

DOSE RECONSTRUCTION USING COMPUTATIONAL MODELING OF  
HANDLING A PARTICULAR ARSENIC-73/ARSENIC-74 SOURCE

A Thesis

by

ALISHA MARIE STALLARD

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

May 2010

Major Subject: Health Physics

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Approved by:

Chair of Committee,	John W. Poston, Sr.
Committee Members,	John Ford
	Michael A. Walker
Head of Department,	Raymond J. Juzaitis

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## ABSTRACT

Dose Reconstruction Using Computational Modeling of Handling a Particular  
Arsenic-73/Arsenic-74 Source. (May 2010)

Alisha Marie Stallard, B.S., Baylor University

Chair of Advisory Committee: Dr. John W. Poston, Sr.

A special work evolution was performed at Los Alamos National Laboratory (LANL) with a particular  $^{73}\text{As}/^{74}\text{As}$  source but the worker's extremity dosimeter did not appear to provide appropriate dosimetric information for the tasks performed. This prompted a reconstruction of the dose to the worker's hands. The computer code MCNP was chosen to model the tasks that the worker performed to evaluate the potential nonuniform hand dose distribution. A model was constructed similar to the worker's hands to represent the performed handling tasks. The model included the thumb, index finger, middle finger, and the palm. The dose was calculated at the  $7 \text{ mg cm}^{-2}$  skin depth. To comply with the Code of Federal Regulations, 10 CFR 835, the  $100 \text{ cm}^2$  area that received the highest dose must be calculated. It could be determined if the dose received by the worker exceeded any regulatory limit. The computer code VARSKIN was also used to provide results to compare with those from MCNP where applicable.

The results from the MCNP calculations showed that the dose to the worker's hands did not exceed the regulatory limit of 0.5 Sv (50 rem). The equivalent nonuniform dose was 0.126 Sv (12.6 rem) to the right hand and 0.082 Sv (8.2 rem) to the left hand.

## DEDICATION

This thesis is dedicated to my loving and supportive parents, Peggy and Curtis.  
Without them, I would not be where I am today.

## ACKNOWLEDGMENTS

I am deeply grateful to my committee chair, Dr. Poston. His guidance, support, patience and encouragement have made the completion of this project possible. To my committee members, Dr. Ford and Dr. Walker, I owe great appreciation for their support throughout the course of this research.

I want to express great gratitude for Los Alamos National Laboratory for funding not only my thesis work, but for the great experience I have gained over the last three and a half years. Many thanks go to Jim Bland who voluntarily agreed to serve as my mentor. Jim offered me great insight and invaluable knowledge regarding my research as well as about health physics and working at LANL. Other LANL colleagues who have contributed their time and efforts with this research that I would like to thank include: Luiz Bertelli, Jeff Hoffman, Tom Waters, Alan Justus, Tom McLean, Milan Gadd, Dan Talley, Dick Olsher, David Seagraves, and RT Perry. Additional colleagues who have given me great support include: William Martinez, Shawna Eisele, John Bliss, Christine Pollard, and Murray Moore.

To Linda Morris, I am deeply grateful for her enthusiasm and introducing me to the exciting world of health physics. It was her support and guidance that led me to further my education at Texas A&M University and explore a career path at LANL.

To my parents, Peggy and Curtis, sister, Soraya, aunt, Wanda, and other family members and friends, I truly appreciate all of the unconditional love and support that they have given me throughout every endeavor.

## NOMENCLATURE

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
DOE	Department of Energy
LANL	Los Alamos National Laboratory
MCNP	Monte Carlo N-Particle
NRC	Nuclear Regulatory Commission
RPP	Radiation Protection Program

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## INTRODUCTION

Department of Energy (DOE) facilities, such as Los Alamos National Laboratory (LANL), must comply with the Code of Federal Regulations, 10 CFR 835, Occupational Radiation Protection. The radiation protection program (RPP) establishes controls to ensure radiological workers do not exceed regulatory limits of 0.5 Sv (50 rem) equivalent dose to the skin or any extremity within a year (10 CFR 835.202 2009). The goal of the RPP is to keep radiation doses to radiological workers as low as reasonably achievable (ALARA). Radiological workers are required to be monitored with external personal dosimeters if they are likely to receive an equivalent dose to the skin or any extremity of 0.05 Sv (5 rem) or more within a year (10 CFR 835.402 2009). If an individual is not monitored, if the dosimeter is worn incorrectly, or if an off-normal event occurs and no dosimeter data are available, a dose reconstruction must be performed. For nonuniform exposures affecting more than 100 cm<sup>2</sup> of skin surface, it is necessary to determine the 100 cm<sup>2</sup> receiving the maximum dose to comply with 10 CFR 835. A detailed evaluation of the distribution of dose within the affected area must be performed to fulfill these requirements. Such detailed external dose reconstructions are rarely done and the literature provides little guidance to follow when performing an external dose reconstruction.

MCNP is a radiation transport code that can be used for a variety of applications including radiation dosimetry (Pelowitz 2005). It can be used to simulate the transport

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This thesis follows the style of Health Physics.

of photons, electrons, neutrons, or coupled photon/electron/neutron transport. Realistic conditions can be modeled with MCNP since the models are three-dimensional. MCNP can also be used to provide an evaluation of dose rates to specific areas of the geometry since it can be divided into small cells.

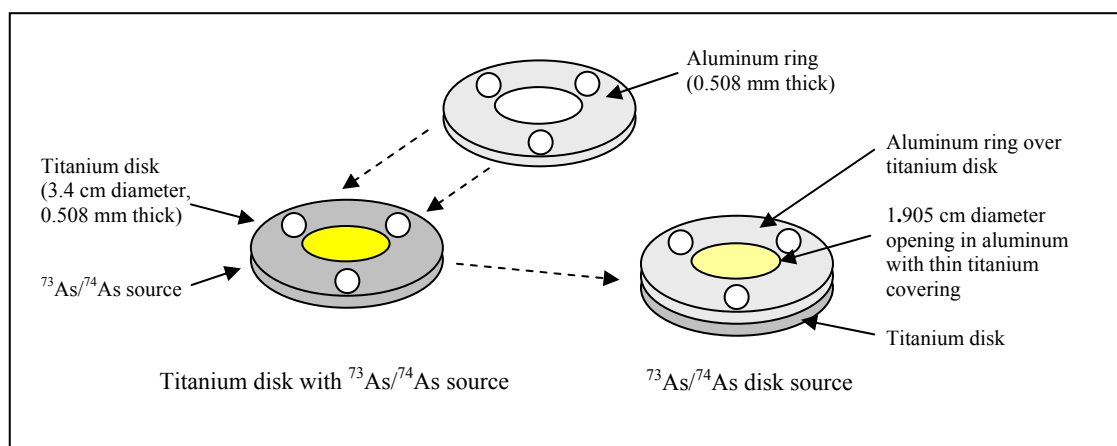
VARSKIN is a computer code that is used for calculating nonuniform doses to the skin. However, the code has some limitations that could impact its use for dose reconstructions, but it could prove useful for planning jobs involving the potential for receiving unwanted radiation dose. VARSKIN has not been tested for averaging doses over areas greater than 10 cm<sup>2</sup>, nor has it been tested for air gaps greater than 5 cm for beta doses (Durham 2006). Another major limitation is that complex geometries cannot be simulated. MCNP does not have the limitations that VARSKIN has and allows for the simulation of detailed geometries, thus making it a valuable tool for reconstructing uniform or nonuniform doses.

A nonroutine work evolution was performed at LANL with a particular <sup>73</sup>As/<sup>74</sup>As source disk. After the tasks were completed, it was determined that there was a large beta radiation field that was not accounted for during the planning of the work. Upon recognizing the potential for significant extremity exposures, LANL initiated an internal investigation which involved workers at two facilities. In each case, dose reconstruction was warranted due to inadequate application of extremity dosimetry. This research focused on the worker's dose reconstruction to the hands at one of the facilities.

## BACKGROUND

A special radioactive arsenic disk source was constructed in a hot cell and prepared for shipment. The preparation involved tasks where the worker used remote handling tools and handled the disk source directly. The first task involved moving the disk source with its stand from a train that transports materials into and out of a hot cell. The disk source with its stand was removed from the hot cell train using tongs and was placed onto a work surface. The worker smeared the disk source four times to check for any removable contamination. Lastly, the disk source was transferred into a shipping container.

The disk source was constructed in a hot cell with four components: 1) titanium base disk, 2)  $^{73}\text{As}/^{74}\text{As}$  source material, 3) aluminum ring, and 4) a thin titanium covering. The assembly of these components is illustrated in Fig. 1.



**Fig. 1.** Illustration of the titanium and aluminum disk source assembly.

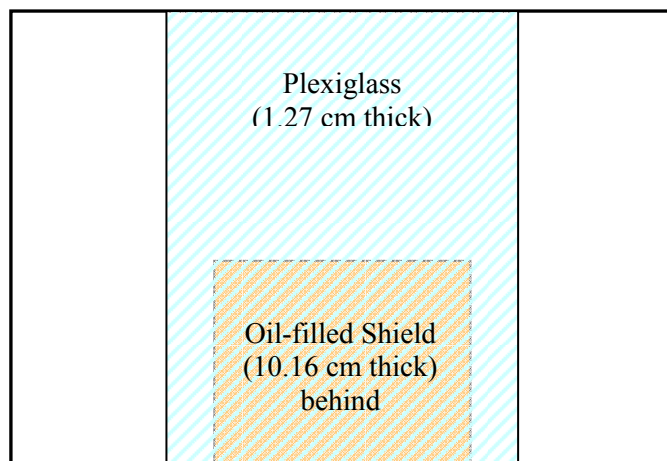
The disk source contained two radionuclides,  $^{73}\text{As}$  and  $^{74}\text{As}$ . The activity of each was 23.1 GBq (625 mCi) and 13.6 GBq (368 mCi), respectively. The source material was deposited onto the center of a titanium disk with a liquid dropper. As shown in Fig. 2, the titanium disk was 3.4 cm in diameter, 0.508 mm thick and had three holes equally spaced apart along the edge. A thin 2- $\mu\text{m}$  layer of titanium was used to cover the 1.905-cm diameter aperture of an aluminum ring that measured 3.4 cm in diameter, 0.508 mm thick, and also had three holes equally spaced apart along the edge. The aluminum ring with titanium window was adhered on top of the titanium disk with the three holes being aligned.



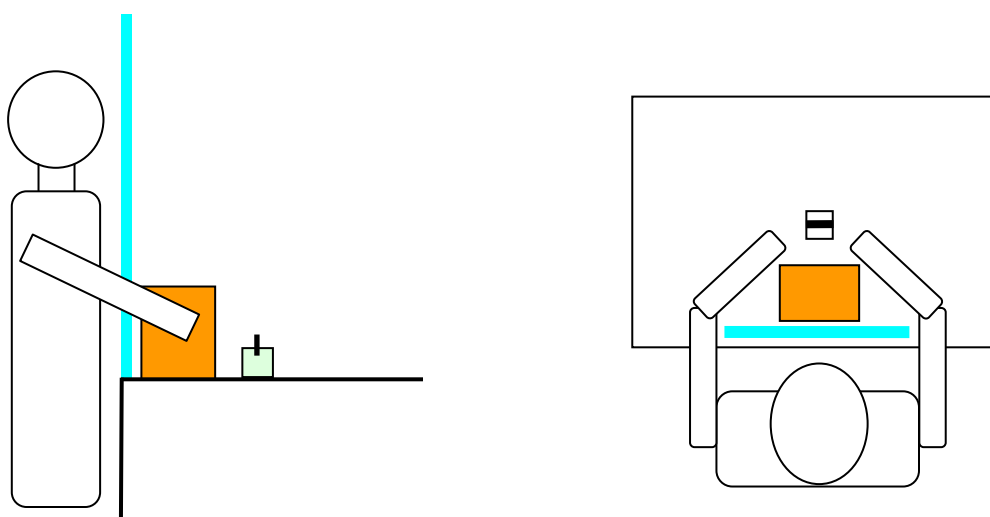
**Fig. 2.** Photograph of titanium disk measuring 3.4 cm in diameter.

Once the disk source was assembled in the hot cell, it was placed on a small train that transports materials into and out of the hot cell. The worker removed the disk source and its stand from the train with tongs and placed it on the workstation behind a 10.16-cm thick oil-filled shield. Between the oil-filled shield and the worker was a 1.27-

cm thick sheet of plexiglass, see Figs. 3 and 4. The worker's arms could reach around both sides of the shield to work with the disk source.



**Fig. 3.** Front view of the workstation.

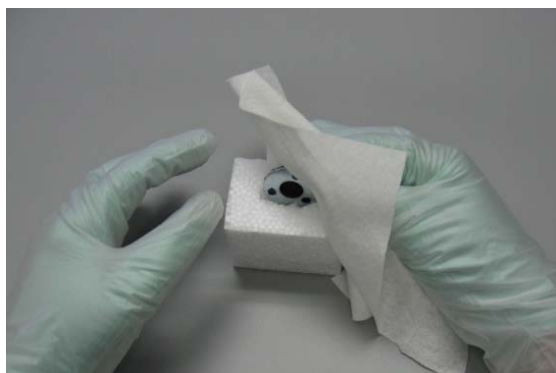


**Fig. 4.** Side and top view of the workstation.

After the disk source was placed on the workstation surface, the worker performed the next task. Wearing one pair of nitrile gloves and three pairs of vinyl



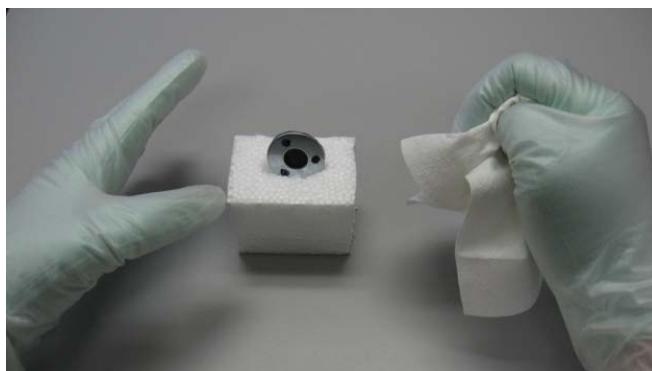
gloves, the worker reached around and behind the plexiglass and oil-filled shield where the disk source was located on a stand. The worker picked up the disk source with a wipe dampened with a decontamination solution, wiped it back and forth to decontaminate the outer surface, and placed the disk source back on the stand as simulated in Figs. 5, 6, and 7. With the wipe still in hand, the worker removed the outer pair of vinyl gloves with the wipe remaining inside the glove, as simulated in Figs. 8 and 9. This process was repeated two more times. When all of the vinyl gloves were removed, the worker donned another pair of vinyl gloves to perform the decontamination process a fourth time.



**Fig. 5.** Simulating picking up the disk source.



**Fig. 6.** Simulating smearing the disk source.



**Fig. 7.** After smearing, placing disk source back on the stand.

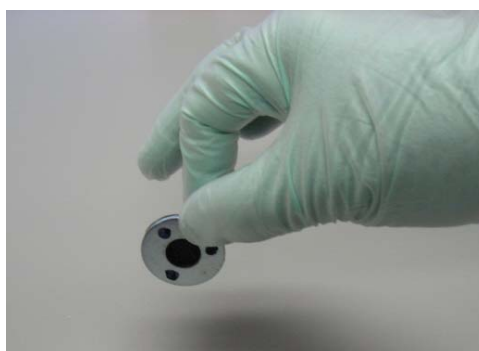


**Fig. 8.** Removing the outer vinyl gloves while keeping the wipe inside.

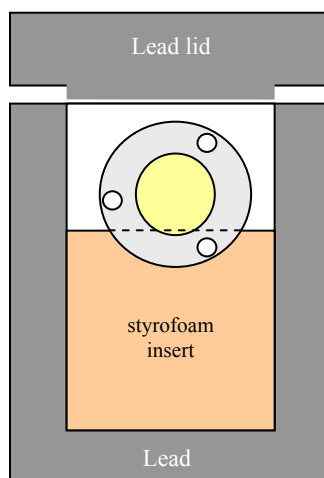


**Fig. 9.** Vinyl glove turned inside out with the wipe inside.

After the decontamination process was performed four times, the disk source had to be placed into a leaded shipping container. The worker picked up the disk source with the thumb and index finger as shown in Fig. 10. Inside the shipping container was a specially made styrofoam insert to hold the disk source safely and securely. Fig. 11 illustrates the composition of the leaded shipping container and how the disk source was placed inside.



**Fig. 10.** Holding the disk source with thumb and index finger.



**Fig. 11.** Illustration of the leaded shipping container.

Table 1 summarizes the duration for each task to be completed.

**Table 1.** Time required to complete each task.

Description of Task	Time (sec)
Removing disk source from hot cell train with tongs (1 Nitrile, 1 Vinyl)	3
Picking up disk source (1 Nitrile, 3 Vinyl)	1
Smearing disk source (1 Nitrile, 3 Vinyl)	2
Putting down disk source (1 Nitrile, 3 Vinyl)	1
Picking up disk source (1 Nitrile, 2 Vinyl)	1
Smearing disk source (1 Nitrile, 2 Vinyl)	2
Putting down disk source (1 Nitrile, 2 Vinyl)	1
Picking up disk source (1 Nitrile, 1 Vinyl)	1
Smearing disk source (1 Nitrile, 1 Vinyl)	2
Putting down disk source (1 Nitrile, 1 Vinyl)	1
Picking up disk source (1 Nitrile, 1 Vinyl)	1
Smearing disk source (1 Nitrile, 1 Vinyl)	2
Putting down disk source (1 Nitrile, 1 Vinyl)	1
Placing disk source into shipping container (1 Nitrile, 1 Vinyl)	5

In summary, the time required to move the disk source with the tongs was 3 seconds. The total contact time to smear the disk source four times was 16 seconds. It

took 5 seconds to place the disk source into the shipping container. Therefore, the overall process took 24 seconds. These three tasks were the basis for the dose reconstruction to the worker's hands.

## MATERIALS AND METHODS

### **MCNP**

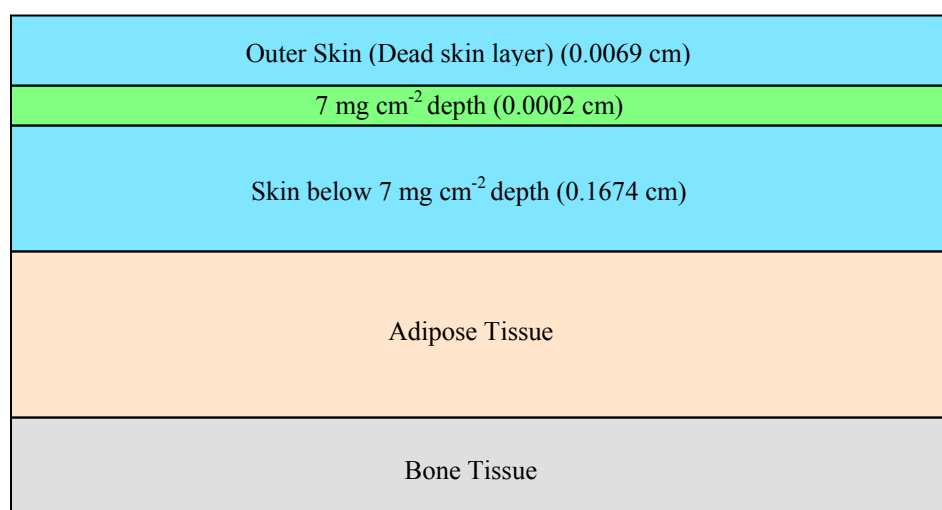
MCNP is a Monte Carlo radiation transport code that was developed at LANL. It is used for a variety of applications including radiation dosimetry, shielding design, and nuclear criticality safety (Pelowitz 2005). It can simulate the transport of photons, electrons, neutrons, or coupled photon/electron/neutron transport. MCNP follows every particle individually throughout every interaction until all of its energy is absorbed or until it leaves the cells that the user defines as being important. The output from the MCNP simulations can include a variety of tallies such as cell fluence, number of particles crossing a surface, or energy deposition.

With MCNP, the user can simulate detailed geometries because the user defines the three-dimensional geometry. The model can also be divided into many small cells so that tallies at specific areas can be evaluated. Depending on the complexity of the geometry, executing MCNP may take minutes or days due to the computational time required to follow several million or more particles. Because of the ability to model complex geometries with MCNP, it was chosen to be used as the primary tool for the dose reconstruction.

### **MCNP Geometry**

The composition and density of the materials used to model the hand were obtained from International Commission on Radiation Protection (ICRP) Publication 110, Adult Reference Computational Phantoms (ICRP 2009). The thickness of the skin

layers used throughout the hand model was obtained from ICRP Publication 89 and shown in Fig. 12 (ICRP 2002). The thickness of the outer skin, or dead skin layer, was modeled as 0.0069 cm so that the  $7 \text{ mg cm}^{-2}$  skin depth could be thick enough (0.0002 cm) to tally in MCNP. The approximate length and width of the worker's fingers and palm were also used to generate the hand model. The MCNP model simulated the actual positions of the worker's hands when the worker performed the tasks.



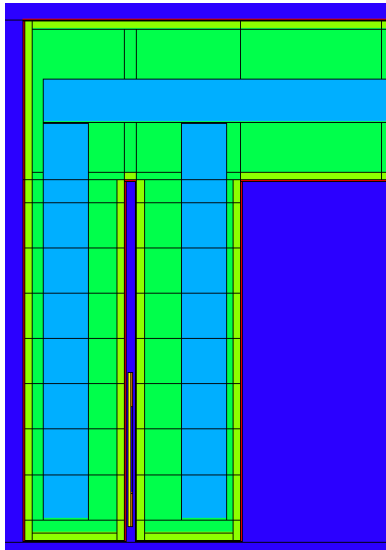
**Fig. 12.** Thickness of the modeled skin layers (not to scale).

Based on the worker's presentation of how the tasks were performed, the hand model included the index finger, thumb, middle finger, and the palm of the hand. A photograph simulating the general position of the hand is shown in Fig. 13. The side view of the MCNP hand model is shown in Fig. 14. The index finger is on the left and the thumb on the right. The palm is above the fingers and extending to the right. The front view of the MCNP hand model is shown in Fig. 15. The front of the palm

(knuckles) is shown on the top with the bones in the hand represented as cylinders. The index finger is on the right with the middle finger next to it.

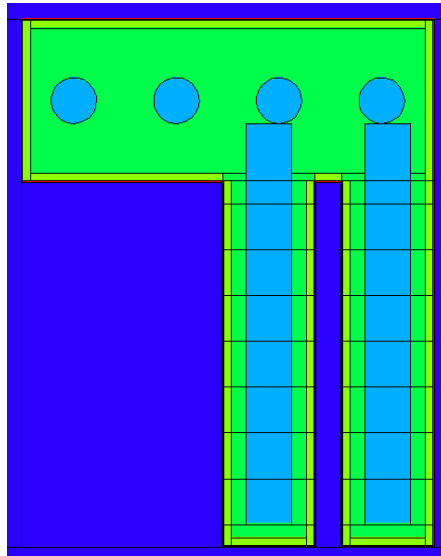


**Fig. 13.** Photograph of general hand position.



**Fig. 14.** MCNP side view of the index finger, thumb, and palm.

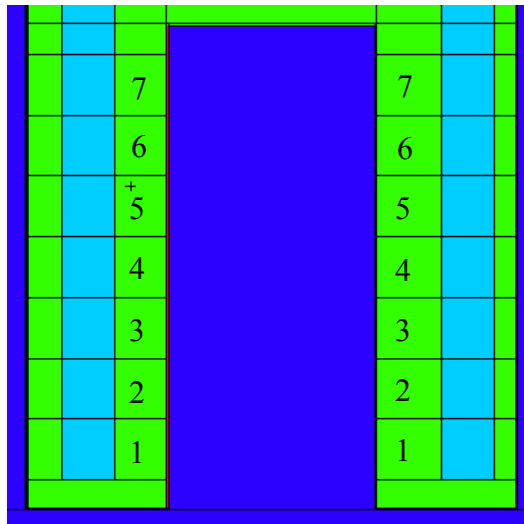




**Fig. 15.** MCNP front view of the index finger, middle finger and palm of the hand.

The fingers and thumb were modeled using several rectangular cells so that the localization of absorbed dose could be analyzed. The use of a rectangular structure for the fingers was chosen so that the absorbed dose could be determined on each side of the finger (front, back, inside, or outside), as well as along the length of the finger. The fingers and thumb were modeled as 2.0 cm thick, 2.3 cm wide and 8 cm long.

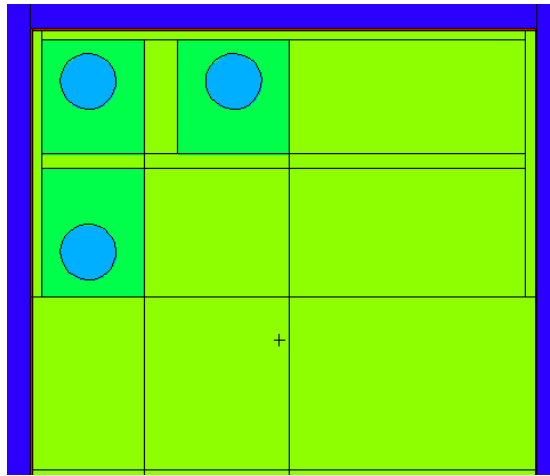
The length of the fingers was divided into eight sections above the finger tips. The first section was the first centimeter above the tip of the finger continuing up to section eight where the fingers meet the palm. The tip of the fingers and section eight were 0.5 cm each in length. Sections one through seven were each 1 cm long. The tip of each finger had four side cells and one end cell. Sections one through eight had four side cells each. The fingers and thumb were each divided into 138 cells at the  $7 \text{ mg cm}^{-2}$  depth. Fig. 16 shows the finger sections.



**Fig. 16.** MCNP model of the index finger and thumb sections.

The bones in the fingers, thumb, and palm were modeled as cylinders. The composition of the bones and adipose tissue were obtained from ICRP Publication 110 (ICRP 2009). Adipose tissue surrounded the bone and was under the skin layer. The bone and adipose tissue of each finger were divided into eight cells along the length, corresponding to sections of the fingers.

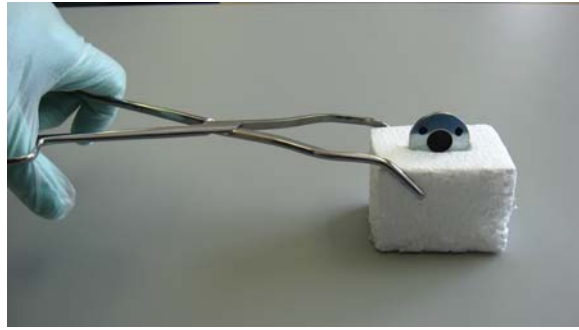
The palm was modeled as 8 cm wide, approximately 8 cm long, and 3.5 cm thick. Fig. 17 shows the right hand where the fingers meet the palm. The index and middle finger are across the top with the thumb just below the index finger.



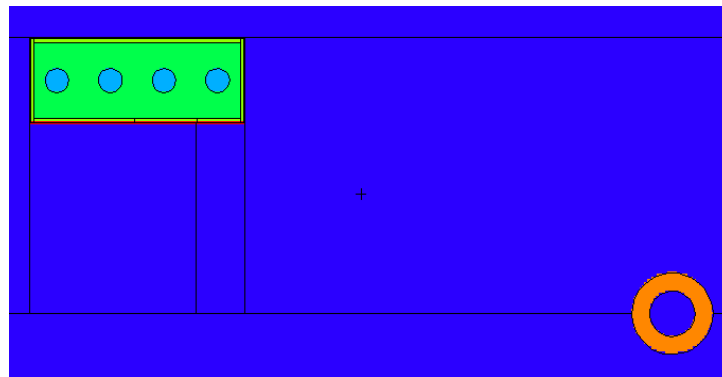
**Fig. 17.** MCNP model of palm of hand.

### **MCNP Models of Tasks Performed**

The disk source along with the stand was removed from the hot cell train using 20-cm long tongs and placed behind the plexiglass and thick oil-filled shielded workstation. A photograph simulating the worker using tongs to pick up the disk source (with disk source opening away from the hand) and stand is shown in Fig. 18. The side view of the MCNP model is illustrated in Fig. 19. This illustration only shows the palm of the hand and the aluminum ring of the disk source. The index finger and thumb would be located between the two vertical lines below the right side of the palm if a three-dimensional model could have been shown. A sample of the MCNP input file for using tongs is found in Appendix A.1.

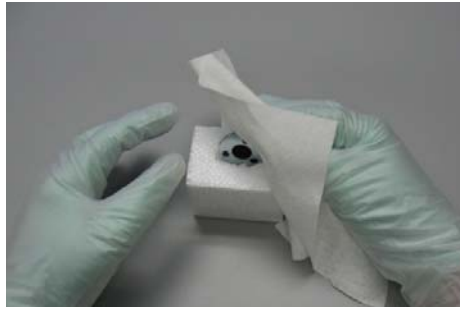


**Fig. 18.** Simulation of the disk source and stand picked up with tongs.



**Fig. 19.** MCNP side view of picking up the disk source and stand with tongs.

Once the disk source and stand were placed on the workstation, the decontamination process began. The worker picked up the disk source from the stand with the wipe as simulated in Fig. 20. The worker smeared the disk source with a wipe dampened with a decontamination solution to check for removable  $^{73}\text{As}$  and  $^{74}\text{As}$  material.

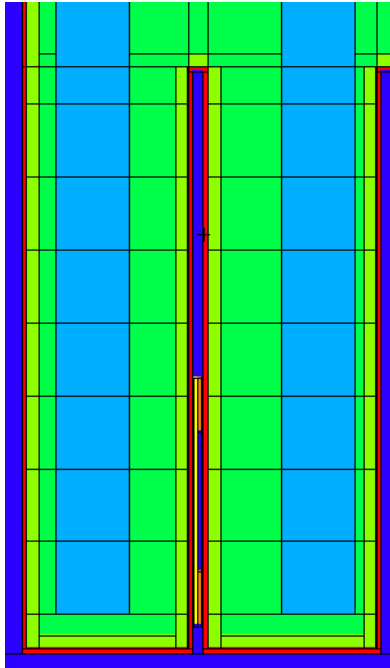


**Fig. 20.** Picking up the disk source with wipe for smearing.

The wipe was folded over the front of the disk source and rubbed back and forth on the front and back surfaces. Portions of the worker's thumbs were directly over the disk source opening and portions of the index and middle finger were directly under the center of the back titanium disk. Fig. 21 simulates the worker smearing the disk source. The MCNP model of this task is illustrated in Fig. 22. Section two of the thumb is directly over the disk source opening whereas sections one and three are partially over the disk source opening. This model provides absorbed dose rate estimations as the thumb moves across the  $^{73}\text{As}/^{74}\text{As}$  disk source.



**Fig. 21.** Simulation of smearing the disk source for removable  $^{73}\text{As}/^{74}\text{As}$  material.



**Fig. 22.** MCNP model of smearing the disk source.

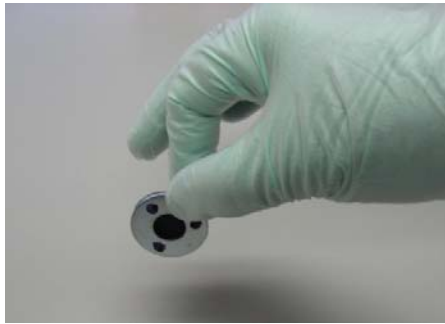
Each time the disk source was smeared, a pair of vinyl gloves was removed with the wipe inside the vinyl glove. An MCNP model was developed to estimate the absorbed dose rates to the thumb, index finger, middle finger, and palm for the following conditions:

- 1) Three pairs of vinyl gloves and one pair of nitrile gloves.
- 2) Two pairs of vinyl gloves and one pair of nitrile gloves.
- 3) One pair of vinyl gloves and one pair of nitrile gloves.

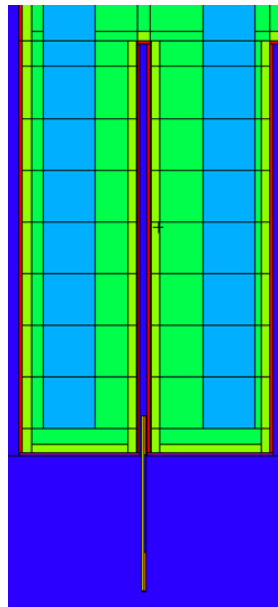
A sample of the MCNP input file for smearing the disk source is found in Appendix A.2.

After the smearing process, the worker placed the disk source into a leaded shipping container for transport. The worker picked up the disk source with the thumb touching the aluminum ring just above the disk source opening and the index finger on

the back surface of the titanium base disk. The disk source opening was towards the thumb direction as shown in Fig. 23. The MCNP model of this task is illustrated in Fig. 24. A sample of the MCNP input file for holding the disk source is found in Appendix A.3



**Fig. 23.** Picking up the disk source.

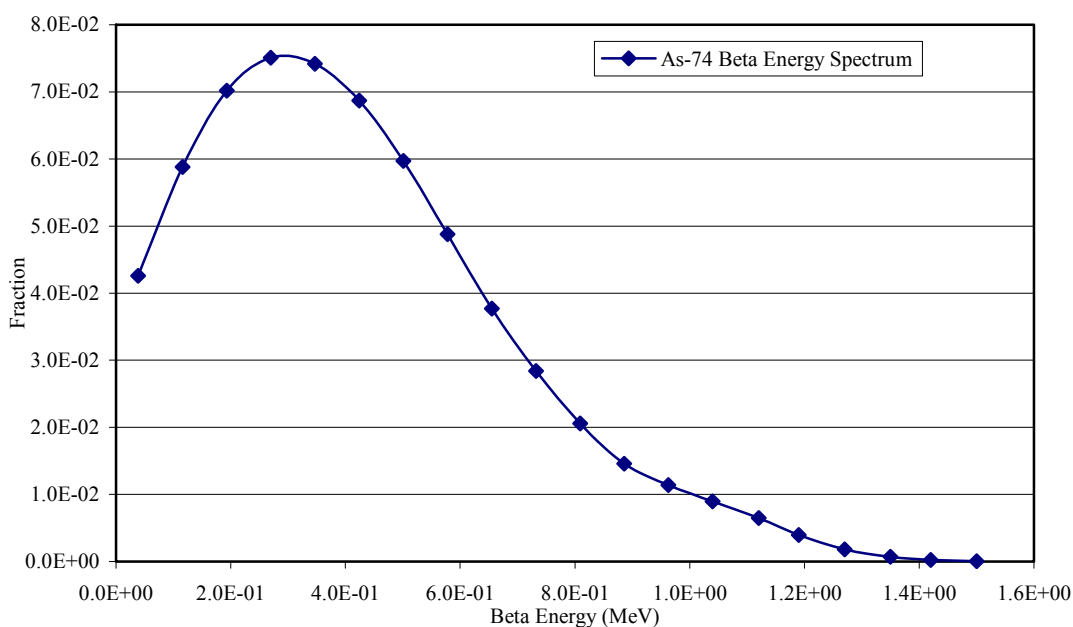


**Fig. 24.** MCNP model of picking up the disk source to place into the leaded shipping container.

### MCNP Source Term

The two radionuclides that made up the source term were  $^{73}\text{As}$  and  $^{74}\text{As}$ . The activities were 23.1 GBq (625 mCi) and 13.6 GBq (368 mCi), respectively. As-73 decays by electron capture and emits several photons. As-74 decays by electron capture (~37%), positron (~29%) and beta minus (~34%). Depending on the reference, the percent of electron capture, positron and beta minus will vary. The percentages were obtained from data by Eckerman, Burrows, Lederer, and the National Nuclear Data Center (Lederer 1978, Burrows 1988, Eckerman 1994, NNDC 2009). There were three source term calculations for each MCNP model: 1)  $^{73}\text{As}$  photons; 2)  $^{74}\text{As}$  photons; and 3)  $^{74}\text{As}$  electron (beta) spectrum. A beta spectrum was used in MCNP for  $^{74}\text{As}$  which combined the positron and beta minus as a beta minus spectrum, see Fig. 25. The beta spectrum was constructed from data published by Eckerman (Eckerman 1994). The 0.511 MeV annihilation photons from positrons were included in the  $^{74}\text{As}$  photon source term.





**Fig. 25.** Beta spectrum used in MCNP models for  $^{74}\text{As}$  (Eckerman et al., 1994).

The radiological properties of  $^{73}\text{As}$  and  $^{74}\text{As}$  are summarized in Table 2.

**Table 2.** Radiological properties of  $^{73}\text{As}$  and  $^{74}\text{As}$ .

Radionuclide	Half-Life	Decay Mode	Threshold Energy
$^{73}\text{As}$	80.3 d	EC (100%)	
		$\gamma$	9.87 keV (90.3%)
			10.98 keV (11.5%)
			53.4 keV (10.3%)
EC (37%)			
$^{74}\text{As}$	17.78 d	$\beta^+$ (29%)	336 keV (0.016%) 944.6 keV (26.1%) 1540.5 keV (3%)
		$\beta^-$ (34%)	83.2 keV (0.02%) 718.0 keV (15.4%) 1352.8 keV (19%)
			$\gamma$ (combined $\beta^+$ , $\beta^-$ and EC)

The source terms used for  $^{73}\text{As}$  photons,  $^{74}\text{As}$  photons, and  $^{74}\text{As}$  betas are shown in Figs. 26, 27 and 28, respectively.

```

c      As-73 2.3125E+10 Bq (625 mCi) photons
c      Disk source 1.905 cm diam / radius 0.9525 cm
sdef  par=2 pos= -0.99 0 1.50 axs=1 0 0 ext=0 rad=d1 erg=d4
sil   0 0.9525
spl   -21 1
sc4   As-73 photon lines
si4   L 0.009871 0.01098 0.05344
sp4   D 0.903 0.1151 0.103

```

**Fig. 26.** MCNP source term for  $^{73}\text{As}$  photons.

```

c      As-74 1.3616E+10 Bq (368 mCi) photons
c      Disk source 1.905 cm diam / radius 0.9525 cm
sdef  par=2 pos= -0.99 0 1.50 axs=1 0 0 ext=0 rad=d1 erg=d4
sil   0 0.9525
spl   -21 1
sc4   As-74 photon lines
si4   L 0.00987 0.01098 0.511 059583 0.60843 0.63478 1.20435
sp4   D 0.151 0.0193 0.59 0.60843 0.00552 0.154 0.00285

```

**Fig. 27.** MCNP source term for  $^{74}\text{As}$  photons.

```

c      As-74 1.3616E+10 Bq (368 mCi) betas
c      Disk source 1.905 cm diam / radius 0.9525 cm
sdef  par=3 pos= -0.99 0 1.50 axs=1 0 0 ext=0 rad=d1 erg=d4
sil   0 0.9525
spl   -21 1
sc4   As-74 B+ B- spectrum
si4   A 0.00 3.85E-02 1.16E-01 1.93E-01 2.70E-01 3.47E-01 4.24E-01
      5.01E-01 5.78E-01 6.55E-01 7.32E-01 8.09E-01 8.86E-01 9.63E-01
      1.04E+00 1.12E+00 1.19E+00 1.27E+00 1.35E+00 1.42E+00 1.50E+00
sp4   D 0.00 4.26E-02 5.88E-02 7.02E-02 7.51E-02 7.42E-02 6.87E-02
      5.79E-02 4.88E-02 3.77E-02 2.84E-02 2.06E-02 1.46E-02 1.14E-02
      8.94E-03 6.48E-03 3.97E-03 1.82E-03 7.17E-04 2.54E-04 4.09E-05

```

**Fig. 28.** MCNP source term for  $^{74}\text{As}$  betas.

### MCNP Tallies

To determine the dose to the hands, an energy deposition tally, or “F6” tally, was used. This tally accumulates results in terms of energy deposited per unit mass in units of MeV g<sup>-1</sup> for each tally cell. A tally multiplier was used to convert the energy deposition results into a dose rate. Equation 1 was the tally multiplier used to attain a dose rate in Gy s<sup>-1</sup> for <sup>73</sup>As photons:

$$\frac{\text{X tally}}{\text{source particle}} \cdot \frac{2.3125 \times 10^{10} \text{ dis}}{\text{s}} \cdot \frac{1.1211 \text{ source particles}}{\text{dis}} \cdot \frac{1 \text{ Gy}}{6.242 \times 10^9 \frac{\text{MeV}}{\text{g}}} \quad (1)$$

$$= \frac{4.1534 \text{ Gy}}{\text{s}} \text{ per } 6.242 \times 10^9 \frac{\text{MeV}}{\text{g}} \text{ } 2.3125 \times 10^{10} \text{ Bq of } ^{73}\text{As photon.}$$

The constant of 1 Gy = 6.242 X 10<sup>9</sup> MeV g<sup>-1</sup> is explained with Equation 2 using constants found in the Handbook of Health Physics and Radiological Health (Shleien et al. 1998).

$$\frac{6.242 \times 10^{12} \text{ MeV}}{\text{J}} \times \frac{\text{J}}{10^7 \text{ ergs}} \times \frac{10^4 \text{ ergs}}{\text{g} \cdot \text{Gy}} = 6.242 \times 10^9 \frac{\text{MeV}}{\text{g} \cdot \text{Gy}}. \quad (2)$$

$$\therefore 1 \text{ Gy} = 6.242 \times 10^9 \frac{\text{MeV}}{\text{g}}.$$

Equation 3 was the tally multiplier used to attain a dose rate in Gy s<sup>-1</sup> for <sup>74</sup>As photons:

$$\frac{\text{X tally}}{\text{source particle}} \cdot \frac{1.3616 \times 10^{10} \text{ dis}}{\text{s}} \cdot \frac{1.3615 \text{ source particles}}{\text{dis}} \cdot \frac{1 \text{ Gy}}{6.242 \times 10^9 \frac{\text{MeV}}{\text{g}}} \quad (3)$$

$$= \frac{2.9699 \text{ Gy}}{\text{s}} \text{ per } 6.242 \times 10^9 \frac{\text{MeV}}{\text{g}} 1.3616 \times 10^{10} \text{ Bq of } ^{74}\text{As photon.}$$

Equation 4 was the tally multiplier used to attain a dose rate in Gy s<sup>-1</sup> for <sup>74</sup>As betas:

$$\frac{\text{X tally}}{\text{source particle}} \cdot \frac{1.3616 \times 10^{10} \text{ dis}}{\text{s}} \cdot \frac{0.633022 \text{ source particles}}{\text{dis}} \cdot \frac{1 \text{ Gy}}{6.242 \times 10^9 \frac{\text{MeV}}{\text{g}}} \quad (4)$$

$$= \frac{1.3808 \text{ Gy}}{\text{s}} \text{ per } 6.242 \times 10^9 \frac{\text{MeV}}{\text{g}} 1.3616 \times 10^{10} \text{ Bq of } ^{74}\text{As betas.}$$

A total of 47 tallies were calculated using MCNP. A listing of these tallies is shown in Table 3. Some tallies included only one cell; however, many of the tallies contained a combination of cells. For example, tally number six (7 mg cm<sup>-2</sup> inner index) included the following cells: 135, 163, 189, 215, 241, 267, 293, 319, and 345. These cells incorporate the inner side of the tip and sections one through eight of the inner side of the index finger.

**Table 3.** MCNP estimated absorbed dose rate tallies.

Tally No.	Description of Estimated Absorbed Dose Rate Tally	Tally No.	Description of Estimated Absorbed Dose Rate Tally
6	7 mg cm <sup>-2</sup> Inner Index	246	Skin Below Inner Middle Finger
16	7 mg cm <sup>-2</sup> Inner Thumb	256	Outer Skin Tip of Fingers
26	7 mg cm <sup>-2</sup> Inner Middle Finger	266	Outer Skin Front Index
36	7 mg cm <sup>-2</sup> Front Index	276	Outer Skin Front Thumb
46	7 mg cm <sup>-2</sup> Front Thumb	286	Outer Skin Front Middle Finger
56	7 mg cm <sup>-2</sup> Front Middle Finger	296	Skin Below Front Index
66	7 mg cm <sup>-2</sup> Back Index	306	Skin Below Front Thumb
76	7 mg cm <sup>-2</sup> Back Thumb	316	Skin Below Front Middle Finger
86	7 mg cm <sup>-2</sup> Back Middle Finger	326	Index Finger Bone
96	7 mg cm <sup>-2</sup> Outer Index	336	Thumb Bone
106	7 mg cm <sup>-2</sup> Outer Thumb	346	Middle Finger Bone
116	7 mg cm <sup>-2</sup> Outer Middle Finger	356	Palm Bones
126	7 mg cm <sup>-2</sup> Tip of Fingers	366	7 mg cm <sup>-2</sup> Palm Back Between Index/Middle Finger
136	7 mg cm <sup>-2</sup> 1 <sup>st</sup> half under Palm Extension	376	7 mg cm <sup>-2</sup> Palm Behind Thumb - Back
146	7 mg cm <sup>-2</sup> 2 <sup>nd</sup> half under Palm Extension	386	7 mg cm <sup>-2</sup> 1 <sup>st</sup> Half Palm Extension – Back
156	7 mg cm <sup>-2</sup> Between Index and Thumb (Arch)	396	7 mg cm <sup>-2</sup> 2 <sup>nd</sup> Half Palm Extension – Back
166	7 mg cm <sup>-2</sup> Between Index and Middle Finger	406	7 mg cm <sup>-2</sup> 1 <sup>st</sup> Half Palm Extension Front Face
176	7 mg cm <sup>-2</sup> Palm behind Thumb	416	7 mg cm <sup>-2</sup> 2 <sup>nd</sup> Half Palm Extension Front Face
186	7 mg cm <sup>-2</sup> 1 <sup>st</sup> half under Palm Extension - Mid	426	7 mg cm <sup>-2</sup> Palm Behind Middle Finger
196	7 mg cm <sup>-2</sup> 2 <sup>nd</sup> half under Palm Extension - Mid	436	7 mg cm <sup>-2</sup> Palm Between Index/Thumb beside Middle Finger
206	7 mg cm <sup>-2</sup> Front face of Index/Thumb	446	Skin Below Inner Middle Finger
216	7 mg cm <sup>-2</sup> Between Index/Thumb beside Middle Finger	456	Outer Skin Tip of Fingers
226	Outer Skin Inner Index	466	Outer Skin Front Index
236	Outer Skin Inner Thumb		

## **VARSKIN**

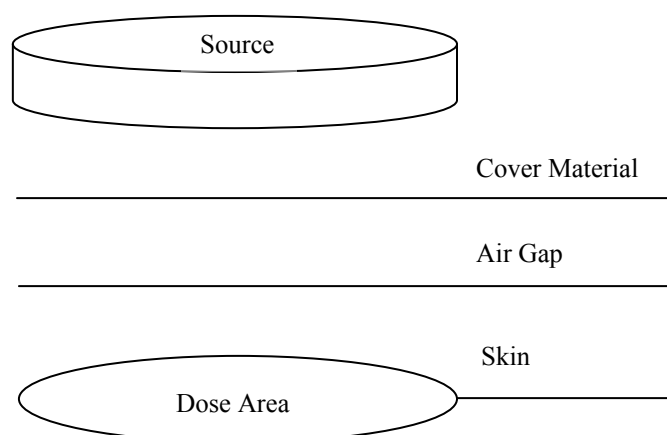
VARSKIN is a computer program that is used to calculate nonuniform doses to the skin from contamination, including hot particles. The code is useful because it determines photon dose and beta dose at the  $7 \text{ mg cm}^{-2}$  skin depth. This computer program was originally developed for use by the Nuclear Regulatory Commission (NRC); however, its use has become much more widespread in the nuclear industry.

VARSKIN is a point kernel code. The dose is determined at many dose points and then averaged to obtain an overall dose. A major advantage to using the code is that the computational time is almost instantaneous. Even though the code was developed for skin dose from skin contamination, it can also be used to estimate shallow dose from an external source within 5 cm from the skin surface. The user can also specify the dose to be averaged over an area up to  $10 \text{ cm}^2$  (Durham 2006).

There are several limitations of VARSKIN. Doses averaged over more than  $10 \text{ cm}^2$  may result in errors. Users are alerted that if the distance from the source to the skin is greater than 5 cm, errors may result. Furthermore, the geometry parameters are very simple and cannot accommodate complex models. The code allows the user to input a cover material over the source and an air gap between the cover material and skin. Because of these limitations, this code could not be used for a dose reconstruction of this complexity. However, it could be useful in planning purposes, if one handles a beta-emitting source.

### VARSKIN Model

The VARSKIN model was used to estimate the beta dose from the smearing tasks. The model was constructed to represent the highest exposed thumb section determined from the MCNP model (cell number 202). The disk source was modeled as a disk source with a diameter of 1.91 cm. The irradiation area was 2 cm<sup>2</sup> and the irradiation time was one second. Three models were set up for one nitrile/one vinyl glove, one nitrile/two vinyl gloves, and one nitrile/three vinyl gloves. In VARSKIN, gloves are considered a cover material. The thickness of each glove measured 0.015 cm with a density of 1.65 g cm<sup>-3</sup>. VARSKIN was used only to calculate the dose rate from <sup>74</sup>As beta particles. An illustration of the VARSKIN model is shown in Fig. 29.



**Fig. 29.** Illustration of VARSKIN model.

## RESULTS

### MCNP

The absorbed dose rate was tallied for 300 cells. These cells included the outer skin, the  $7 \text{ mg cm}^{-2}$  skin depth, the skin below the  $7 \text{ mg cm}^{-2}$  depth, and the bones. This research focused on 127 of the 300 cell tallies which were at the  $7 \text{ mg cm}^{-2}$  skin depth. The  $^{73}\text{As}$  photon,  $^{74}\text{As}$  photon, and  $^{74}\text{As}$  beta dose rates were summed which resulted in the total cell dose rate for the 127 cells of interest for each task. Appendix B shows the results for the  $7 \text{ mg cm}^{-2}$  skin depth tally cells which include the area of each cell, the dose rate from each radionuclide and the associated percent error for all tasks. The time required for each task was multiplied by the cell dose rate, which resulted in absorbed dose for each  $7 \text{ mg cm}^{-2}$  skin depth cell. Once the absorbed dose was calculated for each tally cell, the  $100 \text{ cm}^2$  area that received the highest dose was determined to comply with 10 CFR 835 requirements. The dose for each cell was sorted from the highest to lowest dose. The dose was multiplied by the fraction of the cell area to the total  $100 \text{ cm}^2$  area. The absorbed doses were summed for all tasks over the  $100 \text{ cm}^2$  area receiving the highest dose to estimate the worker's nonuniform dose.

The dose rate results for moving the disk source with tongs are found in Appendix B.1. The task of moving the disk source with the tongs took approximately three seconds. This was completed with the worker's right hand while wearing one nitrile and one vinyl glove. Considering only the tong task, Appendix C.1 shows the cells contributing to highest dose rate of the  $100 \text{ cm}^2$  area. The cells that received the highest dose rate were the front face of the thumb, palm, and index finger. The percent



contribution to the total dose rate for this task from photons and beta particles is shown in Appendix D.1 for the cells contributing to the highest 100 cm<sup>2</sup> area. The <sup>74</sup>As beta radiation contributed 90%, the <sup>74</sup>As photons contributed 9%, and the <sup>73</sup>As photons contributed 1% of the total dose rate for this task.

