.43E-08	5.36E-08	6.07E-08	6.50E-08
0.251	7.44E-08	7.78E-08	8.29E-08	8.17E-08
0.316	9.28E-08	7.87E-08	1.47E-07	1.04E-07
0.398	1.26E-07	8.72E-08	1.53E-07	1.75E-07
0.501	1.59E-07	1.09E-07	1.65E-07	2.24E-07
0.631	1.99E-07	1.47E-07	2.35E-07	2.79E-07
0.794	2.44E-07	1.96E-07	3.24E-07	3.61E-07
1	3.07E-07	2.41E-07	3.73E-07	3.93E-07
1.259	3.81E-07	2.94E-07	4.37E-07	5.41E-07
1.585	4.52E-07	3.53E-07	4.23E-07	5.15E-07
1.995	5.31E-07	4.42E-07	5.54E-07	6.36E-07
2.512	6.66E-07	5.37E-07	6.58E-07	7.31E-07
3.162	7.59E-07	6.43E-07	7.94E-07	9.71E-07
3.981	9.05E-07	7.82E-07	9.24E-07	1.22E-06
5.012	1.10E-06	9.30E-07	1.16E-06	1.39E-06
6.31	1.29E-06	1.14E-06	1.50E-06	1.62E-06
7.943	1.54E-06	1.37E-06	1.71E-06	1.83E-06
10	1.84E-06	1.63E-06	2.00E-06	2.21E-06

Table E-14: Kerma Drywall 5cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	3.44E-11	3.08E-11	6.16E-11	9.18E-11
0.013	8.31E-11	7.81E-11	1.43E-10	1.29E-10
0.016	1.46E-10	1.52E-10	1.47E-10	1.92E-10
0.02	2.36E-10	2.28E-10	2.24E-10	2.29E-10
0.025	3.60E-10	2.85E-10	2.74E-10	4.10E-10
0.032	5.13E-10	5.26E-10	4.88E-10	6.36E-10
0.04	7.17E-10	4.99E-10	9.81E-10	6.98E-10
0.05	1.04E-09	8.33E-10	1.21E-09	1.21E-09
0.063	1.76E-09	1.25E-09	2.61E-09	2.21E-09
0.079	2.64E-09	1.90E-09	4.24E-09	1.86E-09
0.1	4.37E-09	4.42E-09	5.44E-09	1.75E-09
0.126	6.82E-09	6.62E-09	9.31E-09	3.94E-09
0.158	9.78E-09	7.84E-09	1.77E-08	9.33E-09
0.2	1.34E-08	1.16E-08	2.25E-08	1.23E-08
0.251	1.83E-08	1.71E-08	3.62E-08	2.13E-08
0.316	2.40E-08	2.43E-08	3.80E-08	1.90E-08
0.398	3.11E-08	1.81E-08	1.04E-07	6.04E-08
0.501	3.97E-08	2.29E-08	1.24E-07	7.93E-08
0.631	4.96E-08	3.04E-08	1.64E-07	9.94E-08
0.794	6.06E-08	4.09E-08	2.19E-07	1.29E-07
1	7.63E-08	5.09E-08	2.58E-07	1.45E-07
1.259	9.56E-08	6.18E-08	3.04E-07	1.75E-07
1.585	1.12E-07	7.61E-08	3.34E-07	1.63E-07
1.995	1.33E-07	9.20E-08	4.06E-07	1.78E-07
2.512	1.67E-07	1.14E-07	4.81E-07	2.07E-07
3.162	1.89E-07	1.37E-07	5.70E-07	3.29E-07
3.981	2.27E-07	1.70E-07	6.73E-07	3.53E-07
5.012	2.74E-07	2.05E-07	8.13E-07	3.84E-07
6.31	3.21E-07	2.51E-07	1.00E-06	4.22E-07
7.943	3.85E-07	2.99E-07	1.30E-06	4.84E-07
10	4.60E-07	3.58E-07	1.70E-06	5.82E-07

Table E-15: Kerma Drywall 5cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	4.41E-12	7.31E-12	2.16E-11	3.13E-11
0.013	1.15E-11	1.52E-11	3.47E-11	3.27E-11
0.016	2.38E-11	2.54E-11	4.90E-11	3.42E-11
0.02	4.47E-11	3.81E-11	6.64E-11	6.88E-11
0.025	7.31E-11	6.84E-11	8.91E-11	1.07E-10
0.032	1.17E-10	1.06E-10	8.22E-11	1.98E-10
0.04	1.73E-10	1.29E-10	1.68E-10	9.56E-11
0.05	2.60E-10	1.50E-10	1.11E-10	1.34E-10
0.063	4.15E-10	2.70E-10	1.92E-10	2.88E-10
0.079	6.56E-10	4.41E-10	4.49E-10	4.76E-10
0.1	1.09E-09	9.14E-10	1.02E-09	1.07E-09
0.126	1.66E-09	7.85E-10	1.97E-09	5.77E-10
0.158	2.42E-09	1.20E-09	3.79E-09	9.93E-10
0.2	3.29E-09	2.20E-09	3.00E-09	1.17E-09
0.251	4.41E-09	4.04E-09	5.25E-09	3.53E-09
0.316	5.72E-09	2.94E-09	1.20E-08	4.76E-09
0.398	7.64E-09	3.65E-09	1.19E-08	8.72E-09
0.501	9.62E-09	4.69E-09	1.85E-08	1.32E-08
0.631	1.20E-08	6.27E-09	1.97E-08	1.82E-08
0.794	1.47E-08	7.99E-09	2.63E-08	2.54E-08
1	1.86E-08	1.03E-08	3.37E-08	3.21E-08
1.259	2.33E-08	1.25E-08	4.73E-08	4.24E-08
1.585	2.79E-08	1.65E-08	5.45E-08	2.72E-08
1.995	3.32E-08	1.87E-08	5.94E-08	3.84E-08
2.512	4.15E-08	2.34E-08	7.25E-08	4.75E-08
3.162	4.69E-08	2.80E-08	8.70E-08	6.21E-08
3.981	5.62E-08	3.52E-08	1.04E-07	8.39E-08
5.012	6.80E-08	4.24E-08	1.26E-07	9.68E-08
6.31	7.95E-08	5.16E-08	1.54E-07	1.12E-07
7.943	9.56E-08	6.33E-08	1.93E-07	1.30E-07
10	1.14E-07	7.50E-08	2.44E-07	1.52E-07

Surface Contamination Room Ratios

Table E-16: Room Ratio Drywall Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.740	1.780	3.125	3.840
0.013	2.470	1.503	2.174	2.494
0.016	1.867	1.224	1.674	1.874
0.02	1.501	1.025	1.357	1.508
0.025	1.220	0.854	1.114	1.218
0.032	1.070	0.759	0.979	1.069
0.04	0.951	0.688	0.872	0.951
0.05	0.980	0.722	0.904	0.994
0.063	0.960	0.717	0.890	0.969
0.079	1.009	0.763	0.934	1.018
0.1	1.089	0.832	1.011	1.100
0.126	1.147	0.873	1.071	1.159
0.158	1.159	0.883	1.082	1.175
0.2	1.144	0.866	1.065	1.160
0.251	1.029	0.774	0.957	1.045
0.316	1.013	0.756	0.942	1.026
0.398	0.950	0.702	0.880	0.962
0.501	0.915	0.670	0.846	0.924
0.631	0.902	0.655	0.832	0.909
0.794	0.891	0.641	0.822	0.898
1	0.962	0.687	0.885	0.968
1.259	0.917	0.651	0.842	0.921
1.585	0.896	0.633	0.824	0.900
1.995	0.881	0.623	0.807	0.885
2.512	0.869	0.612	0.796	0.873
3.162	0.850	0.598	0.779	0.854
3.981	0.830	0.584	0.759	0.833
5.012	0.832	0.585	0.760	0.833
6.31	0.830	0.584	0.758	0.831
7.943	0.824	0.581	0.753	0.825
10	0.826	0.583	0.754	0.826

Table E-17: Room Ratio Drywall Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.461	1.236	3.061	3.796
0.013	2.008	1.411	2.284	2.557
0.016	1.758	1.444	1.930	2.012
0.02	1.577	1.374	1.692	1.720
0.025	1.367	1.237	1.430	1.440
0.032	1.247	1.153	1.303	1.271
0.04	1.122	1.044	1.172	1.150
0.05	1.159	1.065	1.205	1.190
0.063	1.130	1.046	1.184	1.175
0.079	1.182	1.092	1.252	1.242
0.1	1.271	1.178	1.343	1.341
0.126	1.339	1.247	1.417	1.430
0.158	1.356	1.248	1.445	1.442
0.2	1.341	1.234	1.423	1.429
0.251	1.210	1.114	1.286	1.286
0.316	1.197	1.100	1.271	1.274
0.398	1.127	1.036	1.195	1.190
0.501	1.091	1.001	1.156	1.148
0.631	1.080	0.989	1.145	1.131
0.794	1.072	0.979	1.135	1.116
1	1.162	1.061	1.228	1.206
1.259	1.111	1.023	1.175	1.150
1.585	1.088	0.992	1.151	1.126
1.995	1.072	0.978	1.133	1.109
2.512	1.059	0.966	1.117	1.092
3.162	1.038	0.947	1.094	1.068
3.981	1.014	0.926	1.070	1.042
5.012	1.015	0.924	1.067	1.041
6.31	1.013	0.922	1.064	1.036
7.943	1.005	0.915	1.055	1.027
10	1.007	0.917	1.057	1.028

Table E-18: Room Ratio Drywall Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.258	1.283	3.195	3.973
0.013	1.934	1.456	2.324	2.578
0.016	1.772	1.515	1.966	2.104
0.02	1.670	1.551	1.757	1.734
0.025	1.503	1.438	1.558	1.483
0.032	1.406	1.375	1.451	1.381
0.04	1.282	1.261	1.297	1.220
0.05	1.327	1.319	1.358	1.298
0.063	1.292	1.278	1.323	1.273
0.079	1.345	1.330	1.394	1.337
0.1	1.444	1.426	1.508	1.419
0.126	1.521	1.510	1.584	1.516
0.158	1.542	1.528	1.630	1.545
0.2	1.528	1.522	1.610	1.522
0.251	1.384	1.377	1.468	1.381
0.316	1.375	1.366	1.443	1.356
0.398	1.300	1.288	1.372	1.281
0.501	1.264	1.251	1.320	1.237
0.631	1.257	1.242	1.306	1.224
0.794	1.252	1.239	1.298	1.212
1	1.362	1.350	1.412	1.320
1.259	1.306	1.294	1.343	1.261
1.585	1.282	1.272	1.320	1.225
1.995	1.266	1.257	1.306	1.206
2.512	1.253	1.245	1.286	1.191
3.162	1.229	1.218	1.257	1.167
3.981	1.202	1.194	1.227	1.140
5.012	1.204	1.193	1.231	1.137
6.31	1.201	1.190	1.228	1.132
7.943	1.192	1.181	1.218	1.123
10	1.194	1.181	1.220	1.125

Table E-19: Room Ratio Drywall Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.227	0.943	2.941	3.827
0.013	1.196	1.065	2.205	2.568
0.016	1.234	1.184	1.869	2.023
0.02	1.304	1.296	1.719	1.757
0.025	1.284	1.339	1.549	1.516
0.032	1.284	1.378	1.488	1.437
0.04	1.212	1.327	1.365	1.314
0.05	1.280	1.397	1.478	1.362
0.063	1.254	1.337	1.406	1.360
0.079	1.308	1.412	1.479	1.424
0.1	1.398	1.477	1.578	1.616
0.126	1.470	1.553	1.689	1.644
0.158	1.489	1.590	1.766	1.630
0.2	1.476	1.560	1.731	1.648
0.251	1.338	1.413	1.553	1.492
0.316	1.330	1.424	1.535	1.468
0.398	1.259	1.343	1.455	1.370
0.501	1.227	1.307	1.423	1.375
0.631	1.222	1.311	1.406	1.322
0.794	1.220	1.319	1.402	1.322
1	1.329	1.438	1.523	1.423
1.259	1.277	1.370	1.466	1.367
1.585	1.257	1.351	1.442	1.341
1.995	1.243	1.340	1.433	1.317
2.512	1.232	1.330	1.424	1.309
3.162	1.211	1.309	1.392	1.283
3.981	1.186	1.283	1.360	1.254
5.012	1.189	1.286	1.363	1.254
6.31	1.188	1.290	1.359	1.256
7.943	1.180	1.276	1.353	1.246
10	1.182	1.283	1.363	1.245

Table E-20: Room Ratio Drywall Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.637	0.969	2.923	3.939
0.013	0.662	0.985	2.179	2.588
0.016	0.758	1.012	1.839	2.062
0.02	0.912	1.151	1.698	1.801
0.025	0.999	1.202	1.528	1.677
0.032	1.102	1.266	1.497	1.576
0.04	1.099	1.353	1.403	1.456
0.05	1.198	1.393	1.467	1.461
0.063	1.186	1.376	1.431	1.431
0.079	1.321	1.485	1.602	1.722
0.1	1.321	1.498	1.612	1.792
0.126	1.453	1.685	1.779	2.004
0.158	1.454	1.661	1.936	1.773
0.2	1.387	1.612	1.775	1.879
0.251	1.258	1.447	1.609	1.691
0.316	1.251	1.446	1.600	1.660
0.398	1.188	1.374	1.524	1.547
0.501	1.159	1.347	1.472	1.537
0.631	1.159	1.360	1.465	1.498
0.794	1.159	1.410	1.471	1.515
1	1.268	1.494	1.604	1.643
1.259	1.223	1.451	1.553	1.565
1.585	1.208	1.431	1.523	1.538
1.995	1.199	1.424	1.525	1.519
2.512	1.193	1.422	1.522	1.509
3.162	1.176	1.406	1.498	1.478
3.981	1.154	1.376	1.468	1.443
5.012	1.160	1.387	1.473	1.455
6.31	1.161	1.397	1.470	1.454
7.943	1.154	1.396	1.464	1.450
10	1.158	1.392	1.473	1.450

1 cm Contamination Depth Room Ratios

Table E-21: Room Ratio Drywall 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.374483	0.941738	1.275818	1.507927
0.013	0.868344	0.755285	0.841946	0.903261
0.016	0.788788	0.736645	0.77776	0.801433
0.02	0.672681	0.651859	0.668839	0.678887
0.025	0.539154	0.530022	0.538263	0.540987
0.032	0.635917	0.62636	0.63477	0.637685
0.04	0.723629	0.69956	0.722416	0.728292
0.05	0.90128	0.846082	0.899006	0.914288
0.063	0.995202	0.907909	0.990392	1.015542
0.079	1.16964	1.046506	1.161995	1.199499
0.1	1.319143	1.162979	1.306911	1.356476
0.126	1.437463	1.253464	1.421175	1.481945
0.158	1.477966	1.276609	1.460112	1.52571
0.2	1.51845	1.298959	1.497193	1.569392
0.251	1.339094	1.134015	1.320004	1.385209
0.316	1.341797	1.123678	1.319291	1.390124
0.398	1.207472	0.999521	1.185602	1.252218
0.501	1.18439	0.968683	1.160512	1.229138
0.631	1.214918	0.981764	1.187919	1.262015
0.794	1.205037	0.962187	1.175469	1.252794
1	1.240969	0.979299	1.207089	1.290709
1.259	1.180574	0.921193	1.145366	1.227815
1.585	1.124592	0.868814	1.087731	1.168606
1.995	1.095975	0.839309	1.056957	1.138022
2.512	1.049323	0.797459	1.008946	1.088963
3.162	1.034134	0.781334	0.9915	1.07127
3.981	0.991283	0.745641	0.948065	1.025504
5.012	0.986593	0.739674	0.941139	1.019673
6.31	0.9755	0.729689	0.928718	1.006642
7.943	0.960349	0.717367	0.913024	0.989735
10	0.949795	0.708743	0.901369	0.977871

Table E-22: Room Ratio Drywall 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.841799	0.515942	1.013945	1.248157
0.013	0.656405	0.489796	0.691234	0.848553
0.016	0.656331	0.582621	0.669594	0.748955
0.02	0.606529	0.626833	0.611085	0.643929
0.025	0.512796	0.496658	0.511168	0.545513
0.032	0.624893	0.615242	0.618449	0.637165
0.04	0.724908	0.735504	0.729673	0.722368
0.05	0.928798	0.933653	0.96201	0.933225
0.063	1.048746	1.048826	1.086039	1.066308
0.079	1.251306	1.261873	1.323151	1.253926
0.1	1.421415	1.419396	1.495183	1.434169
0.126	1.557894	1.534036	1.667424	1.637096
0.158	1.612897	1.587513	1.700415	1.648064
0.2	1.663655	1.648815	1.776861	1.726331
0.251	1.477731	1.454409	1.556916	1.561704
0.316	1.487567	1.468421	1.575945	1.605729
0.398	1.348352	1.32973	1.450014	1.409881
0.501	1.331744	1.299343	1.420987	1.41145
0.631	1.377566	1.345145	1.475464	1.459115
0.794	1.377148	1.359008	1.469591	1.413625
1	1.42454	1.390302	1.534654	1.512157
1.259	1.362766	1.343291	1.478363	1.448365
1.585	1.305278	1.265678	1.420128	1.40311
1.995	1.277829	1.235818	1.403487	1.379059
2.512	1.22899	1.180963	1.349385	1.318933
3.162	1.215549	1.171263	1.342474	1.291246
3.981	1.170495	1.127259	1.295648	1.226404
5.012	1.172801	1.130235	1.261395	1.208451
6.31	1.162779	1.116896	1.249188	1.198937
7.943	1.144016	1.096532	1.283783	1.211221
10	1.133721	1.079004	1.266729	1.191638

Table E-23: Room Ratio Drywall 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.779571	0.500787	1.104879	1.424081
0.013	0.594833	0.487773	0.723167	0.837654
0.016	0.616757	0.549777	0.694379	0.762299
0.02	0.585351	0.553252	0.620662	0.65078
0.025	0.50172	0.486279	0.515063	0.54035
0.032	0.62098	0.61118	0.640815	0.642459
0.04	0.735345	0.734559	0.745978	0.743618
0.05	0.952919	0.962116	0.96753	0.955337
0.063	1.085868	1.104033	1.116146	1.086189
0.079	1.304278	1.332042	1.343881	1.314069
0.1	1.492643	1.528293	1.552136	1.5008
0.126	1.644741	1.68635	1.717679	1.653177
0.158	1.708183	1.753952	1.791659	1.723007
0.2	1.772677	1.822674	1.864243	1.78277
0.251	1.580215	1.627986	1.662765	1.588678
0.316	1.601028	1.654117	1.688465	1.605091
0.398	1.46155	1.508005	1.529074	1.484714
0.501	1.446932	1.493815	1.499864	1.490043
0.631	1.509133	1.556769	1.571106	1.473609
0.794	1.512191	1.582442	1.588099	1.460976
1	1.574028	1.652951	1.664236	1.526945
1.259	1.518405	1.591145	1.5994	1.463207
1.585	1.46019	1.547983	1.553725	1.403912
1.995	1.437247	1.514853	1.527038	1.389794
2.512	1.391307	1.458164	1.490998	1.34448
3.162	1.379494	1.423826	1.497249	1.427773
3.981	1.329389	1.381963	1.450705	1.357503
5.012	1.336873	1.391229	1.415073	1.286073
6.31	1.321811	1.370486	1.448124	1.301814
7.943	1.308249	1.359245	1.459297	1.315543
10	1.300311	1.34067	1.37945	1.262453

Table E-24: Room Ratio Drywall 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.425333	0.414914	0.524968	1.083707
0.013	0.380126	0.345733	0.476134	0.693609
0.016	0.456973	0.403724	0.598612	0.637361
0.02	0.484305	0.458036	0.563934	0.589921
0.025	0.448897	0.412963	0.494619	0.49926
0.032	0.589391	0.573358	0.629787	0.597274
0.04	0.714525	0.702899	0.738525	0.743983
0.05	0.935284	0.963702	0.941501	0.914397
0.063	1.070304	1.07348	1.068779	1.027869
0.079	1.287522	1.333683	1.343971	1.236809
0.1	1.468333	1.503566	1.573572	1.481317
0.126	1.610488	1.649044	1.757476	1.571074
0.158	1.668658	1.719492	1.89273	1.567152
0.2	1.727664	1.768577	1.907813	1.63994
0.251	1.539329	1.584382	1.74158	1.702978
0.316	1.556871	1.621623	1.808478	1.57923
0.398	1.420376	1.489604	1.536383	1.508129
0.501	1.413204	1.49422	1.591715	1.519735
0.631	1.473373	1.526037	1.768217	1.560106
0.794	1.482068	1.52944	1.843933	1.587703
1	1.54896	1.598014	1.881851	1.623661
1.259	1.49388	1.555877	1.830367	1.534594
1.585	1.436748	1.50739	1.718913	1.43744
1.995	1.41552	1.499133	1.70989	1.439796
2.512	1.370585	1.455849	1.662015	1.423161
3.162	1.367079	1.476766	1.602248	1.411719
3.981	1.325352	1.424834	1.558593	1.398778
5.012	1.320969	1.406718	1.637753	1.391067
6.31	1.311278	1.397306	1.626429	1.262982
7.943	1.299572	1.383916	1.603863	1.293986
10	1.291554	1.37169	1.667171	1.308734

Table E-25: Room Ratio Drywall 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.219735	0.236487	1.280441	1.415535
0.013	0.212611	0.240368	0.64656	1.081587
0.016	0.292789	0.284981	0.55516	0.64768
0.02	0.35826	0.339997	0.526742	0.586817
0.025	0.373896	0.36002	0.402574	0.666781
0.032	0.533073	0.501892	0.552432	0.596608
0.04	0.677771	0.683517	0.692832	0.873235
0.05	0.912407	0.94079	0.924471	0.974272
0.063	1.049958	1.026969	1.001757	1.215195
0.079	1.255239	1.294834	1.291163	1.344383
0.1	1.422887	1.636081	1.521443	1.677392
0.126	1.546829	1.569419	1.768291	1.696672
0.158	1.596315	1.622373	1.960439	1.459318
0.2	1.653933	1.73371	1.941718	1.741776
0.251	1.470159	1.586519	1.706402	1.672227
0.316	1.487364	1.565656	1.673681	1.662043
0.398	1.359209	1.395786	1.620085	1.509385
0.501	1.351507	1.493243	1.63377	1.629337
0.631	1.408684	1.497387	1.72975	1.823977
0.794	1.4233	1.466114	1.664806	1.793761
1	1.485865	1.584158	1.763282	1.997169
1.259	1.438978	1.660452	1.672943	1.994575
1.585	1.388501	1.49609	1.676342	1.70653
1.995	1.367937	1.472627	1.631845	1.612746
2.512	1.339032	1.445846	1.772554	1.491231
3.162	1.333464	1.43024	1.773311	1.525092
3.981	1.285796	1.391447	1.570289	1.596423
5.012	1.295711	1.420143	1.530366	1.626362
6.31	1.290967	1.385143	1.58987	1.671147
7.943	1.274698	1.404788	1.522491	1.596101
10	1.271089	1.382176	1.421845	1.668347

5 cm Contamination Depth Room Ratios

Table E-26: Room Ratio Drywall 5cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.25979	0.84902	1.11760	1.36249
0.013	0.69499	0.60467	0.66948	0.72225
0.016	0.88426	0.82646	0.86731	0.89972
0.02	0.66856	0.64727	0.66221	0.67443
0.025	0.62023	0.61090	0.61657	0.62058
0.032	0.57288	0.56898	0.57146	0.57271
0.04	0.58250	0.57990	0.58237	0.58257
0.05	0.63643	0.63489	0.63581	0.63586
0.063	0.70609	0.66538	0.54755	0.60162
0.079	0.85244	0.81524	0.67107	0.68725
0.1	1.14549	1.12113	1.14438	1.15768
0.126	1.27550	1.34279	1.23125	1.27183
0.158	1.49271	1.30490	1.28213	1.29867
0.2	1.53733	1.47416	1.53424	1.55621
0.251	1.64159	1.42189	1.42321	1.61905
0.316	1.70738	1.42812	1.39120	1.49629
0.398	1.60778	1.45240	1.39535	1.42449
0.501	1.61383	1.43310	1.40956	1.42159
0.631	1.50000	1.35141	1.37334	1.36122
0.794	1.49302	1.33528	1.37219	1.29814
1	1.47684	1.30000	1.37842	1.24268
1.259	1.38576	1.20239	1.23218	1.17325
1.585	1.33821	1.14198	1.22976	1.22789
1.995	1.32042	1.08781	1.19705	1.16661
2.512	1.28070	1.05285	1.15771	1.12475
3.162	1.23321	1.01202	1.12181	1.04840
3.981	1.20471	0.98716	1.09590	1.03719
5.012	1.17008	0.97866	1.11144	1.03276
6.31	1.15676	0.96153	1.14755	1.03465
7.943	1.14001	0.94166	1.12655	1.03078
10	1.13282	0.93665	1.09957	1.03478

Table E-27: Room Ratio Drywall 5cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.88375	0.50626	0.94425	1.15742
0.013	0.52668	0.41480	0.55302	0.59895
0.016	0.95686	0.64958	0.65222	0.37930
0.02	0.68874	0.49451	0.56897	0.38834
0.025	0.58696	0.50648	0.69618	0.53861
0.032	0.54529	0.45332	0.86903	0.52253
0.04	0.66042	0.46282	0.49947	0.47504
0.05	0.64515	0.48139	0.54475	0.56524
0.063	0.69952	0.59616	0.58906	0.68879
0.079	0.93543	0.64064	0.76473	1.08616
0.1	1.28320	0.88789	1.06568	1.59934
0.126	1.42297	1.10874	1.51884	1.42675
0.158	1.55219	1.20512	1.13898	1.48178
0.2	1.69289	1.42201	1.27084	1.75420
0.251	1.70021	1.47974	1.42882	1.73734
0.316	1.71247	1.43726	1.37589	1.88048
0.398	1.63503	1.44915	1.48188	1.99111
0.501	1.65532	1.46008	1.59154	2.18480
0.631	1.61405	1.49024	1.62243	2.47783
0.794	1.61491	1.55512	1.65833	2.72143
1	1.58958	1.54262	1.67620	2.63208
1.259	1.53517	1.39450	1.41552	2.55509
1.585	1.49864	1.35399	1.48241	2.57791
1.995	1.39819	1.33180	1.33556	2.60618
2.512	1.46757	1.31383	1.30200	2.54646
3.162	1.37716	1.25967	1.35619	2.70311
3.981	1.33529	1.26486	1.27447	2.70285
5.012	1.37126	1.25399	1.30470	2.72691
6.31	1.35714	1.21509	1.31650	2.72396
7.943	1.33805	1.20578	1.30290	2.74024
10	1.32452	1.19613	1.25192	2.62805

Table E-28: Room Ratio Drywall 5cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.72455	0.51220	0.71608	0.74030
0.013	0.47992	0.40861	0.47109	0.36446
0.016	0.71151	0.66866	0.74054	0.40959
0.02	0.63750	0.51634	0.50508	0.58787
0.025	0.58470	0.44393	0.39080	0.70873
0.032	0.58703	0.47445	0.42493	0.58305
0.04	0.60322	0.48877	0.48039	0.69245
0.05	0.66075	0.63713	0.54253	0.74657
0.063	0.76341	0.65843	1.03448	0.73445
0.079	0.92048	0.68821	1.19385	0.92115
0.1	1.18272	1.26668	1.27232	1.09722
0.126	1.35711	1.26932	1.50816	1.38713
0.158	1.48797	1.49980	1.51408	1.43555
0.2	1.58038	1.56012	1.76885	1.89246
0.251	1.67028	1.74525	1.85938	1.83320
0.316	1.60171	1.35794	2.53885	1.80230
0.398	1.69936	1.17709	2.06823	2.36931
0.501	1.70778	1.17339	1.76443	2.40065
0.631	1.66323	1.22737	1.96493	2.33310
0.794	1.64959	1.32331	2.18978	2.44153
1	1.68782	1.32430	2.04485	2.15910
1.259	1.64204	1.26613	1.88444	2.33042
1.585	1.55090	1.21194	1.45164	1.76783
1.995	1.46764	1.22146	1.53154	1.75826
2.512	1.54034	1.24153	1.52178	1.69160
3.162	1.44175	1.22108	1.50881	1.84485
3.981	1.42704	1.23368	1.45788	1.92297
5.012	1.45759	1.23733	1.54267	1.85088
6.31	1.43216	1.27400	1.67424	1.80180
7.943	1.40507	1.25517	1.56513	1.67550
10	1.38655	1.23286	1.51282	1.67134

Table E-29: Room Ratio Drywall 5cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.40189	0.35921	0.71882	1.07156
0.013	0.31887	0.29980	0.54927	0.49331
0.016	0.52082	0.54222	0.52501	0.68425
0.02	0.48421	0.46839	0.46076	0.46988
0.025	0.53464	0.42250	0.40591	0.60792
0.032	0.53450	0.54884	0.50880	0.66326
0.04	0.57389	0.39964	0.78537	0.55874
0.05	0.63558	0.50736	0.73534	0.73878
0.063	0.77014	0.54660	1.14051	0.96404
0.079	0.87410	0.63057	1.40468	0.61649
0.1	1.17117	1.18222	1.45777	0.46878
0.126	1.33959	1.29954	1.82804	0.77439
0.158	1.49466	1.19818	2.70046	1.42563
0.2	1.56480	1.35225	2.61978	1.43418
0.251	1.64265	1.53403	3.25227	1.91349
0.316	1.65465	1.67748	2.62544	1.31024
0.398	1.67851	0.97837	5.61782	3.26068
0.501	1.70032	0.98320	5.33150	3.40081
0.631	1.66099	1.01719	5.47668	3.33027
0.794	1.63672	1.10423	5.90491	3.48722
1	1.67597	1.11732	5.66012	3.18749
1.259	1.64776	1.06535	5.24488	3.01857
1.585	1.54160	1.04369	4.58522	2.23604
1.995	1.46801	1.01797	4.49164	1.97138
2.512	1.54415	1.05219	4.45357	1.91393
3.162	1.43905	1.04302	4.33405	2.50393
3.981	1.42945	1.06967	4.24650	2.22808
5.012	1.45740	1.09003	4.32679	2.04436
6.31	1.43161	1.12022	4.46088	1.88271
7.943	1.40699	1.09172	4.73224	1.76880
10	1.38722	1.07922	5.12755	1.75580

Table E-30: Room Ratio Drywall 5cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.20599	0.34134	1.00627	1.46246
0.013	0.17708	0.23343	0.53272	0.50273
0.016	0.33963	0.36152	0.69809	0.48732
0.02	0.36752	0.31286	0.54625	0.56577
0.025	0.43398	0.40584	0.52860	0.63633
0.032	0.48937	0.44054	0.34284	0.82443
0.04	0.55253	0.41230	0.53914	0.30597
0.05	0.63407	0.36564	0.27104	0.32619
0.063	0.72547	0.47140	0.33565	0.50238
0.079	0.86997	0.58515	0.59571	0.63092
0.1	1.16851	0.97916	1.08831	1.14669
0.126	1.30499	0.61675	1.54988	0.45293
0.158	1.47859	0.73444	2.31526	0.60696
0.2	1.53365	1.02597	1.39611	0.54605
0.251	1.58415	1.44912	1.88311	1.26536
0.316	1.57933	0.81133	3.31445	1.31365
0.398	1.64981	0.78935	2.57983	1.88303
0.501	1.64999	0.80431	3.17106	2.25851
0.631	1.61390	0.83993	2.64025	2.43480
0.794	1.58778	0.86356	2.84250	2.74524
1	1.63399	0.90549	2.95621	2.82187
1.259	1.60515	0.86109	3.26075	2.92483
1.585	1.52983	0.90436	2.99232	1.49361
1.995	1.46809	0.82650	2.62717	1.70022
2.512	1.53485	0.86441	2.68405	1.75648
3.162	1.42664	0.85250	2.64324	1.88844
3.981	1.41759	0.88930	2.63465	2.11863
5.012	1.44603	0.90263	2.68423	2.06017
6.31	1.41783	0.92037	2.74036	1.99119
7.943	1.39664	0.92467	2.82473	1.89737
10	1.37104	0.90562	2.94472	1.83429

APPENDIX F: GLASS TABLES

First tables will be presented for raw air kerma values. These units are in pGy per cm^2. Room ratio values are presented following the Kerma tables.

Surface Contamination Kerma

Table F-1: Kerma Glass Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.27E-05	5.99E-06	1.05E-05	1.30E-05
0.013	1.01E-05	6.13E-06	8.86E-06	1.02E-05
0.016	7.52E-06	4.93E-06	6.74E-06	7.54E-06
0.02	5.14E-06	3.51E-06	4.64E-06	5.16E-06
0.025	3.45E-06	2.42E-06	3.15E-06	3.45E-06
0.032	2.26E-06	1.61E-06	2.07E-06	2.26E-06
0.04	1.65E-06	1.20E-06	1.51E-06	1.65E-06
0.05	1.37E-06	1.03E-06	1.27E-06	1.39E-06
0.063	1.37E-06	1.04E-06	1.27E-06	1.38E-06
0.079	1.56E-06	1.20E-06	1.45E-06	1.58E-06
0.1	1.96E-06	1.52E-06	1.83E-06	1.98E-06
0.126	2.57E-06	1.98E-06	2.40E-06	2.60E-06
0.158	3.32E-06	2.55E-06	3.10E-06	3.37E-06
0.2	4.31E-06	3.29E-06	4.02E-06	4.38E-06
0.251	5.45E-06	4.12E-06	5.07E-06	5.54E-06
0.316	6.83E-06	5.12E-06	6.35E-06	6.91E-06
0.398	8.46E-06	6.27E-06	7.84E-06	8.56E-06
0.501	1.03E-05	7.59E-06	9.56E-06	1.04E-05
0.631	1.24E-05	9.04E-06	1.15E-05	1.25E-05
0.794	1.48E-05	1.07E-05	1.37E-05	1.49E-05
1	1.76E-05	1.26E-05	1.62E-05	1.77E-05
1.259	2.05E-05	1.46E-05	1.88E-05	2.06E-05
1.585	2.39E-05	1.69E-05	2.20E-05	2.40E-05
1.995	2.77E-05	1.96E-05	2.54E-05	2.78E-05
2.512	3.19E-05	2.25E-05	2.92E-05	3.21E-05
3.162	3.69E-05	2.60E-05	3.38E-05	3.71E-05
3.981	4.27E-05	3.00E-05	3.90E-05	4.28E-05
5.012	4.95E-05	3.49E-05	4.53E-05	4.96E-05
6.31	5.82E-05	4.10E-05	5.32E-05	5.83E-05
7.943	6.90E-05	4.86E-05	6.30E-05	6.90E-05
10	8.22E-05	5.81E-05	7.51E-05	8.23E-05

Table F-2: Kerma Glass Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	7.14E-07	3.57E-07	8.86E-07	1.10E-06
0.013	7.04E-07	4.93E-07	7.98E-07	8.94E-07
0.016	6.07E-07	4.98E-07	6.65E-07	6.95E-07
0.02	4.62E-07	4.03E-07	4.96E-07	5.05E-07
0.025	3.31E-07	3.00E-07	3.47E-07	3.49E-07
0.032	2.25E-07	2.08E-07	2.35E-07	2.31E-07
0.04	1.66E-07	1.54E-07	1.73E-07	1.71E-07
0.05	1.38E-07	1.27E-07	1.44E-07	1.44E-07
0.063	1.37E-07	1.27E-07	1.44E-07	1.45E-07
0.079	1.55E-07	1.44E-07	1.64E-07	1.64E-07
0.1	1.95E-07	1.80E-07	2.06E-07	2.07E-07
0.126	2.56E-07	2.37E-07	2.74E-07	2.73E-07
0.158	3.31E-07	3.05E-07	3.53E-07	3.52E-07
0.2	4.32E-07	3.98E-07	4.58E-07	4.60E-07
0.251	5.47E-07	5.03E-07	5.81E-07	5.84E-07
0.316	6.90E-07	6.34E-07	7.32E-07	7.37E-07
0.398	8.59E-07	7.89E-07	9.12E-07	9.09E-07
0.501	1.05E-06	9.67E-07	1.12E-06	1.11E-06
0.631	1.28E-06	1.17E-06	1.35E-06	1.34E-06
0.794	1.53E-06	1.40E-06	1.62E-06	1.59E-06
1	1.82E-06	1.66E-06	1.92E-06	1.89E-06
1.259	2.13E-06	1.95E-06	2.25E-06	2.21E-06
1.585	2.49E-06	2.27E-06	2.63E-06	2.58E-06
1.995	2.89E-06	2.64E-06	3.05E-06	2.98E-06
2.512	3.34E-06	3.05E-06	3.52E-06	3.44E-06
3.162	3.86E-06	3.52E-06	4.07E-06	3.97E-06
3.981	4.47E-06	4.08E-06	4.71E-06	4.59E-06
5.012	5.18E-06	4.72E-06	5.45E-06	5.32E-06
6.31	6.09E-06	5.54E-06	6.39E-06	6.23E-06
7.943	7.21E-06	6.56E-06	7.57E-06	7.36E-06
10	8.59E-06	7.83E-06	9.02E-06	8.77E-06

Table F-3: Kerma Glass Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.91E-07	1.08E-07	2.70E-07	3.35E-07
0.013	1.98E-07	1.48E-07	2.37E-07	2.63E-07
0.016	1.79E-07	1.52E-07	1.98E-07	2.12E-07
0.02	1.43E-07	1.33E-07	1.50E-07	1.49E-07
0.025	1.06E-07	1.02E-07	1.10E-07	1.05E-07
0.032	7.39E-08	7.22E-08	7.61E-08	7.27E-08
0.04	5.51E-08	5.41E-08	5.59E-08	5.27E-08
0.05	4.61E-08	4.57E-08	4.71E-08	4.56E-08
0.063	4.55E-08	4.63E-08	4.70E-08	4.47E-08
0.079	5.13E-08	5.08E-08	5.34E-08	5.05E-08
0.1	6.43E-08	6.34E-08	6.75E-08	6.39E-08
0.126	8.44E-08	8.36E-08	8.83E-08	8.39E-08
0.158	1.09E-07	1.09E-07	1.16E-07	1.10E-07
0.2	1.43E-07	1.43E-07	1.51E-07	1.43E-07
0.251	1.83E-07	1.81E-07	1.94E-07	1.82E-07
0.316	2.31E-07	2.29E-07	2.42E-07	2.29E-07
0.398	2.89E-07	2.86E-07	3.03E-07	2.85E-07
0.501	3.56E-07	3.53E-07	3.72E-07	3.48E-07
0.631	4.33E-07	4.27E-07	4.50E-07	4.22E-07
0.794	5.21E-07	5.15E-07	5.39E-07	5.06E-07
1	6.21E-07	6.14E-07	6.43E-07	6.01E-07
1.259	7.30E-07	7.24E-07	7.52E-07	7.03E-07
1.585	8.55E-07	8.48E-07	8.80E-07	8.19E-07
1.995	9.94E-07	9.87E-07	1.02E-06	9.48E-07
2.512	1.15E-06	1.14E-06	1.18E-06	1.09E-06
3.162	1.33E-06	1.32E-06	1.36E-06	1.26E-06
3.981	1.54E-06	1.53E-06	1.58E-06	1.46E-06
5.012	1.79E-06	1.78E-06	1.84E-06	1.70E-06
6.31	2.11E-06	2.08E-06	2.15E-06	1.98E-06
7.943	2.49E-06	2.47E-06	2.55E-06	2.35E-06
10	2.97E-06	2.94E-06	3.03E-06	2.80E-06

Table F-4: Kerma Glass Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.60E-08	1.99E-08	6.20E-08	8.07E-08
0.013	3.06E-08	2.71E-08	5.62E-08	6.55E-08
0.016	3.11E-08	2.98E-08	4.70E-08	5.12E-08
0.02	2.79E-08	2.76E-08	3.66E-08	3.78E-08
0.025	2.27E-08	2.36E-08	2.74E-08	2.68E-08
0.032	1.69E-08	1.80E-08	1.94E-08	1.89E-08
0.04	1.30E-08	1.42E-08	1.46E-08	1.44E-08
0.05	1.11E-08	1.21E-08	1.25E-08	1.18E-08
0.063	1.10E-08	1.18E-08	1.25E-08	1.20E-08
0.079	1.24E-08	1.31E-08	1.38E-08	1.47E-08
0.1	1.56E-08	1.65E-08	1.78E-08	1.80E-08
0.126	2.04E-08	2.15E-08	2.34E-08	2.25E-08
0.158	2.65E-08	2.82E-08	3.06E-08	2.93E-08
0.2	3.46E-08	3.65E-08	4.00E-08	3.89E-08
0.251	4.41E-08	4.66E-08	5.08E-08	4.98E-08
0.316	5.59E-08	5.96E-08	6.40E-08	6.15E-08
0.398	6.99E-08	7.44E-08	8.08E-08	7.64E-08
0.501	8.64E-08	9.19E-08	9.94E-08	9.31E-08
0.631	1.05E-07	1.13E-07	1.21E-07	1.15E-07
0.794	1.27E-07	1.36E-07	1.45E-07	1.37E-07
1	1.52E-07	1.63E-07	1.74E-07	1.64E-07
1.259	1.78E-07	1.91E-07	2.05E-07	1.91E-07
1.585	2.10E-07	2.26E-07	2.41E-07	2.23E-07
1.995	2.44E-07	2.63E-07	2.81E-07	2.60E-07
2.512	2.83E-07	3.06E-07	3.27E-07	3.02E-07
3.162	3.28E-07	3.62E-07	3.78E-07	3.48E-07
3.981	3.81E-07	4.12E-07	4.36E-07	4.02E-07
5.012	4.42E-07	4.78E-07	5.08E-07	4.68E-07
6.31	5.20E-07	5.66E-07	5.96E-07	5.49E-07
7.943	6.17E-07	6.67E-07	7.07E-07	6.52E-07
10	7.35E-07	7.99E-07	8.48E-07	7.76E-07

Table F-5: Kerma Glass Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	3.34E-09	5.08E-09	1.53E-08	2.07E-08
0.013	4.20E-09	6.25E-09	1.38E-08	1.64E-08
0.016	4.74E-09	6.34E-09	1.15E-08	1.29E-08
0.02	4.84E-09	6.11E-09	9.00E-09	9.55E-09
0.025	4.41E-09	5.28E-09	6.74E-09	7.37E-09
0.032	3.61E-09	4.15E-09	4.89E-09	5.22E-09
0.04	2.95E-09	3.61E-09	3.75E-09	3.89E-09
0.05	2.59E-09	2.97E-09	3.13E-09	3.18E-09
0.063	2.61E-09	3.01E-09	3.11E-09	3.24E-09
0.079	2.95E-09	3.32E-09	3.58E-09	3.85E-09
0.1	3.68E-09	4.12E-09	4.48E-09	4.95E-09
0.126	4.81E-09	5.58E-09	5.89E-09	6.64E-09
0.158	6.23E-09	7.61E-09	7.99E-09	8.25E-09
0.2	8.14E-09	9.43E-09	1.08E-08	1.09E-08
0.251	1.04E-08	1.19E-08	1.31E-08	1.41E-08
0.316	1.32E-08	1.52E-08	1.68E-08	1.73E-08
0.398	1.65E-08	1.91E-08	2.11E-08	2.16E-08
0.501	2.04E-08	2.38E-08	2.60E-08	2.64E-08
0.631	2.49E-08	2.91E-08	3.13E-08	3.21E-08
0.794	3.01E-08	3.66E-08	3.80E-08	3.93E-08
1	3.61E-08	4.25E-08	4.56E-08	4.71E-08
1.259	4.27E-08	5.05E-08	5.45E-08	5.43E-08
1.585	5.04E-08	5.96E-08	6.36E-08	6.43E-08
1.995	5.88E-08	6.99E-08	7.49E-08	7.50E-08
2.512	6.85E-08	8.17E-08	8.70E-08	8.67E-08
3.162	7.97E-08	9.53E-08	1.02E-07	9.98E-08
3.981	9.27E-08	1.11E-07	1.18E-07	1.15E-07
5.012	1.08E-07	1.29E-07	1.37E-07	1.35E-07
6.31	1.27E-07	1.53E-07	1.61E-07	1.59E-07
7.943	1.51E-07	1.81E-07	1.92E-07	1.88E-07
10	1.80E-07	2.17E-07	2.29E-07	2.24E-07

Kerma for 1cm of Contamination Depth

Table F-6: Kerma Glass 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.15E-07	7.87E-08	1.06E-07	1.26E-07
0.013	1.97E-07	1.73E-07	1.91E-07	2.06E-07
0.016	2.72E-07	2.54E-07	2.69E-07	2.77E-07
0.02	3.60E-07	3.49E-07	3.58E-07	3.64E-07
0.025	4.64E-07	4.57E-07	4.63E-07	4.67E-07
0.032	5.82E-07	5.69E-07	5.81E-07	5.85E-07
0.04	6.67E-07	6.36E-07	6.66E-07	6.74E-07
0.05	7.57E-07	7.01E-07	7.55E-07	7.70E-07
0.063	9.15E-07	8.30E-07	9.10E-07	9.36E-07
0.079	1.16E-06	1.04E-06	1.15E-06	1.19E-06
0.1	1.56E-06	1.37E-06	1.54E-06	1.60E-06
0.126	2.10E-06	1.84E-06	2.08E-06	2.17E-06
0.158	2.77E-06	2.40E-06	2.73E-06	2.86E-06
0.2	3.64E-06	3.13E-06	3.59E-06	3.76E-06
0.251	4.64E-06	3.94E-06	4.57E-06	4.80E-06
0.316	5.86E-06	4.92E-06	5.76E-06	6.07E-06
0.398	7.29E-06	6.05E-06	7.16E-06	7.56E-06
0.501	8.95E-06	7.34E-06	8.77E-06	9.29E-06
0.631	1.08E-05	8.78E-06	1.06E-05	1.13E-05
0.794	1.30E-05	1.04E-05	1.27E-05	1.35E-05
1	1.55E-05	1.23E-05	1.51E-05	1.61E-05
1.259	1.82E-05	1.42E-05	1.77E-05	1.89E-05
1.585	2.14E-05	1.65E-05	2.07E-05	2.22E-05
1.995	2.49E-05	1.91E-05	2.40E-05	2.59E-05
2.512	2.89E-05	2.20E-05	2.78E-05	3.00E-05
3.162	3.36E-05	2.54E-05	3.22E-05	3.48E-05
3.981	3.90E-05	2.94E-05	3.73E-05	4.04E-05
5.012	4.55E-05	3.41E-05	4.34E-05	4.70E-05
6.31	5.35E-05	4.01E-05	5.10E-05	5.53E-05
7.943	6.36E-05	4.75E-05	6.04E-05	6.55E-05
10	7.59E-05	5.67E-05	7.20E-05	7.82E-05

Table F-7: Kerma Glass 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	6.13E-09	3.76E-09	7.85E-09	1.05E-08
0.013	1.25E-08	9.97E-09	1.45E-08	1.68E-08
0.016	1.93E-08	1.70E-08	2.06E-08	2.31E-08
0.02	2.79E-08	2.63E-08	2.86E-08	3.03E-08
0.025	3.79E-08	3.67E-08	3.83E-08	3.95E-08
0.032	4.93E-08	4.86E-08	4.99E-08	5.04E-08
0.04	5.82E-08	5.78E-08	5.92E-08	5.92E-08
0.05	6.77E-08	6.77E-08	6.99E-08	6.89E-08
0.063	8.33E-08	8.30E-08	8.67E-08	8.56E-08
0.079	1.07E-07	1.07E-07	1.12E-07	1.11E-07
0.1	1.44E-07	1.43E-07	1.52E-07	1.50E-07
0.126	1.95E-07	1.93E-07	2.07E-07	2.04E-07
0.158	2.59E-07	2.56E-07	2.75E-07	2.72E-07
0.2	3.42E-07	3.38E-07	3.64E-07	3.61E-07
0.251	4.38E-07	4.33E-07	4.68E-07	4.62E-07
0.316	5.57E-07	5.49E-07	5.98E-07	5.89E-07
0.398	6.98E-07	6.88E-07	7.49E-07	7.37E-07
0.501	8.63E-07	8.51E-07	9.28E-07	9.10E-07
0.631	1.05E-06	1.04E-06	1.14E-06	1.12E-06
0.794	1.27E-06	1.25E-06	1.38E-06	1.34E-06
1	1.53E-06	1.50E-06	1.65E-06	1.61E-06
1.259	1.81E-06	1.77E-06	1.96E-06	1.90E-06
1.585	2.14E-06	2.08E-06	2.32E-06	2.25E-06
1.995	2.50E-06	2.44E-06	2.71E-06	2.64E-06
2.512	2.92E-06	2.83E-06	3.17E-06	3.07E-06
3.162	3.41E-06	3.30E-06	3.69E-06	3.58E-06
3.981	3.97E-06	3.83E-06	4.30E-06	4.16E-06
5.012	4.63E-06	4.46E-06	5.02E-06	4.85E-06
6.31	5.47E-06	5.26E-06	5.92E-06	5.71E-06
7.943	6.50E-06	6.23E-06	7.04E-06	6.78E-06
10	7.76E-06	7.43E-06	8.40E-06	8.10E-06

Table F-8: Kerma Glass 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.62E-09	1.05E-09	2.29E-09	2.96E-09
0.013	3.39E-09	2.77E-09	4.16E-09	4.80E-09
0.016	5.33E-09	4.82E-09	6.06E-09	6.61E-09
0.02	7.83E-09	7.37E-09	8.27E-09	8.78E-09
0.025	1.08E-08	1.05E-08	1.11E-08	1.16E-08
0.032	1.43E-08	1.41E-08	1.47E-08	1.48E-08
0.04	1.71E-08	1.72E-08	1.74E-08	1.73E-08
0.05	2.03E-08	2.05E-08	2.07E-08	2.03E-08
0.063	2.52E-08	2.56E-08	2.58E-08	2.52E-08
0.079	3.25E-08	3.32E-08	3.37E-08	3.29E-08
0.1	4.40E-08	4.50E-08	4.58E-08	4.43E-08
0.126	6.01E-08	6.15E-08	6.28E-08	6.06E-08
0.158	7.98E-08	8.19E-08	8.37E-08	8.08E-08
0.2	1.06E-07	1.09E-07	1.12E-07	1.07E-07
0.251	1.37E-07	1.41E-07	1.44E-07	1.38E-07
0.316	1.74E-07	1.80E-07	1.86E-07	1.76E-07
0.398	2.20E-07	2.27E-07	2.32E-07	2.21E-07
0.501	2.73E-07	2.83E-07	2.89E-07	2.74E-07
0.631	3.35E-07	3.50E-07	3.56E-07	3.37E-07
0.794	4.08E-07	4.24E-07	4.33E-07	4.08E-07
1	4.92E-07	5.13E-07	5.21E-07	4.89E-07
1.259	5.86E-07	6.11E-07	6.22E-07	5.79E-07
1.585	6.96E-07	7.27E-07	7.38E-07	6.84E-07
1.995	8.20E-07	8.57E-07	8.68E-07	8.04E-07
2.512	9.61E-07	1.00E-06	1.02E-06	9.39E-07
3.162	1.12E-06	1.17E-06	1.19E-06	1.10E-06
3.981	1.32E-06	1.37E-06	1.39E-06	1.28E-06
5.012	1.54E-06	1.60E-06	1.63E-06	1.50E-06
6.31	1.82E-06	1.90E-06	1.92E-06	1.77E-06
7.943	2.17E-06	2.25E-06	2.28E-06	2.11E-06
10	2.59E-06	2.70E-06	2.73E-06	2.50E-06

Table F-9: Kerma Glass 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.24E-10	1.92E-10	5.34E-10	6.98E-10
0.013	5.47E-10	5.12E-10	9.59E-10	1.15E-09
0.016	9.84E-10	9.20E-10	1.38E-09	1.59E-09
0.02	1.62E-09	1.60E-09	1.96E-09	2.11E-09
0.025	2.43E-09	2.35E-09	2.68E-09	2.78E-09
0.032	3.39E-09	3.33E-09	3.56E-09	3.58E-09
0.04	4.17E-09	4.18E-09	4.31E-09	4.26E-09
0.05	4.99E-09	5.07E-09	5.15E-09	5.03E-09
0.063	6.21E-09	6.32E-09	6.50E-09	6.28E-09
0.079	8.02E-09	8.22E-09	8.45E-09	8.22E-09
0.1	1.08E-08	1.11E-08	1.14E-08	1.11E-08
0.126	1.47E-08	1.51E-08	1.57E-08	1.53E-08
0.158	1.95E-08	2.01E-08	2.09E-08	2.05E-08
0.2	2.59E-08	2.67E-08	2.79E-08	2.69E-08
0.251	3.33E-08	3.45E-08	3.61E-08	3.48E-08
0.316	4.26E-08	4.41E-08	4.65E-08	4.47E-08
0.398	5.36E-08	5.60E-08	5.85E-08	5.57E-08
0.501	6.68E-08	7.01E-08	7.31E-08	6.98E-08
0.631	8.20E-08	8.67E-08	8.99E-08	8.50E-08
0.794	9.99E-08	1.06E-07	1.10E-07	1.03E-07
1	1.21E-07	1.28E-07	1.33E-07	1.24E-07
1.259	1.44E-07	1.54E-07	1.59E-07	1.47E-07
1.585	1.71E-07	1.83E-07	1.90E-07	1.75E-07
1.995	2.02E-07	2.17E-07	2.25E-07	2.07E-07
2.512	2.37E-07	2.55E-07	2.65E-07	2.43E-07
3.162	2.78E-07	3.00E-07	3.12E-07	2.85E-07
3.981	3.25E-07	3.52E-07	3.68E-07	3.34E-07
5.012	3.81E-07	4.15E-07	4.30E-07	3.91E-07
6.31	4.51E-07	4.91E-07	5.09E-07	4.62E-07
7.943	5.37E-07	5.85E-07	6.09E-07	5.52E-07
10	6.43E-07	7.01E-07	7.27E-07	6.56E-07

Table F-10: Kerma Glass 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.88E-11	4.38E-11	1.44E-10	2.01E-10
0.013	7.68E-11	1.09E-10	2.36E-10	3.12E-10
0.016	1.57E-10	1.82E-10	3.35E-10	4.06E-10
0.02	2.99E-10	3.14E-10	4.68E-10	5.47E-10
0.025	5.02E-10	5.04E-10	6.30E-10	7.02E-10
0.032	7.65E-10	7.57E-10	8.66E-10	9.32E-10
0.04	9.88E-10	9.76E-10	1.05E-09	1.08E-09
0.05	1.21E-09	1.23E-09	1.28E-09	1.29E-09
0.063	1.51E-09	1.56E-09	1.66E-09	1.58E-09
0.079	1.95E-09	2.02E-09	2.09E-09	2.01E-09
0.1	2.62E-09	2.71E-09	2.84E-09	2.78E-09
0.126	3.54E-09	3.67E-09	3.86E-09	3.82E-09
0.158	4.68E-09	4.88E-09	5.16E-09	5.12E-09
0.2	6.20E-09	6.51E-09	6.89E-09	6.78E-09
0.251	7.97E-09	8.34E-09	8.93E-09	8.76E-09
0.316	1.02E-08	1.07E-08	1.15E-08	1.11E-08
0.398	1.28E-08	1.35E-08	1.45E-08	1.40E-08
0.501	1.60E-08	1.69E-08	1.81E-08	1.75E-08
0.631	1.97E-08	2.11E-08	2.21E-08	2.15E-08
0.794	2.40E-08	2.61E-08	2.73E-08	2.61E-08
1	2.90E-08	3.16E-08	3.33E-08	3.17E-08
1.259	3.47E-08	3.79E-08	3.99E-08	3.75E-08
1.585	4.14E-08	4.53E-08	4.79E-08	4.49E-08
1.995	4.90E-08	5.39E-08	5.67E-08	5.29E-08
2.512	5.76E-08	6.39E-08	6.71E-08	6.25E-08
3.162	6.77E-08	7.55E-08	7.98E-08	7.42E-08
3.981	7.94E-08	8.88E-08	9.33E-08	8.57E-08
5.012	9.32E-08	1.10E-07	1.10E-07	1.00E-07
6.31	1.11E-07	1.24E-07	1.31E-07	1.20E-07
7.943	1.32E-07	1.49E-07	1.57E-07	1.42E-07
10	1.58E-07	1.79E-07	1.89E-07	1.70E-07

Surface Contamination Room Ratios

Table F-11: Room Ratio Glass Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.772	1.786	3.140	3.860
0.013	2.485	1.509	2.182	2.505
0.016	1.878	1.231	1.682	1.883
0.02	1.513	1.033	1.367	1.520
0.025	1.237	0.869	1.129	1.235
0.032	1.099	0.783	1.006	1.098
0.04	0.993	0.725	0.911	0.995
0.05	1.043	0.779	0.964	1.059
0.063	1.035	0.785	0.962	1.046
0.079	1.089	0.837	1.013	1.103
0.1	1.164	0.901	1.085	1.178
0.126	1.210	0.932	1.132	1.227
0.158	1.208	0.928	1.130	1.227
0.2	1.181	0.899	1.102	1.200
0.251	1.054	0.797	0.981	1.072
0.316	1.032	0.774	0.959	1.044
0.398	0.964	0.714	0.894	0.976
0.501	0.925	0.680	0.856	0.934
0.631	0.909	0.662	0.840	0.917
0.794	0.897	0.647	0.829	0.904
1	0.967	0.692	0.890	0.974
1.259	0.921	0.655	0.845	0.926
1.585	0.899	0.636	0.827	0.904
1.995	0.883	0.625	0.809	0.888
2.512	0.870	0.614	0.797	0.874
3.162	0.852	0.599	0.781	0.855
3.981	0.832	0.585	0.761	0.835
5.012	0.833	0.586	0.761	0.834
6.31	0.831	0.585	0.759	0.832
7.943	0.825	0.582	0.754	0.825
10	0.827	0.584	0.755	0.827

Table F-12: Room Ratio Glass Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.483	1.242	3.077	3.816
0.013	2.021	1.417	2.293	2.567
0.016	1.769	1.451	1.938	2.024
0.02	1.589	1.384	1.704	1.737
0.025	1.385	1.252	1.451	1.460
0.032	1.278	1.181	1.335	1.309
0.04	1.167	1.087	1.218	1.204
0.05	1.228	1.130	1.276	1.275
0.063	1.211	1.122	1.272	1.278
0.079	1.267	1.176	1.338	1.337
0.1	1.351	1.250	1.425	1.436
0.126	1.408	1.303	1.508	1.501
0.158	1.409	1.298	1.502	1.497
0.2	1.380	1.272	1.463	1.469
0.251	1.236	1.136	1.311	1.318
0.316	1.216	1.118	1.290	1.298
0.398	1.141	1.049	1.212	1.209
0.501	1.101	1.010	1.166	1.158
0.631	1.089	0.996	1.152	1.141
0.794	1.078	0.985	1.144	1.125
1	1.167	1.066	1.233	1.213
1.259	1.115	1.020	1.177	1.157
1.585	1.091	0.996	1.154	1.129
1.995	1.075	0.981	1.136	1.111
2.512	1.061	0.968	1.120	1.092
3.162	1.039	0.949	1.096	1.069
3.981	1.015	0.928	1.070	1.043
5.012	1.016	0.925	1.069	1.043
6.31	1.014	0.923	1.065	1.037
7.943	1.006	0.916	1.056	1.028
10	1.008	0.918	1.058	1.029

Table F-13: Room Ratio Glass Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.278	1.289	3.212	3.996
0.013	1.947	1.462	2.330	2.588
0.016	1.784	1.522	1.975	2.117
0.02	1.683	1.562	1.771	1.754
0.025	1.522	1.458	1.575	1.503
0.032	1.438	1.406	1.482	1.415
0.04	1.329	1.307	1.350	1.272
0.05	1.401	1.389	1.431	1.386
0.063	1.376	1.399	1.420	1.349
0.079	1.435	1.421	1.494	1.413
0.1	1.528	1.507	1.604	1.518
0.126	1.593	1.577	1.667	1.583
0.158	1.596	1.586	1.692	1.596
0.2	1.569	1.563	1.658	1.569
0.251	1.413	1.403	1.499	1.409
0.316	1.396	1.384	1.459	1.385
0.398	1.315	1.302	1.381	1.298
0.501	1.276	1.264	1.332	1.249
0.631	1.266	1.251	1.316	1.234
0.794	1.259	1.245	1.304	1.224
1	1.368	1.354	1.417	1.323
1.259	1.310	1.299	1.350	1.262
1.585	1.286	1.275	1.323	1.231
1.995	1.269	1.260	1.305	1.210
2.512	1.255	1.246	1.288	1.193
3.162	1.231	1.220	1.260	1.166
3.981	1.203	1.196	1.231	1.140
5.012	1.205	1.194	1.234	1.140
6.31	1.203	1.191	1.229	1.134
7.943	1.193	1.181	1.219	1.124
10	1.195	1.182	1.220	1.125

Table F-14: Room Ratio Glass Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.237	0.947	2.957	3.848
0.013	1.203	1.068	2.213	2.580
0.016	1.241	1.190	1.876	2.043
0.02	1.313	1.299	1.725	1.780
0.025	1.299	1.350	1.569	1.537
0.032	1.314	1.404	1.514	1.472
0.04	1.257	1.372	1.413	1.394
0.05	1.350	1.468	1.520	1.431
0.063	1.333	1.425	1.507	1.453
0.079	1.392	1.465	1.544	1.650
0.1	1.481	1.566	1.689	1.715
0.126	1.541	1.626	1.768	1.700
0.158	1.543	1.643	1.783	1.707
0.2	1.516	1.597	1.750	1.704
0.251	1.367	1.443	1.573	1.541
0.316	1.351	1.441	1.548	1.487
0.398	1.274	1.357	1.474	1.394
0.501	1.238	1.317	1.425	1.334
0.631	1.231	1.319	1.421	1.342
0.794	1.227	1.320	1.407	1.324
1	1.335	1.439	1.529	1.442
1.259	1.282	1.374	1.474	1.370
1.585	1.260	1.358	1.451	1.340
1.995	1.245	1.344	1.434	1.325
2.512	1.234	1.332	1.425	1.315
3.162	1.213	1.336	1.394	1.286
3.981	1.187	1.283	1.360	1.253
5.012	1.190	1.287	1.366	1.258
6.31	1.189	1.292	1.362	1.254
7.943	1.181	1.277	1.352	1.247
10	1.183	1.285	1.364	1.248

Table F-15: Room Ratio Glass Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.637	0.969	2.923	3.939
0.013	0.662	0.985	2.179	2.588
0.016	0.758	1.012	1.839	2.062
0.02	0.912	1.151	1.698	1.801
0.025	1.010	1.210	1.545	1.689
0.032	1.124	1.291	1.524	1.626
0.04	1.138	1.393	1.450	1.504
0.05	1.261	1.446	1.522	1.549
0.063	1.262	1.456	1.504	1.567
0.079	1.321	1.485	1.602	1.722
0.1	1.401	1.567	1.702	1.881
0.126	1.453	1.685	1.779	2.004
0.158	1.453	1.775	1.862	1.925
0.2	1.425	1.651	1.890	1.903
0.251	1.284	1.470	1.626	1.743
0.316	1.272	1.470	1.621	1.670
0.398	1.203	1.391	1.539	1.575
0.501	1.170	1.363	1.489	1.513
0.631	1.167	1.365	1.465	1.502
0.794	1.167	1.417	1.471	1.522
1	1.274	1.498	1.609	1.661
1.259	1.228	1.450	1.566	1.560
1.585	1.211	1.435	1.530	1.547
1.995	1.202	1.427	1.530	1.531
2.512	1.195	1.425	1.518	1.511
3.162	1.177	1.408	1.502	1.475
3.981	1.156	1.379	1.469	1.434
5.012	1.161	1.387	1.477	1.450
6.31	1.162	1.398	1.474	1.450
7.943	1.155	1.389	1.467	1.437
10	1.159	1.395	1.475	1.444

1 cm Contamination Depth Room Ratios

Table F-16: Room Ratio Glass 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.788903	1.227352	1.660492	1.964221
0.013	1.146181	1.00259	1.111658	1.195108
0.016	1.052685	0.983213	1.038209	1.070691
0.02	0.907268	0.87899	0.902368	0.915984
0.025	0.730639	0.719383	0.729492	0.735248
0.032	0.842402	0.822746	0.840436	0.846567
0.04	0.916656	0.874145	0.91532	0.92624
0.05	1.094095	1.014254	1.091097	1.113354
0.063	1.164837	1.055939	1.157999	1.190778
0.079	1.328605	1.186712	1.318926	1.363218
0.1	1.455532	1.285544	1.440773	1.497433
0.126	1.545847	1.352141	1.528103	1.592387
0.158	1.55974	1.352458	1.54014	1.609923
0.2	1.578913	1.355837	1.557617	1.632071
0.251	1.378351	1.171385	1.358843	1.425961
0.316	1.370809	1.151683	1.348345	1.420006
0.398	1.227017	1.018574	1.204894	1.272189
0.501	1.198878	0.983286	1.17492	1.243894
0.631	1.226251	0.993325	1.199207	1.273608
0.794	1.213712	0.971104	1.184218	1.261198
1	1.247885	0.986625	1.214352	1.297327
1.259	1.185799	0.926783	1.150878	1.232832
1.585	1.128464	0.87304	1.091756	1.172626
1.995	1.098987	0.842573	1.060199	1.141207
2.512	1.051614	0.800069	1.011374	1.091293
3.162	1.035968	0.783344	0.993461	1.07324
3.981	0.992776	0.747277	0.949683	1.027234
5.012	0.987842	0.740993	0.942408	1.020653
6.31	0.976585	0.730849	0.929859	1.007724
7.943	0.961354	0.718383	0.914048	0.990713
10	0.95073	0.709624	0.902338	0.978848

Table F-17: Room Ratio Glass 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.116536	0.684856	1.428222	1.907802
0.013	0.849793	0.675897	0.982115	1.137536
0.016	0.872624	0.767229	0.930923	1.04211
0.02	0.819849	0.772207	0.840497	0.892037
0.025	0.695211	0.67324	0.702431	0.725939
0.032	0.832518	0.821088	0.841601	0.850888
0.04	0.933428	0.927821	0.950397	0.949088
0.05	1.142297	1.14157	1.178552	1.161573
0.063	1.236198	1.23254	1.287348	1.271286
0.079	1.423706	1.420547	1.491112	1.473767
0.1	1.569377	1.557999	1.655799	1.638395
0.126	1.675368	1.657987	1.773444	1.754064
0.158	1.698969	1.679368	1.804019	1.788938
0.2	1.729623	1.709775	1.842799	1.823487
0.251	1.519398	1.500525	1.623933	1.602037
0.316	1.520369	1.499961	1.631559	1.606911
0.398	1.370553	1.352027	1.471449	1.448839
0.501	1.348414	1.329256	1.450375	1.422762
0.631	1.38935	1.366601	1.500101	1.476626
0.794	1.385244	1.363175	1.498309	1.460439
1	1.4346	1.406674	1.550997	1.511509
1.259	1.372856	1.343123	1.489129	1.445867
1.585	1.315464	1.283127	1.427508	1.383722
1.995	1.288131	1.253798	1.396257	1.356536
2.512	1.238609	1.202356	1.344342	1.302885
3.162	1.225055	1.18688	1.328616	1.28647
3.981	1.177615	1.136901	1.276732	1.235075
5.012	1.174487	1.131208	1.272683	1.229538
6.31	1.163174	1.119266	1.260089	1.215381
7.943	1.146205	1.099263	1.241308	1.195936
10	1.13453	1.086075	1.227582	1.183717

Table F-18: Room Ratio Glass 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.012149	0.65318	1.428288	1.849652
0.013	0.786404	0.643636	0.966234	1.114733
0.016	0.823468	0.744516	0.936262	1.022816
0.02	0.788681	0.742579	0.833196	0.885153
0.025	0.680138	0.65918	0.697558	0.732399
0.032	0.827307	0.816032	0.853099	0.85711
0.04	0.942936	0.94479	0.956869	0.954212
0.05	1.171286	1.185665	1.194803	1.171639
0.063	1.281136	1.30297	1.315577	1.28419
0.079	1.486539	1.519148	1.539306	1.501856
0.1	1.647253	1.685682	1.71383	1.658686
0.126	1.766327	1.810104	1.845936	1.781643
0.158	1.79862	1.845244	1.886728	1.819651
0.2	1.838854	1.890759	1.934323	1.853508
0.251	1.62272	1.670847	1.707992	1.634678
0.316	1.631303	1.6815	1.737071	1.650448
0.398	1.478834	1.528555	1.565715	1.487132
0.501	1.462969	1.515381	1.550482	1.467384
0.631	1.516784	1.584321	1.611882	1.523538
0.794	1.520497	1.580562	1.614051	1.523049
1	1.584082	1.650626	1.677861	1.574572
1.259	1.524343	1.589383	1.618994	1.506933
1.585	1.468391	1.533215	1.55814	1.442646
1.995	1.44589	1.511619	1.530563	1.417834
2.512	1.397078	1.459633	1.479554	1.365082
3.162	1.387251	1.448441	1.467863	1.351884
3.981	1.338923	1.395821	1.414777	1.301113
5.012	1.338907	1.393932	1.414612	1.306223
6.31	1.328734	1.383187	1.399398	1.290324
7.943	1.311745	1.363873	1.380119	1.273965
10	1.299289	1.351481	1.36662	1.254658

Table F-19: Room Ratio Glass 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.559176	0.479805	1.332678	1.742059
0.013	0.508617	0.475545	0.891326	1.0695
0.016	0.608704	0.56921	0.855301	0.986441
0.02	0.653714	0.646607	0.788413	0.851674
0.025	0.611006	0.592227	0.675507	0.699793
0.032	0.784458	0.77172	0.824153	0.827755
0.04	0.91845	0.920656	0.94786	0.937746
0.05	1.153956	1.173714	1.19042	1.163629
0.063	1.265008	1.286598	1.323323	1.278465
0.079	1.465896	1.502845	1.544344	1.503613
0.1	1.619169	1.666623	1.714286	1.666084
0.126	1.731133	1.78149	1.845283	1.800127
0.158	1.75972	1.815042	1.88671	1.844113
0.2	1.797143	1.854434	1.936012	1.869328
0.251	1.585152	1.640385	1.715316	1.654207
0.316	1.59355	1.651869	1.740613	1.673809
0.398	1.444958	1.508641	1.575878	1.501536
0.501	1.430845	1.502403	1.566672	1.495508
0.631	1.484618	1.568971	1.626485	1.539052
0.794	1.49016	1.582092	1.63937	1.536185
1	1.554434	1.647055	1.711773	1.596687
1.259	1.4979	1.598715	1.657797	1.534698
1.585	1.445374	1.544345	1.599701	1.480109
1.995	1.42487	1.531378	1.589423	1.460298
2.512	1.378577	1.485118	1.541189	1.412633
3.162	1.370527	1.479159	1.540768	1.407694
3.981	1.324103	1.434195	1.4978	1.359821
5.012	1.325267	1.444503	1.496381	1.360855
6.31	1.316539	1.431387	1.484594	1.347168
7.943	1.300385	1.415103	1.473932	1.335705
10	1.288755	1.405602	1.456514	1.314537

Table F-20: Room Ratio Glass 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.287455	0.4372	1.438874	2.005945
0.013	0.28534	0.405408	0.878884	1.158074
0.016	0.387783	0.450501	0.829469	1.005164
0.02	0.481951	0.506686	0.754352	0.881792
0.025	0.505698	0.507729	0.634506	0.706809
0.032	0.708359	0.700729	0.801768	0.862661
0.04	0.869835	0.858771	0.919691	0.946938
0.05	1.117945	1.133835	1.187871	1.195672
0.063	1.23272	1.273029	1.352671	1.289609
0.079	1.425562	1.474387	1.526195	1.469618
0.1	1.56642	1.624748	1.698405	1.662316
0.126	1.665592	1.728086	1.81813	1.796397
0.158	1.687206	1.760628	1.861082	1.845953
0.2	1.719126	1.805872	1.912098	1.880341
0.251	1.515064	1.586992	1.698554	1.666885
0.316	1.522832	1.609603	1.716505	1.661354
0.398	1.381162	1.457408	1.558678	1.510904
0.501	1.369382	1.452204	1.549404	1.502099
0.631	1.422973	1.523773	1.600966	1.55833
0.794	1.431139	1.557509	1.632475	1.558858
1	1.496	1.626008	1.714259	1.633573
1.259	1.445805	1.577392	1.662956	1.561682
1.585	1.397951	1.530387	1.617508	1.514359
1.995	1.38208	1.520452	1.601787	1.494701
2.512	1.340116	1.485833	1.561369	1.45348
3.162	1.335567	1.489567	1.574627	1.463155
3.981	1.292865	1.445198	1.519257	1.394526
5.012	1.296848	1.536236	1.52764	1.392423
6.31	1.290465	1.452412	1.527141	1.396699
7.943	1.275724	1.441729	1.51681	1.375755
10	1.265454	1.433428	1.512325	1.365552

APPENDIX G: WOOD TABLES

First tables will be presented for raw air kerma values. These units are in pGy per cm^2. Room ratio values are presented following the Kerma tables.

Surface Contamination Kerma

Table G-1: Kerma Wood Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.32E-05	6.10E-06	1.08E-05	1.33E-05
0.013	1.05E-05	6.33E-06	9.15E-06	1.05E-05
0.016	7.96E-06	5.24E-06	7.11E-06	7.96E-06
0.02	5.66E-06	3.92E-06	5.11E-06	5.69E-06
0.025	4.07E-06	2.94E-06	3.73E-06	4.08E-06
0.032	2.95E-06	2.22E-06	2.74E-06	2.97E-06
0.04	2.40E-06	1.87E-06	2.23E-06	2.42E-06
0.05	2.15E-06	1.73E-06	2.02E-06	2.19E-06
0.063	2.16E-06	1.77E-06	2.04E-06	2.19E-06
0.079	2.33E-06	1.95E-06	2.23E-06	2.38E-06
0.1	2.71E-06	2.23E-06	2.58E-06	2.75E-06
0.126	3.27E-06	2.66E-06	3.11E-06	3.31E-06
0.158	3.98E-06	3.19E-06	3.77E-06	4.03E-06
0.2	4.91E-06	3.87E-06	4.64E-06	4.97E-06
0.251	5.98E-06	4.65E-06	5.63E-06	6.04E-06
0.316	7.31E-06	5.59E-06	6.85E-06	7.38E-06
0.398	8.86E-06	6.68E-06	8.27E-06	8.95E-06
0.501	1.07E-05	7.94E-06	9.94E-06	1.07E-05
0.631	1.27E-05	9.34E-06	1.18E-05	1.28E-05
0.794	1.50E-05	1.09E-05	1.39E-05	1.51E-05
1	1.77E-05	1.27E-05	1.63E-05	1.78E-05
1.259	2.06E-05	1.47E-05	1.89E-05	2.06E-05
1.585	2.39E-05	1.70E-05	2.20E-05	2.40E-05
1.995	2.75E-05	1.95E-05	2.53E-05	2.76E-05
2.512	3.17E-05	2.23E-05	2.90E-05	3.18E-05
3.162	3.65E-05	2.57E-05	3.34E-05	3.66E-05
3.981	4.21E-05	2.96E-05	3.85E-05	4.22E-05
5.012	4.88E-05	3.43E-05	4.45E-05	4.88E-05
6.31	5.72E-05	4.02E-05	5.23E-05	5.72E-05
7.943	6.78E-05	4.77E-05	6.19E-05	6.78E-05
10	8.08E-05	5.69E-05	7.37E-05	8.08E-05

Table G-2: Kerma Wood Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	7.43E-07	3.64E-07	9.06E-07	1.13E-06
0.013	7.30E-07	5.06E-07	8.22E-07	9.24E-07
0.016	6.38E-07	5.20E-07	6.97E-07	7.33E-07
0.02	5.03E-07	4.38E-07	5.42E-07	5.52E-07
0.025	3.83E-07	3.45E-07	4.02E-07	4.11E-07
0.032	2.86E-07	2.64E-07	3.00E-07	3.07E-07
0.04	2.33E-07	2.17E-07	2.44E-07	2.53E-07
0.05	2.10E-07	1.93E-07	2.24E-07	2.29E-07
0.063	2.10E-07	1.96E-07	2.24E-07	2.25E-07
0.079	2.28E-07	2.13E-07	2.42E-07	2.47E-07
0.1	2.66E-07	2.49E-07	2.82E-07	2.88E-07
0.126	3.24E-07	3.06E-07	3.42E-07	3.43E-07
0.158	3.96E-07	3.67E-07	4.19E-07	4.19E-07
0.2	4.92E-07	4.56E-07	5.21E-07	5.22E-07
0.251	6.04E-07	5.60E-07	6.41E-07	6.39E-07
0.316	7.43E-07	6.86E-07	7.89E-07	7.84E-07
0.398	9.06E-07	8.36E-07	9.61E-07	9.53E-07
0.501	1.10E-06	1.01E-06	1.16E-06	1.15E-06
0.631	1.31E-06	1.21E-06	1.39E-06	1.37E-06
0.794	1.56E-06	1.44E-06	1.66E-06	1.62E-06
1	1.85E-06	1.70E-06	1.95E-06	1.91E-06
1.259	2.15E-06	1.98E-06	2.27E-06	2.22E-06
1.585	2.51E-06	2.30E-06	2.65E-06	2.57E-06
1.995	2.90E-06	2.65E-06	3.06E-06	2.97E-06
2.512	3.34E-06	3.05E-06	3.52E-06	3.42E-06
3.162	3.85E-06	3.52E-06	4.06E-06	3.93E-06
3.981	4.45E-06	4.06E-06	4.68E-06	4.55E-06
5.012	5.15E-06	4.70E-06	5.41E-06	5.25E-06
6.31	6.04E-06	5.50E-06	6.34E-06	6.15E-06
7.943	7.15E-06	6.51E-06	7.49E-06	7.27E-06
10	8.51E-06	7.75E-06	8.92E-06	8.64E-06

Table G-3: Kerma Wood Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.99E-07	1.10E-07	2.75E-07	3.44E-07
0.013	2.05E-07	1.52E-07	2.43E-07	2.72E-07
0.016	1.87E-07	1.60E-07	2.06E-07	2.23E-07
0.02	1.55E-07	1.43E-07	1.64E-07	1.62E-07
0.025	1.21E-07	1.16E-07	1.27E-07	1.23E-07
0.032	9.24E-08	9.03E-08	9.68E-08	9.35E-08
0.04	7.57E-08	7.45E-08	7.83E-08	7.57E-08
0.05	6.77E-08	6.68E-08	7.11E-08	7.03E-08
0.063	6.75E-08	6.68E-08	7.15E-08	6.96E-08
0.079	7.34E-08	7.23E-08	7.80E-08	7.53E-08
0.1	8.61E-08	8.49E-08	9.26E-08	8.81E-08
0.126	1.05E-07	1.04E-07	1.12E-07	1.07E-07
0.158	1.29E-07	1.28E-07	1.39E-07	1.30E-07
0.2	1.62E-07	1.60E-07	1.73E-07	1.63E-07
0.251	2.00E-07	1.98E-07	2.12E-07	1.99E-07
0.316	2.47E-07	2.45E-07	2.60E-07	2.45E-07
0.398	3.04E-07	3.01E-07	3.19E-07	2.98E-07
0.501	3.70E-07	3.67E-07	3.87E-07	3.62E-07
0.631	4.45E-07	4.41E-07	4.62E-07	4.34E-07
0.794	5.32E-07	5.27E-07	5.52E-07	5.15E-07
1	6.32E-07	6.27E-07	6.55E-07	6.08E-07
1.259	7.39E-07	7.32E-07	7.62E-07	7.08E-07
1.585	8.63E-07	8.57E-07	8.91E-07	8.22E-07
1.995	1.00E-06	9.94E-07	1.03E-06	9.48E-07
2.512	1.15E-06	1.15E-06	1.18E-06	1.09E-06
3.162	1.33E-06	1.32E-06	1.36E-06	1.25E-06
3.981	1.54E-06	1.53E-06	1.58E-06	1.45E-06
5.012	1.79E-06	1.77E-06	1.82E-06	1.67E-06
6.31	2.09E-06	2.08E-06	2.14E-06	1.96E-06
7.943	2.48E-06	2.46E-06	2.52E-06	2.32E-06
10	2.95E-06	2.92E-06	3.01E-06	2.76E-06

Table G-4: Kerma Wood Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.70E-08	2.03E-08	6.32E-08	8.23E-08
0.013	3.16E-08	2.77E-08	5.75E-08	6.74E-08
0.016	3.24E-08	3.09E-08	4.89E-08	5.36E-08
0.02	2.99E-08	2.96E-08	3.95E-08	4.08E-08
0.025	2.57E-08	2.66E-08	3.11E-08	3.15E-08
0.032	2.09E-08	2.18E-08	2.46E-08	2.50E-08
0.04	1.77E-08	1.87E-08	1.99E-08	2.03E-08
0.05	1.62E-08	1.72E-08	1.82E-08	1.79E-08
0.063	1.63E-08	1.69E-08	1.84E-08	1.83E-08
0.079	1.78E-08	1.86E-08	2.02E-08	2.07E-08
0.1	2.09E-08	2.18E-08	2.41E-08	2.35E-08
0.126	2.56E-08	2.66E-08	2.94E-08	2.82E-08
0.158	3.14E-08	3.29E-08	3.56E-08	3.47E-08
0.2	3.92E-08	4.11E-08	4.53E-08	4.33E-08
0.251	4.85E-08	5.08E-08	5.58E-08	5.31E-08
0.316	6.00E-08	6.37E-08	6.88E-08	6.51E-08
0.398	7.37E-08	7.83E-08	8.57E-08	7.96E-08
0.501	8.99E-08	9.55E-08	1.04E-07	9.72E-08
0.631	1.08E-07	1.17E-07	1.25E-07	1.16E-07
0.794	1.30E-07	1.42E-07	1.50E-07	1.38E-07
1	1.54E-07	1.66E-07	1.76E-07	1.65E-07
1.259	1.81E-07	1.94E-07	2.08E-07	1.92E-07
1.585	2.12E-07	2.28E-07	2.44E-07	2.23E-07
1.995	2.46E-07	2.64E-07	2.83E-07	2.60E-07
2.512	2.84E-07	3.06E-07	3.27E-07	3.00E-07
3.162	3.29E-07	3.56E-07	3.78E-07	3.45E-07
3.981	3.80E-07	4.11E-07	4.36E-07	3.99E-07
5.012	4.41E-07	4.78E-07	5.05E-07	4.64E-07
6.31	5.18E-07	5.63E-07	5.92E-07	5.44E-07
7.943	6.14E-07	6.65E-07	7.02E-07	6.45E-07
10	7.31E-07	7.96E-07	8.43E-07	7.68E-07

Table G-5: Kerma Wood Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	3.47E-09	5.15E-09	1.57E-08	2.11E-08
0.013	4.34E-09	6.40E-09	1.42E-08	1.69E-08
0.016	4.93E-09	6.53E-09	1.21E-08	1.35E-08
0.02	5.16E-09	6.44E-09	9.75E-09	1.03E-08
0.025	4.93E-09	5.96E-09	7.70E-09	8.49E-09
0.032	4.39E-09	4.95E-09	6.09E-09	6.53E-09
0.04	3.94E-09	4.36E-09	5.13E-09	6.00E-09
0.05	3.73E-09	4.01E-09	4.42E-09	4.84E-09
0.063	3.83E-09	4.17E-09	4.56E-09	5.23E-09
0.079	4.21E-09	4.65E-09	5.02E-09	5.66E-09
0.1	4.93E-09	5.43E-09	6.02E-09	6.41E-09
0.126	6.03E-09	6.70E-09	7.40E-09	7.70E-09
0.158	7.39E-09	8.14E-09	9.32E-09	9.91E-09
0.2	9.24E-09	1.03E-08	1.14E-08	1.21E-08
0.251	1.14E-08	1.28E-08	1.42E-08	1.51E-08
0.316	1.41E-08	1.61E-08	1.75E-08	1.88E-08
0.398	1.74E-08	1.98E-08	2.18E-08	2.26E-08
0.501	2.13E-08	2.46E-08	2.68E-08	2.75E-08
0.631	2.57E-08	2.97E-08	3.23E-08	3.29E-08
0.794	3.09E-08	3.61E-08	3.87E-08	4.01E-08
1	3.68E-08	4.32E-08	4.69E-08	4.75E-08
1.259	4.34E-08	5.11E-08	5.49E-08	5.50E-08
1.585	5.09E-08	6.03E-08	6.43E-08	6.45E-08
1.995	5.93E-08	7.03E-08	7.57E-08	7.57E-08
2.512	6.89E-08	8.22E-08	8.77E-08	8.62E-08
3.162	7.99E-08	9.56E-08	1.02E-07	9.99E-08
3.981	9.26E-08	1.11E-07	1.18E-07	1.15E-07
5.012	1.08E-07	1.29E-07	1.37E-07	1.34E-07
6.31	1.27E-07	1.52E-07	1.61E-07	1.57E-07
7.943	1.50E-07	1.81E-07	1.91E-07	1.88E-07
10	1.79E-07	2.16E-07	2.27E-07	2.22E-07

Kerma for 1cm of Contamination Depth

Table G-6: Kerma Wood 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.89E-06	1.30E-06	1.76E-06	2.09E-06
0.013	3.05E-06	2.57E-06	2.96E-06	3.21E-06
0.016	3.52E-06	3.06E-06	3.46E-06	3.64E-06
0.02	3.39E-06	2.92E-06	3.35E-06	3.51E-06
0.025	2.97E-06	2.51E-06	2.92E-06	3.07E-06
0.032	2.45E-06	2.06E-06	2.40E-06	2.54E-06
0.04	2.13E-06	1.80E-06	2.08E-06	2.20E-06
0.05	1.99E-06	1.70E-06	1.94E-06	2.06E-06
0.063	2.05E-06	1.68E-06	1.76E-06	1.98E-06
0.079	2.24E-06	1.96E-06	2.02E-06	2.20E-06
0.1	2.58E-06	2.22E-06	2.53E-06	2.66E-06
0.126	3.02E-06	2.63E-06	2.91E-06	2.97E-06
0.158	3.77E-06	3.15E-06	3.59E-06	3.69E-06
0.2	4.66E-06	3.85E-06	4.53E-06	4.80E-06
0.251	5.50E-06	4.56E-06	5.17E-06	5.28E-06
0.316	6.87E-06	5.54E-06	6.60E-06	6.59E-06
0.398	8.25E-06	6.62E-06	7.58E-06	7.93E-06
0.501	9.94E-06	7.86E-06	8.97E-06	9.59E-06
0.631	1.19E-05	9.27E-06	1.08E-05	1.14E-05
0.794	1.42E-05	1.09E-05	1.29E-05	1.37E-05
1	1.64E-05	1.26E-05	1.51E-05	1.57E-05
1.259	1.90E-05	1.42E-05	1.76E-05	1.80E-05
1.585	2.22E-05	1.65E-05	2.03E-05	2.01E-05
1.995	2.59E-05	1.89E-05	2.37E-05	2.37E-05
2.512	2.97E-05	2.17E-05	2.71E-05	2.75E-05
3.162	3.41E-05	2.50E-05	3.14E-05	3.19E-05
3.981	3.94E-05	2.88E-05	3.59E-05	3.68E-05
5.012	4.59E-05	3.34E-05	4.15E-05	4.19E-05
6.31	5.37E-05	3.91E-05	4.86E-05	4.92E-05
7.943	6.35E-05	4.63E-05	5.79E-05	5.80E-05
10	7.56E-05	5.51E-05	6.89E-05	6.95E-05

Table G-7: Kerma Wood 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	9.54E-08	5.52E-08	1.60E-07	1.86E-07
0.013	1.80E-07	1.03E-07	1.73E-07	2.73E-07
0.016	2.39E-07	1.77E-07	2.06E-07	3.86E-07
0.02	2.79E-07	2.27E-07	2.39E-07	3.38E-07
0.025	2.73E-07	2.14E-07	2.33E-07	4.20E-07
0.032	2.22E-07	2.11E-07	1.81E-07	2.60E-07
0.04	1.95E-07	1.75E-07	1.98E-07	2.03E-07
0.05	1.95E-07	1.83E-07	1.92E-07	1.53E-07
0.063	1.99E-07	1.67E-07	1.98E-07	1.52E-07
0.079	2.19E-07	1.91E-07	2.18E-07	1.72E-07
0.1	2.50E-07	2.23E-07	2.30E-07	2.11E-07
0.126	2.93E-07	2.78E-07	2.81E-07	3.24E-07
0.158	3.73E-07	3.46E-07	3.97E-07	4.02E-07
0.2	4.63E-07	4.28E-07	4.93E-07	4.70E-07
0.251	5.70E-07	5.46E-07	5.75E-07	5.89E-07
0.316	7.17E-07	6.31E-07	6.62E-07	7.47E-07
0.398	8.73E-07	7.63E-07	8.04E-07	9.24E-07
0.501	1.06E-06	9.25E-07	9.79E-07	1.15E-06
0.631	1.27E-06	1.13E-06	1.19E-06	1.42E-06
0.794	1.47E-06	1.35E-06	1.43E-06	1.69E-06
1	1.73E-06	1.57E-06	1.67E-06	2.01E-06
1.259	2.04E-06	1.84E-06	2.02E-06	2.34E-06
1.585	2.42E-06	2.15E-06	2.36E-06	2.65E-06
1.995	2.81E-06	2.51E-06	2.76E-06	3.03E-06
2.512	3.25E-06	2.89E-06	3.18E-06	3.53E-06
3.162	3.72E-06	3.52E-06	3.71E-06	4.19E-06
3.981	4.32E-06	3.80E-06	4.34E-06	4.80E-06
5.012	5.08E-06	4.32E-06	5.00E-06	6.01E-06
6.31	5.96E-06	5.02E-06	5.84E-06	6.85E-06
7.943	7.06E-06	5.95E-06	6.99E-06	8.37E-06
10	8.39E-06	7.05E-06	8.40E-06	9.73E-06

Table G-8: Kerma Wood 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.71E-08	1.85E-08	3.39E-08	5.65E-08
0.013	4.91E-08	3.73E-08	7.68E-08	1.09E-07
0.016	6.89E-08	6.18E-08	9.16E-08	9.45E-08
0.02	7.97E-08	6.08E-08	1.38E-07	1.10E-07
0.025	7.91E-08	5.79E-08	7.67E-08	8.25E-08
0.032	7.14E-08	5.77E-08	6.85E-08	7.42E-08
0.04	6.32E-08	5.08E-08	6.40E-08	5.01E-08
0.05	5.93E-08	5.74E-08	9.65E-08	5.21E-08
0.063	6.06E-08	4.94E-08	6.81E-08	5.55E-08
0.079	6.81E-08	5.73E-08	7.18E-08	6.44E-08
0.1	8.01E-08	6.67E-08	8.00E-08	6.59E-08
0.126	9.54E-08	8.68E-08	9.33E-08	1.04E-07
0.158	1.15E-07	1.03E-07	1.25E-07	1.32E-07
0.2	1.46E-07	1.38E-07	1.62E-07	1.29E-07
0.251	1.79E-07	1.73E-07	1.84E-07	1.60E-07
0.316	2.28E-07	2.03E-07	2.35E-07	2.11E-07
0.398	2.78E-07	2.41E-07	2.82E-07	2.85E-07
0.501	3.37E-07	2.89E-07	3.45E-07	3.15E-07
0.631	4.15E-07	3.55E-07	4.45E-07	3.88E-07
0.794	4.92E-07	4.36E-07	5.79E-07	5.20E-07
1	5.77E-07	5.15E-07	6.54E-07	5.50E-07
1.259	6.76E-07	6.28E-07	7.78E-07	6.42E-07
1.585	8.03E-07	7.12E-07	8.65E-07	7.48E-07
1.995	9.33E-07	8.42E-07	9.94E-07	8.73E-07
2.512	1.07E-06	9.83E-07	1.18E-06	1.01E-06
3.162	1.23E-06	1.13E-06	1.39E-06	1.18E-06
3.981	1.44E-06	1.30E-06	1.64E-06	1.47E-06
5.012	1.70E-06	1.51E-06	1.89E-06	1.68E-06
6.31	2.00E-06	1.80E-06	2.23E-06	1.93E-06
7.943	2.35E-06	2.10E-06	2.65E-06	2.27E-06
10	2.79E-06	2.50E-06	3.24E-06	2.66E-06

Table G-9: Kerma Wood 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	3.69E-09	2.97E-09	8.27E-09	1.17E-08
0.013	8.32E-09	7.40E-09	1.61E-08	1.70E-08
0.016	1.26E-08	1.07E-08	2.38E-08	1.63E-08
0.02	1.56E-08	1.40E-08	2.60E-08	1.24E-08
0.025	1.71E-08	9.97E-09	4.16E-08	1.47E-08
0.032	1.62E-08	1.18E-08	3.09E-08	1.51E-08
0.04	1.51E-08	1.04E-08	2.12E-08	4.29E-08
0.05	1.46E-08	1.08E-08	2.72E-08	1.39E-08
0.063	1.47E-08	1.63E-08	2.63E-08	9.00E-09
0.079	1.60E-08	1.83E-08	2.79E-08	1.07E-08
0.1	2.01E-08	1.35E-08	3.53E-08	2.17E-08
0.126	2.24E-08	1.88E-08	5.08E-08	2.47E-08
0.158	2.91E-08	2.23E-08	4.32E-08	4.56E-08
0.2	3.52E-08	2.84E-08	5.44E-08	4.24E-08
0.251	4.44E-08	3.66E-08	1.08E-07	6.02E-08
0.316	5.47E-08	4.52E-08	8.80E-08	7.18E-08
0.398	6.79E-08	5.48E-08	1.53E-07	9.47E-08
0.501	8.30E-08	6.66E-08	1.85E-07	1.15E-07
0.631	1.02E-07	7.71E-08	2.38E-07	1.37E-07
0.794	1.22E-07	9.49E-08	3.08E-07	1.71E-07
1	1.43E-07	1.14E-07	3.56E-07	1.65E-07
1.259	1.69E-07	1.40E-07	4.79E-07	2.19E-07
1.585	1.99E-07	1.63E-07	4.65E-07	2.06E-07
1.995	2.33E-07	1.96E-07	5.44E-07	2.42E-07
2.512	2.69E-07	2.29E-07	6.48E-07	2.80E-07
3.162	3.08E-07	2.63E-07	7.71E-07	3.28E-07
3.981	3.59E-07	3.08E-07	8.99E-07	3.92E-07
5.012	4.25E-07	3.61E-07	1.05E-06	4.49E-07
6.31	5.01E-07	4.29E-07	1.26E-06	5.14E-07
7.943	5.89E-07	5.01E-07	1.51E-06	5.60E-07
10	6.98E-07	5.95E-07	1.84E-06	6.65E-07

Table G-10: Kerma Wood 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	4.72E-10	7.49E-10	2.05E-09	3.93E-09
0.013	1.18E-09	1.71E-09	3.85E-09	5.08E-09
0.016	2.02E-09	2.39E-09	5.20E-09	4.92E-09
0.02	2.87E-09	2.93E-09	4.82E-09	6.44E-09
0.025	3.34E-09	3.53E-09	5.20E-09	8.36E-09
0.032	3.43E-09	1.54E-09	4.50E-09	2.58E-09
0.04	3.28E-09	1.95E-09	4.53E-09	1.74E-09
0.05	3.35E-09	2.43E-09	4.76E-09	2.69E-09
0.063	3.48E-09	3.28E-09	1.18E-08	4.59E-09
0.079	3.87E-09	3.93E-09	3.76E-09	3.51E-09
0.1	4.58E-09	2.93E-09	6.13E-09	3.15E-09
0.126	5.52E-09	4.58E-09	6.11E-09	3.23E-09
0.158	6.83E-09	4.75E-09	7.06E-09	1.77E-08
0.2	8.46E-09	5.86E-09	1.04E-08	1.01E-08
0.251	1.04E-08	7.46E-09	1.48E-08	2.47E-08
0.316	1.32E-08	8.58E-09	1.75E-08	1.38E-08
0.398	1.59E-08	1.39E-08	2.03E-08	1.32E-08
0.501	2.00E-08	1.35E-08	2.74E-08	2.39E-08
0.631	2.47E-08	1.64E-08	4.31E-08	3.01E-08
0.794	2.94E-08	2.00E-08	5.10E-08	3.95E-08
1	3.51E-08	2.42E-08	6.19E-08	3.24E-08
1.259	4.12E-08	2.99E-08	8.02E-08	4.03E-08
1.585	4.89E-08	3.69E-08	6.48E-08	6.49E-08
1.995	5.72E-08	4.19E-08	9.92E-08	5.88E-08
2.512	6.66E-08	4.99E-08	1.18E-07	6.92E-08
3.162	7.63E-08	5.81E-08	1.38E-07	8.38E-08
3.981	8.88E-08	6.87E-08	1.63E-07	1.03E-07
5.012	1.05E-07	8.14E-08	1.94E-07	1.20E-07
6.31	1.24E-07	9.76E-08	2.31E-07	1.43E-07
7.943	1.45E-07	1.15E-07	2.79E-07	9.59E-08
10	1.73E-07	1.37E-07	3.43E-07	1.16E-07

Kerma for 5cm of Contamination Depth

Table G-11: Kerma Wood 5cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.72E-07	2.56E-07	3.47E-07	4.09E-07
0.013	6.57E-07	5.71E-07	6.37E-07	6.87E-07
0.016	9.19E-07	8.58E-07	9.05E-07	9.39E-07
0.02	1.20E-06	1.15E-06	1.19E-06	1.21E-06
0.025	1.40E-06	1.34E-06	1.39E-06	1.41E-06
0.032	1.48E-06	1.39E-06	1.48E-06	1.50E-06
0.04	1.50E-06	1.40E-06	1.49E-06	1.52E-06
0.05	1.54E-06	1.43E-06	1.54E-06	1.57E-06
0.063	1.73E-06	1.49E-06	1.49E-06	1.56E-06
0.079	1.94E-06	1.81E-06	2.02E-06	1.84E-06
0.1	2.21E-06	2.03E-06	2.20E-06	2.25E-06
0.126	2.68E-06	2.39E-06	2.63E-06	2.40E-06
0.158	3.23E-06	2.85E-06	3.10E-06	2.98E-06
0.2	3.99E-06	3.57E-06	3.97E-06	4.09E-06
0.251	4.83E-06	4.19E-06	4.50E-06	4.57E-06
0.316	5.97E-06	5.13E-06	5.80E-06	5.69E-06
0.398	7.18E-06	6.22E-06	6.60E-06	6.84E-06
0.501	8.58E-06	7.43E-06	8.01E-06	8.31E-06
0.631	1.02E-05	8.74E-06	9.69E-06	1.01E-05
0.794	1.20E-05	1.01E-05	1.13E-05	1.16E-05
1	1.40E-05	1.17E-05	1.32E-05	1.35E-05
1.259	1.63E-05	1.34E-05	1.55E-05	1.61E-05
1.585	1.96E-05	1.58E-05	1.79E-05	1.82E-05
1.995	2.30E-05	1.80E-05	2.10E-05	2.14E-05
2.512	2.63E-05	2.08E-05	2.43E-05	2.51E-05
3.162	3.00E-05	2.37E-05	2.81E-05	2.90E-05
3.981	3.51E-05	2.73E-05	3.21E-05	3.34E-05
5.012	4.13E-05	3.17E-05	3.75E-05	3.92E-05
6.31	4.82E-05	3.71E-05	4.40E-05	4.63E-05
7.943	5.73E-05	4.40E-05	5.24E-05	5.45E-05
10	6.84E-05	5.23E-05	6.27E-05	6.53E-05

Table G-12: Kerma Wood 5cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.01E-08	9.28E-09	2.65E-08	2.67E-08
0.013	4.20E-08	3.06E-08	8.09E-08	5.68E-08
0.016	5.77E-08	5.17E-08	1.14E-07	8.31E-08
0.02	9.23E-08	7.74E-08	1.12E-07	1.12E-07
0.025	1.37E-07	9.12E-08	1.06E-07	2.51E-07
0.032	1.27E-07	1.31E-07	1.38E-07	1.17E-07
0.04	1.43E-07	1.23E-07	1.52E-07	1.51E-07
0.05	1.54E-07	1.32E-07	1.36E-07	1.32E-07
0.063	1.58E-07	1.30E-07	1.47E-07	1.34E-07
0.079	1.79E-07	1.48E-07	1.55E-07	1.71E-07
0.1	2.08E-07	1.74E-07	1.72E-07	1.94E-07
0.126	2.39E-07	2.24E-07	2.47E-07	3.23E-07
0.158	3.07E-07	2.81E-07	3.15E-07	3.86E-07
0.2	3.82E-07	3.42E-07	4.44E-07	5.10E-07
0.251	4.69E-07	4.41E-07	4.94E-07	5.92E-07
0.316	5.90E-07	5.43E-07	5.54E-07	7.60E-07
0.398	7.21E-07	6.54E-07	6.55E-07	1.04E-06
0.501	8.64E-07	7.83E-07	8.00E-07	1.33E-06
0.631	1.08E-06	9.71E-07	9.61E-07	1.75E-06
0.794	1.26E-06	1.18E-06	1.17E-06	2.19E-06
1	1.45E-06	1.39E-06	1.37E-06	2.47E-06
1.259	1.71E-06	1.65E-06	1.65E-06	2.13E-06
1.585	2.02E-06	1.92E-06	2.00E-06	2.49E-06
1.995	2.37E-06	2.27E-06	2.32E-06	2.92E-06
2.512	2.84E-06	2.60E-06	2.97E-06	3.49E-06
3.162	3.28E-06	3.24E-06	3.58E-06	3.72E-06
3.981	3.85E-06	3.50E-06	3.80E-06	4.33E-06
5.012	4.56E-06	3.98E-06	4.48E-06	5.47E-06
6.31	5.37E-06	4.65E-06	5.26E-06	6.29E-06
7.943	6.42E-06	5.53E-06	6.27E-06	7.69E-06
10	7.65E-06	6.57E-06	7.56E-06	9.04E-06

Table G-13: Kerma Wood 5cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	5.53E-09	3.05E-09	5.77E-09	1.10E-08
0.013	1.10E-08	7.61E-09	8.58E-09	2.02E-08
0.016	1.74E-08	1.35E-08	1.85E-08	3.03E-08
0.02	2.65E-08	2.19E-08	4.24E-08	5.31E-08
0.025	3.43E-08	2.77E-08	3.82E-08	3.52E-08
0.032	3.84E-08	2.72E-08	4.56E-08	4.05E-08
0.04	4.17E-08	3.07E-08	4.39E-08	3.98E-08
0.05	4.28E-08	3.48E-08	6.49E-08	3.58E-08
0.063	4.80E-08	3.97E-08	5.44E-08	3.53E-08
0.079	5.53E-08	4.54E-08	4.87E-08	4.97E-08
0.1	6.40E-08	5.29E-08	5.48E-08	5.67E-08
0.126	7.60E-08	6.62E-08	7.01E-08	7.71E-08
0.158	9.25E-08	7.56E-08	9.10E-08	1.13E-07
0.2	1.17E-07	1.01E-07	1.14E-07	1.41E-07
0.251	1.42E-07	1.28E-07	1.36E-07	1.71E-07
0.316	1.78E-07	1.53E-07	1.70E-07	1.69E-07
0.398	2.19E-07	1.81E-07	2.16E-07	2.30E-07
0.501	2.69E-07	2.26E-07	2.71E-07	2.66E-07
0.631	3.40E-07	2.77E-07	3.37E-07	3.39E-07
0.794	4.02E-07	3.38E-07	4.56E-07	4.16E-07
1	4.69E-07	4.14E-07	5.27E-07	5.04E-07
1.259	5.55E-07	4.97E-07	6.02E-07	5.79E-07
1.585	6.36E-07	5.71E-07	6.75E-07	6.32E-07
1.995	7.52E-07	6.92E-07	8.05E-07	7.55E-07
2.512	9.04E-07	8.11E-07	1.02E-06	8.90E-07
3.162	1.06E-06	9.54E-07	1.21E-06	1.07E-06
3.981	1.24E-06	1.12E-06	1.33E-06	1.32E-06
5.012	1.49E-06	1.32E-06	1.63E-06	1.52E-06
6.31	1.76E-06	1.59E-06	1.91E-06	1.78E-06
7.943	2.10E-06	1.86E-06	2.18E-06	2.07E-06
10	2.52E-06	2.23E-06	2.70E-06	2.45E-06

Table G-14: Kerma Wood 5cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	7.38E-10	5.81E-10	1.82E-09	2.30E-09
0.013	1.87E-09	1.55E-09	2.78E-09	4.19E-09
0.016	3.35E-09	2.73E-09	4.68E-09	5.01E-09
0.02	5.27E-09	3.84E-09	9.44E-09	4.56E-09
0.025	7.20E-09	6.36E-09	1.21E-08	6.29E-09
0.032	9.01E-09	6.89E-09	1.66E-08	6.50E-09
0.04	1.03E-08	6.31E-09	1.80E-08	7.97E-09
0.05	1.05E-08	6.47E-09	2.01E-08	8.60E-09
0.063	1.12E-08	1.24E-08	1.67E-08	8.37E-09
0.079	1.32E-08	1.09E-08	1.63E-08	9.53E-09
0.1	1.56E-08	1.12E-08	2.06E-08	1.19E-08
0.126	1.86E-08	1.87E-08	3.21E-08	1.68E-08
0.158	2.27E-08	1.58E-08	3.33E-08	4.77E-08
0.2	2.80E-08	2.22E-08	5.78E-08	2.92E-08
0.251	3.47E-08	2.78E-08	7.34E-08	3.45E-08
0.316	4.30E-08	3.26E-08	6.94E-08	5.04E-08
0.398	5.24E-08	4.01E-08	8.64E-08	7.29E-08
0.501	6.60E-08	5.39E-08	1.09E-07	8.41E-08
0.631	8.42E-08	5.81E-08	2.04E-07	1.21E-07
0.794	9.94E-08	7.12E-08	2.63E-07	1.50E-07
1	1.16E-07	8.80E-08	3.07E-07	1.69E-07
1.259	1.39E-07	1.07E-07	4.25E-07	2.34E-07
1.585	1.58E-07	1.25E-07	4.08E-07	1.73E-07
1.995	1.87E-07	1.53E-07	4.84E-07	2.06E-07
2.512	2.27E-07	1.79E-07	5.91E-07	2.44E-07
3.162	2.64E-07	2.13E-07	7.07E-07	2.87E-07
3.981	3.11E-07	2.55E-07	7.99E-07	3.51E-07
5.012	3.73E-07	3.05E-07	1.00E-06	4.01E-07
6.31	4.41E-07	3.66E-07	1.27E-06	4.65E-07
7.943	5.28E-07	4.27E-07	1.34E-06	5.48E-07
10	6.33E-07	5.13E-07	1.65E-06	6.44E-07