The smearing task incorporated two separate tasks. The disk source was picked up from the stand, smeared, and placed back on the stand. The worker used both hands to smear the disk source. The smearing task alone took approximately one second with the right hand and one second with the left hand. The worker used the right hand to pick up and put down the disk source which took a total of two seconds. The smearing task results for three, two, and one vinyl glove are shown in Appendix B.2 through B.4. The holding of the disk source results for the various number of vinyl gloves are shown in Appendix B.5 through B.7.

The dose rate from the smearing task was concentrated mostly over the inner sections of the thumb, index finger, and middle finger. Considering only the smearing task, Appendix C.2 through C.4 shows the cells contributing to highest dose rate of the 100 cm<sup>2</sup> area for the various number of vinyl gloves. The percent contribution to the total dose rate from photons and beta particles is shown in Appendix D.2 through D.4 for the various number of vinyl gloves. Depending on the number of vinyl gloves worn, the <sup>74</sup>As beta radiation contributed 73 – 85%, the <sup>74</sup>As photons contributed 11 – 26%, and the <sup>73</sup>As photons contributed 1 – 2% of the total dose rate for the smearing task.

The cells that received the highest dose rates for holding the disk source task before and after smearing were the tips of the fingers, and the lower sections of the

thumb, index finger, and middle finger. Considering only the holding task, Appendix C.5 through C.7 shows the cells contributing to highest dose rate of the 100 cm<sup>2</sup> area for the various number of vinyl gloves. The percent contribution to the total dose rate from photons and beta particles is shown in Appendix D.5 through D.7 for the various number of vinyl gloves. Depending on the number of vinyl gloves worn, the contribution of the <sup>74</sup>As beta radiation was 61 – 77%, the <sup>74</sup>As photons contributed 22 – 37%, and the <sup>73</sup>As photons contributed 1 – 2% of the total dose rate for holding the disk source task.

The task of placing the disk source into the shipping container was performed with the worker's right hand while wearing one nitrile and one vinyl glove. This task took approximately five seconds. The results in Appendix B.7 can also be used for this task. Considering only this task, the cells contributing to highest dose rate of the 100 cm<sup>2</sup> area are shown in Appendix C.7. The percent contribution of photons and beta particles is shown in Appendix D.7. The contribution of the <sup>74</sup>As beta radiation was 77%, the <sup>74</sup>As photons contributed 22%, and the <sup>73</sup>As photons contributed 1% of the total dose rate for this task.

The tasks to determine the nonuniform skin dose to the right and left hand are summarized in Table 4. To determine the nonuniform skin dose to the cells contributing to the 100 cm<sup>2</sup> receiving the maximum dose to the right hand, Equation 5 was used. The 100 cm<sup>2</sup> area which received the maximum dose was composed of 50 cells for the right hand and is summarized in Appendix E.1. The actual area of the 50 cells used for the nonuniform dose determination was 100.8282 cm<sup>2</sup>.

**Table 4.** Summary of tasks used to determine the nonuniform dose to the skin.

Right Hand Task Descriptions	Left Hand Task Descriptions
Using tongs to move disk source	
Smearing the disk source 4 times: <ul style="list-style-type: none"> <li>• 1 Nitrile, 3 Vinyl Holding/Smearing</li> <li>• 1 Nitrile, 2 Vinyl Holding/Smearing</li> <li>• 1 Nitrile, 1 Vinyl Holding/Smearing</li> <li>• 1 Nitrile, 1 Vinyl Holding/Smearing</li> </ul>	Smearing the disk source 4 times: <ul style="list-style-type: none"> <li>• 1 Nitrile, 3 Vinyl Smearing</li> <li>• 1 Nitrile, 2 Vinyl Smearing</li> <li>• 1 Nitrile, 1 Vinyl Smearing</li> <li>• 1 Nitrile, 1 Vinyl Smearing</li> </ul>
Placing disk source into shipping container	

$$\text{Estimated Nonuniform Skin Dose} = \sum \left[ \text{Cell Dose (Gy)} \times \left( \frac{\text{Cell Area (cm}^2\text{)}}{100.8282 \text{ cm}^2} \right) \right]. \quad (5)$$

To determine the nonuniform skin dose to the cells contributing to the 100 cm<sup>2</sup> receiving the maximum dose to the left hand, Equation 6 was used. The 100 cm<sup>2</sup> area which received the maximum dose was composed of 49 cells for the left hand and is summarized in Appendix E.2. The actual area of the 49 cells used for the nonuniform dose determination was 100.6482 cm<sup>2</sup>.

$$\text{Estimated Nonuniform Skin Dose} = \sum \left[ \text{Cell Dose (Gy)} \times \left( \frac{\text{Cell Area (cm}^2\text{)}}{100.6482 \text{ cm}^2} \right) \right]. \quad (6)$$

The calculated nonuniform skin dose for the right hand is 0.126 Gy ± 0.0008 (1σ). The calculated nonuniform skin dose for the left hand is 0.082 Gy ± 0.0005 (1σ).

The absorbed dose can be converted to sieverts (Sv) by multiplying by the radiation weighting factor for betas and gammas, which is one. Therefore the nonuniform equivalent dose is 0.126 Sv (12.6 rem) to the right hand and 0.082 Sv (8.2 rem) to the left hand.

## **VARSKIN**

Due to the limitations of VARSKIN, the only task that could be evaluated using the VARSKIN code and compared to MCNP was the smearing task. The VARSKIN model was set up similarly to the highest exposed thumb section from the MCNP model (cell number 202). The results from the VARSKIN calculations and comparisons with MCNP (cell number 202) results are shown in Table 5.

**Table 5.** Beta dose results from VARSKIN compared with results from MCNP.

Smearing Disk Source	VARSKIN	MCNP
1 Nitrile, 3 Vinyl	241 mGy s <sup>-1</sup>	300 mGy s <sup>-1</sup>
1 Nitrile, 2 Vinyl	357 mGy s <sup>-1</sup>	425 mGy s <sup>-1</sup>
1 Nitrile, 1 Vinyl	509 mGy s <sup>-1</sup>	614 mGy s <sup>-1</sup>

The VARSKIN results are in close agreement with the MCNP results. Because of the inability to model complex geometries in VARSKIN, backscatter from the titanium base disk could not be estimated. Therefore, the VARSKIN results are lower than the results from MCNP.

## CONCLUSIONS

The results from MCNP showed that the nonuniform dose to the worker's skin did not exceed the regulatory limit of 0.5 Sv (50 rem). The nonuniform equivalent dose was 0.126 Sv (12.6 rem) to the worker's right hand and 0.082 Sv (8.2 rem) to the worker's left hand.

Comparing the results from each task showed that using remote handling tools could reduce the dose rate to the worker's hands since most of the contribution was from beta radiation. The dose rate from the smearing task could have been reduced by as much as 240 times by using tongs if the duration of the task remained the same. If holding the disk was done with tongs instead of the worker's fingers, the dose rate could have been reduced by as much as 19 times if the duration of the task remained the same. The dose rate could have been further reduced if a plastic shield had been attached at the hinge of the tongs to block the beta radiation from reaching the worker's hands.

Health physicists must evaluate any new process to determine the best way a radiation source should be handled to ensure that worker's doses are kept ALARA. The results of this research demonstrated that VARSKIN can be useful when planning work that involves beta-emitting radionuclides to obtain a quick estimate of the dose rate on contact and up to 5 cm from the skin surface. MCNP was shown to be a good tool for performing a complex dose reconstruction. Even though the regulatory limit was not exceeded, this event will be used as a learning experience so that a situation such as this one can be avoided in the future.

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## APPENDIX A

## A.1 MCNP input file for using tongs

```

Using tongs to move source disk - 1.3616E+10 Bq As-74 Beta (63.3022%)
c
c File name: 74eT (1 Nitrile, 1 Vinyl)
c
c January 23, 2010 @ 1500 hrs
c Alisha Stallard
c Texas A&M University Master's Thesis
c RP-2 Internal Dosimetry, Dose Assessment/Technical Support
c Los Alamos National Laboratory
c
c x coordinate in and out
c y coordinates left-right
c z coordinates top to bottom
c
c inner - palm side
c outer - back of hand side
c front - when holding object with thumbs up, the sides of the fingers that are facing
you
c back - " , the sides of the fingers that are facing away from you
c (e.g. side of index finger next to middle finger)
c
c ***** CELL CARDS*****
c Thumb, index and tissue between cells
c Front face of index/thumb
100 4 -1.09 -31 74 1 -6 42 -46 imp:e=1 $ Outer skin
101 4 -1.09 -74 38 70 -6 76 -78 imp:e=1 $ 7 mg/cm^2 skin layer
102 4 -1.09 -38 85 7 -6 43 -77 imp:e=1 $ Skin below
103 3 -0.95 -85 138 80 -3 87 -88 20 21 22 26 27 28 29 imp:e=1 $ Adipose tissue
c
c Back face of index/thumb
104 4 -1.09 -136 135 1 -6 42 -46 imp:e=1 $ Outer skin
105 4 -1.09 -137 136 70 -6 76 -78 imp:e=1 $ 7 mg/cm^2 skin layer
106 4 -1.09 -138 137 7 -6 43 -77 imp:e=1 $ Skin below
c
c Side of Index/Thumb
107 4 -1.09 -74 136 1 -70 42 -46 imp:e=1 $ Outer skin
108 4 -1.09 -38 137 70 -7 76 -78 imp:e=1 $ 7 mg/cm^2 skin layer
109 4 -1.09 -85 138 7 -80 43 -77 imp:e=1 $ Skin below
c
c Top of Index/Thumb
110 4 -1.09 -74 136 70 -6 78 -46 imp:e=1 $ Outer skin
111 4 -1.09 -38 137 7 -6 77 -78 imp:e=1 $ 7 mg/cm^2 skin layer
112 4 -1.09 -85 138 80 -6 88 -77 imp:e=1 $ Skin below
c
c Bottom of Index/Thumb at far back
113 4 -1.09 -158 136 70 -3 42 -76 imp:e=1 $ Outer skin
114 4 -1.09 -158 137 7 -3 76 -43 imp:e=1 $ 7 mg/cm^2 skin layer
115 4 -1.09 -158 138 80 -3 43 -87 imp:e=1 $ Skin below
c
c Bottom of Index/Thumb behind thumb
116 4 -1.09 -30 158 4 -6 42 -76 imp:e=1 $ Outer skin
117 4 -1.09 -30 158 4 -6 76 -43 imp:e=1 $ 7 mg/cm^2 skin layer
118 4 -1.09 -30 158 4 -6 43 -87 imp:e=1 $ Skin below
c
c Back side of under palm behind thumb
700 4 -1.09 -158 136 4 -6 42 -76 imp:e=1 $ Outer skin
701 4 -1.09 -158 137 4 -6 76 -43 imp:e=1 $ 7 mg/cm^2 skin layer
702 4 -1.09 -158 138 4 -6 43 -87 imp:e=1 $ Skin below
c
c Between Index and Thumb (Arch)
119 4 -1.09 -74 30 3 -4 42 -76 imp:e=1 $ Outer skin
120 4 -1.09 -38 30 3 -4 76 -43 imp:e=1 $ 7 mg/cm^2 skin layer

```



```

121 4 -1.09 -85 30 3 -4 43 -87      imp:e=1 $ Skin below
c
c   Middle Between Index/Thumb
703 4 -1.09 -30 158 3 -4 42 -76      imp:e=1 $ Outer skin
704 4 -1.09 -30 158 3 -4 76 -43      imp:e=1 $ 7 mg/cm^2 skin layer
705 4 -1.09 -30 158 3 -4 43 -87      imp:e=1 $ Skin below
c
c   Back side Between Index/Thumb
706 4 -1.09 -158 136 3 -4 42 -76      imp:e=1 $ Outer skin
707 4 -1.09 -158 137 3 -4 76 -43      imp:e=1 $ 7 mg/cm^2 skin layer
708 4 -1.09 -158 138 3 -4 43 -87      imp:e=1 $ Skin below
c
c   Between Index/Middle Finger behind Index
122 3 -0.95 -74 30 70 -3 42 -76 20 22 imp:e=1 $ Outer skin
123 3 -0.95 -38 30 7 -3 76 -43 20 22 imp:e=1 $ 7 mg/cm^2 skin layer
124 3 -0.95 -85 30 80 -3 43 -87 20 22 imp:e=1 $ Skin below
c
c   Between Index/Middle Finger
709 4 -1.09 -30 151 70 -3 42 -76      imp:e=1 $ Outer skin
710 4 -1.09 -30 151 7 -3 76 -43      imp:e=1 $ 7 mg/cm^2 skin layer
711 4 -1.09 -30 151 80 -3 43 -87      imp:e=1 $ Skin below
c
c   Between Index/Middle Finger behind Middle
712 3 -0.95 -151 158 70 -3 42 -76 20 22 imp:e=1 $ Outer skin
713 3 -0.95 -151 158 7 -3 76 -43 20 22 imp:e=1 $ 7 mg/cm^2 skin layer
714 3 -0.95 -151 158 80 -3 43 -87 20 22 imp:e=1 $ Skin below
c
c   Under Thumb
125 3 -0.95 -74 30 4 -6 42 -76 21      imp:e=1 $ Outer skin
126 3 -0.95 -38 30 4 -6 76 -43 21      imp:e=1 $ 7 mg/cm^2 skin layer
127 3 -0.95 -85 30 4 -6 43 -87 21      imp:e=1 $ Skin below
c
c   Adipose tissue
128 3 -0.95 -85 138 3 -4 87 -88 20 21 22 26 27 28 29 imp:e=1 $ Adipose tissue above arch
129 3 -0.95 -85 138 4 -6 87 -88 20 21 22 26 27 28 29 imp:e=1 $ Adipose tissue above
      thumb
c
c
c   Tip of Index
130 4 -1.09 40 -75 70 -2 73 -74      imp:e=1 $ Outer skin-index tip
131 4 -1.09 75 -140 7 -120 37 -38      imp:e=1 $ 7 mg/cm^2 index tip
132 4 -1.09 140 -86 80 -81 84 -85      imp:e=1 $ Skin below-index tip
133 3 -0.95 86 -41 80 -81 84 -85      imp:e=1 $ Adipose tissue-index tip
134 4 -1.09 2 -3 40 -41 30 -31      imp:e=1 $ Outer skin-inner index tip
135 4 -1.09 120 -2 75 -41 73 -74      imp:e=1 $ 7 mg/cm^2 inner index tip
136 4 -1.09 81 -120 140 -41 37 -38      imp:e=1 $ Skin below-inner index tip
137 4 -1.09 1 -70 40 -41 30 -31      imp:e=1 $ Outer skin-outer index tip
138 4 -1.09 70 -7 75 -41 73 -74      imp:e=1 $ 7 mg/cm^2 outer index tip
139 4 -1.09 7 -80 140 -41 37 -38      imp:e=1 $ Skin below-outer index tip
140 4 -1.09 70 -2 40 -41 74 -31      imp:e=1 $ Outer skin-front index tip
141 4 -1.09 7 -120 75 -41 38 -74      imp:e=1 $ 7 mg/cm^2 front index tip
142 4 -1.09 80 -81 140 -41 85 -38      imp:e=1 $ Skin below-front index tip
143 4 -1.09 70 -2 40 -41 30 -73      imp:e=1 $ Outer skin-back index tip
144 4 -1.09 7 -120 75 -41 73 -37      imp:e=1 $ 7 mg/cm^2 back index tip
145 4 -1.09 80 -81 140 -41 37 -84      imp:e=1 $ Skin below-back index tip
c
c   Tip of Middle Finger
550 4 -1.09 40 -75 70 -2      157 -152 imp:e=1 $ Outer skin-middle finger tip
551 4 -1.09 75 -140 7 -120      156 -153 imp:e=1 $ 7 mg/cm^2 middle finger tip
552 4 -1.09 140 -86 80 -81      155 -154 imp:e=1 $ Skin below-middle finger tip
553 3 -0.95 86 -41 80 -81      155 -154 imp:e=1 $ Adipose tissue-middle finger tip
554 4 -1.09 2 -3 40 -41      158 -151 imp:e=1 $ Outer skin-inner middle finger tip
555 4 -1.09 120 -2 75 -41      157 -152 imp:e=1 $ 7 mg/cm^2 inner middle finger tip
556 4 -1.09 81 -120 140 -41      156 -153 imp:e=1 $ Skin below-inner middle finger tip
557 4 -1.09 1 -70 40 -41      158 -151 imp:e=1 $ Outer skin-outer middle finger tip
558 4 -1.09 70 -7 75 -41      157 -152 imp:e=1 $ 7 mg/cm^2 outer middle finger tip
559 4 -1.09 7 -80 140 -41      156 -153 imp:e=1 $ Skin below-outer middle finger tip

```

560	4	-1.09	70	-2	40	-41	152	-151	imp:e=1	\$ Outer skin-front middle finger tip	
561	4	-1.09	7	-120	75	-41	153	-152	imp:e=1	\$ 7 mg/cm^2 front middle finger tip	
562	4	-1.09	80	-81	140	-41	154	-153	imp:e=1	\$ Skin below-front middle finger tip	
563	4	-1.09	70	-2	40	-41	158	-157	imp:e=1	\$ Outer skin-back middle finger tip	
564	4	-1.09	7	-120	75	-41	157	-156	imp:e=1	\$ 7 mg/cm^2 back middle finger tip	
565	4	-1.09	80	-81	140	-41	156	-155	imp:e=1	\$ Skin below-back middle finger tip	
c											
c Tip of Thumb											
146	4	-1.09	40	-75	5	-71	73	-74	imp:e=1	\$ Outer skin-thumb tip	
147	4	-1.09	75	-140	121	-8	37	-38	imp:e=1	\$ 7 mg/cm^2 thumb tip	
148	4	-1.09	140	-86	82	-83	84	-85	imp:e=1	\$ Skin below-thumb tip	
149	3	-0.95	86	-41	82	-83	84	-85	imp:e=1	\$ Adipose tissue-thumb tip	
150	4	-1.09	4	-5	40	-41	30	-31	imp:e=1	\$ Outer skin-inner thumb tip	
151	4	-1.09	5	-121	75	-41	73	-74	imp:e=1	\$ 7 mg/cm^2 inner thumb tip	
152	4	-1.09	121	-82	140	-41	37	-38	imp:e=1	\$ Skin below-inner thumb tip	
153	4	-1.09	71	-6	40	-41	30	-31	imp:e=1	\$ Outer skin-outer thumb tip	
154	4	-1.09	8	-71	75	-41	73	-74	imp:e=1	\$ 7 mg/cm^2 outer thumb tip	
155	4	-1.09	83	-8	140	-41	37	-38	imp:e=1	\$ Skin below-outer thumb tip	
156	4	-1.09	5	-71	40	-41	74	-31	imp:e=1	\$ Outer skin-front thumb tip	
157	4	-1.09	121	-8	75	-41	38	-74	imp:e=1	\$ 7 mg/cm^2 front thumb tip	
158	4	-1.09	82	-83	140	-41	85	-38	imp:e=1	\$ Skin below-front thumb tip	
159	4	-1.09	5	-71	40	-41	30	-73	imp:e=1	\$ Outer skin-back thumb tip	
160	4	-1.09	121	-8	75	-41	73	-37	imp:e=1	\$ 7 mg/cm^2 back thumb tip	
161	4	-1.09	82	-83	140	-41	37	-84	imp:e=1	\$ Skin below-back thumb tip	
c											
c Section 1 of Index											
162	4	-1.09	41	-51	2	-3	30	-31	imp:e=1	\$ Outer skin-inner index	
163	4	-1.09	41	-51	120	-2	73	-74	imp:e=1	\$ 7 mg/cm^2 inner index	
164	4	-1.09	41	-51	81	-120	37	-38	imp:e=1	\$ Skin below-inner index	
165	4	-1.09	41	-51	1	-70	30	-31	imp:e=1	\$ Outer skin-outer index	
166	4	-1.09	41	-51	70	-7	73	-74	imp:e=1	\$ 7 mg/cm^2 outer index	
167	4	-1.09	41	-51	7	-80	37	-38	imp:e=1	\$ Skin below-outer index	
168	4	-1.09	41	-51	70	-2	74	-31	imp:e=1	\$ Outer skin-front index	
169	4	-1.09	41	-51	7	-120	38	-74	imp:e=1	\$ 7 mg/cm^2 front index	
170	4	-1.09	41	-51	80	-81	85	-38	imp:e=1	\$ Skin below-front index	
171	4	-1.09	41	-51	70	-2	30	-73	imp:e=1	\$ Outer skin-back index	
172	4	-1.09	41	-51	7	-120	73	-37	imp:e=1	\$ 7 mg/cm^2 back index	
173	4	-1.09	41	-51	80	-81	37	-84	imp:e=1	\$ Skin below-back index	
174	3	-0.95	41	-51	80	-81	84	-85	20	imp:e=1	\$ Adipose tissue index
c											
c Section 1 of Middle Finger											
566	4	-1.09	41	-51	2	-3	158	-151	imp:e=1	\$ Outer skin-inner middle finger	
567	4	-1.09	41	-51	120	-2	157	-152	imp:e=1	\$ 7 mg/cm^2 inner middle finger	
568	4	-1.09	41	-51	81	-120	156	-153	imp:e=1	\$ Skin below-inner middle finger	
569	4	-1.09	41	-51	1	-70	158	-151	imp:e=1	\$ Outer skin-outer middle finger	
570	4	-1.09	41	-51	70	-7	157	-152	imp:e=1	\$ 7 mg/cm^2 outer middle finger	
571	4	-1.09	41	-51	7	-80	156	-153	imp:e=1	\$ Skin below-outer middle finger	
572	4	-1.09	41	-51	70	-2	152	-151	imp:e=1	\$ Outer skin-front middle finger	
573	4	-1.09	41	-51	7	-120	153	-152	imp:e=1	\$ 7 mg/cm^2 front middle finger	
574	4	-1.09	41	-51	80	-81	154	-153	imp:e=1	\$ Skin below-front middle finger	
575	4	-1.09	41	-51	70	-2	158	-157	imp:e=1	\$ Outer skin-back middle finger	
576	4	-1.09	41	-51	7	-120	157	-156	imp:e=1	\$ 7 mg/cm^2 back middle finger	
577	4	-1.09	41	-51	80	-81	156	-155	imp:e=1	\$ Skin below-back middle finger	
578	3	-0.95	41	-51	80	-81	155	-154	22	imp:e=1	\$ Adipose tissue middle finger
c											
c Section 1 of Thumb											
175	4	-1.09	41	-51	4	-5	30	-31	imp:e=1	\$ Outer skin-inner thumb	
176	4	-1.09	41	-51	5	-121	73	-74	imp:e=1	\$ 7 mg/cm^2 inner thumb	
177	4	-1.09	41	-51	121	-82	37	-38	imp:e=1	\$ Skin below-inner thumb	
178	4	-1.09	41	-51	71	-6	30	-31	imp:e=1	\$ Outer skin-outer thumb	
179	4	-1.09	41	-51	8	-71	73	-74	imp:e=1	\$ 7 mg/cm^2 outer thumb	
180	4	-1.09	41	-51	83	-8	37	-38	imp:e=1	\$ Skin below-outer thumb	
181	4	-1.09	41	-51	5	-71	74	-31	imp:e=1	\$ Outer skin-front thumb	
182	4	-1.09	41	-51	121	-8	38	-74	imp:e=1	\$ 7 mg/cm^2 front thumb	
183	4	-1.09	41	-51	82	-83	85	-38	imp:e=1	\$ Skin below-front thumb	
184	4	-1.09	41	-51	5	-71	30	-73	imp:e=1	\$ Outer skin-back thumb	
185	4	-1.09	41	-51	121	-8	73	-37	imp:e=1	\$ 7 mg/cm^2 back thumb	

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186 4 -1.09 41 -51 82 -83 37 -84      imp:e=1 $ Skin below-back thumb
187 3 -0.95 41 -51 82 -83 84 -85 21    imp:e=1 $ Adipose tissue thumb
c
c Section 2 of Index
188 4 -1.09 51 -52 2 -3      30 -31    imp:e=1 $ Outer skin-inner index
189 4 -1.09 51 -52 120 -2    73 -74    imp:e=1 $ 7 mg/cm^2 inner index
190 4 -1.09 51 -52 81 -120  37 -38    imp:e=1 $ Skin below-inner index
191 4 -1.09 51 -52 1 -70    30 -31    imp:e=1 $ Outer skin-outer index
192 4 -1.09 51 -52 70 -7    73 -74    imp:e=1 $ 7 mg/cm^2 outer index
193 4 -1.09 51 -52 7 -80    37 -38    imp:e=1 $ Skin below-outer index
194 4 -1.09 51 -52 70 -2    74 -31    imp:e=1 $ Outer skin-front index
195 4 -1.09 51 -52 7 -120   38 -74    imp:e=1 $ 7 mg/cm^2 front index
196 4 -1.09 51 -52 80 -81   85 -38    imp:e=1 $ Skin below-front index
197 4 -1.09 51 -52 70 -2    30 -73    imp:e=1 $ Outer skin-back index
198 4 -1.09 51 -52 7 -120   73 -37    imp:e=1 $ 7 mg/cm^2 back index
199 4 -1.09 51 -52 80 -81   37 -84    imp:e=1 $ Skin below-back index
200 3 -0.95 51 -52 80 -81   84 -85 20  imp:e=1 $ Adipose tissue index
c
c Section 2 of Middle Finger
579 4 -1.09 51 -52 2 -3     158 -151  imp:e=1 $ Outer skin-inner middle finger
580 4 -1.09 51 -52 120 -2   157 -152  imp:e=1 $ 7 mg/cm^2 inner middle finger
581 4 -1.09 51 -52 81 -120  156 -153  imp:e=1 $ Skin below-inner middle finger
582 4 -1.09 51 -52 1 -70    158 -151  imp:e=1 $ Outer skin-outer middle finger
583 4 -1.09 51 -52 70 -7    157 -152  imp:e=1 $ 7 mg/cm^2 outer middle finger
584 4 -1.09 51 -52 7 -80    156 -153  imp:e=1 $ Skin below-outer middle finger
585 4 -1.09 51 -52 70 -2    152 -151  imp:e=1 $ Outer skin-front middle finger
586 4 -1.09 51 -52 7 -120   153 -152  imp:e=1 $ 7 mg/cm^2 front middle finger
587 4 -1.09 51 -52 80 -81   154 -153  imp:e=1 $ Skin below-front middle finger
588 4 -1.09 51 -52 70 -2    158 -157  imp:e=1 $ Outer skin-back middle finger
589 4 -1.09 51 -52 7 -120   157 -156  imp:e=1 $ 7 mg/cm^2 back middle finger
590 4 -1.09 51 -52 80 -81   156 -155  imp:e=1 $ Skin below-back middle finger
591 3 -0.95 51 -52 80 -81   155 -154 22 imp:e=1 $ Adipose tissue middle finger
c
c Section 2 of Thumb
201 4 -1.09 51 -52 4 -5 30 -31    imp:e=1 $ Outer skin-inner thumb
202 4 -1.09 51 -52 5 -121 73 -74    imp:e=1 $ 7 mg/cm^2 inner thumb
203 4 -1.09 51 -52 121 -82 37 -38    imp:e=1 $ Skin below-inner thumb
204 4 -1.09 51 -52 71 -6 30 -31    imp:e=1 $ Outer skin-outer thumb
205 4 -1.09 51 -52 8 -71 73 -74    imp:e=1 $ 7 mg/cm^2 outer thumb
206 4 -1.09 51 -52 83 -8 37 -38    imp:e=1 $ Skin below-outer thumb
207 4 -1.09 51 -52 5 -71 74 -31    imp:e=1 $ Outer skin-front thumb
208 4 -1.09 51 -52 121 -8 38 -74    imp:e=1 $ 7 mg/cm^2 front thumb
209 4 -1.09 51 -52 82 -83 85 -38    imp:e=1 $ Skin below-front thumb
210 4 -1.09 51 -52 5 -71 30 -73    imp:e=1 $ Outer skin-back thumb
211 4 -1.09 51 -52 121 -8 73 -37    imp:e=1 $ 7 mg/cm^2 back thumb
212 4 -1.09 51 -52 82 -83 37 -84    imp:e=1 $ Skin below-back thumb
213 3 -0.95 51 -52 82 -83 84 -85 21  imp:e=1 $ Adipose tissue thumb
c
c Section 3 of Index
214 4 -1.09 52 -53 2 -3      30 -31    imp:e=1 $ Outer skin-inner index
215 4 -1.09 52 -53 120 -2    73 -74    imp:e=1 $ 7 mg/cm^2 inner index
216 4 -1.09 52 -53 81 -120  37 -38    imp:e=1 $ Skin below-inner index
217 4 -1.09 52 -53 1 -70    30 -31    imp:e=1 $ Outer skin-outer index
218 4 -1.09 52 -53 70 -7    73 -74    imp:e=1 $ 7 mg/cm^2 outer index
219 4 -1.09 52 -53 7 -80    37 -38    imp:e=1 $ Skin below-outer index
220 4 -1.09 52 -53 70 -2    74 -31    imp:e=1 $ Outer skin-front index
221 4 -1.09 52 -53 7 -120   38 -74    imp:e=1 $ 7 mg/cm^2 front index
222 4 -1.09 52 -53 80 -81   85 -38    imp:e=1 $ Skin below-front index
223 4 -1.09 52 -53 70 -2    30 -73    imp:e=1 $ Outer skin-back index
224 4 -1.09 52 -53 7 -120   73 -37    imp:e=1 $ 7 mg/cm^2 back index
225 4 -1.09 52 -53 80 -81   37 -84    imp:e=1 $ Skin below-back index
226 3 -0.95 52 -53 80 -81   84 -85 20  imp:e=1 $ Adipose tissue index
c
c Section 3 of Middle Finger
592 4 -1.09 52 -53 2 -3     158 -151  imp:e=1 $ Outer skin-inner middle finger
593 4 -1.09 52 -53 120 -2   157 -152  imp:e=1 $ 7 mg/cm^2 inner middle finger
594 4 -1.09 52 -53 81 -120  156 -153  imp:e=1 $ Skin below-inner middle finger

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595 4 -1.09 52 -53 1 -70 158 -151 imp:e=1 $ Outer skin-outer middle finger
596 4 -1.09 52 -53 70 -7 157 -152 imp:e=1 $ 7 mg/cm^2 outer middle finger
597 4 -1.09 52 -53 7 -80 156 -153 imp:e=1 $ Skin below-outer middle finger
598 4 -1.09 52 -53 70 -2 152 -151 imp:e=1 $ Outer skin-front middle finger
599 4 -1.09 52 -53 7 -120 153 -152 imp:e=1 $ 7 mg/cm^2 front middle finger
600 4 -1.09 52 -53 80 -81 154 -153 imp:e=1 $ Skin below-front middle finger
601 4 -1.09 52 -53 70 -2 158 -157 imp:e=1 $ Outer skin-back middle finger
602 4 -1.09 52 -53 7 -120 157 -156 imp:e=1 $ 7 mg/cm^2 back middle finger
603 4 -1.09 52 -53 80 -81 156 -155 imp:e=1 $ Skin below-back middle finger
604 3 -0.95 52 -53 80 -81 155 -154 22 imp:e=1 $ Adipose tissue middle finger
c
c Section 3 of Thumb
227 4 -1.09 52 -53 4 -5 30 -31 imp:e=1 $ Outer skin-inner thumb
228 4 -1.09 52 -53 5 -121 73 -74 imp:e=1 $ 7 mg/cm^2 inner thumb
229 4 -1.09 52 -53 121 -82 37 -38 imp:e=1 $ Skin below-inner thumb
230 4 -1.09 52 -53 71 -6 30 -31 imp:e=1 $ Outer skin-outer thumb
231 4 -1.09 52 -53 8 -71 73 -74 imp:e=1 $ 7 mg/cm^2 outer thumb
232 4 -1.09 52 -53 83 -8 37 -38 imp:e=1 $ Skin below-outer thumb
233 4 -1.09 52 -53 5 -71 74 -31 imp:e=1 $ Outer skin-front thumb
234 4 -1.09 52 -53 121 -8 38 -74 imp:e=1 $ 7 mg/cm^2 front thumb
235 4 -1.09 52 -53 82 -83 85 -38 imp:e=1 $ Skin below-front thumb
236 4 -1.09 52 -53 5 -71 30 -73 imp:e=1 $ Outer skin-back thumb
237 4 -1.09 52 -53 121 -8 73 -37 imp:e=1 $ 7 mg/cm^2 back thumb
238 4 -1.09 52 -53 82 -83 37 -84 imp:e=1 $ Skin below-back thumb
239 3 -0.95 52 -53 82 -83 84 -85 21 imp:e=1 $ Adipose tissue thumb
c
c Section 4 of Index
240 4 -1.09 53 -54 2 -3 30 -31 imp:e=1 $ Outer skin-inner index
241 4 -1.09 53 -54 120 -2 73 -74 imp:e=1 $ 7 mg/cm^2 inner index
242 4 -1.09 53 -54 81 -120 37 -38 imp:e=1 $ Skin below-inner index
243 4 -1.09 53 -54 1 -70 30 -31 imp:e=1 $ Outer skin-outer index
244 4 -1.09 53 -54 70 -7 73 -74 imp:e=1 $ 7 mg/cm^2 outer index
245 4 -1.09 53 -54 7 -80 37 -38 imp:e=1 $ Skin below-outer index
246 4 -1.09 53 -54 70 -2 74 -31 imp:e=1 $ Outer skin-front index
247 4 -1.09 53 -54 7 -120 38 -74 imp:e=1 $ 7 mg/cm^2 front index
248 4 -1.09 53 -54 80 -81 85 -38 imp:e=1 $ Skin below-front index
249 4 -1.09 53 -54 70 -2 30 -73 imp:e=1 $ Outer skin-back index
250 4 -1.09 53 -54 7 -120 73 -37 imp:e=1 $ 7 mg/cm^2 back index
251 4 -1.09 53 -54 80 -81 37 -84 imp:e=1 $ Skin below-back index
252 3 -0.95 53 -54 80 -81 84 -85 20 imp:e=1 $ Adipose tissue index
c
c Section 4 of Middle Finger
605 4 -1.09 53 -54 2 -3 158 -151 imp:e=1 $ Outer skin-inner middle finger
606 4 -1.09 53 -54 120 -2 157 -152 imp:e=1 $ 7 mg/cm^2 inner middle finger
607 4 -1.09 53 -54 81 -120 156 -153 imp:e=1 $ Skin below-inner middle finger
608 4 -1.09 53 -54 1 -70 158 -151 imp:e=1 $ Outer skin-outer middle finger
609 4 -1.09 53 -54 70 -7 157 -152 imp:e=1 $ 7 mg/cm^2 outer middle finger
610 4 -1.09 53 -54 7 -80 156 -153 imp:e=1 $ Skin below-outer middle finger
611 4 -1.09 53 -54 70 -2 152 -151 imp:e=1 $ Outer skin-front middle finger
612 4 -1.09 53 -54 7 -120 153 -152 imp:e=1 $ 7 mg/cm^2 front middle finger
613 4 -1.09 53 -54 80 -81 154 -153 imp:e=1 $ Skin below-front middle finger
614 4 -1.09 53 -54 70 -2 158 -157 imp:e=1 $ Outer skin-back middle finger
615 4 -1.09 53 -54 7 -120 157 -156 imp:e=1 $ 7 mg/cm^2 back middle finger
616 4 -1.09 53 -54 80 -81 156 -155 imp:e=1 $ Skin below-back middle finger
617 3 -0.95 53 -54 80 -81 155 -154 22 imp:e=1 $ Adipose tissue middle finger
c
c Section 4 of Thumb
253 4 -1.09 53 -54 4 -5 30 -31 imp:e=1 $ Outer skin-inner thumb
254 4 -1.09 53 -54 5 -121 73 -74 imp:e=1 $ 7 mg/cm^2 inner thumb
255 4 -1.09 53 -54 121 -82 37 -38 imp:e=1 $ Skin below-inner thumb
256 4 -1.09 53 -54 71 -6 30 -31 imp:e=1 $ Outer skin-outer thumb
257 4 -1.09 53 -54 8 -71 73 -74 imp:e=1 $ 7 mg/cm^2 outer thumb
258 4 -1.09 53 -54 83 -8 37 -38 imp:e=1 $ Skin below-outer thumb
259 4 -1.09 53 -54 5 -71 74 -31 imp:e=1 $ Outer skin-front thumb
260 4 -1.09 53 -54 121 -8 38 -74 imp:e=1 $ 7 mg/cm^2 front thumb
261 4 -1.09 53 -54 82 -83 85 -38 imp:e=1 $ Skin below-front thumb
262 4 -1.09 53 -54 5 -71 30 -73 imp:e=1 $ Outer skin-back thumb

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263 4 -1.09 53 -54 121 -8 73 -37      imp:e=1 $ 7 mg/cm^2 back thumb
264 4 -1.09 53 -54 82 -83 37 -84      imp:e=1 $ Skin below-back thumb
265 3 -0.95 53 -54 82 -83 84 -85 21    imp:e=1 $ Adipose tissue thumb
c
c Section 5 of Index
266 4 -1.09 54 -55 2 -3      30 -31    imp:e=1 $ Outer skin-inner index
267 4 -1.09 54 -55 120 -2 73 -74      imp:e=1 $ 7 mg/cm^2 inner index
268 4 -1.09 54 -55 81 -120 37 -38      imp:e=1 $ Skin below-inner index
269 4 -1.09 54 -55 1 -70 30 -31      imp:e=1 $ Outer skin-outer index
270 4 -1.09 54 -55 70 -7 73 -74      imp:e=1 $ 7 mg/cm^2 outer index
271 4 -1.09 54 -55 7 -80 37 -38      imp:e=1 $ Skin below-outer index
272 4 -1.09 54 -55 70 -2 74 -31      imp:e=1 $ Outer skin-front index
273 4 -1.09 54 -55 7 -120 38 -74      imp:e=1 $ 7 mg/cm^2 front index
274 4 -1.09 54 -55 80 -81 85 -38      imp:e=1 $ Skin below-front index
275 4 -1.09 54 -55 70 -2 30 -73      imp:e=1 $ Outer skin-back index
276 4 -1.09 54 -55 7 -120 73 -37      imp:e=1 $ 7 mg/cm^2 back index
277 4 -1.09 54 -55 80 -81 37 -84      imp:e=1 $ Skin below-back index
278 3 -0.95 54 -55 80 -81 84 -85 20    imp:e=1 $ Adipose tissue index
c
c Section 5 of Middle Finger
618 4 -1.09 54 -55 2 -3      158 -151  imp:e=1 $ Outer skin-inner middle finger
619 4 -1.09 54 -55 120 -2 157 -152      imp:e=1 $ 7 mg/cm^2 inner middle finger
620 4 -1.09 54 -55 81 -120 156 -153      imp:e=1 $ Skin below-inner middle finger
621 4 -1.09 54 -55 1 -70 158 -151      imp:e=1 $ Outer skin-outer middle finger
622 4 -1.09 54 -55 70 -7 157 -152      imp:e=1 $ 7 mg/cm^2 outer middle finger
623 4 -1.09 54 -55 7 -80 156 -153      imp:e=1 $ Skin below-outer middle finger
624 4 -1.09 54 -55 70 -2 152 -151      imp:e=1 $ Outer skin-front middle finger
625 4 -1.09 54 -55 7 -120 153 -152      imp:e=1 $ 7 mg/cm^2 front middle finger
626 4 -1.09 54 -55 80 -81 154 -153      imp:e=1 $ Skin below-front middle finger
627 4 -1.09 54 -55 70 -2 158 -157      imp:e=1 $ Outer skin-back middle finger
628 4 -1.09 54 -55 7 -120 157 -156      imp:e=1 $ 7 mg/cm^2 back middle finger
629 4 -1.09 54 -55 80 -81 156 -155      imp:e=1 $ Skin below-back middle finger
630 3 -0.95 54 -55 80 -81 155 -154 22    imp:e=1 $ Adipose tissue middle finger
c
c Section 5 of Thumb
279 4 -1.09 54 -55 4 -5 30 -31      imp:e=1 $ Outer skin-inner thumb
280 4 -1.09 54 -55 5 -121 73 -74      imp:e=1 $ 7 mg/cm^2 inner thumb
281 4 -1.09 54 -55 121 -82 37 -38      imp:e=1 $ Skin below-inner thumb
282 4 -1.09 54 -55 71 -6 30 -31      imp:e=1 $ Outer skin-outer thumb
283 4 -1.09 54 -55 8 -71 73 -74      imp:e=1 $ 7 mg/cm^2 outer thumb
284 4 -1.09 54 -55 83 -8 37 -38      imp:e=1 $ Skin below-outer thumb
285 4 -1.09 54 -55 5 -71 74 -31      imp:e=1 $ Outer skin-front thumb
286 4 -1.09 54 -55 121 -8 38 -74      imp:e=1 $ 7 mg/cm^2 front thumb
287 4 -1.09 54 -55 82 -83 85 -38      imp:e=1 $ Skin below-front thumb
288 4 -1.09 54 -55 5 -71 30 -73      imp:e=1 $ Outer skin-back thumb
289 4 -1.09 54 -55 121 -8 73 -37      imp:e=1 $ 7 mg/cm^2 back thumb
290 4 -1.09 54 -55 82 -83 37 -84      imp:e=1 $ Skin below-back thumb
291 3 -0.95 54 -55 82 -83 84 -85 21    imp:e=1 $ Adipose tissue thumb
c
c Section 6 of Index
292 4 -1.09 55 -56 2 -3      30 -31    imp:e=1 $ Outer skin-inner index
293 4 -1.09 55 -56 120 -2 73 -74      imp:e=1 $ 7 mg/cm^2 inner index
294 4 -1.09 55 -56 81 -120 37 -38      imp:e=1 $ Skin below-inner index
295 4 -1.09 55 -56 1 -70 30 -31      imp:e=1 $ Outer skin-outer index
296 4 -1.09 55 -56 70 -7 73 -74      imp:e=1 $ 7 mg/cm^2 outer index
297 4 -1.09 55 -56 7 -80 37 -38      imp:e=1 $ Skin below-outer index
298 4 -1.09 55 -56 70 -2 74 -31      imp:e=1 $ Outer skin-front index
299 4 -1.09 55 -56 7 -120 38 -74      imp:e=1 $ 7 mg/cm^2 front index
300 4 -1.09 55 -56 80 -81 85 -38      imp:e=1 $ Skin below-front index
301 4 -1.09 55 -56 70 -2 30 -73      imp:e=1 $ Outer skin-back index
302 4 -1.09 55 -56 7 -120 73 -37      imp:e=1 $ 7 mg/cm^2 back index
303 4 -1.09 55 -56 80 -81 37 -84      imp:e=1 $ Skin below-back index
304 3 -0.95 55 -56 80 -81 84 -85 20    imp:e=1 $ Adipose tissue index
c
c Section 6 of Middle Finger
631 4 -1.09 55 -56 2 -3      158 -151  imp:e=1 $ Outer skin-inner middle finger
632 4 -1.09 55 -56 120 -2 157 -152      imp:e=1 $ 7 mg/cm^2 inner middle finger

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633 4 -1.09 55 -56 81 -120 156 -153 imp:e=1 $ Skin below-inner middle finger
634 4 -1.09 55 -56 1 -70 158 -151 imp:e=1 $ Outer skin-outer middle finger
635 4 -1.09 55 -56 70 -7 157 -152 imp:e=1 $ 7 mg/cm^2 outer middle finger
636 4 -1.09 55 -56 7 -80 156 -153 imp:e=1 $ Skin below-outer middle finger
637 4 -1.09 55 -56 70 -2 152 -151 imp:e=1 $ Outer skin-front middle finger
638 4 -1.09 55 -56 7 -120 153 -152 imp:e=1 $ 7 mg/cm^2 front middle finger
639 4 -1.09 55 -56 80 -81 154 -153 imp:e=1 $ Skin below-front middle finger
640 4 -1.09 55 -56 70 -2 158 -157 imp:e=1 $ Outer skin-back middle finger
641 4 -1.09 55 -56 7 -120 157 -156 imp:e=1 $ 7 mg/cm^2 back middle finger
642 4 -1.09 55 -56 80 -81 156 -155 imp:e=1 $ Skin below-back middle finger
643 3 -0.95 55 -56 80 -81 155 -154 22 imp:e=1 $ Adipose tissue middle finger
c
c Section 6 of Thumb
305 4 -1.09 55 -56 4 -5 30 -31 imp:e=1 $ Outer skin-inner thumb
306 4 -1.09 55 -56 5 -121 73 -74 imp:e=1 $ 7 mg/cm^2 inner thumb
307 4 -1.09 55 -56 121 -82 37 -38 imp:e=1 $ Skin below-inner thumb
308 4 -1.09 55 -56 71 -6 30 -31 imp:e=1 $ Outer skin-outer thumb
309 4 -1.09 55 -56 8 -71 73 -74 imp:e=1 $ 7 mg/cm^2 outer thumb
310 4 -1.09 55 -56 83 -8 37 -38 imp:e=1 $ Skin below-outer thumb
311 4 -1.09 55 -56 5 -71 74 -31 imp:e=1 $ Outer skin-front thumb
312 4 -1.09 55 -56 121 -8 38 -74 imp:e=1 $ 7 mg/cm^2 front thumb
313 4 -1.09 55 -56 82 -83 85 -38 imp:e=1 $ Skin below-front thumb
314 4 -1.09 55 -56 5 -71 30 -73 imp:e=1 $ Outer skin-back thumb
315 4 -1.09 55 -56 121 -8 73 -37 imp:e=1 $ 7 mg/cm^2 back thumb
316 4 -1.09 55 -56 82 -83 37 -84 imp:e=1 $ Skin below-back thumb
317 3 -0.95 55 -56 82 -83 84 -85 21 imp:e=1 $ Adipose tissue thumb
c
c Section 7 of Index
318 4 -1.09 56 -57 2 -3 30 -31 imp:e=1 $ Outer skin-inner index
319 4 -1.09 56 -57 120 -2 73 -74 imp:e=1 $ 7 mg/cm^2 inner index
320 4 -1.09 56 -57 81 -120 37 -38 imp:e=1 $ Skin below-inner index
321 4 -1.09 56 -57 1 -70 30 -31 imp:e=1 $ Outer skin-outer index
322 4 -1.09 56 -57 70 -7 73 -74 imp:e=1 $ 7 mg/cm^2 outer index
323 4 -1.09 56 -57 7 -80 37 -38 imp:e=1 $ Skin below-outer index
324 4 -1.09 56 -57 70 -2 74 -31 imp:e=1 $ Outer skin-front index
325 4 -1.09 56 -57 7 -120 38 -74 imp:e=1 $ 7 mg/cm^2 front index
326 4 -1.09 56 -57 80 -81 85 -38 imp:e=1 $ Skin below-front index
327 4 -1.09 56 -57 70 -2 30 -73 imp:e=1 $ Outer skin-back index
328 4 -1.09 56 -57 7 -120 73 -37 imp:e=1 $ 7 mg/cm^2 back index
329 4 -1.09 56 -57 80 -81 37 -84 imp:e=1 $ Skin below-back index
330 3 -0.95 56 -57 80 -81 84 -85 20 imp:e=1 $ Adipose tissue index
c
c Section 7 of Middle Finger
644 4 -1.09 56 -57 2 -3 158 -151 imp:e=1 $ Outer skin-inner middle finger
645 4 -1.09 56 -57 120 -2 157 -152 imp:e=1 $ 7 mg/cm^2 inner middle finger
646 4 -1.09 56 -57 81 -120 156 -153 imp:e=1 $ Skin below-inner middle finger
647 4 -1.09 56 -57 1 -70 158 -151 imp:e=1 $ Outer skin-outer middle finger
648 4 -1.09 56 -57 70 -7 157 -152 imp:e=1 $ 7 mg/cm^2 outer middle finger
649 4 -1.09 56 -57 7 -80 156 -153 imp:e=1 $ Skin below-outer middle finger
650 4 -1.09 56 -57 70 -2 152 -151 imp:e=1 $ Outer skin-front middle finger
651 4 -1.09 56 -57 7 -120 153 -152 imp:e=1 $ 7 mg/cm^2 front middle finger
652 4 -1.09 56 -57 80 -81 154 -153 imp:e=1 $ Skin below-front middle finger
653 4 -1.09 56 -57 70 -2 158 -157 imp:e=1 $ Outer skin-back middle finger
654 4 -1.09 56 -57 7 -120 157 -156 imp:e=1 $ 7 mg/cm^2 back middle finger
655 4 -1.09 56 -57 80 -81 156 -155 imp:e=1 $ Skin below-back middle finger
656 3 -0.95 56 -57 80 -81 155 -154 22 imp:e=1 $ Adipose tissue middle finger
c
c Section 7 of Thumb
331 4 -1.09 56 -57 4 -5 30 -31 imp:e=1 $ Outer skin-inner thumb
332 4 -1.09 56 -57 5 -121 73 -74 imp:e=1 $ 7 mg/cm^2 inner thumb
333 4 -1.09 56 -57 121 -82 37 -38 imp:e=1 $ Skin below-inner thumb
334 4 -1.09 56 -57 71 -6 30 -31 imp:e=1 $ Outer skin-outer thumb
335 4 -1.09 56 -57 8 -71 73 -74 imp:e=1 $ 7 mg/cm^2 outer thumb
336 4 -1.09 56 -57 83 -8 37 -38 imp:e=1 $ Skin below-outer thumb
337 4 -1.09 56 -57 5 -71 74 -31 imp:e=1 $ Outer skin-front thumb
338 4 -1.09 56 -57 121 -8 38 -74 imp:e=1 $ 7 mg/cm^2 front thumb
339 4 -1.09 56 -57 82 -83 85 -38 imp:e=1 $ Skin below-front thumb

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340 4 -1.09 56 -57 5 -71 30 -73      imp:e=1 $ Outer skin-back thumb
341 4 -1.09 56 -57 121 -8 73 -37     imp:e=1 $ 7 mg/cm^2 back thumb
342 4 -1.09 56 -57 82 -83 37 -84     imp:e=1 $ Skin below-back thumb
343 3 -0.95 56 -57 82 -83 84 -85 21  imp:e=1 $ Adipose tissue thumb
c
c Section 8 of Index
344 4 -1.09 57 -42 2 -3 30 -31      imp:e=1 $ Outer skin-inner index
345 4 -1.09 57 -42 120 -2 73 -74     imp:e=1 $ 7 mg/cm^2 inner index
346 4 -1.09 57 -42 81 -120 37 -38   imp:e=1 $ Skin below-inner index
347 4 -1.09 57 -42 1 -70 30 -31     imp:e=1 $ Outer skin-outer index
348 4 -1.09 57 -42 70 -7 73 -74     imp:e=1 $ 7 mg/cm^2 outer index
349 4 -1.09 57 -42 7 -80 37 -38     imp:e=1 $ Skin below-outer index
350 4 -1.09 57 -42 70 -2 74 -31     imp:e=1 $ Outer skin-front index
351 4 -1.09 57 -42 7 -120 38 -74    imp:e=1 $ 7 mg/cm^2 front index
352 4 -1.09 57 -42 80 -81 85 -38    imp:e=1 $ Skin below-front index
353 4 -1.09 57 -42 70 -2 30 -73     imp:e=1 $ Outer skin-back index
354 4 -1.09 57 -42 7 -120 73 -37    imp:e=1 $ 7 mg/cm^2 back index
355 4 -1.09 57 -42 80 -81 37 -84    imp:e=1 $ Skin below-back index
356 3 -0.95 57 -42 80 -81 84 -85 20 imp:e=1 $ Adipose tissue index
c
c Section 8 of Middle Finger
657 4 -1.09 57 -42 2 -3 158 -151   imp:e=1 $ Outer skin-middle finger
658 4 -1.09 57 -42 120 -2 157 -152  imp:e=1 $ 7 mg/cm^2 inner middle finger
659 4 -1.09 57 -42 81 -120 156 -153 imp:e=1 $ Skin below-inner middle finger
660 4 -1.09 57 -42 1 -70 158 -151   imp:e=1 $ Outer skin-outer middle finger
661 4 -1.09 57 -42 70 -7 157 -152   imp:e=1 $ 7 mg/cm^2 outer middle finger
662 4 -1.09 57 -42 7 -80 156 -153   imp:e=1 $ Skin below-outer middle finger
663 4 -1.09 57 -42 70 -2 152 -151   imp:e=1 $ Outer skin-front middle finger
664 4 -1.09 57 -42 7 -120 153 -152  imp:e=1 $ 7 mg/cm^2 front middle finger
665 4 -1.09 57 -42 80 -81 154 -153   imp:e=1 $ Skin below-front middle finger
666 4 -1.09 57 -42 70 -2 158 -157   imp:e=1 $ Outer skin-back middle finger
667 4 -1.09 57 -42 7 -120 157 -156  imp:e=1 $ 7 mg/cm^2 back middle finger
668 4 -1.09 57 -42 80 -81 156 -155   imp:e=1 $ Skin below-back middle finger
669 3 -0.95 57 -42 80 -81 155 -154 22 imp:e=1 $ Adipose tissue middle finger
c
c Section 8 of Thumb
357 4 -1.09 57 -42 4 -5 30 -31      imp:e=1 $ Outer skin-inner thumb
358 4 -1.09 57 -42 5 -121 73 -74     imp:e=1 $ 7 mg/cm^2 inner thumb
359 4 -1.09 57 -42 121 -82 37 -38   imp:e=1 $ Skin below-inner thumb
360 4 -1.09 57 -42 71 -6 30 -31     imp:e=1 $ Outer skin-outer thumb
361 4 -1.09 57 -42 8 -71 73 -74     imp:e=1 $ 7 mg/cm^2 outer thumb
362 4 -1.09 57 -42 83 -8 37 -38     imp:e=1 $ Skin below-outer thumb
363 4 -1.09 57 -42 5 -71 74 -31     imp:e=1 $ Outer skin-front thumb
364 4 -1.09 57 -42 121 -8 38 -74     imp:e=1 $ 7 mg/cm^2 front thumb
365 4 -1.09 57 -42 82 -83 85 -38    imp:e=1 $ Skin below-front thumb
366 4 -1.09 57 -42 5 -71 30 -73     imp:e=1 $ Outer skin-back thumb
367 4 -1.09 57 -42 121 -8 73 -37    imp:e=1 $ 7 mg/cm^2 back thumb
368 4 -1.09 57 -42 82 -83 37 -84    imp:e=1 $ Skin below-back thumb
369 3 -0.95 57 -42 82 -83 84 -85 21  imp:e=1 $ Adipose tissue thumb
c
c *****
c Palm Extension beside thumb
370 4 -1.09 6 -9 42 -76 -31 30      imp:e=1 $ 1 half Outer skin underside palm ext.
371 4 -1.09 6 -9 76 -43 -74 30      imp:e=1 $ 1 half 7 mg/cm^2 underside palm ext.
372 4 -1.09 6 -9 43 -87 -38 30      imp:e=1 $ 1 half Skin below-underside palm ext.
373 4 -1.09 6 -9 78 -46 -31 135     imp:e=1 $ 1 half Outer skin above palm ext.
374 4 -1.09 6 -9 77 -78 -74 135     imp:e=1 $ 1 half 7 mg/cm^2 above palm ext.
375 4 -1.09 6 -9 88 -77 -38 135     imp:e=1 $ 1 half Skin below-above palm ext.
376 4 -1.09 6 -9 76 -78 -31 74      imp:e=1 $ 1 half Outer skin front palm ext.
377 4 -1.09 6 -9 43 -77 -74 38      imp:e=1 $ 1 half 7 mg/cm^2 front palm ext.
378 4 -1.09 6 -9 87 -88 -38 85      imp:e=1 $ 1 half Skin below-front palm ext.
379 3 -0.95 6 -9 87 -88 -85 30 26 27 28 29 imp:e=1 $ 1st Adipose tissue palm ext.
380 4 -1.09 9 -130 42 -76 -31 30     imp:e=1 $ 2 half Outer skin underside palm ext.
381 4 -1.09 9 -130 76 -43 -74 30     imp:e=1 $ 2 half 7 mg/cm^2 underside palm ext.
382 4 -1.09 9 -130 43 -87 -38 30     imp:e=1 $ 2 half Skin below-underside palm ext.
383 4 -1.09 9 -130 78 -46 -31 135    imp:e=1 $ 2 half Outer skin above palm ext.
384 4 -1.09 9 -130 77 -78 -74 135    imp:e=1 $ 2 half 7 mg/cm^2 above palm ext.