Table G-15: Kerma Wood 5cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	9.52E-11	1.33E-10	4.09E-10	4.94E-10
0.013	2.59E-10	3.33E-10	7.07E-10	1.16E-09
0.016	5.27E-10	5.84E-10	1.13E-09	1.63E-09
0.02	9.87E-10	1.02E-09	1.50E-09	1.66E-09
0.025	1.49E-09	1.37E-09	1.94E-09	2.80E-09
0.032	1.91E-09	1.78E-09	2.47E-09	3.68E-09
0.04	2.19E-09	1.73E-09	1.89E-09	2.00E-09
0.05	2.52E-09	1.22E-09	2.97E-09	1.22E-09
0.063	2.73E-09	2.61E-09	2.95E-09	1.62E-09
0.079	3.10E-09	3.25E-09	3.98E-09	2.14E-09
0.1	3.77E-09	2.58E-09	1.21E-08	1.93E-09
0.126	4.40E-09	2.61E-09	5.16E-09	3.11E-09
0.158	5.61E-09	4.13E-09	5.14E-09	5.76E-09
0.2	6.83E-09	5.07E-09	1.82E-08	6.72E-09
0.251	8.47E-09	6.64E-09	1.11E-08	9.79E-09
0.316	1.05E-08	9.39E-09	1.37E-08	1.03E-08
0.398	1.31E-08	1.14E-08	2.05E-08	8.44E-09
0.501	1.57E-08	9.42E-09	2.29E-08	2.00E-08
0.631	1.95E-08	1.18E-08	5.49E-08	2.61E-08
0.794	2.43E-08	1.47E-08	4.07E-08	3.47E-08
1	2.88E-08	1.86E-08	3.60E-08	4.22E-08
1.259	3.40E-08	2.21E-08	9.91E-08	5.62E-08
1.585	3.97E-08	3.63E-08	7.13E-08	2.92E-08
1.995	4.63E-08	3.10E-08	8.37E-08	4.87E-08
2.512	5.61E-08	3.69E-08	1.01E-07	6.04E-08
3.162	6.51E-08	4.44E-08	1.19E-07	7.33E-08
3.981	7.66E-08	5.31E-08	1.40E-07	9.19E-08
5.012	9.23E-08	6.40E-08	1.76E-07	1.07E-07
6.31	1.09E-07	7.77E-08	2.21E-07	1.28E-07
7.943	1.30E-07	9.27E-08	2.34E-07	1.51E-07
10	1.57E-07	1.12E-07	2.88E-07	1.80E-07

Surface Contamination Room Ratios

Table G-16: Room Ratio Wood Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.919	1.818	3.211	3.952
0.013	2.585	1.557	2.252	2.591
0.016	1.987	1.307	1.774	1.987
0.02	1.666	1.155	1.507	1.677
0.025	1.456	1.054	1.337	1.460
0.032	1.436	1.081	1.333	1.446
0.04	1.445	1.131	1.347	1.462
0.05	1.634	1.318	1.539	1.667
0.063	1.628	1.335	1.542	1.651
0.079	1.632	1.365	1.556	1.664
0.1	1.610	1.322	1.531	1.636
0.126	1.544	1.255	1.466	1.563
0.158	1.448	1.161	1.373	1.468
0.2	1.344	1.058	1.269	1.362
0.251	1.158	0.900	1.090	1.169
0.316	1.103	0.844	1.034	1.114
0.398	1.010	0.762	0.943	1.020
0.501	0.956	0.711	0.891	0.961
0.631	0.930	0.683	0.863	0.935
0.794	0.910	0.661	0.842	0.915
1	0.975	0.702	0.900	0.978
1.259	0.923	0.659	0.850	0.927
1.585	0.898	0.638	0.828	0.901
1.995	0.879	0.623	0.807	0.882
2.512	0.863	0.609	0.791	0.866
3.162	0.843	0.593	0.771	0.844
3.981	0.820	0.577	0.750	0.822
5.012	0.820	0.576	0.749	0.821
6.31	0.817	0.574	0.746	0.817
7.943	0.811	0.571	0.740	0.811
10	0.813	0.572	0.741	0.813

Table G-17: Room Ratio Wood Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.581	1.265	3.150	3.910
0.013	2.098	1.453	2.362	2.653
0.016	1.858	1.513	2.029	2.136
0.02	1.729	1.505	1.863	1.897
0.025	1.599	1.441	1.682	1.718
0.032	1.624	1.499	1.706	1.744
0.04	1.642	1.526	1.715	1.782
0.05	1.861	1.716	1.983	2.029
0.063	1.850	1.725	1.972	1.986
0.079	1.860	1.735	1.975	2.019
0.1	1.845	1.727	1.953	1.994
0.126	1.783	1.685	1.881	1.888
0.158	1.684	1.559	1.782	1.781
0.2	1.572	1.457	1.665	1.666
0.251	1.364	1.264	1.448	1.443
0.316	1.309	1.208	1.390	1.381
0.398	1.205	1.112	1.278	1.267
0.501	1.147	1.057	1.214	1.198
0.631	1.122	1.036	1.190	1.166
0.794	1.103	1.018	1.169	1.145
1	1.187	1.093	1.256	1.226
1.259	1.129	1.040	1.190	1.162
1.585	1.100	1.008	1.163	1.128
1.995	1.080	0.987	1.139	1.107
2.512	1.062	0.971	1.120	1.087
3.162	1.038	0.948	1.094	1.059
3.981	1.011	0.923	1.063	1.034
5.012	1.010	0.921	1.061	1.030
6.31	1.006	0.917	1.056	1.025
7.943	0.998	0.909	1.045	1.015
10	0.998	0.910	1.046	1.014

Table G-18: Room Ratio Wood Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.369	1.312	3.281	4.095
0.013	2.019	1.499	2.391	2.678
0.016	1.871	1.599	2.060	2.231
0.02	1.822	1.679	1.930	1.914
0.025	1.740	1.663	1.826	1.758
0.032	1.798	1.758	1.886	1.820
0.04	1.826	1.798	1.890	1.826
0.05	2.058	2.030	2.162	2.138
0.063	2.041	2.019	2.159	2.103
0.079	2.054	2.023	2.181	2.107
0.1	2.045	2.017	2.200	2.092
0.126	1.986	1.961	2.120	2.021
0.158	1.886	1.859	2.020	1.897
0.2	1.773	1.754	1.897	1.787
0.251	1.547	1.534	1.643	1.538
0.316	1.495	1.482	1.573	1.477
0.398	1.384	1.374	1.453	1.360
0.501	1.325	1.315	1.386	1.299
0.631	1.304	1.291	1.353	1.269
0.794	1.288	1.276	1.334	1.245
1	1.391	1.381	1.442	1.339
1.259	1.327	1.315	1.368	1.272
1.585	1.298	1.288	1.339	1.235
1.995	1.277	1.269	1.315	1.210
2.512	1.259	1.251	1.291	1.187
3.162	1.232	1.223	1.259	1.156
3.981	1.201	1.194	1.228	1.128
5.012	1.201	1.191	1.225	1.126
6.31	1.196	1.186	1.219	1.119
7.943	1.186	1.175	1.207	1.110
10	1.187	1.175	1.210	1.110

Table G-19: Room Ratio Wood Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.286	0.967	3.014	3.924
0.013	1.243	1.092	2.263	2.653
0.016	1.295	1.234	1.954	2.142
0.02	1.411	1.395	1.861	1.925
0.025	1.474	1.524	1.782	1.808
0.032	1.624	1.701	1.919	1.943
0.04	1.709	1.802	1.925	1.956
0.05	1.967	2.093	2.211	2.175
0.063	1.975	2.039	2.223	2.211
0.079	1.993	2.076	2.264	2.313
0.1	1.984	2.068	2.289	2.234
0.126	1.929	2.005	2.221	2.131
0.158	1.828	1.916	2.076	2.023
0.2	1.718	1.801	1.985	1.896
0.251	1.502	1.572	1.729	1.645
0.316	1.449	1.538	1.663	1.572
0.398	1.344	1.428	1.562	1.451
0.501	1.289	1.369	1.485	1.393
0.631	1.270	1.370	1.468	1.355
0.794	1.257	1.371	1.447	1.338
1	1.360	1.459	1.555	1.451
1.259	1.300	1.394	1.494	1.376
1.585	1.274	1.368	1.467	1.343
1.995	1.256	1.350	1.446	1.326
2.512	1.240	1.336	1.427	1.309
3.162	1.215	1.313	1.394	1.275
3.981	1.186	1.282	1.358	1.243
5.012	1.187	1.285	1.357	1.249
6.31	1.184	1.287	1.353	1.243
7.943	1.175	1.273	1.344	1.234
10	1.176	1.280	1.355	1.235

Table G-20: Room Ratio Wood Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.661	0.983	2.989	4.031
0.013	0.684	1.009	2.238	2.664
0.016	0.788	1.044	1.938	2.154
0.02	0.972	1.214	1.838	1.947
0.025	1.131	1.366	1.765	1.946
0.032	1.368	1.542	1.898	2.035
0.04	1.522	1.683	1.980	2.316
0.05	1.813	1.953	2.151	2.354
0.063	1.850	2.016	2.202	2.531
0.079	1.883	2.080	2.246	2.532
0.1	1.875	2.063	2.290	2.438
0.126	1.821	2.022	2.235	2.325
0.158	1.724	1.899	2.174	2.310
0.2	1.619	1.802	2.004	2.121
0.251	1.414	1.582	1.762	1.864
0.316	1.367	1.559	1.692	1.814
0.398	1.269	1.447	1.589	1.647
0.501	1.220	1.410	1.535	1.579
0.631	1.206	1.391	1.512	1.539
0.794	1.196	1.397	1.498	1.550
1	1.298	1.522	1.652	1.674
1.259	1.246	1.468	1.578	1.580
1.585	1.225	1.450	1.547	1.551
1.995	1.212	1.436	1.547	1.546
2.512	1.201	1.433	1.529	1.503
3.162	1.180	1.412	1.505	1.476
3.981	1.155	1.381	1.470	1.434
5.012	1.159	1.387	1.477	1.437
6.31	1.158	1.394	1.474	1.437
7.943	1.151	1.384	1.461	1.441
10	1.153	1.390	1.463	1.427

1 cm Contamination Depth Room Ratios

Table G-21: Room Ratio Wood 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	29.54165	20.24034	27.44111	32.60484
0.013	17.72836	14.95422	17.21656	18.62001
0.016	13.59294	11.8129	13.35663	14.08762
0.02	8.546075	7.344983	8.44413	8.853221
0.025	4.668033	3.947175	4.596199	4.834476
0.032	3.546224	2.97578	3.475248	3.670971
0.04	2.92985	2.478214	2.864627	3.026274
0.05	2.877634	2.463346	2.812261	2.975368
0.063	2.607305	2.134658	2.237621	2.525286
0.079	2.557255	2.242308	2.304689	2.511729
0.1	2.417798	2.077785	2.364264	2.486923
0.126	2.222237	1.935538	2.142246	2.180454
0.158	2.122607	1.775093	2.021289	2.080174
0.2	2.020175	1.670987	1.963852	2.079996
0.251	1.633801	1.354879	1.53491	1.567553
0.316	1.607665	1.295883	1.545719	1.541724
0.398	1.388721	1.114886	1.276426	1.335781
0.501	1.331647	1.052228	1.202145	1.28434
0.631	1.35035	1.048902	1.221274	1.287667
0.794	1.321108	1.012807	1.207369	1.282437
1	1.32367	1.010481	1.215519	1.263455
1.259	1.237147	0.925202	1.142684	1.170636
1.585	1.173666	0.871784	1.073033	1.059496
1.995	1.142676	0.834391	1.044744	1.046861
2.512	1.081103	0.788425	0.984037	0.999316
3.162	1.052668	0.76937	0.968255	0.983484
3.981	1.00245	0.731684	0.912649	0.935176
5.012	0.998256	0.724987	0.902684	0.911609
6.31	0.978733	0.713152	0.886805	0.896722
7.943	0.959753	0.700521	0.87528	0.877634
10	0.946936	0.68993	0.863226	0.870177

Table G-22: Room Ratio Wood 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	17.37416	10.0431	29.14945	33.77545
0.013	12.19072	7.012491	11.74065	18.5189
0.016	10.75965	7.971741	9.296697	17.4137
0.02	8.204961	6.680988	7.01616	9.948022
0.025	5.009875	3.937157	4.273612	7.718195
0.032	3.741043	3.563125	3.059589	4.391806
0.04	3.132925	2.813039	3.170402	3.248934
0.05	3.289507	3.079833	3.24541	2.58737
0.063	2.95019	2.482433	2.943109	2.257091
0.079	2.922831	2.550793	2.9013	2.292182
0.1	2.731961	2.437414	2.513933	2.302293
0.126	2.51273	2.382053	2.415005	2.780089
0.158	2.448441	2.272085	2.60703	2.638807
0.2	2.342581	2.166407	2.492555	2.375267
0.251	1.977653	1.892386	1.993448	2.041002
0.316	1.957988	1.723778	1.808213	2.040459
0.398	1.714281	1.499463	1.578587	1.815409
0.501	1.655672	1.445898	1.530679	1.796618
0.631	1.677555	1.489927	1.56369	1.872282
0.794	1.603898	1.47229	1.558476	1.837329
1	1.626038	1.471505	1.569051	1.884805
1.259	1.54823	1.397532	1.533721	1.779022
1.585	1.491857	1.322401	1.454989	1.628754
1.995	1.444417	1.290992	1.422104	1.557389
2.512	1.38021	1.226747	1.350013	1.498272
3.162	1.336874	1.265307	1.334378	1.508075
3.981	1.281644	1.128785	1.288015	1.4253
5.012	1.288899	1.094554	1.267249	1.52345
6.31	1.268745	1.068624	1.242815	1.456822
7.943	1.245577	1.049532	1.23323	1.477147
10	1.225504	1.030424	1.227653	1.422351

Table G-23: Room Ratio Wood 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	16.90303	11.51967	21.14313	35.28282
0.013	11.41692	8.676953	17.84099	25.2114
0.016	10.6515	9.556333	14.16938	14.61946
0.02	8.032505	6.130562	13.95201	11.1168
0.025	4.981846	3.646161	4.831146	5.193244
0.032	4.134463	3.337011	3.966615	4.29624
0.04	3.475242	2.796415	3.52247	2.756954
0.05	3.432529	3.322837	5.582542	3.014062
0.063	3.082119	2.516328	3.464492	2.823893
0.079	3.114411	2.620715	3.281126	2.944853
0.1	2.998672	2.495573	2.993012	2.465635
0.126	2.805536	2.552381	2.745293	3.06853
0.158	2.6017	2.325316	2.816963	2.963175
0.2	2.525359	2.399317	2.801897	2.240671
0.251	2.133554	2.055046	2.183536	1.906694
0.316	2.135306	1.90266	2.199461	1.972666
0.398	1.86936	1.624685	1.897777	1.921655
0.501	1.803875	1.54717	1.850602	1.687498
0.631	1.877091	1.606327	2.015057	1.755141
0.794	1.835094	1.628438	2.160254	1.938305
1	1.858081	1.659334	2.105776	1.772601
1.259	1.758933	1.634972	2.025577	1.670443
1.585	1.6942	1.50322	1.825968	1.57837
1.995	1.646738	1.484993	1.754103	1.539875
2.512	1.562992	1.429271	1.720982	1.466336
3.162	1.520272	1.388842	1.708922	1.453706
3.981	1.463444	1.324424	1.664316	1.499788
5.012	1.47979	1.31668	1.643657	1.456033
6.31	1.46119	1.31426	1.624419	1.405344
7.943	1.421347	1.271225	1.602506	1.372921
10	1.397259	1.25075	1.622857	1.332654

Table G-24: Room Ratio Wood 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	9.21766	7.426869	20.64716	29.24413
0.013	7.732901	6.874515	14.92407	15.7738
0.016	7.809574	6.633502	14.70235	10.08614
0.02	6.308923	5.655265	10.4705	5.013298
0.025	4.299819	2.509984	10.47699	3.69601
0.032	3.75792	2.731671	7.150126	3.505814
0.04	3.318345	2.293506	4.659399	9.429887
0.05	3.366685	2.489356	6.28699	3.226807
0.063	2.984099	3.315167	5.361048	1.831803
0.079	2.930194	3.35176	5.104011	1.959295
0.1	3.003344	2.022265	5.289803	3.256637
0.126	2.632826	2.216006	5.972106	2.904376
0.158	2.62599	2.007952	3.891544	4.105595
0.2	2.445086	1.966936	3.771113	2.942063
0.251	2.112116	1.738171	5.158338	2.864054
0.316	2.049428	1.691199	3.295537	2.688086
0.398	1.82995	1.476138	4.114738	2.550378
0.501	1.778846	1.427107	3.958402	2.464234
0.631	1.850489	1.395484	4.306913	2.485687
0.794	1.814951	1.416382	4.59108	2.547166
1	1.836868	1.462549	4.589388	2.124622
1.259	1.754979	1.454947	4.982742	2.279727
1.585	1.679831	1.37761	3.926373	1.741155
1.995	1.642529	1.383579	3.840375	1.710842
2.512	1.563722	1.330783	3.766327	1.629501
3.162	1.519454	1.297715	3.805434	1.616795
3.981	1.461508	1.252325	3.657074	1.596407
5.012	1.479177	1.253562	3.648897	1.560843
6.31	1.46103	1.252042	3.662898	1.500597
7.943	1.424093	1.211678	3.643252	1.354076
10	1.398113	1.191747	3.681699	1.333562

Table G-25: Room Ratio Wood 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	4.708972	7.483755	20.43416	39.22407
0.013	4.387062	6.37301	14.31792	18.89139
0.016	4.989364	5.910059	12.86459	12.1783
0.02	4.621934	4.730848	7.767506	10.39104
0.025	3.361174	3.557328	5.240248	8.417557
0.032	3.174162	1.423265	4.168526	2.393828
0.04	2.887723	1.718827	3.987101	1.53312
0.05	3.104534	2.248735	4.401818	2.486885
0.063	2.836239	2.669895	9.600712	3.737108
0.079	2.83284	2.876875	2.75308	2.566133
0.1	2.742139	1.75723	3.670272	1.884261
0.126	2.59891	2.153135	2.873515	1.521769
0.158	2.461726	1.710646	2.543089	6.384317
0.2	2.347468	1.624851	2.886727	2.802486
0.251	1.975796	1.418906	2.80922	4.702269
0.316	1.970723	1.284962	2.625258	2.073701
0.398	1.712798	1.494232	2.188326	1.418762
0.501	1.715761	1.161515	2.35036	2.04574
0.631	1.786147	1.188584	3.119267	2.179594
0.794	1.757962	1.196366	3.041729	2.358992
1	1.807405	1.248757	3.188726	1.668384
1.259	1.716269	1.246801	3.342305	1.679891
1.585	1.649435	1.245143	2.187575	2.190174
1.995	1.614126	1.183422	2.798904	1.660351
2.512	1.548942	1.16162	2.739542	1.61083
3.162	1.50497	1.146279	2.727765	1.654037
3.981	1.446273	1.11828	2.653057	1.674379
5.012	1.464872	1.132656	2.701007	1.670869
6.31	1.442724	1.139012	2.695206	1.672291
7.943	1.405805	1.114722	2.69919	0.927886
10	1.384589	1.099051	2.745812	0.926236

5 cm Contamination Depth Room Ratios

Table G-26: Room Ratio Wood 5cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	27.14857	18.67519	25.31048	29.86037
0.013	15.75632	13.70364	15.28398	16.48722
0.016	20.46633	19.12019	20.16425	20.92699
0.02	15.35380	14.74747	15.23305	15.52504
0.025	12.97715	12.41219	12.91279	13.10457
0.032	9.65821	9.08684	9.61267	9.79589
0.04	7.50747	6.99191	7.46915	7.62134
0.05	5.86964	5.44896	5.84912	5.97620
0.063	4.73235	4.05647	4.07172	4.24961
0.079	4.01703	3.74551	4.18626	3.81966
0.1	3.69047	3.40023	3.68327	3.77317
0.126	3.29188	2.93077	3.23056	2.93992
0.158	3.08676	2.72717	2.96603	2.85056
0.2	2.90731	2.60010	2.88839	2.97820
0.251	2.70656	2.35247	2.52120	2.56594
0.316	2.57689	2.21109	2.50368	2.45343
0.398	2.42315	2.09830	2.22677	2.30994
0.501	2.30034	1.99146	2.14590	2.22715
0.631	2.13673	1.83017	2.02850	2.10969
0.794	2.03315	1.70780	1.91459	1.96419
1	1.92697	1.60960	1.81585	1.85932
1.259	1.75935	1.44070	1.67456	1.73490
1.585	1.67807	1.35305	1.53908	1.55786
1.995	1.58718	1.24625	1.44883	1.47906
2.512	1.52180	1.20312	1.40396	1.44984
3.162	1.42692	1.12497	1.33345	1.37750
3.981	1.38288	1.07717	1.26779	1.31874
5.012	1.37226	1.05372	1.24662	1.30302
6.31	1.34232	1.03456	1.22508	1.28893
7.943	1.30870	1.00532	1.19723	1.24517
10	1.28975	0.98743	1.18273	1.23234

Table G-27: Room Ratio Wood 5cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	17.13944	7.89890	22.54509	22.74041
0.013	11.75774	8.56690	22.63262	15.88510
0.016	14.99881	13.43731	29.58502	21.59364
0.02	13.83498	11.60012	16.75187	16.79653
0.025	14.83739	9.87027	11.42530	27.11980
0.032	9.68408	9.95661	10.46251	8.88354
0.04	8.36059	7.15838	8.89028	8.80605
0.05	6.86070	5.86842	6.02880	5.84657
0.063	5.02126	4.12639	4.68426	4.26435
0.079	4.32750	3.58634	3.74447	4.13054
0.1	4.06453	3.39641	3.36099	3.79500
0.126	3.42327	3.20753	3.54203	4.61712
0.158	3.42100	3.13172	3.50665	4.30118
0.2	3.24316	2.90889	3.77104	4.33242
0.251	3.06740	2.88262	3.23242	3.87112
0.316	2.97177	2.73485	2.79010	3.82530
0.398	2.83795	2.57587	2.58004	4.08613
0.501	2.70151	2.44738	2.50032	4.16181
0.631	2.62985	2.37203	2.34561	4.26547
0.794	2.48047	2.32032	2.30458	4.30842
1	2.32802	2.21834	2.19302	3.95371
1.259	2.15338	2.06807	2.07427	2.67569
1.585	2.02227	1.91935	2.00177	2.49291
1.995	1.90826	1.82971	1.87106	2.35461
2.512	1.91427	1.75157	2.00663	2.35185
3.162	1.81492	1.79492	1.98157	2.06099
3.981	1.77222	1.60986	1.74909	1.99194
5.012	1.76960	1.54313	1.73790	2.12053
6.31	1.74634	1.51140	1.71096	2.04433
7.943	1.71073	1.47142	1.66976	2.04733
10	1.68272	1.44513	1.66396	1.98951

Table G-28: Room Ratio Wood 5cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	16.14145	8.88744	16.85115	32.08611
0.013	10.58326	7.30540	8.23269	19.35326
0.016	15.52194	12.05577	16.47227	26.96985
0.02	13.61416	11.23701	21.76805	27.29887
0.025	12.73512	10.29176	14.16461	13.05937
0.032	10.00654	7.08925	11.87296	10.56854
0.04	8.34823	6.14554	8.79312	7.97303
0.05	6.52336	5.30453	9.87631	5.45512
0.063	5.23805	4.32834	5.93849	3.84744
0.079	4.57941	3.75997	4.03080	4.11760
0.1	4.28673	3.54349	3.66928	3.79863
0.126	3.72862	3.24941	3.43995	3.78293
0.158	3.53379	2.88801	3.47698	4.31035
0.2	3.40552	2.94491	3.33032	4.10604
0.251	3.19022	2.87671	3.05207	3.84058
0.316	3.06933	2.63207	2.93589	2.91547
0.398	2.95939	2.44289	2.91501	3.11074
0.501	2.87902	2.41920	2.90892	2.84613
0.631	2.84865	2.31818	2.82208	2.83596
0.794	2.71745	2.28424	3.08163	2.80793
1	2.57317	2.27082	2.89324	2.76844
1.259	2.39229	2.13959	2.59269	2.49357
1.585	2.18102	1.95918	2.31563	2.16837
1.995	2.07951	1.91396	2.22681	2.08758
2.512	2.09239	1.87601	2.35914	2.05947
3.162	2.00705	1.81196	2.30249	2.02772
3.981	1.95828	1.77099	2.10255	2.08235
5.012	1.97872	1.76153	2.17137	2.02754
6.31	1.95621	1.77608	2.13132	1.98872
7.943	1.91571	1.70240	1.99286	1.88575
10	1.90375	1.68616	2.03464	1.85019

Table G-29: Room Ratio Wood 5cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	8.61888	6.78394	21.19987	26.89163
0.013	7.17282	5.96508	10.68182	16.09362
0.016	11.94737	9.72133	16.67707	17.85622
0.02	10.83558	7.88710	19.39323	9.37127
0.025	10.68270	9.42960	17.88636	9.33010
0.032	9.39501	7.18338	17.34576	6.77262
0.04	8.26084	5.05398	14.43780	6.37698
0.05	6.40056	3.93981	12.23433	5.23963
0.063	4.87297	5.41948	7.28717	3.65250
0.079	4.35966	3.60680	5.40281	3.15670
0.1	4.18174	3.00295	5.51796	3.17978
0.126	3.66020	3.66888	6.30896	3.30398
0.158	3.46218	2.41307	5.09476	7.29272
0.2	3.26482	2.58693	6.73778	3.40192
0.251	3.11130	2.49608	6.58828	3.09599
0.316	2.96841	2.24959	4.79110	3.47821
0.398	2.83263	2.16530	4.66487	3.93594
0.501	2.82793	2.31093	4.65360	3.60696
0.631	2.81852	1.94576	6.84363	4.05719
0.794	2.68716	1.92440	7.10708	4.05768
1	2.54895	1.93236	6.74488	3.70906
1.259	2.39990	1.84158	7.31545	4.02540
1.585	2.16599	1.71735	5.60168	2.36767
1.995	2.07360	1.69621	5.35716	2.27451
2.512	2.09892	1.65271	5.46583	2.26219
3.162	2.00818	1.61524	5.37121	2.18377
3.981	1.95936	1.61038	5.04317	2.21514
5.012	1.98209	1.62055	5.32599	2.13496
6.31	1.96429	1.63280	5.66937	2.07073
7.943	1.92765	1.55971	4.88144	2.00014
10	1.91078	1.54974	4.97590	1.94449

Table G-30: Room Ratio Wood 5cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	4.44297	6.22486	19.09882	23.07994
0.013	3.98380	5.11570	10.85981	17.83208
0.016	7.51454	8.32381	16.04599	23.26951
0.02	8.11277	8.36991	12.30127	13.64533
0.025	8.83040	8.10922	11.51588	16.64701
0.032	7.98138	7.43138	10.30739	15.33627
0.04	7.00219	5.54666	6.04043	6.38787
0.05	6.14733	2.96049	7.23935	2.98057
0.063	4.77017	4.55338	5.15317	2.82714
0.079	4.11146	4.30407	5.27012	2.83377
0.1	4.03661	2.76728	12.98354	2.06939
0.126	3.45864	2.04608	4.05020	2.44086
0.158	3.42984	2.52726	3.14085	3.52392
0.2	3.18091	2.36377	8.50045	3.13101
0.251	3.03883	2.38307	4.00244	3.51514
0.316	2.89260	2.59214	3.77068	2.84864
0.398	2.84014	2.47241	4.42795	1.82381
0.501	2.69418	1.61548	3.92007	3.42484
0.631	2.60859	1.58645	7.34804	3.49231
0.794	2.62118	1.58986	4.39536	3.74874
1	2.53058	1.63117	3.16529	3.70958
1.259	2.34450	1.52083	6.82959	3.87699
1.585	2.17654	1.99129	3.91472	1.60235
1.995	2.04845	1.37311	3.70126	2.15560
2.512	2.07785	1.36572	3.75253	2.23678
3.162	1.98045	1.34868	3.62835	2.22849
3.981	1.93452	1.33946	3.53259	2.31951
5.012	1.96501	1.36234	3.74452	2.28087
6.31	1.93591	1.38445	3.93672	2.27920
7.943	1.90289	1.35435	3.42405	2.21074
10	1.89333	1.34917	3.48052	2.17411

APPENDIX H: COMPOSITE 1 TABLES

First tables will be presented for raw air kerma values. These units are in pGy per cm^2. Room ratio values are presented following the Kerma tables.

Surface Contamination Kerma

Table H-1: Kerma Composite 1 Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.05E-05	5.49E-06	9.29E-06	1.13E-05
0.013	9.10E-06	5.88E-06	8.36E-06	9.50E-06
0.016	7.06E-06	4.83E-06	6.52E-06	7.25E-06
0.02	4.94E-06	3.47E-06	4.56E-06	5.01E-06
0.025	3.36E-06	2.40E-06	3.09E-06	3.39E-06
0.032	2.20E-06	1.59E-06	2.03E-06	2.22E-06
0.04	1.60E-06	1.17E-06	1.48E-06	1.61E-06
0.05	1.32E-06	9.92E-07	1.23E-06	1.33E-06
0.063	1.31E-06	1.00E-06	1.22E-06	1.33E-06
0.079	1.49E-06	1.15E-06	1.39E-06	1.51E-06
0.1	1.89E-06	1.46E-06	1.76E-06	1.91E-06
0.126	2.49E-06	1.92E-06	2.33E-06	2.53E-06
0.158	3.24E-06	2.49E-06	3.02E-06	3.29E-06
0.2	4.24E-06	3.23E-06	3.95E-06	4.29E-06
0.251	5.37E-06	4.06E-06	5.00E-06	5.44E-06
0.316	6.76E-06	5.06E-06	6.28E-06	6.84E-06
0.398	8.38E-06	6.21E-06	7.77E-06	8.47E-06
0.501	1.03E-05	7.53E-06	9.48E-06	1.04E-05
0.631	1.24E-05	9.00E-06	1.14E-05	1.25E-05
0.794	1.48E-05	1.07E-05	1.36E-05	1.49E-05
1	1.75E-05	1.25E-05	1.61E-05	1.76E-05
1.259	2.04E-05	1.45E-05	1.88E-05	2.06E-05
1.585	2.38E-05	1.69E-05	2.19E-05	2.40E-05
1.995	2.76E-05	1.95E-05	2.53E-05	2.77E-05
2.512	3.19E-05	2.25E-05	2.92E-05	3.20E-05
3.162	3.68E-05	2.59E-05	3.36E-05	3.69E-05
5.012	4.26E-05	3.00E-05	3.89E-05	4.27E-05
6.31	4.94E-05	3.48E-05	4.51E-05	4.95E-05
7.943	5.81E-05	4.09E-05	5.30E-05	5.81E-05
10	6.88E-05	4.86E-05	6.28E-05	6.88E-05
10	8.21E-05	5.80E-05	7.48E-05	8.20E-05

Table H-2: Kerma Composite 1 Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	5.77E-07	3.17E-07	7.48E-07	9.54E-07
0.013	6.23E-07	4.61E-07	7.39E-07	8.24E-07
0.016	5.61E-07	4.67E-07	6.30E-07	6.59E-07
0.02	4.40E-07	3.92E-07	4.77E-07	4.80E-07
0.025	3.21E-07	2.93E-07	3.43E-07	3.37E-07
0.032	2.20E-07	2.02E-07	2.31E-07	2.26E-07
0.04	1.62E-07	1.51E-07	1.71E-07	1.66E-07
0.05	1.35E-07	1.26E-07	1.41E-07	1.39E-07
0.063	1.33E-07	1.24E-07	1.40E-07	1.37E-07
0.079	1.50E-07	1.41E-07	1.59E-07	1.57E-07
0.1	1.89E-07	1.76E-07	2.01E-07	2.00E-07
0.126	2.50E-07	2.32E-07	2.65E-07	2.63E-07
0.158	3.25E-07	3.01E-07	3.45E-07	3.45E-07
0.2	4.26E-07	3.94E-07	4.52E-07	4.51E-07
0.251	5.42E-07	5.00E-07	5.75E-07	5.73E-07
0.316	6.85E-07	6.35E-07	7.28E-07	7.28E-07
0.398	8.53E-07	7.87E-07	9.09E-07	9.02E-07
0.501	1.05E-06	9.66E-07	1.11E-06	1.10E-06
0.631	1.27E-06	1.17E-06	1.35E-06	1.33E-06
0.794	1.52E-06	1.41E-06	1.62E-06	1.59E-06
1	1.81E-06	1.66E-06	1.92E-06	1.88E-06
1.259	2.12E-06	1.95E-06	2.25E-06	2.20E-06
1.585	2.48E-06	2.27E-06	2.63E-06	2.57E-06
1.995	2.88E-06	2.63E-06	3.04E-06	2.98E-06
2.512	3.33E-06	3.05E-06	3.52E-06	3.43E-06
3.162	3.85E-06	3.53E-06	4.06E-06	3.97E-06
3.981	4.46E-06	4.07E-06	4.70E-06	4.58E-06
5.012	5.17E-06	4.73E-06	5.44E-06	5.31E-06
6.31	6.08E-06	5.54E-06	6.40E-06	6.22E-06
7.943	7.20E-06	6.56E-06	7.55E-06	7.36E-06
10	8.58E-06	7.81E-06	9.00E-06	8.76E-06

Table H-3: Kerma Composite 1 Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.54E-07	9.17E-08	2.18E-07	2.79E-07
0.013	1.74E-07	1.35E-07	2.14E-07	2.41E-07
0.016	1.63E-07	1.43E-07	1.86E-07	1.92E-07
0.02	1.35E-07	1.27E-07	1.45E-07	1.42E-07
0.025	1.02E-07	1.00E-07	1.06E-07	1.01E-07
0.032	7.20E-08	7.17E-08	7.36E-08	6.84E-08
0.04	5.38E-08	5.38E-08	5.47E-08	5.06E-08
0.05	4.49E-08	4.51E-08	4.57E-08	4.25E-08
0.063	4.43E-08	4.45E-08	4.55E-08	4.24E-08
0.079	4.99E-08	4.99E-08	5.16E-08	4.85E-08
0.1	6.28E-08	6.25E-08	6.54E-08	6.21E-08
0.126	8.27E-08	8.23E-08	8.61E-08	8.18E-08
0.158	1.08E-07	1.07E-07	1.13E-07	1.07E-07
0.2	1.42E-07	1.41E-07	1.48E-07	1.40E-07
0.251	1.81E-07	1.79E-07	1.90E-07	1.79E-07
0.316	2.29E-07	2.27E-07	2.39E-07	2.26E-07
0.398	2.87E-07	2.84E-07	2.97E-07	2.80E-07
0.501	3.54E-07	3.52E-07	3.67E-07	3.48E-07
0.631	4.31E-07	4.28E-07	4.46E-07	4.19E-07
0.794	5.18E-07	5.15E-07	5.36E-07	5.06E-07
1	6.18E-07	6.20E-07	6.43E-07	5.99E-07
1.259	7.27E-07	7.23E-07	7.49E-07	7.01E-07
1.585	8.54E-07	8.48E-07	8.78E-07	8.16E-07
1.995	9.92E-07	9.86E-07	1.02E-06	9.42E-07
2.512	1.15E-06	1.14E-06	1.18E-06	1.09E-06
3.162	1.33E-06	1.32E-06	1.36E-06	1.26E-06
3.981	1.54E-06	1.53E-06	1.58E-06	1.46E-06
5.012	1.79E-06	1.78E-06	1.83E-06	1.69E-06
6.31	2.10E-06	2.09E-06	2.15E-06	1.98E-06
7.943	2.49E-06	2.49E-06	2.54E-06	2.35E-06
10	2.97E-06	2.97E-06	3.03E-06	2.80E-06

Table H-4: Kerma Composite 1 Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.08E-08	1.74E-08	5.21E-08	6.82E-08
0.013	2.70E-08	2.50E-08	5.07E-08	5.97E-08
0.016	2.86E-08	2.75E-08	4.45E-08	4.79E-08
0.02	2.64E-08	2.68E-08	3.51E-08	3.57E-08
0.025	2.19E-08	2.29E-08	2.69E-08	2.59E-08
0.032	1.65E-08	1.76E-08	1.91E-08	1.78E-08
0.04	1.27E-08	1.38E-08	1.45E-08	1.34E-08
0.05	1.08E-08	1.17E-08	1.23E-08	1.12E-08
0.063	1.07E-08	1.18E-08	1.22E-08	1.13E-08
0.079	1.21E-08	1.30E-08	1.37E-08	1.32E-08
0.1	1.52E-08	1.62E-08	1.73E-08	1.64E-08
0.126	2.00E-08	2.12E-08	2.29E-08	2.13E-08
0.158	2.61E-08	2.76E-08	3.02E-08	2.80E-08
0.2	3.42E-08	3.63E-08	3.96E-08	3.77E-08
0.251	4.37E-08	4.63E-08	5.04E-08	4.72E-08
0.316	5.54E-08	5.88E-08	6.36E-08	6.03E-08
0.398	6.95E-08	7.39E-08	7.95E-08	7.54E-08
0.501	8.59E-08	9.18E-08	9.85E-08	9.33E-08
0.631	1.05E-07	1.11E-07	1.20E-07	1.13E-07
0.794	1.26E-07	1.35E-07	1.45E-07	1.35E-07
1	1.51E-07	1.62E-07	1.75E-07	1.61E-07
1.259	1.78E-07	1.91E-07	2.04E-07	1.89E-07
1.585	2.09E-07	2.25E-07	2.41E-07	2.21E-07
1.995	2.44E-07	2.63E-07	2.86E-07	2.59E-07
2.512	2.83E-07	3.04E-07	3.26E-07	2.99E-07
3.162	3.28E-07	3.54E-07	3.76E-07	3.47E-07
3.981	3.80E-07	4.10E-07	4.34E-07	4.02E-07
5.012	4.42E-07	4.79E-07	5.05E-07	4.66E-07
6.31	5.20E-07	5.62E-07	5.95E-07	5.49E-07
7.943	6.16E-07	6.67E-07	7.09E-07	6.48E-07
10	7.34E-07	7.96E-07	8.42E-07	7.75E-07

Table H-5: Kerma Composite 1 Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.68E-09	4.25E-09	1.31E-08	1.67E-08
0.013	3.72E-09	5.70E-09	1.27E-08	1.45E-08
0.016	4.39E-09	6.03E-09	1.10E-08	1.17E-08
0.02	4.61E-09	5.63E-09	8.63E-09	8.79E-09
0.025	4.28E-09	5.07E-09	6.62E-09	6.46E-09
0.032	3.53E-09	4.17E-09	4.86E-09	4.58E-09
0.04	2.89E-09	3.38E-09	3.74E-09	3.44E-09
0.05	2.53E-09	2.95E-09	3.20E-09	2.95E-09
0.063	2.55E-09	2.95E-09	3.22E-09	2.94E-09
0.079	2.88E-09	3.30E-09	3.60E-09	3.35E-09
0.1	3.60E-09	4.12E-09	4.57E-09	4.24E-09
0.126	4.72E-09	5.35E-09	6.05E-09	5.63E-09
0.158	6.13E-09	7.02E-09	7.94E-09	7.37E-09
0.2	8.05E-09	9.22E-09	1.04E-08	9.69E-09
0.251	1.03E-08	1.18E-08	1.33E-08	1.25E-08
0.316	1.31E-08	1.50E-08	1.67E-08	1.70E-08
0.398	1.64E-08	1.89E-08	2.09E-08	2.11E-08
0.501	2.03E-08	2.38E-08	2.61E-08	2.63E-08
0.631	2.48E-08	2.91E-08	3.16E-08	3.30E-08
0.794	3.00E-08	3.54E-08	3.84E-08	3.93E-08
1	3.60E-08	4.27E-08	4.59E-08	4.70E-08
1.259	4.26E-08	5.05E-08	5.46E-08	5.45E-08
1.585	5.03E-08	5.97E-08	6.40E-08	6.34E-08
1.995	5.88E-08	7.00E-08	7.52E-08	7.54E-08
2.512	6.84E-08	8.13E-08	8.78E-08	8.62E-08
3.162	7.96E-08	9.51E-08	1.01E-07	9.87E-08
3.981	9.25E-08	1.11E-07	1.17E-07	1.15E-07
5.012	1.08E-07	1.29E-07	1.37E-07	1.34E-07
6.31	1.27E-07	1.52E-07	1.62E-07	1.58E-07
7.943	1.51E-07	1.81E-07	1.92E-07	1.88E-07
10	1.80E-07	2.16E-07	2.29E-07	2.25E-07

Kerma for 1cm of Contamination Depth

Table H-6: Kerma Composite 1 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	9.30E-08	6.99E-08	8.86E-08	1.02E-07
0.013	1.70E-07	1.56E-07	1.68E-07	1.77E-07
0.016	2.38E-07	2.34E-07	2.40E-07	2.43E-07
0.02	3.18E-07	3.21E-07	3.22E-07	3.21E-07
0.025	4.11E-07	4.21E-07	4.17E-07	4.13E-07
0.032	5.19E-07	5.27E-07	5.26E-07	5.23E-07
0.04	6.04E-07	5.95E-07	6.10E-07	6.11E-07
0.05	6.95E-07	6.61E-07	7.00E-07	7.08E-07
0.063	8.52E-07	7.87E-07	8.55E-07	8.73E-07
0.079	1.10E-06	9.91E-07	1.09E-06	1.13E-06
0.1	1.48E-06	1.32E-06	1.48E-06	1.53E-06
0.126	2.03E-06	1.78E-06	2.02E-06	2.10E-06
0.158	2.70E-06	2.35E-06	2.68E-06	2.79E-06
0.2	3.59E-06	3.08E-06	3.55E-06	3.73E-06
0.251	4.59E-06	3.90E-06	4.54E-06	4.75E-06
0.316	5.82E-06	4.85E-06	5.75E-06	6.03E-06
0.398	7.24E-06	6.00E-06	7.19E-06	7.52E-06
0.501	8.91E-06	7.31E-06	8.80E-06	9.25E-06
0.631	1.08E-05	8.76E-06	1.07E-05	1.13E-05
0.794	1.30E-05	1.04E-05	1.27E-05	1.36E-05
1	1.55E-05	1.22E-05	1.52E-05	1.61E-05
1.259	1.82E-05	1.42E-05	1.77E-05	1.89E-05
1.585	2.13E-05	1.67E-05	2.08E-05	2.22E-05
1.995	2.49E-05	1.91E-05	2.42E-05	2.58E-05
2.512	2.89E-05	2.20E-05	2.80E-05	3.00E-05
3.162	3.36E-05	2.56E-05	3.24E-05	3.50E-05
3.981	3.90E-05	2.94E-05	3.76E-05	4.04E-05
5.012	4.55E-05	3.41E-05	4.36E-05	4.70E-05
6.31	5.35E-05	4.11E-05	5.12E-05	5.53E-05
7.943	6.36E-05	4.77E-05	6.07E-05	6.54E-05
10	7.56E-05	5.67E-05	7.23E-05	7.82E-05

Table H-7: Kerma Composite 1 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	5.09E-09	3.60E-09	6.31E-09	8.25E-09
0.013	1.10E-08	9.65E-09	1.21E-08	1.40E-08
0.016	1.74E-08	1.64E-08	1.82E-08	1.95E-08
0.02	2.53E-08	2.51E-08	2.56E-08	2.61E-08
0.025	3.45E-08	3.50E-08	3.42E-08	3.39E-08
0.032	4.51E-08	4.63E-08	4.46E-08	4.37E-08
0.04	5.37E-08	5.53E-08	5.37E-08	5.24E-08
0.05	6.31E-08	6.47E-08	6.42E-08	6.21E-08
0.063	7.84E-08	8.00E-08	8.09E-08	7.86E-08
0.079	1.02E-07	1.03E-07	1.06E-07	1.03E-07
0.1	1.38E-07	1.39E-07	1.45E-07	1.42E-07
0.126	1.90E-07	1.89E-07	2.00E-07	1.98E-07
0.158	2.53E-07	2.52E-07	2.68E-07	2.63E-07
0.2	3.37E-07	3.35E-07	3.59E-07	3.53E-07
0.251	4.34E-07	4.30E-07	4.63E-07	4.56E-07
0.316	5.53E-07	5.47E-07	5.93E-07	5.82E-07
0.398	6.95E-07	6.86E-07	7.47E-07	7.32E-07
0.501	8.60E-07	8.47E-07	9.25E-07	9.09E-07
0.631	1.05E-06	1.03E-06	1.13E-06	1.11E-06
0.794	1.27E-06	1.25E-06	1.38E-06	1.34E-06
1	1.53E-06	1.50E-06	1.65E-06	1.61E-06
1.259	1.81E-06	1.77E-06	1.96E-06	1.90E-06
1.585	2.14E-06	2.09E-06	2.32E-06	2.25E-06
1.995	2.50E-06	2.44E-06	2.72E-06	2.63E-06
2.512	2.92E-06	2.81E-06	3.25E-06	3.11E-06
3.162	3.40E-06	3.27E-06	3.80E-06	3.61E-06
3.981	3.96E-06	3.81E-06	4.44E-06	4.18E-06
5.012	4.61E-06	4.42E-06	5.16E-06	4.87E-06
6.31	5.44E-06	5.23E-06	6.16E-06	5.72E-06
7.943	6.46E-06	6.21E-06	7.27E-06	6.93E-06
10	7.71E-06	7.36E-06	8.61E-06	8.19E-06

Table H-8: Kerma Composite 1 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.34E-09	1.25E-09	1.26E-09	1.69E-09
0.013	3.00E-09	2.74E-09	3.13E-09	3.55E-09
0.016	4.87E-09	4.57E-09	5.54E-09	5.54E-09
0.02	7.19E-09	6.86E-09	7.49E-09	7.16E-09
0.025	9.94E-09	9.84E-09	1.00E-08	9.60E-09
0.032	1.32E-08	1.33E-08	1.26E-08	1.30E-08
0.04	1.59E-08	1.68E-08	1.59E-08	1.47E-08
0.05	1.90E-08	1.96E-08	1.91E-08	1.77E-08
0.063	2.38E-08	2.46E-08	2.44E-08	2.25E-08
0.079	3.11E-08	3.17E-08	3.16E-08	3.13E-08
0.1	4.24E-08	4.43E-08	4.54E-08	4.13E-08
0.126	5.84E-08	6.24E-08	6.15E-08	5.73E-08
0.158	7.86E-08	7.96E-08	8.15E-08	8.08E-08
0.2	1.05E-07	1.08E-07	1.12E-07	1.08E-07
0.251	1.35E-07	1.37E-07	1.41E-07	1.38E-07
0.316	1.74E-07	1.77E-07	2.02E-07	1.77E-07
0.398	2.19E-07	2.24E-07	2.33E-07	2.21E-07
0.501	2.72E-07	2.78E-07	2.99E-07	2.86E-07
0.631	3.34E-07	3.41E-07	3.55E-07	3.45E-07
0.794	4.08E-07	4.16E-07	4.30E-07	4.14E-07
1	4.91E-07	5.01E-07	5.36E-07	5.36E-07
1.259	5.88E-07	5.98E-07	6.34E-07	6.07E-07
1.585	6.96E-07	7.19E-07	7.65E-07	6.94E-07
1.995	8.22E-07	8.57E-07	8.82E-07	7.87E-07
2.512	9.61E-07	1.01E-06	1.02E-06	9.19E-07
3.162	1.12E-06	1.16E-06	1.22E-06	1.15E-06
3.981	1.32E-06	1.37E-06	1.40E-06	1.30E-06
5.012	1.54E-06	1.60E-06	1.69E-06	1.53E-06
6.31	1.82E-06	1.91E-06	1.98E-06	1.79E-06
7.943	2.17E-06	2.45E-06	2.33E-06	2.21E-06
10	2.60E-06	3.14E-06	2.96E-06	2.63E-06

Table H-9: Kerma Composite 1 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.88E-10	1.96E-10	2.10E-10	4.49E-10
0.013	4.87E-10	4.70E-10	6.92E-10	8.23E-10
0.016	8.97E-10	9.17E-10	1.05E-09	1.27E-09
0.02	1.48E-09	1.48E-09	1.65E-09	1.79E-09
0.025	2.25E-09	2.23E-09	2.30E-09	2.47E-09
0.032	3.13E-09	3.26E-09	3.02E-09	2.96E-09
0.04	3.87E-09	4.12E-09	3.76E-09	3.53E-09
0.05	4.67E-09	4.83E-09	4.67E-09	4.14E-09
0.063	5.90E-09	6.10E-09	5.89E-09	5.60E-09
0.079	7.69E-09	7.84E-09	7.87E-09	8.10E-09
0.1	1.04E-08	1.06E-08	1.08E-08	1.07E-08
0.126	1.43E-08	1.48E-08	1.56E-08	1.46E-08
0.158	1.91E-08	1.93E-08	2.12E-08	1.89E-08
0.2	2.56E-08	2.58E-08	2.90E-08	2.41E-08
0.251	3.30E-08	3.38E-08	3.86E-08	3.55E-08
0.316	4.24E-08	4.28E-08	5.18E-08	4.56E-08
0.398	5.34E-08	5.56E-08	6.25E-08	5.38E-08
0.501	6.64E-08	6.82E-08	7.83E-08	6.94E-08
0.631	8.20E-08	8.35E-08	9.84E-08	8.81E-08
0.794	9.97E-08	1.05E-07	1.13E-07	9.99E-08
1	1.21E-07	1.25E-07	1.35E-07	1.28E-07
1.259	1.44E-07	1.49E-07	1.73E-07	1.56E-07
1.585	1.71E-07	1.84E-07	1.98E-07	1.71E-07
1.995	2.01E-07	2.10E-07	2.47E-07	2.10E-07
2.512	2.37E-07	2.49E-07	2.75E-07	2.41E-07
3.162	2.77E-07	2.91E-07	3.41E-07	2.90E-07
3.981	3.24E-07	3.42E-07	4.01E-07	3.46E-07
5.012	3.80E-07	4.05E-07	4.45E-07	3.82E-07
6.31	4.51E-07	4.77E-07	5.67E-07	4.36E-07
7.943	5.39E-07	5.70E-07	6.77E-07	5.24E-07
10	6.42E-07	6.88E-07	7.98E-07	6.23E-07

Table H-10: Kerma Composite 1 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.41E-11	3.37E-11	9.29E-11	1.23E-10
0.013	6.76E-11	8.72E-11	1.83E-10	3.04E-10
0.016	1.42E-10	1.90E-10	2.08E-10	4.44E-10
0.02	2.71E-10	3.45E-10	3.08E-10	5.06E-10
0.025	4.64E-10	5.39E-10	5.27E-10	5.89E-10
0.032	7.07E-10	7.40E-10	6.61E-10	8.67E-10
0.04	9.17E-10	9.57E-10	9.59E-10	1.27E-09
0.05	1.14E-09	1.21E-09	1.23E-09	1.04E-09
0.063	1.44E-09	1.49E-09	1.38E-09	1.39E-09
0.079	1.87E-09	1.93E-09	1.99E-09	1.99E-09
0.1	2.54E-09	2.75E-09	2.75E-09	2.92E-09
0.126	3.45E-09	3.42E-09	4.02E-09	3.89E-09
0.158	4.60E-09	4.77E-09	5.30E-09	4.80E-09
0.2	6.12E-09	6.43E-09	7.18E-09	7.13E-09
0.251	7.92E-09	8.15E-09	8.54E-09	8.80E-09
0.316	1.01E-08	1.06E-08	1.29E-08	1.21E-08
0.398	1.27E-08	1.36E-08	1.49E-08	1.60E-08
0.501	1.59E-08	1.71E-08	1.97E-08	1.88E-08
0.631	1.95E-08	2.00E-08	2.30E-08	2.75E-08
0.794	2.39E-08	2.56E-08	2.66E-08	2.94E-08
1	2.90E-08	3.09E-08	3.46E-08	3.67E-08
1.259	3.47E-08	3.79E-08	4.14E-08	4.31E-08
1.585	4.14E-08	4.43E-08	4.53E-08	5.04E-08
1.995	4.88E-08	5.30E-08	5.60E-08	5.94E-08
2.512	5.74E-08	6.25E-08	6.44E-08	6.67E-08
3.162	6.75E-08	7.24E-08	8.06E-08	7.85E-08
3.981	7.92E-08	8.65E-08	9.58E-08	9.41E-08
5.012	9.34E-08	1.06E-07	1.14E-07	1.13E-07
6.31	1.11E-07	1.21E-07	1.27E-07	1.32E-07
7.943	1.32E-07	1.46E-07	1.65E-07	1.58E-07
10	1.59E-07	1.76E-07	2.07E-07	1.97E-07

Kerma for 5cm of Contamination Depth

Table H-11: Kerma Composite 1 5cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.48E-08	1.26E-08	1.92E-08	2.11E-08
0.013	1.70E-08	2.85E-08	3.02E-08	4.34E-08
0.016	4.06E-08	4.45E-08	4.48E-08	7.30E-08
0.02	7.37E-08	6.05E-08	7.16E-08	9.77E-08
0.025	8.08E-08	7.58E-08	7.25E-08	9.63E-08
0.032	1.09E-07	1.06E-07	1.04E-07	1.32E-07
0.04	1.50E-07	1.50E-07	1.26E-07	1.57E-07
0.05	1.92E-07	1.81E-07	1.70E-07	1.60E-07
0.063	3.17E-07	3.14E-07	2.58E-07	2.70E-07
0.079	4.53E-07	4.84E-07	3.75E-07	4.07E-07
0.1	7.43E-07	7.95E-07	7.41E-07	7.78E-07
0.126	1.10E-06	1.18E-06	1.10E-06	1.11E-06
0.158	1.61E-06	1.48E-06	1.49E-06	1.45E-06
0.2	2.22E-06	1.99E-06	2.00E-06	1.99E-06
0.251	2.95E-06	2.66E-06	2.64E-06	2.64E-06
0.316	3.96E-06	3.39E-06	3.38E-06	3.51E-06
0.398	4.79E-06	4.25E-06	4.29E-06	4.24E-06
0.501	5.99E-06	5.29E-06	5.36E-06	5.46E-06
0.631	7.30E-06	6.54E-06	6.63E-06	6.62E-06
0.794	8.82E-06	7.96E-06	8.28E-06	7.72E-06
1	1.08E-05	9.50E-06	1.01E-05	9.09E-06
1.259	1.29E-05	1.13E-05	1.17E-05	1.11E-05
1.585	1.57E-05	1.33E-05	1.43E-05	1.43E-05
1.995	1.92E-05	1.58E-05	1.74E-05	1.67E-05
2.512	2.22E-05	1.83E-05	2.00E-05	1.95E-05
3.162	2.60E-05	2.15E-05	2.37E-05	2.26E-05
3.981	3.05E-05	2.51E-05	2.79E-05	2.67E-05
5.012	3.53E-05	2.96E-05	3.43E-05	3.16E-05
6.31	4.15E-05	3.48E-05	4.19E-05	3.77E-05
7.943	5.05E-05	4.15E-05	4.99E-05	4.60E-05
10	6.05E-05	5.00E-05	5.90E-05	5.56E-05

Table H-12: Kerma Composite 1 5cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.06E-09	7.49E-10	1.09E-09	1.51E-09
0.013	2.44E-09	1.84E-09	1.97E-09	1.81E-09
0.016	3.96E-09	2.70E-09	2.95E-09	1.56E-09
0.02	5.60E-09	4.05E-09	4.42E-09	2.80E-09
0.025	7.23E-09	6.65E-09	6.06E-09	4.66E-09
0.032	9.88E-09	7.25E-09	1.35E-08	7.62E-09
0.04	1.44E-08	1.12E-08	1.34E-08	9.42E-09
0.05	1.77E-08	1.57E-08	1.61E-08	1.33E-08
0.063	2.60E-08	2.95E-08	2.98E-08	2.10E-08
0.079	3.85E-08	3.93E-08	4.75E-08	4.13E-08
0.1	6.54E-08	5.28E-08	5.55E-08	8.75E-08
0.126	1.02E-07	8.60E-08	7.51E-08	1.07E-07
0.158	1.43E-07	1.19E-07	9.92E-08	1.48E-07
0.2	2.03E-07	1.71E-07	1.59E-07	2.23E-07
0.251	2.59E-07	2.32E-07	2.26E-07	2.85E-07
0.316	3.49E-07	2.92E-07	2.96E-07	3.97E-07
0.398	4.17E-07	3.70E-07	3.73E-07	5.39E-07
0.501	5.18E-07	4.79E-07	5.52E-07	7.33E-07
0.631	6.49E-07	6.12E-07	7.16E-07	1.06E-06
0.794	7.88E-07	7.69E-07	8.25E-07	1.39E-06
1	9.88E-07	9.61E-07	1.03E-06	1.64E-06
1.259	1.21E-06	1.12E-06	1.14E-06	2.10E-06
1.585	1.50E-06	1.36E-06	1.31E-06	2.65E-06
1.995	1.76E-06	1.65E-06	1.63E-06	3.31E-06
2.512	2.16E-06	1.96E-06	1.93E-06	3.84E-06
3.162	2.51E-06	2.29E-06	2.38E-06	4.92E-06
3.981	2.94E-06	2.66E-06	2.70E-06	5.87E-06
5.012	3.54E-06	3.13E-06	3.27E-06	7.10E-06
6.31	4.17E-06	3.69E-06	3.98E-06	8.27E-06
7.943	5.05E-06	4.47E-06	4.87E-06	1.03E-05
10	6.05E-06	5.44E-06	5.72E-06	1.20E-05

Table H-13: Kerma Composite 1 5cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.67E-10	2.39E-10	2.43E-10	2.08E-10
0.013	5.87E-10	5.79E-10	5.27E-10	5.07E-10
0.016	9.65E-10	9.94E-10	8.92E-10	6.10E-10
0.02	1.57E-09	1.32E-09	1.17E-09	1.35E-09
0.025	2.15E-09	1.57E-09	1.37E-09	1.78E-09
0.032	2.83E-09	2.56E-09	1.91E-09	2.51E-09
0.04	3.89E-09	3.35E-09	2.85E-09	3.53E-09
0.05	5.28E-09	4.22E-09	5.27E-09	5.09E-09
0.063	7.93E-09	7.92E-09	1.17E-08	7.76E-09
0.079	1.22E-08	7.75E-09	1.49E-08	1.74E-08
0.1	2.05E-08	1.36E-08	3.73E-08	3.34E-08
0.126	3.04E-08	2.19E-08	3.76E-08	2.96E-08
0.158	4.23E-08	3.05E-08	4.70E-08	4.06E-08
0.2	5.84E-08	4.42E-08	9.55E-08	5.94E-08
0.251	7.82E-08	5.50E-08	8.61E-08	8.20E-08
0.316	1.01E-07	1.06E-07	1.37E-07	1.48E-07
0.398	1.31E-07	8.97E-08	1.64E-07	1.76E-07
0.501	1.60E-07	1.32E-07	1.83E-07	1.86E-07
0.631	2.03E-07	1.68E-07	2.24E-07	2.38E-07
0.794	2.39E-07	1.90E-07	2.83E-07	4.07E-07
1	3.12E-07	2.38E-07	3.32E-07	4.14E-07
1.259	3.82E-07	2.81E-07	4.16E-07	5.34E-07
1.585	4.54E-07	3.74E-07	4.44E-07	5.57E-07
1.995	5.35E-07	4.44E-07	6.08E-07	6.64E-07
2.512	6.51E-07	5.39E-07	7.05E-07	7.59E-07
3.162	7.54E-07	6.50E-07	8.05E-07	9.70E-07
3.981	9.03E-07	7.80E-07	9.25E-07	1.16E-06
5.012	1.08E-06	9.22E-07	1.14E-06	1.36E-06
6.31	1.27E-06	1.10E-06	1.42E-06	1.60E-06
7.943	1.54E-06	1.40E-06	1.71E-06	1.87E-06
10	1.86E-06	1.63E-06	2.09E-06	2.30E-06

Table H-14: Kerma Composite 1 5cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	3.79E-11	4.21E-11	6.03E-11	1.09E-10
0.013	9.60E-11	1.02E-10	1.67E-10	1.21E-10
0.016	1.76E-10	1.93E-10	1.39E-10	2.11E-10
0.02	2.96E-10	2.92E-10	2.46E-10	2.93E-10
0.025	4.54E-10	4.45E-10	3.84E-10	4.36E-10
0.032	7.19E-10	4.63E-10	6.06E-10	5.85E-10
0.04	9.21E-10	7.09E-10	8.61E-10	7.14E-10
0.05	1.31E-09	1.01E-09	1.56E-09	1.24E-09
0.063	2.06E-09	2.07E-09	2.20E-09	1.51E-09
0.079	3.14E-09	3.14E-09	3.28E-09	2.62E-09
0.1	4.73E-09	2.81E-09	1.60E-08	6.59E-09
0.126	7.02E-09	4.03E-09	2.40E-08	1.08E-08
0.158	9.82E-09	6.19E-09	3.16E-08	1.19E-08
0.2	1.46E-08	9.31E-09	3.63E-08	2.14E-08
0.251	1.89E-08	1.62E-08	3.43E-08	1.82E-08
0.316	2.43E-08	1.65E-08	6.15E-08	3.74E-08
0.398	3.20E-08	1.90E-08	1.05E-07	7.84E-08
0.501	3.84E-08	2.69E-08	8.99E-08	6.63E-08
0.631	4.83E-08	3.77E-08	1.28E-07	6.72E-08
0.794	5.89E-08	4.16E-08	1.98E-07	1.66E-07
1	7.73E-08	5.13E-08	2.39E-07	2.00E-07
1.259	9.46E-08	5.99E-08	2.91E-07	2.27E-07
1.585	1.12E-07	8.15E-08	2.60E-07	1.68E-07
1.995	1.32E-07	9.53E-08	5.34E-07	2.37E-07
2.512	1.62E-07	1.17E-07	5.94E-07	2.62E-07
3.162	1.89E-07	1.43E-07	5.77E-07	3.31E-07
3.981	2.26E-07	1.69E-07	6.79E-07	3.61E-07
5.012	2.68E-07	2.01E-07	8.22E-07	4.53E-07
6.31	3.18E-07	2.46E-07	1.01E-06	4.90E-07
7.943	3.84E-07	2.99E-07	1.30E-06	5.56E-07
10	4.61E-07	3.56E-07	1.85E-06	6.58E-07

Table H-15: Kerma Composite 1 5cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	4.76E-12	8.39E-12	2.16E-11	3.82E-11
0.013	1.38E-11	2.17E-11	3.52E-11	4.23E-11
0.016	2.87E-11	3.77E-11	3.86E-11	3.67E-11
0.02	5.47E-11	5.68E-11	7.97E-11	7.85E-11
0.025	9.36E-11	9.10E-11	8.83E-11	1.43E-10
0.032	1.50E-10	1.43E-10	1.07E-10	1.65E-10
0.04	2.17E-10	2.39E-10	2.12E-10	2.49E-10
0.05	3.16E-10	1.92E-10	3.38E-10	1.57E-10
0.063	4.88E-10	4.09E-10	5.01E-10	2.57E-10
0.079	7.71E-10	6.83E-10	6.45E-10	4.33E-10
0.1	1.19E-09	1.11E-09	1.14E-09	1.27E-09
0.126	1.73E-09	1.67E-09	1.69E-09	1.71E-09
0.158	2.44E-09	1.33E-09	3.69E-09	1.29E-09
0.2	3.46E-09	1.87E-09	6.11E-09	2.79E-09
0.251	4.40E-09	3.64E-09	4.81E-09	4.88E-09
0.316	5.75E-09	3.15E-09	1.14E-08	5.29E-09
0.398	7.67E-09	3.56E-09	1.12E-08	1.30E-08
0.501	9.55E-09	5.09E-09	2.21E-08	8.37E-09
0.631	1.24E-08	1.19E-08	1.20E-08	1.11E-08
0.794	1.44E-08	8.24E-09	2.48E-08	3.23E-08
1	1.88E-08	1.04E-08	3.13E-08	4.49E-08
1.259	2.33E-08	1.33E-08	4.03E-08	2.65E-08
1.585	2.77E-08	2.51E-08	2.56E-08	3.73E-08
1.995	3.20E-08	1.99E-08	6.26E-08	4.86E-08
2.512	3.95E-08	2.48E-08	7.37E-08	5.74E-08
3.162	4.61E-08	2.96E-08	8.72E-08	7.38E-08
3.981	5.51E-08	3.53E-08	1.05E-07	8.74E-08
5.012	6.53E-08	4.15E-08	1.27E-07	1.06E-07
6.31	7.79E-08	5.03E-08	1.55E-07	1.21E-07
7.943	9.45E-08	6.33E-08	1.93E-07	1.43E-07
10	1.14E-07	7.48E-08	2.87E-07	1.55E-07

Kerma for 15cm of Contamination Depth

Table H-16: Kerma Composite 1 15cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	5.19E-09	3.57E-09	6.03E-09	6.70E-09
0.013	9.43E-09	8.36E-09	1.55E-08	1.08E-08
0.016	9.71E-09	1.19E-08	1.79E-08	1.87E-08
0.02	1.70E-08	1.87E-08	2.74E-08	2.36E-08
0.025	2.56E-08	2.58E-08	2.61E-08	3.31E-08
0.032	3.13E-08	3.16E-08	3.48E-08	4.75E-08
0.04	5.55E-08	4.24E-08	3.73E-08	4.79E-08
0.05	7.22E-08	5.84E-08	4.94E-08	5.44E-08
0.063	9.82E-08	9.07E-08	9.14E-08	1.03E-07
0.079	1.78E-07	1.58E-07	1.13E-07	1.73E-07
0.1	2.80E-07	2.65E-07	2.51E-07	2.84E-07
0.126	4.12E-07	4.18E-07	3.47E-07	3.90E-07
0.158	6.40E-07	5.82E-07	6.00E-07	5.55E-07
0.2	9.37E-07	8.53E-07	7.29E-07	7.51E-07
0.251	1.25E-06	1.17E-06	1.10E-06	1.06E-06
0.316	1.68E-06	1.62E-06	1.54E-06	1.30E-06
0.398	2.13E-06	2.10E-06	1.96E-06	1.63E-06
0.501	2.89E-06	2.76E-06	2.82E-06	2.17E-06
0.631	3.71E-06	3.49E-06	3.88E-06	2.78E-06
0.794	4.65E-06	4.42E-06	4.08E-06	3.70E-06
1	5.88E-06	5.53E-06	4.80E-06	4.57E-06
1.259	7.07E-06	6.78E-06	6.00E-06	5.60E-06
1.585	9.09E-06	8.85E-06	7.66E-06	7.39E-06
1.995	1.13E-05	1.07E-05	9.55E-06	9.05E-06
2.512	1.42E-05	1.23E-05	1.17E-05	1.08E-05
3.162	1.64E-05	1.49E-05	1.48E-05	1.26E-05
3.981	2.00E-05	1.73E-05	1.76E-05	1.51E-05
5.012	2.37E-05	2.09E-05	2.21E-05	1.84E-05
6.31	2.78E-05	2.56E-05	2.72E-05	2.23E-05
7.943	3.43E-05	3.07E-05	3.34E-05	2.71E-05
10	4.08E-05	3.83E-05	4.17E-05	3.37E-05

Table H-17: Kerma Composite 1 15cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.11E-10	2.45E-10	2.88E-10	5.06E-10
0.013	7.35E-10	6.26E-10	6.88E-10	9.35E-10
0.016	1.24E-09	1.11E-09	9.47E-10	1.15E-09
0.02	2.08E-09	1.55E-09	1.30E-09	1.07E-09
0.025	2.51E-09	2.27E-09	1.94E-09	1.20E-09
0.032	3.50E-09	2.99E-09	2.55E-09	1.79E-09
0.04	4.35E-09	3.76E-09	4.82E-09	3.26E-09
0.05	7.35E-09	5.21E-09	6.69E-09	5.94E-09
0.063	9.19E-09	8.30E-09	1.55E-08	6.40E-09
0.079	1.49E-08	1.22E-08	1.28E-08	9.99E-09
0.1	2.47E-08	2.08E-08	2.04E-08	2.53E-08
0.126	4.00E-08	3.00E-08	2.80E-08	3.33E-08
0.158	5.80E-08	4.89E-08	4.72E-08	1.23E-07
0.2	8.85E-08	6.76E-08	6.93E-08	9.04E-08
0.251	1.18E-07	1.02E-07	9.00E-08	1.16E-07
0.316	1.62E-07	1.40E-07	1.41E-07	1.26E-07
0.398	1.91E-07	1.86E-07	1.67E-07	1.82E-07
0.501	2.63E-07	2.36E-07	2.36E-07	2.34E-07
0.631	3.81E-07	2.88E-07	2.95E-07	4.51E-07
0.794	4.68E-07	3.46E-07	3.75E-07	5.91E-07
1	5.83E-07	4.26E-07	4.67E-07	7.76E-07
1.259	6.98E-07	5.45E-07	5.70E-07	1.01E-06
1.585	8.64E-07	7.23E-07	7.43E-07	1.29E-06
1.995	1.07E-06	9.00E-07	1.01E-06	1.65E-06
2.512	1.29E-06	1.10E-06	1.49E-06	2.03E-06
3.162	1.63E-06	1.32E-06	1.73E-06	2.60E-06
3.981	1.95E-06	1.63E-06	1.82E-06	3.26E-06
5.012	2.26E-06	2.01E-06	2.27E-06	4.09E-06
6.31	2.72E-06	2.42E-06	2.83E-06	5.08E-06
7.943	3.32E-06	2.97E-06	3.47E-06	6.04E-06
10	3.94E-06	3.59E-06	4.20E-06	7.29E-06

Table H-18: Kerma Composite 1 15cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	8.96E-11	7.28E-11	9.43E-11	1.09E-10
0.013	1.89E-10	1.95E-10	1.59E-10	1.21E-10
0.016	3.08E-10	3.08E-10	2.65E-10	1.24E-10
0.02	4.79E-10	4.73E-10	3.73E-10	2.23E-10
0.025	6.96E-10	6.04E-10	6.36E-10	4.71E-10
0.032	1.01E-09	6.92E-10	5.33E-10	8.49E-10
0.04	1.28E-09	9.93E-10	8.04E-10	1.03E-09
0.05	1.88E-09	1.57E-09	1.01E-09	1.32E-09
0.063	2.89E-09	2.64E-09	1.74E-09	2.48E-09
0.079	4.48E-09	3.66E-09	3.32E-09	3.77E-09
0.1	7.53E-09	7.39E-09	5.72E-09	6.02E-09
0.126	1.16E-08	1.08E-08	1.15E-08	1.20E-08
0.158	1.67E-08	1.52E-08	2.51E-08	1.47E-08
0.2	2.52E-08	2.22E-08	2.96E-08	2.22E-08
0.251	3.42E-08	3.41E-08	3.37E-08	2.54E-08
0.316	4.61E-08	4.90E-08	5.11E-08	4.47E-08
0.398	5.94E-08	6.29E-08	7.87E-08	5.25E-08
0.501	7.59E-08	7.66E-08	1.10E-07	8.12E-08
0.631	9.97E-08	1.00E-07	1.40E-07	1.09E-07
0.794	1.25E-07	1.23E-07	1.80E-07	1.36E-07
1	1.63E-07	1.23E-07	3.21E-07	2.03E-07
1.259	2.02E-07	1.70E-07	2.88E-07	2.24E-07
1.585	2.52E-07	2.17E-07	3.57E-07	2.97E-07
1.995	3.11E-07	2.17E-07	3.34E-07	3.80E-07
2.512	3.81E-07	2.58E-07	3.94E-07	4.65E-07
3.162	4.60E-07	3.11E-07	4.60E-07	7.16E-07
3.981	5.84E-07	4.12E-07	5.39E-07	9.58E-07
5.012	6.71E-07	4.91E-07	7.05E-07	1.00E-06
6.31	7.89E-07	6.10E-07	8.69E-07	1.19E-06
7.943	1.00E-06	7.83E-07	1.07E-06	1.43E-06
10	1.20E-06	1.12E-06	1.82E-06	1.57E-06

Table H-19: Kerma Composite 1 15cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.23E-11	1.25E-11	2.31E-11	3.68E-11
0.013	3.20E-11	3.74E-11	3.73E-11	5.08E-11
0.016	5.80E-11	7.12E-11	6.67E-11	7.09E-11
0.02	9.78E-11	1.06E-10	1.20E-10	8.09E-11
0.025	1.49E-10	1.55E-10	1.33E-10	1.70E-10
0.032	2.23E-10	2.03E-10	1.57E-10	1.26E-10
0.04	3.24E-10	1.88E-10	2.39E-10	1.62E-10
0.05	4.59E-10	3.69E-10	3.66E-10	2.19E-10
0.063	7.15E-10	6.87E-10	8.21E-10	3.88E-10
0.079	1.21E-09	8.40E-10	9.34E-10	6.79E-10
0.1	1.88E-09	1.48E-09	1.91E-09	9.82E-10
0.126	2.84E-09	2.36E-09	5.62E-09	1.38E-09
0.158	4.23E-09	3.71E-09	7.30E-09	1.77E-09
0.2	6.20E-09	5.49E-09	9.70E-09	2.81E-09
0.251	8.27E-09	7.65E-09	1.18E-08	5.09E-09
0.316	1.14E-08	1.04E-08	1.51E-08	6.19E-09
0.398	1.49E-08	1.36E-08	2.47E-08	7.62E-09
0.501	1.95E-08	1.58E-08	4.55E-08	1.56E-08
0.631	2.47E-08	2.15E-08	5.14E-08	2.79E-08
0.794	3.09E-08	2.48E-08	6.83E-08	3.56E-08
1	4.06E-08	3.94E-08	5.36E-08	2.68E-08
1.259	4.81E-08	3.98E-08	1.04E-07	5.84E-08
1.585	6.21E-08	5.20E-08	1.22E-07	5.92E-08
1.995	7.55E-08	6.54E-08	1.58E-07	6.62E-08
2.512	9.33E-08	8.11E-08	2.06E-07	7.97E-08
3.162	1.14E-07	6.94E-08	3.18E-07	1.74E-07
3.981	1.40E-07	8.83E-08	3.75E-07	1.98E-07
5.012	1.67E-07	1.06E-07	3.97E-07	2.79E-07
6.31	2.00E-07	1.44E-07	5.98E-07	2.58E-07
7.943	2.37E-07	1.80E-07	7.09E-07	2.73E-07
10	2.94E-07	2.28E-07	8.75E-07	3.39E-07

Table H-20: Kerma Composite 1 15cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	1.62E-12	2.44E-12	3.22E-12	2.27E-12
0.013	4.49E-12	6.79E-12	1.20E-11	2.13E-11
0.016	9.46E-12	1.18E-11	1.79E-11	2.05E-11
0.02	1.86E-11	2.13E-11	2.56E-11	1.96E-11
0.025	3.10E-11	2.95E-11	3.24E-11	3.47E-11
0.032	4.95E-11	4.19E-11	1.35E-10	6.88E-11
0.04	7.38E-11	6.75E-11	7.04E-11	9.80E-11
0.05	1.07E-10	1.07E-10	8.03E-11	1.10E-10
0.063	1.72E-10	1.55E-10	1.78E-10	1.67E-10
0.079	2.85E-10	2.50E-10	5.11E-10	2.00E-10
0.1	4.63E-10	2.88E-10	3.53E-10	1.45E-10
0.126	7.21E-10	4.87E-10	3.74E-10	3.41E-10
0.158	9.46E-10	4.08E-10	1.22E-09	7.33E-10
0.2	1.43E-09	6.09E-10	1.84E-09	8.65E-10
0.251	2.05E-09	1.80E-09	2.00E-09	3.25E-09
0.316	2.74E-09	2.49E-09	3.54E-09	1.34E-09
0.398	3.66E-09	3.02E-09	7.74E-09	3.96E-09
0.501	4.74E-09	3.74E-09	3.37E-09	3.07E-09
0.631	6.16E-09	5.26E-09	4.59E-09	4.00E-09
0.794	7.81E-09	5.30E-09	8.38E-09	5.50E-09
1	9.88E-09	6.75E-09	1.71E-08	7.00E-09
1.259	1.21E-08	8.66E-09	1.60E-08	8.77E-09
1.585	1.55E-08	1.21E-08	1.26E-08	1.92E-08
1.995	1.85E-08	9.57E-09	4.37E-08	1.98E-08
2.512	2.30E-08	1.22E-08	5.29E-08	2.49E-08
3.162	2.83E-08	2.67E-08	4.52E-08	2.23E-08
3.981	3.48E-08	2.95E-08	4.70E-08	3.83E-08
5.012	4.25E-08	3.62E-08	4.29E-08	6.00E-08
6.31	4.93E-08	2.98E-08	1.08E-07	4.59E-08
7.943	6.22E-08	3.61E-08	1.32E-07	9.96E-08
10	7.33E-08	4.29E-08	1.86E-07	8.26E-08

Kerma for Infinite Contamination Depth

Table H-21: Kerma Composite 1 Infinite Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	6.58E-10	4.12E-10	2.14E-09	5.78E-10
0.013	1.13E-09	8.90E-10	9.42E-10	1.01E-09
0.016	1.23E-09	1.34E-09	1.32E-09	1.28E-09
0.02	2.06E-09	1.94E-09	1.81E-09	1.99E-09
0.025	3.87E-09	2.17E-09	1.93E-09	1.49E-09
0.032	3.03E-09	3.07E-09	3.19E-09	2.25E-09
0.04	4.06E-09	4.17E-09	4.13E-09	3.84E-09
0.05	4.82E-09	6.09E-09	6.27E-09	8.00E-09
0.063	9.24E-09	9.94E-09	8.65E-09	1.08E-08
0.079	1.76E-08	1.48E-08	1.61E-08	1.94E-08
0.1	2.68E-08	2.64E-08	3.01E-08	3.23E-08
0.126	3.32E-08	4.46E-08	5.30E-08	5.41E-08
0.158	5.05E-08	6.14E-08	6.94E-08	9.32E-08
0.2	6.98E-08	8.24E-08	1.06E-07	1.21E-07
0.251	9.91E-08	1.10E-07	1.68E-07	1.72E-07
0.316	1.27E-07	1.40E-07	1.94E-07	2.38E-07
0.398	1.60E-07	1.94E-07	2.91E-07	3.32E-07
0.501	2.26E-07	2.60E-07	4.56E-07	4.32E-07
0.631	3.73E-07	3.46E-07	3.70E-07	5.68E-07
0.794	4.28E-07	4.62E-07	4.67E-07	7.94E-07
1	4.87E-07	6.21E-07	6.26E-07	9.44E-07
1.259	7.07E-07	7.69E-07	7.77E-07	1.30E-06
1.585	1.00E-06	1.01E-06	9.65E-07	1.36E-06
1.995	1.43E-06	1.40E-06	1.40E-06	1.90E-06
2.512	1.77E-06	1.58E-06	1.77E-06	2.35E-06
3.162	2.16E-06	2.14E-06	2.05E-06	3.42E-06
3.981	2.94E-06	2.58E-06	2.56E-06	4.53E-06
5.012	3.28E-06	3.44E-06	3.51E-06	6.75E-06
6.31	4.08E-06	4.29E-06	4.55E-06	6.52E-06
7.943	4.90E-06	5.34E-06	4.73E-06	1.17E-05
10	5.39E-06	6.63E-06	5.27E-06	1.36E-05

Table H-22: Kerma Composite 1 Infinite Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	4.05E-11	2.99E-11	4.29E-11	7.05E-11
0.013	8.94E-11	8.28E-11	7.87E-11	1.28E-10
0.016	1.41E-10	1.42E-10	1.17E-10	1.25E-10
0.02	2.15E-10	2.29E-10	1.76E-10	1.83E-10
0.025	3.23E-10	3.00E-10	2.49E-10	1.73E-10
0.032	4.52E-10	3.34E-10	3.60E-10	4.57E-10
0.04	6.29E-10	4.50E-10	4.88E-10	5.88E-10
0.05	1.02E-09	6.03E-10	7.41E-10	1.06E-09
0.063	1.34E-09	8.81E-10	1.22E-09	8.24E-10
0.079	2.08E-09	1.60E-09	2.45E-09	1.93E-09
0.1	3.57E-09	2.86E-09	3.31E-09	3.65E-09
0.126	5.66E-09	4.87E-09	6.66E-09	8.26E-09
0.158	7.42E-09	6.98E-09	6.87E-09	1.24E-08
0.2	1.11E-08	1.09E-08	1.08E-08	1.12E-08
0.251	1.53E-08	1.62E-08	1.60E-08	1.54E-08
0.316	2.14E-08	1.85E-08	3.13E-08	2.42E-08
0.398	2.49E-08	2.51E-08	3.51E-08	4.39E-08
0.501	3.31E-08	3.30E-08	4.78E-08	5.59E-08
0.631	4.94E-08	4.33E-08	6.53E-08	7.90E-08
0.794	6.69E-08	5.71E-08	6.84E-08	7.40E-08
1	8.29E-08	7.50E-08	1.10E-07	1.16E-07
1.259	1.11E-07	9.40E-08	1.38E-07	1.51E-07
1.585	1.29E-07	1.21E-07	1.88E-07	1.68E-07
1.995	1.69E-07	1.60E-07	2.37E-07	1.87E-07
2.512	2.32E-07	1.92E-07	2.80E-07	2.19E-07
3.162	2.71E-07	2.21E-07	2.02E-07	2.31E-07
3.981	3.45E-07	2.80E-07	2.90E-07	3.21E-07
5.012	4.07E-07	3.25E-07	3.16E-07	3.67E-07
6.31	5.20E-07	4.25E-07	4.29E-07	4.65E-07
7.943	6.41E-07	5.32E-07	5.44E-07	6.60E-07
10	7.58E-07	6.40E-07	6.22E-07	8.42E-07

Table H-23: Kerma Composite 1 Infinite Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.19E-11	9.24E-12	2.18E-11	2.61E-11
0.013	2.66E-11	2.53E-11	2.42E-11	4.72E-11
0.016	4.32E-11	4.37E-11	3.58E-11	3.50E-11
0.02	6.34E-11	7.02E-11	5.03E-11	4.01E-11
0.025	8.83E-11	9.95E-11	7.27E-11	3.55E-11
0.032	1.23E-10	1.28E-10	1.05E-10	4.57E-11
0.04	1.69E-10	1.66E-10	1.68E-10	1.10E-10
0.05	2.51E-10	1.98E-10	1.81E-10	9.82E-11
0.063	3.96E-10	3.46E-10	3.05E-10	2.16E-10
0.079	7.03E-10	5.45E-10	4.53E-10	7.20E-10
0.1	1.08E-09	7.65E-10	7.29E-10	1.34E-09
0.126	1.68E-09	1.18E-09	1.20E-09	1.68E-09
0.158	2.46E-09	1.75E-09	1.49E-09	4.17E-09
0.2	3.56E-09	2.73E-09	2.08E-09	2.67E-09
0.251	4.92E-09	3.94E-09	3.25E-09	3.53E-09
0.316	6.28E-09	5.15E-09	3.68E-09	4.99E-09
0.398	8.65E-09	6.51E-09	4.81E-09	8.15E-09
0.501	1.20E-08	9.45E-09	6.86E-09	1.06E-08
0.631	1.51E-08	1.25E-08	9.43E-09	1.56E-08
0.794	1.98E-08	1.63E-08	1.54E-08	1.98E-08
1	2.57E-08	2.20E-08	1.99E-08	3.13E-08
1.259	3.25E-08	2.73E-08	3.05E-08	4.35E-08
1.585	4.15E-08	3.49E-08	3.86E-08	6.39E-08
1.995	5.35E-08	4.42E-08	6.20E-08	7.07E-08
2.512	6.52E-08	5.68E-08	5.64E-08	5.41E-08
3.162	8.15E-08	7.13E-08	6.33E-08	6.88E-08
3.981	1.14E-07	7.72E-08	8.50E-08	1.30E-07
5.012	1.33E-07	1.17E-07	9.94E-08	1.34E-07
6.31	1.73E-07	1.22E-07	1.55E-07	2.14E-07
7.943	2.06E-07	1.62E-07	1.95E-07	2.64E-07
10	2.54E-07	2.02E-07	2.44E-07	4.67E-07

Table H-24: Kerma Composite 1 Infinite Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.80E-12	1.60E-12	3.36E-13	1.24E-12
0.013	4.52E-12	4.77E-12	6.70E-12	1.20E-11
0.016	8.38E-12	9.00E-12	8.55E-12	9.23E-12
0.02	1.43E-11	1.41E-11	1.28E-11	1.44E-11
0.025	2.18E-11	2.04E-11	3.32E-11	1.64E-11
0.032	3.08E-11	3.51E-11	4.56E-11	2.06E-11
0.04	4.12E-11	4.17E-11	4.80E-11	2.27E-11
0.05	6.36E-11	5.28E-11	3.85E-11	3.47E-11
0.063	1.01E-10	8.80E-11	8.35E-11	6.33E-11
0.079	1.65E-10	1.66E-10	5.32E-10	1.09E-10
0.1	2.71E-10	2.41E-10	2.00E-10	2.68E-10
0.126	4.22E-10	2.84E-10	1.96E-10	2.31E-10
0.158	6.33E-10	4.07E-10	6.83E-10	6.13E-10
0.2	9.10E-10	7.71E-10	8.86E-10	7.52E-10
0.251	1.25E-09	8.28E-10	1.40E-09	8.03E-10
0.316	1.67E-09	1.09E-09	2.05E-09	1.86E-09
0.398	2.32E-09	1.76E-09	2.06E-09	2.05E-09
0.501	3.07E-09	2.68E-09	3.28E-09	3.84E-09
0.631	4.03E-09	3.00E-09	2.53E-09	3.17E-09
0.794	5.21E-09	3.83E-09	3.52E-09	4.73E-09
1	6.65E-09	4.28E-09	6.27E-09	8.13E-09
1.259	8.43E-09	5.76E-09	9.55E-09	1.08E-08
1.585	1.07E-08	7.00E-09	9.44E-09	1.38E-08
1.995	1.38E-08	9.16E-09	1.26E-08	1.66E-08
2.512	1.71E-08	1.20E-08	1.97E-08	1.73E-08
3.162	2.20E-08	1.51E-08	3.39E-08	1.78E-08
3.981	2.76E-08	1.97E-08	5.05E-08	2.50E-08
5.012	3.50E-08	2.54E-08	3.88E-08	3.17E-08
6.31	4.24E-08	3.16E-08	5.39E-08	4.01E-08
7.943	4.99E-08	4.16E-08	6.87E-08	5.16E-08
10	6.33E-08	5.03E-08	8.99E-08	6.42E-08

Table H-25: Kerma Composite 1 Infinite Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.01E-13	1.99E-13	5.97E-17	1.56E-18
0.013	6.35E-13	9.24E-13	4.76E-14	1.23E-12
0.016	1.35E-12	1.92E-12	1.18E-12	3.28E-12
0.02	2.68E-12	3.14E-12	3.45E-12	5.06E-12
0.025	4.47E-12	4.60E-12	4.15E-12	4.47E-12
0.032	7.15E-12	7.52E-12	6.63E-12	4.16E-12
0.04	1.04E-11	9.69E-12	8.63E-12	4.99E-12
0.05	1.55E-11	1.47E-11	1.68E-11	7.45E-12
0.063	2.50E-11	1.90E-11	3.35E-11	9.40E-12
0.079	4.01E-11	3.61E-11	3.75E-11	3.03E-11
0.1	6.89E-11	4.94E-11	2.87E-11	2.60E-11
0.126	1.04E-10	9.06E-11	6.93E-11	5.05E-11
0.158	1.58E-10	1.46E-10	1.15E-10	8.64E-11
0.2	2.26E-10	1.84E-10	1.10E-10	1.39E-10
0.251	3.13E-10	1.79E-10	1.55E-10	6.37E-11
0.316	4.20E-10	2.38E-10	2.13E-10	1.62E-10
0.398	5.54E-10	3.27E-10	3.86E-10	2.19E-10
0.501	7.44E-10	4.66E-10	1.37E-09	2.73E-10
0.631	9.88E-10	8.16E-10	8.81E-10	1.24E-09
0.794	1.27E-09	6.79E-10	6.24E-10	6.56E-10
1	1.70E-09	1.21E-09	1.65E-09	6.91E-10
1.259	2.11E-09	1.09E-09	1.38E-09	1.44E-09
1.585	2.67E-09	1.51E-09	1.83E-09	3.25E-09
1.995	3.34E-09	1.97E-09	2.82E-09	4.68E-09
2.512	4.49E-09	2.06E-09	4.21E-09	2.98E-09
3.162	5.42E-09	3.49E-09	5.56E-09	2.55E-09
3.981	7.00E-09	3.60E-09	5.23E-09	4.20E-09
5.012	8.83E-09	4.59E-09	6.01E-09	5.18E-09
6.31	1.07E-08	9.38E-09	1.55E-08	9.38E-09
7.943	1.32E-08	8.66E-09	8.79E-09	6.46E-09
10	1.62E-08	1.11E-08	1.14E-08	8.51E-09

Surface Contamination Room Ratios

Table H-26: Room Ratio Composite 1 Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.117	1.635	2.767	3.364
0.013	2.241	1.447	2.057	2.338
0.016	1.763	1.206	1.627	1.809
0.02	1.455	1.023	1.343	1.477
0.025	1.204	0.858	1.109	1.214
0.032	1.073	0.775	0.988	1.079
0.04	0.965	0.708	0.891	0.970
0.05	1.007	0.754	0.933	1.015
0.063	0.992	0.756	0.924	1.003
0.079	1.043	0.804	0.975	1.059
0.1	1.121	0.868	1.048	1.136
0.126	1.175	0.907	1.098	1.192
0.158	1.181	0.907	1.102	1.197
0.2	1.160	0.884	1.081	1.175
0.251	1.040	0.786	0.967	1.053
0.316	1.021	0.764	0.948	1.033
0.398	0.955	0.708	0.885	0.965
0.501	0.919	0.674	0.850	0.928
0.631	0.904	0.658	0.836	0.913
0.794	0.893	0.644	0.823	0.900
1	0.963	0.690	0.886	0.970
1.259	0.918	0.653	0.842	0.923
1.585	0.896	0.635	0.822	0.901
1.995	0.881	0.622	0.806	0.885
2.512	0.869	0.612	0.796	0.872
3.162	0.850	0.598	0.777	0.852
3.981	0.830	0.584	0.758	0.831
5.012	0.831	0.585	0.758	0.832
6.31	0.829	0.584	0.756	0.829
7.943	0.824	0.581	0.751	0.823
10	0.825	0.583	0.752	0.825

Table H-27: Composite 1 Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.004	1.103	2.601	3.317
0.013	1.788	1.324	2.122	2.366
0.016	1.633	1.360	1.836	1.920
0.02	1.513	1.346	1.640	1.649
0.025	1.343	1.224	1.433	1.408
0.032	1.247	1.150	1.314	1.283
0.04	1.140	1.060	1.204	1.167
0.05	1.195	1.115	1.252	1.229
0.063	1.174	1.095	1.235	1.212
0.079	1.228	1.147	1.295	1.283
0.1	1.313	1.221	1.391	1.386
0.126	1.375	1.278	1.456	1.450
0.158	1.382	1.280	1.467	1.464
0.2	1.360	1.258	1.443	1.440
0.251	1.224	1.128	1.299	1.295
0.316	1.206	1.119	1.283	1.283
0.398	1.134	1.046	1.209	1.199
0.501	1.096	1.010	1.164	1.150
0.631	1.084	0.999	1.150	1.135
0.794	1.074	0.993	1.144	1.119
1	1.164	1.064	1.233	1.209
1.259	1.112	1.023	1.177	1.153
1.585	1.089	0.995	1.152	1.128
1.995	1.073	0.980	1.134	1.109
2.512	1.059	0.970	1.119	1.092
3.162	1.038	0.949	1.094	1.069
3.981	1.014	0.926	1.069	1.041
5.012	1.015	0.928	1.068	1.042
6.31	1.012	0.923	1.067	1.036
7.943	1.005	0.916	1.054	1.027
10	1.006	0.916	1.056	1.027

Table H-28: Composite 1 Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.829	1.093	2.592	3.321
0.013	1.709	1.334	2.111	2.375
0.016	1.632	1.429	1.854	1.921
0.02	1.589	1.501	1.706	1.670
0.025	1.468	1.434	1.526	1.446
0.032	1.402	1.395	1.433	1.332
0.04	1.298	1.299	1.321	1.222
0.05	1.365	1.370	1.391	1.293
0.063	1.338	1.343	1.375	1.282
0.079	1.397	1.396	1.443	1.355
0.1	1.491	1.484	1.555	1.475
0.126	1.561	1.553	1.624	1.544
0.158	1.571	1.563	1.643	1.565
0.2	1.551	1.547	1.622	1.530
0.251	1.400	1.389	1.467	1.384
0.316	1.384	1.373	1.444	1.364
0.398	1.307	1.296	1.355	1.278
0.501	1.269	1.260	1.314	1.246
0.631	1.260	1.252	1.304	1.226
0.794	1.254	1.246	1.296	1.224
1	1.362	1.367	1.416	1.320
1.259	1.306	1.298	1.345	1.260
1.585	1.283	1.274	1.320	1.227
1.995	1.267	1.258	1.304	1.202
2.512	1.253	1.245	1.287	1.189
3.162	1.229	1.221	1.260	1.165
3.981	1.202	1.193	1.231	1.137
5.012	1.204	1.194	1.231	1.139
6.31	1.201	1.192	1.228	1.132
7.943	1.191	1.191	1.215	1.123
10	1.193	1.193	1.217	1.125

Table H-29: Composite 1 Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.994	0.831	2.483	3.249
0.013	1.062	0.985	1.996	2.352
0.016	1.143	1.099	1.777	1.914
0.02	1.247	1.265	1.656	1.684
0.025	1.257	1.312	1.543	1.484
0.032	1.281	1.372	1.489	1.385
0.04	1.229	1.328	1.403	1.292
0.05	1.315	1.424	1.493	1.367
0.063	1.298	1.424	1.469	1.369
0.079	1.357	1.457	1.534	1.482
0.1	1.445	1.539	1.647	1.558
0.126	1.511	1.602	1.727	1.609
0.158	1.519	1.610	1.759	1.632
0.2	1.499	1.589	1.732	1.653
0.251	1.352	1.434	1.559	1.462
0.316	1.339	1.421	1.536	1.458
0.398	1.267	1.347	1.449	1.375
0.501	1.231	1.316	1.412	1.337
0.631	1.224	1.305	1.404	1.322
0.794	1.221	1.311	1.401	1.311
1	1.330	1.431	1.541	1.417
1.259	1.278	1.373	1.463	1.359
1.585	1.258	1.356	1.450	1.330
1.995	1.244	1.342	1.458	1.322
2.512	1.233	1.328	1.421	1.305
3.162	1.211	1.309	1.388	1.281
3.981	1.186	1.280	1.354	1.252
5.012	1.189	1.287	1.359	1.252
6.31	1.187	1.283	1.359	1.254
7.943	1.179	1.277	1.357	1.241
10	1.181	1.280	1.355	1.247

Table H-30: Composite 1 Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.510	0.811	2.495	3.191
0.013	0.586	0.898	2.003	2.287
0.016	0.701	0.963	1.765	1.869
0.02	0.869	1.061	1.628	1.657
0.025	0.981	1.163	1.518	1.482
0.032	1.100	1.299	1.515	1.426
0.04	1.116	1.306	1.444	1.330
0.05	1.233	1.437	1.555	1.437
0.063	1.230	1.425	1.555	1.420
0.079	1.289	1.477	1.611	1.500
0.1	1.369	1.566	1.738	1.611
0.126	1.424	1.615	1.827	1.700
0.158	1.430	1.638	1.852	1.720
0.2	1.410	1.615	1.819	1.698
0.251	1.273	1.459	1.648	1.554
0.316	1.262	1.445	1.615	1.646
0.398	1.194	1.375	1.527	1.537
0.501	1.163	1.362	1.499	1.505
0.631	1.161	1.361	1.481	1.547
0.794	1.161	1.371	1.488	1.520
1	1.269	1.505	1.618	1.655
1.259	1.224	1.451	1.568	1.566
1.585	1.209	1.436	1.539	1.526
1.995	1.200	1.430	1.535	1.540
2.512	1.193	1.418	1.531	1.504
3.162	1.176	1.405	1.499	1.458
3.981	1.154	1.381	1.464	1.429
5.012	1.160	1.388	1.476	1.442
6.31	1.160	1.390	1.481	1.443
7.943	1.154	1.389	1.469	1.438
10	1.157	1.389	1.472	1.446

1 cm Contamination Depth Room Ratios

Table H-31: Room Ratio Composite 1 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.451421	1.090864	1.382699	1.595436
0.013	0.985834	0.908947	0.97391	1.027187
0.016	0.921294	0.903407	0.925925	0.940347
0.02	0.800697	0.809556	0.812474	0.808888
0.025	0.646632	0.662051	0.655651	0.649754
0.032	0.75126	0.762308	0.760584	0.75608
0.04	0.829911	0.817657	0.838822	0.839814
0.05	1.005109	0.956416	1.012252	1.024387
0.063	1.084236	1.000878	1.087489	1.111272
0.079	1.251871	1.132191	1.250694	1.287444
0.1	1.389626	1.236625	1.382345	1.432303
0.126	1.494321	1.312233	1.482386	1.542648
0.158	1.521796	1.322173	1.507107	1.572925
0.2	1.555605	1.334944	1.540951	1.615457
0.251	1.364379	1.157454	1.350166	1.411873
0.316	1.361157	1.13523	1.346372	1.411429
0.398	1.219073	1.011086	1.210264	1.265529
0.501	1.194143	0.978984	1.179095	1.238839
0.631	1.220686	0.99116	1.206118	1.272669
0.794	1.208964	0.969658	1.188126	1.264668
1	1.243923	0.98549	1.223425	1.299959
1.259	1.183489	0.92638	1.154991	1.232826
1.585	1.125452	0.878701	1.099738	1.172151
1.995	1.096685	0.843142	1.06614	1.139796
2.512	1.049363	0.800465	1.018834	1.090875
3.162	1.03528	0.788077	0.997706	1.077532
3.981	0.992458	0.748999	0.957541	1.028559
5.012	0.98836	0.740386	0.94839	1.022181
6.31	0.976585	0.749934	0.932943	1.00842
7.943	0.961262	0.720575	0.917346	0.988583
10	0.946578	0.710663	0.905667	0.980004

Table H-32: Room Ratio Composite 1 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.925777	0.655692	1.149324	1.501497
0.013	0.746581	0.653558	0.821686	0.952002
0.016	0.784362	0.741071	0.819841	0.877869
0.02	0.74404	0.737899	0.752947	0.766131
0.025	0.633346	0.642773	0.628787	0.622892
0.032	0.760679	0.782231	0.753015	0.737831
0.04	0.860789	0.886431	0.861752	0.839923
0.05	1.064511	1.091236	1.082772	1.047187
0.063	1.16387	1.186924	1.200741	1.166315
0.079	1.354368	1.370966	1.410761	1.377112
0.1	1.509421	1.517982	1.584772	1.553282
0.126	1.627402	1.624451	1.715278	1.697304
0.158	1.66436	1.65572	1.76094	1.730871
0.2	1.704646	1.693149	1.815404	1.787595
0.251	1.5036	1.490392	1.605521	1.580626
0.316	1.510329	1.493501	1.618821	1.588229
0.398	1.364467	1.346741	1.466544	1.438844
0.501	1.344459	1.324071	1.446052	1.419885
0.631	1.387133	1.36573	1.497237	1.469447
0.794	1.384091	1.361043	1.496318	1.460962
1	1.433895	1.409079	1.552998	1.514628
1.259	1.372811	1.347034	1.487466	1.445593
1.585	1.314843	1.285293	1.429219	1.383611
1.995	1.287956	1.254843	1.397543	1.354899
2.512	1.23749	1.191905	1.377954	1.317483
3.162	1.223117	1.176219	1.365087	1.298364
3.981	1.175695	1.131361	1.317345	1.239227
5.012	1.169526	1.120907	1.308875	1.235917
6.31	1.156678	1.112398	1.310685	1.21659
7.943	1.139997	1.094921	1.283135	1.222833
10	1.127167	1.075863	1.257759	1.196231

Table H-33: Room Ratio Composite 1 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.833751	0.777924	0.788909	1.052441
0.013	0.697927	0.636239	0.726549	0.823898
0.016	0.752748	0.707008	0.85585	0.856686
0.02	0.725073	0.691751	0.754451	0.721954
0.025	0.625611	0.619692	0.631831	0.604217
0.032	0.76431	0.771325	0.727949	0.752427
0.04	0.873932	0.922771	0.874498	0.81073
0.05	1.100034	1.131567	1.104314	1.022934
0.063	1.212859	1.253464	1.241274	1.142811
0.079	1.419932	1.447517	1.444217	1.430532
0.1	1.587618	1.659285	1.700589	1.545985
0.126	1.717291	1.836532	1.80753	1.686433
0.158	1.771182	1.794117	1.836214	1.819487
0.2	1.812668	1.881169	1.94367	1.876643
0.251	1.607387	1.628984	1.671941	1.644222
0.316	1.631416	1.655756	1.88945	1.657843
0.398	1.474536	1.509804	1.572101	1.4873
0.501	1.4564	1.487659	1.602814	1.530737
0.631	1.510052	1.543689	1.607987	1.560709
0.794	1.520526	1.550934	1.604037	1.545677
1	1.582088	1.613758	1.726629	1.726136
1.259	1.53154	1.557877	1.650565	1.580725
1.585	1.468207	1.516334	1.61473	1.46347
1.995	1.449479	1.512396	1.556134	1.387954
2.512	1.396742	1.462265	1.485778	1.336081
3.162	1.381973	1.430054	1.507497	1.412987
3.981	1.33933	1.394336	1.422673	1.326713
5.012	1.336856	1.39016	1.464926	1.331006
6.31	1.326049	1.391088	1.445782	1.306286
7.943	1.31336	1.479197	1.407732	1.337228
10	1.301844	1.573476	1.483958	1.317024

Table H-34: Room Ratio Composite 1 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.470332	0.490054	0.525398	1.120192
0.013	0.452443	0.436862	0.643115	0.764611
0.016	0.554794	0.567127	0.648432	0.782615
0.02	0.596589	0.598302	0.664107	0.723204
0.025	0.566551	0.5606	0.578276	0.622034
0.032	0.725452	0.754545	0.699901	0.685401
0.04	0.852549	0.906683	0.828041	0.777469
0.05	1.080886	1.11826	1.080875	0.958251
0.063	1.20104	1.242235	1.200087	1.140883
0.079	1.405368	1.434183	1.439728	1.480901
0.1	1.564318	1.584668	1.611532	1.608238
0.126	1.685188	1.739322	1.838212	1.720509
0.158	1.725629	1.739813	1.907464	1.705182
0.2	1.773544	1.791496	2.012983	1.673313
0.251	1.566615	1.606124	1.834968	1.687997
0.316	1.586352	1.601084	1.941338	1.709125
0.398	1.437384	1.49715	1.684859	1.449247
0.501	1.42209	1.46082	1.678501	1.48803
0.631	1.48304	1.51166	1.780393	1.594043
0.794	1.488021	1.5686	1.684381	1.491233
1	1.553945	1.614309	1.742728	1.647274
1.259	1.502242	1.549515	1.805283	1.620936
1.585	1.446286	1.552322	1.675197	1.445484
1.995	1.418011	1.483939	1.745331	1.482478
2.512	1.378112	1.445438	1.596946	1.400226
3.162	1.365781	1.436915	1.68163	1.432387
3.981	1.317196	1.393817	1.633464	1.40772
5.012	1.322064	1.40758	1.547901	1.327555
6.31	1.316714	1.392774	1.655424	1.272232
7.943	1.30371	1.379519	1.637039	1.267655
10	1.286609	1.379293	1.598446	1.248767

Table H-35: Room Ratio Composite 1 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.240419	0.336596	0.927849	1.225922
0.013	0.251443	0.324235	0.678398	1.129303
0.016	0.351004	0.469959	0.514861	1.098129
0.02	0.437189	0.556053	0.497233	0.815167
0.025	0.467446	0.542816	0.530865	0.59361
0.032	0.654371	0.684975	0.612388	0.802875
0.04	0.806675	0.842263	0.844441	1.120676
0.05	1.051379	1.115372	1.135343	0.964787
0.063	1.16938	1.211416	1.127735	1.133492
0.079	1.36614	1.408119	1.454728	1.458158
0.1	1.520425	1.645689	1.646162	1.74879
0.126	1.62228	1.609168	1.889929	1.828578
0.158	1.656927	1.720822	1.912098	1.729567
0.2	1.698651	1.78482	1.993397	1.977337
0.251	1.505666	1.550579	1.624929	1.672725
0.316	1.510414	1.585727	1.934414	1.809418
0.398	1.371506	1.46757	1.603294	1.727217
0.501	1.361769	1.463649	1.690196	1.6086
0.631	1.413512	1.448606	1.667063	1.990735
0.794	1.426375	1.529332	1.590545	1.753813
1	1.495459	1.590558	1.782837	1.892724
1.259	1.44665	1.578442	1.722562	1.794685
1.585	1.39706	1.496842	1.529573	1.702883
1.995	1.37889	1.496305	1.582168	1.676066
2.512	1.336243	1.454385	1.498332	1.551383
3.162	1.331958	1.428964	1.590144	1.549828
3.981	1.289889	1.408334	1.560344	1.531918
5.012	1.299346	1.474942	1.580437	1.57447
6.31	1.291329	1.411278	1.485703	1.537507
7.943	1.275985	1.41737	1.59915	1.530079
10	1.271385	1.413806	1.661358	1.575776