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385 4 -1.09 9 -130 88 -77 -38 135 imp:e=1 \$ 2 half Skin below-above palm ext.  
386 4 -1.09 9 -130 76 -78 -31 74 imp:e=1 \$ 2 half Outer skin front palm ext.  
387 4 -1.09 9 -130 43 -77 -74 38 imp:e=1 \$ 2 half 7 mg/cm<sup>2</sup> front palm ext.  
388 4 -1.09 9 -130 87 -88 -38 85 imp:e=1 \$ 2 half Skin below-front palm ext.  
389 3 -0.95 9 -130 87 -88 -85 30 26 27 28 29 imp:e=1 \$ 2nd Adipose tissue palm ext.  
480 4 -1.09 6 -9 42 -76 -30 158 imp:e=1 \$ 1 half Mid Outer skin underside palm ext.  
481 4 -1.09 6 -9 76 -43 -30 158 imp:e=1 \$ 1 half Mid 7 mg/cm<sup>2</sup> underside palm ext.  
482 4 -1.09 6 -9 43 -87 -30 158 imp:e=1 \$ 1 half Mid Skin below-underside palm ext.  
483 4 -1.09 6 -9 42 -76 -158 135 imp:e=1 \$ 1 half Back Outer skin underside palm ext.  
484 4 -1.09 6 -9 76 -43 -158 135 imp:e=1 \$ 1 half Back 7 mg/cm<sup>2</sup> underside palm ext.  
485 4 -1.09 6 -9 43 -87 -158 135 imp:e=1 \$ 1 half Back Skin below-underside palm ext.  
486 4 -1.09 9 -130 42 -76 -30 158 imp:e=1 \$ 2 half Mid Outer skin underside palm ext.  
487 4 -1.09 9 -130 76 -43 -30 158 imp:e=1 \$ 2 half Mid 7 mg/cm<sup>2</sup> underside palm ext.  
488 4 -1.09 9 -130 43 -87 -30 158 imp:e=1 \$ 2 half Mid Skin below-underside palm ext.  
489 4 -1.09 9 -130 42 -76 -158 135 imp:e=1 \$ 2 half Back Outer skin underside palm  
ext.  
490 4 -1.09 9 -130 76 -43 -158 135 imp:e=1 \$ 2 half Back 7 mg/cm<sup>2</sup> underside palm ext.  
491 4 -1.09 9 -130 43 -87 -158 135 imp:e=1 \$ 2 half Back Skin below-underside palm  
ext.  
492 3 -0.95 6 -9 87 -88 -30 158 26 27 28 29 imp:e=1 \$ 1st Mid Adipose tissue palm ext.  
493 3 -0.95 6 -9 87 -88 -158 135 26 27 28 29 imp:e=1 \$ 1st Back Adipose tissue palm ext.  
494 3 -0.95 9 -130 87 -88 -30 158 26 27 28 29 imp:e=1 \$ 2nd Mid Adipose tissue palm  
ext.  
495 3 -0.95 9 -130 87 -88 -158 135 26 27 28 29 imp:e=1 \$ 2nd Back Adipose tissue palm  
ext.

c  
c  
c Bone Cells  
71 2 -1.92 -20 41 -51 imp:e=1 \$ Index bone Section 1  
72 2 -1.92 -20 51 -52 imp:e=1 \$ Index bone Section 2  
73 2 -1.92 -20 52 -53 imp:e=1 \$ Index bone Section 3  
74 2 -1.92 -20 53 -54 imp:e=1 \$ Index bone Section 4  
75 2 -1.92 -20 54 -55 imp:e=1 \$ Index bone Section 5  
76 2 -1.92 -20 55 -56 imp:e=1 \$ Index bone Section 6  
77 2 -1.92 -20 56 -57 imp:e=1 \$ Index bone Section 7  
78 2 -1.92 -20 57 -42 imp:e=1 \$ Index bone Section 8

c  
c  
81 2 -1.92 -21 41 -51 imp:e=1 \$ Thumb bone Section 1  
82 2 -1.92 -21 51 -52 imp:e=1 \$ Thumb bone Section 2  
83 2 -1.92 -21 52 -53 imp:e=1 \$ Thumb bone Section 3  
84 2 -1.92 -21 53 -54 imp:e=1 \$ Thumb bone Section 4  
85 2 -1.92 -21 54 -55 imp:e=1 \$ Thumb bone Section 5  
86 2 -1.92 -21 55 -56 imp:e=1 \$ Thumb bone Section 6  
87 2 -1.92 -21 56 -57 imp:e=1 \$ Thumb bone Section 7  
88 2 -1.92 -21 57 -42 imp:e=1 \$ Thumb bone Section 8

c  
c  
61 2 -1.92 -22 41 -51 imp:e=1 \$ Middle finger bone Section 1  
62 2 -1.92 -22 51 -52 imp:e=1 \$ Middle finger bone Section 2  
63 2 -1.92 -22 52 -53 imp:e=1 \$ Middle finger bone Section 3  
64 2 -1.92 -22 53 -54 imp:e=1 \$ Middle finger bone Section 4  
65 2 -1.92 -22 54 -55 imp:e=1 \$ Middle finger bone Section 5  
66 2 -1.92 -22 55 -56 imp:e=1 \$ Middle finger bone Section 6  
67 2 -1.92 -22 56 -57 imp:e=1 \$ Middle finger bone Section 7  
68 2 -1.92 -22 57 -42 imp:e=1 \$ Middle finger bone Section 8

c  
c Bone of the palm  
90 2 -1.92 -26 imp:e=1 \$ Index bone through palm  
91 2 -1.92 -27 imp:e=1 \$ Middle finger bone through palm  
92 2 -1.92 -28 imp:e=1 \$ Ring finger bone through palm  
93 2 -1.92 -29 imp:e=1 \$ Pinky bone through palm

c  
94 2 -1.92 -20 42 imp:e=1 \$ Index bone through finger  
95 2 -1.92 -21 42 imp:e=1 \$ Thumb bone through finger  
96 2 -1.92 -22 42 imp:e=1 \$ Middle finger bone through finger

c



```

c
c Air Cells
900 1 -0.001 103 -104 180 -60 190 -191 23 25 imp:e=1 $ air between fingers
901 1 -0.001 181 -100 imp:e=1 $ Top of model
902 1 -0.001 -180 -100 23 25 imp:e=1 $ Bottom of model
903 1 -0.001 180 -181 -100 -105 134 -191 imp:e=1 $ Left of index
904 1 -0.001 180 -181 -100 130 134 -191 imp:e=1 $ Right of palm ext.
905 1 -0.001 180 -181 -100 -134 imp:e=1 $ Behind model
906 1 -0.001 180 -181 -100 191 23 25 imp:e=1 $ Front of model
907 1 -0.001 134 -191 106 -130 180 -60 imp:e=1 $ Under palm ext.
908 1 -0.001 134 -190 103 -106 180 -60 23 25 imp:e=1 $ Under palm behind thumb
909 1 -0.001 134 -159 105 -103 180 -60 imp:e=1 $ Under palm behind middle finger
910 1 -0.001 -190 150 -103 105 180 -60 imp:e=1 $ Air between index/middle finger
c
c Index Finger Vinyl and Nitrile gloves
400 7 -1.65 105 -1 190 -191 40 -42 imp:e=1 $ outer side 1-V 1-N gloves
401 7 -1.65 3 -103 190 -191 40 -60 imp:e=1 $ inner side 1-V 1-N gloves
402 7 -1.65 1 -3 31 -191 40 -42 imp:e=1 $ front side 1-V 1-N gloves
403 7 -1.65 1 -3 190 -30 40 -42 imp:e=1 $ back side 1-V 1-N gloves
404 7 -1.65 180 -40 105 -103 190 -191 imp:e=1 $ tip of index 1-V 1-N gloves
c
c Middle Finger Vinyl and Nitrile Gloves
415 7 -1.65 105 -1 159 -150 40 -42 imp:e=1 $ outer side 1-V 1-N gloves
416 7 -1.65 3 -103 159 -150 40 -60 imp:e=1 $ inner side 1-V 1-N gloves
417 7 -1.65 1 -3 151 -150 40 -42 imp:e=1 $ front side 1-V 1-N gloves
418 7 -1.65 1 -3 159 -158 40 -42 imp:e=1 $ back side 1-V 1-N gloves
419 7 -1.65 180 -40 105 -103 159 -150 imp:e=1 $ tip of index 1-V 1-N gloves
c
c Thumb Vinyl and Nitrile Gloves
406 7 -1.65 104 -4 190 -191 40 -60 imp:e=1 $ outer side 1-V 1-N gloves
407 7 -1.65 6 -106 190 -191 40 -60 imp:e=1 $ inner side 1-V 1-N gloves
408 7 -1.65 4 -6 31 -191 40 -42 imp:e=1 $ front side 1-V 1-N gloves
409 7 -1.65 4 -6 190 -30 40 -42 imp:e=1 $ back side 1-V 1-N gloves
410 7 -1.65 180 -40 104 -106 190 -191 imp:e=1 $ tip of index 1-V 1-N gloves
c
c Gloves over palm extension
450 7 -1.65 6 -130 -191 134 46 -181 imp:e=1 $ Glove across top palm ext.
451 7 -1.65 6 -130 -191 134 60 -42 imp:e=1 $ Glove across bottom palm ext.
452 7 -1.65 6 -130 -191 31 42 -46 imp:e=1 $ Glove across front palm ext.
453 7 -1.65 6 -130 -135 134 42 -46 imp:e=1 $ Glove across back palm ext.
c
c Gloves over palm behind index/thumb
455 7 -1.65 -191 134 105 -6 46 -181 imp:e=1 $ Glove across top
456 7 -1.65 -191 31 105 -6 42 -46 imp:e=1 $ Glove across front
457 7 -1.65 -135 134 105 -6 60 -46 imp:e=1 $ Glove across back
458 7 -1.65 -31 135 105 -1 42 -46 imp:e=1 $ Glove across side of index
459 7 -1.65 -190 135 4 -6 60 -42 imp:e=1 $ Glove behind thumb under palm
460 7 -1.65 -150 190 6 -106 60 -46 imp:e=1 $ Glove across back side of thumb
462 7 -1.65 -159 135 105 -103 60 -42 imp:e=1 $ Glove behind middle finger under palm
463 7 -1.65 -190 150 105 -3 60 -42 imp:e=1 $ Glove between index & middle finger
464 7 -1.65 -191 190 3 -4 60 -42 imp:e=1 $ Glove between index/thumb
465 7 -1.65 -190 150 3 -4 60 -42 imp:e=1 $ Glove between index/middle
466 7 -1.65 -150 159 3 -4 60 -42 imp:e=1 $ Glove beside middle finger
467 7 -1.65 -159 135 103 -4 60 -42 imp:e=1 $ Glove between fingers at the back
c
c Titanium Disk
976 5 -4.51 -25 imp:e=1 $ Titanium disk
977 1 -0.001 -24 imp:e=1 $ Air inside Al ring
978 6 -2.7 -23 24 imp:e=1 $ Aluminum ring over Ti disk
c
c
999 0 100 imp:e=0 $ outside world
c
c ***** SURFACE CARDS*****
c
c Index py Surfaces

```

```

105 py -0.7208 $ 1-N 1-V outer index
1 py -0.6908 $ Outer surface of outer index
70 py -0.6839 $ Outer 7 mg/cm^2 surface of outer index
7 py -0.6837 $ Inner 7 mg/cm^2 surface of outer index
80 py -0.5163 $ Skin thickness of outer index
81 py 1.3447 $ Skin thickness of inner index
120 py 1.5121 $ Inner 7 mg/cm^2 surface of inner index
2 py 1.5123 $ Outer 7 mg/cm^2 surface of inner index
3 py 1.5192 $ Inner surface of inner index
103 py 1.5492 $ 1-N 1-V inner index
c
c Thumb py surfaces
104 py 1.7508 $ 1-N 1-V inner thumb
4 py 1.7808 $ inner surface of inner thumb
5 py 1.7877 $ Outer 7 mg/cm^2 surface of inner thumb
121 py 1.7879 $ Inner 7 mg/cm^2 surface of inner thumb
82 py 1.9553 $ Skin thickness of inner thumb
83 py 3.9063 $ Skin thickness of outer thumb
8 py 4.0737 $ Inner 7 mg/cm^2 surface of outer thumb
71 py 4.0739 $ Outer 7 mg/cm^2 surface of outer thumb
6 py 4.0808 $ Outer surface of outer thumb
106 py 4.1108 $ 1-N 1-V outer thumb
c
10 py -0.2808 $ left bone edge towards index
11 py 3.7808 $ right bone edge towards thumb
c
c Palm surfaces
9 py 7.195 $ Half of palm ext.
129 py 10.3392 $ 1-N 1-V back width of palm
130 py 10.3092 $ Outer surface of back width of palm
131 py 10.3023 $ Outer 7 mg/cm^2 surface of back side of palm
132 py 10.3021 $ Inner 7 mg/cm^2 surface of back side of palm
133 py 10.1347 $ Skin thickness of back side of palm
c
c Thumb and Index bone surface cylinders
20 rcc -0.25 0.2192 0.5 0 0 8.75 0.5 $ Index bone
21 rcc -0.25 3.2808 0.5 0 0 8.75 0.5 $ Thumb bone
22 rcc -2.85 0.2192 0.5 0 0 8.75 0.5 $ Middle finger bone
c
c Bone of the palm
26 rcc -0.375 10.3092 9.75 0 -10.59 0 0.5 $ Index bone through palm
27 rcc -2.625 10.3092 9.75 0 -10.59 0 0.5 $ Middle finger bone through palm
28 rcc -4.875 10.3092 9.75 0 -10.59 0 0.5 $ Ring finger bone through palm
29 rcc -7.125 10.3092 9.75 0 -10.59 0 0.5 $ Pinky bone through palm
c
c As-74/73 source disk
23 rcc 18.7325 1.65 0 0 0.05 0 1.7 $ Aluminum ring
24 rcc 18.7325 1.65 0 0 0.05 0 0.9525 $ Air inside Al ring
25 rcc 18.7325 1.60 0 0 0.05 0 1.7 $ Titanium disk
c
c
c px surfaces
190 px -1.28 $ 1-N 1-V back index & thumb
30 px -1.25 $ Outer surface of back index & thumb
73 px -1.2431 $ Outer 7 mg/cm^2 surface of back index & thumb
37 px -1.2429 $ Inner 7 mg/cm^2 surface of back index & thumb
84 px -1.0755 $ Skin thickness of back index & thumb
85 px 0.5755 $ Skin thickness of front index & thumb
38 px 0.7429 $ Inner 7 mg/cm^2 surface of front index & thumb
74 px 0.7431 $ Outer 7 mg/cm^2 surface of front index & thumb
31 px 0.75 $ Outer surface of front index & thumb
191 px 0.78 $ 1-N 1-V front index & thumb
c
150 px -1.82 $ 1-N 1-V front middle finger
151 px -1.85 $ Outer surface front middle finger
152 px -1.8569 $ Outer 7 mg/cm^2 front middle finger
153 px -1.8571 $ Inner 7 mg/cm^2 front middle finger

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154 px -2.0245 $ Skin thickness front middle finger
155 px -3.6755 $ Skin thickness back middle finger
156 px -3.8429 $ Inner 7 mg/cm^2 back middle finger
157 px -3.8431 $ Outer 7 mg/cm^2 back middle finger
158 px -3.85 $ Outer surface back middle finger
159 px -3.88 $ 1-N 1-V back middle finger
c
c Palm surfaces
134 px -8.28 $ 1-N 1-V back of palm
135 px -8.25 $ Outer surface of back length of palm
136 px -8.2431 $ Outer 7 mg/cm^2 surface of back palm
137 px -8.2429 $ Inner 7 mg/cm^2 surface of back palm
138 px -8.0755 $ Skin thickness of back palm
c
c
c pz surfaces
180 pz 0 $ 1-N 1-V at tip of fingers
40 pz 0.03 $ Bottom edge of fingers
75 pz 0.0369 $ Outer 7 mg/cm^2 surface at tip of fingers
140 pz 0.0371 $ Inner 7 mg/cm^2 surface at tip of fingers
86 pz 0.2045 $ Skin thickness of tip of fingers
41 pz 0.5 $ Inner surface of tip of fingers
60 pz 7.97 $ 1-N 1-V under arch
42 pz 8.0 $ Top of lower arch
76 pz 8.0069 $ Outer 7 mg/cm^2 surface of lower arch
43 pz 8.0071 $ Inner 7 mg/cm^2 surface of lower arch
87 pz 8.1745 $ Skin thickness above lower arch
44 pz 10.0 $ botton arch bone/upper tissue
45 pz 10.8 $ top of bone arch area
88 pz 11.3255 $ Skin thickness of top of arch
77 pz 11.4929 $ Inner 7 mg/cm^2 surface at top of arch
78 pz 11.4931 $ Outer 7 mg/cm^2 surface at top of arch
46 pz 11.5 $ Upper surface of arch and palm
181 pz 11.53 $ 1-N 1-V at top of palm
c
c Finger sections
51 pz 1.5 $ Finger section 1
52 pz 2.5 $ Finger section 2
53 pz 3.5 $ Finger section 3
54 pz 4.5 $ Finger section 4
55 pz 5.5 $ Finger section 5
56 pz 6.5 $ Finger section 6
57 pz 7.5 $ Finger section 7
c
c Outer universe
100 s 0 4.8 5.75 30
c
c
c ***** MATERIAL CARDS*****
c
c Dry Air (Density @ 7,000 ft = 0.001 g/cc)
ml 7014 -0.75222 $ Nitrogen-16
7015 -0.00278 $ Nitrogen-15
8016 -0.2320 $ Oxygen
18000 -0.0130 $ Argon
plib=.04p
elib=.01e
c
c Mineral Bone (Density = 1.92 g/cc)
c ICRP 110 Adult Reference Computational Phantoms
m2 1000 -0.036 $ Hydrogen
6000 -0.159 $ Carbon
7000 -0.042 $ Nitrogen
8000 -0.448 $ Oxygen
11000 -0.003 $ Sodium
12000 -0.002 $ Magnesium

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15000 -0.094 $ Phosphorus
16000 -0.003 $ Sulfur
20000 -0.213 $ Calcium
plib=.04p
elib=.01e
c
c Adipose Tissue (Density = 0.95 g/cc)
c ICRP 110 Adult Reference Computational Phantoms
m3 1000 -0.114 $ Hydrogen
6000 -0.588 $ Carbon
7000 -0.008 $ Nitrogen
8000 -0.287 $ Oxygen
11000 -0.001 $ Sodium
16000 -0.001 $ Sulfur
17000 -0.001 $ Chlorine
plib=.04p
elib=.01e
c
c Skin (Density = 1.09 g/cc)
c ICRP 110 Adult Reference Computational Phantoms
m4 1000 -0.100 $ Hydrogen
6000 -0.199 $ Carbon
7000 -0.042 $ Nitrogen
8000 -0.650 $ Oxygen
11000 -0.002 $ Sodium
15000 -0.001 $ Phosphorus
16000 -0.002 $ Sulfur
17000 -0.003 $ Chlorine
19000 -0.001 $ Potassium
plib=.04p
elib=.01e
c
c Titanium (Density = 4.51 g/cc)
m5 22000 -1.00 $ Titanium
plib=.04p
elib=.01e
c
c Aluminum (Density = 2.7 g/cc)
m6 13000 -1.00 $ Aluminum
plib=.04p
elib=.01e
c
c Vinyl/Nitrile Glove (Density = 1.65 g/cc)
m7 1000 -0.0484 $ Hydrogen
6000 -0.3844 $ Carbon
7000 -0.5672 $ Nitrogen
plib=.04p
elib=.01e
c
c *****
c SOURCE CARDS
c
mode e
phys:e 0
cut:e j 0.01
c
c As-74 1.3616E+10 Bq electrons
c Source disk 1.905 cm diam / radius 0.9525 cm
sdef par=3 pos= 18.7325 1.66 0 axs=0 1 0 ext=0 rad=d1 erg=d4
sil 0 0.9525
spl -21 1
sc4 As-74 B+ B- electron lines
si4 A 0.00 3.85E-02 1.16E-01 1.93E-01 2.70E-01 3.47E-01 4.24E-01
5.01E-01 5.78E-01 6.55E-01 7.32E-01 8.09E-01 8.86E-01 9.63E-01
1.04E+00 1.12E+00 1.19E+00 1.27E+00 1.35E+00 1.42E+00 1.50E+00
sp4 D 0.00 4.26E-02 5.88E-02 7.02E-02 7.51E-02 7.42E-02 6.87E-02
5.79E-02 4.88E-02 3.77E-02 2.84E-02 2.06E-02 1.46E-02 1.14E-02

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      8.94E-03 6.48E-03 3.97E-03 1.82E-03 7.17E-04 2.54E-04 4.09E-05
c
c
c fm multiplier for 1.3616E+10 Bq electron (Beta +/-) Source Term
c (src par)/s = [(1.3616E+10 d/sec)
c Multiplier for dose-rate conversion = [X tally_par/(src_par*cm^2)
c [1.3616E+10 d/sec] [0.633022 src part/d] [rad/(6.242E7 MeV/g)]/(tally par)] =
c (Gy/100 rad) = 1.3808E+00 Gy/s per 6.242E+7 MeV/g for 1.3616E+10 Bq As-74 electrons
c
c *****TALLY CARDS*****
c
fc6      7 mg/cm^2 Inner Index MeV/g Energy Deposition Gy/sec
fm6      1.3808E+00
f6:e    135 163 189 215 241 267 293 319 345 T
fq6      e f
e6       2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0
c
fc16     7 mg/cm^2 Inner Thumb MeV/g Energy Deposition Gy/sec
fm16     1.3808E+00
f16:e    151 176 202 228 254 280 306 332 358 T
fq16     e f
e16      2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0
c
fc26     7 mg/cm^2 Inner Middle finger MeV/g Energy Deposition Gy/sec
fm26     1.3808E+00
f26:e    555 567 580 593 606 619 632 645 658 T
fq26     e f
e26      2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0
c
fc36     7 mg/cm^2 Front Index MeV/g Energy Deposition Gy/sec
fm36     1.3808E+00
f36:e    141 169 195 221 247 273 299 325 351 T
fq36     e f
e36      2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0
c
fc46     7 mg/cm^2 Front Thumb MeV/g Energy Deposition Gy/sec
fm46     1.3808E+00
f46:e    157 182 208 234 260 286 312 338 364 T
fq46     e f
e46      2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0
c
fc56     7 mg/cm^2 Front Middle finger MeV/g Energy Deposition Gy/sec
fm56     1.3808E+00
f56:e    561 573 586 599 612 625 638 651 664 T
fq56     e f
e56      2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0
c
fc66     7 mg/cm^2 Back Index MeV/g Energy Deposition Gy/sec
fm66     1.3808E+00

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f66:e 144 172 198 224 250 276 302 328 354 T
fq66  e f
e66   2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc76  7 mg/cm^2 Back Thumb MeV/g Energy Deposition Gy/sec
fm76  1.3808E+00
f76:e 160 185 211 237 263 289 315 341 367 T
fq76  e f
e76   2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc86  7 mg/cm^2 Back Middle finger MeV/g Energy Deposition Gy/sec
fm86  1.3808E+00
f86:e 564 576 589 602 615 628 641 654 667 T
fq86  e f
e86   2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc96  7 mg/cm^2 Outer Index MeV/g Energy Deposition Gy/sec
fm96  1.3808E+00
f96:e 138 166 192 218 244 270 296 322 348 T
fq96  e f
e96   2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc106 7 mg/cm^2 Outer Thumb MeV/g Energy Deposition Gy/sec
fm106 1.3808E+00
f106:e 154 179 205 231 257 283 309 335 361 T
fq106  e f
e106  2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc116 7 mg/cm^2 Outer Middle finger MeV/g Energy Deposition Gy/sec
fm116 1.3808E+00
f116:e 558 570 583 596 609 622 635 648 661 T
fq116  e f
e116  2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc126 7 mg/cm^2 Tip of Fingers MeV/g Energy Deposition Gy/sec
fm126 1.3808E+00
f126:e 131 147 551 T
fq126  e f
e126  2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc136 7 mg/cm^2 1st half Under Palm Ext. MeV/g Energy Deposition Gy/sec
fm136 1.3808E+00
f136:e 371
fq136  e f
e136  2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0

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1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc146 7 mg/cm^2 2nd half Under Palm Ext. MeV/g Energy Deposition Gy/sec
fm146 1.3808E+00
f146:e 381
fq146 e f
e146 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc156 7 mg/cm^2 Between Index/Thumb MeV/g Energy Deposition Gy/sec
fm156 1.3808E+00
f156:e 120
fq156 e f
e156 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc166 7 mg/cm^2 Between Index/Middle MeV/g Energy Deposition Gy/sec
fm166 1.3808E+00
f166:e 710
fq166 e f
e166 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc176 7 mg/cm^2 Palm behind Thumb MeV/g Energy Deposition Gy/sec
fm176 1.3808E+00
f176:e 117
fq176 e f
e176 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc186 7 mg/cm^2 1st half Under Palm Ext. Mid MeV/g Energy Deposition Gy/sec
fm186 1.3808E+00
f186:e 481
fq186 e f
e186 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc196 7 mg/cm^2 2nd half Under Palm Ext Mid MeV/g Energy Deposition Gy/sec
fm196 1.3808E+00
f196:e 487
fq196 e f
e196 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc206 7 mg/cm^2 Front face of Index/Thumb MeV/g Energy Deposition Gy/sec
fm206 1.3808E+00
f206:e 101
fq206 e f
e206 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc216 7 mg/cm^2 Between Index/Thumb beside Middle

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fm216 1.3808E+00
f216:e 377
fq216 e f
e216 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc226 Outer skin Inner Index MeV/g Energy Deposition Gy/sec
fm226 1.3808E+00
f226:e 134 162 188 214 240 266 292 318 344 T
fq226 e f
e226 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc236 Outer skin Inner Thumb MeV/g Energy Deposition Gy/sec
fm236 1.3808E+00
f236:e 150 175 201 227 253 279 305 331 357 T
fq236 e f
e236 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc246 Outer skin Inner Middle finger MeV/g Energy Deposition Gy/sec
fm246 1.3808E+00
f246:e 554 566 579 592 605 618 631 644 657 T
fq246 e f
e246 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc256 Skin below Inner Index MeV/g Energy Deposition Gy/sec
fm256 1.3808E+00
f256:e 136 164 190 216 242 268 294 320 346 T
fq256 e f
e256 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc266 Skin below Inner Thumb MeV/g Energy Deposition Gy/sec
fm266 1.3808E+00
f266:e 152 177 203 229 255 281 307 333 359 T
fq266 e f
e266 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc276 Skin below Inner Middle MeV/g Energy Deposition Gy/sec
fm276 1.3808E+00
f276:e 556 568 581 594 607 620 633 646 659 T
fq276 e f
e276 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0

c
fc286 Outer Skin Tip of fingers MeV/g Energy Deposition Gy/sec
fm286 1.3808E+00
f286:e 130 146 550 T
fq286 e f
e286 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1

```



```

2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc296 Outer Skin Front Index MeV/g Energy Deposition Gy/sec
fm296 1.3808E+00
f296:e 140 168 194 220 246 272 298 324 350 T
fq296 e f
e296 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc306 Outer Skin Front Thumb MeV/g Energy Deposition Gy/sec
fm306 1.3808E+00
f306:e 156 181 207 233 259 285 311 337 363 T
fq306 e f
e306 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc316 Outer Skin Front Middle Finger MeV/g Energy Deposition Gy/sec
fm316 1.3808E+00
f316:e 560 572 585 598 611 624 637 650 663 T
fq316 e f
e316 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc326 Skin Below Front Index MeV/g Energy Deposition Gy/sec
fm326 1.3808E+00
f326:e 142 170 196 222 248 274 300 326 352 T
fq326 e f
e326 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc336 Skin Below Front Thumb MeV/g Energy Deposition Gy/sec
fm336 1.3808E+00
f336:e 148 183 209 235 261 287 313 339 365 T
fq336 e f
e336 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc346 Skin Below Front Middle Finger MeV/g Energy Deposition Gy/sec
fm346 1.3808E+00
f346:e 562 574 587 600 613 626 639 652 665 T
fq346 e f
e346 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c
fc356 Index Finger Bone MeV/g Energy Deposition Gy/sec
fm356 1.3808E+00
f356:e 71 72 73 74 75 76 77 78 94 T
fq356 e f
e356 2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
2.00e+0
c

```

```

fc366   Thumb Finger Bone MeV/g Energy Deposition Gy/sec
fm366   1.3808E+00
f366:e  81 82 83 84 85 86 87 88 95 T
fq366   e f
e366    2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0

c
fc376   Middle Finger Bone MeV/g Energy Deposition Gy/sec
fm376   1.3808E+00
f376:e  61 62 63 64 65 66 67 68 96 T
fq376   e f
e376    2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0

c
fc386   Palm Bones MeV/g Energy Deposition Gy/sec
fm386   1.3808E+00
f386:e  90 91 92 93 T
fq386   e f
e386    2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0

c
fc396   7 mg/cm^2 Palm Back Between Index/Middle MeV/g Energy Deposition Gy/sec
fm396   1.3808E+00
f396:e  707
fq396   e f
e396    2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0

c
fc406   7 mg/cm^2 Palm behind Thumb Back MeV/g Energy Deposition Gy/sec
fm406   1.3808E+00
f406:e  701
fq406   e f
e406    2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0

c
fc416   7 mg/cm^2 1st Half Palm Ext. Back MeV/g Energy Deposition Gy/sec
fm416   1.3808E+00
f416:e  484
fq416   e f
e416    2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0

c
fc426   7 mg/cm^2 2nd Half Palm Ext. Back MeV/g Energy Deposition Gy/sec
fm426   1.3808E+00
f426:e  490
fq426   e f
e426    2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
          2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
          1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
          2.00e+0

c
fc436   7 mg/cm^2 Palm Ext. Front Face 1st Half MeV/g Energy Deposition Gy/sec
fm436   1.3808E+00
f436:e  377
fq436   e f

```

```
e436  2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0
c
fc446  7 mg/cm^2 Palm Ext. Front Face 2nd Half MeV/g Energy Deposition Gy/sec
fm446  1.3808E+00
f446:e  387
fq446  e f
e446  2.00e-2 3.00E-2 4.00e-2 5.00e-2 6.00e-2 8.00e-2 1.00e-1 1.50e-1
      2.00e-1 3.00e-1 4.00e-1 5.00e-1 6.00e-1 8.00e-1 1.00e+0 1.10e+0
      1.20e+0 1.30e+0 1.40e+0 1.50e+0 1.60e+0 1.70e+0 1.80e+0 1.90e+0
      2.00e+0
c
c
nps  5e8
print 10 30 35 40 110 130 140 160 161 162
```

## A.2 MCNP input file for smearing disk

```

Smearing source disk - 1.3616E+10 Bq As-74 Photon
c
c File name: 74plvS (1 Nitrile, 1 Vinyl)
c
c January 23, 2010 @ 1500 hrs
c Alisha Stallard
c Texas A&M University Master's Thesis
c RP-2 Internal Dosimetry, Dose Assessment/Technical Support
c Los Alamos National Laboratory
c
c x coordinate in and out
c y coordinates left-right
c z coordinates top to bottom
c
c inner - palm side
c outer - back of hand side
c front - when holding object with thumbs up, the sides of the fingers that are facing
you
c back - " , the sides of the fingers that are facing away from you
c (e.g. side of index finger next to middle finger)
c
c ***** CELL CARDS*****
c Thumb, index and tissue between cells
c Front face of index/thumb
100 4 -1.09 -31 74 1 -6 42 -46 imp:p,e=1 $ Outer skin
101 4 -1.09 -74 38 70 -6 76 -78 imp:p,e=1 $ 7 mg/cm^2 skin layer
102 4 -1.09 -38 85 7 -6 43 -77 imp:p,e=1 $ Skin below
103 3 -0.95 -85 138 80 -3 87 -88 20 21 22 26 27 28 29 imp:p,e=1 $ Adipose tissue
c
c Back face of index/thumb
104 4 -1.09 -136 135 1 -6 42 -46 imp:p,e=1 $ Outer skin
105 4 -1.09 -137 136 70 -6 76 -78 imp:p,e=1 $ 7 mg/cm^2 skin layer
106 4 -1.09 -138 137 7 -6 43 -77 imp:p,e=1 $ Skin below
c
c Side of Index/Thumb
107 4 -1.09 -74 136 1 -70 42 -46 imp:p,e=1 $ Outer skin
108 4 -1.09 -38 137 70 -7 76 -78 imp:p,e=1 $ 7 mg/cm^2 skin layer
109 4 -1.09 -85 138 7 -80 43 -77 imp:p,e=1 $ Skin below
c
c Top of Index/Thumb
110 4 -1.09 -74 136 70 -6 78 -46 imp:p,e=1 $ Outer skin
111 4 -1.09 -38 137 7 -6 77 -78 imp:p,e=1 $ 7 mg/cm^2 skin layer
112 4 -1.09 -85 138 80 -6 88 -77 imp:p,e=1 $ Skin below
c
c Bottom of Index/Thumb at far back
113 4 -1.09 -158 136 70 -3 42 -76 imp:p,e=1 $ Outer skin
114 4 -1.09 -158 137 7 -3 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
115 4 -1.09 -158 138 80 -3 43 -87 imp:p,e=1 $ Skin below
c
c Bottom of Index/Thumb behind thumb
116 4 -1.09 -30 158 4 -6 42 -76 imp:p,e=1 $ Outer skin
117 4 -1.09 -30 158 4 -6 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
118 4 -1.09 -30 158 4 -6 43 -87 imp:p,e=1 $ Skin below
c
c Back side of under palm behind thumb
700 4 -1.09 -158 136 4 -6 42 -76 imp:p,e=1 $ Outer skin
701 4 -1.09 -158 137 4 -6 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
702 4 -1.09 -158 138 4 -6 43 -87 imp:p,e=1 $ Skin below
c
c Between Index and Thumb (Arch)
119 4 -1.09 -74 30 3 -4 42 -76 imp:p,e=1 $ Outer skin
120 4 -1.09 -38 30 3 -4 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
121 4 -1.09 -85 30 3 -4 43 -87 imp:p,e=1 $ Skin below
c
c Middle Between Index/Thumb

```

```

703 4 -1.09 -30 158 3 -4 42 -76 imp:p,e=1 $ Outer skin
704 4 -1.09 -30 158 3 -4 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
705 4 -1.09 -30 158 3 -4 43 -87 imp:p,e=1 $ Skin below
c
c Back side Between Index/Thumb
706 4 -1.09 -158 136 3 -4 42 -76 imp:p,e=1 $ Outer skin
707 4 -1.09 -158 137 3 -4 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
708 4 -1.09 -158 138 3 -4 43 -87 imp:p,e=1 $ Skin below
c
c Between Index/Middle Finger behind Index
122 3 -0.95 -74 30 70 -3 42 -76 20 22 imp:p,e=1 $ Outer skin
123 3 -0.95 -38 30 7 -3 76 -43 20 22 imp:p,e=1 $ 7 mg/cm^2 skin layer
124 3 -0.95 -85 30 80 -3 43 -87 20 22 imp:p,e=1 $ Skin below
c
c Between Index/Middle Finger
709 4 -1.09 -30 151 70 -3 42 -76 imp:p,e=1 $ Outer skin
710 4 -1.09 -30 151 7 -3 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
711 4 -1.09 -30 151 80 -3 43 -87 imp:p,e=1 $ Skin below
c
c Between Index/Middle Finger behind Middle
712 3 -0.95 -151 158 70 -3 42 -76 20 22 imp:p,e=1 $ Outer skin
713 3 -0.95 -151 158 7 -3 76 -43 20 22 imp:p,e=1 $ 7 mg/cm^2 skin layer
714 3 -0.95 -151 158 80 -3 43 -87 20 22 imp:p,e=1 $ Skin below
c
c Under Thumb
125 3 -0.95 -74 30 4 -6 42 -76 21 imp:p,e=1 $ Outer skin
126 3 -0.95 -38 30 4 -6 76 -43 21 imp:p,e=1 $ 7 mg/cm^2 skin layer
127 3 -0.95 -85 30 4 -6 43 -87 21 imp:p,e=1 $ Skin below
c
c Adipose tissue
128 3 -0.95 -85 138 3 -4 87 -88 20 21 22 26 27 28 29 imp:p,e=1 $ Adipose tissue above
arch
129 3 -0.95 -85 138 4 -6 87 -88 20 21 22 26 27 28 29 imp:p,e=1 $ Adipose tissue above
thumb
c
c
c Tip of Index
130 4 -1.09 40 -75 70 -2 73 -74 imp:p,e=1 $ Outer skin-index tip
131 4 -1.09 75 -140 7 -120 37 -38 imp:p,e=1 $ 7 mg/cm^2 index tip
132 4 -1.09 140 -86 80 -81 84 -85 imp:p,e=1 $ Skin below-index tip
133 3 -0.95 86 -41 80 -81 84 -85 imp:p,e=1 $ Adipose tissue-index tip
134 4 -1.09 2 -3 40 -41 30 -31 imp:p,e=1 $ Outer skin-inner index tip
135 4 -1.09 120 -2 75 -41 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index tip
136 4 -1.09 81 -120 140 -41 37 -38 imp:p,e=1 $ Skin below-inner index tip
137 4 -1.09 1 -70 40 -41 30 -31 imp:p,e=1 $ Outer skin-outer index tip
138 4 -1.09 70 -7 75 -41 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index tip
139 4 -1.09 7 -80 140 -41 37 -38 imp:p,e=1 $ Skin below-outer index tip
140 4 -1.09 70 -2 40 -41 74 -31 imp:p,e=1 $ Outer skin-front index tip
141 4 -1.09 7 -120 75 -41 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index tip
142 4 -1.09 80 -81 140 -41 85 -38 imp:p,e=1 $ Skin below-front index tip
143 4 -1.09 70 -2 40 -41 30 -73 imp:p,e=1 $ Outer skin-back index tip
144 4 -1.09 7 -120 75 -41 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index tip
145 4 -1.09 80 -81 140 -41 37 -84 imp:p,e=1 $ Skin below-back index tip
c
c Tip of Middle Finger
550 4 -1.09 40 -75 70 -2 157 -152 imp:p,e=1 $ Outer skin-middle finger tip
551 4 -1.09 75 -140 7 -120 156 -153 imp:p,e=1 $ 7 mg/cm^2 middle finger tip
552 4 -1.09 140 -86 80 -81 155 -154 imp:p,e=1 $ Skin below-middle finger tip
553 3 -0.95 86 -41 80 -81 155 -154 imp:p,e=1 $ Adipose tissue-middle finger tip
554 4 -1.09 2 -3 40 -41 158 -151 imp:p,e=1 $ Outer skin-inner middle finger tip
555 4 -1.09 120 -2 75 -41 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger tip
556 4 -1.09 81 -120 140 -41 156 -153 imp:p,e=1 $ Skin below-inner middle finger tip
557 4 -1.09 1 -70 40 -41 158 -151 imp:p,e=1 $ Outer skin-outer middle finger tip
558 4 -1.09 70 -7 75 -41 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger tip
559 4 -1.09 7 -80 140 -41 156 -153 imp:p,e=1 $ Skin below-outer middle finger tip
560 4 -1.09 70 -2 40 -41 152 -151 imp:p,e=1 $ Outer skin-front middle finger tip
561 4 -1.09 7 -120 75 -41 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger tip

```

562	4	-1.09	80	-81	140	-41	154	-153	imp:p,e=1	\$	Skin below-front middle finger tip	
563	4	-1.09	70	-2	40	-41	158	-157	imp:p,e=1	\$	Outer skin-back middle finger tip	
564	4	-1.09	7	-120	75	-41	157	-156	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back middle finger tip	
565	4	-1.09	80	-81	140	-41	156	-155	imp:p,e=1	\$	Skin below-back middle finger tip	
c												
c Tip of Thumb												
146	4	-1.09	40	-75	5	-71	73	-74	imp:p,e=1	\$	Outer skin-thumb tip	
147	4	-1.09	75	-140	121	-8	37	-38	imp:p,e=1	\$	7 mg/cm <sup>2</sup> thumb tip	
148	4	-1.09	140	-86	82	-83	84	-85	imp:p,e=1	\$	Skin below-thumb tip	
149	3	-0.95	86	-41	82	-83	84	-85	imp:p,e=1	\$	Adipose tissue-thumb tip	
150	4	-1.09	4	-5	40	-41	30	-31	imp:p,e=1	\$	Outer skin-inner thumb tip	
151	4	-1.09	5	-121	75	-41	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner thumb tip	
152	4	-1.09	121	-82	140	-41	37	-38	imp:p,e=1	\$	Skin below-inner thumb tip	
153	4	-1.09	71	-6	40	-41	30	-31	imp:p,e=1	\$	Outer skin-outer thumb tip	
154	4	-1.09	8	-71	75	-41	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer thumb tip	
155	4	-1.09	83	-8	140	-41	37	-38	imp:p,e=1	\$	Skin below-outer thumb tip	
156	4	-1.09	5	-71	40	-41	74	-31	imp:p,e=1	\$	Outer skin-front thumb tip	
157	4	-1.09	121	-8	75	-41	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front thumb tip	
158	4	-1.09	82	-83	140	-41	85	-38	imp:p,e=1	\$	Skin below-front thumb tip	
159	4	-1.09	5	-71	40	-41	30	-73	imp:p,e=1	\$	Outer skin-back thumb tip	
160	4	-1.09	121	-8	75	-41	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back thumb tip	
161	4	-1.09	82	-83	140	-41	37	-84	imp:p,e=1	\$	Skin below-back thumb tip	
c												
c Section 1 of Index												
162	4	-1.09	41	-51	2	-3	30	-31	imp:p,e=1	\$	Outer skin-inner index	
163	4	-1.09	41	-51	120	-2	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner index	
164	4	-1.09	41	-51	81	-120	37	-38	imp:p,e=1	\$	Skin below-inner index	
165	4	-1.09	41	-51	1	-70	30	-31	imp:p,e=1	\$	Outer skin-outer index	
166	4	-1.09	41	-51	70	-7	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer index	
167	4	-1.09	41	-51	7	-80	37	-38	imp:p,e=1	\$	Skin below-outer index	
168	4	-1.09	41	-51	70	-2	74	-31	imp:p,e=1	\$	Outer skin-front index	
169	4	-1.09	41	-51	7	-120	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front index	
170	4	-1.09	41	-51	80	-81	85	-38	imp:p,e=1	\$	Skin below-front index	
171	4	-1.09	41	-51	70	-2	30	-73	imp:p,e=1	\$	Outer skin-back index	
172	4	-1.09	41	-51	7	-120	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back index	
173	4	-1.09	41	-51	80	-81	37	-84	imp:p,e=1	\$	Skin below-back index	
174	3	-0.95	41	-51	80	-81	84	-85	20	imp:p,e=1	\$	Adipose tissue index
c												
c Section 1 of Middle Finger												
566	4	-1.09	41	-51	2	-3	158	-151	imp:p,e=1	\$	Outer skin-inner middle finger	
567	4	-1.09	41	-51	120	-2	157	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner middle finger	
568	4	-1.09	41	-51	81	-120	156	-153	imp:p,e=1	\$	Skin below-inner middle finger	
569	4	-1.09	41	-51	1	-70	158	-151	imp:p,e=1	\$	Outer skin-outer middle finger	
570	4	-1.09	41	-51	70	-7	157	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer middle finger	
571	4	-1.09	41	-51	7	-80	156	-153	imp:p,e=1	\$	Skin below-outer middle finger	
572	4	-1.09	41	-51	70	-2	152	-151	imp:p,e=1	\$	Outer skin-front middle finger	
573	4	-1.09	41	-51	7	-120	153	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front middle finger	
574	4	-1.09	41	-51	80	-81	154	-153	imp:p,e=1	\$	Skin below-front middle finger	
575	4	-1.09	41	-51	70	-2	158	-157	imp:p,e=1	\$	Outer skin-back middle finger	
576	4	-1.09	41	-51	7	-120	157	-156	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back middle finger	
577	4	-1.09	41	-51	80	-81	156	-155	imp:p,e=1	\$	Skin below-back middle finger	
578	3	-0.95	41	-51	80	-81	155	-154	22	imp:p,e=1	\$	Adipose tissue middle finger
c												
c Section 1 of Thumb												
175	4	-1.09	41	-51	4	-5	30	-31	imp:p,e=1	\$	Outer skin-inner thumb	
176	4	-1.09	41	-51	5	-121	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner thumb	
177	4	-1.09	41	-51	121	-82	37	-38	imp:p,e=1	\$	Skin below-inner thumb	
178	4	-1.09	41	-51	71	-6	30	-31	imp:p,e=1	\$	Outer skin-outer thumb	
179	4	-1.09	41	-51	8	-71	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer thumb	
180	4	-1.09	41	-51	83	-8	37	-38	imp:p,e=1	\$	Skin below-outer thumb	
181	4	-1.09	41	-51	5	-71	74	-31	imp:p,e=1	\$	Outer skin-front thumb	
182	4	-1.09	41	-51	121	-8	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front thumb	
183	4	-1.09	41	-51	82	-83	85	-38	imp:p,e=1	\$	Skin below-front thumb	
184	4	-1.09	41	-51	5	-71	30	-73	imp:p,e=1	\$	Outer skin-back thumb	
185	4	-1.09	41	-51	121	-8	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back thumb	
186	4	-1.09	41	-51	82	-83	37	-84	imp:p,e=1	\$	Skin below-back thumb	
187	3	-0.95	41	-51	82	-83	84	-85	21	imp:p,e=1	\$	Adipose tissue thumb