5 cm Contamination Depth Room Ratios

Table H-36: Room Ratio Composite 1 5cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.08163	0.92130	1.39749	1.54036
0.013	0.40776	0.68451	0.72362	1.04008
0.016	0.90444	0.99201	0.99787	1.62545
0.02	0.94675	0.77669	0.92007	1.25454
0.025	0.74892	0.70304	0.67221	0.89302
0.032	0.71275	0.69156	0.67611	0.86019
0.04	0.74985	0.75141	0.63239	0.78502
0.05	0.73177	0.68943	0.64606	0.61029
0.063	0.86536	0.85670	0.70516	0.73781
0.079	0.93925	1.00215	0.77680	0.84398
0.1	1.24390	1.33068	1.23956	1.30224
0.126	1.35099	1.44778	1.35292	1.36030
0.158	1.53922	1.41486	1.42190	1.38086
0.2	1.61960	1.44680	1.45944	1.45050
0.251	1.65397	1.48946	1.47965	1.47934
0.316	1.70639	1.46312	1.45633	1.51563
0.398	1.61553	1.43475	1.44679	1.43090
0.501	1.60462	1.41819	1.43718	1.46315
0.631	1.52863	1.36897	1.38698	1.38531
0.794	1.48910	1.34419	1.39810	1.30305
1	1.48003	1.30325	1.38840	1.24689
1.259	1.39131	1.22002	1.25955	1.19997
1.585	1.34924	1.14471	1.22915	1.22865
1.995	1.33029	1.09255	1.19983	1.15790
2.512	1.28356	1.05696	1.15865	1.12616
3.162	1.23379	1.02105	1.12798	1.07109
3.981	1.20393	0.98961	1.10076	1.05446
5.012	1.17274	0.98320	1.14102	1.05026
6.31	1.15622	0.96857	1.16778	1.05050
7.943	1.15312	0.94680	1.13837	1.04967
10	1.14058	0.94299	1.11248	1.04825

Table H-37: Room Ratio Composite 1 5cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.90406	0.63777	0.92399	1.28416
0.013	0.68391	0.51433	0.55169	0.50703
0.016	1.03037	0.70222	0.76746	0.40515
0.02	0.83865	0.60688	0.66257	0.42001
0.025	0.78221	0.71934	0.65520	0.50421
0.032	0.75119	0.55115	1.02971	0.57915
0.04	0.84332	0.65306	0.78111	0.54965
0.05	0.78488	0.69828	0.71531	0.59219
0.063	0.82689	0.93856	0.94988	0.66717
0.079	0.93028	0.94986	1.14866	0.99750
0.1	1.27702	1.03035	1.08422	1.70747
0.126	1.46633	1.23119	1.07510	1.53747
0.158	1.59209	1.32650	1.10513	1.64406
0.2	1.72548	1.45326	1.35453	1.89441
0.251	1.69669	1.51997	1.47989	1.86744
0.316	1.75786	1.47201	1.48947	1.99762
0.398	1.64154	1.45677	1.46988	2.12128
0.501	1.61808	1.49644	1.72504	2.29149
0.631	1.58552	1.49540	1.74779	2.58106
0.794	1.55185	1.51470	1.62559	2.74846
1	1.58237	1.53837	1.64719	2.62308
1.259	1.52022	1.41082	1.43133	2.63292
1.585	1.50029	1.35812	1.31437	2.64787
1.995	1.41627	1.32876	1.31300	2.66586
2.512	1.45874	1.32221	1.30437	2.59014
3.162	1.38996	1.27050	1.31688	2.72374
3.981	1.35099	1.22361	1.24105	2.69878
5.012	1.37436	1.21474	1.26708	2.75490
6.31	1.35544	1.19962	1.29416	2.68813
7.943	1.34464	1.19084	1.29597	2.75327
10	1.33097	1.19764	1.25992	2.63540

Table H-38: Room Ratio Composite 1 5cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.78008	0.69821	0.70881	0.60634
0.013	0.56352	0.55572	0.50549	0.48625
0.016	0.85954	0.88586	0.79513	0.54362
0.02	0.80767	0.67873	0.60168	0.69454
0.025	0.79632	0.58077	0.50807	0.65860
0.032	0.73757	0.66599	0.49671	0.65367
0.04	0.77793	0.67102	0.57031	0.70654
0.05	0.80419	0.64208	0.80316	0.77550
0.063	0.86521	0.86469	1.28062	0.84646
0.079	1.01105	0.64220	1.23404	1.44498
0.1	1.37063	0.91202	2.49423	2.23283
0.126	1.49358	1.07524	1.84736	1.45501
0.158	1.61621	1.16433	1.79717	1.55070
0.2	1.70114	1.28710	2.78178	1.73004
0.251	1.75384	1.23308	1.93167	1.83937
0.316	1.73592	1.83157	2.35842	2.55785
0.398	1.77271	1.21117	2.21119	2.37383
0.501	1.71211	1.41340	1.95993	1.99792
0.631	1.70008	1.40319	1.87729	1.99243
0.794	1.61596	1.28163	1.91318	2.75145
1	1.71095	1.30610	1.82045	2.27306
1.259	1.64434	1.20948	1.79112	2.29881
1.585	1.55748	1.28312	1.52477	1.90938
1.995	1.47844	1.22803	1.68150	1.83681
2.512	1.50544	1.24754	1.63100	1.75503
3.162	1.43268	1.23550	1.53005	1.84204
3.981	1.42378	1.23106	1.45996	1.82583
5.012	1.43504	1.22623	1.52095	1.80764
6.31	1.41758	1.23010	1.57894	1.78458
7.943	1.40510	1.27452	1.56246	1.70574
10	1.40010	1.23034	1.57379	1.73479

Table H-39: Room Ratio Composite 1 5cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.44201	0.49093	0.70430	1.26868
0.013	0.36856	0.39166	0.64034	0.46510
0.016	0.62862	0.68781	0.49590	0.75126
0.02	0.60902	0.60107	0.50624	0.60148
0.025	0.67370	0.66028	0.57022	0.64677
0.032	0.74922	0.48259	0.63219	0.60967
0.04	0.73709	0.56750	0.68951	0.57135
0.05	0.79901	0.61424	0.94963	0.75712
0.063	0.89923	0.90271	0.95994	0.65831
0.079	1.04173	1.04167	1.08573	0.86659
0.1	1.26604	0.75357	4.28150	1.76529
0.126	1.37779	0.79127	4.71873	2.12029
0.158	1.50064	0.94595	4.82329	1.81640
0.2	1.69846	1.08413	4.22747	2.48843
0.251	1.69280	1.45311	3.07516	1.63415
0.316	1.67430	1.13932	4.24273	2.58148
0.398	1.72698	1.02724	5.65482	4.23563
0.501	1.64678	1.15147	3.85623	2.84115
0.631	1.61619	1.26306	4.27735	2.25090
0.794	1.59220	1.12479	5.35553	4.48771
1	1.69692	1.12552	5.25444	4.38956
1.259	1.63083	1.03186	5.01453	3.91293
1.585	1.53283	1.11815	3.56152	2.29873
1.995	1.45995	1.05375	5.90111	2.61746
2.512	1.49452	1.08206	5.49563	2.41999
3.162	1.43344	1.08528	4.38547	2.51227
3.981	1.42499	1.06842	4.28667	2.27914
5.012	1.42687	1.06905	4.37492	2.41146
6.31	1.41844	1.09460	4.49248	2.18455
7.943	1.40424	1.09375	4.74119	2.03184
10	1.39122	1.07314	5.57772	1.98531

Table H-40: Room Ratio Composite 1 5cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.22204	0.39189	1.00672	1.78258
0.013	0.21244	0.33249	0.54075	0.64991
0.016	0.40977	0.53685	0.55101	0.52340
0.02	0.44995	0.46714	0.65485	0.64559
0.025	0.55537	0.54010	0.52397	0.84809
0.032	0.62587	0.59596	0.44461	0.68813
0.04	0.69465	0.76424	0.67837	0.79779
0.05	0.77081	0.46891	0.82356	0.38202
0.063	0.85160	0.71478	0.87516	0.44856
0.079	1.02248	0.90548	0.85521	0.57400
0.1	1.27752	1.18896	1.22487	1.36028
0.126	1.36134	1.31473	1.32888	1.33983
0.158	1.48902	0.81221	2.25445	0.79135
0.2	1.61321	0.86940	2.84858	1.29917
0.251	1.57959	1.30641	1.72505	1.75014
0.316	1.58693	0.86918	3.15271	1.46116
0.398	1.65642	0.76918	2.40919	2.80641
0.501	1.63823	0.87336	3.78747	1.43509
0.631	1.66001	1.59780	1.61150	1.48894
0.794	1.55950	0.89079	2.68180	3.48676
1	1.64935	0.91626	2.75076	3.94265
1.259	1.60671	0.91452	2.77990	1.82843
1.585	1.52047	1.37975	1.40666	2.04528
1.995	1.41766	0.87834	2.77041	2.14825
2.512	1.46363	0.91926	2.72772	2.12346
3.162	1.40286	0.90027	2.65216	2.24351
3.981	1.39017	0.89172	2.64257	2.20691
5.012	1.38921	0.88340	2.70742	2.26097
6.31	1.38943	0.89618	2.76108	2.16538
7.943	1.38073	0.92538	2.81503	2.08708
10	1.37205	0.90355	3.47017	1.86758

15 cm Contamination Depth Room Ratios

Table H-41: Room Ratio Composite 1 15cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.316676	0.905172	1.529902	1.700215
0.013	0.678364	0.601378	1.111439	0.777928
0.016	0.494726	0.603544	0.912699	0.952324
0.02	0.69406	0.762001	1.113642	0.961405
0.025	0.829869	0.836655	0.846482	1.073544
0.032	0.687597	0.692961	0.765034	1.042832
0.04	0.927301	0.709407	0.623053	0.80029
0.05	0.768208	0.621159	0.525919	0.578432
0.063	0.82714	0.76439	0.770336	0.865455
0.079	1.010839	0.894787	0.641914	0.982132
0.1	1.022403	0.966661	0.915809	1.0362
0.126	1.158906	1.176586	0.977263	1.097566
0.158	1.369485	1.245409	1.283833	1.188103
0.2	1.337406	1.217738	1.040954	1.071327
0.251	1.473315	1.370099	1.295633	1.240573
0.316	1.512233	1.460822	1.389633	1.166843
0.398	1.459153	1.441962	1.341437	1.116164
0.501	1.843567	1.759413	1.795446	1.380358
0.631	1.389767	1.307767	1.452543	1.042705
0.794	1.415287	1.345413	1.241985	1.127849
1	1.406668	1.323409	1.147738	1.093849
1.259	1.299822	1.24538	1.103018	1.029651
1.585	1.266697	1.233817	1.068007	1.030852
1.995	1.317413	1.256531	1.117395	1.059651
2.512	1.341757	1.16366	1.110147	1.025983
3.162	1.244099	1.127084	1.118543	0.957461
3.981	1.247459	1.08198	1.100461	0.944487
5.012	1.231396	1.086275	1.148632	0.956279
6.31	1.218823	1.122829	1.194347	0.976332
7.943	1.235494	1.103074	1.202348	0.976812
10	1.182734	1.110949	1.207639	0.97597

Table H-42: Room Ratio Composite 1 15cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	9.22E-01	7.25E-01	8.54E-01	1.50E+00
0.013	6.16E-01	5.25E-01	5.77E-01	7.84E-01
0.016	7.36E-01	6.57E-01	5.62E-01	6.84E-01
0.02	9.88E-01	7.38E-01	6.17E-01	5.09E-01
0.025	9.48E-01	8.59E-01	7.31E-01	4.55E-01
0.032	8.98E-01	7.66E-01	6.54E-01	4.59E-01
0.04	8.47E-01	7.32E-01	9.40E-01	6.35E-01
0.05	9.13E-01	6.46E-01	8.30E-01	7.37E-01
0.063	9.04E-01	8.16E-01	1.52E+00	6.29E-01
0.079	9.84E-01	8.11E-01	8.46E-01	6.62E-01
0.1	1.05E+00	8.86E-01	8.68E-01	1.08E+00
0.126	1.31E+00	9.84E-01	9.20E-01	1.09E+00
0.158	1.45E+00	1.22E+00	1.18E+00	3.07E+00
0.2	1.47E+00	1.13E+00	1.15E+00	1.50E+00
0.251	1.62E+00	1.40E+00	1.23E+00	1.59E+00
0.316	1.70E+00	1.47E+00	1.48E+00	1.33E+00
0.398	1.53E+00	1.49E+00	1.34E+00	1.46E+00
0.501	1.95E+00	1.76E+00	1.76E+00	1.74E+00
0.631	1.66E+00	1.26E+00	1.29E+00	1.97E+00
0.794	1.66E+00	1.23E+00	1.33E+00	2.10E+00
1	1.63E+00	1.19E+00	1.30E+00	2.17E+00
1.259	1.50E+00	1.17E+00	1.22E+00	2.17E+00
1.585	1.41E+00	1.18E+00	1.21E+00	2.11E+00
1.995	1.45E+00	1.23E+00	1.38E+00	2.26E+00
2.512	1.43E+00	1.22E+00	1.65E+00	2.25E+00
3.162	1.44E+00	1.17E+00	1.53E+00	2.30E+00
3.981	1.42E+00	1.19E+00	1.33E+00	2.37E+00
5.012	1.37E+00	1.22E+00	1.37E+00	2.48E+00
6.31	1.39E+00	1.24E+00	1.45E+00	2.60E+00
7.943	1.40E+00	1.25E+00	1.46E+00	2.54E+00
10	1.33E+00	1.21E+00	1.42E+00	2.46E+00

Table H-43: Room Ratio Composite 1 15cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.909831	0.739502	0.957849	1.101708
0.013	0.543492	0.560494	0.457588	0.346723
0.016	0.62681	0.628089	0.539969	0.253534
0.02	0.779699	0.770609	0.607476	0.362377
0.025	0.902091	0.782174	0.824628	0.609868
0.032	0.890829	0.60758	0.468046	0.745343
0.04	0.85765	0.663664	0.537467	0.690905
0.05	0.797754	0.668146	0.431615	0.561368
0.063	0.974705	0.888814	0.585429	0.83737
0.079	1.01736	0.831808	0.753273	0.857185
0.1	1.099556	1.078967	0.836109	0.879038
0.126	1.305846	1.210758	1.299531	1.35079
0.158	1.429103	1.297555	2.147872	1.262476
0.2	1.439895	1.265318	1.691179	1.265649
0.251	1.604644	1.601348	1.581245	1.19413
0.316	1.661354	1.766324	1.840398	1.609629
0.398	1.62978	1.725092	2.160099	1.43984
0.501	1.936177	1.952752	2.801122	2.070198
0.631	1.49344	1.503635	2.096667	1.633973
0.794	1.51762	1.496882	2.193563	1.656308
1	1.563857	1.18127	3.075231	1.939197
1.259	1.483542	1.247442	2.113798	1.649839
1.585	1.405702	1.210357	1.989451	1.656124
1.995	1.454538	1.018377	1.564053	1.778987
2.512	1.443789	0.976195	1.493891	1.762879
3.162	1.39452	0.942856	1.393474	2.170353
3.981	1.459036	1.027502	1.3467	2.391952
5.012	1.395518	1.020032	1.466282	2.081371
6.31	1.383184	1.069512	1.523976	2.084593
7.943	1.442838	1.126499	1.534306	2.057594
10	1.388896	1.301773	2.110547	1.824022

Table H-44: Room Ratio Composite 1 15cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.49927	0.508298	0.936871	1.494521
0.013	0.368141	0.430538	0.428861	0.584948
0.016	0.472236	0.580169	0.543479	0.577962
0.02	0.637309	0.687298	0.781575	0.527245
0.025	0.771214	0.800676	0.688571	0.882754
0.032	0.782357	0.713362	0.551588	0.441589
0.04	0.866987	0.503126	0.639651	0.433928
0.05	0.781108	0.627191	0.622547	0.372005
0.063	0.964421	0.925945	1.106644	0.523519
0.079	1.098973	0.763374	0.84912	0.617298
0.1	1.100771	0.862189	1.117179	0.573963
0.126	1.277358	1.063541	2.528877	0.619087
0.158	1.449663	1.272576	2.500111	0.605511
0.2	1.415687	1.254243	2.214466	0.641378
0.251	1.552977	1.436715	2.212858	0.956136
0.316	1.641871	1.501315	2.179978	0.893008
0.398	1.631355	1.493432	2.708286	0.835969
0.501	1.987212	1.607174	4.645461	1.587354
0.631	1.479032	1.290234	3.078382	1.670275
0.794	1.505433	1.206872	3.328086	1.73599
1	1.553223	1.508276	2.053766	1.026699
1.259	1.414305	1.171565	3.064011	1.718127
1.585	1.385727	1.159716	2.729659	1.320993
1.995	1.413341	1.225484	2.95381	1.239602
2.512	1.41409	1.228908	3.126152	1.208707
3.162	1.379609	0.842063	3.854093	2.110075
3.981	1.393131	0.881839	3.748104	1.975483
5.012	1.389349	0.88085	3.305435	2.318626
6.31	1.404297	1.010378	4.197411	1.807875
7.943	1.36415	1.036643	4.081682	1.57001
10	1.364622	1.057222	4.059777	1.573934

Table H-45: Room Ratio Composite 1 15cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.010	0.26340	0.39601	0.52352	0.36811
0.013	0.20682	0.31267	0.55105	0.97883
0.016	0.30828	0.38494	0.58183	0.66969
0.020	0.48554	0.55507	0.66752	0.50971
0.025	0.64273	0.61181	0.67079	0.71990
0.032	0.69568	0.58891	1.90163	0.96747
0.040	0.78959	0.72216	0.75332	1.04849
0.050	0.73027	0.72858	0.54673	0.75038
0.063	0.92594	0.83470	0.95942	0.89924
0.079	1.03424	0.90808	1.85645	0.72753
0.100	1.08130	0.67230	0.82447	0.33972
0.126	1.29775	0.87629	0.67420	0.61345
0.158	1.29663	0.55881	1.67132	1.00484
0.200	1.30615	0.55595	1.67598	0.78992
0.251	1.53713	1.35525	1.50430	2.43993
0.316	1.58282	1.43521	2.04389	0.77469
0.398	1.60562	1.32585	3.39648	1.73680
0.501	1.93342	1.52771	1.37666	1.25303
0.631	1.47630	1.26119	1.10083	0.95978
0.794	1.52186	1.03362	1.63266	1.07085
1.000	1.51376	1.03434	2.62115	1.07297
1.259	1.41825	1.01835	1.87819	1.03169
1.585	1.38673	1.07795	1.12499	1.70954
1.995	1.38555	0.71678	3.27522	1.48466
2.512	1.39302	0.74010	3.20670	1.50916
3.162	1.37481	1.29578	2.19412	1.08237
3.981	1.38872	1.17870	1.87927	1.52906
5.012	1.41472	1.20436	1.42586	1.99507
6.310	1.38431	0.83680	3.02330	1.28759
7.943	1.43155	0.83099	3.03557	2.29391
10.000	1.36011	0.79507	3.44120	1.53292

Infinite Contamination Depth Room Ratios

Table H-46: Room Ratio Composite 1 Infinite Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.5925	0.3710	1.9265	0.5206
0.013	0.7267	0.5714	0.6048	0.6480
0.016	0.4833	0.5262	0.5170	0.5023
0.02	0.44259	0.41850	0.38976	0.42775
0.025	0.66059	0.37071	0.32928	0.25510
0.032	0.41591	0.42117	0.43676	0.30819
0.04	0.39663	0.40765	0.40408	0.37524
0.05	0.35094	0.44343	0.45660	0.58272
0.063	0.49045	0.52746	0.45916	0.57530
0.079	0.66605	0.55966	0.60808	0.73527
0.1	0.72735	0.71437	0.81479	0.87499
0.126	0.45143	0.60558	0.72032	0.73478
0.158	0.62938	0.76531	0.86543	1.16205
0.2	0.61408	0.72547	0.93144	1.06163
0.251	0.79845	0.88539	1.35245	1.38956
0.316	0.68454	0.75523	1.04397	1.28029
0.398	0.64844	0.78448	1.17623	1.34010
0.501	0.71375	0.82181	1.44096	1.36535
0.631	0.88321	0.82055	0.87594	1.34718
0.794	0.79851	0.86152	0.87099	1.48013
1	0.73758	0.93954	0.94714	1.42823
1.259	0.70991	0.77207	0.77968	1.30670
1.585	1.01493	1.02046	0.97725	1.37457
1.995	1.08043	1.05495	1.05385	1.43536
2.512	1.05156	0.94165	1.05291	1.39482
3.162	0.91918	0.90770	0.87027	1.45251
3.981	0.96433	0.84380	0.83853	1.48231
5.012	0.80116	0.84038	0.85739	1.64840
6.31	0.88579	0.93112	0.98745	1.41438
7.943	0.88368	0.96289	0.85288	2.10186
10	0.79058	0.97249	0.77319	1.99051

Table H-47: Room Ratio Composite 1 Infinite Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.424866	0.313668	0.450819	0.740878
0.013	0.669865	0.620113	0.589844	0.960842
0.016	0.643792	0.650905	0.536183	0.570567
0.02	0.538665	0.573785	0.441183	0.458434
0.025	0.643218	0.597795	0.496185	0.345287
0.032	0.722879	0.534559	0.576233	0.730492
0.04	0.717262	0.512511	0.556523	0.670092
0.05	0.86763	0.512293	0.629972	0.900276
0.063	0.831621	0.545518	0.755725	0.509867
0.079	0.916924	0.706486	1.079887	0.851311
0.1	1.126862	0.903174	1.046147	1.154033
0.126	0.897827	0.771678	1.055731	1.309245
0.158	1.079456	1.015002	0.999252	1.806473
0.2	1.137554	1.114957	1.106856	1.1509
0.251	1.436759	1.520807	1.505048	1.452405
0.316	1.343032	1.16059	1.968965	1.518854
0.398	1.173681	1.184406	1.656803	2.070912
0.501	1.221142	1.214421	1.760047	2.060254
0.631	1.366779	1.196262	1.80638	2.184065
0.794	1.455707	1.241489	1.488083	1.610056
1	1.464694	1.325169	1.939481	2.04437
1.259	1.297243	1.100873	1.621677	1.769446
1.585	1.522641	1.4332	2.218888	1.988566
1.995	1.487945	1.412332	2.090102	1.642809
2.512	1.611362	1.331714	1.94339	1.515933
3.162	1.345032	1.097545	0.999363	1.145071
3.981	1.318152	1.068937	1.10818	1.225959
5.012	1.158896	0.925211	0.90159	1.044725
6.31	1.316412	1.076105	1.085032	1.175679
7.943	1.348613	1.11974	1.145302	1.387714
10	1.297177	1.094749	1.064612	1.441585

Table H-48: Room Ratio Composite 1 Infinite Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.071733	0.055567	0.131341	0.156657
0.013	0.114261	0.108683	0.10363	0.202301
0.016	0.113126	0.114318	0.09362	0.091644
0.02	0.091122	0.100882	0.072267	0.057621
0.025	0.100658	0.113457	0.082893	0.040439
0.032	0.113045	0.116988	0.096223	0.041849
0.04	0.110462	0.108401	0.109669	0.071677
0.05	0.122259	0.096534	0.088079	0.047765
0.063	0.140378	0.122703	0.108122	0.07667
0.079	0.177723	0.137634	0.114537	0.181881
0.1	0.194758	0.138407	0.131906	0.241827
0.126	0.152016	0.107328	0.108857	0.152196
0.158	0.204822	0.145821	0.123815	0.346997
0.2	0.209082	0.16039	0.122025	0.156803
0.251	0.264908	0.211843	0.174654	0.190006
0.316	0.225856	0.185333	0.132435	0.179722
0.398	0.23351	0.175587	0.129897	0.219802
0.501	0.252902	0.199237	0.144667	0.223273
0.631	0.239359	0.197992	0.149222	0.247065
0.794	0.246401	0.202528	0.191246	0.246726
1	0.259309	0.222097	0.200739	0.316513
1.259	0.218089	0.183285	0.204386	0.291891
1.585	0.280809	0.235808	0.261144	0.431933
1.995	0.269494	0.222716	0.312748	0.356183
2.512	0.258766	0.225498	0.224091	0.214911
3.162	0.231238	0.202286	0.179647	0.195262
3.981	0.250293	0.168824	0.18588	0.284744
5.012	0.216382	0.191654	0.16213	0.219234
6.31	0.250309	0.17736	0.224628	0.310274
7.943	0.248599	0.194789	0.234857	0.317427
10	0.248559	0.197738	0.239066	0.457502

Table H-49: Room Ratio Composite 1 Infinite Contamination Depth 200x200x200 ft room

Energy	Average	Center	Middle	Corner
0.01	0.259067	0.230251	0.048452	0.178504
0.013	0.464142	0.490563	0.688709	1.238174
0.016	0.525144	0.564416	0.536066	0.578489
0.02	0.492311	0.483916	0.440118	0.495162
0.025	0.596664	0.558422	0.906162	0.448242
0.032	0.676661	0.770437	0.999291	0.451533
0.04	0.644534	0.652585	0.74988	0.354351
0.05	0.741706	0.615649	0.44862	0.404715
0.063	0.854295	0.747369	0.708953	0.537609
0.079	0.996253	1.005179	3.223715	0.661111
0.1	1.172751	1.045733	0.868558	1.159909
0.126	0.916787	0.617145	0.426201	0.502035
0.158	1.262476	0.811573	1.361149	1.222565
0.2	1.281056	1.085889	1.24791	1.059465
0.251	1.611414	1.068179	1.809694	1.035437
0.316	1.438858	0.939073	1.767776	1.602282
0.398	1.50309	1.137015	1.333456	1.324035
0.501	1.553874	1.352687	1.657133	1.941083
0.631	1.526959	1.13728	0.958395	1.202794
0.794	1.554324	1.141858	1.049806	1.411727
1	1.611577	1.036295	1.519378	1.968393
1.259	1.35393	0.924754	1.534464	1.741119
1.585	1.733276	1.132929	1.529377	2.234858
1.995	1.666682	1.105875	1.525261	2.010655
2.512	1.627941	1.145642	1.870765	1.650633
3.162	1.494774	1.027196	2.303665	1.212392
3.981	1.444888	1.032853	2.647947	1.3089
5.012	1.369081	0.994648	1.516668	1.240183
6.31	1.471925	1.09622	1.871762	1.390245
7.943	1.439286	1.201507	1.98122	1.487485
10	1.486424	1.180596	2.1094	1.505996

Table H-50: Room Ratio Composite 1 Infinite Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.116058	0.114751	3.44E-05	8.98E-07
0.013	0.261218	0.379728	0.019584	0.503877
0.016	0.338164	0.481315	0.295153	0.823677
0.02	0.368552	0.43267	0.47586	0.696315
0.025	0.488117	0.503006	0.453321	0.488157
0.032	0.627488	0.659723	0.58151	0.36535
0.04	0.647551	0.606039	0.540042	0.312012
0.05	0.723568	0.683492	0.783843	0.34746
0.063	0.850558	0.646841	1.136013	0.31918
0.079	0.970194	0.874868	0.909456	0.734617
0.1	1.195145	0.857076	0.497064	0.451061
0.126	0.903154	0.787683	0.602297	0.438678
0.158	1.25696	1.165718	0.914144	0.689077
0.2	1.275267	1.03848	0.620954	0.781614
0.251	1.613616	0.9236	0.801483	0.328584
0.316	1.447309	0.821481	0.7346	0.560493
0.398	1.433414	0.84563	0.998735	0.565261
0.501	1.503821	0.942509	2.774908	0.551375
0.631	1.499134	1.237292	1.337341	1.885067
0.794	1.513837	0.810914	0.745121	0.782711
1	1.650176	1.17569	1.600444	0.669614
1.259	1.353373	0.703329	0.88922	0.925427
1.585	1.72867	0.975308	1.1851	2.106381
1.995	1.613607	0.95093	1.360538	2.261252
2.512	1.709356	0.784641	1.601372	1.1329
3.162	1.472906	0.9491	1.510283	0.69319
3.981	1.467098	0.754361	1.096783	0.879733
5.012	1.380558	0.718298	0.940532	0.810533
6.31	1.481522	1.30183	2.157176	1.302895
7.943	1.517973	0.999	1.014435	0.745893
10	1.518204	1.042113	1.072016	0.798557

APPENDIX I: COMPOSITE 2 TABLES

First tables will be presented for raw air kerma values. These units are in pGy per cm^2. Room ratio values are presented following the Kerma tables.

Surface Contamination Kerma

Table I-1: Kerma Composite 2 Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.11E-05	5.65E-06	9.73E-06	1.19E-05
0.013	9.43E-06	5.97E-06	8.57E-06	9.78E-06
0.016	7.23E-06	4.88E-06	6.63E-06	7.40E-06
0.02	5.04E-06	3.51E-06	4.63E-06	5.11E-06
0.025	3.43E-06	2.44E-06	3.15E-06	3.46E-06
0.032	2.27E-06	1.64E-06	2.09E-06	2.29E-06
0.04	1.67E-06	1.23E-06	1.55E-06	1.69E-06
0.05	1.40E-06	1.05E-06	1.31E-06	1.43E-06
0.063	1.40E-06	1.07E-06	1.31E-06	1.43E-06
0.079	1.59E-06	1.23E-06	1.49E-06	1.63E-06
0.1	1.99E-06	1.55E-06	1.87E-06	2.04E-06
0.126	2.60E-06	2.02E-06	2.44E-06	2.65E-06
0.158	3.35E-06	2.59E-06	3.14E-06	3.41E-06
0.2	4.34E-06	3.32E-06	4.06E-06	4.42E-06
0.251	5.47E-06	4.15E-06	5.10E-06	5.56E-06
0.316	6.85E-06	5.15E-06	6.38E-06	6.95E-06
0.398	8.47E-06	6.29E-06	7.86E-06	8.58E-06
0.501	1.03E-05	7.60E-06	9.57E-06	1.05E-05
0.631	1.24E-05	9.07E-06	1.15E-05	1.26E-05
0.794	1.48E-05	1.07E-05	1.37E-05	1.50E-05
1	1.76E-05	1.26E-05	1.62E-05	1.77E-05
1.259	2.05E-05	1.46E-05	1.88E-05	2.06E-05
1.585	2.39E-05	1.70E-05	2.19E-05	2.40E-05
1.995	2.77E-05	1.95E-05	2.53E-05	2.78E-05
2.512	3.19E-05	2.25E-05	2.92E-05	3.20E-05
3.162	3.69E-05	2.60E-05	3.37E-05	3.70E-05
3.981	4.26E-05	3.00E-05	3.89E-05	4.27E-05
5.012	4.94E-05	3.48E-05	4.51E-05	4.95E-05
6.31	5.81E-05	4.09E-05	5.30E-05	5.81E-05
7.943	6.88E-05	4.86E-05	6.27E-05	6.88E-05
10	8.20E-05	5.79E-05	7.48E-05	8.20E-05

Table I-2: Kerma Composite 2 Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	6.16E-07	3.33E-07	7.93E-07	1.01E-06
0.013	6.47E-07	4.73E-07	7.65E-07	8.56E-07
0.016	5.76E-07	4.75E-07	6.45E-07	6.76E-07
0.02	4.48E-07	3.95E-07	4.87E-07	4.90E-07
0.025	3.26E-07	2.95E-07	3.48E-07	3.44E-07
0.032	2.23E-07	2.04E-07	2.36E-07	2.33E-07
0.04	1.65E-07	1.52E-07	1.76E-07	1.73E-07
0.05	1.38E-07	1.27E-07	1.47E-07	1.47E-07
0.063	1.37E-07	1.26E-07	1.47E-07	1.47E-07
0.079	1.55E-07	1.43E-07	1.66E-07	1.68E-07
0.1	1.94E-07	1.79E-07	2.08E-07	2.11E-07
0.126	2.55E-07	2.35E-07	2.73E-07	2.76E-07
0.158	3.30E-07	3.04E-07	3.53E-07	3.57E-07
0.2	4.31E-07	3.96E-07	4.60E-07	4.63E-07
0.251	5.47E-07	5.02E-07	5.83E-07	5.84E-07
0.316	6.89E-07	6.34E-07	7.35E-07	7.34E-07
0.398	8.57E-07	7.87E-07	9.12E-07	9.10E-07
0.501	1.05E-06	9.65E-07	1.12E-06	1.11E-06
0.631	1.27E-06	1.17E-06	1.35E-06	1.34E-06
0.794	1.53E-06	1.40E-06	1.62E-06	1.60E-06
1	1.81E-06	1.66E-06	1.92E-06	1.90E-06
1.259	2.13E-06	1.95E-06	2.25E-06	2.21E-06
1.585	2.49E-06	2.27E-06	2.63E-06	2.58E-06
1.995	2.89E-06	2.63E-06	3.05E-06	2.99E-06
2.512	3.34E-06	3.04E-06	3.52E-06	3.44E-06
3.162	3.86E-06	3.52E-06	4.06E-06	3.97E-06
3.981	4.46E-06	4.07E-06	4.69E-06	4.59E-06
5.012	5.18E-06	4.72E-06	5.44E-06	5.31E-06
6.31	6.08E-06	5.54E-06	6.39E-06	6.23E-06
7.943	7.20E-06	6.56E-06	7.56E-06	7.37E-06
10	8.58E-06	7.81E-06	9.00E-06	8.77E-06

Table I-3: Kerma Composite 2 Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.64E-07	9.59E-08	2.33E-07	2.95E-07
0.013	1.81E-07	1.39E-07	2.23E-07	2.49E-07
0.016	1.68E-07	1.45E-07	1.92E-07	1.97E-07
0.02	1.38E-07	1.28E-07	1.48E-07	1.45E-07
0.025	1.04E-07	1.01E-07	1.08E-07	1.05E-07
0.032	7.29E-08	7.20E-08	7.52E-08	7.06E-08
0.04	5.45E-08	5.41E-08	5.64E-08	5.29E-08
0.05	4.56E-08	4.53E-08	4.75E-08	4.50E-08
0.063	4.51E-08	4.47E-08	4.74E-08	4.52E-08
0.079	5.08E-08	5.03E-08	5.38E-08	5.15E-08
0.1	6.37E-08	6.29E-08	6.76E-08	6.51E-08
0.126	8.37E-08	8.28E-08	8.87E-08	8.55E-08
0.158	1.09E-07	1.08E-07	1.15E-07	1.10E-07
0.2	1.43E-07	1.42E-07	1.50E-07	1.43E-07
0.251	1.82E-07	1.80E-07	1.91E-07	1.82E-07
0.316	2.30E-07	2.28E-07	2.41E-07	2.30E-07
0.398	2.88E-07	2.85E-07	3.01E-07	2.84E-07
0.501	3.55E-07	3.52E-07	3.71E-07	3.49E-07
0.631	4.32E-07	4.29E-07	4.50E-07	4.20E-07
0.794	5.19E-07	5.15E-07	5.38E-07	5.04E-07
1	6.20E-07	6.16E-07	6.40E-07	5.96E-07
1.259	7.28E-07	7.23E-07	7.50E-07	6.97E-07
1.585	8.54E-07	8.48E-07	8.78E-07	8.12E-07
1.995	9.93E-07	9.85E-07	1.02E-06	9.42E-07
2.512	1.15E-06	1.14E-06	1.18E-06	1.08E-06
3.162	1.33E-06	1.32E-06	1.36E-06	1.25E-06
3.981	1.54E-06	1.53E-06	1.57E-06	1.45E-06
5.012	1.79E-06	1.77E-06	1.82E-06	1.68E-06
6.31	2.10E-06	2.08E-06	2.14E-06	1.97E-06
7.943	2.49E-06	2.47E-06	2.53E-06	2.33E-06
10	2.97E-06	2.94E-06	3.02E-06	2.77E-06

Table I-4: Kerma Composite 2 Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.23E-08	1.82E-08	5.56E-08	7.22E-08
0.013	2.80E-08	2.56E-08	5.27E-08	6.21E-08
0.016	2.94E-08	2.85E-08	4.56E-08	4.91E-08
0.02	2.69E-08	2.72E-08	3.58E-08	3.66E-08
0.025	2.22E-08	2.31E-08	2.74E-08	2.66E-08
0.032	1.66E-08	1.77E-08	1.95E-08	1.83E-08
0.04	1.29E-08	1.38E-08	1.50E-08	1.40E-08
0.05	1.10E-08	1.18E-08	1.27E-08	1.19E-08
0.063	1.09E-08	1.18E-08	1.26E-08	1.22E-08
0.079	1.23E-08	1.31E-08	1.44E-08	1.39E-08
0.1	1.54E-08	1.63E-08	1.80E-08	1.74E-08
0.126	2.02E-08	2.13E-08	2.35E-08	2.29E-08
0.158	2.63E-08	2.76E-08	3.06E-08	2.96E-08
0.2	3.45E-08	3.64E-08	4.00E-08	3.83E-08
0.251	4.39E-08	4.65E-08	5.11E-08	4.87E-08
0.316	5.58E-08	5.89E-08	6.48E-08	6.14E-08
0.398	6.98E-08	7.39E-08	8.11E-08	7.65E-08
0.501	8.62E-08	9.18E-08	1.00E-07	9.69E-08
0.631	1.05E-07	1.12E-07	1.21E-07	1.13E-07
0.794	1.26E-07	1.35E-07	1.46E-07	1.36E-07
1	1.51E-07	1.62E-07	1.75E-07	1.63E-07
1.259	1.78E-07	1.91E-07	2.06E-07	1.90E-07
1.585	2.09E-07	2.25E-07	2.42E-07	2.22E-07
1.995	2.44E-07	2.62E-07	2.82E-07	2.58E-07
2.512	2.83E-07	3.04E-07	3.26E-07	2.98E-07
3.162	3.28E-07	3.54E-07	3.78E-07	3.45E-07
3.981	3.80E-07	4.10E-07	4.37E-07	3.98E-07
5.012	4.42E-07	4.77E-07	5.09E-07	4.63E-07
6.31	5.20E-07	5.61E-07	5.97E-07	5.44E-07
7.943	6.16E-07	6.65E-07	7.08E-07	6.44E-07
10	7.35E-07	7.93E-07	8.52E-07	7.66E-07

Table I-5: Kerma Composite 2 Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.86E-09	4.46E-09	1.40E-08	1.78E-08
0.013	3.86E-09	5.74E-09	1.33E-08	1.49E-08
0.016	4.50E-09	6.16E-09	1.15E-08	1.21E-08
0.02	4.68E-09	5.74E-09	8.79E-09	8.96E-09
0.025	4.33E-09	5.13E-09	6.78E-09	6.63E-09
0.032	3.56E-09	4.19E-09	4.94E-09	4.72E-09
0.04	2.92E-09	3.40E-09	3.84E-09	3.64E-09
0.05	2.57E-09	2.96E-09	3.31E-09	3.10E-09
0.063	2.58E-09	2.94E-09	3.35E-09	3.12E-09
0.079	2.92E-09	3.30E-09	3.76E-09	3.64E-09
0.1	3.65E-09	4.13E-09	4.73E-09	4.46E-09
0.126	4.77E-09	5.34E-09	6.28E-09	5.91E-09
0.158	6.18E-09	7.03E-09	8.03E-09	7.64E-09
0.2	8.10E-09	9.20E-09	1.06E-08	9.87E-09
0.251	1.03E-08	1.18E-08	1.34E-08	1.28E-08
0.316	1.31E-08	1.52E-08	1.71E-08	1.62E-08
0.398	1.64E-08	1.89E-08	2.14E-08	2.00E-08
0.501	2.04E-08	2.35E-08	2.66E-08	2.46E-08
0.631	2.49E-08	2.89E-08	3.27E-08	3.00E-08
0.794	3.01E-08	3.54E-08	3.93E-08	3.61E-08
1	3.61E-08	4.24E-08	4.72E-08	4.30E-08
1.259	4.26E-08	5.00E-08	5.54E-08	5.08E-08
1.585	5.03E-08	5.94E-08	6.55E-08	5.95E-08
1.995	5.88E-08	6.97E-08	7.63E-08	6.94E-08
2.512	6.84E-08	8.09E-08	8.86E-08	8.03E-08
3.162	7.96E-08	9.45E-08	1.03E-07	9.29E-08
3.981	9.26E-08	1.10E-07	1.20E-07	1.08E-07
5.012	1.08E-07	1.28E-07	1.40E-07	1.25E-07
6.31	1.27E-07	1.51E-07	1.64E-07	1.47E-07
7.943	1.51E-07	1.80E-07	1.95E-07	1.75E-07
10	1.80E-07	2.15E-07	2.33E-07	2.09E-07

Kerma for 1cm Contamination Depth

Table I-6: Kerma Composite 2 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.27E-07	9.13E-08	1.21E-07	1.47E-07
0.013	2.26E-07	2.01E-07	2.27E-07	2.51E-07
0.016	3.18E-07	3.05E-07	3.25E-07	3.39E-07
0.02	4.24E-07	4.18E-07	4.39E-07	4.55E-07
0.025	5.41E-07	5.41E-07	5.64E-07	5.70E-07
0.032	6.61E-07	6.51E-07	6.87E-07	6.87E-07
0.04	7.36E-07	7.05E-07	7.66E-07	7.73E-07
0.05	8.18E-07	7.59E-07	8.39E-07	8.54E-07
0.063	9.69E-07	8.81E-07	9.86E-07	1.03E-06
0.079	1.22E-06	1.09E-06	1.24E-06	1.27E-06
0.1	1.61E-06	1.42E-06	1.62E-06	1.68E-06
0.126	2.15E-06	1.89E-06	2.16E-06	2.24E-06
0.158	2.83E-06	2.44E-06	2.85E-06	2.94E-06
0.2	3.71E-06	3.18E-06	3.68E-06	3.87E-06
0.251	4.68E-06	3.99E-06	4.66E-06	4.88E-06
0.316	5.92E-06	4.97E-06	5.86E-06	6.14E-06
0.398	7.32E-06	6.09E-06	7.29E-06	7.74E-06
0.501	8.96E-06	7.40E-06	8.91E-06	9.37E-06
0.631	1.09E-05	8.92E-06	1.06E-05	1.14E-05
0.794	1.31E-05	1.05E-05	1.28E-05	1.37E-05
1	1.54E-05	1.24E-05	1.50E-05	1.65E-05
1.259	1.86E-05	1.43E-05	1.78E-05	1.90E-05
1.585	2.18E-05	1.67E-05	2.07E-05	2.24E-05
1.995	2.50E-05	1.92E-05	2.41E-05	2.59E-05
2.512	2.90E-05	2.23E-05	2.79E-05	3.01E-05
3.162	3.34E-05	2.53E-05	3.24E-05	3.53E-05
3.981	3.92E-05	2.94E-05	3.77E-05	4.04E-05
5.012	4.53E-05	3.41E-05	4.37E-05	4.74E-05
6.31	5.33E-05	4.00E-05	5.11E-05	5.64E-05
7.943	6.30E-05	4.75E-05	6.02E-05	6.58E-05
10	7.57E-05	5.68E-05	7.17E-05	7.88E-05

Table I-7: Kerma Composite 2 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	5.90E-09	3.74E-09	8.55E-09	1.10E-08
0.013	1.25E-08	9.84E-09	1.51E-08	1.89E-08
0.016	1.98E-08	1.67E-08	2.31E-08	2.52E-08
0.02	2.88E-08	2.66E-08	3.10E-08	3.60E-08
0.025	3.91E-08	3.70E-08	4.19E-08	4.34E-08
0.032	5.02E-08	4.87E-08	5.34E-08	5.67E-08
0.04	5.81E-08	5.65E-08	6.17E-08	6.16E-08
0.05	6.76E-08	6.71E-08	7.27E-08	7.29E-08
0.063	8.30E-08	8.17E-08	8.93E-08	8.88E-08
0.079	1.06E-07	1.04E-07	1.12E-07	1.15E-07
0.1	1.43E-07	1.42E-07	1.49E-07	1.51E-07
0.126	1.95E-07	1.92E-07	2.06E-07	2.11E-07
0.158	2.58E-07	2.51E-07	2.72E-07	2.80E-07
0.2	3.42E-07	3.37E-07	3.66E-07	3.60E-07
0.251	4.39E-07	4.37E-07	4.67E-07	4.62E-07
0.316	5.60E-07	5.47E-07	6.24E-07	6.34E-07
0.398	7.00E-07	6.89E-07	7.38E-07	7.63E-07
0.501	8.65E-07	8.50E-07	9.39E-07	9.30E-07
0.631	1.06E-06	1.03E-06	1.13E-06	1.12E-06
0.794	1.27E-06	1.24E-06	1.38E-06	1.35E-06
1	1.52E-06	1.49E-06	1.67E-06	1.61E-06
1.259	1.84E-06	1.77E-06	1.94E-06	1.91E-06
1.585	2.22E-06	2.08E-06	2.44E-06	2.34E-06
1.995	2.50E-06	2.42E-06	2.75E-06	2.66E-06
2.512	2.94E-06	2.78E-06	3.38E-06	3.17E-06
3.162	3.39E-06	3.27E-06	3.80E-06	3.66E-06
3.981	3.96E-06	3.79E-06	4.33E-06	4.17E-06
5.012	4.60E-06	4.42E-06	5.23E-06	4.93E-06
6.31	5.43E-06	5.23E-06	6.10E-06	5.77E-06
7.943	6.50E-06	6.19E-06	7.28E-06	6.85E-06
10	7.74E-06	7.38E-06	8.57E-06	8.21E-06

Table I-8: Kerma Composite 2 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.51E-09	1.09E-09	2.28E-09	3.00E-09
0.013	3.28E-09	2.74E-09	4.38E-09	5.24E-09
0.016	5.25E-09	4.67E-09	6.44E-09	7.39E-09
0.02	7.79E-09	7.10E-09	9.08E-09	1.01E-08
0.025	1.08E-08	1.04E-08	1.21E-08	1.32E-08
0.032	1.42E-08	1.37E-08	1.53E-08	1.65E-08
0.04	1.68E-08	1.67E-08	1.83E-08	1.91E-08
0.05	1.98E-08	1.98E-08	2.13E-08	2.17E-08
0.063	2.47E-08	2.50E-08	2.65E-08	2.67E-08
0.079	3.20E-08	3.24E-08	3.42E-08	3.41E-08
0.1	4.34E-08	4.42E-08	4.63E-08	4.57E-08
0.126	5.95E-08	6.07E-08	6.34E-08	6.21E-08
0.158	7.93E-08	8.11E-08	8.49E-08	8.18E-08
0.2	1.06E-07	1.08E-07	1.12E-07	1.09E-07
0.251	1.36E-07	1.40E-07	1.45E-07	1.39E-07
0.316	1.74E-07	1.79E-07	1.86E-07	1.77E-07
0.398	2.20E-07	2.27E-07	2.34E-07	2.21E-07
0.501	2.73E-07	2.84E-07	2.91E-07	2.73E-07
0.631	3.35E-07	3.49E-07	3.60E-07	3.34E-07
0.794	4.08E-07	4.25E-07	4.30E-07	4.15E-07
1	4.92E-07	5.15E-07	5.20E-07	4.92E-07
1.259	5.87E-07	6.13E-07	6.19E-07	5.82E-07
1.585	6.97E-07	7.29E-07	7.43E-07	6.89E-07
1.995	8.20E-07	8.60E-07	8.71E-07	8.08E-07
2.512	9.61E-07	1.01E-06	1.02E-06	9.44E-07
3.162	1.13E-06	1.18E-06	1.19E-06	1.11E-06
3.981	1.32E-06	1.38E-06	1.39E-06	1.29E-06
5.012	1.54E-06	1.61E-06	1.63E-06	1.51E-06
6.31	1.82E-06	1.91E-06	1.92E-06	1.78E-06
7.943	2.17E-06	2.29E-06	2.29E-06	2.13E-06
10	2.59E-06	2.71E-06	2.74E-06	2.54E-06

Table I-9: Kerma Composite 2 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	2.09E-10	2.15E-10	5.87E-10	6.74E-10
0.013	5.30E-10	5.35E-10	1.06E-09	1.20E-09
0.016	9.68E-10	9.51E-10	1.54E-09	1.68E-09
0.02	1.60E-09	1.58E-09	2.15E-09	2.30E-09
0.025	2.41E-09	2.35E-09	2.92E-09	3.03E-09
0.032	3.34E-09	3.31E-09	3.83E-09	3.97E-09
0.04	4.09E-09	4.18E-09	4.52E-09	4.56E-09
0.05	4.87E-09	4.93E-09	5.32E-09	5.41E-09
0.063	6.08E-09	6.23E-09	6.73E-09	6.62E-09
0.079	7.88E-09	8.03E-09	8.61E-09	8.64E-09
0.1	1.07E-08	1.10E-08	1.18E-08	1.14E-08
0.126	1.46E-08	1.49E-08	1.59E-08	1.62E-08
0.158	1.94E-08	2.00E-08	2.12E-08	2.06E-08
0.2	2.58E-08	2.66E-08	2.83E-08	2.76E-08
0.251	3.33E-08	3.45E-08	3.66E-08	3.58E-08
0.316	4.25E-08	4.44E-08	4.67E-08	4.55E-08
0.398	5.37E-08	5.62E-08	5.92E-08	5.70E-08
0.501	6.67E-08	7.05E-08	7.35E-08	7.15E-08
0.631	8.21E-08	8.60E-08	8.97E-08	8.71E-08
0.794	9.99E-08	1.06E-07	1.08E-07	1.05E-07
1	1.21E-07	1.28E-07	1.34E-07	1.28E-07
1.259	1.44E-07	1.53E-07	1.59E-07	1.52E-07
1.585	1.71E-07	1.84E-07	1.91E-07	1.79E-07
1.995	2.02E-07	2.18E-07	2.25E-07	2.11E-07
2.512	2.37E-07	2.56E-07	2.64E-07	2.47E-07
3.162	2.78E-07	3.01E-07	3.12E-07	2.91E-07
3.981	3.25E-07	3.52E-07	3.64E-07	3.43E-07
5.012	3.81E-07	4.15E-07	4.33E-07	3.98E-07
6.31	4.51E-07	4.93E-07	5.18E-07	4.73E-07
7.943	5.38E-07	5.89E-07	6.10E-07	5.65E-07
10	6.43E-07	7.06E-07	7.28E-07	6.71E-07

Table I-10: Kerma Composite 2 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	2.67E-11	4.64E-11	1.61E-10	1.37E-10
0.013	7.42E-11	1.14E-10	2.75E-10	2.73E-10
0.016	1.54E-10	2.00E-10	4.17E-10	3.87E-10
0.02	2.95E-10	3.42E-10	5.64E-10	5.49E-10
0.025	4.97E-10	5.39E-10	7.18E-10	7.35E-10
0.032	7.52E-10	7.59E-10	9.47E-10	9.54E-10
0.04	9.66E-10	9.99E-10	1.13E-09	1.13E-09
0.05	1.18E-09	1.22E-09	1.40E-09	1.35E-09
0.063	1.48E-09	1.53E-09	1.82E-09	1.69E-09
0.079	1.91E-09	1.99E-09	2.14E-09	2.11E-09
0.1	2.58E-09	2.66E-09	2.91E-09	2.86E-09
0.126	3.50E-09	3.64E-09	4.02E-09	3.81E-09
0.158	4.64E-09	4.87E-09	5.43E-09	5.15E-09
0.2	6.17E-09	6.44E-09	7.12E-09	6.82E-09
0.251	7.95E-09	8.35E-09	9.23E-09	9.09E-09
0.316	1.02E-08	1.08E-08	1.17E-08	1.13E-08
0.398	1.28E-08	1.36E-08	1.48E-08	1.41E-08
0.501	1.60E-08	1.71E-08	1.81E-08	1.93E-08
0.631	1.97E-08	2.11E-08	2.19E-08	2.33E-08
0.794	2.40E-08	2.62E-08	2.70E-08	2.84E-08
1	2.91E-08	3.19E-08	3.28E-08	3.48E-08
1.259	3.48E-08	3.81E-08	3.98E-08	4.12E-08
1.585	4.14E-08	4.52E-08	4.72E-08	4.91E-08
1.995	4.90E-08	5.41E-08	5.66E-08	5.78E-08
2.512	5.76E-08	6.42E-08	6.66E-08	6.79E-08
3.162	6.77E-08	7.54E-08	7.81E-08	8.24E-08
3.981	7.95E-08	8.89E-08	9.17E-08	9.27E-08
5.012	9.34E-08	1.05E-07	1.08E-07	1.10E-07
6.31	1.11E-07	1.25E-07	1.30E-07	1.30E-07
7.943	1.32E-07	1.50E-07	1.54E-07	1.56E-07
10	1.58E-07	1.81E-07	1.85E-07	1.87E-07

Kerma for 5cm of Contamination Depth

Table I-11: Kerma Composite 2 5 cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.50E-08	1.41E-08	3.02E-08	3.74E-08
0.013	3.21E-08	3.85E-08	4.28E-08	6.74E-08
0.016	5.97E-08	5.68E-08	6.90E-08	1.07E-07
0.02	8.72E-08	8.49E-08	9.11E-08	1.09E-07
0.025	1.24E-07	1.01E-07	9.75E-08	1.33E-07
0.032	1.91E-07	1.29E-07	1.21E-07	1.41E-07
0.04	2.34E-07	1.93E-07	1.53E-07	1.83E-07
0.05	2.64E-07	2.37E-07	1.94E-07	2.24E-07
0.063	3.52E-07	3.82E-07	3.28E-07	3.73E-07
0.079	5.81E-07	6.31E-07	5.39E-07	5.82E-07
0.1	8.35E-07	9.07E-07	8.72E-07	8.98E-07
0.126	1.21E-06	1.28E-06	1.18E-06	1.26E-06
0.158	1.68E-06	1.60E-06	1.66E-06	1.57E-06
0.2	2.26E-06	2.08E-06	2.13E-06	2.74E-06
0.251	2.98E-06	2.76E-06	2.71E-06	2.78E-06
0.316	3.99E-06	3.55E-06	3.46E-06	3.60E-06
0.398	4.90E-06	4.39E-06	4.43E-06	4.36E-06
0.501	6.09E-06	5.43E-06	5.48E-06	5.54E-06
0.631	7.44E-06	6.77E-06	6.73E-06	6.66E-06
0.794	9.05E-06	8.14E-06	8.44E-06	7.77E-06
1	1.11E-05	9.58E-06	9.81E-06	9.34E-06
1.259	1.31E-05	1.14E-05	1.18E-05	1.13E-05
1.585	1.61E-05	1.34E-05	1.44E-05	1.43E-05
1.995	1.95E-05	1.58E-05	1.74E-05	1.69E-05
2.512	2.24E-05	1.83E-05	2.02E-05	1.98E-05
3.162	2.60E-05	2.15E-05	2.39E-05	2.27E-05
3.981	3.07E-05	2.52E-05	2.81E-05	2.69E-05
5.012	3.52E-05	2.94E-05	3.46E-05	3.19E-05
6.31	4.19E-05	3.50E-05	4.13E-05	3.82E-05
7.943	5.07E-05	4.16E-05	5.03E-05	4.62E-05
10	6.04E-05	5.02E-05	5.95E-05	5.57E-05

Table I-12: Kerma Composite 2 5 cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.26E-09	7.87E-10	1.54E-09	2.16E-09
0.013	2.77E-09	1.92E-09	2.30E-09	2.64E-09
0.016	4.44E-09	2.83E-09	3.39E-09	2.38E-09
0.02	6.53E-09	4.62E-09	6.17E-09	4.90E-09
0.025	7.85E-09	7.16E-09	8.05E-09	6.82E-09
0.032	1.10E-08	7.92E-09	1.74E-08	9.09E-09
0.04	1.53E-08	1.23E-08	1.56E-08	1.20E-08
0.05	2.01E-08	1.65E-08	2.11E-08	1.87E-08
0.063	2.97E-08	3.28E-08	3.30E-08	2.74E-08
0.079	4.14E-08	4.06E-08	6.29E-08	5.07E-08
0.1	7.08E-08	5.51E-08	5.26E-08	8.37E-08
0.126	1.06E-07	8.54E-08	8.01E-08	1.21E-07
0.158	1.50E-07	1.22E-07	1.10E-07	1.56E-07
0.2	2.10E-07	1.76E-07	1.66E-07	2.32E-07
0.251	2.63E-07	2.31E-07	2.24E-07	2.93E-07
0.316	3.51E-07	2.96E-07	3.05E-07	4.10E-07
0.398	4.21E-07	3.74E-07	3.88E-07	5.43E-07
0.501	5.26E-07	4.83E-07	5.62E-07	7.58E-07
0.631	6.58E-07	6.26E-07	7.29E-07	1.09E-06
0.794	7.92E-07	7.72E-07	8.37E-07	1.44E-06
1	1.00E-06	9.67E-07	9.18E-07	1.67E-06
1.259	1.22E-06	1.13E-06	1.15E-06	2.13E-06
1.585	1.51E-06	1.36E-06	1.32E-06	2.70E-06
1.995	1.76E-06	1.66E-06	1.64E-06	3.35E-06
2.512	2.20E-06	1.97E-06	1.95E-06	3.90E-06
3.162	2.50E-06	2.30E-06	2.39E-06	5.04E-06
3.981	2.95E-06	2.66E-06	2.71E-06	5.91E-06
5.012	3.54E-06	3.13E-06	3.28E-06	7.15E-06
6.31	4.17E-06	3.70E-06	4.02E-06	8.33E-06
7.943	5.02E-06	4.47E-06	4.85E-06	1.04E-05
10	6.10E-06	5.43E-06	5.76E-06	1.20E-05

Table I-13: Kerma Composite 2 5 cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.96E-10	2.51E-10	3.36E-10	3.63E-10
0.013	6.46E-10	5.91E-10	7.40E-10	7.49E-10
0.016	1.05E-09	1.01E-09	1.12E-09	9.34E-10
0.02	1.58E-09	1.09E-09	1.07E-09	2.43E-09
0.025	2.17E-09	1.60E-09	1.50E-09	2.55E-09
0.032	2.97E-09	2.68E-09	2.32E-09	4.30E-09
0.04	4.05E-09	3.44E-09	3.45E-09	4.63E-09
0.05	5.72E-09	4.43E-09	6.54E-09	6.09E-09
0.063	8.38E-09	7.81E-09	1.28E-08	9.62E-09
0.079	1.30E-08	1.28E-08	1.64E-08	1.30E-08
0.1	2.02E-08	1.38E-08	4.25E-08	3.86E-08
0.126	3.02E-08	2.17E-08	3.91E-08	3.05E-08
0.158	4.29E-08	3.08E-08	4.90E-08	4.11E-08
0.2	5.99E-08	4.47E-08	9.81E-08	5.86E-08
0.251	7.94E-08	5.56E-08	8.64E-08	8.40E-08
0.316	9.99E-08	1.05E-07	1.26E-07	1.40E-07
0.398	1.31E-07	9.04E-08	1.66E-07	1.82E-07
0.501	1.61E-07	1.34E-07	1.84E-07	1.87E-07
0.631	2.07E-07	1.70E-07	2.29E-07	2.42E-07
0.794	2.39E-07	1.90E-07	2.87E-07	4.11E-07
1	3.13E-07	2.42E-07	3.34E-07	4.21E-07
1.259	3.83E-07	2.83E-07	4.20E-07	5.37E-07
1.585	4.56E-07	3.74E-07	4.48E-07	5.57E-07
1.995	5.33E-07	4.44E-07	6.13E-07	6.57E-07
2.512	6.53E-07	5.40E-07	7.10E-07	7.59E-07
3.162	7.54E-07	6.51E-07	8.08E-07	9.75E-07
3.981	9.01E-07	7.80E-07	9.32E-07	1.16E-06
5.012	1.08E-06	9.22E-07	1.15E-06	1.36E-06
6.31	1.27E-06	1.11E-06	1.43E-06	1.61E-06
7.943	1.53E-06	1.39E-06	1.67E-06	1.89E-06
10	1.86E-06	1.63E-06	2.11E-06	2.23E-06

Table I-14: Kerma Composite 2 5 cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	4.18E-11	4.24E-11	9.43E-11	1.56E-10
0.013	1.04E-10	1.04E-10	2.16E-10	1.74E-10
0.016	1.89E-10	1.95E-10	2.00E-10	3.00E-10
0.02	3.19E-10	2.97E-10	3.54E-10	4.27E-10
0.025	4.77E-10	4.13E-10	8.43E-10	7.25E-10
0.032	7.42E-10	4.66E-10	7.79E-10	7.94E-10
0.04	9.79E-10	7.43E-10	1.08E-09	9.16E-10
0.05	1.40E-09	1.04E-09	2.14E-09	1.53E-09
0.063	2.19E-09	2.08E-09	2.68E-09	1.79E-09
0.079	3.29E-09	3.20E-09	4.10E-09	1.75E-09
0.1	4.71E-09	2.76E-09	1.25E-08	6.89E-09
0.126	7.07E-09	4.11E-09	2.27E-08	1.14E-08
0.158	1.00E-08	6.69E-09	3.48E-08	1.12E-08
0.2	1.52E-08	9.14E-09	3.70E-08	2.20E-08
0.251	1.92E-08	1.66E-08	3.49E-08	1.96E-08
0.316	2.40E-08	1.65E-08	6.27E-08	3.79E-08
0.398	3.18E-08	1.91E-08	1.06E-07	7.85E-08
0.501	3.87E-08	2.65E-08	9.06E-08	6.65E-08
0.631	4.84E-08	3.73E-08	1.31E-07	6.77E-08
0.794	5.89E-08	4.17E-08	2.00E-07	1.66E-07
1	7.76E-08	5.21E-08	2.41E-07	2.00E-07
1.259	9.47E-08	6.04E-08	2.93E-07	2.27E-07
1.585	1.13E-07	8.09E-08	2.61E-07	1.68E-07
1.995	1.32E-07	9.59E-08	5.36E-07	2.34E-07
2.512	1.62E-07	1.17E-07	5.96E-07	2.62E-07
3.162	1.88E-07	1.43E-07	5.79E-07	3.67E-07
3.981	2.26E-07	1.69E-07	6.82E-07	3.72E-07
5.012	2.68E-07	2.01E-07	8.22E-07	4.50E-07
6.31	3.18E-07	2.46E-07	1.01E-06	4.90E-07
7.943	3.84E-07	2.98E-07	1.30E-06	5.57E-07
10	4.62E-07	3.56E-07	1.86E-06	6.66E-07

Table I-15: Kerma Composite 2 5 cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	5.30E-12	8.74E-12	3.06E-11	5.51E-11
0.013	1.49E-11	2.22E-11	4.95E-11	5.64E-11
0.016	3.09E-11	3.81E-11	5.48E-11	5.65E-11
0.02	5.86E-11	5.74E-11	1.03E-10	1.08E-10
0.025	1.00E-10	9.18E-11	1.05E-10	2.00E-10
0.032	1.59E-10	1.54E-10	1.40E-10	1.52E-10
0.04	2.33E-10	2.39E-10	2.58E-10	3.06E-10
0.05	3.32E-10	1.97E-10	3.37E-10	2.17E-10
0.063	5.22E-10	4.19E-10	5.16E-10	3.79E-10
0.079	8.11E-10	6.86E-10	7.96E-10	4.75E-10
0.1	1.23E-09	1.10E-09	1.20E-09	2.29E-09
0.126	1.79E-09	1.69E-09	1.79E-09	1.75E-09
0.158	2.50E-09	1.33E-09	3.68E-09	1.41E-09
0.2	3.53E-09	1.82E-09	6.19E-09	2.84E-09
0.251	4.47E-09	3.63E-09	4.75E-09	4.96E-09
0.316	5.88E-09	3.15E-09	1.16E-08	5.42E-09
0.398	7.64E-09	3.54E-09	1.14E-08	1.30E-08
0.501	9.60E-09	5.11E-09	2.22E-08	8.46E-09
0.631	1.24E-08	1.21E-08	1.26E-08	1.04E-08
0.794	1.44E-08	8.25E-09	2.52E-08	3.23E-08
1	1.88E-08	1.05E-08	3.17E-08	4.50E-08
1.259	2.33E-08	1.35E-08	4.07E-08	2.69E-08
1.585	2.79E-08	2.70E-08	4.03E-08	2.82E-08
1.995	3.20E-08	1.99E-08	6.32E-08	4.90E-08
2.512	3.98E-08	2.49E-08	7.43E-08	5.91E-08
3.162	4.62E-08	2.97E-08	8.79E-08	7.24E-08
3.981	5.52E-08	3.53E-08	1.06E-07	8.73E-08
5.012	6.53E-08	4.15E-08	1.27E-07	1.06E-07
6.31	7.78E-08	5.03E-08	1.56E-07	1.22E-07
7.943	9.43E-08	6.29E-08	1.95E-07	1.43E-07
10	1.14E-07	7.49E-08	2.99E-07	1.55E-07

Kerma for 15cm of Contamination Depth

Table I-16: Kerma Composite 2 15 cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	5.71E-09	5.10E-09	7.00E-09	9.16E-09
0.013	1.35E-08	1.07E-08	1.58E-08	1.62E-08
0.016	1.55E-08	1.65E-08	2.39E-08	2.90E-08
0.02	2.24E-08	2.48E-08	2.43E-08	4.24E-08
0.025	2.96E-08	3.25E-08	3.33E-08	4.72E-08
0.032	3.97E-08	4.30E-08	4.37E-08	6.54E-08
0.04	6.06E-08	5.40E-08	5.78E-08	5.74E-08
0.05	7.70E-08	7.34E-08	6.52E-08	7.92E-08
0.063	1.41E-07	1.21E-07	9.85E-08	1.25E-07
0.079	2.12E-07	1.99E-07	1.54E-07	2.33E-07
0.1	3.06E-07	3.16E-07	2.81E-07	3.34E-07
0.126	4.73E-07	4.99E-07	4.40E-07	4.66E-07
0.158	6.49E-07	6.74E-07	6.91E-07	6.58E-07
0.2	1.00E-06	9.30E-07	8.15E-07	9.36E-07
0.251	1.29E-06	1.24E-06	1.15E-06	1.14E-06
0.316	1.81E-06	1.74E-06	1.65E-06	1.52E-06
0.398	2.39E-06	2.23E-06	2.33E-06	1.83E-06
0.501	3.10E-06	2.87E-06	3.11E-06	2.47E-06
0.631	3.91E-06	3.66E-06	4.15E-06	3.08E-06
0.794	4.88E-06	4.56E-06	4.41E-06	3.93E-06
1	6.11E-06	5.68E-06	5.24E-06	5.08E-06
1.259	7.37E-06	7.09E-06	6.70E-06	6.08E-06
1.585	9.50E-06	8.89E-06	8.38E-06	8.32E-06
1.995	1.18E-05	1.07E-05	1.05E-05	1.01E-05
2.512	1.47E-05	1.24E-05	1.26E-05	1.19E-05
3.162	1.70E-05	1.49E-05	1.53E-05	1.40E-05
3.981	2.05E-05	1.76E-05	1.90E-05	1.67E-05
5.012	2.43E-05	2.12E-05	2.40E-05	2.01E-05
6.31	2.91E-05	2.54E-05	2.94E-05	2.43E-05
7.943	3.58E-05	3.09E-05	3.61E-05	2.95E-05
10	4.26E-05	3.81E-05	4.49E-05	3.64E-05

Table I-17: Kerma Composite 2 15 cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.82E-10	2.64E-10	4.11E-10	7.10E-10
0.013	8.41E-10	6.46E-10	9.18E-10	1.25E-09
0.016	1.39E-09	1.20E-09	1.25E-09	1.54E-09
0.02	2.42E-09	1.61E-09	1.86E-09	1.18E-09
0.025	2.64E-09	2.40E-09	2.34E-09	1.73E-09
0.032	4.45E-09	2.45E-09	4.15E-09	3.41E-09
0.04	5.39E-09	4.24E-09	5.80E-09	4.39E-09
0.05	7.95E-09	5.35E-09	8.51E-09	4.45E-09
0.063	1.07E-08	8.66E-09	1.33E-08	7.98E-09
0.079	1.45E-08	1.21E-08	1.56E-08	1.19E-08
0.1	2.63E-08	2.19E-08	2.53E-08	2.67E-08
0.126	4.01E-08	3.14E-08	3.00E-08	3.59E-08
0.158	6.10E-08	4.92E-08	4.72E-08	1.26E-07
0.2	8.88E-08	7.18E-08	6.89E-08	9.48E-08
0.251	1.20E-07	1.02E-07	9.36E-08	1.18E-07
0.316	1.62E-07	1.41E-07	1.48E-07	1.31E-07
0.398	2.00E-07	1.83E-07	1.79E-07	1.85E-07
0.501	2.59E-07	2.38E-07	2.36E-07	2.46E-07
0.631	3.80E-07	2.86E-07	3.20E-07	4.47E-07
0.794	4.65E-07	3.45E-07	3.89E-07	6.22E-07
1	5.82E-07	4.30E-07	4.80E-07	8.11E-07
1.259	7.10E-07	5.43E-07	5.86E-07	1.05E-06
1.585	8.76E-07	7.23E-07	7.55E-07	1.31E-06
1.995	1.08E-06	9.09E-07	1.03E-06	1.72E-06
2.512	1.31E-06	1.10E-06	1.54E-06	2.10E-06
3.162	1.61E-06	1.33E-06	1.49E-06	2.68E-06
3.981	1.94E-06	1.64E-06	1.85E-06	3.33E-06
5.012	2.26E-06	2.01E-06	2.32E-06	4.20E-06
6.31	2.69E-06	2.43E-06	2.88E-06	5.12E-06
7.943	3.31E-06	2.96E-06	3.49E-06	6.19E-06
10	3.95E-06	3.60E-06	4.29E-06	7.35E-06

Table I-18: Kerma Composite 2 15 cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	9.88E-11	7.54E-11	1.32E-10	1.60E-10
0.013	2.06E-10	2.03E-10	2.07E-10	1.49E-10
0.016	3.29E-10	3.08E-10	3.35E-10	1.78E-10
0.02	5.25E-10	4.86E-10	4.94E-10	3.48E-10
0.025	7.56E-10	6.18E-10	7.21E-10	7.12E-10
0.032	1.05E-09	7.40E-10	5.75E-10	1.16E-09
0.04	1.39E-09	1.06E-09	9.09E-10	1.34E-09
0.05	2.03E-09	1.60E-09	1.13E-09	2.27E-09
0.063	3.06E-09	2.32E-09	1.98E-09	6.21E-09
0.079	4.60E-09	3.74E-09	3.57E-09	5.53E-09
0.1	7.65E-09	6.64E-09	5.93E-09	7.85E-09
0.126	1.18E-08	1.11E-08	1.11E-08	1.67E-08
0.158	1.71E-08	1.52E-08	2.63E-08	1.51E-08
0.2	2.50E-08	2.21E-08	3.03E-08	3.28E-08
0.251	3.46E-08	3.41E-08	3.45E-08	3.85E-08
0.316	4.69E-08	4.82E-08	5.25E-08	5.54E-08
0.398	6.15E-08	6.24E-08	8.76E-08	7.84E-08
0.501	7.57E-08	7.61E-08	1.07E-07	8.26E-08
0.631	9.75E-08	1.00E-07	1.55E-07	1.16E-07
0.794	1.25E-07	1.23E-07	1.90E-07	1.42E-07
1	1.62E-07	1.23E-07	3.18E-07	2.02E-07
1.259	2.00E-07	1.70E-07	2.99E-07	2.30E-07
1.585	2.52E-07	2.18E-07	3.70E-07	2.87E-07
1.995	3.09E-07	2.20E-07	3.40E-07	3.82E-07
2.512	3.85E-07	2.58E-07	4.51E-07	4.69E-07
3.162	4.60E-07	3.12E-07	4.62E-07	7.22E-07
3.981	5.78E-07	4.11E-07	5.80E-07	9.66E-07
5.012	6.80E-07	4.92E-07	7.14E-07	1.00E-06
6.31	7.95E-07	6.14E-07	8.76E-07	1.19E-06
7.943	1.00E-06	7.80E-07	1.05E-06	1.45E-06
10	1.21E-06	1.12E-06	1.86E-06	1.58E-06

Table I-19: Kerma Composite 2 15 cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.36E-11	1.30E-11	3.09E-11	5.00E-11
0.013	3.47E-11	3.79E-11	5.22E-11	6.89E-11
0.016	6.22E-11	7.24E-11	9.32E-11	8.93E-11
0.02	1.05E-10	1.14E-10	9.80E-11	1.25E-10
0.025	1.60E-10	1.51E-10	1.66E-10	2.35E-10
0.032	2.40E-10	2.05E-10	3.28E-10	3.33E-10
0.04	3.48E-10	2.00E-10	2.90E-10	2.69E-10
0.05	4.92E-10	3.87E-10	4.20E-10	2.85E-10
0.063	7.55E-10	7.01E-10	9.38E-10	4.55E-10
0.079	1.27E-09	8.66E-10	1.47E-09	8.38E-10
0.1	1.98E-09	1.48E-09	2.10E-09	1.00E-09
0.126	2.86E-09	2.36E-09	6.67E-09	1.57E-09
0.158	4.39E-09	4.02E-09	8.21E-09	1.78E-09
0.2	6.35E-09	5.61E-09	1.01E-08	2.76E-09
0.251	8.40E-09	7.64E-09	1.21E-08	4.84E-09
0.316	1.15E-08	1.06E-08	1.47E-08	6.24E-09
0.398	1.49E-08	1.36E-08	2.49E-08	7.61E-09
0.501	1.94E-08	1.77E-08	2.77E-08	1.14E-08
0.631	2.52E-08	2.47E-08	4.49E-08	2.20E-08
0.794	3.15E-08	2.55E-08	7.02E-08	3.68E-08
1	4.07E-08	3.96E-08	5.48E-08	2.94E-08
1.259	4.93E-08	4.01E-08	1.03E-07	5.82E-08
1.585	6.19E-08	5.28E-08	1.25E-07	5.85E-08
1.995	7.62E-08	6.68E-08	1.81E-07	6.81E-08
2.512	9.34E-08	8.12E-08	2.08E-07	8.01E-08
3.162	1.10E-07	1.00E-07	2.20E-07	1.01E-07
3.981	1.41E-07	8.89E-08	3.78E-07	1.98E-07
5.012	1.69E-07	1.07E-07	4.01E-07	2.80E-07
6.31	2.02E-07	1.38E-07	5.41E-07	3.27E-07
7.943	2.41E-07	1.79E-07	7.48E-07	2.77E-07
10	2.98E-07	2.27E-07	9.07E-07	3.46E-07

Kerma for Infinite Contamination Depth

Table I-20: Kerma Composite 2 Infinite Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	7.31E-09	5.38E-09	5.95E-09	7.72E-09
0.013	1.30E-08	1.20E-08	1.20E-08	1.28E-08
0.016	1.83E-08	1.77E-08	1.69E-08	1.80E-08
0.02	2.42E-08	2.45E-08	2.32E-08	2.37E-08
0.025	3.13E-08	3.23E-08	3.01E-08	3.04E-08
0.032	4.25E-08	4.32E-08	4.06E-08	4.16E-08
0.04	5.52E-08	5.74E-08	5.35E-08	5.45E-08
0.05	7.41E-09	7.71E-09	7.72E-09	7.34E-09
0.063	1.19E-08	1.19E-08	1.19E-08	1.22E-08
0.079	1.90E-08	1.93E-08	1.88E-08	1.95E-08
0.1	3.03E-08	3.21E-08	3.18E-08	2.89E-08
0.126	4.71E-08	4.81E-08	4.72E-08	4.62E-08
0.158	6.68E-08	6.64E-08	6.62E-08	6.72E-08
0.2	9.57E-08	9.39E-08	9.59E-08	9.22E-08
0.251	1.32E-07	1.29E-07	1.28E-07	1.29E-07
0.316	1.77E-07	1.76E-07	1.66E-07	1.75E-07
0.398	2.30E-07	2.28E-07	2.27E-07	2.29E-07
0.501	3.00E-07	2.94E-07	3.21E-07	3.59E-07
0.631	4.11E-07	3.98E-07	4.27E-07	4.60E-07
0.794	5.11E-07	5.22E-07	5.94E-07	6.12E-07
1	6.33E-07	6.51E-07	6.35E-07	6.53E-07
1.259	8.86E-07	8.37E-07	9.18E-07	1.05E-06
1.585	1.11E-06	1.07E-06	1.02E-06	1.07E-06
1.995	1.39E-06	1.39E-06	1.46E-06	1.54E-06
2.512	1.66E-06	1.68E-06	1.73E-06	1.90E-06
3.162	2.13E-06	2.12E-06	2.05E-06	2.21E-06
3.981	2.63E-06	2.77E-06	2.94E-06	3.43E-06
5.012	3.34E-06	3.38E-06	3.20E-06	3.42E-06
6.31	4.15E-06	4.17E-06	4.03E-06	4.59E-06
7.943	5.33E-06	5.17E-06	5.35E-06	6.31E-06
10	6.34E-06	6.34E-06	6.03E-06	6.87E-06

Table I-21: Kerma Composite 2 Infinite Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.59E-10	2.97E-10	3.92E-10	5.94E-10
0.013	8.03E-10	6.99E-10	7.72E-10	1.00E-09
0.016	1.29E-09	1.16E-09	1.22E-09	1.44E-09
0.02	1.87E-09	1.77E-09	1.90E-09	1.95E-09
0.025	2.55E-09	2.47E-09	2.57E-09	2.66E-09
0.032	3.42E-09	3.35E-09	3.45E-09	3.36E-09
0.04	4.64E-09	4.58E-09	4.63E-09	4.84E-09
0.05	8.59E-10	8.64E-10	8.42E-10	8.75E-10
0.063	1.39E-09	1.35E-09	1.35E-09	1.42E-09
0.079	2.13E-09	2.08E-09	2.26E-09	2.66E-09
0.1	3.51E-09	3.46E-09	3.53E-09	3.53E-09
0.126	5.60E-09	5.26E-09	5.31E-09	5.76E-09
0.158	7.83E-09	7.75E-09	8.18E-09	8.56E-09
0.2	1.14E-08	1.10E-08	1.18E-08	1.20E-08
0.251	1.61E-08	1.55E-08	1.58E-08	1.54E-08
0.316	2.18E-08	2.06E-08	2.56E-08	2.01E-08
0.398	2.83E-08	2.76E-08	2.63E-08	2.75E-08
0.501	3.87E-08	3.51E-08	3.30E-08	3.18E-08
0.631	4.99E-08	4.58E-08	5.00E-08	4.19E-08
0.794	6.34E-08	6.00E-08	6.07E-08	5.49E-08
1	7.98E-08	7.37E-08	7.81E-08	5.91E-08
1.259	1.06E-07	9.29E-08	1.01E-07	9.38E-08
1.585	1.36E-07	1.20E-07	1.32E-07	1.14E-07
1.995	1.73E-07	1.50E-07	1.75E-07	1.35E-07
2.512	2.14E-07	2.00E-07	2.05E-07	1.90E-07
3.162	2.72E-07	2.50E-07	2.61E-07	2.56E-07
3.981	3.43E-07	2.98E-07	3.49E-07	2.79E-07
5.012	4.19E-07	3.86E-07	4.35E-07	3.39E-07
6.31	5.25E-07	4.78E-07	5.20E-07	4.36E-07
7.943	6.53E-07	6.04E-07	6.49E-07	5.66E-07
10	8.19E-07	7.24E-07	9.50E-07	7.31E-07

Table I-22: Kerma Composite 2 Infinite Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	9.93E-11	7.44E-11	9.79E-11	1.36E-10
0.013	2.03E-10	2.15E-10	1.90E-10	1.44E-10
0.016	3.42E-10	3.10E-10	3.70E-10	3.82E-10
0.02	5.10E-10	5.22E-10	4.46E-10	4.30E-10
0.025	7.03E-10	7.01E-10	6.56E-10	6.49E-10
0.032	9.76E-10	9.68E-10	1.11E-09	9.90E-10
0.04	1.33E-09	1.31E-09	1.32E-09	1.37E-09
0.05	2.52E-10	2.48E-10	2.36E-10	2.21E-10
0.063	4.13E-10	4.01E-10	3.63E-10	3.86E-10
0.079	6.96E-10	5.97E-10	6.96E-10	5.61E-10
0.1	1.09E-09	9.67E-10	8.83E-10	1.05E-09
0.126	1.68E-09	1.61E-09	1.87E-09	1.74E-09
0.158	2.56E-09	2.39E-09	2.55E-09	2.37E-09
0.2	3.59E-09	3.46E-09	3.70E-09	3.78E-09
0.251	4.91E-09	4.82E-09	4.68E-09	5.53E-09
0.316	6.82E-09	5.83E-09	5.26E-09	6.42E-09
0.398	8.84E-09	8.40E-09	8.68E-09	8.92E-09
0.501	1.12E-08	9.88E-09	8.77E-09	7.70E-09
0.631	1.57E-08	1.20E-08	1.08E-08	1.04E-08
0.794	2.07E-08	1.59E-08	1.72E-08	1.34E-08
1	2.59E-08	2.27E-08	2.11E-08	2.33E-08
1.259	3.37E-08	2.72E-08	2.92E-08	2.28E-08
1.585	4.31E-08	3.69E-08	3.28E-08	3.78E-08
1.995	5.18E-08	4.37E-08	5.17E-08	4.65E-08
2.512	6.71E-08	6.30E-08	5.23E-08	6.79E-08
3.162	8.84E-08	8.09E-08	6.03E-08	8.79E-08
3.981	1.07E-07	9.15E-08	7.51E-08	9.34E-08
5.012	1.30E-07	1.18E-07	1.25E-07	1.49E-07
6.31	1.66E-07	1.38E-07	1.27E-07	1.75E-07
7.943	2.03E-07	1.88E-07	1.81E-07	2.22E-07
10	2.55E-07	2.29E-07	2.18E-07	2.43E-07

Table I-23: Kerma Composite 2 Infinite Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.38E-11	2.05E-11	1.46E-11	1.42E-10
0.013	3.47E-11	3.80E-11	4.91E-11	6.80E-11
0.016	6.30E-11	6.61E-11	8.17E-11	1.04E-10
0.02	1.05E-10	1.23E-10	9.50E-11	1.11E-10
0.025	1.62E-10	1.66E-10	1.81E-10	1.68E-10
0.032	2.33E-10	2.36E-10	2.54E-10	2.31E-10
0.04	3.25E-10	3.17E-10	3.45E-10	3.44E-10
0.05	6.65E-11	6.12E-11	6.15E-11	5.40E-11
0.063	1.10E-10	9.40E-11	1.15E-10	1.01E-10
0.079	1.73E-10	1.67E-10	2.16E-10	1.34E-10
0.1	2.90E-10	2.65E-10	1.66E-10	4.86E-10
0.126	4.35E-10	4.02E-10	3.97E-10	6.26E-10
0.158	6.35E-10	6.52E-10	6.43E-10	5.62E-10
0.2	9.18E-10	8.85E-10	1.04E-09	9.14E-10
0.251	1.27E-09	1.20E-09	1.24E-09	1.12E-09
0.316	1.75E-09	1.48E-09	1.03E-09	1.55E-09
0.398	2.33E-09	2.10E-09	2.28E-09	2.68E-09
0.501	3.16E-09	2.77E-09	3.10E-09	3.44E-09
0.631	4.10E-09	3.52E-09	2.59E-09	4.55E-09
0.794	5.22E-09	4.18E-09	3.43E-09	6.38E-09
1	6.49E-09	4.38E-09	6.15E-09	5.52E-09
1.259	8.67E-09	5.52E-09	8.57E-09	6.29E-09
1.585	1.13E-08	9.87E-09	1.47E-08	1.05E-08
1.995	1.39E-08	1.18E-08	1.29E-08	1.33E-08
2.512	1.75E-08	1.41E-08	1.51E-08	1.72E-08
3.162	2.22E-08	1.78E-08	3.47E-08	2.86E-08
3.981	2.76E-08	2.41E-08	3.91E-08	2.83E-08
5.012	3.43E-08	2.51E-08	3.92E-08	2.78E-08
6.31	4.34E-08	3.92E-08	4.60E-08	3.03E-08
7.943	5.28E-08	4.82E-08	5.23E-08	3.15E-08
10	6.67E-08	5.54E-08	9.93E-08	7.58E-08

Table I-24: Kerma Composite 2 Infinite Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	9.93E-11	7.44E-11	9.79E-11	1.36E-10
0.013	2.03E-10	2.15E-10	1.90E-10	1.44E-10
0.016	3.42E-10	3.10E-10	3.70E-10	3.82E-10
0.02	5.10E-10	5.22E-10	4.46E-10	4.30E-10
0.025	7.03E-10	7.01E-10	6.56E-10	6.49E-10
0.032	9.76E-10	9.68E-10	1.11E-09	9.90E-10
0.04	1.33E-09	1.31E-09	1.32E-09	1.37E-09
0.05	2.52E-10	2.48E-10	2.36E-10	2.21E-10
0.063	4.13E-10	4.01E-10	3.63E-10	3.86E-10
0.079	6.96E-10	5.97E-10	6.96E-10	5.61E-10
0.1	1.09E-09	9.67E-10	8.83E-10	1.05E-09
0.126	1.68E-09	1.61E-09	1.87E-09	1.74E-09
0.158	2.56E-09	2.39E-09	2.55E-09	2.37E-09
0.2	3.59E-09	3.46E-09	3.70E-09	3.78E-09
0.251	4.91E-09	4.82E-09	4.68E-09	5.53E-09
0.316	6.82E-09	5.83E-09	5.26E-09	6.42E-09
0.398	8.84E-09	8.40E-09	8.68E-09	8.92E-09
0.501	1.12E-08	9.88E-09	8.77E-09	7.70E-09
0.631	1.57E-08	1.20E-08	1.08E-08	1.04E-08
0.794	2.07E-08	1.59E-08	1.72E-08	1.34E-08
1	2.59E-08	2.27E-08	2.11E-08	2.33E-08
1.259	3.37E-08	2.72E-08	2.92E-08	2.28E-08
1.585	4.31E-08	3.69E-08	3.28E-08	3.78E-08
1.995	5.18E-08	4.37E-08	5.17E-08	4.65E-08
2.512	6.71E-08	6.30E-08	5.23E-08	6.79E-08
3.162	8.84E-08	8.09E-08	6.03E-08	8.79E-08
3.981	1.07E-07	9.15E-08	7.51E-08	9.34E-08
5.012	1.30E-07	1.18E-07	1.25E-07	1.49E-07
6.31	1.66E-07	1.38E-07	1.27E-07	1.75E-07
7.943	2.03E-07	1.88E-07	1.81E-07	2.22E-07
10	2.55E-07	2.29E-07	2.18E-07	2.43E-07

Surface Contamination Room Ratios

Table I-25: Room Ratio Composite 2 Surface Contamination 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.310	1.684	2.898	3.537
0.013	2.321	1.470	2.110	2.407
0.016	1.806	1.219	1.656	1.846
0.02	1.484	1.035	1.363	1.504
0.025	1.228	0.873	1.130	1.241
0.032	1.104	0.797	1.018	1.116
0.04	1.005	0.740	0.933	1.020
0.05	1.064	0.802	0.993	1.086
0.063	1.057	0.812	0.991	1.082
0.079	1.110	0.863	1.045	1.138
0.1	1.182	0.922	1.112	1.211
0.126	1.226	0.952	1.151	1.252
0.158	1.220	0.942	1.143	1.244
0.2	1.188	0.910	1.110	1.209
0.251	1.059	0.803	0.987	1.076
0.316	1.035	0.777	0.963	1.050
0.398	0.965	0.717	0.895	0.978
0.501	0.926	0.681	0.857	0.937
0.631	0.910	0.663	0.841	0.919
0.794	0.898	0.649	0.827	0.905
1	0.967	0.694	0.890	0.975
1.259	0.920	0.656	0.845	0.927
1.585	0.898	0.637	0.824	0.903
1.995	0.883	0.624	0.808	0.886
2.512	0.870	0.613	0.795	0.873
3.162	0.851	0.599	0.778	0.853
3.981	0.830	0.585	0.758	0.832
5.012	0.831	0.585	0.758	0.832
6.31	0.829	0.584	0.756	0.829
7.943	0.823	0.581	0.750	0.823
10	0.825	0.582	0.752	0.824

Table I-26: Room Ratio Composite 2 Surface Contamination 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	2.140	1.156	2.758	3.503
0.013	1.859	1.358	2.198	2.459
0.016	1.677	1.382	1.879	1.968
0.02	1.541	1.358	1.673	1.683
0.025	1.363	1.234	1.456	1.439
0.032	1.266	1.159	1.341	1.324
0.04	1.163	1.070	1.242	1.218
0.05	1.225	1.129	1.302	1.305
0.063	1.208	1.113	1.292	1.299
0.079	1.263	1.164	1.355	1.372
0.1	1.346	1.240	1.444	1.464
0.126	1.402	1.293	1.500	1.517
0.158	1.403	1.292	1.502	1.516
0.2	1.376	1.266	1.469	1.479
0.251	1.234	1.134	1.316	1.319
0.316	1.215	1.116	1.296	1.293
0.398	1.140	1.046	1.212	1.210
0.501	1.100	1.009	1.168	1.161
0.631	1.087	0.996	1.153	1.145
0.794	1.077	0.986	1.143	1.129
1	1.166	1.067	1.236	1.218
1.259	1.114	1.019	1.179	1.158
1.585	1.091	0.996	1.154	1.131
1.995	1.074	0.980	1.135	1.111
2.512	1.061	0.968	1.119	1.094
3.162	1.039	0.948	1.094	1.069
3.981	1.014	0.926	1.067	1.042
5.012	1.016	0.926	1.068	1.042
6.31	1.013	0.923	1.064	1.038
7.943	1.005	0.915	1.054	1.029
10	1.007	0.916	1.056	1.029

Table I-27: Room Ratio Composite 2 Surface Contamination 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.955	1.142	2.777	3.511
0.013	1.779	1.369	2.196	2.455
0.016	1.678	1.453	1.913	1.969
0.02	1.620	1.512	1.743	1.705
0.025	1.489	1.451	1.551	1.499
0.032	1.419	1.403	1.463	1.374
0.04	1.315	1.305	1.360	1.278
0.05	1.386	1.377	1.445	1.369
0.063	1.362	1.351	1.432	1.365
0.079	1.422	1.407	1.504	1.440
0.1	1.513	1.494	1.606	1.546
0.126	1.579	1.562	1.674	1.613
0.158	1.586	1.569	1.682	1.607
0.2	1.561	1.552	1.647	1.568
0.251	1.407	1.390	1.479	1.408
0.316	1.392	1.378	1.458	1.389
0.398	1.312	1.301	1.373	1.296
0.501	1.272	1.261	1.331	1.249
0.631	1.263	1.255	1.316	1.230
0.794	1.256	1.245	1.301	1.218
1	1.365	1.356	1.410	1.313
1.259	1.308	1.298	1.347	1.251
1.585	1.284	1.275	1.320	1.221
1.995	1.268	1.257	1.303	1.202
2.512	1.254	1.243	1.284	1.182
3.162	1.230	1.219	1.258	1.158
3.981	1.202	1.190	1.227	1.129
5.012	1.204	1.193	1.227	1.128
6.31	1.201	1.189	1.222	1.125
7.943	1.192	1.180	1.212	1.114
10	1.193	1.181	1.213	1.114

Table I-28: Room Ratio Composite 2 Surface Contamination 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.062	0.867	2.650	3.443
0.013	1.105	1.010	2.077	2.445
0.016	1.174	1.137	1.822	1.962
0.02	1.269	1.283	1.688	1.723
0.025	1.273	1.324	1.569	1.527
0.032	1.296	1.380	1.521	1.428
0.04	1.244	1.332	1.443	1.351
0.05	1.335	1.435	1.545	1.445
0.063	1.320	1.429	1.528	1.470
0.079	1.379	1.468	1.607	1.550
0.1	1.466	1.546	1.707	1.650
0.126	1.528	1.607	1.771	1.726
0.158	1.533	1.609	1.782	1.728
0.2	1.509	1.592	1.752	1.679
0.251	1.361	1.439	1.582	1.508
0.316	1.348	1.423	1.566	1.485
0.398	1.272	1.347	1.479	1.394
0.501	1.235	1.315	1.436	1.388
0.631	1.228	1.306	1.421	1.323
0.794	1.224	1.308	1.414	1.317
1	1.333	1.430	1.541	1.433
1.259	1.280	1.373	1.479	1.366
1.585	1.259	1.350	1.455	1.337
1.995	1.245	1.339	1.440	1.317
2.512	1.233	1.326	1.421	1.301
3.162	1.212	1.307	1.394	1.273
3.981	1.186	1.277	1.364	1.241
5.012	1.189	1.282	1.369	1.244
6.31	1.187	1.282	1.365	1.242
7.943	1.179	1.273	1.355	1.233
10	1.182	1.275	1.371	1.233

Table I-29: Room Ratio Composite 2 Surface Contamination 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.546	0.850	2.664	3.385
0.013	0.609	0.905	2.088	2.353
0.016	0.719	0.984	1.842	1.930
0.02	0.883	1.082	1.658	1.690
0.025	0.993	1.176	1.555	1.520
0.032	1.110	1.306	1.540	1.472
0.04	1.128	1.312	1.484	1.405
0.05	1.249	1.441	1.608	1.509
0.063	1.249	1.423	1.618	1.510
0.079	1.308	1.478	1.683	1.628
0.1	1.387	1.568	1.799	1.697
0.126	1.439	1.613	1.896	1.785
0.158	1.442	1.640	1.872	1.782
0.2	1.418	1.611	1.849	1.729
0.251	1.279	1.462	1.661	1.580
0.316	1.268	1.470	1.652	1.565
0.398	1.199	1.378	1.562	1.458
0.501	1.167	1.350	1.527	1.413
0.631	1.164	1.354	1.532	1.404
0.794	1.164	1.369	1.521	1.398
1	1.271	1.493	1.663	1.516
1.259	1.225	1.437	1.591	1.458
1.585	1.210	1.428	1.574	1.431
1.995	1.201	1.424	1.558	1.417
2.512	1.194	1.411	1.545	1.400
3.162	1.176	1.396	1.524	1.372
3.981	1.155	1.372	1.493	1.344
5.012	1.160	1.380	1.502	1.347
6.31	1.161	1.381	1.496	1.347
7.943	1.154	1.376	1.491	1.337
10	1.158	1.380	1.496	1.343

1 cm Contamination Depth Room Ratios

Table I-30: Room Ratio Composite 2 1cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.98407	1.424147	1.883701	2.290826
0.013	1.310664	1.16662	1.318737	1.455963
0.016	1.228721	1.180846	1.255858	1.310545
0.02	1.067377	1.051972	1.106323	1.145688
0.025	0.851448	0.852113	0.887181	0.896497
0.032	0.956584	0.941904	0.993512	0.994692
0.04	1.011464	0.969464	1.053779	1.062962
0.05	1.182541	1.097094	1.212564	1.234994
0.063	1.232458	1.121237	1.254823	1.307393
0.079	1.389009	1.245437	1.420217	1.451677
0.1	1.504686	1.332021	1.515037	1.569085
0.126	1.581622	1.389026	1.591262	1.649722
0.158	1.592672	1.374694	1.602849	1.658141
0.2	1.607484	1.379878	1.597231	1.676003
0.251	1.391693	1.184686	1.383857	1.450509
0.316	1.38538	1.163184	1.37236	1.436134
0.398	1.23279	1.025517	1.227234	1.303794
0.501	1.200583	0.991345	1.192912	1.255104
0.631	1.229836	1.009418	1.198631	1.288606
0.794	1.218954	0.98142	1.19585	1.278472
1	1.243102	0.995482	1.209022	1.327792
1.259	1.212326	0.930193	1.160972	1.238917
1.585	1.148105	0.880262	1.092796	1.182428
1.995	1.102181	0.844822	1.064694	1.14178
2.512	1.053791	0.811036	1.015191	1.095143
3.162	1.030261	0.780391	0.998387	1.086839
3.981	0.996154	0.748866	0.958713	1.027002
5.012	0.984943	0.741914	0.949266	1.030213
6.31	0.972343	0.730205	0.932303	1.02868
7.943	0.95251	0.71826	0.91107	0.994925
10	0.948191	0.710791	0.898348	0.987114

Table I-31: Room Ratio Composite 2 1cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.074232	0.680179	1.556352	2.00917
0.013	0.846811	0.666608	1.026037	1.282739
0.016	0.891453	0.751606	1.041086	1.137999
0.02	0.845777	0.783301	0.912238	1.058791
0.025	0.717112	0.678544	0.768869	0.797711
0.032	0.848225	0.822394	0.901543	0.956832
0.04	0.931959	0.907084	0.989904	0.987609
0.05	1.139586	1.131877	1.226602	1.229649
0.063	1.231427	1.212311	1.325086	1.318605
0.079	1.416854	1.387857	1.495872	1.528975
0.1	1.563077	1.553534	1.63085	1.652655
0.126	1.66962	1.648026	1.770664	1.813157
0.158	1.697386	1.64974	1.790364	1.842314
0.2	1.731768	1.704277	1.850801	1.821312
0.251	1.521447	1.514905	1.618234	1.603004
0.316	1.530253	1.493752	1.703848	1.731235
0.398	1.37591	1.352611	1.449535	1.499012
0.501	1.351182	1.327735	1.467803	1.45311
0.631	1.393903	1.359251	1.497079	1.478236
0.794	1.386452	1.351347	1.505829	1.467632
1	1.432373	1.397103	1.566458	1.512204
1.259	1.398633	1.344999	1.473792	1.448995
1.585	1.366125	1.282924	1.499452	1.439658
1.995	1.2842	1.245261	1.413403	1.367851
2.512	1.246256	1.17936	1.432436	1.346098
3.162	1.218578	1.17632	1.366616	1.315938
3.981	1.176594	1.124508	1.284962	1.237022
5.012	1.166501	1.119685	1.32586	1.250934
6.31	1.156389	1.112098	1.297111	1.226801
7.943	1.146177	1.09147	1.284723	1.208517
10	1.130717	1.07798	1.251789	1.199343

Table I-32: Room Ratio Composite 2 1cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.944132	0.681418	1.420405	1.874513
0.013	0.761304	0.636897	1.018508	1.216496
0.016	0.811922	0.721334	0.995562	1.142583
0.02	0.785332	0.715901	0.915049	1.022081
0.025	0.678923	0.65306	0.760276	0.829265
0.032	0.819042	0.794014	0.88741	0.956179
0.04	0.92595	0.916374	1.005741	1.047864
0.05	1.14697	1.143853	1.230131	1.254031
0.063	1.256406	1.270071	1.350619	1.358386
0.079	1.461531	1.480642	1.565104	1.559253
0.1	1.62499	1.654336	1.73144	1.709394
0.126	1.749702	1.784234	1.864287	1.826479
0.158	1.786928	1.82638	1.913353	1.842511
0.2	1.832316	1.879712	1.946029	1.883788
0.251	1.619748	1.666259	1.719236	1.646611
0.316	1.631584	1.680311	1.736668	1.652704
0.398	1.479682	1.528858	1.574088	1.490163
0.501	1.462936	1.522786	1.559467	1.464437
0.631	1.517793	1.579552	1.628355	1.511083
0.794	1.522996	1.585983	1.604731	1.549035
1	1.584597	1.658668	1.674055	1.585447
1.259	1.528156	1.596555	1.611606	1.515945
1.585	1.471282	1.538137	1.56768	1.452978
1.995	1.447353	1.517339	1.537539	1.425068
2.512	1.397322	1.465493	1.479889	1.372246
3.162	1.387534	1.45653	1.467259	1.36445
3.981	1.338404	1.406708	1.415113	1.312428
5.012	1.338725	1.40332	1.413865	1.31462
6.31	1.328793	1.393073	1.403381	1.298655
7.943	1.312053	1.382763	1.383984	1.285705
10	1.299861	1.355433	1.373103	1.270985

Table I-33: Room Ratio Composite 2 1cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.521633	0.537789	1.466404	1.683536
0.013	0.492276	0.497396	0.980559	1.113548
0.016	0.598669	0.588432	0.952429	1.040831
0.02	0.644942	0.637963	0.865494	0.927739
0.025	0.606254	0.592132	0.736452	0.763441
0.032	0.773187	0.766436	0.887838	0.919283
0.04	0.89918	0.919818	0.995158	1.003591
0.05	1.12757	1.139434	1.230019	1.252375
0.063	1.238556	1.268766	1.369449	1.347502
0.079	1.440447	1.469046	1.575086	1.579552
0.1	1.596483	1.645284	1.763313	1.710797
0.126	1.713708	1.7571	1.866167	1.907594
0.158	1.746878	1.799461	1.909465	1.856089
0.2	1.789852	1.845659	1.960492	1.914827
0.251	1.581834	1.641764	1.737919	1.701271
0.316	1.593321	1.662242	1.750207	1.703006
0.398	1.445896	1.515118	1.596052	1.534363
0.501	1.429392	1.510989	1.575568	1.533306
0.631	1.485087	1.556224	1.623368	1.576047
0.794	1.491585	1.577241	1.618805	1.567123
1	1.556186	1.648807	1.721125	1.645715
1.259	1.50119	1.596081	1.652101	1.578296
1.585	1.4461	1.555571	1.613764	1.508859
1.995	1.423911	1.535393	1.591004	1.486557
2.512	1.37806	1.488846	1.537332	1.438365
3.162	1.370926	1.483046	1.537335	1.433512
3.981	1.323484	1.433092	1.481854	1.39446
5.012	1.32623	1.44322	1.506489	1.383956
6.31	1.317304	1.439225	1.511844	1.380185
7.943	1.30094	1.424964	1.475897	1.366788
10	1.289424	1.413968	1.459606	1.344782

Table I-34: Room Ratio Composite 2 1cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.266984	0.463462	1.605767	1.368057
0.013	0.275966	0.42376	1.021432	1.015715
0.016	0.381875	0.495888	1.032066	0.956446
0.02	0.475307	0.551725	0.909999	0.885695
0.025	0.500207	0.543251	0.72345	0.740515
0.032	0.696391	0.703073	0.877298	0.883408
0.04	0.850152	0.879533	0.992175	0.9925
0.05	1.091006	1.127449	1.297043	1.24472
0.063	1.205333	1.242915	1.485669	1.375001
0.079	1.399658	1.452951	1.563136	1.54453
0.1	1.543258	1.594386	1.74101	1.715859
0.126	1.647901	1.714146	1.89399	1.792119
0.158	1.67424	1.755625	1.958154	1.855138
0.2	1.711354	1.786191	1.975739	1.892078
0.251	1.511314	1.587363	1.755052	1.727963
0.316	1.521648	1.612659	1.750477	1.686458
0.398	1.381334	1.46257	1.592431	1.51972
0.501	1.367667	1.464266	1.548881	1.650701
0.631	1.423263	1.529412	1.585475	1.688743
0.794	1.433461	1.562135	1.612572	1.692386
1	1.498133	1.641235	1.691458	1.793647
1.259	1.448316	1.587409	1.657841	1.717402
1.585	1.398569	1.527355	1.595143	1.658744
1.995	1.382771	1.526275	1.597435	1.632825
2.512	1.339467	1.493325	1.549033	1.579339
3.162	1.336656	1.488604	1.541636	1.626284
3.981	1.293917	1.447214	1.493541	1.508817
5.012	1.299083	1.456402	1.505345	1.527946
6.31	1.29099	1.458132	1.515924	1.520709
7.943	1.275724	1.453381	1.493041	1.505477
10	1.26656	1.45131	1.480575	1.502025

5 cm Contamination Depth Room Ratios

Table I-35: Room Ratio Composite 2 5 cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.09467	1.03102	2.19952	2.72957
0.013	0.76886	0.92385	1.02674	1.61681
0.016	1.33006	1.26594	1.53674	2.39156
0.02	1.12045	1.09048	1.17075	1.40235
0.025	1.15395	0.93288	0.90432	1.23627
0.032	1.24774	0.84330	0.78759	0.92141
0.04	1.17145	0.96562	0.76645	0.91390
0.05	1.00517	0.90375	0.73966	0.85435
0.063	0.96170	1.04091	0.89603	1.01648
0.079	1.20420	1.30664	1.11658	1.20486
0.1	1.39654	1.51841	1.45851	1.50232
0.126	1.48072	1.56637	1.44679	1.54176
0.158	1.60726	1.52517	1.58394	1.50171
0.2	1.64242	1.51433	1.54813	1.99531
0.251	1.67420	1.54962	1.52113	1.56063
0.316	1.72263	1.53162	1.49063	1.55263
0.398	1.65251	1.48172	1.49410	1.47281
0.501	1.63192	1.45546	1.46820	1.48470
0.631	1.55783	1.41796	1.40842	1.39403
0.794	1.52773	1.37443	1.42488	1.31242
1	1.51722	1.31462	1.34599	1.28227
1.259	1.41493	1.22894	1.27460	1.22080
1.585	1.37903	1.15270	1.23803	1.22812
1.995	1.34599	1.09121	1.20132	1.17093
2.512	1.29325	1.06035	1.16648	1.14707
3.162	1.23683	1.02090	1.13426	1.07784
3.981	1.21038	0.99423	1.10947	1.06264
5.012	1.17172	0.97860	1.14987	1.06195
6.31	1.16735	0.97395	1.14949	1.06431
7.943	1.15748	0.94986	1.14933	1.05457
10	1.14017	0.94743	1.12204	1.05101