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c
c Section 2 of Index
188 4 -1.09 51 -52 2 -3 30 -31 imp:p,e=1 $ Outer skin-inner index
189 4 -1.09 51 -52 120 -2 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index
190 4 -1.09 51 -52 81 -120 37 -38 imp:p,e=1 $ Skin below-inner index
191 4 -1.09 51 -52 1 -70 30 -31 imp:p,e=1 $ Outer skin-outer index
192 4 -1.09 51 -52 70 -7 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index
193 4 -1.09 51 -52 7 -80 37 -38 imp:p,e=1 $ Skin below-outer index
194 4 -1.09 51 -52 70 -2 74 -31 imp:p,e=1 $ Outer skin-front index
195 4 -1.09 51 -52 7 -120 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index
196 4 -1.09 51 -52 80 -81 85 -38 imp:p,e=1 $ Skin below-front index
197 4 -1.09 51 -52 70 -2 30 -73 imp:p,e=1 $ Outer skin-back index
198 4 -1.09 51 -52 7 -120 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index
199 4 -1.09 51 -52 80 -81 37 -84 imp:p,e=1 $ Skin below-back index
200 3 -0.95 51 -52 80 -81 84 -85 20 imp:p,e=1 $ Adipose tissue index
c
c Section 2 of Middle Finger
579 4 -1.09 51 -52 2 -3 158 -151 imp:p,e=1 $ Outer skin-inner middle finger
580 4 -1.09 51 -52 120 -2 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger
581 4 -1.09 51 -52 81 -120 156 -153 imp:p,e=1 $ Skin below-inner middle finger
582 4 -1.09 51 -52 1 -70 158 -151 imp:p,e=1 $ Outer skin-outer middle finger
583 4 -1.09 51 -52 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger
584 4 -1.09 51 -52 7 -80 156 -153 imp:p,e=1 $ Skin below-outer middle finger
585 4 -1.09 51 -52 70 -2 152 -151 imp:p,e=1 $ Outer skin-front middle finger
586 4 -1.09 51 -52 7 -120 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger
587 4 -1.09 51 -52 80 -81 154 -153 imp:p,e=1 $ Skin below-front middle finger
588 4 -1.09 51 -52 70 -2 158 -157 imp:p,e=1 $ Outer skin-back middle finger
589 4 -1.09 51 -52 7 -120 157 -156 imp:p,e=1 $ 7 mg/cm^2 back middle finger
590 4 -1.09 51 -52 80 -81 156 -155 imp:p,e=1 $ Skin below-back middle finger
591 3 -0.95 51 -52 80 -81 155 -154 22 imp:p,e=1 $ Adipose tissue middle finger
c
c Section 2 of Thumb
201 4 -1.09 51 -52 4 -5 30 -31 imp:p,e=1 $ Outer skin-inner thumb
202 4 -1.09 51 -52 5 -121 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner thumb
203 4 -1.09 51 -52 121 -82 37 -38 imp:p,e=1 $ Skin below-inner thumb
204 4 -1.09 51 -52 71 -6 30 -31 imp:p,e=1 $ Outer skin-outer thumb
205 4 -1.09 51 -52 8 -71 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer thumb
206 4 -1.09 51 -52 83 -8 37 -38 imp:p,e=1 $ Skin below-outer thumb
207 4 -1.09 51 -52 5 -71 74 -31 imp:p,e=1 $ Outer skin-front thumb
208 4 -1.09 51 -52 121 -8 38 -74 imp:p,e=1 $ 7 mg/cm^2 front thumb
209 4 -1.09 51 -52 82 -83 85 -38 imp:p,e=1 $ Skin below-front thumb
210 4 -1.09 51 -52 5 -71 30 -73 imp:p,e=1 $ Outer skin-back thumb
211 4 -1.09 51 -52 121 -8 73 -37 imp:p,e=1 $ 7 mg/cm^2 back thumb
212 4 -1.09 51 -52 82 -83 37 -84 imp:p,e=1 $ Skin below-back thumb
213 3 -0.95 51 -52 82 -83 84 -85 21 imp:p,e=1 $ Adipose tissue thumb
c
c Section 3 of Index
214 4 -1.09 52 -53 2 -3 30 -31 imp:p,e=1 $ Outer skin-inner index
215 4 -1.09 52 -53 120 -2 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index
216 4 -1.09 52 -53 81 -120 37 -38 imp:p,e=1 $ Skin below-inner index
217 4 -1.09 52 -53 1 -70 30 -31 imp:p,e=1 $ Outer skin-outer index
218 4 -1.09 52 -53 70 -7 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index
219 4 -1.09 52 -53 7 -80 37 -38 imp:p,e=1 $ Skin below-outer index
220 4 -1.09 52 -53 70 -2 74 -31 imp:p,e=1 $ Outer skin-front index
221 4 -1.09 52 -53 7 -120 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index
222 4 -1.09 52 -53 80 -81 85 -38 imp:p,e=1 $ Skin below-front index
223 4 -1.09 52 -53 70 -2 30 -73 imp:p,e=1 $ Outer skin-back index
224 4 -1.09 52 -53 7 -120 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index
225 4 -1.09 52 -53 80 -81 37 -84 imp:p,e=1 $ Skin below-back index
226 3 -0.95 52 -53 80 -81 84 -85 20 imp:p,e=1 $ Adipose tissue index
c
c Section 3 of Middle Finger
592 4 -1.09 52 -53 2 -3 158 -151 imp:p,e=1 $ Outer skin-inner middle finger
593 4 -1.09 52 -53 120 -2 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger
594 4 -1.09 52 -53 81 -120 156 -153 imp:p,e=1 $ Skin below-inner middle finger
595 4 -1.09 52 -53 1 -70 158 -151 imp:p,e=1 $ Outer skin-outer middle finger
596 4 -1.09 52 -53 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger

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597 4 -1.09 52 -53 7 -80 156 -153 imp:p,e=1 $ Skin below-outer middle finger
598 4 -1.09 52 -53 70 -2 152 -151 imp:p,e=1 $ Outer skin-front middle finger
599 4 -1.09 52 -53 7 -120 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger
600 4 -1.09 52 -53 80 -81 154 -153 imp:p,e=1 $ Skin below-front middle finger
601 4 -1.09 52 -53 70 -2 158 -157 imp:p,e=1 $ Outer skin-back middle finger
602 4 -1.09 52 -53 7 -120 157 -156 imp:p,e=1 $ 7 mg/cm^2 back middle finger
603 4 -1.09 52 -53 80 -81 156 -155 imp:p,e=1 $ Skin below-back middle finger
604 3 -0.95 52 -53 80 -81 155 -154 22 imp:p,e=1 $ Adipose tissue middle finger
c
c Section 3 of Thumb
227 4 -1.09 52 -53 4 -5 30 -31 imp:p,e=1 $ Outer skin-inner thumb
228 4 -1.09 52 -53 5 -121 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner thumb
229 4 -1.09 52 -53 121 -82 37 -38 imp:p,e=1 $ Skin below-inner thumb
230 4 -1.09 52 -53 71 -6 30 -31 imp:p,e=1 $ Outer skin-outer thumb
231 4 -1.09 52 -53 8 -71 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer thumb
232 4 -1.09 52 -53 83 -8 37 -38 imp:p,e=1 $ Skin below-outer thumb
233 4 -1.09 52 -53 5 -71 74 -31 imp:p,e=1 $ Outer skin-front thumb
234 4 -1.09 52 -53 121 -8 38 -74 imp:p,e=1 $ 7 mg/cm^2 front thumb
235 4 -1.09 52 -53 82 -83 85 -38 imp:p,e=1 $ Skin below-front thumb
236 4 -1.09 52 -53 5 -71 30 -73 imp:p,e=1 $ Outer skin-back thumb
237 4 -1.09 52 -53 121 -8 73 -37 imp:p,e=1 $ 7 mg/cm^2 back thumb
238 4 -1.09 52 -53 82 -83 37 -84 imp:p,e=1 $ Skin below-back thumb
239 3 -0.95 52 -53 82 -83 84 -85 21 imp:p,e=1 $ Adipose tissue thumb
c
c Section 4 of Index
240 4 -1.09 53 -54 2 -3 30 -31 imp:p,e=1 $ Outer skin-inner index
241 4 -1.09 53 -54 120 -2 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index
242 4 -1.09 53 -54 81 -120 37 -38 imp:p,e=1 $ Skin below-inner index
243 4 -1.09 53 -54 1 -70 30 -31 imp:p,e=1 $ Outer skin-outer index
244 4 -1.09 53 -54 70 -7 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index
245 4 -1.09 53 -54 7 -80 37 -38 imp:p,e=1 $ Skin below-outer index
246 4 -1.09 53 -54 70 -2 74 -31 imp:p,e=1 $ Outer skin-front index
247 4 -1.09 53 -54 7 -120 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index
248 4 -1.09 53 -54 80 -81 85 -38 imp:p,e=1 $ Skin below-front index
249 4 -1.09 53 -54 70 -2 30 -73 imp:p,e=1 $ Outer skin-back index
250 4 -1.09 53 -54 7 -120 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index
251 4 -1.09 53 -54 80 -81 37 -84 imp:p,e=1 $ Skin below-back index
252 3 -0.95 53 -54 80 -81 84 -85 20 imp:p,e=1 $ Adipose tissue index
c
c Section 4 of Middle Finger
605 4 -1.09 53 -54 2 -3 158 -151 imp:p,e=1 $ Outer skin-inner middle finger
606 4 -1.09 53 -54 120 -2 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger
607 4 -1.09 53 -54 81 -120 156 -153 imp:p,e=1 $ Skin below-inner middle finger
608 4 -1.09 53 -54 1 -70 158 -151 imp:p,e=1 $ Outer skin-outer middle finger
609 4 -1.09 53 -54 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger
610 4 -1.09 53 -54 7 -80 156 -153 imp:p,e=1 $ Skin below-outer middle finger
611 4 -1.09 53 -54 70 -2 152 -151 imp:p,e=1 $ Outer skin-front middle finger
612 4 -1.09 53 -54 7 -120 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger
613 4 -1.09 53 -54 80 -81 154 -153 imp:p,e=1 $ Skin below-front middle finger
614 4 -1.09 53 -54 70 -2 158 -157 imp:p,e=1 $ Outer skin-back middle finger
615 4 -1.09 53 -54 7 -120 157 -156 imp:p,e=1 $ 7 mg/cm^2 back middle finger
616 4 -1.09 53 -54 80 -81 156 -155 imp:p,e=1 $ Skin below-back middle finger
617 3 -0.95 53 -54 80 -81 155 -154 22 imp:p,e=1 $ Adipose tissue middle finger
c
c Section 4 of Thumb
253 4 -1.09 53 -54 4 -5 30 -31 imp:p,e=1 $ Outer skin-inner thumb
254 4 -1.09 53 -54 5 -121 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner thumb
255 4 -1.09 53 -54 121 -82 37 -38 imp:p,e=1 $ Skin below-inner thumb
256 4 -1.09 53 -54 71 -6 30 -31 imp:p,e=1 $ Outer skin-outer thumb
257 4 -1.09 53 -54 8 -71 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer thumb
258 4 -1.09 53 -54 83 -8 37 -38 imp:p,e=1 $ Skin below-outer thumb
259 4 -1.09 53 -54 5 -71 74 -31 imp:p,e=1 $ Outer skin-front thumb
260 4 -1.09 53 -54 121 -8 38 -74 imp:p,e=1 $ 7 mg/cm^2 front thumb
261 4 -1.09 53 -54 82 -83 85 -38 imp:p,e=1 $ Skin below-front thumb
262 4 -1.09 53 -54 5 -71 30 -73 imp:p,e=1 $ Outer skin-back thumb
263 4 -1.09 53 -54 121 -8 73 -37 imp:p,e=1 $ 7 mg/cm^2 back thumb
264 4 -1.09 53 -54 82 -83 37 -84 imp:p,e=1 $ Skin below-back thumb

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265 3 -0.95 53 -54 82 -83 84 -85 21  imp:p,e=1 $ Adipose tissue thumb
c
c Section 5 of Index
266 4 -1.09 54 -55 2 -3 30 -31  imp:p,e=1 $ Outer skin-inner index
267 4 -1.09 54 -55 120 -2 73 -74  imp:p,e=1 $ 7 mg/cm^2 inner index
268 4 -1.09 54 -55 81 -120 37 -38  imp:p,e=1 $ Skin below-inner index
269 4 -1.09 54 -55 1 -70 30 -31  imp:p,e=1 $ Outer skin-outer index
270 4 -1.09 54 -55 70 -7 73 -74  imp:p,e=1 $ 7 mg/cm^2 outer index
271 4 -1.09 54 -55 7 -80 37 -38  imp:p,e=1 $ Skin below-outer index
272 4 -1.09 54 -55 70 -2 74 -31  imp:p,e=1 $ Outer skin-front index
273 4 -1.09 54 -55 7 -120 38 -74  imp:p,e=1 $ 7 mg/cm^2 front index
274 4 -1.09 54 -55 80 -81 85 -38  imp:p,e=1 $ Skin below-front index
275 4 -1.09 54 -55 70 -2 30 -73  imp:p,e=1 $ Outer skin-back index
276 4 -1.09 54 -55 7 -120 73 -37  imp:p,e=1 $ 7 mg/cm^2 back index
277 4 -1.09 54 -55 80 -81 37 -84  imp:p,e=1 $ Skin below-back index
278 3 -0.95 54 -55 80 -81 84 -85 20  imp:p,e=1 $ Adipose tissue index
c
c Section 5 of Middle Finger
618 4 -1.09 54 -55 2 -3 158 -151  imp:p,e=1 $ Outer skin-inner middle finger
619 4 -1.09 54 -55 120 -2 157 -152  imp:p,e=1 $ 7 mg/cm^2 inner middle finger
620 4 -1.09 54 -55 81 -120 156 -153  imp:p,e=1 $ Skin below-inner middle finger
621 4 -1.09 54 -55 1 -70 158 -151  imp:p,e=1 $ Outer skin-outer middle finger
622 4 -1.09 54 -55 70 -7 157 -152  imp:p,e=1 $ 7 mg/cm^2 outer middle finger
623 4 -1.09 54 -55 7 -80 156 -153  imp:p,e=1 $ Skin below-outer middle finger
624 4 -1.09 54 -55 70 -2 152 -151  imp:p,e=1 $ Outer skin-front middle finger
625 4 -1.09 54 -55 7 -120 153 -152  imp:p,e=1 $ 7 mg/cm^2 front middle finger
626 4 -1.09 54 -55 80 -81 154 -153  imp:p,e=1 $ Skin below-front middle finger
627 4 -1.09 54 -55 70 -2 158 -157  imp:p,e=1 $ Outer skin-back middle finger
628 4 -1.09 54 -55 7 -120 157 -156  imp:p,e=1 $ 7 mg/cm^2 back middle finger
629 4 -1.09 54 -55 80 -81 156 -155  imp:p,e=1 $ Skin below-back middle finger
630 3 -0.95 54 -55 80 -81 155 -154 22  imp:p,e=1 $ Adipose tissue middle finger
c
c Section 5 of Thumb
279 4 -1.09 54 -55 4 -5 30 -31  imp:p,e=1 $ Outer skin-inner thumb
280 4 -1.09 54 -55 5 -121 73 -74  imp:p,e=1 $ 7 mg/cm^2 inner thumb
281 4 -1.09 54 -55 121 -82 37 -38  imp:p,e=1 $ Skin below-inner thumb
282 4 -1.09 54 -55 71 -6 30 -31  imp:p,e=1 $ Outer skin-outer thumb
283 4 -1.09 54 -55 8 -71 73 -74  imp:p,e=1 $ 7 mg/cm^2 outer thumb
284 4 -1.09 54 -55 83 -8 37 -38  imp:p,e=1 $ Skin below-outer thumb
285 4 -1.09 54 -55 5 -71 74 -31  imp:p,e=1 $ Outer skin-front thumb
286 4 -1.09 54 -55 121 -8 38 -74  imp:p,e=1 $ 7 mg/cm^2 front thumb
287 4 -1.09 54 -55 82 -83 85 -38  imp:p,e=1 $ Skin below-front thumb
288 4 -1.09 54 -55 5 -71 30 -73  imp:p,e=1 $ Outer skin-back thumb
289 4 -1.09 54 -55 121 -8 73 -37  imp:p,e=1 $ 7 mg/cm^2 back thumb
290 4 -1.09 54 -55 82 -83 37 -84  imp:p,e=1 $ Skin below-back thumb
291 3 -0.95 54 -55 82 -83 84 -85 21  imp:p,e=1 $ Adipose tissue thumb
c
c Section 6 of Index
292 4 -1.09 55 -56 2 -3 30 -31  imp:p,e=1 $ Outer skin-inner index
293 4 -1.09 55 -56 120 -2 73 -74  imp:p,e=1 $ 7 mg/cm^2 inner index
294 4 -1.09 55 -56 81 -120 37 -38  imp:p,e=1 $ Skin below-inner index
295 4 -1.09 55 -56 1 -70 30 -31  imp:p,e=1 $ Outer skin-outer index
296 4 -1.09 55 -56 70 -7 73 -74  imp:p,e=1 $ 7 mg/cm^2 outer index
297 4 -1.09 55 -56 7 -80 37 -38  imp:p,e=1 $ Skin below-outer index
298 4 -1.09 55 -56 70 -2 74 -31  imp:p,e=1 $ Outer skin-front index
299 4 -1.09 55 -56 7 -120 38 -74  imp:p,e=1 $ 7 mg/cm^2 front index
300 4 -1.09 55 -56 80 -81 85 -38  imp:p,e=1 $ Skin below-front index
301 4 -1.09 55 -56 70 -2 30 -73  imp:p,e=1 $ Outer skin-back index
302 4 -1.09 55 -56 7 -120 73 -37  imp:p,e=1 $ 7 mg/cm^2 back index
303 4 -1.09 55 -56 80 -81 37 -84  imp:p,e=1 $ Skin below-back index
304 3 -0.95 55 -56 80 -81 84 -85 20  imp:p,e=1 $ Adipose tissue index
c
c Section 6 of Middle Finger
631 4 -1.09 55 -56 2 -3 158 -151  imp:p,e=1 $ Outer skin-inner middle finger
632 4 -1.09 55 -56 120 -2 157 -152  imp:p,e=1 $ 7 mg/cm^2 inner middle finger
633 4 -1.09 55 -56 81 -120 156 -153  imp:p,e=1 $ Skin below-inner middle finger
634 4 -1.09 55 -56 1 -70 158 -151  imp:p,e=1 $ Outer skin-outer middle finger

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635 4 -1.09 55 -56 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger
636 4 -1.09 55 -56 7 -80 156 -153 imp:p,e=1 $ Skin below-outer middle finger
637 4 -1.09 55 -56 70 -2 152 -151 imp:p,e=1 $ Outer skin-front middle finger
638 4 -1.09 55 -56 7 -120 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger
639 4 -1.09 55 -56 80 -81 154 -153 imp:p,e=1 $ Skin below-front middle finger
640 4 -1.09 55 -56 70 -2 158 -157 imp:p,e=1 $ Outer skin-back middle finger
641 4 -1.09 55 -56 7 -120 157 -156 imp:p,e=1 $ 7 mg/cm^2 back middle finger
642 4 -1.09 55 -56 80 -81 156 -155 imp:p,e=1 $ Skin below-back middle finger
643 3 -0.95 55 -56 80 -81 155 -154 22 imp:p,e=1 $ Adipose tissue middle finger
c
c Section 6 of Thumb
305 4 -1.09 55 -56 4 -5 30 -31 imp:p,e=1 $ Outer skin-inner thumb
306 4 -1.09 55 -56 5 -121 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner thumb
307 4 -1.09 55 -56 121 -82 37 -38 imp:p,e=1 $ Skin below-inner thumb
308 4 -1.09 55 -56 71 -6 30 -31 imp:p,e=1 $ Outer skin-outer thumb
309 4 -1.09 55 -56 8 -71 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer thumb
310 4 -1.09 55 -56 83 -8 37 -38 imp:p,e=1 $ Skin below-outer thumb
311 4 -1.09 55 -56 5 -71 74 -31 imp:p,e=1 $ Outer skin-front thumb
312 4 -1.09 55 -56 121 -8 38 -74 imp:p,e=1 $ 7 mg/cm^2 front thumb
313 4 -1.09 55 -56 82 -83 85 -38 imp:p,e=1 $ Skin below-front thumb
314 4 -1.09 55 -56 5 -71 30 -73 imp:p,e=1 $ Outer skin-back thumb
315 4 -1.09 55 -56 121 -8 73 -37 imp:p,e=1 $ 7 mg/cm^2 back thumb
316 4 -1.09 55 -56 82 -83 37 -84 imp:p,e=1 $ Skin below-back thumb
317 3 -0.95 55 -56 82 -83 84 -85 21 imp:p,e=1 $ Adipose tissue thumb
c
c Section 7 of Index
318 4 -1.09 56 -57 2 -3 30 -31 imp:p,e=1 $ Outer skin-inner index
319 4 -1.09 56 -57 120 -2 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index
320 4 -1.09 56 -57 81 -120 37 -38 imp:p,e=1 $ Skin below-inner index
321 4 -1.09 56 -57 1 -70 30 -31 imp:p,e=1 $ Outer skin-outer index
322 4 -1.09 56 -57 70 -7 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index
323 4 -1.09 56 -57 7 -80 37 -38 imp:p,e=1 $ Skin below-outer index
324 4 -1.09 56 -57 70 -2 74 -31 imp:p,e=1 $ Outer skin-front index
325 4 -1.09 56 -57 7 -120 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index
326 4 -1.09 56 -57 80 -81 85 -38 imp:p,e=1 $ Skin below-front index
327 4 -1.09 56 -57 70 -2 30 -73 imp:p,e=1 $ Outer skin-back index
328 4 -1.09 56 -57 7 -120 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index
329 4 -1.09 56 -57 80 -81 37 -84 imp:p,e=1 $ Skin below-back index
330 3 -0.95 56 -57 80 -81 84 -85 20 imp:p,e=1 $ Adipose tissue index
c
c Section 7 of Middle Finger
644 4 -1.09 56 -57 2 -3 158 -151 imp:p,e=1 $ Outer skin-inner middle finger
645 4 -1.09 56 -57 120 -2 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger
646 4 -1.09 56 -57 81 -120 156 -153 imp:p,e=1 $ Skin below-inner middle finger
647 4 -1.09 56 -57 1 -70 158 -151 imp:p,e=1 $ Outer skin-outer middle finger
648 4 -1.09 56 -57 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger
649 4 -1.09 56 -57 7 -80 156 -153 imp:p,e=1 $ Skin below-outer middle finger
650 4 -1.09 56 -57 70 -2 152 -151 imp:p,e=1 $ Outer skin-front middle finger
651 4 -1.09 56 -57 7 -120 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger
652 4 -1.09 56 -57 80 -81 154 -153 imp:p,e=1 $ Skin below-front middle finger
653 4 -1.09 56 -57 70 -2 158 -157 imp:p,e=1 $ Outer skin-back middle finger
654 4 -1.09 56 -57 7 -120 157 -156 imp:p,e=1 $ 7 mg/cm^2 back middle finger
655 4 -1.09 56 -57 80 -81 156 -155 imp:p,e=1 $ Skin below-back middle finger
656 3 -0.95 56 -57 80 -81 155 -154 22 imp:p,e=1 $ Adipose tissue middle finger
c
c Section 7 of Thumb
331 4 -1.09 56 -57 4 -5 30 -31 imp:p,e=1 $ Outer skin-inner thumb
332 4 -1.09 56 -57 5 -121 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner thumb
333 4 -1.09 56 -57 121 -82 37 -38 imp:p,e=1 $ Skin below-inner thumb
334 4 -1.09 56 -57 71 -6 30 -31 imp:p,e=1 $ Outer skin-outer thumb
335 4 -1.09 56 -57 8 -71 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer thumb
336 4 -1.09 56 -57 83 -8 37 -38 imp:p,e=1 $ Skin below-outer thumb
337 4 -1.09 56 -57 5 -71 74 -31 imp:p,e=1 $ Outer skin-front thumb
338 4 -1.09 56 -57 121 -8 38 -74 imp:p,e=1 $ 7 mg/cm^2 front thumb
339 4 -1.09 56 -57 82 -83 85 -38 imp:p,e=1 $ Skin below-front thumb
340 4 -1.09 56 -57 5 -71 30 -73 imp:p,e=1 $ Outer skin-back thumb
341 4 -1.09 56 -57 121 -8 73 -37 imp:p,e=1 $ 7 mg/cm^2 back thumb

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342 4 -1.09 56 -57 82 -83 37 -84      imp:p,e=1 $ Skin below-back thumb
343 3 -0.95 56 -57 82 -83 84 -85 21    imp:p,e=1 $ Adipose tissue thumb
c
c Section 8 of Index
344 4 -1.09 57 -42 2 -3      30 -31    imp:p,e=1 $ Outer skin-inner index
345 4 -1.09 57 -42 120 -2   73 -74    imp:p,e=1 $ 7 mg/cm^2 inner index
346 4 -1.09 57 -42 81 -120 37 -38    imp:p,e=1 $ Skin below-inner index
347 4 -1.09 57 -42 1 -70   30 -31    imp:p,e=1 $ Outer skin-outer index
348 4 -1.09 57 -42 70 -7   73 -74    imp:p,e=1 $ 7 mg/cm^2 outer index
349 4 -1.09 57 -42 7 -80   37 -38    imp:p,e=1 $ Skin below-outer index
350 4 -1.09 57 -42 70 -2   74 -31    imp:p,e=1 $ Outer skin-front index
351 4 -1.09 57 -42 7 -120  38 -74    imp:p,e=1 $ 7 mg/cm^2 front index
352 4 -1.09 57 -42 80 -81  85 -38    imp:p,e=1 $ Skin below-front index
353 4 -1.09 57 -42 70 -2   30 -73    imp:p,e=1 $ Outer skin-back index
354 4 -1.09 57 -42 7 -120  73 -37    imp:p,e=1 $ 7 mg/cm^2 back index
355 4 -1.09 57 -42 80 -81  37 -84    imp:p,e=1 $ Skin below-back index
356 3 -0.95 57 -42 80 -81  84 -85 20    imp:p,e=1 $ Adipose tissue index
c
c Section 8 of Middle Finger
657 4 -1.09 57 -42 2 -3    158 -151  imp:p,e=1 $ Outer skin-middle finger
658 4 -1.09 57 -42 120 -2  157 -152  imp:p,e=1 $ 7 mg/cm^2 inner middle finger
659 4 -1.09 57 -42 81 -120 156 -153  imp:p,e=1 $ Skin below-inner middle finger
660 4 -1.09 57 -42 1 -70   158 -151  imp:p,e=1 $ Outer skin-outer middle finger
661 4 -1.09 57 -42 70 -7   157 -152  imp:p,e=1 $ 7 mg/cm^2 outer middle finger
662 4 -1.09 57 -42 7 -80   156 -153  imp:p,e=1 $ Skin below-outer middle finger
663 4 -1.09 57 -42 70 -2   152 -151  imp:p,e=1 $ Outer skin-front middle finger
664 4 -1.09 57 -42 7 -120  153 -152  imp:p,e=1 $ 7 mg/cm^2 front middle finger
665 4 -1.09 57 -42 80 -81  154 -153  imp:p,e=1 $ Skin below-front middle finger
666 4 -1.09 57 -42 70 -2   158 -157  imp:p,e=1 $ Outer skin-back middle finger
667 4 -1.09 57 -42 7 -120  157 -156  imp:p,e=1 $ 7 mg/cm^2 back middle finger
668 4 -1.09 57 -42 80 -81  156 -155  imp:p,e=1 $ Skin below-back middle finger
669 3 -0.95 57 -42 80 -81  155 -154 22  imp:p,e=1 $ Adipose tissue middle finger
c
c Section 8 of Thumb
357 4 -1.09 57 -42 4 -5 30 -31    imp:p,e=1 $ Outer skin-inner thumb
358 4 -1.09 57 -42 5 -121 73 -74    imp:p,e=1 $ 7 mg/cm^2 inner thumb
359 4 -1.09 57 -42 121 -82 37 -38    imp:p,e=1 $ Skin below-inner thumb
360 4 -1.09 57 -42 71 -6 30 -31    imp:p,e=1 $ Outer skin-outer thumb
361 4 -1.09 57 -42 8 -71 73 -74    imp:p,e=1 $ 7 mg/cm^2 outer thumb
362 4 -1.09 57 -42 83 -8 37 -38    imp:p,e=1 $ Skin below-outer thumb
363 4 -1.09 57 -42 5 -71 74 -31    imp:p,e=1 $ Outer skin-front thumb
364 4 -1.09 57 -42 121 -8 38 -74    imp:p,e=1 $ 7 mg/cm^2 front thumb
365 4 -1.09 57 -42 82 -83 85 -38    imp:p,e=1 $ Skin below-front thumb
366 4 -1.09 57 -42 5 -71 30 -73    imp:p,e=1 $ Outer skin-back thumb
367 4 -1.09 57 -42 121 -8 73 -37    imp:p,e=1 $ 7 mg/cm^2 back thumb
368 4 -1.09 57 -42 82 -83 37 -84    imp:p,e=1 $ Skin below-back thumb
369 3 -0.95 57 -42 82 -83 84 -85 21    imp:p,e=1 $ Adipose tissue thumb
c
c *****
c Palm Extension beside thumb
370 4 -1.09 6 -9 42 -76 -31 30      imp:p,e=1 $ 1 half Outer skin underside palm ext.
371 4 -1.09 6 -9 76 -43 -74 30      imp:p,e=1 $ 1 half 7 mg/cm^2 underside palm ext.
372 4 -1.09 6 -9 43 -87 -38 30      imp:p,e=1 $ 1 half Skin below-underside palm ext.
373 4 -1.09 6 -9 78 -46 -31 135     imp:p,e=1 $ 1 half Outer skin above palm ext.
374 4 -1.09 6 -9 77 -78 -74 135     imp:p,e=1 $ 1 half 7 mg/cm^2 above palm ext.
375 4 -1.09 6 -9 88 -77 -38 135     imp:p,e=1 $ 1 half Skin below-above palm ext.
376 4 -1.09 6 -9 76 -78 -31 74      imp:p,e=1 $ 1 half Outer skin front palm ext.
377 4 -1.09 6 -9 43 -77 -74 38      imp:p,e=1 $ 1 half 7 mg/cm^2 front palm ext.
378 4 -1.09 6 -9 87 -88 -38 85      imp:p,e=1 $ 1 half Skin below-front palm ext.
379 3 -0.95 6 -9 87 -88 -85 30 26 27 28 29  imp:p,e=1 $ 1st Adipose tissue palm ext.
380 4 -1.09 9 -130 42 -76 -31 30     imp:p,e=1 $ 2 half Outer skin underside palm ext.
381 4 -1.09 9 -130 76 -43 -74 30     imp:p,e=1 $ 2 half 7 mg/cm^2 underside palm ext.
382 4 -1.09 9 -130 43 -87 -38 30     imp:p,e=1 $ 2 half Skin below-underside palm ext.
383 4 -1.09 9 -130 78 -46 -31 135     imp:p,e=1 $ 2 half Outer skin above palm ext.
384 4 -1.09 9 -130 77 -78 -74 135     imp:p,e=1 $ 2 half 7 mg/cm^2 above palm ext.
385 4 -1.09 9 -130 88 -77 -38 135     imp:p,e=1 $ 2 half Skin below-above palm ext.
386 4 -1.09 9 -130 76 -78 -31 74     imp:p,e=1 $ 2 half Outer skin front palm ext.

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387 4 -1.09 9 -130 43 -77 -74 38 imp:p,e=1 \$ 2 half 7 mg/cm^2 front palm ext.  
 388 4 -1.09 9 -130 87 -88 -38 85 imp:p,e=1 \$ 2 half Skin below-front palm ext.  
 389 3 -0.95 9 -130 87 -88 -85 30 26 27 28 29 imp:p,e=1 \$ 2nd Adipose tissue palm ext.  
 480 4 -1.09 6 -9 42 -76 -30 158 imp:p,e=1 \$ 1 half Mid Outer skin underside palm  
 ext.  
 481 4 -1.09 6 -9 76 -43 -30 158 imp:p,e=1 \$ 1 half Mid 7 mg/cm^2 underside palm ext.  
 482 4 -1.09 6 -9 43 -87 -30 158 imp:p,e=1 \$ 1 half Mid Skin below-underside palm  
 ext.  
 483 4 -1.09 6 -9 42 -76 -158 135 imp:p,e=1 \$ 1 half Back Outer skin underside palm  
 ext.  
 484 4 -1.09 6 -9 76 -43 -158 135 imp:p,e=1 \$ 1 half Back 7 mg/cm^2 underside palm  
 ext.  
 485 4 -1.09 6 -9 43 -87 -158 135 imp:p,e=1 \$ 1 half Back Skin below-underside palm  
 ext.  
 486 4 -1.09 9 -130 42 -76 -30 158 imp:p,e=1 \$ 2 half Mid Outer skin underside palm  
 ext.  
 487 4 -1.09 9 -130 76 -43 -30 158 imp:p,e=1 \$ 2 half Mid 7 mg/cm^2 underside palm ext.  
 488 4 -1.09 9 -130 43 -87 -30 158 imp:p,e=1 \$ 2 half Mid Skin below-underside palm  
 ext.  
 489 4 -1.09 9 -130 42 -76 -158 135 imp:p,e=1 \$ 2 half Back Outer skin underside palm  
 ext.  
 490 4 -1.09 9 -130 76 -43 -158 135 imp:p,e=1 \$ 2 half Back 7 mg/cm^2 underside palm  
 ext.  
 491 4 -1.09 9 -130 43 -87 -158 135 imp:p,e=1 \$ 2 half Back Skin below-underside palm  
 ext.  
 492 3 -0.95 6 -9 87 -88 -30 158 26 27 28 29 imp:p,e=1 \$ 1st Mid Adipose tissue palm  
 ext.  
 493 3 -0.95 6 -9 87 -88 -158 135 26 27 28 29 imp:p,e=1 \$ 1st Back Adipose tissue palm  
 ext.  
 494 3 -0.95 9 -130 87 -88 -30 158 26 27 28 29 imp:p,e=1 \$ 2nd Mid Adipose tissue palm  
 ext.  
 495 3 -0.95 9 -130 87 -88 -158 135 26 27 28 29 imp:p,e=1 \$ 2nd Back Adipose tissue palm  
 ext.

c

c

c Bone Cells

71 2 -1.92 -20 41 -51 imp:p,e=1 \$ Index bone Section 1  
 72 2 -1.92 -20 51 -52 imp:p,e=1 \$ Index bone Section 2  
 73 2 -1.92 -20 52 -53 imp:p,e=1 \$ Index bone Section 3  
 74 2 -1.92 -20 53 -54 imp:p,e=1 \$ Index bone Section 4  
 75 2 -1.92 -20 54 -55 imp:p,e=1 \$ Index bone Section 5  
 76 2 -1.92 -20 55 -56 imp:p,e=1 \$ Index bone Section 6  
 77 2 -1.92 -20 56 -57 imp:p,e=1 \$ Index bone Section 7  
 78 2 -1.92 -20 57 -42 imp:p,e=1 \$ Index bone Section 8

c

c

81 2 -1.92 -21 41 -51 imp:p,e=1 \$ Thumb bone Section 1  
 82 2 -1.92 -21 51 -52 imp:p,e=1 \$ Thumb bone Section 2  
 83 2 -1.92 -21 52 -53 imp:p,e=1 \$ Thumb bone Section 3  
 84 2 -1.92 -21 53 -54 imp:p,e=1 \$ Thumb bone Section 4  
 85 2 -1.92 -21 54 -55 imp:p,e=1 \$ Thumb bone Section 5  
 86 2 -1.92 -21 55 -56 imp:p,e=1 \$ Thumb bone Section 6  
 87 2 -1.92 -21 56 -57 imp:p,e=1 \$ Thumb bone Section 7  
 88 2 -1.92 -21 57 -42 imp:p,e=1 \$ Thumb bone Section 8

c

c

61 2 -1.92 -22 41 -51 imp:p,e=1 \$ Middle finger bone Section 1  
 62 2 -1.92 -22 51 -52 imp:p,e=1 \$ Middle finger bone Section 2  
 63 2 -1.92 -22 52 -53 imp:p,e=1 \$ Middle finger bone Section 3  
 64 2 -1.92 -22 53 -54 imp:p,e=1 \$ Middle finger bone Section 4  
 65 2 -1.92 -22 54 -55 imp:p,e=1 \$ Middle finger bone Section 5  
 66 2 -1.92 -22 55 -56 imp:p,e=1 \$ Middle finger bone Section 6  
 67 2 -1.92 -22 56 -57 imp:p,e=1 \$ Middle finger bone Section 7  
 68 2 -1.92 -22 57 -42 imp:p,e=1 \$ Middle finger bone Section 8

c

c Bone of the palm

90 2 -1.92 -26 imp:p,e=1 \$ Index bone through palm

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91 2 -1.92 -27 imp:p,e=1 $ Middle finger bone through palm
92 2 -1.92 -28 imp:p,e=1 $ Ring finger bone through palm
93 2 -1.92 -29 imp:p,e=1 $ Pinky bone through palm
c
94 2 -1.92 -20 42 imp:p,e=1 $ Index bone through finger
95 2 -1.92 -21 42 imp:p,e=1 $ Thumb bone through finger
96 2 -1.92 -22 42 imp:p,e=1 $ Middle finger bone through finger
c
c
c Air Cells
900 1 -0.001 103 -104 180 -60 190 -191 23 25 imp:p,e=1 $ air between fingers
901 1 -0.001 181 -100 imp:p,e=1 $ Top of model
902 1 -0.001 -180 -100 imp:p,e=1 $ Bottom of model
903 1 -0.001 180 -181 -100 -105 134 -191 imp:p,e=1 $ Left of index
904 1 -0.001 180 -181 -100 130 134 -191 imp:p,e=1 $ Right of palm ext.
905 1 -0.001 180 -181 -100 -134 imp:p,e=1 $ Behind model
906 1 -0.001 180 -181 -100 191 23 25 imp:p,e=1 $ Front of model
907 1 -0.001 134 -191 106 -130 180 -60 imp:p,e=1 $ Under palm ext.
908 1 -0.001 134 -190 103 -106 180 -60 23 25 imp:p,e=1 $ Under palm behind thumb
909 1 -0.001 134 -159 105 -103 180 -60 imp:p,e=1 $ Under palm behind middle
finger
910 1 -0.001 -190 150 -103 105 180 -60 imp:p,e=1 $ Air between index/middle
finger
c
c Index Finger Vinyl and Nitrile gloves
400 7 -1.65 105 -1 190 -191 40 -42 imp:p,e=1 $ outer side 1-V 1-N gloves
401 7 -1.65 3 -103 190 -191 40 -60 imp:p,e=1 $ inner side 1-V 1-N gloves
402 7 -1.65 1 -3 31 -191 40 -42 imp:p,e=1 $ front side 1-V 1-N gloves
403 7 -1.65 1 -3 190 -30 40 -42 imp:p,e=1 $ back side 1-V 1-N gloves
404 7 -1.65 180 -40 105 -103 190 -191 imp:p,e=1 $ tip of index 1-V 1-N gloves
c
c Middle Finger Vinyl and Nitrile Gloves
415 7 -1.65 105 -1 159 -150 40 -42 imp:p,e=1 $ outer side 1-V 1-N gloves
416 7 -1.65 3 -103 159 -150 40 -60 imp:p,e=1 $ inner side 1-V 1-N gloves
417 7 -1.65 1 -3 151 -150 40 -42 imp:p,e=1 $ front side 1-V 1-N gloves
418 7 -1.65 1 -3 159 -158 40 -42 imp:p,e=1 $ back side 1-V 1-N gloves
419 7 -1.65 180 -40 105 -103 159 -150 imp:p,e=1 $ tip of index 1-V 1-N gloves
c
c Thumb Vinyl and Nitrile Gloves
406 7 -1.65 104 -4 190 -191 40 -60 imp:p,e=1 $ outer side 1-V 1-N gloves
407 7 -1.65 6 -106 190 -191 40 -60 imp:p,e=1 $ inner side 1-V 1-N gloves
408 7 -1.65 4 -6 31 -191 40 -42 imp:p,e=1 $ front side 1-V 1-N gloves
409 7 -1.65 4 -6 190 -30 40 -42 imp:p,e=1 $ back side 1-V 1-N gloves
410 7 -1.65 180 -40 104 -106 190 -191 imp:p,e=1 $ tip of index 1-V 1-N gloves
c
c Gloves over palm extension
450 7 -1.65 6 -130 -191 134 46 -181 imp:p,e=1 $ Glove across top palm ext.
451 7 -1.65 6 -130 -191 134 60 -42 imp:p,e=1 $ Glove across bottom palm ext.
452 7 -1.65 6 -130 -191 31 42 -46 imp:p,e=1 $ Glove across front palm ext.
453 7 -1.65 6 -130 -135 134 42 -46 imp:p,e=1 $ Glove across back palm ext.
c
c Gloves over palm behind index/thumb
455 7 -1.65 -191 134 105 -6 46 -181 imp:p,e=1 $ Glove across top
456 7 -1.65 -191 31 105 -6 42 -46 imp:p,e=1 $ Glove across front
457 7 -1.65 -135 134 105 -6 60 -46 imp:p,e=1 $ Glove across back
458 7 -1.65 -31 135 105 -1 42 -46 imp:p,e=1 $ Glove across side of index
459 7 -1.65 -190 135 4 -6 60 -42 imp:p,e=1 $ Glove behind thumb under palm
460 7 -1.65 -150 190 6 -106 60 -46 imp:p,e=1 $ Glove across back side of thumb
462 7 -1.65 -159 135 105 -103 60 -42 imp:p,e=1 $ Glove behind middle finger under palm
463 7 -1.65 -190 150 105 -3 60 -42 imp:p,e=1 $ Glove between index & middle finger
464 7 -1.65 -191 190 3 -4 60 -42 imp:p,e=1 $ Glove between index/thumb
465 7 -1.65 -190 150 3 -4 60 -42 imp:p,e=1 $ Glove between index/middle
466 7 -1.65 -150 159 3 -4 60 -42 imp:p,e=1 $ Glove beside middle finger
467 7 -1.65 -159 135 103 -4 60 -42 imp:p,e=1 $ Glove between fingers at the back
c
c Titanium Disk
976 5 -4.51 -25 imp:p,e=1 $ Titanium disk

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977 1 -0.001  -24    imp:p,e=1 $ Air inside Al ring
978 6 -2.7    -23 24 imp:p,e=1 $ Aluminum ring over Ti disk
c
c
999 0 100      imp:p,e=0 $ outside world
c

c ***** SURFACE CARDS*****
c
c   Index py Surfaces
105 py -0.7208  $ 1-N 1-V outer index
1   py -0.6908  $ Outer surface of outer index
70  py -0.6839  $ Outer 7 mg/cm^2 surface of outer index
7   py -0.6837  $ Inner 7 mg/cm^2 surface of outer index
80  py -0.5163  $ Skin thickness of outer index
81  py 1.3447   $ Skin thickness of inner index
120 py 1.5121   $ Inner 7 mg/cm^2 surface of inner index
2   py 1.5123   $ Outer 7 mg/cm^2 surface of inner index
3   py 1.5192   $ Inner surface of inner index
103 py 1.5492   $ 1-N 1-V inner index
c
c   Thumb py surfaces
104 py 1.7508   $ 1-N 1-V inner thumb
4   py 1.7808   $ inner surface of inner thumb
5   py 1.7877   $ Outer 7 mg/cm^2 surface of inner thumb
121 py 1.7879   $ Inner 7 mg/cm^2 surface of inner thumb
82  py 1.9553   $ Skin thickness of inner thumb
83  py 3.9063   $ Skin thickness of outer thumb
8   py 4.0737   $ Inner 7 mg/cm^2 surface of outer thumb
71  py 4.0739   $ Outer 7 mg/cm^2 surface of outer thumb
6   py 4.0808   $ Outer surface of outer thumb
106 py 4.1108   $ 1-N 1-V outer thumb
c
10  py -0.2808  $ left bone edge towards index
11  py 3.7808   $ right bone edge towards thumb
c
c   Palm surfaces
9   py 7.195    $ Half of palm ext.
129 py 10.3392  $ 1-N 1-V back width of palm
130 py 10.3092  $ Outer surface of back width of palm
131 py 10.3023  $ Outer 7 mg/cm^2 surface of back side of palm
132 py 10.3021  $ Inner 7 mg/cm^2 surface of back side of palm
133 py 10.1347  $ Skin thickness of back side of palm
c
c   Thumb and Index bone surface cylinders
20  rcc -0.25 0.2192 0.5 0 0 8.75 0.5 $ Index bone
21  rcc -0.25 3.2808 0.5 0 0 8.75 0.5 $ Thumb bone
22  rcc -2.85 0.2192 0.5 0 0 8.75 0.5 $ Middle finger bone
c
c   Bone of the palm
26  rcc -0.375 10.3092 9.75 0 -10.59 0 0.5 $ Index bone through palm
27  rcc -2.625 10.3092 9.75 0 -10.59 0 0.5 $ Middle finger bone through palm
28  rcc -4.875 10.3092 9.75 0 -10.59 0 0.5 $ Ring finger bone through palm
29  rcc -7.125 10.3092 9.75 0 -10.59 0 0.5 $ Pinky bone through palm
c
c   As-74/73 source disk
23  rcc -0.25 1.65 2.04 0 0.05 0 1.7 $ Aluminum ring
24  rcc -0.25 1.65 2.04 0 0.05 0 0.9525 $ Air inside Al ring
25  rcc -0.25 1.60 2.04 0 0.05 0 1.7 $ Titanium disk
c
c
c   px surfaces
190 px -1.28    $ 1-N 1-V back index & thumb
30  px -1.25    $ Outer surface of back index & thumb
73  px -1.2431  $ Outer 7 mg/cm^2 surface of back index & thumb
37  px -1.2429  $ Inner 7 mg/cm^2 surface of back index & thumb
84  px -1.0755  $ Skin thickness of back index & thumb

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85 px 0.5755 $ Skin thickness of front index & thumb
38 px 0.7429 $ Inner 7 mg/cm^2 surface of front index & thumb
74 px 0.7431 $ Outer 7 mg/cm^2 surface of front index & thumb
31 px 0.75 $ Outer surface of front index & thumb
191 px 0.78 $ 1-N 1-V front index & thumb
c
150 px -1.82 $ 1-N 1-V front middle finger
151 px -1.85 $ Outer surface front middle finger
152 px -1.8569 $ Outer 7 mg/cm^2 front middle finger
153 px -1.8571 $ Inner 7 mg/cm^2 front middle finger
154 px -2.0245 $ Skin thickness front middle finger
155 px -3.6755 $ Skin thickness back middle finger
156 px -3.8429 $ Inner 7 mg/cm^2 back middle finger
157 px -3.8431 $ Outer 7 mg/cm^2 back middle finger
158 px -3.85 $ Outer surface back middle finger
159 px -3.88 $ 1-N 1-V back middle finger
c
c Palm surfaces
134 px -8.28 $ 1-N 1-V back of palm
135 px -8.25 $ Outer surface of back length of palm
136 px -8.2431 $ Outer 7 mg/cm^2 surface of back palm
137 px -8.2429 $ Inner 7 mg/cm^2 surface of back palm
138 px -8.0755 $ Skin thickness of back palm
c
c
c pz surfaces
180 pz 0 $ 1-N 1-V at tip of fingers
40 pz 0.03 $ Bottom edge of fingers
75 pz 0.0369 $ Outer 7 mg/cm^2 surface at tip of fingers
140 pz 0.0371 $ Inner 7 mg/cm^2 surface at tip of fingers
86 pz 0.2045 $ Skin thickness of tip of fingers
41 pz 0.5 $ Inner surface of tip of fingers
60 pz 7.97 $ 1-N 1-V under arch
42 pz 8.0 $ Top of lower arch
76 pz 8.0069 $ Outer 7 mg/cm^2 surface of lower arch
43 pz 8.0071 $ Inner 7 mg/cm^2 surface of lower arch
87 pz 8.1745 $ Skin thickness above lower arch
44 pz 10.0 $ botton arch bone/upper tissue
45 pz 10.8 $ top of bone arch area
88 pz 11.3255 $ Skin thickness of top of arch
77 pz 11.4929 $ Inner 7 mg/cm^2 surface at top of arch
78 pz 11.4931 $ Outer 7 mg/cm^2 surface at top of arch
46 pz 11.5 $ Upper surface of arch and palm
181 pz 11.53 $ 1-N 1-V at top of palm
c
c Finger sections
51 pz 1.5 $ Finger section 1
52 pz 2.5 $ Finger section 2
53 pz 3.5 $ Finger section 3
54 pz 4.5 $ Finger section 4
55 pz 5.5 $ Finger section 5
56 pz 6.5 $ Finger section 6
57 pz 7.5 $ Finger section 7
c
c Outer universe
100 s 0 4.8 5.75 20
c
c
c ***** MATERIAL CARDS*****
c
c Dry Air (Density @ 7,000 ft = 0.001 g/cc)
ml 7014 -0.75222 $ Nitrogen-16
7015 -0.00278 $ Nitrogen-15
8016 -0.2320 $ Oxygen
18000 -0.0130 $ Argon
plib=.04p

```

```

      elib=.01e
c
c   Mineral Bone (Density = 1.92 g/cc)
c   ICRP 110 Adult Reference Computational Phantoms
m2  1000 -0.036 $ Hydrogen
      6000 -0.159 $ Carbon
      7000 -0.042 $ Nitrogen
      8000 -0.448 $ Oxygen
      11000 -0.003 $ Sodium
      12000 -0.002 $ Magnesium
      15000 -0.094 $ Phosphorus
      16000 -0.003 $ Sulfur
      20000 -0.213 $ Calcium
      plib=.04p
      elib=.01e

c
c   Adipose Tissue (Density = 0.95 g/cc)
c   ICRP 110 Adult Reference Computational Phantoms
m3  1000 -0.114 $ Hydrogen
      6000 -0.588 $ Carbon
      7000 -0.008 $ Nitrogen
      8000 -0.287 $ Oxygen
      11000 -0.001 $ Sodium
      16000 -0.001 $ Sulfur
      17000 -0.001 $ Chlorine
      plib=.04p
      elib=.01e

c
c   Skin (Density = 1.09 g/cc)
c   ICRP 110 Adult Reference Computational Phantoms
m4  1000 -0.100 $ Hydrogen
      6000 -0.199 $ Carbon
      7000 -0.042 $ Nitrogen
      8000 -0.650 $ Oxygen
      11000 -0.002 $ Sodium
      15000 -0.001 $ Phosphorus
      16000 -0.002 $ Sulfur
      17000 -0.003 $ Chlorine
      19000 -0.001 $ Potassium
      plib=.04p
      elib=.01e

c
c   Titanium (Density = 4.51 g/cc)
m5  22000 -1.00 $ Titanium
      plib=.04p
      elib=.01e

c
c   Aluminum (Density = 2.7 g/cc)
m6  13000 -1.00 $ Aluminum
      plib=.04p
      elib=.01e

c
c   Vinyl/Nitrile Glove (Density = 1.65 g/cc)
m7  1000 -0.0484 $ Hydrogen
      6000 -0.3844 $ Carbon
      7000 -0.5672 $ Nitrogen
      plib=.04p
      elib=.01e

c
c   *****
c   SOURCE CARDS
c   Found in thesis.
c
c   ****TALLY CARDS*****
c   Same as input file in Appendix A.1 except multiplier is 2.9699E+00
c
nps 5e7

```



```
print 10 30 35 40 110 130 140 160 161 162
```

### A.3 MCNP input file for holding disk