Table I-36: Room Ratio Composite 2 5 cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.07322	0.67005	1.31109	1.83447
0.013	0.77657	0.53745	0.64444	0.73825
0.016	1.15398	0.73577	0.88139	0.61759
0.02	0.97856	0.69293	0.92479	0.73449
0.025	0.84902	0.77503	0.87101	0.73769
0.032	0.83297	0.60213	1.32004	0.69135
0.04	0.89072	0.71761	0.91334	0.70263
0.05	0.89061	0.73188	0.93715	0.83187
0.063	0.94588	1.04293	1.04988	0.87147
0.079	0.99969	0.98059	1.51929	1.22481
0.1	1.38155	1.07532	1.02765	1.63378
0.126	1.51680	1.22327	1.14615	1.72567
0.158	1.66768	1.36062	1.22380	1.73332
0.2	1.78291	1.49179	1.41127	1.96831
0.251	1.72415	1.51122	1.46589	1.91507
0.316	1.76498	1.48836	1.53568	2.06152
0.398	1.65989	1.47435	1.52860	2.13709
0.501	1.64421	1.50917	1.75725	2.36915
0.631	1.60774	1.52935	1.78052	2.67322
0.794	1.56136	1.52157	1.65002	2.83698
1	1.60587	1.54806	1.47004	2.68142
1.259	1.52787	1.42063	1.44379	2.67423
1.585	1.51563	1.36504	1.32484	2.69930
1.995	1.41717	1.33676	1.32559	2.70292
2.512	1.48148	1.32713	1.31542	2.62934
3.162	1.38734	1.27589	1.32485	2.79276
3.981	1.35556	1.22306	1.24783	2.71824
5.012	1.37439	1.21607	1.27076	2.77446
6.31	1.35374	1.20361	1.30649	2.70549
7.943	1.33762	1.18994	1.29170	2.78213
10	1.34216	1.19544	1.26731	2.64638

Table I-37: Room Ratio Composite 2 5 cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.86496	0.73266	0.97962	1.05871
0.013	0.61951	0.56685	0.70977	0.71912
0.016	0.93663	0.89791	0.99816	0.83190
0.02	0.80991	0.56024	0.55093	1.24947
0.025	0.80412	0.59368	0.55492	0.94475
0.032	0.77338	0.69833	0.60522	1.12171
0.04	0.81099	0.68841	0.69073	0.92647
0.05	0.87131	0.67435	0.99642	0.92745
0.063	0.91503	0.85249	1.39363	1.04996
0.079	1.07758	1.06220	1.36028	1.07419
0.1	1.35241	0.92306	2.84748	2.58510
0.126	1.48179	1.06299	1.91865	1.49788
0.158	1.63991	1.17869	1.87091	1.56994
0.2	1.74497	1.30179	2.85596	1.70707
0.251	1.78078	1.24742	1.93842	1.88490
0.316	1.72421	1.81847	2.17992	2.42279
0.398	1.76770	1.22098	2.24563	2.46116
0.501	1.73103	1.43147	1.97624	2.00550
0.631	1.73228	1.42257	1.91622	2.02561
0.794	1.61624	1.28394	1.94017	2.77803
1	1.71982	1.32587	1.83605	2.31081
1.259	1.64968	1.21847	1.81084	2.31351
1.585	1.56585	1.28416	1.53569	1.90918
1.995	1.47324	1.22913	1.69588	1.81721
2.512	1.51086	1.24941	1.64227	1.75561
3.162	1.43212	1.23638	1.53599	1.85152
3.981	1.42169	1.22989	1.47081	1.82570
5.012	1.43356	1.22584	1.52471	1.80389
6.31	1.41747	1.23284	1.58956	1.79156
7.943	1.39814	1.27044	1.52892	1.72252
10	1.40250	1.23004	1.59375	1.68233

Table I-38: Room Ratio Composite 2 5 cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.48754	0.49533	1.10122	1.82624
0.013	0.39896	0.39944	0.82709	0.66699
0.016	0.67433	0.69638	0.71220	1.06997
0.02	0.65517	0.61105	0.72822	0.87698
0.025	0.70823	0.61293	1.25070	1.07614
0.032	0.77318	0.48538	0.81184	0.82767
0.04	0.78393	0.59504	0.86109	0.73328
0.05	0.85469	0.63244	1.30609	0.93418
0.063	0.95776	0.90845	1.16846	0.77985
0.079	1.09119	1.05880	1.35734	0.58124
0.1	1.26127	0.74015	3.33352	1.84555
0.126	1.38894	0.80723	4.45948	2.24558
0.158	1.52885	1.02208	5.32618	1.70728
0.2	1.76931	1.06472	4.30565	2.56199
0.251	1.72110	1.49237	3.13517	1.76287
0.316	1.65639	1.13646	4.32752	2.61862
0.398	1.71929	1.03352	5.71251	4.23955
0.501	1.65984	1.13594	3.88329	2.85215
0.631	1.62075	1.24892	4.37865	2.26733
0.794	1.59228	1.12628	5.39374	4.49393
1	1.70414	1.14303	5.28283	4.38982
1.259	1.63175	1.04110	5.04279	3.91726
1.585	1.55095	1.11037	3.58542	2.30518
1.995	1.45595	1.06115	5.92686	2.59174
2.512	1.50105	1.08332	5.51593	2.42779
3.162	1.43144	1.08562	4.39929	2.78887
3.981	1.42585	1.06787	4.30188	2.34536
5.012	1.42666	1.06912	4.37482	2.39248
6.31	1.41672	1.09699	4.51169	2.18374
7.943	1.40117	1.08795	4.76164	2.03553
10	1.39457	1.07329	5.62907	2.00896

Table I-39: Room Ratio Composite 2 5 cm Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	0.24733	0.40796	1.42786	2.57279
0.013	0.22900	0.34036	0.75938	0.86531
0.016	0.44066	0.54296	0.78112	0.80629
0.02	0.48209	0.47158	0.84590	0.89162
0.025	0.59326	0.54498	0.62501	1.18502
0.032	0.66398	0.64040	0.58351	0.63491
0.04	0.74633	0.76453	0.82672	0.97819
0.05	0.80993	0.48016	0.82052	0.52982
0.063	0.91167	0.73250	0.90138	0.66144
0.079	1.07521	0.90996	1.05486	0.63004
0.1	1.31801	1.17777	1.28540	2.45276
0.126	1.40326	1.32438	1.40237	1.37611
0.158	1.52840	0.81071	2.25187	0.86096
0.2	1.64278	0.84815	2.88495	1.32410
0.251	1.60297	1.30365	1.70369	1.78206
0.316	1.62331	0.87009	3.20603	1.49567
0.398	1.64964	0.76553	2.46517	2.80762
0.501	1.64677	0.87621	3.81052	1.45088
0.631	1.66235	1.62032	1.68823	1.39986
0.794	1.55941	0.89216	2.72098	3.49321
1	1.65508	0.92456	2.78518	3.94806
1.259	1.60274	0.93327	2.80268	1.85439
1.585	1.52977	1.48353	2.20955	1.55034
1.995	1.41381	0.87911	2.79706	2.16988
2.512	1.47205	0.92025	2.75063	2.18614
3.162	1.40393	0.90175	2.67230	2.20203
3.981	1.39205	0.89197	2.66438	2.20257
5.012	1.38906	0.88344	2.71313	2.25246
6.31	1.38732	0.89661	2.78620	2.16827
7.943	1.37752	0.91922	2.84341	2.08894
10	1.37483	0.90374	3.60730	1.87150

15 cm Contamination Depth Room Ratios

Table I-40: Room Ratio Composite 2 15 cm Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.44959	1.295031	1.776656	2.325627
0.013	0.967288	0.76597	1.137513	1.162322
0.016	0.788351	0.842326	1.217868	1.475625
0.02	0.91215	1.011091	0.98867	1.728157
0.025	0.958531	1.053333	1.07837	1.529936
0.032	0.872405	0.945195	0.959457	1.436963
0.04	1.012931	0.902269	0.96562	0.960088
0.05	0.819182	0.780872	0.693587	0.842228
0.063	1.19172	1.018054	0.829664	1.057246
0.079	1.203673	1.132781	0.87441	1.32411
0.1	1.116286	1.152878	1.02649	1.22108
0.126	1.331866	1.402886	1.237141	1.310162
0.158	1.388857	1.443127	1.479256	1.409043
0.2	1.430974	1.327572	1.16278	1.335255
0.251	1.508899	1.458723	1.346009	1.343391
0.316	1.634292	1.564626	1.489654	1.370379
0.398	1.63828	1.527629	1.596516	1.257513
0.501	1.976147	1.831734	1.983785	1.575843
0.631	1.464792	1.369679	1.553712	1.154532
0.794	1.485475	1.388609	1.342886	1.197692
1	1.462459	1.358854	1.254902	1.216944
1.259	1.355139	1.302038	1.230405	1.116834
1.585	1.324724	1.239539	1.168564	1.159515
1.995	1.381034	1.254798	1.226821	1.180349
2.512	1.388325	1.174007	1.193515	1.128983
3.162	1.287113	1.126485	1.162285	1.057955
3.981	1.282449	1.100891	1.185582	1.041585
5.012	1.264678	1.102367	1.246366	1.047344
6.31	1.276659	1.115538	1.28939	1.064948
7.943	1.287256	1.111211	1.298286	1.061277
10	1.234846	1.104985	1.302329	1.05536

Table I-41: Room Ratio Composite 2 15 cm Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.13E+00	7.82E-01	1.22E+00	2.10E+00
0.013	7.05E-01	5.42E-01	7.70E-01	1.05E+00
0.016	8.26E-01	7.12E-01	7.43E-01	9.14E-01
0.02	1.15E+00	7.64E-01	8.82E-01	5.59E-01
0.025	9.96E-01	9.06E-01	8.82E-01	6.55E-01
0.032	1.14E+00	6.28E-01	1.06E+00	8.74E-01
0.04	1.05E+00	8.26E-01	1.13E+00	8.55E-01
0.05	9.86E-01	6.63E-01	1.06E+00	5.52E-01
0.063	1.05E+00	8.51E-01	1.30E+00	7.84E-01
0.079	9.58E-01	8.01E-01	1.03E+00	7.87E-01
0.1	1.12E+00	9.32E-01	1.08E+00	1.14E+00
0.126	1.32E+00	1.03E+00	9.85E-01	1.18E+00
0.158	1.52E+00	1.23E+00	1.18E+00	3.15E+00
0.2	1.48E+00	1.20E+00	1.15E+00	1.58E+00
0.251	1.64E+00	1.40E+00	1.28E+00	1.61E+00
0.316	1.70E+00	1.49E+00	1.55E+00	1.38E+00
0.398	1.60E+00	1.47E+00	1.43E+00	1.48E+00
0.501	1.93E+00	1.77E+00	1.75E+00	1.83E+00
0.631	1.66E+00	1.25E+00	1.40E+00	1.95E+00
0.794	1.65E+00	1.23E+00	1.38E+00	2.21E+00
1	1.62E+00	1.20E+00	1.34E+00	2.26E+00
1.259	1.52E+00	1.16E+00	1.26E+00	2.25E+00
1.585	1.43E+00	1.18E+00	1.23E+00	2.14E+00
1.995	1.48E+00	1.24E+00	1.40E+00	2.34E+00
2.512	1.44E+00	1.22E+00	1.70E+00	2.32E+00
3.162	1.43E+00	1.17E+00	1.32E+00	2.37E+00
3.981	1.41E+00	1.19E+00	1.35E+00	2.43E+00
5.012	1.37E+00	1.22E+00	1.40E+00	2.55E+00
6.31	1.38E+00	1.24E+00	1.47E+00	2.62E+00
7.943	1.39E+00	1.24E+00	1.47E+00	2.60E+00
10	1.34E+00	1.22E+00	1.45E+00	2.49E+00

Table I-42: Room Ratio Composite 2 15 cm Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	1.002853	0.765638	1.343292	1.623577
0.013	0.591151	0.584135	0.59674	0.428891
0.016	0.669597	0.626462	0.682003	0.361955
0.02	0.854437	0.791811	0.803886	0.567024
0.025	0.979595	0.800684	0.933552	0.92214
0.032	0.922656	0.649559	0.504649	1.019598
0.04	0.926961	0.706102	0.607797	0.896735
0.05	0.862699	0.680114	0.478959	0.964678
0.063	1.032442	0.782253	0.6673	2.094083
0.079	1.044595	0.849347	0.810684	1.25561
0.1	1.117533	0.970012	0.866198	1.146071
0.126	1.328875	1.247654	1.249489	1.878792
0.158	1.463215	1.30039	2.249291	1.294198
0.2	1.42732	1.260962	1.731159	1.873577
0.251	1.623578	1.601648	1.621357	1.809871
0.316	1.690521	1.73626	1.890756	1.995294
0.398	1.686292	1.710892	2.404345	2.152638
0.501	1.930498	1.941519	2.723904	2.107088
0.631	1.459819	1.502332	2.328134	1.743131
0.794	1.523246	1.495871	2.313412	1.73467
1	1.553738	1.180025	3.045303	1.930829
1.259	1.473119	1.249897	2.197193	1.690334
1.585	1.406226	1.217818	2.064482	1.6002
1.995	1.446765	1.029512	1.59195	1.788042
2.512	1.458198	0.976593	1.709502	1.778683
3.162	1.395448	0.945324	1.401086	2.188852
3.981	1.441839	1.027068	1.447377	2.410627
5.012	1.414176	1.02363	1.484661	2.088523
6.31	1.393651	1.07655	1.536112	2.090713
7.943	1.444709	1.123232	1.51267	2.089077
10	1.405717	1.296556	2.159377	1.837435

Table I-43: Room Ratio Composite 2 15 cm Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	0.551031	0.528789	1.254427	2.030019
0.013	0.399601	0.435884	0.600508	0.792678
0.016	0.50674	0.589646	0.759145	0.72796
0.02	0.68462	0.74225	0.638235	0.814432
0.025	0.830698	0.784274	0.861216	1.218976
0.032	0.84178	0.71874	1.151301	1.170893
0.04	0.930941	0.534456	0.776413	0.719145
0.05	0.837415	0.657789	0.715048	0.484262
0.063	1.01847	0.945793	1.265019	0.614108
0.079	1.149549	0.786565	1.337695	0.761062
0.1	1.157414	0.865128	1.227974	0.587089
0.126	1.289536	1.064234	3.004392	0.707494
0.158	1.505039	1.37751	2.812089	0.611407
0.2	1.450918	1.281818	2.303646	0.630998
0.251	1.578357	1.434615	2.276967	0.909271
0.316	1.657195	1.522477	2.12155	0.898861
0.398	1.635921	1.493992	2.73487	0.83483
0.501	1.983295	1.80237	2.825904	1.162169
0.631	1.508494	1.480488	2.68816	1.317425
0.794	1.534098	1.242518	3.420157	1.793935
1	1.560487	1.51474	2.099456	1.125531
1.259	1.449539	1.179836	3.015526	1.711088
1.585	1.380679	1.178215	2.794908	1.305695
1.995	1.427636	1.251675	3.388894	1.275409
2.512	1.415682	1.230644	3.15591	1.21449
3.162	1.338893	1.216878	2.669396	1.222395
3.981	1.411066	0.887412	3.771552	1.980716
5.012	1.406406	0.889299	3.33475	2.326277
6.31	1.417533	0.970797	3.798168	2.296682
7.943	1.387505	1.03328	4.305461	1.596164
10	1.382721	1.05054	4.205674	1.604164

Infinite Contamination Depth Room Ratios

Table I-44: Room Ratio Composite 2 Infinite Contamination Depth 10x10x10 ft room

Energy	Average	Center	Middle	Corner
0.01	6.58221	4.84693	5.35576	6.94985
0.013	8.34183	7.69633	7.73332	8.25319
0.016	7.16187	6.92366	6.61272	7.04635
0.02	5.20388	5.28213	4.98283	5.10756
0.025	5.34165	5.51314	5.13700	5.19205
0.032	5.82108	5.92424	5.55974	5.70008
0.04	5.39450	5.60876	5.22815	5.33090
0.05	0.53996	0.56201	0.56249	0.53473
0.063	0.62901	0.63101	0.63122	0.64571
0.079	0.71975	0.72942	0.71003	0.73819
0.1	0.82164	0.86975	0.86173	0.78345
0.126	0.64016	0.65354	0.64126	0.62810
0.158	0.83319	0.82800	0.82538	0.83821
0.2	0.84247	0.82631	0.84400	0.81132
0.251	1.06248	1.03761	1.03271	1.03912
0.316	0.95295	0.94769	0.89638	0.94440
0.398	0.92962	0.92272	0.91577	0.92631
0.501	0.94669	0.92961	1.01428	1.13229
0.631	0.97380	0.94438	1.01311	1.09123
0.794	0.95255	0.97277	1.10701	1.14039
1	0.95851	0.98480	0.96123	0.98875
1.259	0.88958	0.84046	0.92164	1.05725
1.585	1.12366	1.08049	1.02906	1.08191
1.995	1.05053	1.05077	1.09991	1.16609
2.512	0.98722	0.99710	1.03068	1.12748
3.162	0.90283	0.90032	0.86924	0.93863
3.981	0.86228	0.90696	0.96318	1.12287
5.012	0.81681	0.82670	0.78232	0.83532
6.31	0.89926	0.90425	0.87530	0.99572
7.943	0.96064	0.93196	0.96482	1.13808
10	0.92970	0.92979	0.88499	1.00722

Table I-45: Room Ratio Composite 2 Infinite Contamination Depth 50x50x10 ft room

Energy	Average	Center	Middle	Corner
0.01	3.774338	3.115274	4.119876	6.235002
0.013	6.019406	5.234637	5.783469	7.527274
0.016	5.892972	5.285027	5.598645	6.60346
0.02	4.684723	4.450421	4.769811	4.889171
0.025	5.073308	4.911505	5.122654	5.290832
0.032	5.464987	5.351618	5.524295	5.370316
0.04	5.285027	5.222776	5.27529	5.523476
0.05	0.730668	0.734858	0.716253	0.744102
0.063	0.85921	0.837118	0.837415	0.878226
0.079	0.938471	0.917975	0.996034	1.174236
0.1	1.108683	1.092144	1.116865	1.115734
0.126	0.888165	0.833171	0.84115	0.913266
0.158	1.139154	1.12643	1.189574	1.245108
0.2	1.167615	1.127215	1.215057	1.233578
0.251	1.512156	1.453091	1.484956	1.444892
0.316	1.370946	1.295656	1.610242	1.261737
0.398	1.334401	1.301568	1.241962	1.298452
0.501	1.424662	1.294095	1.215161	1.172839
0.631	1.378933	1.266274	1.384011	1.158506
0.794	1.379906	1.304801	1.319999	1.194911
1	1.408511	1.301037	1.379481	1.042792
1.259	1.245098	1.088565	1.17878	1.099218
1.585	1.608953	1.411755	1.553569	1.348104
1.995	1.526602	1.321447	1.537382	1.186162
2.512	1.482277	1.388846	1.419824	1.319621
3.162	1.347659	1.237034	1.294985	1.266973
3.981	1.310171	1.140164	1.331405	1.065423
5.012	1.19425	1.100263	1.241234	0.965756
6.31	1.32774	1.209099	1.316389	1.104286
7.943	1.373011	1.270582	1.365807	1.190841
10	1.400947	1.239435	1.626721	1.250586

Table I-46: Room Ratio Composite 2 Infinite Contamination Depth 100x100x10 ft room

Energy	Average	Center	Middle	Corner
0.01	0.596697	0.4471	0.588621	0.817554
0.013	0.871806	0.92031	0.816465	0.617856
0.016	0.894347	0.811731	0.967549	0.999287
0.02	0.732862	0.750707	0.641566	0.61855
0.025	0.801353	0.799278	0.748371	0.739641
0.032	0.893075	0.885998	1.014885	0.906074
0.04	0.86475	0.85718	0.863804	0.894599
0.05	0.122792	0.120466	0.114781	0.10741
0.063	0.146303	0.141913	0.128649	0.136754
0.079	0.175844	0.150966	0.175829	0.141688
0.1	0.19771	0.174896	0.159681	0.189496
0.126	0.152267	0.146275	0.169385	0.157736
0.158	0.212798	0.199078	0.212595	0.197575
0.2	0.210866	0.203178	0.217271	0.222048
0.251	0.264047	0.259391	0.252116	0.297541
0.316	0.245631	0.209717	0.189401	0.231159
0.398	0.238678	0.226669	0.234237	0.240815
0.501	0.236334	0.208292	0.184928	0.16244
0.631	0.248694	0.189451	0.171461	0.165322
0.794	0.257918	0.197865	0.214005	0.166437
1	0.261351	0.22973	0.212997	0.235747
1.259	0.22564	0.182663	0.196005	0.153107
1.585	0.291353	0.24969	0.221594	0.255723
1.995	0.261327	0.220521	0.260711	0.234575
2.512	0.26652	0.250293	0.207672	0.269815
3.162	0.250785	0.229527	0.171162	0.249377
3.981	0.233688	0.199999	0.164126	0.204255
5.012	0.211292	0.191742	0.203188	0.24324
6.31	0.240413	0.200179	0.184249	0.254076
7.943	0.244862	0.226924	0.217754	0.267661
10	0.24952	0.224231	0.213813	0.238007

Table I-47: Room Ratio Composite 2 Infinite Contamination Depth 200x200x20 ft room

Energy	Average	Center	Middle	Corner
0.01	1.985262	2.959499	2.106343	20.50023
0.013	3.565048	3.908001	5.042237	6.988504
0.016	3.952341	4.144101	5.121157	6.508016
0.02	3.599131	4.245299	3.271764	3.829143
0.025	4.414312	4.530836	4.940924	4.581462
0.032	5.111955	5.16778	5.570141	5.058608
0.04	5.078827	4.957709	5.38686	5.378088
0.05	0.775838	0.713356	0.717452	0.629993
0.063	0.929722	0.797622	0.972338	0.854508
0.079	1.046864	1.008794	1.30583	0.810928
0.1	1.257527	1.150616	0.718437	2.104703
0.126	0.945036	0.873559	0.863662	1.359841
0.158	1.26677	1.30022	1.282547	1.120869
0.2	1.292612	1.245613	1.459823	1.286665
0.251	1.631994	1.54872	1.604051	1.438097
0.316	1.505918	1.272933	0.887708	1.337673
0.398	1.507176	1.360049	1.475022	1.734188
0.501	1.594528	1.398369	1.564794	1.737491
0.631	1.55514	1.335391	0.982184	1.724725
0.794	1.556051	1.248434	1.023082	1.90409
1	1.5712	1.060442	1.489562	1.336568
1.259	1.392963	0.886261	1.376541	1.009724
1.585	1.823208	1.59843	2.374719	1.701938
1.995	1.678869	1.421273	1.559179	1.605405
2.512	1.667141	1.34173	1.439332	1.63874
3.162	1.508195	1.207513	2.360715	1.944635
3.981	1.443568	1.264025	2.050848	1.48215
5.012	1.340133	0.983022	1.534185	1.085873
6.31	1.506512	1.360985	1.597834	1.052032
7.943	1.523946	1.391453	1.509695	0.909167
10	1.564536	1.300848	2.329867	1.778739

Table I-48: Room Ratio Composite 2 Infinite Contamination Depth 400x400x40 ft room

Energy	Average	Center	Middle	Corner
0.01	1.001	0.741726	4.304382	3.515411
0.013	2.00416	2.2786	6.221577	6.138747
0.016	2.542239	3.040134	5.532867	3.401473
0.02	2.664017	2.713077	4.063424	5.378044
0.025	3.623346	3.910436	5.319053	5.502639
0.032	4.628209	4.687338	5.941235	5.483101
0.04	4.85785	4.894613	6.861479	5.041506
0.05	0.767847	0.667122	0.883896	0.359373
0.063	0.908255	0.743812	0.967669	0.916927
0.079	1.042183	0.719542	0.848318	0.520593
0.1	1.195286	1.124279	1.034516	1.184514
0.126	0.936463	0.811359	0.565485	0.728328
0.158	1.289196	1.186411	0.568616	0.410283
0.2	1.28527	1.250284	0.772659	1.26175
0.251	1.643227	1.315018	0.790197	1.566927
0.316	1.4862	1.426456	1.102192	0.853335
0.398	1.473116	1.220224	0.938247	1.400457
0.501	1.464753	0.665693	0.368513	1.938136
0.631	1.45372	0.773329	0.741453	0.76688
0.794	1.551943	1.219586	1.076888	0.607923
1	1.591552	0.955677	1.852387	0.924639
1.259	1.39179	0.970276	1.120551	0.634266
1.585	1.771445	1.303053	2.473468	0.970514
1.995	1.61895	0.991877	1.028641	1.399949
2.512	1.664614	1.200793	1.869104	1.383014
3.162	1.490089	0.959144	1.770479	0.725913
3.981	1.475518	1.211668	1.956591	0.682676
5.012	1.361836	0.98183	1.404622	0.836427
6.31	1.511468	0.992139	1.007764	0.915562
7.943	1.520616	1.051709	1.590664	0.883442
10	1.521471	1.035016	1.984408	0.922258

APPENDIX J: SPECIAL CASES TABLES

Each Case will be presented in ascending order. The room ratio values are provided in these tables. Surface contamination and 1 and 5 cm contamination tables are provided within each case section.

TRC – Top Right Corner

BM – Bottom Middle

WM – Window Middle

TLC- Top Left Corner

BRC – Bottom Right Corner

WO- Window Opposite

TM - Top Middle

BLC – Bottom Left Corner

Case 1

Table J-1: Case 1 Surface Contamination Room Ratios

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	3.1325	1.6600	3.5310	2.7817	3.3301	2.8011	2.7280	3.2835	2.7002	3.2772
0.013	2.2513	1.4606	2.3877	2.0493	2.3198	2.0679	2.0604	2.3042	2.0243	2.3019
0.016	1.7698	1.2147	1.8431	1.6235	1.7954	1.6328	1.6216	1.7885	1.6032	1.7811
0.02	1.4626	1.0297	1.5172	1.3421	1.4708	1.3494	1.3396	1.4651	1.3272	1.4604
0.025	1.2124	0.8684	1.2730	1.1130	1.2128	1.1176	1.1098	1.2030	1.0950	1.2013
0.032	1.0872	0.7848	1.1729	1.0010	1.0777	0.9995	0.9859	1.0654	0.9790	1.0696
0.04	0.9820	0.7227	1.0860	0.9106	0.9760	0.9035	0.8926	0.9589	0.8824	0.9599
0.05	1.0260	0.7711	1.1637	0.9641	1.0241	0.9463	0.9350	0.9949	0.9239	1.0019
0.063	1.0116	0.7706	1.1442	0.9570	1.0165	0.9351	0.9221	0.9847	0.9097	0.9915
0.079	1.0584	0.8194	1.1864	1.0133	1.0702	0.9797	0.9691	1.0421	0.9600	1.0558
0.1	1.1305	0.8773	1.2324	1.0718	1.1288	1.0496	1.0424	1.1109	1.0311	1.1202
0.126	1.1833	0.9145	1.2638	1.1166	1.1879	1.0974	1.0873	1.1716	1.0818	1.1720
0.158	1.1880	0.9166	1.2509	1.1165	1.1873	1.0984	1.0905	1.1847	1.0934	1.1861
0.2	1.1640	0.8901	1.2054	1.0902	1.1677	1.0788	1.0775	1.1566	1.0694	1.1656
0.251	1.0433	0.7917	1.0624	0.9692	1.0420	0.9620	0.9629	1.0441	0.9654	1.0495
0.316	1.0212	0.7656	1.0365	0.9503	1.0248	0.9529	0.9395	1.0260	0.9462	1.0348
0.398	0.9571	0.7085	0.9641	0.8865	0.9629	0.8827	0.8836	0.9540	0.8757	0.9636
0.501	0.9216	0.6786	0.9238	0.8484	0.9252	0.8414	0.8502	0.9194	0.8441	0.9469
0.631	0.9035	0.6615	0.9092	0.8244	0.9164	0.8382	0.8320	0.9261	0.8283	0.9073
0.794	0.8919	0.6449	0.8885	0.8087	0.8957	0.8228	0.8115	0.8822	0.8164	0.9075
1	0.9647	0.6911	0.9600	0.8848	0.9617	0.8812	0.8787	0.9631	0.8861	0.9671
1.259	0.9160	0.6581	0.9120	0.8256	0.9284	0.8376	0.8329	0.9152	0.8355	0.9240
1.585	0.8967	0.6383	0.8918	0.8155	0.8901	0.8232	0.8144	0.9055	0.8172	0.9067
1.995	0.8815	0.6206	0.8724	0.7973	0.8820	0.8096	0.8020	0.8672	0.8008	0.8804
2.512	0.8676	0.6113	0.8607	0.7815	0.8701	0.7969	0.7838	0.8650	0.7885	0.8709
3.162	0.8502	0.5994	0.8384	0.7712	0.8465	0.7792	0.7712	0.8514	0.7720	0.8546
3.981	0.8291	0.5839	0.8191	0.7441	0.8307	0.7593	0.7475	0.8208	0.7550	0.8304
5.012	0.8305	0.5866	0.8187	0.7548	0.8283	0.7617	0.7533	0.8316	0.7541	0.8353
6.31	0.8257	0.5863	0.8219	0.7445	0.8313	0.7526	0.7483	0.8174	0.7539	0.8325
7.943	0.8172	0.5814	0.8158	0.7414	0.8248	0.7495	0.7504	0.8075	0.7422	0.8196
10	0.8242	0.5833	0.8143	0.7474	0.8156	0.7548	0.7493	0.8253	0.7487	0.8282

Table J-2: Case 1 1cm Contamination Depth Room Ratios

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.6091	1.6349	13.4134	2.5706	1.7709	2.1713	1.3871	1.6260	1.2988	1.5391
0.013	1.6537	1.3717	6.7978	1.8371	1.1982	1.4569	1.0354	0.9812	1.0632	1.0746
0.016	1.4372	1.2472	4.9639	1.5496	1.0766	1.3634	0.9962	0.9596	1.0030	1.0860
0.02	1.0644	1.0008	3.0622	1.1746	0.8688	1.0957	0.8172	0.7980	0.8280	0.8760
0.025	0.8085	0.7602	1.7962	0.8478	0.6556	0.8100	0.6208	0.6404	0.6538	0.6052
0.032	0.8449	0.8096	1.5736	0.8846	0.7531	0.8808	0.6976	0.6708	0.7436	0.6868
0.04	0.8650	0.8555	1.3308	0.9437	0.8465	0.9197	0.8484	0.8200	0.8113	0.7857
0.05	1.0448	0.9906	1.4540	1.1123	1.0403	1.0784	1.0405	0.9871	1.0035	0.9742
0.063	1.0869	1.0419	1.3868	1.1708	1.2613	1.1447	1.0771	1.0201	1.0935	1.0959
0.079	1.2859	1.1547	1.5432	1.3313	1.3607	1.3008	1.1747	1.2068	1.2530	1.1838
0.1	1.4156	1.2825	1.6173	1.4524	1.5229	1.4164	1.3395	1.3213	1.3904	1.3863
0.126	1.5006	1.3103	1.6880	1.5016	1.5796	1.4878	1.4823	1.4379	1.4955	1.4960
0.158	1.4994	1.3151	1.6424	1.5775	1.7146	1.5098	1.4691	1.4982	1.5452	1.5234
0.2	1.5619	1.3499	1.7021	1.6407	1.6953	1.5979	1.5128	1.5792	1.5280	1.5732
0.251	1.3570	1.1564	1.4724	1.3846	1.4532	1.4150	1.3397	1.3481	1.3298	1.3522
0.316	1.3452	1.1601	1.4739	1.4284	1.5213	1.3655	1.3190	1.3392	1.3634	1.3800
0.398	1.2269	1.0174	1.3339	1.2597	1.3301	1.2326	1.1737	1.2024	1.2276	1.2647
0.501	1.1835	0.9808	1.2746	1.2250	1.3055	1.2011	1.1440	1.1750	1.1909	1.2237
0.631	1.2267	0.9897	1.3162	1.2480	1.3250	1.2784	1.1700	1.1889	1.2012	1.2632
0.794	1.2153	0.9658	1.2715	1.1865	1.2562	1.1826	1.2035	1.2610	1.1982	1.2623
1	1.2490	0.9790	1.3056	1.2185	1.2882	1.2107	1.2357	1.3113	1.2174	1.2970
1.259	1.1845	0.9238	1.2767	1.1913	1.2661	1.1690	1.1229	1.1807	1.1587	1.2290
1.585	1.1201	0.8718	1.1922	1.1357	1.1830	1.1082	1.0604	1.1301	1.1140	1.1646
1.995	1.0922	0.8386	1.1551	1.1083	1.1705	1.0597	1.0388	1.0896	1.0718	1.1334
2.512	1.0412	0.8029	1.1040	1.0618	1.1230	1.0190	0.9912	1.0433	1.0272	1.0927
3.162	1.0301	0.7856	1.0862	1.0422	1.0917	1.0105	0.9676	1.0387	1.0020	1.0722
3.981	0.9895	0.7496	1.0466	1.0054	1.0455	0.9554	0.9341	0.9908	0.9603	1.0372
5.012	0.9859	0.7461	1.0423	0.9922	1.0403	0.9529	0.9198	0.9911	0.9591	1.0239
6.31	0.9785	0.7356	1.0366	0.9844	1.0275	0.9338	0.9086	0.9724	0.9461	1.0163
7.943	0.9670	0.7226	1.0189	0.9659	1.0119	0.9321	0.8946	0.9561	0.9286	0.9935
10	0.9585	0.7096	1.0071	0.9470	1.0048	0.9148	0.8770	0.9464	0.9118	0.9789

Table J-3: Case 1 5cm Contamination Room Ratios

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.423412	1.544582	12.3552	2.324653	1.676532	1.936383	1.291122	1.358293	1.254049	1.36782
0.013	1.435641	1.158769	6.016003	1.607622	1.031117	1.189566	0.862881	0.855589	0.834607	0.823813
0.016	1.885545	1.628279	7.232712	2.146819	1.311719	1.71768	1.150263	1.036701	1.134093	1.129978
0.02	1.379159	1.239769	5.112471	1.548239	1.01984	1.187329	0.904422	0.755111	0.895099	0.926141
0.025	1.204078	1.129184	3.997983	1.371116	0.978533	1.061133	0.848269	0.737354	0.838843	0.90463
0.032	0.959045	0.964199	3.008122	1.149789	0.945375	0.949147	0.762469	0.68278	0.738015	0.723055
0.04	0.911283	0.92282	2.402931	1.060447	0.804064	0.893592	0.719444	0.688905	0.744413	0.682617
0.05	0.923083	0.885439	1.914322	0.99644	0.822246	0.899513	0.803706	0.73993	0.775587	0.753639
0.063	0.948818	0.909519	1.623991	1.047951	0.862473	0.91784	0.839108	0.790826	0.833143	0.80094
0.079	1.051528	1.041794	1.534857	1.149616	1.024158	1.031318	0.912174	0.91252	1.079972	0.906348
0.1	1.274225	1.271611	1.715157	1.367057	1.284361	1.343933	1.163861	1.220554	1.265396	1.154374
0.126	1.426678	1.379617	1.769229	1.465025	1.415928	1.416088	1.41151	1.383422	1.370193	1.3517
0.158	1.521154	1.464101	1.937855	1.514418	1.541531	1.506336	1.461063	1.400704	1.543289	1.456429
0.2	1.586493	1.539562	1.870122	1.661514	1.599934	1.629836	1.520617	1.490249	1.59874	1.787034
0.251	1.646175	1.560011	1.870753	1.631681	1.599688	1.630604	1.595813	1.504411	1.693872	1.605566
0.316	1.649729	1.572973	1.82055	1.6919	1.684134	1.666075	1.560764	1.450786	1.670653	1.610674
0.398	1.6487	1.511093	1.794932	1.647923	1.592009	1.673253	1.573492	1.541104	1.656606	1.63259
0.501	1.617488	1.527754	1.728293	2.018079	1.657766	1.675389	1.532637	1.494722	1.603622	1.648687
0.631	1.572424	1.430901	1.681379	1.621256	1.579878	1.628287	1.484453	1.46641	1.598735	1.582515
0.794	1.561696	1.406555	1.680029	1.564163	1.623949	1.589699	1.515197	1.4736	1.576716	1.572626
1	1.513325	1.383483	1.63883	1.553408	1.567213	1.609217	1.498326	1.443285	1.586506	1.55268
1.259	1.443665	1.274679	1.547903	1.44094	1.526149	1.518556	1.379941	1.384626	1.459959	1.447994
1.585	1.333733	1.208741	1.49333	1.401675	1.43128	1.410637	1.308235	1.352507	1.37833	1.412301
1.995	1.317436	1.150228	1.470369	1.360789	1.39223	1.330454	1.254043	1.307212	1.316621	1.376101
2.512	1.268495	1.121661	1.380529	1.334514	1.361084	1.343751	1.264655	1.257946	1.285516	1.329766
3.162	1.245113	1.079364	1.385095	1.333992	1.323438	1.310148	1.190386	1.209229	1.261344	1.296321
3.981	1.220458	1.040882	1.324952	1.296281	1.246396	1.268012	1.137205	1.170809	1.208271	1.27377
5.012	1.1965	1.026534	1.312856	1.309611	1.259654	1.244538	1.148107	1.182153	1.215314	1.271126
6.31	1.188765	1.019043	1.325035	1.252903	1.22517	1.245975	1.142202	1.182656	1.207908	1.263522
7.943	1.184053	0.979142	1.341095	1.218898	1.250076	1.162762	1.111716	1.161582	1.178513	1.237019
10	1.163191	0.952294	1.286109	1.195006	1.215201	1.157748	1.120023	1.185697	1.160242	1.232093

Case 2

Table J-4: Case 2 Surface Contamination Room Ratios

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	3.135556	1.658074	3.343773	2.76784	3.333109	2.793964	2.731177	3.461137	2.695095	3.273086
0.013	2.25144	1.458677	2.318219	2.048356	2.318114	2.070209	2.052856	2.371151	2.025822	2.3016
0.016	1.770379	1.216263	1.801209	1.621526	1.798853	1.629704	1.623827	1.832486	1.606008	1.778645
0.02	1.462565	1.029698	1.466896	1.336671	1.469335	1.34905	1.339431	1.515354	1.332594	1.461519
0.025	1.215203	0.868955	1.208393	1.10532	1.209887	1.115905	1.107025	1.26972	1.104901	1.206566
0.032	1.086292	0.784547	1.082204	0.989575	1.076523	0.997071	0.986246	1.161894	0.991342	1.071889
0.04	0.981385	0.722874	0.967327	0.896399	0.969614	0.900876	0.892097	1.068241	0.899024	0.965626
0.05	1.026228	0.769475	1.013435	0.942217	1.018695	0.947622	0.934585	1.138311	0.943707	1.00724
0.063	1.009274	0.772643	1.002219	0.938397	1.00719	0.926333	0.920237	1.104211	0.927429	1.004621
0.079	1.058485	0.817253	1.053038	0.987266	1.060031	0.983818	0.969699	1.157608	0.979888	1.047639
0.1	1.131322	0.877339	1.134951	1.061415	1.127224	1.046643	1.03815	1.205583	1.040009	1.128168
0.126	1.17983	0.914612	1.19118	1.109326	1.188741	1.097777	1.097154	1.252858	1.090418	1.192299
0.158	1.187941	0.9159	1.193101	1.108426	1.200912	1.102731	1.097018	1.239275	1.090074	1.192124
0.2	1.161302	0.887613	1.16546	1.082196	1.166919	1.076719	1.080401	1.188573	1.073133	1.166246
0.251	1.043289	0.789376	1.050899	0.971007	1.036634	0.959724	0.958261	1.056372	0.967669	1.047616
0.316	1.024881	0.764918	1.023387	0.946112	1.028697	0.949464	0.945615	1.031868	0.945243	1.031086
0.398	0.958513	0.710711	0.960217	0.890507	0.957215	0.88354	0.876743	0.964956	0.884991	0.97213
0.501	0.917503	0.681535	0.917727	0.834655	0.924607	0.849008	0.839936	0.919438	0.839514	0.930949
0.631	0.906377	0.659267	0.903875	0.832365	0.906523	0.825252	0.831706	0.909311	0.83216	0.915443
0.794	0.891101	0.644223	0.89046	0.810159	0.896732	0.824046	0.819661	0.890182	0.81556	0.898329
1	0.956175	0.691851	0.96279	0.877612	0.967516	0.878895	0.875706	0.948888	0.878714	0.970991
1.259	0.918611	0.655284	0.909838	0.84026	0.918656	0.838181	0.836709	0.916371	0.845351	0.924919
1.585	0.894141	0.639954	0.892611	0.805112	0.895824	0.826531	0.813012	0.900857	0.813185	0.902281
1.995	0.879741	0.621578	0.87701	0.792788	0.884052	0.805976	0.798465	0.89517	0.799349	0.880791
2.512	0.867808	0.611679	0.86275	0.781122	0.872555	0.795062	0.782991	0.860264	0.788322	0.872566
3.162	0.850871	0.599787	0.84408	0.772075	0.844768	0.780163	0.771459	0.849537	0.77286	0.85588
3.981	0.828475	0.584115	0.824765	0.746726	0.830868	0.7584	0.746249	0.814927	0.754367	0.828789
5.012	0.825418	0.585552	0.824811	0.74636	0.829833	0.757911	0.748676	0.813464	0.755362	0.832457
6.31	0.826638	0.586495	0.824463	0.755093	0.828086	0.760701	0.75501	0.825931	0.75228	0.830792
7.943	0.817208	0.58317	0.819047	0.740247	0.826031	0.747238	0.751161	0.804496	0.740748	0.820898
10	0.825144	0.583218	0.818184	0.748667	0.818698	0.754252	0.74903	0.820057	0.748843	0.828488

Table J-5: Case 2 1cm Contamination Depth Room ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.593338	1.629329	1.661022	1.520868	1.615972	2.146577	1.376471	13.05988	2.302249	1.682557
0.013	1.658488	1.383276	1.058707	1.180541	1.062871	1.450852	1.039941	6.531859	1.732558	1.201084
0.016	1.440607	1.270014	0.973955	1.093193	0.97276	1.369572	1.015123	4.840665	1.462617	1.202284
0.02	1.059138	1.01456	0.909594	0.9254	0.831533	1.114265	0.811335	2.949402	1.107613	0.922525
0.025	0.795221	0.7663	0.672969	0.724808	0.637765	0.851558	0.619573	1.60155	0.756604	0.634669
0.032	0.824562	0.794911	0.792239	0.795833	0.747565	0.829314	0.690882	1.26108	0.787582	0.699683
0.04	0.845516	0.846436	0.861482	0.865976	0.882291	0.942994	0.785014	1.200614	0.882342	0.81501
0.05	1.048045	0.988415	1.038484	1.075048	1.050471	1.085227	1.03291	1.371065	1.038289	0.976168
0.063	1.100554	1.040098	1.074047	1.152779	1.233747	1.141413	1.059956	1.290318	1.107303	1.066151
0.079	1.258944	1.154202	1.285181	1.30559	1.335221	1.276782	1.184392	1.398391	1.248819	1.212652
0.1	1.400688	1.284833	1.43002	1.432949	1.474933	1.423665	1.314473	1.614589	1.402888	1.392977
0.126	1.478084	1.294644	1.50363	1.53764	1.582703	1.500704	1.439236	1.582232	1.502211	1.467892
0.158	1.48905	1.306234	1.508611	1.520929	1.717093	1.513759	1.480354	1.57987	1.524967	1.535184
0.2	1.538636	1.336375	1.640326	1.661232	1.735057	1.558623	1.515918	1.682428	1.546683	1.602672
0.251	1.340374	1.150712	1.410572	1.419685	1.454592	1.388888	1.325778	1.416678	1.352082	1.381908
0.316	1.338722	1.150487	1.422878	1.391062	1.514894	1.382553	1.320363	1.358285	1.355718	1.373076
0.398	1.221575	1.014185	1.283168	1.251799	1.340457	1.228102	1.186249	1.232803	1.221925	1.26671
0.501	1.18921	0.98308	1.243282	1.229917	1.310855	1.196356	1.148557	1.198238	1.180805	1.235127
0.631	1.22555	0.990758	1.275904	1.200191	1.275101	1.199479	1.214171	1.292315	1.199547	1.276809
0.794	1.215036	0.965078	1.259211	1.185767	1.260097	1.183687	1.204011	1.272512	1.192417	1.261804
1	1.25088	0.97876	1.292882	1.21824	1.288406	1.210205	1.23712	1.311851	1.22328	1.301964
1.259	1.184283	0.923119	1.271424	1.18686	1.269134	1.166458	1.118514	1.179825	1.157412	1.226754
1.585	1.122123	0.870402	1.177707	1.12944	1.184048	1.112062	1.058852	1.129134	1.108934	1.158583
1.995	1.096535	0.839984	1.149786	1.114663	1.173608	1.064014	1.039773	1.095463	1.077216	1.13561
2.512	1.039192	0.800898	1.110291	1.072578	1.123418	1.01927	0.994274	1.046695	1.024898	1.088701
3.162	1.030551	0.784041	1.082141	1.041076	1.088282	1.00398	0.968575	1.036945	1.00483	1.06495
3.981	0.992278	0.749009	1.042984	1.005324	1.044325	0.95355	0.932261	0.989052	0.961364	1.033557
5.012	0.9897	0.745189	1.039777	0.994138	1.040536	0.946069	0.919126	0.985632	0.953882	1.022024
6.31	0.980103	0.735753	1.025749	0.98394	1.026187	0.929859	0.908387	0.971088	0.946128	1.012323
7.943	0.969907	0.723193	1.015384	0.978067	1.014389	0.922711	0.889819	0.958702	0.925508	0.991599
10	0.949234	0.710361	0.988807	0.922037	0.993519	0.927468	0.889003	0.938959	0.919861	0.981636

Table J-6: Case 2 5cm Contamination Depth Room Ratios

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.416044	1.58315	1.592378	1.377792	1.540235	1.936318	1.28975	12.00147	2.21445	1.505015
0.013	1.439602	1.110712	0.866587	0.94742	0.874371	1.167471	0.860043	5.883137	1.464604	0.961542
0.016	1.806096	1.633501	1.127503	1.298256	1.132465	1.688726	1.161804	7.766627	1.976842	1.311614
0.02	1.325912	1.249583	0.844817	0.970697	0.869422	1.16988	0.905589	4.886713	1.503984	1.043879
0.025	1.232465	1.143493	0.773429	0.916616	0.863541	1.080005	0.856594	3.986623	1.347357	1.039943
0.032	0.972096	0.957488	0.748851	0.840085	0.783209	0.958015	0.75046	2.887384	1.049061	0.785939
0.04	0.893032	0.909737	0.706566	0.792807	0.726047	0.916451	0.706391	2.169187	0.924966	0.732756
0.05	0.918575	0.885264	0.785291	0.853277	0.756567	0.876431	0.795128	1.733203	0.894541	0.795441
0.063	0.945654	0.913314	0.817237	0.952262	0.89322	0.92028	0.79234	1.400352	0.924326	0.818036
0.079	1.057375	1.043577	0.972504	1.088286	1.025218	1.063307	0.991422	1.428528	1.033656	0.930281
0.1	1.289052	1.268452	1.270915	1.301765	1.266049	1.379971	1.190803	1.624986	1.337514	1.16497
0.126	1.444262	1.393607	1.354891	1.406504	1.387042	1.453772	1.395006	1.757694	1.414284	1.310175
0.158	1.528863	1.460957	1.510005	1.574127	1.496257	1.541646	1.498168	1.769361	1.545515	1.469947
0.2	1.594881	1.534524	1.624426	1.57831	1.551641	1.582773	1.50974	1.7566	1.619213	1.615114
0.251	1.651767	1.567746	1.618091	1.637307	1.691298	1.663601	1.551357	1.700227	1.695835	1.620514
0.316	1.640601	1.605722	1.679919	1.719932	1.6757	1.686365	1.554289	1.655463	1.683069	1.661938
0.398	1.661572	1.548173	1.651492	1.645175	1.582786	1.678914	1.565532	1.689339	1.671916	1.636317
0.501	1.681628	1.551863	1.631273	1.670043	1.650354	1.689839	1.527352	1.673508	1.643592	1.6544
0.631	1.576146	1.428324	1.55979	1.64067	1.615643	1.621748	1.482565	1.593519	1.609158	1.587289
0.794	1.562137	1.402225	1.571999	1.564798	1.616095	1.583084	1.509252	1.580531	1.576287	1.59419
1	1.506861	1.388546	1.545668	1.569367	1.604071	1.609533	1.49248	1.524028	1.577244	1.558938
1.259	1.425162	1.278857	1.48894	1.479366	1.498148	1.493323	1.369193	1.463814	1.456836	1.467702
1.585	1.342824	1.223347	1.501701	1.444256	1.4905	1.420002	1.300731	1.397532	1.374985	1.41068
1.995	1.278343	1.139949	1.385883	1.323209	1.4632	1.34464	1.261074	1.381272	1.307896	1.386969
2.512	1.26071	1.124119	1.381691	1.352409	1.376573	1.349586	1.269507	1.33485	1.291259	1.331368
3.162	1.238535	1.080304	1.353756	1.33053	1.318242	1.308747	1.197302	1.252347	1.256494	1.288242
3.981	1.208969	1.046076	1.287743	1.315657	1.267988	1.267195	1.149209	1.223317	1.218857	1.26382
5.012	1.191623	1.029224	1.285674	1.2519	1.253882	1.241619	1.14817	1.203819	1.211281	1.275492
6.31	1.184091	1.023742	1.280327	1.259566	1.221056	1.228861	1.136302	1.216532	1.214234	1.261093
7.943	1.165515	0.967404	1.244207	1.149241	1.242534	1.173806	1.139688	1.193928	1.171831	1.228691
10	1.173882	0.953801	1.240236	1.180138	1.265065	1.173642	1.121972	1.20268	1.168253	1.22647

Case 3

Table J-7: Case 3 Surface Contamination Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	3.143867	1.658083	3.377582	2.77042	3.333138	2.925292	2.728422	3.326198	2.693591	3.267844
0.013	2.254308	1.460208	2.34174	2.050421	2.319441	2.116236	2.059321	2.321068	2.021201	2.298833
0.016	1.770364	1.214638	1.805081	1.620063	1.795515	1.667912	1.623777	1.795495	1.602736	1.7816
0.02	1.463947	1.031769	1.472519	1.338804	1.469682	1.388865	1.340088	1.469962	1.329167	1.461334
0.025	1.21468	0.87652	1.218169	1.109787	1.212022	1.166833	1.10704	1.210188	1.098381	1.203192
0.032	1.088327	0.789103	1.090722	0.99436	1.075861	1.069456	0.987117	1.076883	0.984927	1.070901
0.04	0.983756	0.727743	0.978748	0.903235	0.971695	0.994839	0.893033	0.967665	0.890046	0.963182
0.05	1.028812	0.77621	1.025612	0.950252	1.021325	1.061514	0.935239	1.011899	0.932199	1.004534
0.063	1.013066	0.777719	1.014116	0.944523	1.013029	1.043093	0.923886	0.996108	0.920071	0.993404
0.079	1.060989	0.824806	1.066227	0.998308	1.068724	1.070619	0.965923	1.048849	0.970475	1.047611
0.1	1.134131	0.88136	1.143403	1.069035	1.127236	1.131197	1.038696	1.119972	1.036416	1.125371
0.126	1.184368	0.918962	1.201031	1.116147	1.186982	1.15628	1.092772	1.177872	1.089762	1.189209
0.158	1.189851	0.919121	1.1976	1.115035	1.202745	1.140664	1.095703	1.187373	1.087035	1.190437
0.2	1.162531	0.892118	1.169629	1.082935	1.163889	1.10589	1.080198	1.155888	1.073498	1.168474
0.251	1.041822	0.788914	1.042472	0.967961	1.048018	0.983523	0.963286	1.039924	0.958807	1.04986
0.316	1.022744	0.764867	1.023618	0.950399	1.023055	0.954169	0.939383	1.031566	0.943363	1.035437
0.398	0.957982	0.710088	0.971956	0.888625	0.958232	0.889139	0.876925	0.955334	0.882205	0.971873
0.501	0.921418	0.676891	0.922251	0.848963	0.92217	0.84661	0.84814	0.920244	0.843062	0.948813
0.631	0.903962	0.661874	0.907065	0.822106	0.914097	0.838672	0.830982	0.904518	0.831282	0.912516
0.794	0.89323	0.644138	0.890188	0.810534	0.893817	0.821258	0.815488	0.887237	0.815766	0.898238
1	0.961512	0.691575	0.958637	0.875288	0.964955	0.884073	0.879017	0.958356	0.879369	0.962977
1.259	0.918862	0.655697	0.9107	0.837818	0.916357	0.836125	0.835236	0.919599	0.838541	0.923105
1.585	0.895663	0.641202	0.893765	0.805838	0.898861	0.817977	0.812994	0.900928	0.815474	0.905405
1.995	0.879636	0.621833	0.879872	0.793602	0.883411	0.803194	0.795826	0.898124	0.800864	0.878283
2.512	0.869214	0.612592	0.858128	0.792154	0.864546	0.788006	0.792432	0.869296	0.784207	0.875308
3.162	0.850331	0.598446	0.843152	0.761444	0.849585	0.772768	0.765924	0.843792	0.772802	0.851056
3.981	0.824754	0.584483	0.823175	0.746537	0.831398	0.753529	0.747165	0.816811	0.75242	0.831439
5.012	0.830425	0.586416	0.824341	0.754866	0.828155	0.758812	0.754229	0.831317	0.753945	0.832793
6.31	0.82307	0.58618	0.822567	0.747234	0.831728	0.748994	0.750255	0.816873	0.747894	0.834014
7.943	0.817931	0.582216	0.819518	0.739858	0.824894	0.743384	0.750198	0.807811	0.740853	0.820444
10	0.820308	0.58305	0.814301	0.742906	0.818958	0.750773	0.753112	0.821699	0.748633	0.824144

Table J-8: Case 3 1cm Contamination Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.881572	2.20085	2.177147	1.95052	1.726905	13.30567	1.450948	2.126525	1.689829	1.616487
0.013	1.793617	1.712688	1.410515	1.449324	1.145519	6.850835	1.089147	1.311831	1.37292	1.151292
0.016	1.550332	1.590132	1.258854	1.297251	1.021629	4.866604	1.045832	1.259646	1.277045	1.133925
0.02	1.126501	1.123197	1.140127	1.047948	0.854862	3.220265	0.828514	1.033798	0.967216	0.83279
0.025	0.851016	0.808039	0.80171	0.786726	0.63613	1.836821	0.641154	0.785739	0.711691	0.639734
0.032	0.83225	0.823361	0.896985	0.816269	0.754525	1.408883	0.688534	0.752289	0.777286	0.702771
0.04	0.864077	0.863669	0.935759	0.90003	0.878093	1.358455	0.802206	0.816155	0.847389	0.791451
0.05	1.05491	1.008426	1.098605	1.107142	1.055185	1.396664	1.031325	1.047997	1.025698	0.973688
0.063	1.109326	1.045584	1.151477	1.165873	1.251777	1.428691	1.067313	1.045501	1.10908	1.067869
0.079	1.300768	1.171125	1.33329	1.326868	1.337015	1.506642	1.187409	1.242912	1.244477	1.193317
0.1	1.407361	1.274295	1.437591	1.448307	1.50098	1.580213	1.333257	1.328278	1.365527	1.365732
0.126	1.498115	1.316292	1.51994	1.481996	1.587122	1.59063	1.492644	1.450192	1.511844	1.513374
0.158	1.486409	1.316282	1.533956	1.574592	1.714964	1.581728	1.456034	1.511917	1.53203	1.507591
0.2	1.543431	1.355083	1.672986	1.631005	1.694412	1.608304	1.5208	1.61192	1.552137	1.620187
0.251	1.341082	1.169872	1.444837	1.397262	1.46564	1.404055	1.350175	1.356537	1.345477	1.373183
0.316	1.350983	1.160427	1.455754	1.427659	1.516637	1.400976	1.313946	1.346152	1.376051	1.385249
0.398	1.208313	1.017017	1.300889	1.261392	1.338037	1.221652	1.170713	1.210524	1.21572	1.268436
0.501	1.191893	0.981916	1.25703	1.238703	1.303613	1.19041	1.148411	1.17028	1.172687	1.232359
0.631	1.226748	0.991329	1.306465	1.245071	1.314246	1.208957	1.168726	1.200757	1.210439	1.263937
0.794	1.217471	0.965582	1.268035	1.188509	1.261161	1.191466	1.204608	1.26658	1.192893	1.263315
1	1.252095	0.978454	1.297528	1.219166	1.288913	1.214561	1.236452	1.316762	1.224424	1.300507
1.259	1.176897	0.922442	1.275563	1.189717	1.259059	1.145548	1.122139	1.180795	1.157796	1.229533
1.585	1.117032	0.875324	1.185573	1.129234	1.198113	1.095982	1.060282	1.135686	1.106618	1.162977
1.995	1.099495	0.840663	1.146676	1.110618	1.17015	1.058739	1.042627	1.091688	1.075266	1.137842
2.512	1.040773	0.799883	1.099356	1.060651	1.119437	1.013156	0.986945	1.046615	1.022004	1.08845
3.162	1.034793	0.783227	1.080331	1.042531	1.095968	0.996855	0.965952	1.037297	1.001402	1.062931
3.981	0.991873	0.749457	1.045907	1.005538	1.047848	0.954674	0.930542	0.994152	0.956137	1.037538
5.012	0.990776	0.745124	1.043326	0.992765	1.040955	0.946456	0.919681	0.990046	0.956018	1.021505
6.31	0.979158	0.735587	1.038689	0.988486	1.029165	0.934118	0.906813	0.968689	0.94422	1.014541
7.943	0.96324	0.721961	1.0183	0.978006	1.013178	0.926538	0.898826	0.961909	0.927365	0.995189
10	0.960526	0.7084	1.005681	0.947918	1.00199	0.910615	0.877441	0.946083	0.904152	0.98131

Table J-9: Case 3 5cm Contamination Depth Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.630192	2.122242	2.370093	1.734505	1.60505	12.3517	1.362269	1.84144	1.612315	1.439339
0.013	1.618548	1.477116	1.154182	1.241003	0.965173	6.157409	0.912564	1.134611	1.115834	0.905876
0.016	1.994496	2.053141	1.450127	1.668784	1.25532	7.17619	1.215398	1.387646	1.475186	1.210042
0.02	1.438328	1.533916	1.091804	1.234065	0.953027	4.918302	0.949432	1.021786	1.129032	1.015624
0.025	1.285288	1.334782	0.979033	1.116052	0.917741	4.180267	0.880943	1.009915	1.036762	0.910108
0.032	1.048553	1.076988	0.909023	0.973347	0.812869	2.904443	0.786415	0.847813	0.882008	0.769219
0.04	0.992411	1.038418	0.832341	0.933321	0.762314	2.343056	0.728204	0.850722	0.874266	0.724762
0.05	0.944253	0.946785	0.867443	0.92092	0.818728	1.862463	0.820536	0.834752	0.837737	0.766648
0.063	0.971674	0.965552	0.922451	0.993086	0.855811	1.575358	0.847495	0.864667	0.881782	0.84914
0.079	1.089707	1.089775	1.025025	1.123971	1.06716	1.498472	0.937136	0.98937	1.050507	0.965891
0.1	1.311931	1.301395	1.318217	1.324563	1.277878	1.898501	1.181919	1.287869	1.52854	1.199475
0.126	1.455012	1.425033	1.434887	1.43312	1.41329	1.772739	1.389164	1.423463	1.40189	1.322384
0.158	1.543021	1.494509	1.563475	1.535073	1.689705	1.809686	1.501731	1.496639	1.561593	1.484019
0.2	1.606989	1.554786	1.643123	1.670826	1.742338	1.825352	1.503748	1.490024	1.646421	1.571539
0.251	1.648715	1.590153	1.66433	1.638468	1.628972	1.834116	1.600939	1.561363	1.683109	1.648844
0.316	1.675704	1.58551	1.666943	1.706675	1.650834	1.808475	1.575497	1.489146	1.716516	1.606891
0.398	1.64603	1.547336	1.685271	1.640578	1.588204	1.771771	1.58259	1.583276	1.67201	1.652261
0.501	1.643367	1.538573	1.64251	1.679125	1.677008	1.765438	1.544825	1.532056	1.680843	1.660843
0.631	1.541951	1.424686	1.61496	1.7078	1.59445	1.709923	1.45607	1.496855	1.579702	1.574852
0.794	1.567568	1.407949	1.618206	1.591646	1.639181	1.672963	1.51351	1.504351	1.587544	1.603795
1	1.510388	1.391977	1.588894	1.569696	1.584942	1.696176	1.498834	1.481667	1.59452	1.542553
1.259	1.426778	1.279051	1.509381	1.483027	1.516489	1.53848	1.362031	1.411625	1.448037	1.455533
1.585	1.336889	1.229582	1.499454	1.465148	1.442232	1.449231	1.290156	1.346717	1.357764	1.389213
1.995	1.298536	1.155766	1.450818	1.387183	1.429021	1.353557	1.253628	1.325967	1.309327	1.390259
2.512	1.261809	1.122327	1.390968	1.344208	1.358672	1.354954	1.259513	1.306071	1.281554	1.323821
3.162	1.225858	1.079739	1.350441	1.338813	1.316404	1.288057	1.190476	1.227435	1.256836	1.28686
3.981	1.200897	1.040692	1.30379	1.29772	1.246719	1.237262	1.149209	1.188458	1.217054	1.267791
5.012	1.187982	1.026707	1.292646	1.308068	1.257619	1.229482	1.137137	1.192933	1.217625	1.273015
6.31	1.191662	1.014996	1.290709	1.257806	1.224967	1.212314	1.150425	1.198495	1.213234	1.262229
7.943	1.171301	0.978743	1.258752	1.16515	1.224993	1.184461	1.13547	1.178081	1.180188	1.237334
10	1.159084	0.951309	1.275178	1.18944	1.218189	1.177114	1.112194	1.192913	1.168566	1.231316

Case 4

Table J-10: Case 4 Surface Contamination Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	3.13219	1.65718	3.343624	2.768757	3.330815	2.743974	2.729378	3.456877	2.752121	3.285865
0.013	2.250864	1.458428	2.310671	2.047361	2.318187	2.051051	2.05322	2.369167	2.04453	2.308456
0.016	1.768682	1.213145	1.794559	1.618096	1.795083	1.624936	1.624022	1.833676	1.613477	1.78514
0.02	1.462482	1.029828	1.466162	1.336241	1.469391	1.345809	1.339894	1.515334	1.335984	1.462503
0.025	1.21363	0.872924	1.212187	1.106986	1.210055	1.114129	1.106631	1.270229	1.104303	1.202544
0.032	1.087144	0.78481	1.085489	0.989191	1.074406	1.000347	0.986246	1.160828	0.99051	1.069246
0.04	0.982043	0.722313	0.973632	0.898028	0.970091	0.906137	0.891367	1.072271	0.895	0.959888
0.05	1.026502	0.770137	1.020337	0.94392	1.018885	0.954509	0.933073	1.143396	0.937512	1.000436
0.063	1.011012	0.771238	1.009493	0.93712	1.009471	0.941018	0.92091	1.119734	0.923629	0.987799
0.079	1.060919	0.819078	1.062849	0.990364	1.062793	0.983755	0.965209	1.155985	0.970734	1.041597
0.1	1.131957	0.877036	1.139744	1.061367	1.128305	1.055927	1.034699	1.211392	1.037788	1.121587
0.126	1.183934	0.913791	1.198865	1.112958	1.193171	1.104339	1.098211	1.255387	1.088776	1.19086
0.158	1.188018	0.915412	1.1976	1.111235	1.196631	1.103365	1.096392	1.239519	1.086733	1.187694
0.2	1.162487	0.888995	1.17054	1.084975	1.166084	1.081263	1.080519	1.193829	1.070613	1.165947
0.251	1.042565	0.78949	1.044165	0.967004	1.049111	0.963292	0.966237	1.059564	0.963807	1.047778
0.316	1.023083	0.765923	1.030373	0.946948	1.025134	0.949709	0.941001	1.036588	0.945568	1.031125
0.398	0.959566	0.709974	0.967989	0.888136	0.959369	0.880402	0.87787	0.964286	0.880691	0.970343
0.501	0.920746	0.677317	0.919375	0.846502	0.921722	0.842642	0.84821	0.923657	0.845689	0.947648
0.631	0.904745	0.661181	0.907416	0.820379	0.908031	0.836638	0.827316	0.903545	0.827228	0.912179
0.794	0.892099	0.644525	0.889602	0.808635	0.892958	0.824082	0.814883	0.889414	0.815808	0.897561
1	0.96398	0.690347	0.959166	0.885339	0.962674	0.88074	0.879815	0.959574	0.885075	0.969262
1.259	0.915414	0.65562	0.910709	0.826109	0.917677	0.837854	0.834352	0.910467	0.844777	0.921071
1.585	0.893712	0.640461	0.89219	0.805747	0.89452	0.827411	0.811885	0.898106	0.813666	0.90203
1.995	0.882285	0.621957	0.877769	0.802887	0.87611	0.80745	0.797734	0.890386	0.806295	0.886331
2.512	0.868988	0.612281	0.858605	0.791813	0.864423	0.791737	0.791873	0.865363	0.783765	0.876071
3.162	0.849643	0.598769	0.844528	0.762376	0.85128	0.776001	0.765635	0.837804	0.772622	0.851386
3.981	0.824984	0.583957	0.828123	0.750201	0.833982	0.759004	0.751744	0.807944	0.747383	0.825241
5.012	0.829318	0.586932	0.824655	0.75588	0.829243	0.763598	0.75516	0.828029	0.751988	0.832792
6.31	0.823028	0.586175	0.822707	0.746688	0.831864	0.752945	0.750359	0.812751	0.746904	0.83188
7.943	0.816338	0.580988	0.818796	0.741215	0.824842	0.747313	0.749974	0.805278	0.74009	0.820617
10	0.826239	0.581336	0.820505	0.745284	0.825196	0.763387	0.749898	0.810691	0.744628	0.824415

Table J-11: Case 4 1cm Contamination Depth Room Ratios

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.631976	1.657371	1.825433	1.562432	1.616549	2.519123	1.345236	13.81546	2.016169	1.519039
0.013	1.701316	1.390849	1.231228	1.216655	1.059462	1.750957	1.002596	6.934354	1.486106	1.028679
0.016	1.464759	1.314429	1.099026	1.126101	0.972347	1.471988	0.985424	4.931043	1.346309	1.030277
0.02	1.057762	1.019559	0.976397	0.935335	0.832084	1.123553	0.812099	3.028872	1.107019	0.861703
0.025	0.801014	0.77848	0.680324	0.722433	0.631134	0.77634	0.626579	1.780144	0.80316	0.61309
0.032	0.845796	0.812479	0.779755	0.843463	0.75179	0.801813	0.700576	1.39555	0.855828	0.695245
0.04	0.843254	0.842793	0.885538	0.860183	0.883448	0.91249	0.789084	1.255559	0.931147	0.814927
0.05	1.044754	0.988352	1.043851	1.076223	1.049712	1.06614	1.026899	1.391007	1.074792	0.976158
0.063	1.105875	1.03531	1.100936	1.199429	1.251299	1.129868	1.034945	1.353429	1.114697	1.089728
0.079	1.260155	1.156933	1.299374	1.309338	1.329713	1.267743	1.191249	1.499957	1.272394	1.210664
0.1	1.391386	1.273874	1.44097	1.603994	1.49587	1.399125	1.333884	1.480072	1.434634	1.40987
0.126	1.484989	1.299791	1.495791	1.526331	1.559112	1.507336	1.439662	1.574356	1.572444	1.488217
0.158	1.477932	1.306809	1.511078	1.567856	1.735696	1.48678	1.464449	1.578608	1.540382	1.537228
0.2	1.548868	1.340398	1.634646	1.662307	1.74013	1.546614	1.516273	1.691429	1.567051	1.597881
0.251	1.348778	1.154994	1.40965	1.406043	1.441669	1.356974	1.337938	1.420853	1.455647	1.385266
0.316	1.347732	1.147716	1.432509	1.455056	1.513716	1.364478	1.306845	1.404744	1.381724	1.364033
0.398	1.205741	1.014818	1.292039	1.258068	1.345657	1.212423	1.177312	1.241155	1.230122	1.262776
0.501	1.18411	0.983545	1.246695	1.23793	1.31591	1.179854	1.1564	1.196312	1.1972	1.24661
0.631	1.224249	0.992157	1.270283	1.199264	1.276458	1.189695	1.214805	1.296184	1.210665	1.277895
0.794	1.215353	0.965414	1.256683	1.186746	1.258381	1.173044	1.203787	1.272783	1.205401	1.269733
1	1.250702	0.978751	1.287351	1.218909	1.290209	1.201502	1.235019	1.31954	1.232217	1.30512
1.259	1.182558	0.924538	1.27024	1.191201	1.261597	1.153201	1.118572	1.178576	1.163568	1.232845
1.585	1.119395	0.870133	1.192288	1.134051	1.199627	1.096536	1.06378	1.127478	1.11566	1.163515
1.995	1.096932	0.840067	1.143867	1.115135	1.166701	1.055131	1.039345	1.084211	1.081693	1.137961
2.512	1.04202	0.804144	1.111338	1.06373	1.129475	1.010586	0.987171	1.044816	1.032343	1.098193
3.162	1.031975	0.784679	1.080963	1.042451	1.09504	1.001331	0.968245	1.03393	1.006773	1.072433
3.981	0.992924	0.74909	1.039438	1.006581	1.048817	0.947941	0.933752	0.986712	0.962648	1.036218
5.012	0.990207	0.747123	1.04405	0.99966	1.043765	0.946504	0.920961	0.985519	0.959209	1.025319
6.31	0.977754	0.735757	1.033185	0.983162	1.032993	0.928953	0.909044	0.970798	0.945216	1.014131
7.943	0.969271	0.722608	1.011902	0.975796	1.013155	0.922606	0.895145	0.952129	0.933066	0.996398
10	0.961757	0.70869	1.000296	0.943791	1.00501	0.904679	0.87758	0.94331	0.911931	0.983208

Table J-12: Case 4 5cm Contamination Depth Room Ratios

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.371632	1.526082	1.728829	1.410568	1.534355	2.274224	1.260206	11.87242	1.880818	1.353945
0.013	1.443325	1.141272	1.046448	0.992205	0.889613	1.504111	0.818934	6.170962	1.197096	0.798017
0.016	1.865619	1.796585	1.410094	1.445201	1.161394	2.205611	1.09281	7.475263	1.542342	1.050059
0.02	1.41112	1.300682	1.069609	1.048694	0.85684	1.535971	0.854285	5.033236	1.164508	0.806315
0.025	1.28603	1.160121	0.95546	0.959373	0.862462	1.342423	0.816591	4.24113	1.086627	0.858651
0.032	0.981401	0.948131	0.850354	0.896265	0.799147	1.081419	0.747932	2.845546	0.917533	0.689883
0.04	0.907506	0.911553	0.760948	0.824536	0.710553	0.963284	0.685343	2.177032	0.876417	0.652539
0.05	0.906149	0.877954	0.82927	0.864968	0.753537	0.910447	0.778336	1.865752	0.858725	0.729693
0.063	0.936835	0.918689	0.866108	0.947405	0.877905	0.937526	0.835678	1.489591	0.917177	0.771452
0.079	1.048459	1.083889	1.01801	1.08554	1.010239	1.095761	1.022817	1.534934	1.049269	0.908755
0.1	1.294481	1.262991	1.27006	1.291519	1.235197	1.359411	1.206465	1.674526	1.381775	1.142728
0.126	1.443219	1.396147	1.392343	1.392748	1.428776	1.450422	1.385925	1.738612	1.42253	1.305094
0.158	1.540948	1.477217	1.519358	1.582974	1.502496	1.536391	1.513883	1.786232	1.58499	1.471094
0.2	1.603734	1.532616	1.615281	1.582016	1.594269	1.557189	1.544906	1.763867	1.649654	1.693258
0.251	1.659871	1.580433	1.607832	1.652193	1.694456	1.654313	1.568217	1.693833	1.724233	1.620503
0.316	1.669436	1.572387	1.631632	1.649082	1.631295	1.659432	1.566774	1.665873	1.74831	1.615445
0.398	1.655067	1.532671	1.640031	1.621737	1.608855	1.636175	1.556488	1.740689	1.690756	1.647923
0.501	1.626098	1.541746	1.618348	2.036559	1.635526	1.643691	1.541202	1.651345	1.638492	1.680513
0.631	1.562859	1.434597	1.587499	1.67884	1.591668	1.655952	1.480411	1.635203	1.630479	1.613384
0.794	1.541057	1.407817	1.567203	1.567259	1.610267	1.546904	1.514057	1.593729	1.614631	1.603024
1	1.508769	1.384402	1.560859	1.558307	1.588331	1.579329	1.489859	1.559885	1.618713	1.53738
1.259	1.422351	1.277942	1.480841	1.475812	1.515368	1.462124	1.369968	1.468445	1.48181	1.481358
1.585	1.340534	1.223458	1.488407	1.435706	1.494033	1.399256	1.297704	1.411452	1.413639	1.417489
1.995	1.299137	1.148562	1.424376	1.367038	1.427169	1.313572	1.261267	1.32912	1.337312	1.396557
2.512	1.280947	1.128845	1.368666	1.360431	1.36183	1.324139	1.26462	1.316458	1.314179	1.346012
3.162	1.234531	1.073844	1.328967	1.326345	1.317178	1.283701	1.191816	1.258707	1.251075	1.291913
3.981	1.198846	1.039	1.295973	1.293721	1.284655	1.211064	1.146094	1.232123	1.233902	1.276227
5.012	1.201186	1.018437	1.282032	1.246021	1.225193	1.227487	1.144293	1.224438	1.216501	1.2737
6.31	1.183411	1.019015	1.265689	1.25426	1.228412	1.208741	1.141391	1.222955	1.224011	1.26721
7.943	1.172151	0.965017	1.235113	1.158847	1.230182	1.138588	1.142525	1.208565	1.192168	1.246074
10	1.157627	0.957019	1.259635	1.192627	1.232791	1.140203	1.121547	1.205887	1.176248	1.244154

Case 5

Table J-13: Case 5 Surface Contamination Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	3.131326	1.656867	3.339334	2.76622	3.33147	2.737376	2.73524	3.283393	2.754715	3.461822
0.013	2.250827	1.458692	2.310615	2.047341	2.318845	2.046696	2.057427	2.306376	2.044335	2.371159
0.016	1.768058	1.213215	1.79352	1.617886	1.795772	1.620779	1.628118	1.788113	1.61315	1.831003
0.02	1.462562	1.029757	1.46491	1.336326	1.47064	1.340236	1.345258	1.464559	1.33589	1.512665
0.025	1.213351	0.872562	1.210536	1.106613	1.211359	1.105549	1.114885	1.20551	1.103683	1.266973
0.032	1.086044	0.784849	1.082447	0.989765	1.077049	0.988105	0.997714	1.068458	0.990442	1.16243
0.04	0.980776	0.722409	0.969946	0.897256	0.974302	0.890565	0.90703	0.956847	0.894209	1.074425
0.05	1.026456	0.770213	1.015654	0.943449	1.023628	0.934768	0.952791	1.000566	0.937443	1.142119
0.063	1.011178	0.771533	1.004591	0.93996	1.015355	0.923115	0.939983	0.9865	0.92551	1.126193
0.079	1.059877	0.817407	1.057478	0.993329	1.071507	0.969349	0.984	1.042317	0.971769	1.171797
0.1	1.130467	0.877351	1.12682	1.058374	1.130764	1.04327	1.051567	1.115012	1.040858	1.218822
0.126	1.181807	0.915655	1.195544	1.110585	1.184481	1.104646	1.098508	1.183444	1.101995	1.263435
0.158	1.187144	0.916345	1.189883	1.113684	1.199142	1.098078	1.101256	1.186579	1.088256	1.237701
0.2	1.165066	0.894363	1.175399	1.085112	1.167658	1.073998	1.082799	1.166221	1.079626	1.204003
0.251	1.042223	0.78854	1.040351	0.968103	1.048208	0.961731	0.966222	1.037551	0.959497	1.064654
0.316	1.023413	0.76418	1.028171	0.947838	1.023887	0.942445	0.941957	1.023612	0.944026	1.044256
0.398	0.959478	0.709165	0.961148	0.885402	0.961564	0.882528	0.882673	0.952335	0.879407	0.971863
0.501	0.917736	0.68335	0.917234	0.836538	0.922457	0.846662	0.839873	0.914385	0.843615	0.937561
0.631	0.90457	0.661526	0.905748	0.825625	0.917404	0.837069	0.831391	0.905682	0.827433	0.908243
0.794	0.893805	0.64637	0.892033	0.80872	0.892837	0.82355	0.815711	0.888477	0.815451	0.898541
1	0.96398	0.689967	0.959562	0.885169	0.963842	0.880895	0.878785	0.960917	0.887058	0.969361
1.259	0.915688	0.656437	0.910858	0.827505	0.924533	0.838186	0.834576	0.916029	0.84519	0.91668
1.585	0.896753	0.638112	0.888616	0.817477	0.89755	0.818883	0.820101	0.902319	0.81243	0.904627
1.995	0.87911	0.621488	0.878261	0.805596	0.885195	0.805957	0.796078	0.896398	0.800213	0.876471
2.512	0.868939	0.612663	0.863131	0.791481	0.864652	0.796896	0.78518	0.871321	0.786883	0.86883
3.162	0.849613	0.598686	0.844417	0.761843	0.852609	0.776306	0.765958	0.842229	0.772943	0.847612
3.981	0.823528	0.584478	0.825177	0.748958	0.833855	0.758729	0.748938	0.81643	0.748895	0.825995
5.012	0.829376	0.586991	0.821631	0.754807	0.826501	0.763917	0.752444	0.832139	0.754382	0.830077
6.31	0.826251	0.585558	0.81724	0.748078	0.82856	0.76137	0.750981	0.818654	0.745862	0.820585
7.943	0.823721	0.582064	0.816592	0.748264	0.817933	0.750953	0.749238	0.819036	0.745345	0.821383
10	0.825144	0.585927	0.827457	0.746684	0.823151	0.762452	0.748769	0.801459	0.737749	0.825377

Table J-14: Case 5 1cm Contamination Depth Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.605	1.654	1.654	1.605	1.704	1.427	2.290	1.397	1.959	13.244
0.013	1.706	1.380	1.112	1.198	1.213	1.049	1.672	0.948	1.473	6.874
0.016	1.444	1.254	1.016	1.115	1.101	1.033	1.475	0.961	1.313	5.046
0.02	1.112	1.023	0.837	0.970	0.904	0.866	1.035	0.821	1.103	3.390
0.025	0.812	0.745	0.686	0.723	0.698	0.694	0.804	0.639	0.791	1.798
0.032	0.827	0.788	0.856	0.804	0.777	0.753	0.761	0.661	0.839	1.472
0.04	0.865	0.837	0.843	0.860	0.888	0.853	0.830	0.754	0.899	1.238
0.05	1.056	0.993	1.030	1.077	1.048	1.019	1.073	0.985	1.078	1.411
0.063	1.094	1.036	1.081	1.169	1.283	1.083	1.107	1.006	1.138	1.358
0.079	1.289	1.153	1.313	1.275	1.361	1.200	1.263	1.272	1.284	1.534
0.1	1.386	1.270	1.416	1.418	1.472	1.375	1.339	1.309	1.428	1.603
0.126	1.480	1.325	1.517	1.477	1.593	1.451	1.505	1.439	1.521	1.657
0.158	1.517	1.319	1.561	1.576	1.728	1.500	1.465	1.523	1.596	1.648
0.2	1.537	1.350	1.631	1.620	1.687	1.571	1.496	1.614	1.566	1.636
0.251	1.346	1.161	1.418	1.407	1.513	1.372	1.337	1.341	1.361	1.430
0.316	1.359	1.150	1.421	1.416	1.521	1.363	1.323	1.347	1.381	1.435
0.398	1.218	1.017	1.284	1.264	1.332	1.216	1.179	1.206	1.234	1.306
0.501	1.191	0.981	1.245	1.241	1.316	1.191	1.153	1.177	1.191	1.264
0.631	1.227	0.991	1.295	1.243	1.326	1.270	1.173	1.191	1.214	1.293
0.794	1.216	0.967	1.256	1.190	1.259	1.174	1.205	1.261	1.207	1.277
1	1.249	0.979	1.290	1.217	1.289	1.201	1.236	1.312	1.232	1.309
1.259	1.183	0.923	1.269	1.190	1.261	1.155	1.125	1.179	1.165	1.236
1.585	1.118	0.874	1.194	1.141	1.188	1.102	1.061	1.124	1.116	1.177
1.995	1.091	0.842	1.165	1.122	1.183	1.059	1.046	1.091	1.088	1.150
2.512	1.042	0.804	1.103	1.065	1.130	1.010	0.992	1.039	1.029	1.093
3.162	1.033	0.785	1.085	1.048	1.094	0.998	0.969	1.025	1.008	1.083
3.981	0.992	0.750	1.046	1.009	1.050	0.951	0.935	0.990	0.964	1.042
5.012	0.985	0.746	1.035	0.992	1.039	0.943	0.919	0.989	0.958	1.011
6.31	0.977	0.735	1.033	0.988	1.034	0.927	0.906	0.969	0.949	1.002
7.943	0.969	0.721	1.008	0.976	1.010	0.919	0.896	0.957	0.934	0.980
10	0.944	0.709	0.985	0.925	0.997	0.926	0.893	0.938	0.917	0.969

Table J-15: Case 5 5cm Contamination Depth Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.401286	1.511288	1.621186	1.442016	1.698752	1.300423	2.227493	1.344629	1.88243	12.22615
0.013	1.494651	1.175694	0.937247	1.020699	0.977747	0.865409	1.393061	0.834084	1.068127	6.575846
0.016	1.830877	1.62335	1.233727	1.367	1.347198	1.193645	1.89629	1.048671	1.435955	7.050024
0.02	1.409334	1.233055	0.93896	1.034088	1.003097	0.977792	1.42403	0.758995	1.092398	5.022586
0.025	1.206081	1.176378	0.884046	0.954579	0.931246	0.858975	1.281569	0.72364	1.024539	4.108776
0.032	0.951584	0.945121	0.743228	0.848139	0.990503	0.780557	1.027051	0.690469	0.894473	2.822076
0.04	0.913699	0.922735	0.728674	0.861983	0.769889	0.754634	0.857456	0.745194	0.882255	2.391484
0.05	0.889059	0.880132	0.786559	0.850109	0.824709	0.779226	0.926261	0.732731	0.859421	1.815267
0.063	0.931204	0.896818	0.828873	0.898906	0.891089	0.820601	0.842805	0.739099	0.922143	1.487687
0.079	1.046243	1.051301	0.982077	1.091463	1.043308	0.982054	0.980925	0.915853	1.176886	1.458156
0.1	1.273333	1.336421	1.258341	1.298318	1.349321	1.38684	1.265028	1.22889	1.313041	1.699627
0.126	1.419045	1.403595	1.371776	1.388894	1.401644	1.396355	1.45149	1.356793	1.436004	1.720107
0.158	1.540241	1.476061	1.474619	1.554734	1.60573	1.494977	1.492589	1.393711	1.59632	1.793378
0.2	1.572493	1.534706	1.605037	1.599672	1.587717	1.589034	1.533606	1.449565	1.621004	1.801035
0.251	1.630795	1.555541	1.606099	1.595667	1.600221	1.578515	1.625141	1.503816	1.71306	1.860663
0.316	1.631205	1.557408	1.586627	1.654902	1.783694	1.765019	1.582533	1.474453	1.719932	1.802638
0.398	1.627067	1.511393	1.651272	1.675379	1.616173	1.657359	1.550479	1.500611	1.723232	1.798767
0.501	1.62665	1.509786	1.614119	1.656324	1.636708	1.613548	1.545535	1.51223	1.702713	1.804736
0.631	1.565488	1.426606	1.550017	1.641692	1.604233	1.637373	1.504656	1.450626	1.647075	1.693722
0.794	1.547616	1.402171	1.55809	1.558105	1.638395	1.550009	1.519915	1.457081	1.619729	1.707885
1	1.508975	1.386008	1.553778	1.560324	1.558677	1.590445	1.506628	1.426722	1.620963	1.639983
1.259	1.434047	1.283822	1.471439	1.44738	1.514722	1.483986	1.397258	1.387663	1.486194	1.545717
1.585	1.336452	1.219942	1.490689	1.450688	1.43863	1.402412	1.297824	1.342223	1.399273	1.463098
1.995	1.290316	1.148956	1.436861	1.396149	1.376011	1.314256	1.249688	1.281405	1.335535	1.417062
2.512	1.25938	1.119493	1.358476	1.332027	1.360916	1.315006	1.262636	1.272428	1.320275	1.401511
3.162	1.236341	1.079079	1.330083	1.298696	1.302971	1.280134	1.190624	1.211926	1.265623	1.361142
3.981	1.207869	1.04522	1.275615	1.248577	1.273474	1.245785	1.142608	1.187022	1.242638	1.324053
5.012	1.19659	1.026215	1.286209	1.246251	1.255658	1.228644	1.138697	1.180161	1.222264	1.325818
6.31	1.181517	1.015561	1.276639	1.259549	1.226953	1.208105	1.139151	1.189632	1.22454	1.304511
7.943	1.163634	0.971285	1.221359	1.164848	1.238646	1.141037	1.141126	1.181775	1.184676	1.283508
10	1.164827	0.951824	1.246071	1.179753	1.260176	1.157039	1.124253	1.172803	1.176753	1.274331

Case 6

Table J-16: Case 6 Surface Contamination Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	3.141454	1.660084	3.331381	2.766038	3.333943	2.738273	2.736518	3.325483	2.8693	3.320687
0.013	2.253286	1.46056	2.318399	2.048388	2.320502	2.046517	2.061342	2.322402	2.090514	2.321979
0.016	1.771385	1.216311	1.793226	1.619451	1.795255	1.62196	1.623266	1.796464	1.649247	1.792162
0.02	1.463932	1.031734	1.465511	1.336397	1.469447	1.342398	1.342094	1.469744	1.37455	1.4681
0.025	1.215916	0.871312	1.208436	1.106337	1.211549	1.111302	1.110285	1.212029	1.159407	1.21189
0.032	1.087748	0.7892	1.079371	0.989814	1.074941	0.994058	0.990286	1.076538	1.063498	1.078159
0.04	0.982212	0.726705	0.972311	0.896749	0.972655	0.896791	0.897654	0.967539	0.981053	0.966338
0.05	1.02882	0.777943	1.024882	0.950282	1.032514	0.939306	0.939587	1.001668	1.046858	1.011056
0.063	1.012266	0.776775	1.006072	0.938427	1.01355	0.929582	0.926613	0.996508	1.025825	0.999628
0.079	1.059975	0.821659	1.058583	0.991315	1.06429	0.980825	0.977154	1.046933	1.063227	1.051639
0.1	1.13346	0.881794	1.134642	1.0605	1.127491	1.049565	1.045063	1.12091	1.112435	1.127824
0.126	1.183264	0.918943	1.192662	1.109524	1.184675	1.094857	1.092399	1.17716	1.145236	1.181538
0.158	1.182928	0.918648	1.19912	1.107391	1.185905	1.104724	1.094675	1.192594	1.134109	1.193148
0.2	1.166675	0.894147	1.176373	1.088328	1.163292	1.074787	1.079377	1.166856	1.104223	1.169845
0.251	1.039498	0.795768	1.046878	0.967373	1.060426	0.968269	0.962474	1.057871	0.982019	1.050501
0.316	1.026454	0.765729	1.022206	0.947172	1.030559	0.949425	0.946637	1.023248	0.957277	1.03111
0.398	0.956233	0.709306	0.962586	0.885945	0.963473	0.88184	0.883106	0.953875	0.884456	0.963777
0.501	0.915792	0.681046	0.917825	0.84047	0.928961	0.849666	0.843609	0.920988	0.847892	0.922546
0.631	0.902009	0.664558	0.906092	0.823386	0.91466	0.836484	0.825164	0.896323	0.831882	0.915121
0.794	0.895214	0.645057	0.889287	0.823048	0.890545	0.819026	0.824796	0.891204	0.820586	0.89894
1	0.960499	0.691939	0.958483	0.876009	0.969581	0.885196	0.881605	0.958224	0.879474	0.966546
1.259	0.918934	0.655432	0.91528	0.829247	0.920604	0.844925	0.835385	0.899158	0.829678	0.92174
1.585	0.896869	0.638789	0.896016	0.817943	0.894238	0.821157	0.815207	0.904273	0.815771	0.905014
1.995	0.879866	0.622063	0.878918	0.792201	0.882406	0.805306	0.79492	0.87999	0.801266	0.885042
2.512	0.86511	0.610747	0.867805	0.786736	0.866121	0.798103	0.786531	0.851636	0.780983	0.866764
3.162	0.851628	0.599337	0.843293	0.77448	0.845724	0.774116	0.775591	0.847856	0.764255	0.857387
3.981	0.828569	0.585011	0.822014	0.754415	0.82559	0.76372	0.751828	0.8314	0.750353	0.834263
5.012	0.828982	0.586128	0.826212	0.744464	0.828266	0.756573	0.750047	0.822998	0.753	0.831801
6.31	0.831226	0.586332	0.823507	0.750467	0.830893	0.766042	0.750517	0.813589	0.747245	0.826097
7.943	0.821333	0.583002	0.818846	0.748207	0.820091	0.755936	0.748935	0.822847	0.742601	0.824471
10	0.819089	0.582894	0.816214	0.743985	0.821121	0.75513	0.752732	0.821358	0.744879	0.82403

Table J-17: Case 6 1cm Contamination Depth Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.8361	2.204205	1.859217	1.678952	1.679951	1.865256	1.672991	2.235664	13.38232	2.074249
0.013	1.823703	1.781031	1.18028	1.25029	1.118773	1.341382	1.297782	1.303607	6.940046	1.34891
0.016	1.498552	1.471439	1.093352	1.149592	1.009943	1.255239	1.181244	1.267559	5.163598	1.264238
0.02	1.137776	1.127997	0.964845	0.976896	0.877458	0.988668	0.91	1.037753	3.152587	1.080066
0.025	0.815177	0.816336	0.69167	0.729515	0.646662	0.706908	0.676559	0.750258	1.778019	0.751662
0.032	0.831518	0.829324	0.853747	0.812018	0.77149	0.78711	0.726869	0.762515	1.683245	0.800753
0.04	0.893058	0.879373	0.850472	0.889227	0.862658	0.86768	0.873937	0.886073	1.308432	0.868441
0.05	1.061761	1.005832	1.037467	1.073422	1.050772	1.041306	1.065728	1.049501	1.41757	1.036844
0.063	1.072587	1.04965	1.124044	1.152856	1.229495	1.080179	1.092425	1.040946	1.41383	1.119388
0.079	1.297808	1.166714	1.273594	1.313201	1.36972	1.259858	1.205156	1.286575	1.502231	1.289923
0.1	1.411339	1.26779	1.425012	1.421784	1.505659	1.378985	1.338554	1.352068	1.577583	1.443019
0.126	1.496409	1.326918	1.483305	1.469517	1.567709	1.43411	1.506072	1.459178	1.649266	1.550296
0.158	1.498253	1.318186	1.538963	1.58286	1.720343	1.492683	1.461092	1.524274	1.66317	1.541092
0.2	1.559464	1.352759	1.643851	1.627493	1.66793	1.573893	1.508825	1.613363	1.666508	1.616394
0.251	1.358676	1.164999	1.429316	1.401006	1.463031	1.360682	1.336856	1.368331	1.489618	1.410052
0.316	1.340009	1.15722	1.452456	1.409261	1.499884	1.371249	1.323556	1.372978	1.470884	1.399577
0.398	1.213782	1.023692	1.307079	1.261688	1.332607	1.223818	1.176629	1.224256	1.286196	1.288211
0.501	1.18666	0.984443	1.263719	1.250979	1.311277	1.190495	1.160168	1.189122	1.201371	1.246521
0.631	1.22564	0.99172	1.27104	1.204806	1.280666	1.185148	1.215777	1.282532	1.221681	1.281616
0.794	1.217461	0.965489	1.254193	1.187464	1.261711	1.171747	1.211557	1.268763	1.211986	1.277167
1	1.250855	0.979887	1.28806	1.218796	1.291964	1.201897	1.237869	1.318912	1.23927	1.311408
1.259	1.180704	0.922599	1.271555	1.185832	1.264624	1.158186	1.117824	1.184166	1.170994	1.239093
1.585	1.118599	0.872101	1.19912	1.134378	1.203937	1.094225	1.064798	1.132547	1.113582	1.168158
1.995	1.090294	0.840111	1.147148	1.110067	1.169745	1.05072	1.044025	1.090258	1.079695	1.144109
2.512	1.038512	0.80085	1.10061	1.071946	1.133357	1.008873	0.99062	1.0409	1.030958	1.099483
3.162	1.032746	0.784044	1.077849	1.043059	1.091359	0.997034	0.968899	1.037115	1.011443	1.070228
3.981	0.986827	0.749851	1.040865	1.007962	1.053775	0.949388	0.934985	0.990489	0.96505	1.036577
5.012	0.990778	0.745215	1.044986	0.994653	1.037976	0.946139	0.918685	0.994499	0.95892	1.029302
6.31	0.977283	0.735164	1.024817	0.984216	1.028445	0.929378	0.910831	0.974766	0.948266	1.019675
7.943	0.967798	0.720969	1.011123	0.972327	1.010567	0.919304	0.894105	0.962115	0.928918	0.9958
10	0.95913	0.707433	1.000326	0.945463	1.004004	0.906029	0.877217	0.945569	0.916048	0.980513

Table J-18: Case 6 5cm Contamination Depth Room Ratio

Energy	Average	Center	TRC	WM	BRC	TM	BM	TLC	WO	BLC
0.01	2.618433	2.061104	1.893001	1.486843	1.636221	1.68258	1.615897	1.906321	12.14817	1.798036
0.013	1.566054	1.460466	1.018802	1.036867	0.905305	1.130768	1.040839	1.108637	5.829069	1.101026
0.016	2.016597	2.072608	1.342595	1.440391	1.181853	1.532584	1.406249	1.362909	7.117084	1.536413
0.02	1.441077	1.51597	0.99579	1.073078	0.969607	1.179015	1.092879	0.981461	4.737634	1.129723
0.025	1.30659	1.339177	0.900396	0.993732	0.871024	1.034045	1.058017	0.932767	4.110538	0.969444
0.032	1.037352	1.099839	0.814882	0.879513	0.776465	0.947486	0.888439	0.872026	2.966499	0.83699
0.04	0.987833	1.029488	0.75627	0.850627	0.746365	0.88107	0.804489	0.818613	2.278347	0.829724
0.05	0.939955	0.931721	0.815237	0.844349	0.803782	0.838715	0.862707	0.828036	1.833579	0.833008
0.063	0.943356	0.952892	0.863619	0.951503	0.861985	0.89122	0.894496	0.863977	1.575478	0.853331
0.079	1.022598	1.109412	0.994504	1.104073	1.014369	1.054778	0.955328	0.950396	1.583298	0.968285
0.1	1.271496	1.284875	1.270396	1.309249	1.317005	1.407315	1.228379	1.280609	1.805373	1.215504
0.126	1.444557	1.410259	1.383937	1.443109	1.40297	1.430408	1.446054	1.38352	1.749632	1.347332
0.158	1.532388	1.499611	1.514266	1.516205	1.608539	1.551113	1.475249	1.461999	1.873532	1.50069
0.2	1.625584	1.540283	1.593825	1.648154	1.623006	1.607593	1.521062	1.491014	1.848141	1.652246
0.251	1.654605	1.575436	1.613391	1.601994	1.59256	1.588566	1.622449	1.57575	1.938407	1.682739
0.316	1.656153	1.562533	1.595963	1.651395	1.638491	1.663267	1.583681	1.4806	1.895032	1.640683
0.398	1.648197	1.569468	1.636753	1.666683	1.656231	1.685743	1.572851	1.52777	1.864772	1.689305
0.501	1.624605	1.50408	1.607516	2.035222	1.64374	1.635539	1.561167	1.561974	1.771085	1.735566
0.631	1.576638	1.43196	1.560799	1.649773	1.59552	1.587162	1.480403	1.496469	1.722013	1.640616
0.794	1.564344	1.401923	1.570998	1.564303	1.634447	1.540172	1.517603	1.486459	1.674165	1.633751
1	1.515795	1.377129	1.528378	1.558252	1.581429	1.581882	1.495554	1.461742	1.62884	1.597471
1.259	1.433293	1.278857	1.482198	1.477847	1.498493	1.464547	1.370227	1.410516	1.515864	1.516725
1.585	1.335645	1.220954	1.499042	1.430989	1.486838	1.397781	1.310182	1.368819	1.430671	1.426529
1.995	1.260216	1.143868	1.388061	1.357657	1.399682	1.323458	1.263369	1.314457	1.36784	1.413771
2.512	1.264851	1.11737	1.352617	1.305145	1.351385	1.328893	1.258564	1.281843	1.35489	1.35574
3.162	1.23341	1.085937	1.331774	1.336149	1.318845	1.28618	1.203781	1.223511	1.312627	1.317876
3.981	1.195991	1.041726	1.292593	1.288149	1.270212	1.211462	1.1479	1.199146	1.26979	1.28721
5.012	1.188623	1.027515	1.274418	1.252648	1.233659	1.230792	1.148715	1.204976	1.2601	1.299147
6.31	1.175492	1.013397	1.279823	1.254265	1.227632	1.211206	1.14199	1.201398	1.246488	1.281135
7.943	1.166578	0.969388	1.238596	1.154941	1.225936	1.155537	1.140893	1.186822	1.192485	1.255531
10	1.156873	0.945823	1.223894	1.156192	1.221789	1.115527	1.129001	1.166619	1.18137	1.250991

APPENDIX K: SOIL CONTAMINATION TABLES

Table K-1: Soil Contamination Kerma Values (pGy per cm2)

Energy	Surface	1 cm	5 cm	15 cm	Infinite
0.01	5.96E-09	1.14E-10	2.43E-11	6.99E-12	1.97E-12
0.013	7.21E-09	3.06E-10	7.40E-11	2.47E-11	2.76E-12
0.016	7.11E-09	4.59E-10	7.97E-11	3.49E-11	4.53E-12
0.02	6.03E-09	7.05E-10	1.38E-10	4.36E-11	8.25E-12
0.025	4.96E-09	1.13E-09	1.91E-10	5.48E-11	1.04E-11
0.032	3.65E-09	1.23E-09	2.72E-10	8.09E-11	1.29E-11
0.04	2.94E-09	1.29E-09	3.55E-10	1.06E-10	1.82E-11
0.05	2.34E-09	1.23E-09	4.66E-10	1.67E-10	2.44E-11
0.063	2.35E-09	1.40E-09	6.51E-10	2.11E-10	3.35E-11
0.079	2.54E-09	1.55E-09	8.57E-10	3.13E-10	4.69E-11
0.1	2.99E-09	1.90E-09	1.06E-09	4.86E-10	6.55E-11
0.126	3.76E-09	2.41E-09	1.45E-09	6.31E-10	1.31E-10
0.158	4.87E-09	3.15E-09	1.86E-09	8.29E-10	1.42E-10
0.2	6.49E-09	4.09E-09	2.44E-09	1.24E-09	2.02E-10
0.251	9.17E-09	5.97E-09	3.17E-09	1.51E-09	2.20E-10
0.316	1.18E-08	7.59E-09	4.11E-09	1.97E-09	3.29E-10
0.398	1.56E-08	1.05E-08	5.26E-09	2.59E-09	4.39E-10
0.501	1.98E-08	1.33E-08	6.62E-09	2.78E-09	5.62E-10
0.631	2.43E-08	1.57E-08	8.48E-09	4.74E-09	7.49E-10
0.794	2.94E-08	1.90E-08	1.05E-08	5.83E-09	9.52E-10
1	3.22E-08	2.20E-08	1.29E-08	7.42E-09	1.17E-09
1.259	3.95E-08	2.73E-08	1.65E-08	9.66E-09	1.77E-09
1.585	4.72E-08	3.36E-08	2.07E-08	1.27E-08	1.75E-09
1.995	5.56E-08	4.02E-08	2.57E-08	1.52E-08	2.35E-09
2.512	6.51E-08	4.88E-08	3.07E-08	1.87E-08	2.99E-09
3.162	7.69E-08	5.76E-08	3.74E-08	2.34E-08	4.18E-09
3.981	9.11E-08	6.98E-08	4.50E-08	2.84E-08	5.42E-09
5.012	1.06E-07	8.17E-08	5.34E-08	3.42E-08	7.27E-09
6.31	1.24E-07	9.73E-08	6.37E-08	4.05E-08	8.18E-09
7.943	1.48E-07	1.17E-07	7.78E-08	4.93E-08	9.84E-09
10	1.77E-07	1.42E-07	9.41E-08	6.13E-08	1.21E-08

Table K-2: Soil Contamination Values (pGy)

Energy	Surface	1 cm	5 cm	15 cm	Infinite
0.01	1.87E+00	3.57E-02	7.64E-03	2.20E-03	6.19E-04
0.013	2.26E+00	9.60E-02	2.32E-02	7.75E-03	8.68E-04
0.016	2.23E+00	1.44E-01	2.50E-02	1.09E-02	1.42E-03
0.02	1.89E+00	2.21E-01	4.34E-02	1.37E-02	2.59E-03
0.025	1.56E+00	3.54E-01	6.01E-02	1.72E-02	3.26E-03
0.032	1.15E+00	3.85E-01	8.55E-02	2.54E-02	4.07E-03
0.04	9.24E-01	4.05E-01	1.11E-01	3.33E-02	5.70E-03
0.05	7.33E-01	3.85E-01	1.46E-01	5.24E-02	7.65E-03
0.063	7.38E-01	4.38E-01	2.04E-01	6.61E-02	1.05E-02
0.079	7.97E-01	4.88E-01	2.69E-01	9.82E-02	1.47E-02
0.1	9.39E-01	5.96E-01	3.33E-01	1.53E-01	2.06E-02
0.126	1.18E+00	7.58E-01	4.54E-01	1.98E-01	4.10E-02
0.158	1.53E+00	9.90E-01	5.83E-01	2.60E-01	4.47E-02
0.2	2.04E+00	1.29E+00	7.66E-01	3.91E-01	6.33E-02
0.251	2.88E+00	1.88E+00	9.94E-01	4.75E-01	6.92E-02
0.316	3.69E+00	2.38E+00	1.29E+00	6.19E-01	1.03E-01
0.398	4.89E+00	3.31E+00	1.65E+00	8.13E-01	1.38E-01
0.501	6.22E+00	4.16E+00	2.08E+00	8.74E-01	1.76E-01
0.631	7.62E+00	4.93E+00	2.66E+00	1.49E+00	2.35E-01
0.794	9.22E+00	5.98E+00	3.30E+00	1.83E+00	2.99E-01
1	1.01E+01	6.92E+00	4.06E+00	2.33E+00	3.68E-01
1.259	1.24E+01	8.57E+00	5.18E+00	3.03E+00	5.55E-01
1.585	1.48E+01	1.06E+01	6.50E+00	4.00E+00	5.51E-01
1.995	1.75E+01	1.26E+01	8.06E+00	4.76E+00	7.38E-01
2.512	2.05E+01	1.53E+01	9.64E+00	5.88E+00	9.37E-01
3.162	2.41E+01	1.81E+01	1.17E+01	7.36E+00	1.31E+00
3.981	2.86E+01	2.19E+01	1.41E+01	8.93E+00	1.70E+00
5.012	3.32E+01	2.56E+01	1.68E+01	1.07E+01	2.28E+00
6.31	3.90E+01	3.06E+01	2.00E+01	1.27E+01	2.57E+00
7.943	4.66E+01	3.69E+01	2.44E+01	1.55E+01	3.09E+00
10	5.54E+01	4.45E+01	2.95E+01	1.92E+01	3.80E+00

APPENDIX L: MISCELLANIOUS TABLES

Table K-1: Surface Contamination Source Weighting Factors

	10x10x10	50x50x10	100x100x10	200x200x20	400x400x40
Wall	0.166	0.0714	0.0416	0.0416	0.0416
$Wall_2$	0.166	0.0714	0.0416	0.0416	0.0416
Floor/Ceiling	0.166	0.357	0.416	0.416	0.416

Table K-2: 1 cm Contamination Depth Source Weighting Factors

	10x10x10	50x50x10	100x100x10	200x200x20	400x400x40
Wall	0.166	0.0714	0.0416	0.0416	0.0416
$Wall_2$	0.166	0.0714	0.0416	0.0416	0.0416
Floor/Ceiling	0.166	0.357	0.416	0.416	0.416

Table K-3: 5 cm Contamination Depth Source Weighting Factors

	10x10x10	50x50x10	100x100x10	200x200x20	400x400x40
Wall	0.16132	0.0707	0.0414	0.0415	0.0415
$Wall_2$	0.16661	0.07116	0.0416	0.0416	0.0416
Floor/Ceiling	0.17207	0.35814	0.41701	0.4168	0.4168

Table K-4: 15 cm Contamination Depth Source Weighting Factors

	10x10x10	50x50x10	100x100x10	200x200x20	400x400x40
Wall	0.0926	0.0586	0.0373	0. 03937	0.0405
$Wall_2$	0.1534	0.0663	0.0397	0.04066	0.0412
Floor/Ceiling	0.254	0.3751	0.423	0.41997	0.4183

Table K-5: Infinite Contamination Depth Source Weighting Factors

	10x10x10	50x50x10	100x100x10	200x200x20	400x400x40
Wall	0.0926	0.0586	0.0373	0. 03937	0.0405
$Wall_2$	0.1534	0.0663	0.0397	0.04066	0.0412
Floor/Ceiling	0.254	0.3751	0.423	0.41997	0.4183

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