```

Holding source disk - 2.3125E+10 Bq As-73 Photon
c
c File name: 73pH (1 Nitrile, 1 Vinyl)
c
c January 23, 2010 @ 1500 hrs
c Alisha Stallard
c Texas A&M University Master's Thesis
c RP-2 Internal Dosimetry, Dose Assessment/Technical Support
c Los Alamos National Laboratory
c
c x coordinate in and out
c y coordinates left-right
c z coordinates top to bottom
c
c inner - palm side
c outer - back of hand side
c front - when holding object with thumbs up, the sides of the fingers that are facing
you
c back - " , the sides of the fingers that are facing away from you
c (e.g. side of index finger next to middle finger)
c
c ***** CELL CARDS*****
c Thumb, index and tissue between cells
c Front face of index/thumb
100 4 -1.09 -31 74 1 -6 42 -46 imp:p,e=1 $ Outer skin
101 4 -1.09 -74 38 70 -6 76 -78 imp:p,e=1 $ 7 mg/cm^2 skin layer
102 4 -1.09 -38 85 7 -6 43 -77 imp:p,e=1 $ Skin below
103 3 -0.95 -85 138 80 -3 87 -88 20 21 22 26 27 28 29 imp:p,e=1 $ Adipose tissue
c
c Back face of index/thumb
104 4 -1.09 -136 135 1 -6 42 -46 imp:p,e=1 $ Outer skin
105 4 -1.09 -137 136 70 -6 76 -78 imp:p,e=1 $ 7 mg/cm^2 skin layer
106 4 -1.09 -138 137 7 -6 43 -77 imp:p,e=1 $ Skin below
c
c Side of Index/Thumb
107 4 -1.09 -74 136 1 -70 42 -46 imp:p,e=1 $ Outer skin
108 4 -1.09 -38 137 70 -7 76 -78 imp:p,e=1 $ 7 mg/cm^2 skin layer
109 4 -1.09 -85 138 7 -80 43 -77 imp:p,e=1 $ Skin below
c
c Top of Index/Thumb
110 4 -1.09 -74 136 70 -6 78 -46 imp:p,e=1 $ Outer skin
111 4 -1.09 -38 137 7 -6 77 -78 imp:p,e=1 $ 7 mg/cm^2 skin layer
112 4 -1.09 -85 138 80 -6 88 -77 imp:p,e=1 $ Skin below
c
c Bottom of Index/Thumb at far back
113 4 -1.09 -158 136 70 -3 42 -76 imp:p,e=1 $ Outer skin
114 4 -1.09 -158 137 7 -3 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
115 4 -1.09 -158 138 80 -3 43 -87 imp:p,e=1 $ Skin below
c
c Bottom of Index/Thumb behind thumb
116 4 -1.09 -30 158 4 -6 42 -76 imp:p,e=1 $ Outer skin
117 4 -1.09 -30 158 4 -6 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
118 4 -1.09 -30 158 4 -6 43 -87 imp:p,e=1 $ Skin below
c
c Back side of under palm behind thumb
700 4 -1.09 -158 136 4 -6 42 -76 imp:p,e=1 $ Outer skin
701 4 -1.09 -158 137 4 -6 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
702 4 -1.09 -158 138 4 -6 43 -87 imp:p,e=1 $ Skin below
c
c Between Index and Thumb (Arch)
119 4 -1.09 -74 30 3 -4 42 -76 imp:p,e=1 $ Outer skin
120 4 -1.09 -38 30 3 -4 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
121 4 -1.09 -85 30 3 -4 43 -87 imp:p,e=1 $ Skin below
c
c Middle Between Index/Thumb

```

```

703 4 -1.09 -30 158 3 -4 42 -76 imp:p,e=1 $ Outer skin
704 4 -1.09 -30 158 3 -4 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
705 4 -1.09 -30 158 3 -4 43 -87 imp:p,e=1 $ Skin below
c
c Back side Between Index/Thumb
706 4 -1.09 -158 136 3 -4 42 -76 imp:p,e=1 $ Outer skin
707 4 -1.09 -158 137 3 -4 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
708 4 -1.09 -158 138 3 -4 43 -87 imp:p,e=1 $ Skin below
c
c Between Index/Middle Finger behind Index
122 3 -0.95 -74 30 70 -3 42 -76 20 22 imp:p,e=1 $ Outer skin
123 3 -0.95 -38 30 7 -3 76 -43 20 22 imp:p,e=1 $ 7 mg/cm^2 skin layer
124 3 -0.95 -85 30 80 -3 43 -87 20 22 imp:p,e=1 $ Skin below
c
c Between Index/Middle Finger
709 4 -1.09 -30 151 70 -3 42 -76 imp:p,e=1 $ Outer skin
710 4 -1.09 -30 151 7 -3 76 -43 imp:p,e=1 $ 7 mg/cm^2 skin layer
711 4 -1.09 -30 151 80 -3 43 -87 imp:p,e=1 $ Skin below
c
c Between Index/Middle Finger behind Middle
712 3 -0.95 -151 158 70 -3 42 -76 20 22 imp:p,e=1 $ Outer skin
713 3 -0.95 -151 158 7 -3 76 -43 20 22 imp:p,e=1 $ 7 mg/cm^2 skin layer
714 3 -0.95 -151 158 80 -3 43 -87 20 22 imp:p,e=1 $ Skin below
c
c Under Thumb
125 3 -0.95 -74 30 4 -6 42 -76 21 imp:p,e=1 $ Outer skin
126 3 -0.95 -38 30 4 -6 76 -43 21 imp:p,e=1 $ 7 mg/cm^2 skin layer
127 3 -0.95 -85 30 4 -6 43 -87 21 imp:p,e=1 $ Skin below
c
c Adipose tissue
128 3 -0.95 -85 138 3 -4 87 -88 20 21 22 26 27 28 29 imp:p,e=1 $ Adipose tissue above
arch
129 3 -0.95 -85 138 4 -6 87 -88 20 21 22 26 27 28 29 imp:p,e=1 $ Adipose tissue above
thumb
c
c
c Tip of Index
130 4 -1.09 40 -75 70 -2 73 -74 imp:p,e=1 $ Outer skin-index tip
131 4 -1.09 75 -140 7 -120 37 -38 imp:p,e=1 $ 7 mg/cm^2 index tip
132 4 -1.09 140 -86 80 -81 84 -85 imp:p,e=1 $ Skin below-index tip
133 3 -0.95 86 -41 80 -81 84 -85 imp:p,e=1 $ Adipose tissue-index tip
134 4 -1.09 2 -3 40 -41 30 -31 imp:p,e=1 $ Outer skin-inner index tip
135 4 -1.09 120 -2 75 -41 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index tip
136 4 -1.09 81 -120 140 -41 37 -38 imp:p,e=1 $ Skin below-inner index tip
137 4 -1.09 1 -70 40 -41 30 -31 imp:p,e=1 $ Outer skin-outer index tip
138 4 -1.09 70 -7 75 -41 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index tip
139 4 -1.09 7 -80 140 -41 37 -38 imp:p,e=1 $ Skin below-outer index tip
140 4 -1.09 70 -2 40 -41 74 -31 imp:p,e=1 $ Outer skin-front index tip
141 4 -1.09 7 -120 75 -41 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index tip
142 4 -1.09 80 -81 140 -41 85 -38 imp:p,e=1 $ Skin below-front index tip
143 4 -1.09 70 -2 40 -41 30 -73 imp:p,e=1 $ Outer skin-back index tip
144 4 -1.09 7 -120 75 -41 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index tip
145 4 -1.09 80 -81 140 -41 37 -84 imp:p,e=1 $ Skin below-back index tip
c
c Tip of Middle Finger
550 4 -1.09 40 -75 70 -2 157 -152 imp:p,e=1 $ Outer skin-middle finger tip
551 4 -1.09 75 -140 7 -120 156 -153 imp:p,e=1 $ 7 mg/cm^2 middle finger tip
552 4 -1.09 140 -86 80 -81 155 -154 imp:p,e=1 $ Skin below-middle finger tip
553 3 -0.95 86 -41 80 -81 155 -154 imp:p,e=1 $ Adipose tissue-middle finger tip
554 4 -1.09 2 -3 40 -41 158 -151 imp:p,e=1 $ Outer skin-inner middle finger tip
555 4 -1.09 120 -2 75 -41 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger tip
556 4 -1.09 81 -120 140 -41 156 -153 imp:p,e=1 $ Skin below-inner middle finger tip
557 4 -1.09 1 -70 40 -41 158 -151 imp:p,e=1 $ Outer skin-outer middle finger tip
558 4 -1.09 70 -7 75 -41 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger tip
559 4 -1.09 7 -80 140 -41 156 -153 imp:p,e=1 $ Skin below-outer middle finger tip
560 4 -1.09 70 -2 40 -41 152 -151 imp:p,e=1 $ Outer skin-front middle finger tip
561 4 -1.09 7 -120 75 -41 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger tip

```

562	4	-1.09	80	-81	140	-41	154	-153	imp:p,e=1	\$	Skin below-front middle finger tip	
563	4	-1.09	70	-2	40	-41	158	-157	imp:p,e=1	\$	Outer skin-back middle finger tip	
564	4	-1.09	7	-120	75	-41	157	-156	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back middle finger tip	
565	4	-1.09	80	-81	140	-41	156	-155	imp:p,e=1	\$	Skin below-back middle finger tip	
c												
c Tip of Thumb												
146	4	-1.09	40	-75	5	-71	73	-74	imp:p,e=1	\$	Outer skin-thumb tip	
147	4	-1.09	75	-140	121	-8	37	-38	imp:p,e=1	\$	7 mg/cm <sup>2</sup> thumb tip	
148	4	-1.09	140	-86	82	-83	84	-85	imp:p,e=1	\$	Skin below-thumb tip	
149	3	-0.95	86	-41	82	-83	84	-85	imp:p,e=1	\$	Adipose tissue-thumb tip	
150	4	-1.09	4	-5	40	-41	30	-31	imp:p,e=1	\$	Outer skin-inner thumb tip	
151	4	-1.09	5	-121	75	-41	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner thumb tip	
152	4	-1.09	121	-82	140	-41	37	-38	imp:p,e=1	\$	Skin below-inner thumb tip	
153	4	-1.09	71	-6	40	-41	30	-31	imp:p,e=1	\$	Outer skin-outer thumb tip	
154	4	-1.09	8	-71	75	-41	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer thumb tip	
155	4	-1.09	83	-8	140	-41	37	-38	imp:p,e=1	\$	Skin below-outer thumb tip	
156	4	-1.09	5	-71	40	-41	74	-31	imp:p,e=1	\$	Outer skin-front thumb tip	
157	4	-1.09	121	-8	75	-41	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front thumb tip	
158	4	-1.09	82	-83	140	-41	85	-38	imp:p,e=1	\$	Skin below-front thumb tip	
159	4	-1.09	5	-71	40	-41	30	-73	imp:p,e=1	\$	Outer skin-back thumb tip	
160	4	-1.09	121	-8	75	-41	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back thumb tip	
161	4	-1.09	82	-83	140	-41	37	-84	imp:p,e=1	\$	Skin below-back thumb tip	
c												
c Section 1 of Index												
162	4	-1.09	41	-51	2	-3	30	-31	imp:p,e=1	\$	Outer skin-inner index	
163	4	-1.09	41	-51	120	-2	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner index	
164	4	-1.09	41	-51	81	-120	37	-38	imp:p,e=1	\$	Skin below-inner index	
165	4	-1.09	41	-51	1	-70	30	-31	imp:p,e=1	\$	Outer skin-outer index	
166	4	-1.09	41	-51	70	-7	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer index	
167	4	-1.09	41	-51	7	-80	37	-38	imp:p,e=1	\$	Skin below-outer index	
168	4	-1.09	41	-51	70	-2	74	-31	imp:p,e=1	\$	Outer skin-front index	
169	4	-1.09	41	-51	7	-120	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front index	
170	4	-1.09	41	-51	80	-81	85	-38	imp:p,e=1	\$	Skin below-front index	
171	4	-1.09	41	-51	70	-2	30	-73	imp:p,e=1	\$	Outer skin-back index	
172	4	-1.09	41	-51	7	-120	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back index	
173	4	-1.09	41	-51	80	-81	37	-84	imp:p,e=1	\$	Skin below-back index	
174	3	-0.95	41	-51	80	-81	84	-85	20	imp:p,e=1	\$	Adipose tissue index
c												
c Section 1 of Middle Finger												
566	4	-1.09	41	-51	2	-3	158	-151	imp:p,e=1	\$	Outer skin-inner middle finger	
567	4	-1.09	41	-51	120	-2	157	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner middle finger	
568	4	-1.09	41	-51	81	-120	156	-153	imp:p,e=1	\$	Skin below-inner middle finger	
569	4	-1.09	41	-51	1	-70	158	-151	imp:p,e=1	\$	Outer skin-outer middle finger	
570	4	-1.09	41	-51	70	-7	157	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer middle finger	
571	4	-1.09	41	-51	7	-80	156	-153	imp:p,e=1	\$	Skin below-outer middle finger	
572	4	-1.09	41	-51	70	-2	152	-151	imp:p,e=1	\$	Outer skin-front middle finger	
573	4	-1.09	41	-51	7	-120	153	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front middle finger	
574	4	-1.09	41	-51	80	-81	154	-153	imp:p,e=1	\$	Skin below-front middle finger	
575	4	-1.09	41	-51	70	-2	158	-157	imp:p,e=1	\$	Outer skin-back middle finger	
576	4	-1.09	41	-51	7	-120	157	-156	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back middle finger	
577	4	-1.09	41	-51	80	-81	156	-155	imp:p,e=1	\$	Skin below-back middle finger	
578	3	-0.95	41	-51	80	-81	155	-154	22	imp:p,e=1	\$	Adipose tissue middle finger
c												
c Section 1 of Thumb												
175	4	-1.09	41	-51	4	-5	30	-31	imp:p,e=1	\$	Outer skin-inner thumb	
176	4	-1.09	41	-51	5	-121	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner thumb	
177	4	-1.09	41	-51	121	-82	37	-38	imp:p,e=1	\$	Skin below-inner thumb	
178	4	-1.09	41	-51	71	-6	30	-31	imp:p,e=1	\$	Outer skin-outer thumb	
179	4	-1.09	41	-51	8	-71	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer thumb	
180	4	-1.09	41	-51	83	-8	37	-38	imp:p,e=1	\$	Skin below-outer thumb	
181	4	-1.09	41	-51	5	-71	74	-31	imp:p,e=1	\$	Outer skin-front thumb	
182	4	-1.09	41	-51	121	-8	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front thumb	
183	4	-1.09	41	-51	82	-83	85	-38	imp:p,e=1	\$	Skin below-front thumb	
184	4	-1.09	41	-51	5	-71	30	-73	imp:p,e=1	\$	Outer skin-back thumb	
185	4	-1.09	41	-51	121	-8	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back thumb	
186	4	-1.09	41	-51	82	-83	37	-84	imp:p,e=1	\$	Skin below-back thumb	
187	3	-0.95	41	-51	82	-83	84	-85	21	imp:p,e=1	\$	Adipose tissue thumb

```

c
c Section 2 of Index
188 4 -1.09 51 -52 2 -3 30 -31 imp:p,e=1 $ Outer skin-inner index
189 4 -1.09 51 -52 120 -2 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index
190 4 -1.09 51 -52 81 -120 37 -38 imp:p,e=1 $ Skin below-inner index
191 4 -1.09 51 -52 1 -70 30 -31 imp:p,e=1 $ Outer skin-outer index
192 4 -1.09 51 -52 70 -7 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index
193 4 -1.09 51 -52 7 -80 37 -38 imp:p,e=1 $ Skin below-outer index
194 4 -1.09 51 -52 70 -2 74 -31 imp:p,e=1 $ Outer skin-front index
195 4 -1.09 51 -52 7 -120 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index
196 4 -1.09 51 -52 80 -81 85 -38 imp:p,e=1 $ Skin below-front index
197 4 -1.09 51 -52 70 -2 30 -73 imp:p,e=1 $ Outer skin-back index
198 4 -1.09 51 -52 7 -120 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index
199 4 -1.09 51 -52 80 -81 37 -84 imp:p,e=1 $ Skin below-back index
200 3 -0.95 51 -52 80 -81 84 -85 20 imp:p,e=1 $ Adipose tissue index
c
c Section 2 of Middle Finger
579 4 -1.09 51 -52 2 -3 158 -151 imp:p,e=1 $ Outer skin-inner middle finger
580 4 -1.09 51 -52 120 -2 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger
581 4 -1.09 51 -52 81 -120 156 -153 imp:p,e=1 $ Skin below-inner middle finger
582 4 -1.09 51 -52 1 -70 158 -151 imp:p,e=1 $ Outer skin-outer middle finger
583 4 -1.09 51 -52 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger
584 4 -1.09 51 -52 7 -80 156 -153 imp:p,e=1 $ Skin below-outer middle finger
585 4 -1.09 51 -52 70 -2 152 -151 imp:p,e=1 $ Outer skin-front middle finger
586 4 -1.09 51 -52 7 -120 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger
587 4 -1.09 51 -52 80 -81 154 -153 imp:p,e=1 $ Skin below-front middle finger
588 4 -1.09 51 -52 70 -2 158 -157 imp:p,e=1 $ Outer skin-back middle finger
589 4 -1.09 51 -52 7 -120 157 -156 imp:p,e=1 $ 7 mg/cm^2 back middle finger
590 4 -1.09 51 -52 80 -81 156 -155 imp:p,e=1 $ Skin below-back middle finger
591 3 -0.95 51 -52 80 -81 155 -154 22 imp:p,e=1 $ Adipose tissue middle finger
c
c Section 2 of Thumb
201 4 -1.09 51 -52 4 -5 30 -31 imp:p,e=1 $ Outer skin-inner thumb
202 4 -1.09 51 -52 5 -121 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner thumb
203 4 -1.09 51 -52 121 -82 37 -38 imp:p,e=1 $ Skin below-inner thumb
204 4 -1.09 51 -52 71 -6 30 -31 imp:p,e=1 $ Outer skin-outer thumb
205 4 -1.09 51 -52 8 -71 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer thumb
206 4 -1.09 51 -52 83 -8 37 -38 imp:p,e=1 $ Skin below-outer thumb
207 4 -1.09 51 -52 5 -71 74 -31 imp:p,e=1 $ Outer skin-front thumb
208 4 -1.09 51 -52 121 -8 38 -74 imp:p,e=1 $ 7 mg/cm^2 front thumb
209 4 -1.09 51 -52 82 -83 85 -38 imp:p,e=1 $ Skin below-front thumb
210 4 -1.09 51 -52 5 -71 30 -73 imp:p,e=1 $ Outer skin-back thumb
211 4 -1.09 51 -52 121 -8 73 -37 imp:p,e=1 $ 7 mg/cm^2 back thumb
212 4 -1.09 51 -52 82 -83 37 -84 imp:p,e=1 $ Skin below-back thumb
213 3 -0.95 51 -52 82 -83 84 -85 21 imp:p,e=1 $ Adipose tissue thumb
c
c Section 3 of Index
214 4 -1.09 52 -53 2 -3 30 -31 imp:p,e=1 $ Outer skin-inner index
215 4 -1.09 52 -53 120 -2 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index
216 4 -1.09 52 -53 81 -120 37 -38 imp:p,e=1 $ Skin below-inner index
217 4 -1.09 52 -53 1 -70 30 -31 imp:p,e=1 $ Outer skin-outer index
218 4 -1.09 52 -53 70 -7 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index
219 4 -1.09 52 -53 7 -80 37 -38 imp:p,e=1 $ Skin below-outer index
220 4 -1.09 52 -53 70 -2 74 -31 imp:p,e=1 $ Outer skin-front index
221 4 -1.09 52 -53 7 -120 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index
222 4 -1.09 52 -53 80 -81 85 -38 imp:p,e=1 $ Skin below-front index
223 4 -1.09 52 -53 70 -2 30 -73 imp:p,e=1 $ Outer skin-back index
224 4 -1.09 52 -53 7 -120 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index
225 4 -1.09 52 -53 80 -81 37 -84 imp:p,e=1 $ Skin below-back index
226 3 -0.95 52 -53 80 -81 84 -85 20 imp:p,e=1 $ Adipose tissue index
c
c Section 3 of Middle Finger
592 4 -1.09 52 -53 2 -3 158 -151 imp:p,e=1 $ Outer skin-inner middle finger
593 4 -1.09 52 -53 120 -2 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger
594 4 -1.09 52 -53 81 -120 156 -153 imp:p,e=1 $ Skin below-inner middle finger
595 4 -1.09 52 -53 1 -70 158 -151 imp:p,e=1 $ Outer skin-outer middle finger
596 4 -1.09 52 -53 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger

```

597	4	-1.09	52	-53	7	-80	156	-153	imp:p,e=1	\$	Skin below-outer middle finger	
598	4	-1.09	52	-53	70	-2	152	-151	imp:p,e=1	\$	Outer skin-front middle finger	
599	4	-1.09	52	-53	7	-120	153	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front middle finger	
600	4	-1.09	52	-53	80	-81	154	-153	imp:p,e=1	\$	Skin below-front middle finger	
601	4	-1.09	52	-53	70	-2	158	-157	imp:p,e=1	\$	Outer skin-back middle finger	
602	4	-1.09	52	-53	7	-120	157	-156	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back middle finger	
603	4	-1.09	52	-53	80	-81	156	-155	imp:p,e=1	\$	Skin below-back middle finger	
604	3	-0.95	52	-53	80	-81	155	-154	22	imp:p,e=1	\$	Adipose tissue middle finger
c												
c Section 3 of Thumb												
227	4	-1.09	52	-53	4	-5	30	-31	imp:p,e=1	\$	Outer skin-inner thumb	
228	4	-1.09	52	-53	5	-121	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner thumb	
229	4	-1.09	52	-53	121	-82	37	-38	imp:p,e=1	\$	Skin below-inner thumb	
230	4	-1.09	52	-53	71	-6	30	-31	imp:p,e=1	\$	Outer skin-outer thumb	
231	4	-1.09	52	-53	8	-71	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer thumb	
232	4	-1.09	52	-53	83	-8	37	-38	imp:p,e=1	\$	Skin below-outer thumb	
233	4	-1.09	52	-53	5	-71	74	-31	imp:p,e=1	\$	Outer skin-front thumb	
234	4	-1.09	52	-53	121	-8	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front thumb	
235	4	-1.09	52	-53	82	-83	85	-38	imp:p,e=1	\$	Skin below-front thumb	
236	4	-1.09	52	-53	5	-71	30	-73	imp:p,e=1	\$	Outer skin-back thumb	
237	4	-1.09	52	-53	121	-8	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back thumb	
238	4	-1.09	52	-53	82	-83	37	-84	imp:p,e=1	\$	Skin below-back thumb	
239	3	-0.95	52	-53	82	-83	84	-85	21	imp:p,e=1	\$	Adipose tissue thumb
c												
c Section 4 of Index												
240	4	-1.09	53	-54	2	-3	30	-31	imp:p,e=1	\$	Outer skin-inner index	
241	4	-1.09	53	-54	120	-2	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner index	
242	4	-1.09	53	-54	81	-120	37	-38	imp:p,e=1	\$	Skin below-inner index	
243	4	-1.09	53	-54	1	-70	30	-31	imp:p,e=1	\$	Outer skin-outer index	
244	4	-1.09	53	-54	70	-7	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer index	
245	4	-1.09	53	-54	7	-80	37	-38	imp:p,e=1	\$	Skin below-outer index	
246	4	-1.09	53	-54	70	-2	74	-31	imp:p,e=1	\$	Outer skin-front index	
247	4	-1.09	53	-54	7	-120	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front index	
248	4	-1.09	53	-54	80	-81	85	-38	imp:p,e=1	\$	Skin below-front index	
249	4	-1.09	53	-54	70	-2	30	-73	imp:p,e=1	\$	Outer skin-back index	
250	4	-1.09	53	-54	7	-120	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back index	
251	4	-1.09	53	-54	80	-81	37	-84	imp:p,e=1	\$	Skin below-back index	
252	3	-0.95	53	-54	80	-81	84	-85	20	imp:p,e=1	\$	Adipose tissue index
c												
c Section 4 of Middle Finger												
605	4	-1.09	53	-54	2	-3	158	-151	imp:p,e=1	\$	Outer skin-inner middle finger	
606	4	-1.09	53	-54	120	-2	157	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner middle finger	
607	4	-1.09	53	-54	81	-120	156	-153	imp:p,e=1	\$	Skin below-inner middle finger	
608	4	-1.09	53	-54	1	-70	158	-151	imp:p,e=1	\$	Outer skin-outer middle finger	
609	4	-1.09	53	-54	70	-7	157	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer middle finger	
610	4	-1.09	53	-54	7	-80	156	-153	imp:p,e=1	\$	Skin below-outer middle finger	
611	4	-1.09	53	-54	70	-2	152	-151	imp:p,e=1	\$	Outer skin-front middle finger	
612	4	-1.09	53	-54	7	-120	153	-152	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front middle finger	
613	4	-1.09	53	-54	80	-81	154	-153	imp:p,e=1	\$	Skin below-front middle finger	
614	4	-1.09	53	-54	70	-2	158	-157	imp:p,e=1	\$	Outer skin-back middle finger	
615	4	-1.09	53	-54	7	-120	157	-156	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back middle finger	
616	4	-1.09	53	-54	80	-81	156	-155	imp:p,e=1	\$	Skin below-back middle finger	
617	3	-0.95	53	-54	80	-81	155	-154	22	imp:p,e=1	\$	Adipose tissue middle finger
c												
c Section 4 of Thumb												
253	4	-1.09	53	-54	4	-5	30	-31	imp:p,e=1	\$	Outer skin-inner thumb	
254	4	-1.09	53	-54	5	-121	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> inner thumb	
255	4	-1.09	53	-54	121	-82	37	-38	imp:p,e=1	\$	Skin below-inner thumb	
256	4	-1.09	53	-54	71	-6	30	-31	imp:p,e=1	\$	Outer skin-outer thumb	
257	4	-1.09	53	-54	8	-71	73	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> outer thumb	
258	4	-1.09	53	-54	83	-8	37	-38	imp:p,e=1	\$	Skin below-outer thumb	
259	4	-1.09	53	-54	5	-71	74	-31	imp:p,e=1	\$	Outer skin-front thumb	
260	4	-1.09	53	-54	121	-8	38	-74	imp:p,e=1	\$	7 mg/cm <sup>2</sup> front thumb	
261	4	-1.09	53	-54	82	-83	85	-38	imp:p,e=1	\$	Skin below-front thumb	
262	4	-1.09	53	-54	5	-71	30	-73	imp:p,e=1	\$	Outer skin-back thumb	
263	4	-1.09	53	-54	121	-8	73	-37	imp:p,e=1	\$	7 mg/cm <sup>2</sup> back thumb	
264	4	-1.09	53	-54	82	-83	37	-84	imp:p,e=1	\$	Skin below-back thumb	

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265 3 -0.95 53 -54 82 -83 84 -85 21  imp:p,e=1 $ Adipose tissue thumb
c
c Section 5 of Index
266 4 -1.09 54 -55 2 -3 30 -31  imp:p,e=1 $ Outer skin-inner index
267 4 -1.09 54 -55 120 -2 73 -74  imp:p,e=1 $ 7 mg/cm^2 inner index
268 4 -1.09 54 -55 81 -120 37 -38  imp:p,e=1 $ Skin below-inner index
269 4 -1.09 54 -55 1 -70 30 -31  imp:p,e=1 $ Outer skin-outer index
270 4 -1.09 54 -55 70 -7 73 -74  imp:p,e=1 $ 7 mg/cm^2 outer index
271 4 -1.09 54 -55 7 -80 37 -38  imp:p,e=1 $ Skin below-outer index
272 4 -1.09 54 -55 70 -2 74 -31  imp:p,e=1 $ Outer skin-front index
273 4 -1.09 54 -55 7 -120 38 -74  imp:p,e=1 $ 7 mg/cm^2 front index
274 4 -1.09 54 -55 80 -81 85 -38  imp:p,e=1 $ Skin below-front index
275 4 -1.09 54 -55 70 -2 30 -73  imp:p,e=1 $ Outer skin-back index
276 4 -1.09 54 -55 7 -120 73 -37  imp:p,e=1 $ 7 mg/cm^2 back index
277 4 -1.09 54 -55 80 -81 37 -84  imp:p,e=1 $ Skin below-back index
278 3 -0.95 54 -55 80 -81 84 -85 20  imp:p,e=1 $ Adipose tissue index
c
c Section 5 of Middle Finger
618 4 -1.09 54 -55 2 -3 158 -151  imp:p,e=1 $ Outer skin-inner middle finger
619 4 -1.09 54 -55 120 -2 157 -152  imp:p,e=1 $ 7 mg/cm^2 inner middle finger
620 4 -1.09 54 -55 81 -120 156 -153  imp:p,e=1 $ Skin below-inner middle finger
621 4 -1.09 54 -55 1 -70 158 -151  imp:p,e=1 $ Outer skin-outer middle finger
622 4 -1.09 54 -55 70 -7 157 -152  imp:p,e=1 $ 7 mg/cm^2 outer middle finger
623 4 -1.09 54 -55 7 -80 156 -153  imp:p,e=1 $ Skin below-outer middle finger
624 4 -1.09 54 -55 70 -2 152 -151  imp:p,e=1 $ Outer skin-front middle finger
625 4 -1.09 54 -55 7 -120 153 -152  imp:p,e=1 $ 7 mg/cm^2 front middle finger
626 4 -1.09 54 -55 80 -81 154 -153  imp:p,e=1 $ Skin below-front middle finger
627 4 -1.09 54 -55 70 -2 158 -157  imp:p,e=1 $ Outer skin-back middle finger
628 4 -1.09 54 -55 7 -120 157 -156  imp:p,e=1 $ 7 mg/cm^2 back middle finger
629 4 -1.09 54 -55 80 -81 156 -155  imp:p,e=1 $ Skin below-back middle finger
630 3 -0.95 54 -55 80 -81 155 -154 22  imp:p,e=1 $ Adipose tissue middle finger
c
c Section 5 of Thumb
279 4 -1.09 54 -55 4 -5 30 -31  imp:p,e=1 $ Outer skin-inner thumb
280 4 -1.09 54 -55 5 -121 73 -74  imp:p,e=1 $ 7 mg/cm^2 inner thumb
281 4 -1.09 54 -55 121 -82 37 -38  imp:p,e=1 $ Skin below-inner thumb
282 4 -1.09 54 -55 71 -6 30 -31  imp:p,e=1 $ Outer skin-outer thumb
283 4 -1.09 54 -55 8 -71 73 -74  imp:p,e=1 $ 7 mg/cm^2 outer thumb
284 4 -1.09 54 -55 83 -8 37 -38  imp:p,e=1 $ Skin below-outer thumb
285 4 -1.09 54 -55 5 -71 74 -31  imp:p,e=1 $ Outer skin-front thumb
286 4 -1.09 54 -55 121 -8 38 -74  imp:p,e=1 $ 7 mg/cm^2 front thumb
287 4 -1.09 54 -55 82 -83 85 -38  imp:p,e=1 $ Skin below-front thumb
288 4 -1.09 54 -55 5 -71 30 -73  imp:p,e=1 $ Outer skin-back thumb
289 4 -1.09 54 -55 121 -8 73 -37  imp:p,e=1 $ 7 mg/cm^2 back thumb
290 4 -1.09 54 -55 82 -83 37 -84  imp:p,e=1 $ Skin below-back thumb
291 3 -0.95 54 -55 82 -83 84 -85 21  imp:p,e=1 $ Adipose tissue thumb
c
c Section 6 of Index
292 4 -1.09 55 -56 2 -3 30 -31  imp:p,e=1 $ Outer skin-inner index
293 4 -1.09 55 -56 120 -2 73 -74  imp:p,e=1 $ 7 mg/cm^2 inner index
294 4 -1.09 55 -56 81 -120 37 -38  imp:p,e=1 $ Skin below-inner index
295 4 -1.09 55 -56 1 -70 30 -31  imp:p,e=1 $ Outer skin-outer index
296 4 -1.09 55 -56 70 -7 73 -74  imp:p,e=1 $ 7 mg/cm^2 outer index
297 4 -1.09 55 -56 7 -80 37 -38  imp:p,e=1 $ Skin below-outer index
298 4 -1.09 55 -56 70 -2 74 -31  imp:p,e=1 $ Outer skin-front index
299 4 -1.09 55 -56 7 -120 38 -74  imp:p,e=1 $ 7 mg/cm^2 front index
300 4 -1.09 55 -56 80 -81 85 -38  imp:p,e=1 $ Skin below-front index
301 4 -1.09 55 -56 70 -2 30 -73  imp:p,e=1 $ Outer skin-back index
302 4 -1.09 55 -56 7 -120 73 -37  imp:p,e=1 $ 7 mg/cm^2 back index
303 4 -1.09 55 -56 80 -81 37 -84  imp:p,e=1 $ Skin below-back index
304 3 -0.95 55 -56 80 -81 84 -85 20  imp:p,e=1 $ Adipose tissue index
c
c Section 6 of Middle Finger
631 4 -1.09 55 -56 2 -3 158 -151  imp:p,e=1 $ Outer skin-inner middle finger
632 4 -1.09 55 -56 120 -2 157 -152  imp:p,e=1 $ 7 mg/cm^2 inner middle finger
633 4 -1.09 55 -56 81 -120 156 -153  imp:p,e=1 $ Skin below-inner middle finger
634 4 -1.09 55 -56 1 -70 158 -151  imp:p,e=1 $ Outer skin-outer middle finger

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635 4 -1.09 55 -56 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger
636 4 -1.09 55 -56 7 -80 156 -153 imp:p,e=1 $ Skin below-outer middle finger
637 4 -1.09 55 -56 70 -2 152 -151 imp:p,e=1 $ Outer skin-front middle finger
638 4 -1.09 55 -56 7 -120 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger
639 4 -1.09 55 -56 80 -81 154 -153 imp:p,e=1 $ Skin below-front middle finger
640 4 -1.09 55 -56 70 -2 158 -157 imp:p,e=1 $ Outer skin-back middle finger
641 4 -1.09 55 -56 7 -120 157 -156 imp:p,e=1 $ 7 mg/cm^2 back middle finger
642 4 -1.09 55 -56 80 -81 156 -155 imp:p,e=1 $ Skin below-back middle finger
643 3 -0.95 55 -56 80 -81 155 -154 22 imp:p,e=1 $ Adipose tissue middle finger
c
c Section 6 of Thumb
305 4 -1.09 55 -56 4 -5 30 -31 imp:p,e=1 $ Outer skin-inner thumb
306 4 -1.09 55 -56 5 -121 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner thumb
307 4 -1.09 55 -56 121 -82 37 -38 imp:p,e=1 $ Skin below-inner thumb
308 4 -1.09 55 -56 71 -6 30 -31 imp:p,e=1 $ Outer skin-outer thumb
309 4 -1.09 55 -56 8 -71 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer thumb
310 4 -1.09 55 -56 83 -8 37 -38 imp:p,e=1 $ Skin below-outer thumb
311 4 -1.09 55 -56 5 -71 74 -31 imp:p,e=1 $ Outer skin-front thumb
312 4 -1.09 55 -56 121 -8 38 -74 imp:p,e=1 $ 7 mg/cm^2 front thumb
313 4 -1.09 55 -56 82 -83 85 -38 imp:p,e=1 $ Skin below-front thumb
314 4 -1.09 55 -56 5 -71 30 -73 imp:p,e=1 $ Outer skin-back thumb
315 4 -1.09 55 -56 121 -8 73 -37 imp:p,e=1 $ 7 mg/cm^2 back thumb
316 4 -1.09 55 -56 82 -83 37 -84 imp:p,e=1 $ Skin below-back thumb
317 3 -0.95 55 -56 82 -83 84 -85 21 imp:p,e=1 $ Adipose tissue thumb
c
c Section 7 of Index
318 4 -1.09 56 -57 2 -3 30 -31 imp:p,e=1 $ Outer skin-inner index
319 4 -1.09 56 -57 120 -2 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner index
320 4 -1.09 56 -57 81 -120 37 -38 imp:p,e=1 $ Skin below-inner index
321 4 -1.09 56 -57 1 -70 30 -31 imp:p,e=1 $ Outer skin-outer index
322 4 -1.09 56 -57 70 -7 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer index
323 4 -1.09 56 -57 7 -80 37 -38 imp:p,e=1 $ Skin below-outer index
324 4 -1.09 56 -57 70 -2 74 -31 imp:p,e=1 $ Outer skin-front index
325 4 -1.09 56 -57 7 -120 38 -74 imp:p,e=1 $ 7 mg/cm^2 front index
326 4 -1.09 56 -57 80 -81 85 -38 imp:p,e=1 $ Skin below-front index
327 4 -1.09 56 -57 70 -2 30 -73 imp:p,e=1 $ Outer skin-back index
328 4 -1.09 56 -57 7 -120 73 -37 imp:p,e=1 $ 7 mg/cm^2 back index
329 4 -1.09 56 -57 80 -81 37 -84 imp:p,e=1 $ Skin below-back index
330 3 -0.95 56 -57 80 -81 84 -85 20 imp:p,e=1 $ Adipose tissue index
c
c Section 7 of Middle Finger
644 4 -1.09 56 -57 2 -3 158 -151 imp:p,e=1 $ Outer skin-inner middle finger
645 4 -1.09 56 -57 120 -2 157 -152 imp:p,e=1 $ 7 mg/cm^2 inner middle finger
646 4 -1.09 56 -57 81 -120 156 -153 imp:p,e=1 $ Skin below-inner middle finger
647 4 -1.09 56 -57 1 -70 158 -151 imp:p,e=1 $ Outer skin-outer middle finger
648 4 -1.09 56 -57 70 -7 157 -152 imp:p,e=1 $ 7 mg/cm^2 outer middle finger
649 4 -1.09 56 -57 7 -80 156 -153 imp:p,e=1 $ Skin below-outer middle finger
650 4 -1.09 56 -57 70 -2 152 -151 imp:p,e=1 $ Outer skin-front middle finger
651 4 -1.09 56 -57 7 -120 153 -152 imp:p,e=1 $ 7 mg/cm^2 front middle finger
652 4 -1.09 56 -57 80 -81 154 -153 imp:p,e=1 $ Skin below-front middle finger
653 4 -1.09 56 -57 70 -2 158 -157 imp:p,e=1 $ Outer skin-back middle finger
654 4 -1.09 56 -57 7 -120 157 -156 imp:p,e=1 $ 7 mg/cm^2 back middle finger
655 4 -1.09 56 -57 80 -81 156 -155 imp:p,e=1 $ Skin below-back middle finger
656 3 -0.95 56 -57 80 -81 155 -154 22 imp:p,e=1 $ Adipose tissue middle finger
c
c Section 7 of Thumb
331 4 -1.09 56 -57 4 -5 30 -31 imp:p,e=1 $ Outer skin-inner thumb
332 4 -1.09 56 -57 5 -121 73 -74 imp:p,e=1 $ 7 mg/cm^2 inner thumb
333 4 -1.09 56 -57 121 -82 37 -38 imp:p,e=1 $ Skin below-inner thumb
334 4 -1.09 56 -57 71 -6 30 -31 imp:p,e=1 $ Outer skin-outer thumb
335 4 -1.09 56 -57 8 -71 73 -74 imp:p,e=1 $ 7 mg/cm^2 outer thumb
336 4 -1.09 56 -57 83 -8 37 -38 imp:p,e=1 $ Skin below-outer thumb
337 4 -1.09 56 -57 5 -71 74 -31 imp:p,e=1 $ Outer skin-front thumb
338 4 -1.09 56 -57 121 -8 38 -74 imp:p,e=1 $ 7 mg/cm^2 front thumb
339 4 -1.09 56 -57 82 -83 85 -38 imp:p,e=1 $ Skin below-front thumb
340 4 -1.09 56 -57 5 -71 30 -73 imp:p,e=1 $ Outer skin-back thumb
341 4 -1.09 56 -57 121 -8 73 -37 imp:p,e=1 $ 7 mg/cm^2 back thumb

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342 4 -1.09 56 -57 82 -83 37 -84      imp:p,e=1 $ Skin below-back thumb
343 3 -0.95 56 -57 82 -83 84 -85 21    imp:p,e=1 $ Adipose tissue thumb
c
c Section 8 of Index
344 4 -1.09 57 -42 2 -3      30 -31      imp:p,e=1 $ Outer skin-inner index
345 4 -1.09 57 -42 120 -2    73 -74      imp:p,e=1 $ 7 mg/cm^2 inner index
346 4 -1.09 57 -42 81 -120  37 -38      imp:p,e=1 $ Skin below-inner index
347 4 -1.09 57 -42 1 -70    30 -31      imp:p,e=1 $ Outer skin-outer index
348 4 -1.09 57 -42 70 -7    73 -74      imp:p,e=1 $ 7 mg/cm^2 outer index
349 4 -1.09 57 -42 7 -80    37 -38      imp:p,e=1 $ Skin below-outer index
350 4 -1.09 57 -42 70 -2    74 -31      imp:p,e=1 $ Outer skin-front index
351 4 -1.09 57 -42 7 -120   38 -74      imp:p,e=1 $ 7 mg/cm^2 front index
352 4 -1.09 57 -42 80 -81   85 -38      imp:p,e=1 $ Skin below-front index
353 4 -1.09 57 -42 70 -2    30 -73      imp:p,e=1 $ Outer skin-back index
354 4 -1.09 57 -42 7 -120   73 -37      imp:p,e=1 $ 7 mg/cm^2 back index
355 4 -1.09 57 -42 80 -81   37 -84      imp:p,e=1 $ Skin below-back index
356 3 -0.95 57 -42 80 -81   84 -85 20    imp:p,e=1 $ Adipose tissue index
c
c Section 8 of Middle Finger
657 4 -1.09 57 -42 2 -3      158 -151    imp:p,e=1 $ Outer skin-middle finger
658 4 -1.09 57 -42 120 -2    157 -152    imp:p,e=1 $ 7 mg/cm^2 inner middle finger
659 4 -1.09 57 -42 81 -120   156 -153    imp:p,e=1 $ Skin below-inner middle finger
660 4 -1.09 57 -42 1 -70    158 -151    imp:p,e=1 $ Outer skin-outer middle finger
661 4 -1.09 57 -42 70 -7    157 -152    imp:p,e=1 $ 7 mg/cm^2 outer middle finger
662 4 -1.09 57 -42 7 -80    156 -153    imp:p,e=1 $ Skin below-outer middle finger
663 4 -1.09 57 -42 70 -2    152 -151    imp:p,e=1 $ Outer skin-front middle finger
664 4 -1.09 57 -42 7 -120   153 -152    imp:p,e=1 $ 7 mg/cm^2 front middle finger
665 4 -1.09 57 -42 80 -81   154 -153    imp:p,e=1 $ Skin below-front middle finger
666 4 -1.09 57 -42 70 -2    158 -157    imp:p,e=1 $ Outer skin-back middle finger
667 4 -1.09 57 -42 7 -120   157 -156    imp:p,e=1 $ 7 mg/cm^2 back middle finger
668 4 -1.09 57 -42 80 -81   156 -155    imp:p,e=1 $ Skin below-back middle finger
669 3 -0.95 57 -42 80 -81   155 -154 22  imp:p,e=1 $ Adipose tissue middle finger
c
c Section 8 of Thumb
357 4 -1.09 57 -42 4 -5 30 -31      imp:p,e=1 $ Outer skin-inner thumb
358 4 -1.09 57 -42 5 -121 73 -74      imp:p,e=1 $ 7 mg/cm^2 inner thumb
359 4 -1.09 57 -42 121 -82 37 -38      imp:p,e=1 $ Skin below-inner thumb
360 4 -1.09 57 -42 71 -6 30 -31      imp:p,e=1 $ Outer skin-outer thumb
361 4 -1.09 57 -42 8 -71 73 -74      imp:p,e=1 $ 7 mg/cm^2 outer thumb
362 4 -1.09 57 -42 83 -8 37 -38      imp:p,e=1 $ Skin below-outer thumb
363 4 -1.09 57 -42 5 -71 74 -31      imp:p,e=1 $ Outer skin-front thumb
364 4 -1.09 57 -42 121 -8 38 -74      imp:p,e=1 $ 7 mg/cm^2 front thumb
365 4 -1.09 57 -42 82 -83 85 -38      imp:p,e=1 $ Skin below-front thumb
366 4 -1.09 57 -42 5 -71 30 -73      imp:p,e=1 $ Outer skin-back thumb
367 4 -1.09 57 -42 121 -8 73 -37      imp:p,e=1 $ 7 mg/cm^2 back thumb
368 4 -1.09 57 -42 82 -83 37 -84      imp:p,e=1 $ Skin below-back thumb
369 3 -0.95 57 -42 82 -83 84 -85 21    imp:p,e=1 $ Adipose tissue thumb
c
c *****
c Palm Extension beside thumb
370 4 -1.09 6 -9 42 -76 -31 30      imp:p,e=1 $ 1 half Outer skin underside palm ext.
371 4 -1.09 6 -9 76 -43 -74 30      imp:p,e=1 $ 1 half 7 mg/cm^2 underside palm ext.
372 4 -1.09 6 -9 43 -87 -38 30      imp:p,e=1 $ 1 half Skin below-underside palm ext.
373 4 -1.09 6 -9 78 -46 -31 135     imp:p,e=1 $ 1 half Outer skin above palm ext.
374 4 -1.09 6 -9 77 -78 -74 135     imp:p,e=1 $ 1 half 7 mg/cm^2 above palm ext.
375 4 -1.09 6 -9 88 -77 -38 135     imp:p,e=1 $ 1 half Skin below-above palm ext.
376 4 -1.09 6 -9 76 -78 -31 74      imp:p,e=1 $ 1 half Outer skin front palm ext.
377 4 -1.09 6 -9 43 -77 -74 38      imp:p,e=1 $ 1 half 7 mg/cm^2 front palm ext.
378 4 -1.09 6 -9 87 -88 -38 85      imp:p,e=1 $ 1 half Skin below-front palm ext.
379 3 -0.95 6 -9 87 -88 -85 30 26 27 28 29  imp:p,e=1 $ 1st Adipose tissue palm ext.
380 4 -1.09 9 -130 42 -76 -31 30      imp:p,e=1 $ 2 half Outer skin underside palm ext.
381 4 -1.09 9 -130 76 -43 -74 30      imp:p,e=1 $ 2 half 7 mg/cm^2 underside palm ext.
382 4 -1.09 9 -130 43 -87 -38 30      imp:p,e=1 $ 2 half Skin below-underside palm ext.
383 4 -1.09 9 -130 78 -46 -31 135     imp:p,e=1 $ 2 half Outer skin above palm ext.
384 4 -1.09 9 -130 77 -78 -74 135     imp:p,e=1 $ 2 half 7 mg/cm^2 above palm ext.
385 4 -1.09 9 -130 88 -77 -38 135     imp:p,e=1 $ 2 half Skin below-above palm ext.
386 4 -1.09 9 -130 76 -78 -31 74      imp:p,e=1 $ 2 half Outer skin front palm ext.

```

387 4 -1.09 9 -130 43 -77 -74 38 imp:p,e=1 \$ 2 half 7 mg/cm^2 front palm ext.  
 388 4 -1.09 9 -130 87 -88 -38 85 imp:p,e=1 \$ 2 half Skin below-front palm ext.  
 389 3 -0.95 9 -130 87 -88 -85 30 26 27 28 29 imp:p,e=1 \$ 2nd Adipose tissue palm ext.  
 480 4 -1.09 6 -9 42 -76 -30 158 imp:p,e=1 \$ 1 half Mid Outer skin underside palm  
 ext.  
 481 4 -1.09 6 -9 76 -43 -30 158 imp:p,e=1 \$ 1 half Mid 7 mg/cm^2 underside palm ext.  
 482 4 -1.09 6 -9 43 -87 -30 158 imp:p,e=1 \$ 1 half Mid Skin below-underside palm  
 ext.  
 483 4 -1.09 6 -9 42 -76 -158 135 imp:p,e=1 \$ 1 half Back Outer skin underside palm  
 ext.  
 484 4 -1.09 6 -9 76 -43 -158 135 imp:p,e=1 \$ 1 half Back 7 mg/cm^2 underside palm  
 ext.  
 485 4 -1.09 6 -9 43 -87 -158 135 imp:p,e=1 \$ 1 half Back Skin below-underside palm  
 ext.  
 486 4 -1.09 9 -130 42 -76 -30 158 imp:p,e=1 \$ 2 half Mid Outer skin underside palm  
 ext.  
 487 4 -1.09 9 -130 76 -43 -30 158 imp:p,e=1 \$ 2 half Mid 7 mg/cm^2 underside palm ext.  
 488 4 -1.09 9 -130 43 -87 -30 158 imp:p,e=1 \$ 2 half Mid Skin below-underside palm  
 ext.  
 489 4 -1.09 9 -130 42 -76 -158 135 imp:p,e=1 \$ 2 half Back Outer skin underside palm  
 ext.  
 490 4 -1.09 9 -130 76 -43 -158 135 imp:p,e=1 \$ 2 half Back 7 mg/cm^2 underside palm  
 ext.  
 491 4 -1.09 9 -130 43 -87 -158 135 imp:p,e=1 \$ 2 half Back Skin below-underside palm  
 ext.  
 492 3 -0.95 6 -9 87 -88 -30 158 26 27 28 29 imp:p,e=1 \$ 1st Mid Adipose tissue palm  
 ext.  
 493 3 -0.95 6 -9 87 -88 -158 135 26 27 28 29 imp:p,e=1 \$ 1st Back Adipose tissue palm  
 ext.  
 494 3 -0.95 9 -130 87 -88 -30 158 26 27 28 29 imp:p,e=1 \$ 2nd Mid Adipose tissue palm  
 ext.  
 495 3 -0.95 9 -130 87 -88 -158 135 26 27 28 29 imp:p,e=1 \$ 2nd Back Adipose tissue palm  
 ext.

c

c

c Bone Cells

71 2 -1.92 -20 41 -51 imp:p,e=1 \$ Index bone Section 1  
 72 2 -1.92 -20 51 -52 imp:p,e=1 \$ Index bone Section 2  
 73 2 -1.92 -20 52 -53 imp:p,e=1 \$ Index bone Section 3  
 74 2 -1.92 -20 53 -54 imp:p,e=1 \$ Index bone Section 4  
 75 2 -1.92 -20 54 -55 imp:p,e=1 \$ Index bone Section 5  
 76 2 -1.92 -20 55 -56 imp:p,e=1 \$ Index bone Section 6  
 77 2 -1.92 -20 56 -57 imp:p,e=1 \$ Index bone Section 7  
 78 2 -1.92 -20 57 -42 imp:p,e=1 \$ Index bone Section 8

c

c

81 2 -1.92 -21 41 -51 imp:p,e=1 \$ Thumb bone Section 1  
 82 2 -1.92 -21 51 -52 imp:p,e=1 \$ Thumb bone Section 2  
 83 2 -1.92 -21 52 -53 imp:p,e=1 \$ Thumb bone Section 3  
 84 2 -1.92 -21 53 -54 imp:p,e=1 \$ Thumb bone Section 4  
 85 2 -1.92 -21 54 -55 imp:p,e=1 \$ Thumb bone Section 5  
 86 2 -1.92 -21 55 -56 imp:p,e=1 \$ Thumb bone Section 6  
 87 2 -1.92 -21 56 -57 imp:p,e=1 \$ Thumb bone Section 7  
 88 2 -1.92 -21 57 -42 imp:p,e=1 \$ Thumb bone Section 8

c

c

61 2 -1.92 -22 41 -51 imp:p,e=1 \$ Middle finger bone Section 1  
 62 2 -1.92 -22 51 -52 imp:p,e=1 \$ Middle finger bone Section 2  
 63 2 -1.92 -22 52 -53 imp:p,e=1 \$ Middle finger bone Section 3  
 64 2 -1.92 -22 53 -54 imp:p,e=1 \$ Middle finger bone Section 4  
 65 2 -1.92 -22 54 -55 imp:p,e=1 \$ Middle finger bone Section 5  
 66 2 -1.92 -22 55 -56 imp:p,e=1 \$ Middle finger bone Section 6  
 67 2 -1.92 -22 56 -57 imp:p,e=1 \$ Middle finger bone Section 7  
 68 2 -1.92 -22 57 -42 imp:p,e=1 \$ Middle finger bone Section 8

c

c Bone of the palm

90 2 -1.92 -26 imp:p,e=1 \$ Index bone through palm

```

91 2 -1.92 -27 imp:p,e=1 $ Middle finger bone through palm
92 2 -1.92 -28 imp:p,e=1 $ Ring finger bone through palm
93 2 -1.92 -29 imp:p,e=1 $ Pinky bone through palm
c
94 2 -1.92 -20 42 imp:p,e=1 $ Index bone through finger
95 2 -1.92 -21 42 imp:p,e=1 $ Thumb bone through finger
96 2 -1.92 -22 42 imp:p,e=1 $ Middle finger bone through finger
c
c
c Air Cells
900 1 -0.001 103 -104 180 -60 190 -191 23 25 imp:p,e=1 $ air between fingers
901 1 -0.001 181 -100 imp:p,e=1 $ Top of model
902 1 -0.001 -180 -100 23 25 imp:p,e=1 $ Bottom of model
903 1 -0.001 180 -181 -100 -105 134 -191 imp:p,e=1 $ Left of index
904 1 -0.001 180 -181 -100 130 134 -191 imp:p,e=1 $ Right of palm ext.
905 1 -0.001 180 -181 -100 -134 imp:p,e=1 $ Behind model
906 1 -0.001 180 -181 -100 191 23 25 imp:p,e=1 $ Front of model
907 1 -0.001 134 -191 106 -130 180 -60 imp:p,e=1 $ Under palm ext.
908 1 -0.001 134 -190 103 -106 180 -60 23 25 imp:p,e=1 $ Under palm behind thumb
909 1 -0.001 134 -159 105 -103 180 -60 imp:p,e=1 $ Under palm behind middle
finger
910 1 -0.001 -190 150 -103 105 180 -60 imp:p,e=1 $ Air between index/middle
finger
c
c Index Finger Vinyl and Nitrile gloves
400 7 -1.65 105 -1 190 -191 40 -42 imp:p,e=1 $ outer side 1-V 1-N gloves
401 7 -1.65 3 -103 190 -191 40 -60 imp:p,e=1 $ inner side 1-V 1-N gloves
402 7 -1.65 1 -3 31 -191 40 -42 imp:p,e=1 $ front side 1-V 1-N gloves
403 7 -1.65 1 -3 190 -30 40 -42 imp:p,e=1 $ back side 1-V 1-N gloves
404 7 -1.65 180 -40 105 -103 190 -191 imp:p,e=1 $ tip of index 1-V 1-N gloves
c
c Middle Finger Vinyl and Nitrile Gloves
415 7 -1.65 105 -1 159 -150 40 -42 imp:p,e=1 $ outer side 1-V 1-N gloves
416 7 -1.65 3 -103 159 -150 40 -60 imp:p,e=1 $ inner side 1-V 1-N gloves
417 7 -1.65 1 -3 151 -150 40 -42 imp:p,e=1 $ front side 1-V 1-N gloves
418 7 -1.65 1 -3 159 -158 40 -42 imp:p,e=1 $ back side 1-V 1-N gloves
419 7 -1.65 180 -40 105 -103 159 -150 imp:p,e=1 $ tip of index 1-V 1-N gloves
c
c Thumb Vinyl and Nitrile Gloves
406 7 -1.65 104 -4 190 -191 40 -60 imp:p,e=1 $ outer side 1-V 1-N gloves
407 7 -1.65 6 -106 190 -191 40 -60 imp:p,e=1 $ inner side 1-V 1-N gloves
408 7 -1.65 4 -6 31 -191 40 -42 imp:p,e=1 $ front side 1-V 1-N gloves
409 7 -1.65 4 -6 190 -30 40 -42 imp:p,e=1 $ back side 1-V 1-N gloves
410 7 -1.65 180 -40 104 -106 190 -191 imp:p,e=1 $ tip of index 1-V 1-N gloves
c
c Gloves over palm extension
450 7 -1.65 6 -130 -191 134 46 -181 imp:p,e=1 $ Glove across top palm ext.
451 7 -1.65 6 -130 -191 134 60 -42 imp:p,e=1 $ Glove across bottom palm ext.
452 7 -1.65 6 -130 -191 31 42 -46 imp:p,e=1 $ Glove across front palm ext.
453 7 -1.65 6 -130 -135 134 42 -46 imp:p,e=1 $ Glove across back palm ext.
c
c Gloves over palm behind index/thumb
455 7 -1.65 -191 134 105 -6 46 -181 imp:p,e=1 $ Glove across top
456 7 -1.65 -191 31 105 -6 42 -46 imp:p,e=1 $ Glove across front
457 7 -1.65 -135 134 105 -6 60 -46 imp:p,e=1 $ Glove across back
458 7 -1.65 -31 135 105 -1 42 -46 imp:p,e=1 $ Glove across side of index
459 7 -1.65 -190 135 4 -6 60 -42 imp:p,e=1 $ Glove behind thumb under palm
460 7 -1.65 -150 190 6 -106 60 -46 imp:p,e=1 $ Glove across back side of thumb
462 7 -1.65 -159 135 105 -103 60 -42 imp:p,e=1 $ Glove behind middle finger under palm
463 7 -1.65 -190 150 105 -3 60 -42 imp:p,e=1 $ Glove between index & middle finger
464 7 -1.65 -191 190 3 -4 60 -42 imp:p,e=1 $ Glove between index/thumb
465 7 -1.65 -190 150 3 -4 60 -42 imp:p,e=1 $ Glove between index/middle
466 7 -1.65 -150 159 3 -4 60 -42 imp:p,e=1 $ Glove beside middle finger
467 7 -1.65 -159 135 103 -4 60 -42 imp:p,e=1 $ Glove between fingers at the back
c
c Titanium Disk
976 5 -4.51 -25 imp:p,e=1 $ Titanium disk

```

```

977 1 -0.001  -24  imp:p,e=1 $ Air inside Al ring
978 6 -2.7    -23 24 imp:p,e=1 $ Aluminum ring over Ti disk
c
c
999 0 100      imp:p,e=0 $ outside world
c

c ***** SURFACE CARDS*****
c
c   Index py Surfaces
105 py -0.7208  $ 1-N 1-V outer index
1   py -0.6908  $ Outer surface of outer index
70  py -0.6839  $ Outer 7 mg/cm^2 surface of outer index
7   py -0.6837  $ Inner 7 mg/cm^2 surface of outer index
80  py -0.5163  $ Skin thickness of outer index
81  py 1.3447   $ Skin thickness of inner index
120 py 1.5121   $ Inner 7 mg/cm^2 surface of inner index
2   py 1.5123   $ Outer 7 mg/cm^2 surface of inner index
3   py 1.5192   $ Inner surface of inner index
103 py 1.5492   $ 1-N 1-V inner index
c
c   Thumb py surfaces
104 py 1.7508   $ 1-N 1-V inner thumb
4   py 1.7808   $ inner surface of inner thumb
5   py 1.7877   $ Outer 7 mg/cm^2 surface of inner thumb
121 py 1.7879   $ Inner 7 mg/cm^2 surface of inner thumb
82  py 1.9553   $ Skin thickness of inner thumb
83  py 3.9063   $ Skin thickness of outer thumb
8   py 4.0737   $ Inner 7 mg/cm^2 surface of outer thumb
71  py 4.0739   $ Outer 7 mg/cm^2 surface of outer thumb
6   py 4.0808   $ Outer surface of outer thumb
106 py 4.1108   $ 1-N 1-V outer thumb
c
10  py -0.2808  $ left bone edge towards index
11  py 3.7808   $ right bone edge towards thumb
c
c   Palm surfaces
9   py 7.195    $ Half of palm ext.
129 py 10.3392  $ 1-N 1-V back width of palm
130 py 10.3092  $ Outer surface of back width of palm
131 py 10.3023  $ Outer 7 mg/cm^2 surface of back side of palm
132 py 10.3021  $ Inner 7 mg/cm^2 surface of back side of palm
133 py 10.1347  $ Skin thickness of back side of palm
c
c   Thumb and Index bone surface cylinders
20  rcc -0.25 0.2192 0.5 0 0 8.75 0.5 $ Index bone
21  rcc -0.25 3.2808 0.5 0 0 8.75 0.5 $ Thumb bone
22  rcc -2.85 0.2192 0.5 0 0 8.75 0.5 $ Middle finger bone
c
c   Bone of the palm
26  rcc -0.375 10.3092 9.75 0 -10.59 0 0.5 $ Index bone through palm
27  rcc -2.625 10.3092 9.75 0 -10.59 0 0.5 $ Middle finger bone through palm
28  rcc -4.875 10.3092 9.75 0 -10.59 0 0.5 $ Ring finger bone through palm
29  rcc -7.125 10.3092 9.75 0 -10.59 0 0.5 $ Pinky bone through palm
c
c   As-74/73 source disk
23  rcc -0.25 1.65 -0.9525 0 0.05 0 1.7 $ Aluminum ring
24  rcc -0.25 1.65 -0.9525 0 0.05 0 0.9525 $ Air inside Al ring
25  rcc -0.25 1.60 -0.9525 0 0.05 0 1.7 $ Titanium disk
c
c
c   px surfaces
190 px -1.28     $ 1-N 1-V back index & thumb
30  px -1.25     $ Outer surface of back index & thumb
73  px -1.2431   $ Outer 7 mg/cm^2 surface of back index & thumb
37  px -1.2429   $ Inner 7 mg/cm^2 surface of back index & thumb
84  px -1.0755   $ Skin thickness of back index & thumb

```

```

85 px 0.5755 $ Skin thickness of front index & thumb
38 px 0.7429 $ Inner 7 mg/cm^2 surface of front index & thumb
74 px 0.7431 $ Outer 7 mg/cm^2 surface of front index & thumb
31 px 0.75 $ Outer surface of front index & thumb
191 px 0.78 $ 1-N 1-V front index & thumb
c
150 px -1.82 $ 1-N 1-V front middle finger
151 px -1.85 $ Outer surface front middle finger
152 px -1.8569 $ Outer 7 mg/cm^2 front middle finger
153 px -1.8571 $ Inner 7 mg/cm^2 front middle finger
154 px -2.0245 $ Skin thickness front middle finger
155 px -3.6755 $ Skin thickness back middle finger
156 px -3.8429 $ Inner 7 mg/cm^2 back middle finger
157 px -3.8431 $ Outer 7 mg/cm^2 back middle finger
158 px -3.85 $ Outer surface back middle finger
159 px -3.88 $ 1-N 1-V back middle finger
c
c Palm surfaces
134 px -8.28 $ 1-N 1-V back of palm
135 px -8.25 $ Outer surface of back length of palm
136 px -8.2431 $ Outer 7 mg/cm^2 surface of back palm
137 px -8.2429 $ Inner 7 mg/cm^2 surface of back palm
138 px -8.0755 $ Skin thickness of back palm
c
c
c pz surfaces
180 pz 0 $ 1-N 1-V at tip of fingers
40 pz 0.03 $ Bottom edge of fingers
75 pz 0.0369 $ Outer 7 mg/cm^2 surface at tip of fingers
140 pz 0.0371 $ Inner 7 mg/cm^2 surface at tip of fingers
86 pz 0.2045 $ Skin thickness of tip of fingers
41 pz 0.5 $ Inner surface of tip of fingers
60 pz 7.97 $ 1-N 1-V under arch
42 pz 8.0 $ Top of lower arch
76 pz 8.0069 $ Outer 7 mg/cm^2 surface of lower arch
43 pz 8.0071 $ Inner 7 mg/cm^2 surface of lower arch
87 pz 8.1745 $ Skin thickness above lower arch
44 pz 10.0 $ botton arch bone/upper tissue
45 pz 10.8 $ top of bone arch area
88 pz 11.3255 $ Skin thickness of top of arch
77 pz 11.4929 $ Inner 7 mg/cm^2 surface at top of arch
78 pz 11.4931 $ Outer 7 mg/cm^2 surface at top of arch
46 pz 11.5 $ Upper surface of arch and palm
181 pz 11.53 $ 1-N 1-V at top of palm
c
c Finger sections
51 pz 1.5 $ Finger section 1
52 pz 2.5 $ Finger section 2
53 pz 3.5 $ Finger section 3
54 pz 4.5 $ Finger section 4
55 pz 5.5 $ Finger section 5
56 pz 6.5 $ Finger section 6
57 pz 7.5 $ Finger section 7
c
c Outer universe
100 s 0 4.8 5.75 20
c
c
c ***** MATERIAL CARDS*****
c
c Dry Air (Density @ 7,000 ft = 0.001 g/cc)
ml 7014 -0.75222 $ Nitrogen-16
7015 -0.00278 $ Nitrogen-15
8016 -0.2320 $ Oxygen
18000 -0.0130 $ Argon
plib=.04p

```

```

      elib=.01e
c
c   Mineral Bone (Density = 1.92 g/cc)
c   ICRP 110 Adult Reference Computational Phantoms
m2  1000 -0.036 $ Hydrogen
      6000 -0.159 $ Carbon
      7000 -0.042 $ Nitrogen
      8000 -0.448 $ Oxygen
      11000 -0.003 $ Sodium
      12000 -0.002 $ Magnesium
      15000 -0.094 $ Phosphorus
      16000 -0.003 $ Sulfur
      20000 -0.213 $ Calcium
      plib=.04p
      elib=.01e

c
c   Adipose Tissue (Density = 0.95 g/cc)
c   ICRP 110 Adult Reference Computational Phantoms
m3  1000 -0.114 $ Hydrogen
      6000 -0.588 $ Carbon
      7000 -0.008 $ Nitrogen
      8000 -0.287 $ Oxygen
      11000 -0.001 $ Sodium
      16000 -0.001 $ Sulfur
      17000 -0.001 $ Chlorine
      plib=.04p
      elib=.01e

c
c   Skin (Density = 1.09 g/cc)
c   ICRP 110 Adult Reference Computational Phantoms
m4  1000 -0.100 $ Hydrogen
      6000 -0.199 $ Carbon
      7000 -0.042 $ Nitrogen
      8000 -0.650 $ Oxygen
      11000 -0.002 $ Sodium
      15000 -0.001 $ Phosphorus
      16000 -0.002 $ Sulfur
      17000 -0.003 $ Chlorine
      19000 -0.001 $ Potassium
      plib=.04p
      elib=.01e

c
c   Titanium (Density = 4.51 g/cc)
m5  22000 -1.00 $ Titanium
      plib=.04p
      elib=.01e

c
c   Aluminum (Density = 2.7 g/cc)
m6  13000 -1.00 $ Aluminum
      plib=.04p
      elib=.01e

c
c   Vinyl/Nitrile Glove (Density = 1.65 g/cc)
m7  1000 -0.0484 $ Hydrogen
      6000 -0.3844 $ Carbon
      7000 -0.5672 $ Nitrogen
      plib=.04p
      elib=.01e

c
c   *****
c   SOURCE CARDS
c   Found in thesis.
c
c   ****TALLY CARDS*****
c   Same as input file in Appendix A.1 except multiplier is 4.1534E+00
c
nps 5e7

```

```
print 10 30 35 40 110 130 140 160 161 162
```

## APPENDIX B

### B.1 Using Tongs 1 Nitrile, 1 Vinyl – MCNP Results of the 7 mg cm<sup>-2</sup> Cells

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Inner Index (Tally 6)</b>									
Inner Index Tip	135	0.94	4.55E-08	25.30	1.59E-05	22.71	1.02E-05	36.37	2.61E-05
Inner Index Section 1	163	2	1.27E-07	56.48	2.08E-05	17.53	1.70E-05	22.32	3.79E-05
Inner Index Section 2	189	2	7.14E-08	13.86	1.45E-05	13.26	9.85E-06	18.67	2.45E-05
Inner Index Section 3	215	2	2.61E-07	77.16	2.20E-05	21.11	1.37E-05	20.74	3.60E-05
Inner Index Section 4	241	2	5.75E-08	14.59	1.73E-05	25.39	1.40E-05	18.55	3.14E-05
Inner Index Section 5	267	2	6.68E-08	37.38	1.72E-05	19.01	9.22E-06	31.87	2.65E-05
Inner Index Section 6	293	2	8.46E-08	100.00	1.73E-05	21.36	1.43E-05	21.14	3.16E-05
Inner Index Section 7	319	2	1.13E-07	39.10	1.18E-05	13.71	1.21E-05	18.09	2.40E-05
Inner Index Section 8	345	1	5.90E-08	20.92	2.15E-05	29.62	1.28E-05	27.72	3.43E-05
<b>Inner Thumb (Tally 16)</b>									
Inner Thumb Tip	151	0.94	8.99E-08	21.33	1.16E-05	14.22	1.41E-05	27.25	2.58E-05
Inner Thumb Section 1	176	2	1.37E-07	19.32	2.27E-05	17.93	8.48E-06	17.20	3.13E-05
Inner Thumb Section 2	202	2	1.42E-07	23.92	1.87E-05	12.98	1.40E-05	20.73	3.29E-05
Inner Thumb Section 3	228	2	1.64E-07	25.05	2.00E-05	18.32	1.02E-05	19.68	3.03E-05
Inner Thumb Section 4	254	2	1.16E-07	17.20	1.58E-05	17.39	1.27E-05	18.95	2.86E-05
Inner Thumb Section 5	280	2	2.06E-07	30.55	1.43E-05	17.82	1.11E-05	21.52	2.56E-05
Inner Thumb Section 6	306	2	1.29E-07	27.73	1.85E-05	23.97	1.10E-05	23.69	2.96E-05
Inner Thumb Section 7	332	2	2.25E-07	57.88	1.80E-05	14.73	9.98E-06	25.08	2.82E-05
Inner Thumb Section 8	358	1	1.05E-07	31.10	2.13E-05	33.70	9.57E-06	24.08	3.10E-05
<b>Inner Middle Finger (Tally 26)</b>									
Inner Middle Finger Tip	555	0.94	3.70E-08	30.47	2.07E-05	30.17	6.36E-06	31.16	2.71E-05
Inner Middle Finger Section 1	567	2	2.36E-08	22.75	9.83E-06	15.74	2.03E-06	30.63	1.19E-05
Inner Middle Finger Section 2	580	2	4.69E-08	27.10	1.10E-05	17.47	1.69E-06	63.24	1.28E-05
Inner Middle Finger Section 3	593	2	2.79E-08	19.08	1.14E-05	19.06	1.23E-06	25.62	1.27E-05
Inner Middle Finger Section 4	606	2	2.98E-08	19.80	6.15E-06	12.23	2.45E-06	41.22	8.63E-06
Inner Middle Finger Section 5	619	2	6.38E-08	35.03	1.23E-05	39.24	2.31E-06	26.08	1.47E-05
Inner Middle Finger Section 6	632	2	3.12E-08	15.92	7.21E-06	15.53	1.07E-06	25.75	8.31E-06
Inner Middle Finger Section 7	645	2	2.30E-07	64.63	1.20E-05	26.10	2.66E-06	37.39	1.49E-05
Inner Middle Finger Section 8	658	1	5.79E-08	33.67	9.40E-06	35.52	3.03E-06	50.92	1.25E-05



Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Front Index (Tally 36)</b>									
Front Index Tip	141	1.081	2.76E-08	7.64	1.57E-05	11.65	1.45E-04	11.11	1.60E-04
Front Index Section 1	169	2.3	5.42E-08	49.71	2.13E-05	18.56	1.50E-04	5.37	1.71E-04
Front Index Section 2	195	2.3	6.90E-08	53.26	1.51E-05	8.81	1.32E-04	6.11	1.47E-04
Front Index Section 3	221	2.3	2.70E-08	4.43	2.35E-05	14.98	1.31E-04	6.25	1.54E-04
Front Index Section 4	247	2.3	5.11E-08	49.15	1.48E-05	9.59	1.22E-04	6.26	1.37E-04
Front Index Section 5	273	2.3	2.73E-08	4.95	1.43E-05	8.90	1.19E-04	6.07	1.34E-04
Front Index Section 6	299	2.3	2.49E-08	5.27	1.84E-05	16.45	1.04E-04	9.16	1.23E-04
Front Index Section 7	325	2.3	9.18E-08	70.18	1.64E-05	14.96	1.11E-04	6.47	1.27E-04
Front Index Section 8	351	1.15	2.92E-08	11.55	1.41E-05	16.15	1.03E-04	7.86	1.17E-04
<b>Front Thumb (Tally 46)</b>									
Front Thumb Tip	157	1.081	3.61E-06	28.84	1.65E-05	38.03	5.10E-04	4.10	5.30E-04
Front Thumb Section 1	182	2.3	4.41E-06	19.41	2.26E-05	14.52	4.86E-04	3.70	5.13E-04
Front Thumb Section 2	208	2.3	3.24E-06	20.80	2.08E-05	12.29	4.95E-04	5.22	5.20E-04
Front Thumb Section 3	234	2.3	2.86E-06	19.95	2.23E-05	13.50	4.66E-04	4.06	4.92E-04
Front Thumb Section 4	260	2.3	3.03E-06	20.65	2.14E-05	9.65	4.58E-04	3.92	4.82E-04
Front Thumb Section 5	286	2.3	3.52E-06	22.06	2.35E-05	15.83	4.45E-04	3.72	4.72E-04
Front Thumb Section 6	312	2.3	4.40E-06	20.60	1.77E-05	7.97	4.17E-04	3.77	4.39E-04
Front Thumb Section 7	338	2.3	4.18E-06	22.26	2.27E-05	13.00	4.01E-04	3.82	4.28E-04
Front Thumb Section 8	364	1.15	1.88E-06	12.88	1.79E-05	12.89	3.99E-04	6.08	4.18E-04
<b>Front Middle Finger (Tally 56)</b>									
Front Middle Finger Tip	561	1.081	1.35E-08	7.39	1.31E-05	22.05	6.08E-06	19.17	1.92E-05
Front Middle Finger Section 1	573	2.3	1.55E-08	6.37	1.37E-05	15.22	1.64E-06	62.37	1.53E-05
Front Middle Finger Section 2	586	2.3	1.46E-08	4.75	1.28E-05	17.87	1.26E-06	52.03	1.41E-05
Front Middle Finger Section 3	599	2.3	1.69E-08	6.21	1.28E-05	16.32	3.48E-07	53.75	1.31E-05
Front Middle Finger Section 4	612	2.3	1.66E-08	5.88	1.27E-05	25.89	6.36E-07	31.02	1.34E-05
Front Middle Finger Section 5	625	2.3	4.96E-08	41.63	1.41E-05	22.10	9.05E-07	42.39	1.51E-05
Front Middle Finger Section 6	638	2.3	1.51E-08	4.41	9.81E-06	12.70	9.15E-07	54.13	1.07E-05
Front Middle Finger Section 7	651	2.3	1.75E-08	5.04	1.10E-05	12.70	2.22E-06	73.45	1.32E-05
Front Middle Finger Section 8	664	1.15	6.73E-08	71.95	1.60E-05	37.72	3.61E-07	64.22	1.65E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Back Index (Tally 66)</b>									
Back Index Tip	144	1.081	1.58E-08	8.56	1.02E-05	16.82	1.62E-06	100.00	1.18E-05
Back Index Section 1	172	2.3	1.56E-08	7.85	1.29E-05	16.17	0.00E+00	100.00	1.10E-05
Back Index Section 2	198	2.3	1.69E-08	5.65	9.62E-06	10.53	0.00E+00	0.00	9.64E-06
Back Index Section 3	224	2.3	1.82E-08	5.49	1.42E-05	14.91	3.98E-07	100.00	1.46E-05
Back Index Section 4	250	2.3	1.76E-08	5.69	1.70E-05	15.35	4.41E-08	100.00	1.71E-05
Back Index Section 5	276	2.3	1.03E-07	78.91	1.12E-05	12.82	0.00E+00	0.00	1.13E-05
Back Index Section 6	302	2.3	1.89E-08	7.72	9.72E-06	10.48	6.34E-08	100.00	9.80E-06
Back Index Section 7	328	2.3	1.78E-08	5.51	1.18E-05	16.44	0.00E+00	0.00	1.18E-05
Back Index Section 8	354	1.15	1.81E-08	8.05	7.95E-06	10.62	1.27E-07	100.00	8.10E-06
<b>Back Thumb (Tally 76)</b>									
Back Thumb Tip	160	1.081	6.07E-07	76.98	2.04E-05	20.06	8.16E-07	48.35	2.18E-05
Back Thumb Section 1	185	2.3	3.37E-07	63.44	1.57E-05	9.35	7.30E-08	71.34	1.61E-05
Back Thumb Section 2	211	2.3	1.33E-07	19.11	1.39E-05	9.72	8.31E-07	60.87	1.49E-05
Back Thumb Section 3	237	2.3	1.48E-07	15.72	2.23E-05	20.88	2.01E-07	72.83	2.26E-05
Back Thumb Section 4	263	2.3	2.36E-07	41.40	1.48E-05	18.07	7.06E-08	71.48	1.51E-05
Back Thumb Section 5	289	2.3	4.31E-07	61.37	1.96E-05	17.36	7.97E-07	43.22	2.09E-05
Back Thumb Section 6	315	2.3	2.00E-07	49.21	1.88E-05	18.53	4.05E-07	41.46	1.94E-05
Back Thumb Section 7	341	2.3	1.26E-07	19.06	1.27E-05	9.10	1.24E-06	59.19	1.41E-05
Back Thumb Section 8	367	1.15	9.54E-08	2.54	9.56E-06	8.52	1.23E-06	79.56	1.09E-05
<b>Back Middle Finger (Tally 86)</b>									
Back Middle Finger Tip	564	1.081	7.44E-09	14.08	5.08E-06	8.01	2.09E-06	52.05	7.18E-06
Back Middle Finger Section 1	576	2.3	7.49E-09	7.95	8.39E-06	17.39	3.02E-07	55.76	8.69E-06
Back Middle Finger Section 2	589	2.3	8.72E-09	7.93	1.17E-05	21.68	2.10E-07	61.14	1.19E-05
Back Middle Finger Section 3	602	2.3	9.04E-09	6.75	7.37E-06	22.03	0.00E+00	0.00	7.38E-06
Back Middle Finger Section 4	615	2.3	8.58E-09	8.37	7.20E-06	12.66	0.00E+00	0.00	7.21E-06
Back Middle Finger Section 5	628	2.3	9.99E-09	7.85	7.25E-06	12.41	3.66E-07	92.31	7.63E-06
Back Middle Finger Section 6	641	2.3	1.07E-08	7.40	6.32E-06	12.00	6.82E-07	89.71	7.02E-06
Back Middle Finger Section 7	654	2.3	1.51E-08	24.18	7.08E-06	37.20	5.33E-08	100.00	7.15E-06
Back Middle Finger Section 8	667	1.15	1.04E-08	9.63	6.79E-06	22.86	1.26E-07	100.00	6.93E-06

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Outer Index (Tally 96)</b>									
Outer Index Tip	138	0.94	4.30E-08	25.23	1.32E-05	24.52	1.35E-06	43.59	1.46E-05
Outer Index Section 1	166	2	3.20E-08	5.94	1.81E-05	16.32	2.36E-06	51.97	2.05E-05
Outer Index Section 2	192	2	7.68E-08	38.80	1.48E-05	19.73	5.32E-07	46.90	1.54E-05
Outer Index Section 3	218	2	3.26E-08	5.75	1.98E-05	27.90	7.87E-07	39.31	2.07E-05
Outer Index Section 4	244	2	2.99E-08	6.09	1.58E-05	13.02	6.03E-07	44.15	1.64E-05
Outer Index Section 5	270	2	1.03E-07	65.14	2.40E-05	18.44	5.41E-07	44.13	2.47E-05
Outer Index Section 6	296	2	4.83E-08	44.95	1.84E-05	17.57	2.70E-07	60.77	1.88E-05
Outer Index Section 7	322	2	2.86E-08	6.83	1.52E-05	11.73	1.86E-06	67.10	1.71E-05
Outer Index Section 8	348	1	2.78E-08	9.01	1.17E-05	21.14	5.43E-07	54.27	1.23E-05
<b>Outer Thumb (Tally 106)</b>									
Outer Thumb Tip	154	0.94	3.13E-06	46.80	1.57E-05	16.06	3.85E-05	18.95	5.73E-05
Outer Thumb Section 1	179	2	5.95E-07	13.88	1.63E-05	12.03	1.04E-05	100.00	2.72E-05
Outer Thumb Section 2	205	2	1.13E-06	36.57	1.47E-05	9.08	3.91E-05	12.52	5.49E-05
Outer Thumb Section 3	231	2	8.95E-07	44.62	1.88E-05	10.75	4.01E-05	12.92	5.98E-05
Outer Thumb Section 4	257	2	5.14E-07	12.41	1.95E-05	13.08	4.07E-05	10.19	6.07E-05
Outer Thumb Section 5	283	2	7.52E-07	30.12	1.72E-05	15.10	4.93E-05	10.72	6.72E-05
Outer Thumb Section 6	309	2	8.97E-07	46.31	1.85E-05	18.36	3.89E-05	9.68	5.83E-05
Outer Thumb Section 7	335	2	3.88E-07	7.45	1.96E-05	19.61	4.65E-05	11.76	6.64E-05
Outer Thumb Section 8	361	1	3.97E-07	9.09	2.34E-05	24.43	4.14E-05	26.47	6.52E-05
<b>Outer Middle Finger (Tally 116)</b>									
Outer Middle Finger Tip	558	0.94	4.94E-08	55.55	1.03E-05	20.27	4.31E-07	82.87	1.08E-05
Outer Middle Finger Section 1	570	2	2.02E-08	29.90	1.67E-05	22.14	2.10E-07	80.31	1.69E-05
Outer Middle Finger Section 2	583	2	1.75E-08	8.86	1.16E-05	24.67	3.88E-07	51.54	1.20E-05
Outer Middle Finger Section 3	596	2	1.50E-08	8.78	1.02E-05	15.87	3.34E-07	49.71	1.05E-05
Outer Middle Finger Section 4	609	2	7.43E-08	72.88	9.91E-06	15.34	3.27E-07	77.06	1.03E-05
Outer Middle Finger Section 5	622	2	1.82E-08	14.61	1.19E-05	17.48	7.21E-08	72.31	1.20E-05
Outer Middle Finger Section 6	635	2	1.97E-08	34.47	7.60E-06	76.58	2.14E-07	100.00	7.84E-06
Outer Middle Finger Section 7	648	2	1.40E-08	8.82	8.96E-06	42.93	0.00E+00	0.00	8.97E-06
Outer Middle Finger Section 8	661	1	3.45E-08	67.89	6.88E-06	11.54	1.77E-07	100.00	7.09E-06
<b>Tip of Fingers (Tally 126)</b>									
Index Tip	131	4.42	2.32E-08	22.21	1.84E-05	16.40	7.36E-06	14.44	2.58E-05
Thumb Tip	147	4.42	7.93E-07	33.59	1.98E-05	11.81	3.31E-05	11.62	5.37E-05
Middle Finger Tip	551	4.42	1.37E-07	90.48	6.93E-06	19.40	6.77E-06	17.03	1.38E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
1st Half Under Palm Ext. (Tally 136)	371	6.2284	3.58E-06	12.67	1.84E-05	8.63	2.16E-04	3.39	2.38E-04
2nd Half Under Palm Ext. (Tally 146)	381	6.2284	3.71E-06	12.64	2.18E-05	13.54	2.35E-04	3.81	2.61E-04
Between Index/Thumb (Tally 156)	120	0.5232	5.38E-07	82.04	1.24E-05	17.64	2.98E-05	26.57	4.28E-05
Between Index/Middle (Tally 166)	710	1.326	5.99E-08	71.49	1.22E-05	27.09	2.27E-07	100.00	1.25E-05
Palm Behind Thumb (Tally 176)	117	5.98	2.80E-07	46.38	1.14E-05	14.39	4.26E-06	18.20	1.60E-05
1st Half Under Palm Ext. Mid (Tally 186)	481	8.09692	2.22E-06	13.07	1.71E-05	9.66	1.25E-04	3.69	1.45E-04
2nd Half Under Palm Ext. Mid (Tally 196)	487	8.09692	3.00E-06	12.61	1.70E-05	9.32	1.48E-04	3.74	1.68E-04
Front Face of Index/Thumb (Tally 206)	101	16.7006	1.43E-06	12.60	1.57E-05	5.54	2.16E-04	2.07	2.33E-04
Palm Back Between Index/Middle (Tally 396)	707	1.15104	1.11E-07	31.62	1.23E-05	28.02	5.17E-06	31.22	1.76E-05
Palm Behind Thumb Back (Tally 406)	701	10.12	1.26E-07	37.16	1.06E-05	12.79	6.81E-06	14.38	1.75E-05
1st Half Palm Ext. Back (Tally 416)	484	13.7025	1.63E-06	12.89	1.14E-05	8.74	6.19E-05	5.97	7.48E-05
2nd Half Palm Ext. Back (Tally 426)	490	13.7025	2.09E-06	10.99	1.02E-05	13.88	9.59E-05	3.35	1.08E-04
Palm Ext. Front Face 1st Half (Tally 436)	377	10.8997	3.86E-06	8.46	1.58E-05	6.53	5.65E-04	1.59	5.84E-04
Palm Ext. Front Face 2nd Half (Tally 446)	387	10.8997	4.32E-06	8.81	1.64E-05	5.77	6.24E-04	1.49	6.44E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	Total
Palm Behind Middle Finger (Tally 456)									
	114	9.724	8.74E-09	5.99	5.87E-06	9.57	7.01E-07	50.39	6.58E-06
Palm Arch beside Middle Finger (Tally 466)									
	704	0.68016	1.11E-07	24.48	1.61E-05	22.06	2.40E-06	30.94	1.86E-05

### B.2 Smearing Task 1 Nitrile, 3 Vinyl – MCNP Results of the 7 mg cm<sup>-2</sup> Cells

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Inner Index (Tally 6)</b>									
Inner Index Tip	135	0.94	1.28E-05	10.49	2.15E-03	2.49	9.47E-06	24.11	2.17E-03
Inner Index Section 1	163	2	9.18E-05	2.74	1.02E-02	0.80	3.33E-03	1.64	1.37E-02
Inner Index Section 2	189	2	2.65E-04	1.64	2.47E-02	0.53	1.30E-02	0.76	3.80E-02
Inner Index Section 3	215	2	1.08E-04	2.32	1.17E-02	0.76	4.33E-03	1.27	1.61E-02
Inner Index Section 4	241	2	1.10E-05	7.60	1.87E-03	2.09	1.36E-05	21.19	1.89E-03
Inner Index Section 5	267	2	4.71E-06	9.88	7.05E-04	2.97	9.59E-06	24.18	7.20E-04
Inner Index Section 6	293	2	2.53E-06	9.68	3.63E-04	4.19	3.14E-06	26.01	3.68E-04
Inner Index Section 7	319	2	1.39E-06	19.23	2.26E-04	5.36	2.60E-06	30.74	2.30E-04
Inner Index Section 8	345	1	1.05E-06	24.38	1.47E-04	8.14	3.52E-06	25.55	1.51E-04
<b>Inner Thumb (Tally 16)</b>									
Inner Thumb Tip	151	0.94	6.02E-05	6.18	2.52E-03	2.33	8.58E-05	7.98	2.66E-03
Inner Thumb Section 1	176	2	1.55E-03	1.07	1.14E-02	0.79	8.11E-02	0.31	9.41E-02
Inner Thumb Section 2	202	2	5.28E-03	0.59	2.85E-02	0.47	3.00E-01	0.16	3.34E-01
Inner Thumb Section 3	228	2	1.92E-03	0.97	1.34E-02	0.72	1.02E-01	0.28	1.18E-01
Inner Thumb Section 4	254	2	4.90E-05	4.40	2.16E-03	1.70	8.40E-05	7.66	2.29E-03
Inner Thumb Section 5	280	2	1.39E-05	6.75	8.36E-04	2.64	5.26E-06	36.43	8.55E-04
Inner Thumb Section 6	306	2	7.53E-06	11.21	4.53E-04	3.79	2.75E-06	26.34	4.63E-04
Inner Thumb Section 7	332	2	3.43E-06	12.59	2.86E-04	4.52	3.57E-06	41.73	2.93E-04
Inner Thumb Section 8	358	1	1.31E-06	12.93	1.90E-04	8.86	7.09E-06	34.57	1.98E-04
<b>Inner Middle Finger (Tally 26)</b>									
Inner Middle Finger Tip	555	0.94	3.28E-06	26.11	6.45E-04	5.02	1.83E-06	37.70	6.50E-04
Inner Middle Finger Section 1	567	2	5.86E-06	11.53	9.34E-04	2.74	1.22E-06	51.93	9.41E-04
Inner Middle Finger Section 2	580	2	6.02E-06	11.29	1.17E-03	2.34	4.06E-06	24.03	1.18E-03
Inner Middle Finger Section 3	593	2	4.94E-06	10.00	9.56E-04	2.55	3.68E-06	79.34	9.65E-04
Inner Middle Finger Section 4	606	2	3.79E-06	11.21	5.84E-04	3.18	9.53E-07	34.20	5.89E-04
Inner Middle Finger Section 5	619	2	2.63E-06	22.10	3.60E-04	4.17	3.20E-06	19.63	3.66E-04
Inner Middle Finger Section 6	632	2	2.15E-06	21.17	2.45E-04	6.01	4.75E-06	28.29	2.51E-04
Inner Middle Finger Section 7	645	2	1.47E-06	15.89	1.59E-04	6.14	2.43E-06	33.09	1.63E-04
Inner Middle Finger Section 8	658	1	1.30E-06	29.42	1.28E-04	11.46	6.75E-06	68.51	1.36E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Front Index (Tally 36)</b>									
Front Index Tip	141	1.081	1.33E-05	10.33	1.28E-03	2.81	0.00E+00	0.00	1.30E-03
Front Index Section 1	169	2.3	3.00E-05	5.24	2.37E-03	1.59	3.80E-07	39.99	2.40E-03
Front Index Section 2	195	2.3	4.57E-05	3.91	3.68E-03	1.24	7.94E-05	8.51	3.81E-03
Front Index Section 3	221	2.3	3.02E-05	5.11	2.46E-03	1.66	2.53E-06	47.59	2.49E-03
Front Index Section 4	247	2.3	1.24E-05	6.29	1.15E-03	2.31	5.95E-08	70.88	1.16E-03
Front Index Section 5	273	2.3	6.16E-06	10.36	5.81E-04	3.33	0.00E+00	0.00	5.87E-04
Front Index Section 6	299	2.3	2.50E-06	11.66	3.35E-04	4.33	4.69E-08	100.00	3.38E-04
Front Index Section 7	325	2.3	1.56E-06	14.71	2.17E-04	6.42	0.00E+00	0.00	2.19E-04
Front Index Section 8	351	1.15	8.50E-07	22.12	1.66E-04	8.33	0.00E+00	0.00	1.67E-04
<b>Front Thumb (Tally 46)</b>									
Front Thumb Tip	157	1.081	2.34E-05	7.77	1.26E-03	3.06	1.17E-06	58.78	1.29E-03
Front Thumb Section 1	182	2.3	6.33E-05	4.04	2.33E-03	1.64	1.20E-04	6.90	2.52E-03
Front Thumb Section 2	208	2.3	1.73E-04	2.74	3.75E-03	1.24	2.59E-03	1.65	6.52E-03
Front Thumb Section 3	234	2.3	6.97E-05	4.00	2.54E-03	1.43	2.07E-04	7.17	2.82E-03
Front Thumb Section 4	260	2.3	2.09E-05	6.01	1.16E-03	2.36	7.88E-07	93.68	1.18E-03
Front Thumb Section 5	286	2.3	8.19E-06	6.93	6.44E-04	2.90	2.01E-08	100.00	6.52E-04
Front Thumb Section 6	312	2.3	4.05E-06	7.47	3.36E-04	5.17	0.00E+00	0.00	3.40E-04
Front Thumb Section 7	338	2.3	2.79E-06	15.20	2.17E-04	4.15	0.00E+00	0.00	2.20E-04
Front Thumb Section 8	364	1.15	2.49E-06	25.99	1.23E-04	21.08	0.00E+00	0.00	1.25E-04
<b>Front Middle Finger (Tally 56)</b>									
Front Middle Finger Tip	561	1.081	1.16E-05	10.42	9.87E-04	3.26	1.83E-06	34.30	1.00E-03
Front Middle Finger Section 1	573	2.3	1.66E-05	6.44	1.49E-03	1.84	1.52E-06	69.31	1.51E-03
Front Middle Finger Section 2	586	2.3	2.51E-05	5.14	1.94E-03	1.65	7.74E-06	29.44	1.97E-03
Front Middle Finger Section 3	599	2.3	1.84E-05	5.75	1.58E-03	1.81	1.65E-06	29.77	1.60E-03
Front Middle Finger Section 4	612	2.3	1.00E-05	8.48	9.96E-04	2.43	9.94E-07	27.57	1.01E-03
Front Middle Finger Section 5	625	2.3	6.77E-06	11.99	5.84E-04	3.19	1.77E-06	48.42	5.92E-04
Front Middle Finger Section 6	638	2.3	3.97E-06	14.21	3.53E-04	4.22	1.30E-06	26.95	3.58E-04
Front Middle Finger Section 7	651	2.3	1.93E-06	14.92	2.14E-04	4.75	1.04E-06	36.80	2.17E-04
Front Middle Finger Section 8	664	1.15	8.69E-07	6.74	1.69E-04	12.28	2.79E-06	46.24	1.73E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Back Index (Tally 66)</b>									
Back Index Tip	144	1.081	1.25E-05	9.80	1.36E-03	2.96	5.07E-08	100.00	1.38E-03
Back Index Section 1	172	2.3	2.79E-05	4.68	2.26E-03	1.79	2.27E-07	47.37	2.29E-03
Back Index Section 2	198	2.3	4.66E-05	3.73	3.62E-03	1.27	7.93E-05	12.99	3.74E-03
Back Index Section 3	224	2.3	2.93E-05	4.50	2.47E-03	1.53	0.00E+00	100.00	2.50E-03
Back Index Section 4	250	2.3	1.46E-05	6.68	1.21E-03	2.31	1.79E-07	71.78	1.23E-03
Back Index Section 5	276	2.3	5.88E-06	9.50	6.22E-04	3.19	1.13E-07	57.75	6.28E-04
Back Index Section 6	302	2.3	3.77E-06	16.59	3.23E-04	3.65	5.39E-08	73.55	3.26E-04
Back Index Section 7	328	2.3	1.46E-06	12.50	2.05E-04	4.61	2.71E-07	46.77	2.06E-04
Back Index Section 8	354	1.15	8.29E-07	11.70	1.48E-04	7.76	0.00E+00	0.00	1.49E-04
<b>Back Thumb (Tally 76)</b>									
Back Thumb Tip	160	1.081	2.42E-05	7.40	1.24E-03	3.11	1.23E-07	72.00	1.26E-03
Back Thumb Section 1	185	2.3	6.05E-05	3.99	2.28E-03	1.54	1.09E-04	6.35	2.45E-03
Back Thumb Section 2	211	2.3	1.70E-04	2.66	3.86E-03	1.20	2.46E-03	1.94	6.49E-03
Back Thumb Section 3	237	2.3	6.86E-05	3.83	2.48E-03	1.51	1.95E-04	6.58	2.75E-03
Back Thumb Section 4	263	2.3	2.00E-05	5.22	1.20E-03	2.00	7.40E-07	41.96	1.22E-03
Back Thumb Section 5	289	2.3	1.02E-05	7.61	6.00E-04	3.13	3.54E-08	100.00	6.10E-04
Back Thumb Section 6	315	2.3	4.94E-06	9.94	3.95E-04	3.92	0.00E+00	100.00	3.97E-04
Back Thumb Section 7	341	2.3	3.21E-06	14.68	2.29E-04	4.87	3.95E-08	100.00	2.32E-04
Back Thumb Section 8	367	1.15	2.79E-06	27.00	1.67E-04	6.85	5.78E-08	100.00	1.70E-04
<b>Back Middle Finger (Tally 86)</b>									
Back Middle Finger Tip	564	1.081	2.69E-06	21.86	3.48E-04	5.30	0.00E+00	0.00	3.51E-04
Back Middle Finger Section 1	576	2.3	2.98E-06	11.80	4.19E-04	3.26	0.00E+00	0.00	4.22E-04
Back Middle Finger Section 2	589	2.3	3.85E-06	14.39	4.42E-04	3.75	2.93E-08	100.00	4.46E-04
Back Middle Finger Section 3	602	2.3	3.43E-06	12.67	4.28E-04	3.63	0.00E+00	0.00	4.32E-04
Back Middle Finger Section 4	615	2.3	2.78E-06	13.07	3.32E-04	4.73	0.00E+00	0.00	3.35E-04
Back Middle Finger Section 5	628	2.3	1.80E-06	14.49	2.54E-04	4.51	0.00E+00	0.00	2.56E-04
Back Middle Finger Section 6	641	2.3	1.52E-06	24.46	1.91E-04	5.15	0.00E+00	0.00	1.92E-04
Back Middle Finger Section 7	654	2.3	8.30E-07	16.52	1.43E-04	5.53	0.00E+00	0.00	1.44E-04
Back Middle Finger Section 8	667	1.15	8.78E-07	29.89	1.32E-04	10.65	0.00E+00	0.00	1.33E-04



Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Outer Index (Tally 96)</b>									
Outer Index Tip	138	0.94	6.15E-06	13.19	7.39E-04	4.23	1.34E-06	100.00	7.46E-04
Outer Index Section 1	166	2	9.56E-06	9.39	9.60E-04	2.59	0.00E+00	0.00	9.69E-04
Outer Index Section 2	192	2	1.28E-05	7.04	1.09E-03	2.31	0.00E+00	0.00	1.10E-03
Outer Index Section 3	218	2	1.08E-05	8.58	9.49E-04	2.49	0.00E+00	0.00	9.60E-04
Outer Index Section 4	244	2	7.93E-06	9.69	6.86E-04	2.80	0.00E+00	0.00	6.93E-04
Outer Index Section 5	270	2	3.41E-06	10.12	4.28E-04	3.53	0.00E+00	0.00	4.31E-04
Outer Index Section 6	296	2	2.05E-06	19.45	2.68E-04	4.02	0.00E+00	0.00	2.70E-04
Outer Index Section 7	322	2	1.01E-06	15.77	1.86E-04	5.48	0.00E+00	0.00	1.87E-04
Outer Index Section 8	348	1	5.74E-07	18.22	1.40E-04	8.07	0.00E+00	0.00	1.40E-04
<b>Outer Thumb (Tally 106)</b>									
Outer Thumb Tip	154	0.94	1.15E-05	13.37	6.86E-04	4.33	0.00E+00	0.00	6.98E-04
Outer Thumb Section 1	179	2	9.73E-06	5.81	8.96E-04	2.48	0.00E+00	0.00	9.05E-04
Outer Thumb Section 2	205	2	1.46E-05	7.06	1.11E-03	2.41	0.00E+00	0.00	1.13E-03
Outer Thumb Section 3	231	2	1.11E-05	6.23	9.15E-04	2.59	0.00E+00	0.00	9.26E-04
Outer Thumb Section 4	257	2	1.04E-05	9.70	6.84E-04	3.63	0.00E+00	0.00	6.94E-04
Outer Thumb Section 5	283	2	5.40E-06	11.86	4.11E-04	3.82	0.00E+00	0.00	4.16E-04
Outer Thumb Section 6	309	2	3.49E-06	14.72	2.93E-04	4.42	0.00E+00	0.00	2.97E-04
Outer Thumb Section 7	335	2	1.84E-06	18.30	2.00E-04	6.00	0.00E+00	0.00	2.02E-04
Outer Thumb Section 8	361	1	8.59E-07	16.56	1.20E-04	7.64	0.00E+00	0.00	1.21E-04
<b>Outer Middle Finger (Tally 116)</b>									
Outer Middle Finger Tip	558	0.94	4.03E-06	13.80	4.47E-04	5.10	0.00E+00	0.00	4.51E-04
Outer Middle Finger Section 1	570	2	6.21E-06	9.67	5.57E-04	3.26	0.00E+00	0.00	5.64E-04
Outer Middle Finger Section 2	583	2	6.73E-06	9.15	5.84E-04	3.20	0.00E+00	0.00	5.91E-04
Outer Middle Finger Section 3	596	2	6.30E-06	11.92	5.27E-04	3.20	0.00E+00	0.00	5.33E-04
Outer Middle Finger Section 4	609	2	4.79E-06	11.59	4.36E-04	3.62	0.00E+00	0.00	4.41E-04
Outer Middle Finger Section 5	622	2	2.70E-06	9.20	3.19E-04	4.06	0.00E+00	0.00	3.22E-04
Outer Middle Finger Section 6	635	2	2.55E-06	17.30	2.40E-04	4.37	0.00E+00	0.00	2.42E-04
Outer Middle Finger Section 7	648	2	1.48E-06	15.75	1.72E-04	5.45	0.00E+00	0.00	1.73E-04
Outer Middle Finger Section 8	661	1	8.49E-07	15.89	1.25E-04	9.56	0.00E+00	0.00	1.25E-04
<b>Tip of Fingers (Tally 126)</b>									
Index Tip	131	4.42	1.36E-05	5.11	1.25E-03	1.49	0.00E+00	100.00	1.26E-03
Thumb Tip	147	4.42	2.18E-05	4.21	1.27E-03	1.40	2.37E-07	45.25	1.29E-03
Middle Finger Tip	551	4.42	5.31E-06	6.70	5.67E-04	2.15	1.39E-08	100.00	5.72E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
1st Half Under Palm Ext. (Tally 136)	371	6.2284	1.31E-06	13.14	1.06E-04	3.51	1.29E-08	100.00	1.07E-04
2nd Half Under Palm Ext. (Tally 146)	381	6.2284	9.72E-07	11.93	7.50E-05	5.77	3.47E-07	80.48	7.63E-05
Between Index/Thumb (Tally 156)	120	0.5232	1.93E-06	23.61	1.82E-04	8.71	4.35E-04	6.66	6.19E-04
Between Index/Middle (Tally 166)	710	1.326	1.47E-06	21.68	1.53E-04	9.33	8.51E-06	17.64	1.63E-04
Palm Behind Thumb (Tally 176)	117	5.98	3.58E-06	11.17	1.64E-04	3.34	2.75E-05	8.77	1.96E-04
1st Half Under Palm Ext. Mid (Tally 186)	481	8.09692	1.95E-06	8.80	1.25E-04	3.28	2.19E-06	19.11	1.29E-04
2nd Half Under Palm Ext. Mid (Tally 196)	487	8.09692	1.19E-06	15.34	7.16E-05	4.24	1.33E-06	34.82	7.41E-05
Front Face of Index/Thumb (Tally 206)	101	16.7006	8.84E-07	11.39	8.96E-05	3.46	7.70E-07	40.11	9.13E-05
Palm Back Between Index/Middle (Tally 396)	707	1.15104	1.05E-06	13.11	1.09E-04	7.02	1.17E-04	6.97	2.27E-04
Palm Behind Thumb Back (Tally 406)	701	10.12	3.70E-06	7.94	1.17E-04	2.89	3.97E-05	4.65	1.61E-04
1st Half Palm Ext. Back (Tally 416)	484	13.7025	2.43E-06	7.12	9.30E-05	2.85	5.84E-06	10.50	1.01E-04
2nd Half Palm Ext. Back (Tally 426)	490	13.7025	1.42E-06	10.01	7.08E-05	3.86	1.18E-06	18.49	7.34E-05
Palm Ext. Front Face 1st Half (Tally 436)	377	10.8997	6.18E-07	13.24	6.51E-05	4.66	0.00E+00	0.00	6.57E-05
Palm Ext. Front Face 2nd Half (Tally 446)	387	10.8997	6.26E-07	15.77	5.91E-05	5.20	2.07E-08	100.00	5.97E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	Total
Palm Behind Middle Finger (Tally 456)									
	114	9.724	6.98E-07	14.09	7.96E-05	3.95	7.53E-07	26.79	8.10E-05
Palm Arch beside Middle Finger (Tally 466)									
	704	0.68016	3.27E-06	33.46	1.99E-04	8.89	1.83E-04	10.40	3.85E-04

### B.3 Smearing Task 1 Nitrile, 2 Vinyl – MCNP Results of the 7 mg cm<sup>-2</sup> Cells

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Inner Index (Tally 6)</b>									
Inner Index Tip	135	0.94	1.32E-05	10.89	2.24E-03	2.42	5.03E-05	12.21	2.30E-03
Inner Index Section 1	163	2	9.07E-05	2.75	1.02E-02	0.79	4.55E-03	1.29	1.48E-02
Inner Index Section 2	189	2	2.64E-04	1.63	2.51E-02	0.54	1.70E-02	0.72	4.24E-02
Inner Index Section 3	215	2	1.08E-04	2.32	1.18E-02	0.75	5.75E-03	1.11	1.77E-02
Inner Index Section 4	241	2	1.12E-05	7.88	1.85E-03	2.08	6.54E-05	9.39	1.93E-03
Inner Index Section 5	267	2	5.12E-06	10.14	7.24E-04	3.60	3.86E-05	13.17	7.68E-04
Inner Index Section 6	293	2	2.74E-06	9.79	3.72E-04	4.61	1.63E-05	17.72	3.92E-04
Inner Index Section 7	319	2	1.47E-06	19.22	2.24E-04	5.94	9.90E-06	25.92	2.35E-04
Inner Index Section 8	345	1	9.10E-07	24.75	1.46E-04	7.05	1.06E-05	27.13	1.57E-04
<b>Inner Thumb (Tally 16)</b>									
Inner Thumb Tip	151	0.94	8.45E-05	5.87	2.46E-03	2.44	4.24E-04	6.25	2.97E-03
Inner Thumb Section 1	176	2	1.80E-03	1.00	1.14E-02	0.78	1.17E-01	0.27	1.30E-01
Inner Thumb Section 2	202	2	5.97E-03	0.56	2.86E-02	0.47	4.25E-01	0.14	4.60E-01
Inner Thumb Section 3	228	2	2.20E-03	0.90	1.36E-02	0.70	1.47E-01	0.24	1.63E-01
Inner Thumb Section 4	254	2	6.47E-05	4.24	2.18E-03	1.74	3.27E-04	4.25	2.57E-03
Inner Thumb Section 5	280	2	1.58E-05	6.55	8.47E-04	2.99	2.10E-05	28.94	8.83E-04
Inner Thumb Section 6	306	2	7.69E-06	10.99	4.91E-04	3.73	1.14E-05	18.73	5.10E-04
Inner Thumb Section 7	332	2	3.38E-06	11.54	2.91E-04	4.67	7.20E-06	20.13	3.02E-04
Inner Thumb Section 8	358	1	1.99E-06	28.42	2.08E-04	8.42	1.17E-05	17.77	2.22E-04
<b>Inner Middle Finger (Tally 26)</b>									
Inner Middle Finger Tip	555	0.94	3.31E-06	27.06	6.33E-04	4.35	2.23E-05	30.74	6.58E-04
Inner Middle Finger Section 1	567	2	5.26E-06	10.65	9.66E-04	2.57	9.63E-06	36.32	9.80E-04
Inner Middle Finger Section 2	580	2	6.06E-06	11.30	1.19E-03	2.42	1.02E-05	18.57	1.20E-03
Inner Middle Finger Section 3	593	2	4.80E-06	10.17	9.66E-04	2.62	5.06E-06	18.02	9.76E-04
Inner Middle Finger Section 4	606	2	3.97E-06	11.26	6.14E-04	3.11	8.95E-06	46.86	6.26E-04
Inner Middle Finger Section 5	619	2	2.56E-06	22.60	3.58E-04	4.55	1.76E-05	17.96	3.78E-04
Inner Middle Finger Section 6	632	2	2.21E-06	21.06	2.39E-04	5.56	1.27E-05	23.32	2.54E-04
Inner Middle Finger Section 7	645	2	1.50E-06	18.17	1.54E-04	6.13	5.06E-06	26.93	1.61E-04
Inner Middle Finger Section 8	658	1	1.13E-06	30.06	1.38E-04	9.81	5.90E-06	30.20	1.45E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Front Index (Tally 36)</b>									
Front Index Tip	141	1.081	1.35E-05	10.31	1.30E-03	2.81	6.51E-07	37.35	1.31E-03
Front Index Section 1	169	2.3	2.99E-05	5.24	2.38E-03	1.63	1.58E-06	29.35	2.41E-03
Front Index Section 2	195	2.3	4.51E-05	3.94	3.69E-03	1.26	1.26E-04	6.89	3.87E-03
Front Index Section 3	221	2.3	3.04E-05	5.02	2.48E-03	1.64	5.97E-06	29.19	2.51E-03
Front Index Section 4	247	2.3	1.18E-05	6.18	1.16E-03	2.30	7.39E-07	37.94	1.17E-03
Front Index Section 5	273	2.3	6.01E-06	10.59	5.78E-04	3.42	3.33E-07	49.92	5.85E-04
Front Index Section 6	299	2.3	2.41E-06	11.97	3.36E-04	4.26	2.96E-07	72.05	3.39E-04
Front Index Section 7	325	2.3	1.64E-06	15.65	2.23E-04	6.35	1.19E-07	54.76	2.25E-04
Front Index Section 8	351	1.15	8.42E-07	22.33	1.69E-04	8.51	2.67E-07	84.35	1.70E-04
<b>Front Thumb (Tally 46)</b>									
Front Thumb Tip	157	1.081	2.37E-05	7.71	1.27E-03	3.05	2.82E-06	29.56	1.30E-03
Front Thumb Section 1	182	2.3	6.73E-05	4.03	2.32E-03	1.63	2.04E-04	5.03	2.59E-03
Front Thumb Section 2	208	2.3	1.86E-04	2.68	3.73E-03	1.24	3.70E-03	1.39	7.62E-03
Front Thumb Section 3	234	2.3	7.33E-05	3.89	2.53E-03	1.43	3.66E-04	4.10	2.96E-03
Front Thumb Section 4	260	2.3	2.14E-05	5.99	1.18E-03	2.36	2.42E-06	37.84	1.20E-03
Front Thumb Section 5	286	2.3	7.97E-06	7.00	6.34E-04	2.94	7.74E-07	40.95	6.42E-04
Front Thumb Section 6	312	2.3	4.02E-06	7.55	3.36E-04	5.18	2.34E-07	65.19	3.41E-04
Front Thumb Section 7	338	2.3	3.02E-06	14.71	2.22E-04	4.20	0.00E+00	0.00	2.25E-04
Front Thumb Section 8	364	1.15	2.49E-06	25.95	1.20E-04	21.56	2.63E-07	100.00	1.23E-04
<b>Front Middle Finger (Tally 56)</b>									
Front Middle Finger Tip	561	1.081	1.07E-05	10.48	1.03E-03	3.20	7.23E-06	23.23	1.05E-03
Front Middle Finger Section 1	573	2.3	1.58E-05	5.56	1.49E-03	1.99	8.76E-06	16.19	1.51E-03
Front Middle Finger Section 2	586	2.3	2.48E-05	4.97	1.95E-03	1.66	2.37E-05	11.36	2.00E-03
Front Middle Finger Section 3	599	2.3	1.85E-05	5.78	1.56E-03	1.83	1.11E-05	19.09	1.59E-03
Front Middle Finger Section 4	612	2.3	1.03E-05	8.62	9.83E-04	2.35	1.00E-05	15.67	1.00E-03
Front Middle Finger Section 5	625	2.3	6.86E-06	11.86	5.80E-04	3.16	1.20E-05	17.67	5.99E-04
Front Middle Finger Section 6	638	2.3	3.70E-06	14.33	3.62E-04	4.33	1.04E-05	25.31	3.76E-04
Front Middle Finger Section 7	651	2.3	2.02E-06	14.56	2.29E-04	5.15	4.94E-06	25.01	2.36E-04
Front Middle Finger Section 8	664	1.15	8.91E-07	6.80	1.76E-04	13.64	4.48E-06	24.86	1.82E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Back Index (Tally 66)</b>									
Back Index Tip	144	1.081	1.26E-05	9.78	1.33E-03	2.91	5.51E-07	51.04	1.34E-03
Back Index Section 1	172	2.3	2.73E-05	4.71	2.29E-03	1.76	1.26E-06	27.81	2.32E-03
Back Index Section 2	198	2.3	4.56E-05	3.68	3.62E-03	1.24	1.13E-04	7.60	3.78E-03
Back Index Section 3	224	2.3	3.02E-05	4.70	2.46E-03	1.53	8.32E-06	39.65	2.50E-03
Back Index Section 4	250	2.3	1.44E-05	6.71	1.21E-03	2.33	1.02E-06	31.69	1.22E-03
Back Index Section 5	276	2.3	5.51E-06	8.98	6.24E-04	3.11	1.94E-06	40.08	6.32E-04
Back Index Section 6	302	2.3	3.80E-06	16.86	3.25E-04	3.73	1.19E-06	57.85	3.30E-04
Back Index Section 7	328	2.3	1.47E-06	12.64	2.03E-04	4.59	4.84E-07	36.79	2.05E-04
Back Index Section 8	354	1.15	9.01E-07	13.59	1.55E-04	7.81	1.79E-06	66.91	1.58E-04
<b>Back Thumb (Tally 76)</b>									
Back Thumb Tip	160	1.081	2.45E-05	7.76	1.23E-03	3.02	3.50E-06	100.00	1.26E-03
Back Thumb Section 1	185	2.3	6.32E-05	3.95	2.30E-03	1.57	2.07E-04	5.15	2.57E-03
Back Thumb Section 2	211	2.3	1.84E-04	2.61	3.86E-03	1.20	3.72E-03	1.43	7.77E-03
Back Thumb Section 3	237	2.3	7.32E-05	3.81	2.51E-03	1.50	3.27E-04	4.54	2.91E-03
Back Thumb Section 4	263	2.3	2.01E-05	5.18	1.20E-03	2.00	4.30E-06	31.82	1.23E-03
Back Thumb Section 5	289	2.3	1.01E-05	7.70	6.02E-04	3.11	2.97E-07	58.00	6.13E-04
Back Thumb Section 6	315	2.3	4.80E-06	10.06	3.96E-04	3.87	6.82E-07	52.14	4.01E-04
Back Thumb Section 7	341	2.3	3.25E-06	13.88	2.36E-04	4.91	0.00E+00	0.00	2.40E-04
Back Thumb Section 8	367	1.15	2.77E-06	26.89	1.73E-04	6.84	2.91E-06	70.55	1.78E-04
<b>Back Middle Finger (Tally 86)</b>									
Back Middle Finger Tip	564	1.081	2.87E-06	21.45	3.53E-04	5.51	0.00E+00	0.00	3.56E-04
Back Middle Finger Section 1	576	2.3	2.95E-06	11.63	4.18E-04	3.25	1.22E-07	71.90	4.21E-04
Back Middle Finger Section 2	589	2.3	3.53E-06	14.22	4.45E-04	3.71	0.00E+00	0.00	4.49E-04
Back Middle Finger Section 3	602	2.3	3.50E-06	12.60	4.32E-04	3.59	2.48E-08	100.00	4.36E-04
Back Middle Finger Section 4	615	2.3	2.61E-06	12.51	3.32E-04	4.70	5.10E-07	80.31	3.35E-04
Back Middle Finger Section 5	628	2.3	2.25E-06	16.78	2.51E-04	4.38	6.79E-08	70.77	2.54E-04
Back Middle Finger Section 6	641	2.3	1.48E-06	24.99	1.93E-04	5.13	3.81E-08	100.00	1.94E-04
Back Middle Finger Section 7	654	2.3	7.07E-07	10.86	1.47E-04	5.56	0.00E+00	0.00	1.48E-04
Back Middle Finger Section 8	667	1.15	8.78E-07	29.89	1.41E-04	10.97	0.00E+00	0.00	1.42E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Outer Index (Tally 96)</b>									
Outer Index Tip	138	0.94	5.55E-06	12.87	7.28E-04	4.19	0.00E+00	0.00	7.33E-04
Outer Index Section 1	166	2	9.07E-06	9.60	9.56E-04	2.59	0.00E+00	0.00	9.65E-04
Outer Index Section 2	192	2	1.25E-05	7.07	1.09E-03	2.31	0.00E+00	0.00	1.10E-03
Outer Index Section 3	218	2	1.07E-05	8.63	9.54E-04	2.49	0.00E+00	0.00	9.65E-04
Outer Index Section 4	244	2	8.07E-06	9.71	6.92E-04	2.77	0.00E+00	0.00	7.00E-04
Outer Index Section 5	270	2	3.11E-06	8.52	4.25E-04	3.51	0.00E+00	0.00	4.28E-04
Outer Index Section 6	296	2	2.09E-06	19.29	2.65E-04	3.92	0.00E+00	0.00	2.67E-04
Outer Index Section 7	322	2	9.07E-07	16.07	1.83E-04	5.51	0.00E+00	0.00	1.84E-04
Outer Index Section 8	348	1	5.65E-07	18.49	1.36E-04	8.18	0.00E+00	0.00	1.37E-04
<b>Outer Thumb (Tally 106)</b>									
Outer Thumb Tip	154	0.94	1.16E-05	13.53	6.84E-04	4.34	0.00E+00	0.00	6.96E-04
Outer Thumb Section 1	179	2	9.91E-06	5.91	8.89E-04	2.47	0.00E+00	0.00	8.99E-04
Outer Thumb Section 2	205	2	1.42E-05	7.14	1.12E-03	2.42	0.00E+00	0.00	1.13E-03
Outer Thumb Section 3	231	2	1.06E-05	6.33	9.12E-04	2.65	0.00E+00	0.00	9.22E-04
Outer Thumb Section 4	257	2	1.01E-05	9.88	6.93E-04	3.63	0.00E+00	0.00	7.03E-04
Outer Thumb Section 5	283	2	5.37E-06	11.93	4.11E-04	3.86	0.00E+00	0.00	4.16E-04
Outer Thumb Section 6	309	2	2.96E-06	14.21	2.86E-04	4.40	0.00E+00	0.00	2.89E-04
Outer Thumb Section 7	335	2	1.77E-06	18.82	1.96E-04	6.08	0.00E+00	0.00	1.98E-04
Outer Thumb Section 8	361	1	1.21E-06	31.32	1.27E-04	8.80	0.00E+00	0.00	1.28E-04
<b>Outer Middle Finger (Tally 116)</b>									
Outer Middle Finger Tip	558	0.94	3.86E-06	13.96	4.57E-04	5.08	0.00E+00	0.00	4.61E-04
Outer Middle Finger Section 1	570	2	6.07E-06	9.68	5.46E-04	3.21	0.00E+00	0.00	5.52E-04
Outer Middle Finger Section 2	583	2	6.77E-06	9.27	5.79E-04	3.24	0.00E+00	0.00	5.86E-04
Outer Middle Finger Section 3	596	2	5.90E-06	12.55	5.22E-04	3.11	0.00E+00	0.00	5.28E-04
Outer Middle Finger Section 4	609	2	4.81E-06	11.55	4.39E-04	3.59	0.00E+00	0.00	4.44E-04
Outer Middle Finger Section 5	622	2	2.98E-06	11.04	3.19E-04	4.03	0.00E+00	0.00	3.22E-04
Outer Middle Finger Section 6	635	2	2.48E-06	17.59	2.38E-04	4.55	0.00E+00	0.00	2.40E-04
Outer Middle Finger Section 7	648	2	1.41E-06	15.77	1.77E-04	5.47	0.00E+00	0.00	1.79E-04
Outer Middle Finger Section 8	661	1	1.69E-06	44.18	1.29E-04	9.75	0.00E+00	0.00	1.31E-04
<b>Tip of Fingers (Tally 126)</b>									
Index Tip	131	4.42	1.34E-05	5.18	1.25E-03	1.49	2.16E-06	39.05	1.26E-03
Thumb Tip	147	4.42	2.19E-05	4.24	1.27E-03	1.39	1.63E-06	34.49	1.29E-03
Middle Finger Tip	551	4.42	5.51E-06	7.15	5.71E-04	2.06	6.66E-07	45.56	5.77E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
1st Half Under Palm Ext. (Tally 136)	371	6.2284	1.34E-06	13.05	1.14E-04	3.80	3.61E-07	49.08	1.15E-04
2nd Half Under Palm Ext. (Tally 146)	381	6.2284	9.87E-07	11.92	7.59E-05	4.40	2.85E-07	51.67	7.72E-05
Between Index/Thumb (Tally 156)	120	0.5232	2.15E-06	22.11	2.07E-04	10.46	9.61E-04	4.48	1.17E-03
Between Index/Middle (Tally 166)	710	1.326	1.34E-06	21.82	1.69E-04	7.50	3.03E-05	11.93	2.00E-04
Palm Behind Thumb (Tally 176)	117	5.98	4.34E-06	11.04	1.68E-04	3.98	7.04E-05	6.39	2.43E-04
1st Half Under Palm Ext. Mid (Tally 186)	481	8.09692	1.99E-06	8.70	1.24E-04	3.21	8.13E-06	11.11	1.34E-04
2nd Half Under Palm Ext. Mid (Tally 196)	487	8.09692	1.20E-06	15.18	7.49E-05	4.79	1.82E-06	17.78	7.79E-05
Front Face of Index/Thumb (Tally 206)	101	16.7006	8.54E-07	11.43	8.91E-05	3.61	1.67E-06	26.88	9.17E-05
Palm Back Between Index/Middle (Tally 396)	707	1.15104	1.08E-06	13.10	1.11E-04	8.36	2.49E-04	6.15	3.62E-04
Palm Behind Thumb Back (Tally 406)	701	10.12	4.69E-06	6.97	1.24E-04	3.59	1.22E-04	3.58	2.50E-04
1st Half Palm Ext. Back (Tally 416)	484	13.7025	2.65E-06	7.35	9.24E-05	3.21	1.77E-05	7.34	1.13E-04
2nd Half Palm Ext. Back (Tally 426)	490	13.7025	1.57E-06	9.99	6.72E-05	4.01	5.74E-06	10.07	7.45E-05
Palm Ext. Front Face 1st Half (Tally 436)	377	10.8997	6.12E-07	13.29	6.71E-05	4.33	1.23E-08	72.68	6.77E-05
Palm Ext. Front Face 2nd Half (Tally 446)	387	10.8997	5.57E-07	15.55	5.92E-05	5.24	9.54E-08	41.21	5.98E-05



Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	Total
Palm Behind Middle Finger (Tally 456)									
	114	9.724	6.88E-07	14.23	8.15E-05	3.99	6.04E-06	13.25	8.82E-05
Palm Arch beside Middle Finger (Tally 466)									
	704	0.68016	3.35E-06	32.73	1.81E-04	12.08	4.98E-04	5.11	6.82E-04

#### B.4 Smearing Task 1 Nitrile, 1 Vinyl – MCNP Results of the 7 mg cm<sup>-2</sup> Cells

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Inner Index (Tally 6)</b>									
Inner Index Tip	135	0.94	1.30E-05	10.32	2.28E-03	2.67	1.54E-04	14.73	2.45E-03
Inner Index Section 1	163	2	9.17E-05	2.76	1.02E-02	0.81	5.93E-03	1.19	1.62E-02
Inner Index Section 2	189	2	2.64E-04	1.65	2.54E-02	0.53	2.29E-02	0.58	4.85E-02
Inner Index Section 3	215	2	1.07E-04	2.33	1.19E-02	0.76	7.72E-03	1.01	1.97E-02
Inner Index Section 4	241	2	1.04E-05	7.63	1.91E-03	1.93	1.95E-04	7.16	2.12E-03
Inner Index Section 5	267	2	5.13E-06	10.24	7.38E-04	3.07	1.56E-04	7.11	8.99E-04
Inner Index Section 6	293	2	2.91E-06	12.31	3.98E-04	4.10	6.51E-05	9.01	4.66E-04
Inner Index Section 7	319	2	1.32E-06	11.33	2.42E-04	4.90	4.89E-05	10.77	2.93E-04
Inner Index Section 8	345	1	9.41E-07	23.97	1.80E-04	9.16	3.42E-05	14.11	2.15E-04
<b>Inner Thumb (Tally 16)</b>									
Inner Thumb Tip	151	0.94	1.29E-04	5.17	2.65E-03	2.34	1.24E-03	3.81	4.02E-03
Inner Thumb Section 1	176	2	2.13E-03	0.92	1.17E-02	0.76	1.74E-01	0.22	1.87E-01
Inner Thumb Section 2	202	2	6.80E-03	0.53	2.86E-02	0.47	6.14E-01	0.11	6.49E-01
Inner Thumb Section 3	228	2	2.59E-03	0.84	1.36E-02	0.72	2.17E-01	0.19	2.33E-01
Inner Thumb Section 4	254	2	9.65E-05	3.88	2.27E-03	1.76	9.73E-04	2.75	3.34E-03
Inner Thumb Section 5	280	2	1.95E-05	7.34	9.16E-04	2.91	8.15E-05	8.13	1.02E-03
Inner Thumb Section 6	306	2	8.42E-06	10.88	4.80E-04	3.41	4.56E-05	11.37	5.34E-04
Inner Thumb Section 7	332	2	3.78E-06	15.94	2.96E-04	4.23	2.82E-05	11.40	3.28E-04
Inner Thumb Section 8	358	1	2.56E-06	24.81	2.24E-04	8.39	3.79E-05	25.32	2.64E-04
<b>Inner Middle Finger (Tally 26)</b>									
Inner Middle Finger Tip	555	0.94	3.63E-06	26.33	6.08E-04	4.25	3.44E-05	19.36	6.46E-04
Inner Middle Finger Section 1	567	2	5.06E-06	10.94	9.60E-04	2.50	2.34E-05	12.20	9.88E-04
Inner Middle Finger Section 2	580	2	5.74E-06	10.43	1.22E-03	2.34	2.75E-05	12.89	1.25E-03
Inner Middle Finger Section 3	593	2	4.73E-06	10.12	9.74E-04	2.54	2.48E-05	14.79	1.00E-03
Inner Middle Finger Section 4	606	2	4.20E-06	11.88	6.04E-04	3.06	4.58E-05	11.07	6.54E-04
Inner Middle Finger Section 5	619	2	2.48E-06	23.21	3.67E-04	4.36	5.54E-05	9.06	4.25E-04
Inner Middle Finger Section 6	632	2	1.97E-06	22.46	2.48E-04	5.15	4.25E-05	9.71	2.93E-04
Inner Middle Finger Section 7	645	2	1.71E-06	20.20	1.70E-04	5.32	1.70E-05	12.13	1.89E-04
Inner Middle Finger Section 8	658	1	1.65E-06	34.14	1.26E-04	7.98	1.16E-05	42.81	1.39E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Front Index (Tally 36)</b>									
Front Index Tip	141	1.081	1.33E-05	10.24	1.31E-03	2.84	0.00E+00	100.00	1.32E-03
Front Index Section 1	169	2.3	2.98E-05	5.32	2.37E-03	1.59	4.75E-06	26.36	2.40E-03
Front Index Section 2	195	2.3	4.46E-05	3.93	3.69E-03	1.23	1.76E-04	7.34	3.91E-03
Front Index Section 3	221	2.3	3.02E-05	5.02	2.49E-03	1.62	2.72E-06	100.00	2.52E-03
Front Index Section 4	247	2.3	1.17E-05	6.23	1.16E-03	2.34	3.50E-06	22.83	1.17E-03
Front Index Section 5	273	2.3	6.15E-06	10.60	5.68E-04	3.44	2.91E-06	29.00	5.77E-04
Front Index Section 6	299	2.3	2.65E-06	13.20	3.40E-04	4.24	1.63E-06	50.05	3.44E-04
Front Index Section 7	325	2.3	1.42E-06	15.11	2.19E-04	6.36	1.57E-07	80.26	2.20E-04
Front Index Section 8	351	1.15	8.06E-07	19.34	1.71E-04	8.51	1.83E-06	74.72	1.74E-04
<b>Front Thumb (Tally 46)</b>									
Front Thumb Tip	157	1.081	2.31E-05	6.83	1.25E-03	2.93	1.20E-05	32.19	1.28E-03
Front Thumb Section 1	182	2.3	7.10E-05	3.97	2.32E-03	1.62	3.81E-04	3.61	2.77E-03
Front Thumb Section 2	208	2.3	2.01E-04	2.60	3.72E-03	1.23	5.40E-03	1.26	9.32E-03
Front Thumb Section 3	234	2.3	7.96E-05	3.87	2.52E-03	1.42	5.95E-04	3.33	3.19E-03
Front Thumb Section 4	260	2.3	2.15E-05	5.98	1.18E-03	2.35	8.80E-06	16.53	1.21E-03
Front Thumb Section 5	286	2.3	8.24E-06	7.23	6.37E-04	2.92	2.39E-06	42.82	6.47E-04
Front Thumb Section 6	312	2.3	4.11E-06	7.55	3.36E-04	5.11	8.50E-07	34.00	3.41E-04
Front Thumb Section 7	338	2.3	2.96E-06	14.88	2.22E-04	4.23	1.07E-06	73.61	2.26E-04
Front Thumb Section 8	364	1.15	2.52E-06	25.66	1.23E-04	21.21	0.00E+00	0.00	1.25E-04
<b>Front Middle Finger (Tally 56)</b>									
Front Middle Finger Tip	561	1.081	1.18E-05	10.87	1.06E-03	3.63	2.52E-05	31.13	1.10E-03
Front Middle Finger Section 1	573	2.3	1.59E-05	5.59	1.51E-03	2.07	1.99E-05	14.80	1.55E-03
Front Middle Finger Section 2	586	2.3	2.46E-05	5.00	1.96E-03	1.67	7.83E-05	7.52	2.06E-03
Front Middle Finger Section 3	599	2.3	1.82E-05	5.85	1.58E-03	1.79	2.66E-05	11.05	1.63E-03
Front Middle Finger Section 4	612	2.3	1.04E-05	8.61	9.66E-04	2.48	2.93E-05	15.61	1.01E-03
Front Middle Finger Section 5	625	2.3	6.65E-06	11.96	5.80E-04	3.27	3.98E-05	10.08	6.27E-04
Front Middle Finger Section 6	638	2.3	3.57E-06	14.22	3.50E-04	4.19	2.04E-05	41.26	3.74E-04
Front Middle Finger Section 7	651	2.3	2.07E-06	15.25	2.29E-04	4.42	1.75E-05	17.14	2.49E-04
Front Middle Finger Section 8	664	1.15	1.18E-06	25.17	1.98E-04	12.03	1.57E-05	35.02	2.15E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Back Index (Tally 66)</b>									
Back Index Tip	144	1.081	1.25E-05	9.87	1.34E-03	2.95	5.82E-06	52.05	1.36E-03
Back Index Section 1	172	2.3	2.79E-05	4.92	2.30E-03	1.71	6.13E-06	23.21	2.33E-03
Back Index Section 2	198	2.3	4.51E-05	3.68	3.66E-03	1.26	1.76E-04	6.52	3.88E-03
Back Index Section 3	224	2.3	2.93E-05	4.64	2.45E-03	1.53	6.95E-06	18.65	2.48E-03
Back Index Section 4	250	2.3	1.42E-05	6.69	1.19E-03	2.31	4.70E-06	31.11	1.21E-03
Back Index Section 5	276	2.3	5.36E-06	9.25	6.15E-04	3.05	3.64E-06	24.96	6.24E-04
Back Index Section 6	302	2.3	3.87E-06	16.95	3.28E-04	3.64	3.53E-06	21.31	3.36E-04
Back Index Section 7	328	2.3	1.39E-06	12.96	1.97E-04	4.52	3.50E-06	27.62	2.02E-04
Back Index Section 8	354	1.15	8.20E-07	11.82	1.58E-04	7.88	1.48E-06	100.00	1.60E-04
<b>Back Thumb (Tally 76)</b>									
Back Thumb Tip	160	1.081	2.46E-05	7.77	1.25E-03	3.02	1.42E-05	28.22	1.29E-03
Back Thumb Section 1	185	2.3	7.00E-05	3.99	2.26E-03	1.61	3.70E-04	4.87	2.70E-03
Back Thumb Section 2	211	2.3	1.98E-04	2.56	3.85E-03	1.22	5.42E-03	1.15	9.47E-03
Back Thumb Section 3	237	2.3	7.82E-05	3.75	2.50E-03	1.51	5.72E-04	4.51	3.15E-03
Back Thumb Section 4	263	2.3	2.00E-05	5.15	1.22E-03	2.08	8.05E-06	20.90	1.24E-03
Back Thumb Section 5	289	2.3	1.05E-05	7.70	5.96E-04	3.08	2.12E-06	41.45	6.09E-04
Back Thumb Section 6	315	2.3	4.85E-06	9.99	3.93E-04	3.94	2.42E-06	30.91	4.01E-04
Back Thumb Section 7	341	2.3	3.24E-06	13.71	2.28E-04	4.81	1.55E-06	24.56	2.33E-04
Back Thumb Section 8	367	1.15	2.70E-06	27.52	1.73E-04	6.81	1.14E-06	34.05	1.77E-04
<b>Back Middle Finger (Tally 86)</b>									
Back Middle Finger Tip	564	1.081	2.86E-06	21.61	3.63E-04	5.39	0.00E+00	0.00	3.66E-04
Back Middle Finger Section 1	576	2.3	2.71E-06	10.26	4.21E-04	3.21	0.00E+00	0.00	4.23E-04
Back Middle Finger Section 2	589	2.3	3.54E-06	14.21	4.42E-04	3.67	1.27E-07	72.00	4.45E-04
Back Middle Finger Section 3	602	2.3	3.55E-06	12.51	4.31E-04	3.55	2.09E-07	61.70	4.35E-04
Back Middle Finger Section 4	615	2.3	2.57E-06	12.77	3.28E-04	4.72	1.15E-07	59.35	3.30E-04
Back Middle Finger Section 5	628	2.3	1.81E-06	14.42	2.54E-04	4.39	5.81E-07	44.89	2.57E-04
Back Middle Finger Section 6	641	2.3	1.43E-06	24.66	1.99E-04	5.11	1.25E-07	58.74	2.01E-04
Back Middle Finger Section 7	654	2.3	8.41E-07	19.57	1.46E-04	5.53	7.03E-07	45.46	1.48E-04
Back Middle Finger Section 8	667	1.15	8.05E-07	31.84	1.40E-04	10.88	1.05E-07	100.00	1.41E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Outer Index (Tally 96)</b>									
Outer Index Tip	138	0.94	5.25E-06	12.95	7.22E-04	4.23	0.00E+00	0.00	7.27E-04
Outer Index Section 1	166	2	8.87E-06	9.77	9.52E-04	2.57	0.00E+00	0.00	9.60E-04
Outer Index Section 2	192	2	1.23E-05	7.19	1.08E-03	2.30	0.00E+00	0.00	1.09E-03
Outer Index Section 3	218	2	1.06E-05	8.66	9.54E-04	2.55	0.00E+00	0.00	9.64E-04
Outer Index Section 4	244	2	7.55E-06	9.75	6.86E-04	2.66	0.00E+00	0.00	6.94E-04
Outer Index Section 5	270	2	3.17E-06	8.66	4.41E-04	3.77	0.00E+00	0.00	4.44E-04
Outer Index Section 6	296	2	2.16E-06	19.14	2.64E-04	3.59	0.00E+00	0.00	2.66E-04
Outer Index Section 7	322	2	8.96E-07	16.27	1.77E-04	5.25	0.00E+00	0.00	1.78E-04
Outer Index Section 8	348	1	5.61E-07	18.64	1.34E-04	8.14	0.00E+00	0.00	1.34E-04
<b>Outer Thumb (Tally 106)</b>									
Outer Thumb Tip	154	0.94	1.16E-05	13.53	6.84E-04	4.48	0.00E+00	0.00	6.95E-04
Outer Thumb Section 1	179	2	9.61E-06	5.74	8.90E-04	2.57	0.00E+00	0.00	9.00E-04
Outer Thumb Section 2	205	2	1.38E-05	7.27	1.10E-03	2.42	0.00E+00	0.00	1.12E-03
Outer Thumb Section 3	231	2	1.09E-05	6.56	9.01E-04	2.63	0.00E+00	0.00	9.12E-04
Outer Thumb Section 4	257	2	1.02E-05	9.94	6.98E-04	3.65	0.00E+00	0.00	7.08E-04
Outer Thumb Section 5	283	2	5.28E-06	12.10	4.10E-04	3.86	0.00E+00	0.00	4.16E-04
Outer Thumb Section 6	309	2	3.23E-06	15.85	2.82E-04	4.39	0.00E+00	0.00	2.85E-04
Outer Thumb Section 7	335	2	1.71E-06	19.34	1.94E-04	6.10	0.00E+00	0.00	1.95E-04
Outer Thumb Section 8	361	1	8.57E-07	16.66	1.27E-04	8.73	8.55E-08	100.00	1.28E-04
<b>Outer Middle Finger (Tally 116)</b>									
Outer Middle Finger Tip	558	0.94	3.83E-06	14.10	4.51E-04	5.10	0.00E+00	0.00	4.55E-04
Outer Middle Finger Section 1	570	2	5.80E-06	9.85	5.48E-04	3.53	0.00E+00	0.00	5.54E-04
Outer Middle Finger Section 2	583	2	6.95E-06	9.28	5.75E-04	3.22	0.00E+00	0.00	5.82E-04
Outer Middle Finger Section 3	596	2	5.91E-06	12.41	5.22E-04	3.22	0.00E+00	0.00	5.28E-04
Outer Middle Finger Section 4	609	2	4.79E-06	11.64	4.36E-04	3.58	0.00E+00	0.00	4.41E-04
Outer Middle Finger Section 5	622	2	2.70E-06	9.81	3.20E-04	3.92	0.00E+00	0.00	3.23E-04
Outer Middle Finger Section 6	635	2	2.53E-06	17.34	2.39E-04	4.59	0.00E+00	0.00	2.42E-04
Outer Middle Finger Section 7	648	2	1.48E-06	15.41	1.72E-04	5.12	0.00E+00	0.00	1.74E-04
Outer Middle Finger Section 8	661	1	1.72E-06	43.45	1.31E-04	9.59	0.00E+00	0.00	1.33E-04
<b>Tip of Fingers (Tally 126)</b>									
Index Tip	131	4.42	1.31E-05	5.25	1.25E-03	1.53	4.71E-06	47.92	1.27E-03
Thumb Tip	147	4.42	2.22E-05	4.28	1.28E-03	1.40	1.60E-06	100.00	1.30E-03
Middle Finger Tip	551	4.42	5.47E-06	7.22	5.74E-04	2.10	2.11E-06	27.86	5.81E-04

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
1st Half Under Palm Ext. (Tally 136)	371	6.2284	1.26E-06	13.43	1.16E-04	4.11	6.72E-07	40.43	1.18E-04
2nd Half Under Palm Ext. (Tally 146)	381	6.2284	9.49E-07	11.41	7.97E-05	4.31	1.23E-06	37.28	8.19E-05
Between Index/Thumb (Tally 156)	120	0.5232	2.55E-06	31.40	1.94E-04	9.29	1.68E-03	4.38	1.88E-03
Between Index/Middle (Tally 166)	710	1.326	1.40E-06	21.39	1.64E-04	9.01	7.10E-05	13.96	2.36E-04
Palm Behind Thumb (Tally 176)	117	5.98	4.87E-06	10.36	1.74E-04	3.11	1.57E-04	4.41	3.36E-04
1st Half Under Palm Ext. Mid (Tally 186)	481	8.09692	1.94E-06	8.72	1.21E-04	3.70	2.24E-05	7.24	1.45E-04
2nd Half Under Palm Ext. Mid (Tally 196)	487	8.09692	1.21E-06	15.12	7.37E-05	4.30	5.49E-06	14.45	8.04E-05
Front Face of Index/Thumb (Tally 206)	101	16.7006	8.68E-07	11.32	8.76E-05	3.58	1.88E-06	14.86	9.04E-05
Palm Back Between Index/Middle (Tally 396)	707	1.15104	9.91E-07	10.38	1.01E-04	13.39	4.72E-04	4.91	5.74E-04
Palm Behind Thumb Back (Tally 406)	701	10.12	6.35E-06	6.63	1.26E-04	2.84	3.06E-04	2.18	4.39E-04
1st Half Palm Ext. Back (Tally 416)	484	13.7025	3.04E-06	7.26	9.13E-05	3.34	4.97E-05	4.59	1.44E-04
2nd Half Palm Ext. Back (Tally 426)	490	13.7025	1.64E-06	9.54	6.94E-05	3.63	1.28E-05	7.55	8.38E-05
Palm Ext. Front Face 1st Half (Tally 436)	377	10.8997	6.15E-07	13.12	6.48E-05	3.82	6.46E-08	56.59	6.55E-05
Palm Ext. Front Face 2nd Half (Tally 446)	387	10.8997	5.70E-07	15.52	5.85E-05	4.89	9.03E-08	36.85	5.91E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	Total
Palm Behind Middle Finger (Tally 456)									
	114	9.724	6.86E-07	14.14	8.10E-05	3.90	1.68E-05	9.01	9.85E-05
Palm Arch beside Middle Finger (Tally 466)									
	704	0.68016	3.43E-06	32.11	2.13E-04	10.36	8.76E-04	6.87	1.09E-03

**B.5 Holding Disk Source Task 1 Nitrile, 3 Vinyl – MCNP Results of the 7 mg cm<sup>-2</sup> Cells**

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Inner Index (Tally 6)</b>									
Inner Index Tip	135	0.94	3.51E-05	6.07	5.80E-03	1.57	3.22E-04	6.16	6.16E-03
Inner Index Section 1	163	2	7.92E-06	7.90	1.84E-03	1.93	1.19E-05	20.21	1.86E-03
Inner Index Section 2	189	2	2.81E-06	10.92	6.80E-04	2.99	6.73E-06	19.47	6.89E-04
Inner Index Section 3	215	2	2.03E-06	19.49	3.40E-04	4.41	2.10E-06	33.76	3.44E-04
Inner Index Section 4	241	2	9.10E-07	27.99	2.29E-04	5.99	7.14E-07	47.63	2.30E-04
Inner Index Section 5	267	2	7.79E-07	33.73	1.46E-04	6.50	0.00E+00	100.00	1.47E-04
Inner Index Section 6	293	2	3.23E-07	12.25	9.84E-05	8.60	1.28E-06	49.92	1.00E-04
Inner Index Section 7	319	2	4.76E-07	31.42	6.74E-05	9.39	6.69E-07	43.75	6.85E-05
Inner Index Section 8	345	1	2.18E-07	33.39	5.32E-05	10.35	5.91E-07	53.15	5.40E-05
<b>Inner Thumb (Tally 16)</b>									
Inner Thumb Tip	151	0.94	7.64E-04	2.24	6.31E-03	1.41	2.86E-02	0.88	3.57E-02
Inner Thumb Section 1	176	2	5.27E-05	4.45	2.21E-03	1.73	6.33E-05	7.97	2.33E-03
Inner Thumb Section 2	202	2	1.15E-05	7.46	8.21E-04	2.66	4.46E-06	19.07	8.37E-04
Inner Thumb Section 3	228	2	6.52E-06	13.23	4.12E-04	4.02	6.85E-07	29.81	4.20E-04
Inner Thumb Section 4	254	2	2.64E-06	13.64	2.56E-04	4.82	8.12E-07	48.83	2.60E-04
Inner Thumb Section 5	280	2	1.65E-06	16.69	1.58E-04	6.07	5.32E-07	45.50	1.60E-04
Inner Thumb Section 6	306	2	9.49E-07	30.01	1.04E-04	9.21	5.47E-07	79.07	1.05E-04
Inner Thumb Section 7	332	2	5.89E-07	16.09	8.12E-05	8.99	9.84E-07	46.68	8.27E-05
Inner Thumb Section 8	358	1	3.11E-07	15.96	6.85E-05	13.76	9.01E-07	71.38	6.97E-05
<b>Inner Middle Finger (Tally 26)</b>									
Inner Middle Finger Tip	555	0.94	2.77E-06	20.94	8.50E-04	4.09	2.51E-05	68.95	8.78E-04
Inner Middle Finger Section 1	567	2	1.99E-06	20.68	5.58E-04	3.20	4.05E-05	13.22	6.00E-04
Inner Middle Finger Section 2	580	2	1.13E-06	22.72	3.43E-04	4.06	1.52E-05	24.75	3.60E-04
Inner Middle Finger Section 3	593	2	1.38E-06	23.12	2.19E-04	6.18	5.94E-06	28.16	2.26E-04
Inner Middle Finger Section 4	606	2	6.98E-07	27.89	1.61E-04	5.58	2.78E-06	35.86	1.64E-04
Inner Middle Finger Section 5	619	2	3.35E-07	10.14	1.12E-04	6.04	1.36E-06	40.44	1.14E-04
Inner Middle Finger Section 6	632	2	4.67E-07	46.31	9.06E-05	8.26	5.71E-07	43.61	9.16E-05
Inner Middle Finger Section 7	645	2	3.57E-07	49.47	7.16E-05	10.39	2.65E-07	49.94	7.22E-05
Inner Middle Finger Section 8	658	1	2.38E-07	23.33	5.32E-05	12.40	6.68E-07	52.67	5.41E-05



Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Front Index (Tally 36)</b>									
Front Index Tip	141	1.081	2.21E-05	8.06	2.08E-03	2.56	7.63E-05	10.27	2.18E-03
Front Index Section 1	169	2.3	1.10E-05	7.44	1.22E-03	2.46	4.35E-08	77.38	1.23E-03
Front Index Section 2	195	2.3	5.57E-06	11.35	6.10E-04	3.21	5.50E-08	100.00	6.16E-04
Front Index Section 3	221	2.3	2.57E-06	15.50	3.53E-04	4.21	1.02E-07	79.19	3.56E-04
Front Index Section 4	247	2.3	1.73E-06	22.31	2.28E-04	5.37	0.00E+00	0.00	2.30E-04
Front Index Section 5	273	2.3	6.89E-07	19.51	1.36E-04	5.96	3.94E-08	100.00	1.37E-04
Front Index Section 6	299	2.3	2.69E-07	7.60	8.58E-05	8.58	4.97E-08	72.41	8.62E-05
Front Index Section 7	325	2.3	2.67E-07	27.31	6.63E-05	8.75	1.63E-07	76.94	6.68E-05
Front Index Section 8	351	1.15	1.58E-07	24.70	5.26E-05	14.12	0.00E+00	0.00	5.28E-05
<b>Front Thumb (Tally 46)</b>									
Front Thumb Tip	157	1.081	1.77E-04	4.29	2.11E-03	2.27	3.98E-03	2.00	6.26E-03
Front Thumb Section 1	182	2.3	2.80E-05	5.72	1.22E-03	2.00	1.58E-06	66.18	1.25E-03
Front Thumb Section 2	208	2.3	8.48E-06	6.36	6.09E-04	2.88	1.24E-06	68.67	6.19E-04
Front Thumb Section 3	234	2.3	4.67E-06	8.69	3.71E-04	4.19	8.03E-08	100.00	3.76E-04
Front Thumb Section 4	260	2.3	2.70E-06	17.29	2.41E-04	5.52	1.85E-07	100.00	2.44E-04
Front Thumb Section 5	286	2.3	1.47E-06	13.79	1.38E-04	10.13	5.45E-08	71.23	1.39E-04
Front Thumb Section 6	312	2.3	1.06E-06	29.07	1.11E-04	7.07	2.42E-07	58.70	1.12E-04
Front Thumb Section 7	338	2.3	8.12E-07	37.26	7.91E-05	9.30	0.00E+00	0.00	7.99E-05
Front Thumb Section 8	364	1.15	3.41E-07	13.53	6.24E-05	14.54	0.00E+00	0.00	6.27E-05
<b>Front Middle Finger (Tally 56)</b>									
Front Middle Finger Tip	561	1.081	1.42E-05	8.90	1.37E-03	2.69	3.51E-04	6.30	1.74E-03
Front Middle Finger Section 1	573	2.3	1.07E-05	8.12	9.42E-04	2.46	3.71E-05	10.80	9.90E-04
Front Middle Finger Section 2	586	2.3	5.63E-06	13.77	5.87E-04	3.80	5.87E-06	39.99	5.99E-04
Front Middle Finger Section 3	599	2.3	2.89E-06	12.11	3.39E-04	4.15	1.83E-06	40.79	3.44E-04
Front Middle Finger Section 4	612	2.3	1.67E-06	18.45	2.31E-04	4.88	5.93E-07	36.22	2.33E-04
Front Middle Finger Section 5	625	2.3	6.39E-07	13.30	1.56E-04	6.42	1.38E-06	78.26	1.58E-04
Front Middle Finger Section 6	638	2.3	4.65E-07	12.19	1.20E-04	7.28	8.32E-07	82.00	1.22E-04
Front Middle Finger Section 7	651	2.3	4.10E-07	18.37	8.44E-05	7.09	9.66E-07	86.07	8.58E-05
Front Middle Finger Section 8	664	1.15	2.47E-07	19.78	6.98E-05	18.15	6.43E-08	100.00	7.01E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Back Index (Tally 66)</b>									
Back Index Tip	144	1.081	2.40E-05	7.90	1.99E-03	3.25	7.65E-05	10.29	2.09E-03
Back Index Section 1	172	2.3	1.35E-05	7.59	1.16E-03	2.26	4.86E-06	39.23	1.18E-03
Back Index Section 2	198	2.3	5.81E-06	10.40	6.10E-04	3.20	7.90E-07	40.12	6.17E-04
Back Index Section 3	224	2.3	3.08E-06	15.40	3.79E-04	4.88	3.18E-07	53.88	3.83E-04
Back Index Section 4	250	2.3	1.14E-06	15.16	1.97E-04	4.67	0.00E+00	0.00	1.98E-04
Back Index Section 5	276	2.3	8.33E-07	19.20	1.55E-04	7.73	2.63E-08	100.00	1.56E-04
Back Index Section 6	302	2.3	6.14E-07	23.02	9.56E-05	7.88	1.01E-07	100.00	9.63E-05
Back Index Section 7	328	2.3	7.47E-07	42.37	6.84E-05	7.36	9.70E-08	100.00	6.93E-05
Back Index Section 8	354	1.15	1.68E-07	22.16	5.54E-05	11.72	3.10E-07	75.17	5.59E-05
<b>Back Thumb (Tally 76)</b>									
Back Thumb Tip	160	1.081	1.72E-04	4.27	2.20E-03	2.35	3.79E-03	2.12	6.17E-03
Back Thumb Section 1	185	2.3	2.88E-05	5.59	1.19E-03	2.18	1.37E-06	33.69	1.22E-03
Back Thumb Section 2	211	2.3	9.96E-06	8.43	6.49E-04	3.07	1.06E-07	60.73	6.60E-04
Back Thumb Section 3	237	2.3	4.64E-06	10.65	3.72E-04	4.10	7.98E-07	80.24	3.78E-04
Back Thumb Section 4	263	2.3	2.36E-06	10.67	2.29E-04	5.12	1.38E-06	79.09	2.32E-04
Back Thumb Section 5	289	2.3	1.84E-06	17.80	1.54E-04	5.84	3.23E-07	51.08	1.57E-04
Back Thumb Section 6	315	2.3	1.09E-06	19.97	9.67E-05	5.96	1.32E-07	62.55	9.79E-05
Back Thumb Section 7	341	2.3	4.83E-07	10.03	8.19E-05	7.48	1.40E-07	73.69	8.25E-05
Back Thumb Section 8	367	1.15	9.10E-07	43.62	6.27E-05	10.80	6.46E-08	100.00	6.36E-05
<b>Back Middle Finger (Tally 86)</b>									
Back Middle Finger Tip	564	1.081	3.37E-06	20.06	4.30E-04	4.88	4.68E-07	61.73	4.34E-04
Back Middle Finger Section 1	576	2.3	2.81E-06	14.84	3.53E-04	4.24	1.47E-07	100.00	3.56E-04
Back Middle Finger Section 2	589	2.3	1.35E-06	18.43	2.80E-04	4.50	1.17E-07	58.02	2.81E-04
Back Middle Finger Section 3	602	2.3	8.80E-07	24.86	1.98E-04	6.75	4.30E-08	100.00	1.99E-04
Back Middle Finger Section 4	615	2.3	4.68E-07	10.61	1.33E-04	5.26	1.87E-07	51.75	1.34E-04
Back Middle Finger Section 5	628	2.3	3.63E-07	20.40	1.24E-04	7.64	2.24E-08	100.00	1.24E-04
Back Middle Finger Section 6	641	2.3	3.77E-07	51.14	7.88E-05	7.41	3.09E-07	60.83	7.95E-05
Back Middle Finger Section 7	654	2.3	3.92E-07	52.34	5.04E-05	9.03	0.00E+00	0.00	5.08E-05
Back Middle Finger Section 8	667	1.15	1.01E-07	4.00	5.60E-05	20.79	4.41E-07	100.00	5.66E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Outer Index (Tally 96)</b>									
Outer Index Tip	138	0.94	1.56E-05	11.94	1.01E-03	3.57	4.53E-05	16.78	1.07E-03
Outer Index Section 1	166	2	8.11E-06	9.09	7.59E-04	3.09	2.84E-08	100.00	7.67E-04
Outer Index Section 2	192	2	3.92E-06	12.63	4.43E-04	3.62	0.00E+00	0.00	4.47E-04
Outer Index Section 3	218	2	1.65E-06	11.86	2.71E-04	4.60	0.00E+00	0.00	2.73E-04
Outer Index Section 4	244	2	8.41E-07	11.20	2.00E-04	5.33	0.00E+00	0.00	2.01E-04
Outer Index Section 5	270	2	6.59E-07	25.24	1.11E-04	12.00	0.00E+00	0.00	1.11E-04
Outer Index Section 6	296	2	3.16E-07	25.64	7.92E-05	6.23	0.00E+00	0.00	7.95E-05
Outer Index Section 7	322	2	2.95E-07	38.27	6.10E-05	8.58	0.00E+00	0.00	6.13E-05
Outer Index Section 8	348	1	8.92E-08	5.52	4.25E-05	12.04	0.00E+00	0.00	4.26E-05
<b>Outer Thumb (Tally 106)</b>									
Outer Thumb Tip	154	0.94	5.52E-05	8.01	9.67E-04	3.57	6.41E-04	5.37	1.66E-03
Outer Thumb Section 1	179	2	1.20E-05	8.36	6.69E-04	3.72	1.68E-07	59.25	6.81E-04
Outer Thumb Section 2	205	2	5.49E-06	13.04	4.30E-04	3.87	9.36E-08	73.41	4.35E-04
Outer Thumb Section 3	231	2	3.98E-06	15.86	2.63E-04	4.68	0.00E+00	0.00	2.67E-04
Outer Thumb Section 4	257	2	1.70E-06	20.44	1.89E-04	5.43	0.00E+00	0.00	1.90E-04
Outer Thumb Section 5	283	2	8.49E-07	20.75	1.45E-04	6.89	9.05E-08	76.19	1.46E-04
Outer Thumb Section 6	309	2	5.42E-07	19.53	9.85E-05	8.21	0.00E+00	0.00	9.91E-05
Outer Thumb Section 7	335	2	3.41E-07	18.07	6.60E-05	10.61	4.08E-08	100.00	6.64E-05
Outer Thumb Section 8	361	1	1.87E-07	14.84	5.21E-05	11.84	0.00E+00	0.00	5.23E-05
<b>Outer Middle Finger (Tally 116)</b>									
Outer Middle Finger Tip	558	0.94	5.69E-06	14.65	5.99E-04	5.46	9.82E-06	30.78	6.15E-04
Outer Middle Finger Section 1	570	2	5.17E-06	13.27	4.52E-04	3.55	4.10E-07	40.86	4.58E-04
Outer Middle Finger Section 2	583	2	3.99E-06	14.48	3.51E-04	4.04	0.00E+00	0.00	3.55E-04
Outer Middle Finger Section 3	596	2	1.96E-06	17.77	2.31E-04	5.37	0.00E+00	0.00	2.33E-04
Outer Middle Finger Section 4	609	2	1.14E-06	19.76	1.62E-04	5.22	0.00E+00	0.00	1.63E-04
Outer Middle Finger Section 5	622	2	6.29E-07	12.99	1.25E-04	7.95	0.00E+00	0.00	1.26E-04
Outer Middle Finger Section 6	635	2	4.53E-07	30.57	9.63E-05	8.28	0.00E+00	0.00	9.68E-05
Outer Middle Finger Section 7	648	2	3.34E-07	37.57	6.04E-05	8.13	0.00E+00	0.00	6.08E-05
Outer Middle Finger Section 8	661	1	3.24E-07	50.29	4.72E-05	10.36	0.00E+00	0.00	4.75E-05
<b>Tip of Fingers (Tally 126)</b>									
Index Tip	131	4.42	4.10E-05	3.20	3.46E-03	0.94	1.49E-03	1.39	4.99E-03
Thumb Tip	147	4.42	7.42E-04	1.04	3.55E-03	0.92	5.07E-02	0.26	5.50E-02
Middle Finger Tip	551	4.42	9.32E-06	6.82	8.90E-04	2.02	1.05E-04	4.91	1.00E-03

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
1st Half Under Palm Ext. (Tally 136)	371	6.2284	6.16E-07	22.88	5.46E-05	6.39	2.72E-06	25.89	5.79E-05
2nd Half Under Palm Ext. (Tally 146)	381	6.2284	5.90E-07	21.16	4.66E-05	5.98	6.42E-06	15.99	5.36E-05
Between Index/Thumb (Tally 156)	120	0.5232	3.69E-07	1.69	1.08E-04	16.23	9.07E-05	15.40	1.99E-04
Between Index/Middle (Tally 166)	710	1.326	1.89E-07	12.22	5.36E-05	9.51	3.38E-06	35.10	5.72E-05
Palm Behind Thumb (Tally 176)	117	5.98	1.59E-06	16.19	7.37E-05	4.93	3.65E-05	17.66	1.12E-04
1st Half Under Palm Ext. Mid (Tally 186)	481	8.09692	1.17E-06	10.50	7.08E-05	5.14	5.57E-05	4.41	1.28E-04
2nd Half Under Palm Ext. Mid (Tally 196)	487	8.09692	1.31E-06	15.76	4.66E-05	4.45	3.96E-05	5.76	8.75E-05
Front Face of Index/Thumb (Tally 206)	101	16.7006	1.59E-07	12.65	3.42E-05	4.12	3.75E-07	51.30	3.47E-05
Palm Back Between Index/Middle (Tally 396)	707	1.15104	1.11E-06	49.81	6.32E-05	8.72	8.15E-05	8.41	1.46E-04
Palm Behind Thumb Back (Tally 406)	701	10.12	4.08E-06	8.58	6.96E-05	3.42	2.25E-04	2.63	2.98E-04
1st Half Palm Ext. Back (Tally 416)	484	13.7025	4.35E-06	6.99	5.94E-05	3.53	2.98E-04	1.92	3.61E-04
2nd Half Palm Ext. Back (Tally 426)	490	13.7025	3.79E-06	8.36	4.50E-05	3.90	1.99E-04	2.08	2.48E-04
Palm Ext. Front Face 1st Half (Tally 436)	377	10.8997	2.24E-07	19.09	3.49E-05	6.44	1.04E-07	48.77	3.52E-05
Palm Ext. Front Face 2nd Half (Tally 446)	387	10.8997	1.97E-07	9.18	3.37E-05	6.40	2.49E-07	76.26	3.41E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	Total
Palm Behind Middle Finger (Tally 456)									
	114	9.724	2.32E-07	24.31	4.28E-05	5.43	5.54E-06	14.08	4.85E-05
Palm Arch beside Middle Finger (Tally 466)									
	704	0.68016	8.30E-07	30.65	8.86E-05	15.11	2.53E-05	51.16	1.15E-04

**B.6 Holding Disk Source Task 1 Nitrile, 2 Vinyl – MCNP Results of the 7 mg cm<sup>-2</sup> Cells**

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Inner Index (Tally 6)</b>									
Inner Index Tip	135	0.94	3.54E-05	6.01	5.72E-03	1.55	4.56E-04	8.51	6.21E-03
Inner Index Section 1	163	2	8.43E-06	7.92	1.83E-03	1.92	4.92E-05	11.56	1.88E-03
Inner Index Section 2	189	2	2.61E-06	9.86	6.94E-04	2.82	2.25E-05	31.80	7.19E-04
Inner Index Section 3	215	2	2.37E-06	19.28	3.71E-04	4.33	1.58E-05	17.96	3.89E-04
Inner Index Section 4	241	2	7.28E-07	56.92	2.30E-04	6.59	6.21E-06	19.14	2.37E-04
Inner Index Section 5	267	2	7.87E-07	33.47	1.42E-04	6.18	5.46E-06	18.86	1.48E-04
Inner Index Section 6	293	2	3.89E-07	19.75	1.07E-04	8.37	2.66E-06	51.01	1.10E-04
Inner Index Section 7	319	2	4.54E-07	32.55	7.49E-05	6.77	3.82E-06	43.98	7.92E-05
Inner Index Section 8	345	1	1.68E-07	11.19	5.83E-05	11.06	5.32E-06	57.13	6.38E-05
<b>Inner Thumb (Tally 16)</b>									
Inner Thumb Tip	151	0.94	8.35E-04	2.16	6.52E-03	1.47	3.98E-02	0.70	4.72E-02
Inner Thumb Section 1	176	2	6.87E-05	4.45	2.20E-03	1.74	2.84E-04	5.98	2.55E-03
Inner Thumb Section 2	202	2	1.36E-05	7.96	8.25E-04	2.64	2.70E-05	15.44	8.66E-04
Inner Thumb Section 3	228	2	6.69E-06	12.53	4.28E-04	3.64	1.21E-05	20.25	4.47E-04
Inner Thumb Section 4	254	2	2.76E-06	12.85	2.62E-04	4.80	6.72E-06	22.83	2.71E-04
Inner Thumb Section 5	280	2	1.91E-06	17.54	1.81E-04	5.89	3.46E-06	38.61	1.86E-04
Inner Thumb Section 6	306	2	1.02E-06	28.19	1.01E-04	13.33	1.52E-06	60.50	1.04E-04
Inner Thumb Section 7	332	2	5.92E-07	15.13	9.39E-05	9.50	3.95E-06	44.31	9.84E-05
Inner Thumb Section 8	358	1	4.88E-07	27.28	6.42E-05	14.77	3.21E-06	28.28	6.79E-05
<b>Inner Middle Finger (Tally 26)</b>									
Inner Middle Finger Tip	555	0.94	2.83E-06	20.72	8.33E-04	4.04	5.65E-05	10.75	8.92E-04
Inner Middle Finger Section 1	567	2	2.02E-06	20.59	5.56E-04	3.84	5.48E-05	12.46	6.12E-04
Inner Middle Finger Section 2	580	2	1.30E-06	24.80	3.55E-04	3.95	2.51E-05	12.05	3.82E-04
Inner Middle Finger Section 3	593	2	1.30E-06	23.74	2.20E-04	5.60	1.21E-05	17.10	2.33E-04
Inner Middle Finger Section 4	606	2	6.93E-07	28.11	1.51E-04	5.71	8.53E-06	30.44	1.61E-04
Inner Middle Finger Section 5	619	2	3.60E-07	17.76	1.17E-04	6.66	3.55E-06	45.05	1.21E-04
Inner Middle Finger Section 6	632	2	5.44E-07	42.02	1.02E-04	8.53	3.10E-06	28.16	1.05E-04
Inner Middle Finger Section 7	645	2	3.60E-07	49.00	7.11E-05	8.53	1.59E-06	27.83	7.30E-05
Inner Middle Finger Section 8	658	1	3.42E-07	33.43	6.17E-05	10.38	8.70E-07	52.09	6.29E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Front Index (Tally 36)</b>									
Front Index Tip	141	1.081	2.27E-05	8.29	2.09E-03	2.51	1.13E-04	15.39	2.23E-03
Front Index Section 1	169	2.3	1.07E-05	7.17	1.22E-03	2.50	2.89E-06	44.66	1.23E-03
Front Index Section 2	195	2.3	5.45E-06	11.39	6.12E-04	3.12	3.62E-07	49.65	6.18E-04
Front Index Section 3	221	2.3	2.26E-06	13.57	3.42E-04	4.05	1.80E-07	59.14	3.45E-04
Front Index Section 4	247	2.3	1.78E-06	22.36	2.22E-04	5.09	0.00E+00	0.00	2.24E-04
Front Index Section 5	273	2.3	6.72E-07	19.90	1.43E-04	6.05	2.43E-07	81.79	1.44E-04
Front Index Section 6	299	2.3	2.85E-07	10.95	8.67E-05	8.34	5.60E-07	69.13	8.75E-05
Front Index Section 7	325	2.3	3.00E-07	30.05	7.03E-05	8.98	9.95E-07	88.24	7.16E-05
Front Index Section 8	351	1.15	1.94E-07	29.95	5.46E-05	13.33	0.00E+00	0.00	5.48E-05
<b>Front Thumb (Tally 46)</b>									
Front Thumb Tip	157	1.081	1.87E-04	4.15	2.14E-03	2.27	5.23E-03	1.78	7.56E-03
Front Thumb Section 1	182	2.3	3.00E-05	5.90	1.23E-03	1.99	2.96E-06	63.20	1.26E-03
Front Thumb Section 2	208	2.3	8.10E-06	6.02	6.06E-04	2.91	2.06E-07	47.07	6.15E-04
Front Thumb Section 3	234	2.3	4.86E-06	9.65	3.72E-04	4.12	3.67E-07	77.87	3.77E-04
Front Thumb Section 4	260	2.3	2.94E-06	17.01	2.54E-04	6.11	0.00E+00	100.00	2.57E-04
Front Thumb Section 5	286	2.3	1.54E-06	16.78	1.38E-04	10.00	1.23E-07	62.92	1.40E-04
Front Thumb Section 6	312	2.3	1.19E-06	27.70	1.11E-04	7.13	3.73E-07	76.59	1.12E-04
Front Thumb Section 7	338	2.3	7.46E-07	39.67	8.12E-05	9.55	2.74E-07	46.85	8.22E-05
Front Thumb Section 8	364	1.15	3.12E-07	8.21	6.45E-05	14.23	6.39E-07	61.69	6.55E-05
<b>Front Middle Finger (Tally 56)</b>									
Front Middle Finger Tip	561	1.081	1.39E-05	8.92	1.42E-03	2.97	5.53E-04	4.86	1.99E-03
Front Middle Finger Section 1	573	2.3	1.03E-05	8.21	9.58E-04	2.31	7.92E-05	7.38	1.05E-03
Front Middle Finger Section 2	586	2.3	5.59E-06	13.58	5.72E-04	3.36	1.12E-05	26.73	5.89E-04
Front Middle Finger Section 3	599	2.3	3.13E-06	13.68	3.49E-04	4.83	7.82E-06	17.14	3.60E-04
Front Middle Finger Section 4	612	2.3	1.71E-06	18.25	2.35E-04	5.80	4.66E-06	28.13	2.41E-04
Front Middle Finger Section 5	625	2.3	6.94E-07	14.59	1.56E-04	10.44	2.58E-06	34.54	1.59E-04
Front Middle Finger Section 6	638	2.3	4.17E-07	8.71	1.23E-04	7.70	0.00E+00	100.00	1.20E-04
Front Middle Finger Section 7	651	2.3	5.78E-07	30.79	8.92E-05	7.69	7.80E-07	48.27	9.05E-05
Front Middle Finger Section 8	664	1.15	1.93E-07	7.94	7.26E-05	18.30	3.98E-07	42.29	7.32E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Back Index (Tally 66)</b>									
Back Index Tip	144	1.081	2.35E-05	7.88	2.02E-03	3.26	1.29E-04	8.97	2.18E-03
Back Index Section 1	172	2.3	1.28E-05	7.71	1.16E-03	2.30	1.04E-05	23.46	1.18E-03
Back Index Section 2	198	2.3	5.73E-06	10.53	6.02E-04	3.23	5.36E-06	27.97	6.13E-04
Back Index Section 3	224	2.3	2.95E-06	15.57	3.75E-04	4.69	2.86E-06	83.24	3.81E-04
Back Index Section 4	250	2.3	1.26E-06	15.15	1.99E-04	4.84	9.77E-07	40.16	2.02E-04
Back Index Section 5	276	2.3	8.56E-07	18.86	1.57E-04	7.74	1.32E-06	64.18	1.59E-04
Back Index Section 6	302	2.3	6.88E-07	23.45	9.12E-05	7.69	1.48E-07	59.21	9.21E-05
Back Index Section 7	328	2.3	7.75E-07	41.36	6.85E-05	7.71	3.42E-07	42.72	6.96E-05
Back Index Section 8	354	1.15	1.27E-07	4.63	5.64E-05	12.28	1.60E-06	88.16	5.81E-05
<b>Back Thumb (Tally 76)</b>									
Back Thumb Tip	160	1.081	1.90E-04	4.14	2.19E-03	2.26	5.47E-03	1.60	7.84E-03
Back Thumb Section 1	185	2.3	2.94E-05	5.63	1.19E-03	2.20	2.04E-06	70.57	1.22E-03
Back Thumb Section 2	211	2.3	9.69E-06	8.33	6.40E-04	3.00	2.99E-06	31.32	6.53E-04
Back Thumb Section 3	237	2.3	4.77E-06	10.68	3.75E-04	4.10	1.16E-07	58.78	3.80E-04
Back Thumb Section 4	263	2.3	2.26E-06	10.80	2.33E-04	5.21	5.89E-07	35.00	2.36E-04
Back Thumb Section 5	289	2.3	1.88E-06	17.62	1.59E-04	5.89	5.49E-07	41.02	1.61E-04
Back Thumb Section 6	315	2.3	1.06E-06	19.49	9.73E-05	5.90	9.33E-07	42.84	9.93E-05
Back Thumb Section 7	341	2.3	4.84E-07	10.08	8.22E-05	7.45	1.44E-06	43.92	8.41E-05
Back Thumb Section 8	367	1.15	9.07E-07	43.76	5.66E-05	8.55	1.88E-07	74.01	5.77E-05
<b>Back Middle Finger (Tally 86)</b>									
Back Middle Finger Tip	564	1.081	3.37E-06	20.06	4.47E-04	4.95	2.72E-06	63.00	4.53E-04
Back Middle Finger Section 1	576	2.3	2.79E-06	14.96	3.58E-04	4.18	6.18E-07	40.77	3.62E-04
Back Middle Finger Section 2	589	2.3	1.21E-06	18.62	2.88E-04	4.51	3.47E-07	68.21	2.90E-04
Back Middle Finger Section 3	602	2.3	1.22E-06	26.70	1.98E-04	6.42	6.17E-08	71.72	2.00E-04
Back Middle Finger Section 4	615	2.3	6.80E-07	36.37	1.38E-04	5.23	1.95E-07	54.26	1.39E-04
Back Middle Finger Section 5	628	2.3	3.60E-07	20.62	1.24E-04	7.56	0.00E+00	0.00	1.24E-04
Back Middle Finger Section 6	641	2.3	4.16E-07	47.91	7.50E-05	7.28	3.06E-07	51.47	7.57E-05
Back Middle Finger Section 7	654	2.3	3.91E-07	52.40	4.98E-05	7.43	5.37E-08	100.00	5.02E-05
Back Middle Finger Section 8	667	1.15	1.05E-07	4.33	4.43E-05	15.15	3.48E-07	58.69	4.48E-05



Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Outer Index (Tally 96)</b>									
Outer Index Tip	138	0.94	1.55E-05	11.86	1.01E-03	3.57	7.28E-05	13.88	1.10E-03
Outer Index Section 1	166	2	8.20E-06	9.09	7.42E-04	3.27	2.38E-07	100.00	7.51E-04
Outer Index Section 2	192	2	3.75E-06	12.55	4.54E-04	3.91	0.00E+00	0.00	4.57E-04
Outer Index Section 3	218	2	1.75E-06	11.65	2.76E-04	4.63	0.00E+00	0.00	2.77E-04
Outer Index Section 4	244	2	8.17E-07	10.95	1.96E-04	5.31	0.00E+00	0.00	1.97E-04
Outer Index Section 5	270	2	6.72E-07	25.53	1.11E-04	11.89	0.00E+00	0.00	1.12E-04
Outer Index Section 6	296	2	2.75E-07	18.83	8.30E-05	6.80	0.00E+00	0.00	8.33E-05
Outer Index Section 7	322	2	2.88E-07	39.23	6.03E-05	8.82	0.00E+00	0.00	6.06E-05
Outer Index Section 8	348	1	8.56E-08	5.66	4.38E-05	12.12	0.00E+00	0.00	4.38E-05
<b>Outer Thumb (Tally 106)</b>									
Outer Thumb Tip	154	0.94	6.05E-05	7.72	9.75E-04	3.60	9.85E-04	4.20	2.02E-03
Outer Thumb Section 1	179	2	1.18E-05	8.32	6.66E-04	3.69	3.87E-07	43.46	6.79E-04
Outer Thumb Section 2	205	2	5.38E-06	13.24	4.35E-04	3.83	7.70E-07	53.45	4.41E-04
Outer Thumb Section 3	231	2	3.72E-06	15.67	2.63E-04	4.68	2.74E-07	51.38	2.67E-04
Outer Thumb Section 4	257	2	1.64E-06	20.98	1.93E-04	5.88	0.00E+00	0.00	1.94E-04
Outer Thumb Section 5	283	2	8.42E-07	20.92	1.42E-04	7.07	2.43E-07	47.16	1.43E-04
Outer Thumb Section 6	309	2	5.06E-07	15.76	9.29E-05	7.39	4.00E-08	100.00	9.35E-05
Outer Thumb Section 7	335	2	3.38E-07	18.22	6.27E-05	10.45	7.68E-08	73.55	6.31E-05
Outer Thumb Section 8	361	1	1.80E-07	11.98	5.34E-05	14.69	0.00E+00	0.00	5.35E-05
<b>Outer Middle Finger (Tally 116)</b>									
Outer Middle Finger Tip	558	0.94	5.54E-06	13.94	6.04E-04	5.43	2.79E-05	21.22	6.37E-04
Outer Middle Finger Section 1	570	2	4.76E-06	13.47	4.58E-04	3.71	1.29E-06	41.06	4.64E-04
Outer Middle Finger Section 2	583	2	4.26E-06	13.89	3.53E-04	4.05	0.00E+00	0.00	3.57E-04
Outer Middle Finger Section 3	596	2	2.01E-06	17.73	2.40E-04	5.38	0.00E+00	0.00	2.42E-04
Outer Middle Finger Section 4	609	2	1.15E-06	19.62	1.64E-04	5.92	0.00E+00	0.00	1.65E-04
Outer Middle Finger Section 5	622	2	1.06E-06	32.58	1.31E-04	7.73	4.06E-07	100.00	1.32E-04
Outer Middle Finger Section 6	635	2	4.53E-07	30.56	1.01E-04	8.47	3.25E-08	100.00	1.01E-04
Outer Middle Finger Section 7	648	2	3.30E-07	38.00	6.39E-05	8.06	0.00E+00	0.00	6.42E-05
Outer Middle Finger Section 8	661	1	1.47E-07	3.61	4.86E-05	10.25	0.00E+00	0.00	4.87E-05
<b>Tip of Fingers (Tally 126)</b>									
Index Tip	131	4.42	4.13E-05	3.19	3.46E-03	0.93	2.07E-03	1.32	5.57E-03
Thumb Tip	147	4.42	8.17E-04	0.99	3.61E-03	0.88	7.07E-02	0.22	7.51E-02
Middle Finger Tip	551	4.42	9.40E-06	6.89	8.99E-04	2.03	1.50E-04	4.51	1.06E-03

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
1st Half Under Palm Ext. (Tally 136)	371	6.2284	6.22E-07	22.67	5.50E-05	5.31	5.99E-06	13.89	6.17E-05
2nd Half Under Palm Ext. (Tally 146)	381	6.2284	5.92E-07	21.06	4.20E-05	7.65	1.09E-05	11.82	5.36E-05
Between Index/Thumb (Tally 156)	120	0.5232	1.22E-06	42.88	9.99E-05	14.88	2.28E-04	10.62	3.29E-04
Between Index/Middle (Tally 166)	710	1.326	1.67E-07	8.48	5.22E-05	9.48	1.65E-05	16.11	6.89E-05
Palm Behind Thumb (Tally 176)	117	5.98	1.61E-06	15.07	7.65E-05	4.60	6.88E-05	5.88	1.47E-04
1st Half Under Palm Ext. Mid (Tally 186)	481	8.09692	1.30E-06	11.88	6.49E-05	4.69	9.09E-05	3.68	1.57E-04
2nd Half Under Palm Ext. Mid (Tally 196)	487	8.09692	1.47E-06	15.63	4.77E-05	5.43	7.30E-05	4.96	1.22E-04
Front Face of Index/Thumb (Tally 206)	101	16.7006	1.53E-07	11.48	3.39E-05	4.24	5.50E-07	27.88	3.46E-05
Palm Back Between Index/Middle (Tally 396)	707	1.15104	1.25E-06	45.63	6.95E-05	11.63	1.35E-04	6.82	2.06E-04
Palm Behind Thumb Back (Tally 406)	701	10.12	4.43E-06	8.14	6.81E-05	6.44	3.23E-04	2.28	3.96E-04
1st Half Palm Ext. Back (Tally 416)	484	13.7025	4.39E-06	6.56	6.23E-05	3.41	4.15E-04	1.77	4.82E-04
2nd Half Palm Ext. Back (Tally 426)	490	13.7025	4.28E-06	7.99	4.80E-05	4.09	2.87E-04	1.96	3.40E-04
Palm Ext. Front Face 1st Half (Tally 436)	377	10.8997	2.28E-07	18.80	3.57E-05	6.42	9.31E-07	45.52	3.68E-05
Palm Ext. Front Face 2nd Half (Tally 446)	387	10.8997	2.08E-07	10.27	3.36E-05	6.47	1.53E-06	25.76	3.54E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	Total
Palm Behind Middle Finger (Tally 456)									
	114	9.724	2.24E-07	24.05	4.18E-05	4.69	1.35E-05	9.75	5.56E-05
Palm Arch beside Middle Finger (Tally 466)									
	704	0.68016	8.43E-07	30.18	8.63E-05	23.94	1.01E-04	10.99	1.88E-04

**B.7 Holding Disk Source Task 1 Nitrile, 1 Vinyl – MCNP Results of the 7 mg cm<sup>-2</sup> Cells**

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Inner Index (Tally 6)</b>									
Inner Index Tip	135	0.94	3.79E-05	6.64	5.85E-03	1.55	6.50E-04	4.65	6.54E-03
Inner Index Section 1	163	2	9.17E-06	8.39	1.86E-03	1.82	1.49E-04	7.88	2.02E-03
Inner Index Section 2	189	2	3.02E-06	12.70	7.07E-04	2.88	1.51E-04	6.42	8.61E-04
Inner Index Section 3	215	2	2.65E-06	20.02	3.78E-04	4.07	4.68E-05	12.85	4.27E-04
Inner Index Section 4	241	2	5.43E-07	62.11	2.33E-04	6.01	2.34E-05	15.79	2.57E-04
Inner Index Section 5	267	2	7.89E-07	33.53	1.54E-04	5.94	1.16E-05	12.98	1.67E-04
Inner Index Section 6	293	2	3.96E-07	20.06	1.04E-04	10.12	1.07E-05	16.26	1.15E-04
Inner Index Section 7	319	2	4.25E-07	33.83	7.44E-05	6.10	6.31E-06	26.14	8.11E-05
Inner Index Section 8	345	1	1.73E-07	10.90	7.00E-05	11.40	7.48E-06	31.50	7.76E-05
<b>Inner Thumb (Tally 16)</b>									
Inner Thumb Tip	151	0.94	9.18E-04	2.05	6.54E-03	1.37	5.58E-02	0.63	6.33E-02
Inner Thumb Section 1	176	2	9.70E-05	4.00	2.30E-03	1.71	8.32E-04	3.09	3.23E-03
Inner Thumb Section 2	202	2	1.69E-05	7.95	8.40E-04	2.66	4.82E-05	22.53	9.05E-04
Inner Thumb Section 3	228	2	7.27E-06	12.67	4.59E-04	3.81	3.70E-05	11.06	5.03E-04
Inner Thumb Section 4	254	2	3.19E-06	18.76	2.70E-04	4.41	2.22E-05	18.66	2.96E-04
Inner Thumb Section 5	280	2	2.18E-06	14.49	1.90E-04	5.75	1.64E-05	19.43	2.09E-04
Inner Thumb Section 6	306	2	1.16E-06	25.33	1.27E-04	7.98	9.13E-06	17.99	1.37E-04
Inner Thumb Section 7	332	2	9.12E-07	35.16	8.91E-05	9.90	6.94E-06	53.00	9.69E-05
Inner Thumb Section 8	358	1	4.96E-07	26.29	8.16E-05	9.84	8.34E-06	29.23	9.05E-05
<b>Inner Middle Finger (Tally 26)</b>									
Inner Middle Finger Tip	555	0.94	3.00E-06	20.86	8.33E-04	4.01	1.18E-04	11.65	9.54E-04
Inner Middle Finger Section 1	567	2	2.14E-06	20.47	5.57E-04	3.56	1.22E-04	7.00	6.81E-04
Inner Middle Finger Section 2	580	2	1.67E-06	25.23	3.50E-04	4.82	6.81E-05	12.11	4.19E-04
Inner Middle Finger Section 3	593	2	1.24E-06	24.48	2.32E-04	5.61	3.63E-05	15.01	2.69E-04
Inner Middle Finger Section 4	606	2	5.15E-07	11.41	1.59E-04	4.88	1.80E-05	16.23	1.77E-04
Inner Middle Finger Section 5	619	2	3.68E-07	17.65	1.14E-04	5.19	1.13E-05	19.80	1.26E-04
Inner Middle Finger Section 6	632	2	4.76E-07	45.79	9.72E-05	7.96	6.77E-06	28.44	1.04E-04
Inner Middle Finger Section 7	645	2	3.66E-07	48.19	7.25E-05	7.99	4.72E-06	18.67	7.76E-05
Inner Middle Finger Section 8	658	1	3.63E-07	31.96	6.16E-05	9.06	4.10E-06	33.39	6.60E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Front Index (Tally 36)</b>									
Front Index Tip	141	1.081	2.29E-05	8.26	2.05E-03	3.08	1.69E-04	8.68	2.25E-03
Front Index Section 1	169	2.3	1.03E-05	6.98	1.21E-03	2.52	4.37E-06	22.81	1.23E-03
Front Index Section 2	195	2.3	5.42E-06	11.48	6.14E-04	3.10	2.82E-06	38.94	6.23E-04
Front Index Section 3	221	2.3	2.36E-06	13.36	3.51E-04	4.22	1.54E-06	60.59	3.55E-04
Front Index Section 4	247	2.3	1.57E-06	23.72	2.15E-04	5.03	3.39E-07	43.13	2.17E-04
Front Index Section 5	273	2.3	6.72E-07	19.93	1.44E-04	5.99	5.19E-07	62.39	1.45E-04
Front Index Section 6	299	2.3	2.72E-07	10.93	8.42E-05	8.21	4.40E-07	50.70	8.49E-05
Front Index Section 7	325	2.3	3.38E-07	29.30	7.00E-05	8.99	4.58E-07	54.39	7.08E-05
Front Index Section 8	351	1.15	1.37E-07	26.24	5.20E-05	14.81	5.90E-07	73.34	5.27E-05
<b>Front Thumb (Tally 46)</b>									
Front Thumb Tip	157	1.081	2.03E-04	4.02	2.15E-03	2.30	7.45E-03	1.61	9.80E-03
Front Thumb Section 1	182	2.3	2.93E-05	5.84	1.20E-03	1.95	7.41E-06	20.98	1.24E-03
Front Thumb Section 2	208	2.3	8.28E-06	6.20	6.00E-04	2.86	1.92E-06	29.39	6.10E-04
Front Thumb Section 3	234	2.3	4.48E-06	8.83	3.74E-04	4.18	1.20E-06	27.34	3.80E-04
Front Thumb Section 4	260	2.3	3.02E-06	16.73	2.61E-04	5.97	9.34E-07	57.17	2.65E-04
Front Thumb Section 5	286	2.3	1.37E-06	12.97	1.40E-04	10.01	7.84E-07	32.12	1.42E-04
Front Thumb Section 6	312	2.3	1.20E-06	27.62	1.11E-04	7.07	8.05E-07	29.43	1.13E-04
Front Thumb Section 7	338	2.3	7.27E-07	40.65	8.36E-05	9.29	1.17E-06	47.20	8.56E-05
Front Thumb Section 8	364	1.15	3.24E-07	7.98	6.22E-05	14.19	4.06E-07	66.89	6.29E-05
<b>Front Middle Finger (Tally 56)</b>									
Front Middle Finger Tip	561	1.081	1.47E-05	8.67	1.46E-03	2.76	8.42E-04	3.27	2.32E-03
Front Middle Finger Section 1	573	2.3	1.00E-05	8.16	9.79E-04	2.67	1.63E-04	5.85	1.15E-03
Front Middle Finger Section 2	586	2.3	5.95E-06	13.29	5.74E-04	3.26	4.84E-05	11.64	6.28E-04
Front Middle Finger Section 3	599	2.3	3.01E-06	13.50	3.34E-04	4.07	2.03E-05	28.13	3.57E-04
Front Middle Finger Section 4	612	2.3	1.63E-06	18.61	2.36E-04	5.80	1.28E-05	15.44	2.51E-04
Front Middle Finger Section 5	625	2.3	7.54E-07	14.59	1.74E-04	5.36	6.87E-06	17.63	1.82E-04
Front Middle Finger Section 6	638	2.3	4.21E-07	8.64	1.16E-04	7.43	3.03E-06	27.44	1.20E-04
Front Middle Finger Section 7	651	2.3	5.22E-07	32.74	8.65E-05	6.89	4.06E-06	40.93	9.11E-05
Front Middle Finger Section 8	664	1.15	1.91E-07	7.85	6.58E-05	14.28	2.39E-06	30.17	6.84E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Back Index (Tally 66)</b>									
Back Index Tip	144	1.081	2.35E-05	7.96	2.04E-03	3.24	2.19E-04	6.74	2.28E-03
Back Index Section 1	172	2.3	1.26E-05	7.81	1.16E-03	2.24	1.58E-05	18.58	1.19E-03
Back Index Section 2	198	2.3	5.63E-06	10.19	5.92E-04	3.15	7.83E-06	21.27	6.06E-04
Back Index Section 3	224	2.3	2.98E-06	15.57	3.62E-04	4.50	3.61E-06	32.29	3.68E-04
Back Index Section 4	250	2.3	1.14E-06	16.03	1.99E-04	5.30	2.69E-06	24.14	2.03E-04
Back Index Section 5	276	2.3	8.64E-07	19.01	1.61E-04	8.20	2.32E-06	42.69	1.64E-04
Back Index Section 6	302	2.3	6.93E-07	23.36	9.50E-05	7.74	1.29E-06	35.03	9.70E-05
Back Index Section 7	328	2.3	9.49E-07	36.61	7.21E-05	7.61	6.29E-07	50.00	7.37E-05
Back Index Section 8	354	1.15	1.26E-07	4.59	5.25E-05	12.93	7.22E-07	39.42	5.34E-05
<b>Back Thumb (Tally 76)</b>									
Back Thumb Tip	160	1.081	2.04E-04	4.01	2.21E-03	2.26	7.55E-03	1.37	9.96E-03
Back Thumb Section 1	185	2.3	3.04E-05	5.71	1.20E-03	2.19	9.67E-06	19.51	1.24E-03
Back Thumb Section 2	211	2.3	9.58E-06	8.46	6.44E-04	3.02	2.95E-06	27.12	6.56E-04
Back Thumb Section 3	237	2.3	4.57E-06	10.74	3.81E-04	4.06	2.15E-06	31.35	3.88E-04
Back Thumb Section 4	263	2.3	2.05E-06	8.89	2.37E-04	5.23	4.09E-06	31.35	2.43E-04
Back Thumb Section 5	289	2.3	1.75E-06	18.55	1.57E-04	5.74	2.94E-06	44.26	1.61E-04
Back Thumb Section 6	315	2.3	1.07E-06	19.34	9.97E-05	5.86	3.55E-06	38.02	1.04E-04
Back Thumb Section 7	341	2.3	5.05E-07	9.86	7.57E-05	7.19	4.26E-06	42.50	8.05E-05
Back Thumb Section 8	367	1.15	9.37E-07	42.41	5.96E-05	9.25	0.00E+00	100.00	5.97E-05
<b>Back Middle Finger (Tally 86)</b>									
Back Middle Finger Tip	564	1.081	3.28E-06	20.34	4.30E-04	4.82	4.84E-06	36.03	4.38E-04
Back Middle Finger Section 1	576	2.3	2.75E-06	15.12	3.64E-04	4.18	9.08E-07	41.29	3.68E-04
Back Middle Finger Section 2	589	2.3	1.19E-06	18.81	2.99E-04	4.67	7.50E-07	39.84	3.01E-04
Back Middle Finger Section 3	602	2.3	1.22E-06	26.64	1.94E-04	6.34	1.37E-06	79.21	1.97E-04
Back Middle Finger Section 4	615	2.3	6.70E-07	36.81	1.39E-04	5.35	7.60E-07	61.66	1.41E-04
Back Middle Finger Section 5	628	2.3	3.58E-07	20.71	1.20E-04	7.50	1.65E-07	52.76	1.21E-04
Back Middle Finger Section 6	641	2.3	3.97E-07	45.55	7.46E-05	7.43	4.89E-07	36.46	7.55E-05
Back Middle Finger Section 7	654	2.3	3.82E-07	53.49	4.96E-05	7.42	2.13E-06	60.00	5.21E-05
Back Middle Finger Section 8	667	1.15	1.62E-07	35.48	4.58E-05	16.27	3.79E-07	52.46	4.64E-05

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
<b>Outer Index (Tally 96)</b>									
Outer Index Tip	138	0.94	1.54E-05	11.91	1.02E-03	3.54	1.04E-04	11.80	1.13E-03
Outer Index Section 1	166	2	8.28E-06	9.05	7.34E-04	3.26	2.65E-08	100.00	7.42E-04
Outer Index Section 2	192	2	3.68E-06	12.76	4.46E-04	3.63	4.38E-08	100.00	4.50E-04
Outer Index Section 3	218	2	1.61E-06	12.11	2.75E-04	4.63	5.49E-08	100.00	2.77E-04
Outer Index Section 4	244	2	7.97E-07	11.17	1.95E-04	5.40	5.84E-08	100.00	1.96E-04
Outer Index Section 5	270	2	6.66E-07	25.76	1.17E-04	11.52	0.00E+00	0.00	1.18E-04
Outer Index Section 6	296	2	2.31E-07	15.45	7.90E-05	6.24	0.00E+00	0.00	7.92E-05
Outer Index Section 7	322	2	2.79E-07	40.46	5.83E-05	9.57	0.00E+00	0.00	5.86E-05
Outer Index Section 8	348	1	8.48E-08	5.53	4.22E-05	12.07	0.00E+00	0.00	4.23E-05
<b>Outer Thumb (Tally 106)</b>									
Outer Thumb Tip	154	0.94	6.78E-05	7.42	9.85E-04	3.59	1.43E-03	3.15	2.48E-03
Outer Thumb Section 1	179	2	1.20E-05	8.23	6.85E-04	3.64	7.99E-07	31.83	6.98E-04
Outer Thumb Section 2	205	2	5.38E-06	13.24	4.40E-04	3.64	6.13E-07	32.56	4.46E-04
Outer Thumb Section 3	231	2	3.38E-06	14.93	2.62E-04	4.68	4.41E-07	41.73	2.65E-04
Outer Thumb Section 4	257	2	1.63E-06	21.13	1.92E-04	5.27	8.26E-07	42.84	1.94E-04
Outer Thumb Section 5	283	2	7.19E-07	9.50	1.47E-04	6.96	6.77E-07	36.35	1.48E-04
Outer Thumb Section 6	309	2	4.96E-07	15.96	9.32E-05	7.38	3.67E-06	48.81	9.73E-05
Outer Thumb Section 7	335	2	3.36E-07	18.35	6.14E-05	10.64	4.67E-07	51.57	6.22E-05
Outer Thumb Section 8	361	1	1.78E-07	12.10	5.73E-05	12.41	4.72E-07	100.00	5.79E-05
<b>Outer Middle Finger (Tally 116)</b>									
Outer Middle Finger Tip	558	0.94	6.54E-06	15.68	6.26E-04	5.47	2.67E-05	36.17	6.60E-04
Outer Middle Finger Section 1	570	2	4.68E-06	13.15	4.65E-04	3.74	1.97E-06	27.15	4.72E-04
Outer Middle Finger Section 2	583	2	4.38E-06	13.66	3.58E-04	4.02	1.34E-07	70.73	3.62E-04
Outer Middle Finger Section 3	596	2	2.02E-06	17.69	2.35E-04	5.39	0.00E+00	0.00	2.37E-04
Outer Middle Finger Section 4	609	2	1.30E-06	18.91	1.54E-04	5.10	0.00E+00	0.00	1.55E-04
Outer Middle Finger Section 5	622	2	1.04E-06	33.21	1.29E-04	8.06	1.62E-07	71.65	1.30E-04
Outer Middle Finger Section 6	635	2	4.74E-07	29.56	1.03E-04	8.67	9.00E-08	75.79	1.03E-04
Outer Middle Finger Section 7	648	2	3.52E-07	35.99	6.61E-05	8.20	0.00E+00	0.00	6.64E-05
Outer Middle Finger Section 8	661	1	1.70E-07	13.01	5.01E-05	10.52	0.00E+00	0.00	5.03E-05
<b>Tip of Fingers (Tally 126)</b>									
Index Tip	131	4.42	4.15E-05	3.19	3.44E-03	0.91	2.85E-03	1.11	6.33E-03
Thumb Tip	147	4.42	8.99E-04	0.95	3.55E-03	0.88	9.94E-02	0.19	1.04E-01
Middle Finger Tip	551	4.42	9.39E-06	6.86	8.82E-04	1.99	2.36E-04	3.64	1.13E-03

Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						Total
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	
1st Half Under Palm Ext. (Tally 136)	371	6.2284	5.93E-07	23.22	5.56E-05	5.08	1.30E-05	8.99	6.92E-05
2nd Half Under Palm Ext. (Tally 146)	381	6.2284	5.91E-07	21.12	4.84E-05	6.57	2.81E-05	8.08	7.71E-05
Between Index/Thumb (Tally 156)	120	0.5232	1.23E-06	42.68	9.30E-05	16.01	4.14E-04	6.41	5.08E-04
Between Index/Middle (Tally 166)	710	1.326	1.68E-07	8.41	6.56E-05	11.66	3.50E-05	15.01	1.01E-04
Palm Behind Thumb (Tally 176)	117	5.98	1.73E-06	14.90	7.78E-05	4.47	1.24E-04	4.74	2.03E-04
1st Half Under Palm Ext. Mid (Tally 186)	481	8.09692	1.52E-06	12.22	6.17E-05	4.99	1.46E-04	4.48	2.09E-04
2nd Half Under Palm Ext. Mid (Tally 196)	487	8.09692	1.68E-06	15.81	5.23E-05	6.18	1.27E-04	3.57	1.81E-04
Front Face of Index/Thumb (Tally 206)	101	16.7006	1.66E-07	13.47	3.51E-05	4.33	1.18E-06	14.50	3.65E-05
Palm Back Between Index/Middle (Tally 396)	707	1.15104	1.10E-06	50.28	6.15E-05	8.17	2.58E-04	6.47	3.21E-04
Palm Behind Thumb Back (Tally 406)	701	10.12	5.31E-06	7.77	7.13E-05	3.82	4.68E-04	1.88	5.45E-04
1st Half Palm Ext. Back (Tally 416)	484	13.7025	5.14E-06	6.49	6.27E-05	3.36	6.00E-04	1.35	6.68E-04
2nd Half Palm Ext. Back (Tally 426)	490	13.7025	4.29E-06	7.61	4.69E-05	4.89	4.53E-04	1.49	5.04E-04
Palm Ext. Front Face 1st Half (Tally 436)	377	10.8997	2.05E-07	17.82	3.51E-05	6.51	1.86E-06	20.37	3.71E-05
Palm Ext. Front Face 2nd Half (Tally 446)	387	10.8997	2.09E-07	10.20	3.47E-05	6.72	3.15E-06	20.70	3.80E-05



Cell Description	Cell No.	Area (cm <sup>2</sup> )	Dose Rate (Gy s <sup>-1</sup> )						
			As-73 Photon	% Error	As-74 Photon	% Error	As-74 Beta	% Error	Total
Palm Behind Middle Finger (Tally 456)									
	114	9.724	2.22E-07	24.23	4.27E-05	4.90	2.69E-05	6.02	6.99E-05
Palm Arch beside Middle Finger (Tally 466)									
	704	0.68016	8.57E-07	29.76	8.72E-05	14.48	2.16E-04	6.81	3.04E-04

## APPENDIX C

**C.1 Tong Task 1 Nitrile, 1 Vinyl – Highest Dose Rates with Respect to Source Term for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> )							
		<sup>73</sup> As Photon	± 1σ (%)	<sup>74</sup> As Photon	± 1σ (%)	<sup>74</sup> As Beta	± 1σ (%)	Total Cell	± 1σ (%)
377	Palm Ext. Front Face 1st Half	4.47E-06	2.75	1.87E-05	2.34	5.73E-04	0.50	5.96E-04	0.49
157	Front Thumb Tip	3.98E-06	9.50	2.29E-05	7.95	5.05E-04	1.54	5.32E-04	1.50
182	Front Thumb Section 1	3.68E-06	6.27	2.38E-05	5.82	5.03E-04	1.23	5.30E-04	1.20
208	Front Thumb Section 2	3.87E-06	6.54	2.30E-05	5.06	4.93E-04	1.17	5.20E-04	1.13
234	Front Thumb Section 3	3.69E-06	6.53	2.27E-05	4.89	4.89E-04	1.07	5.16E-04	1.04
260	Front Thumb Section 4	3.52E-06	6.71	2.27E-05	4.75	4.69E-04	1.28	4.95E-04	1.23
286	Front Thumb Section 5	3.70E-06	6.77	2.26E-05	4.52	4.51E-04	1.15	4.77E-04	1.11
312	Front Thumb Section 6	3.56E-06	6.78	1.97E-05	4.99	4.32E-04	1.29	4.56E-04	1.24
338	Front Thumb Section 7	3.29E-06	7.12	2.06E-05	4.44	3.96E-04	1.34	4.19E-04	1.28
364	Front Thumb Section 8	3.40E-06	10.29	2.07E-05	5.97	3.90E-04	2.04	4.14E-04	1.95
371	1st Half Under Palm Ext.	3.57E-06	4.03	1.82E-05	2.94	2.16E-04	1.13	2.38E-04	1.05
101	Front Face of Index/Thumb	1.37E-06	4.03	1.62E-05	2.00	2.17E-04	0.63	2.34E-04	0.60
169	Front Index Section 1	5.34E-08	30.79	1.90E-05	4.01	1.32E-04	2.16	1.51E-04	1.95
195	Front Index Section 2	6.05E-08	30.33	1.92E-05	4.73	1.31E-04	2.11	1.51E-04	1.94
141	Front Index Tip	4.25E-08	20.27	1.85E-05	6.16	1.28E-04	3.53	1.47E-04	3.18
221	Front Index Section 3	5.83E-08	31.48	1.93E-05	4.72	1.25E-04	2.01	1.44E-04	1.85
247	Front Index Section 4	3.26E-08	8.66	1.88E-05	4.66	1.24E-04	2.05	1.43E-04	1.88
481	1st Half Under Palm Ext. Mid	2.54E-06	4.19	1.59E-05	3.20	1.24E-04	1.28	1.42E-04	1.17
273	Front Index Section 5	6.76E-08	32.75	1.81E-05	4.91	1.20E-04	2.24	1.39E-04	2.05
299	Front Index Section 6	8.62E-08	47.72	1.86E-05	5.20	1.15E-04	2.56	1.34E-04	2.32
325	Front Index Section 7	4.09E-08	21.58	1.52E-05	7.37	1.10E-04	2.36	1.25E-04	2.26
351	Front Index Section 8	2.52E-08	3.11	1.51E-05	7.78	1.04E-04	4.42	1.19E-04	3.98
484	1st Half Palm Ext. Back	1.61E-06	4.11	1.17E-05	3.19	6.30E-05	1.47	7.63E-05	1.31
154	Outer Thumb Tip	1.10E-06	19.26	2.02E-05	8.13	4.32E-05	6.34	6.44E-05	4.96
231	Outer Thumb Section 3	9.46E-07	12.55	2.14E-05	5.40	4.18E-05	3.79	6.41E-05	3.06
257	Outer Thumb Section 4	1.02E-06	12.68	2.13E-05	5.56	3.90E-05	6.05	6.13E-05	4.31
309	Outer Thumb Section 6	7.17E-07	12.15	2.03E-05	6.08	3.98E-05	4.36	6.08E-05	3.50
335	Outer Thumb Section 7	7.61E-07	12.44	1.75E-05	6.22	4.22E-05	4.12	6.05E-05	3.40
283	Outer Thumb Section 5	7.70E-07	11.72	1.75E-05	5.71	4.20E-05	3.85	6.03E-05	3.16
205	Outer Thumb Section 2	1.02E-06	12.85	1.74E-05	4.22	4.16E-05	4.12	6.01E-05	3.11
361	Outer Thumb Section 8	9.83E-07	21.08	1.76E-05	11.05	3.85E-05	5.97	5.71E-05	5.29
179	Outer Thumb Section 1	9.79E-07	12.05	1.81E-05	6.04	3.63E-05	8.73	5.54E-05	6.06
147	Thumb Tip	8.29E-07	10.07	2.06E-05	3.99	3.06E-05	3.95	5.20E-05	2.81
120	Between Index/Thumb	2.20E-07	26.88	1.49E-05	6.95	2.36E-05	9.10	3.87E-05	6.16
163	Inner Index Section 1	9.88E-08	24.79	1.85E-05	6.28	1.57E-05	6.59	3.43E-05	4.54
215	Inner Index Section 3	1.25E-07	22.50	1.69E-05	5.57	1.48E-05	5.93	3.18E-05	4.04

**C.2 Smearing Task 1 Nitrile, 3 Vinyl Highest Dose Rates with Respect to Source Term for the  
7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> )							
		<sup>73</sup> As Photon	± 1σ (%)	<sup>74</sup> As Photon	± 1σ (%)	<sup>74</sup> As Beta	± 1σ (%)	Total Cell	± 1σ (%)
202	Inner Thumb Section 2	5.28E-03	0.59	2.85E-02	0.47	3.00E-01	0.16	3.34E-01	0.15
228	Inner Thumb Section 3	1.92E-03	0.97	1.34E-02	0.72	1.02E-01	0.28	1.18E-01	0.26
176	Inner Thumb Section 1	1.55E-03	1.07	1.14E-02	0.79	8.11E-02	0.31	9.41E-02	0.28
189	Inner Index Section 2	2.65E-04	1.64	2.47E-02	0.53	1.30E-02	0.76	3.80E-02	0.43
215	Inner Index Section 3	1.08E-04	2.32	1.17E-02	0.76	4.33E-03	1.27	1.61E-02	0.65
163	Inner Index Section 1	9.18E-05	2.74	1.02E-02	0.80	3.33E-03	1.64	1.37E-02	0.72
208	Front Thumb Section 2	1.73E-04	2.74	3.75E-03	1.24	2.59E-03	1.65	6.52E-03	0.97
211	Back Thumb Section 2	1.70E-04	2.66	3.86E-03	1.20	2.46E-03	1.94	6.49E-03	1.03
195	Front Index Section 2	4.57E-05	3.91	3.68E-03	1.24	7.94E-05	8.51	3.81E-03	1.21
198	Back Index Section 2	4.66E-05	3.73	3.62E-03	1.27	7.93E-05	12.99	3.74E-03	1.26
234	Front Thumb Section 3	6.97E-05	4.00	2.54E-03	1.43	2.07E-04	7.17	2.82E-03	1.40
237	Back Thumb Section 3	6.86E-05	3.83	2.48E-03	1.51	1.95E-04	6.58	2.75E-03	1.45
151	Inner Thumb Tip	6.02E-05	6.18	2.52E-03	2.33	8.58E-05	7.98	2.66E-03	2.22
182	Front Thumb Section 1	6.33E-05	4.04	2.33E-03	1.64	1.20E-04	6.90	2.52E-03	1.56
224	Back Index Section 3	2.93E-05	4.50	2.47E-03	1.53	0.00E+00	0.00	2.50E-03	1.51
221	Front Index Section 3	3.02E-05	5.11	2.46E-03	1.66	2.53E-06	47.59	2.49E-03	1.64
185	Back Thumb Section 1	6.05E-05	3.99	2.28E-03	1.54	1.09E-04	6.35	2.45E-03	1.46
169	Front Index Section 1	3.00E-05	5.24	2.37E-03	1.59	3.80E-07	39.99	2.40E-03	1.57
254	Inner Thumb Section 4	4.90E-05	4.40	2.16E-03	1.70	8.40E-05	7.66	2.29E-03	1.63
172	Back Index Section 1	2.79E-05	4.68	2.26E-03	1.79	2.27E-07	47.37	2.29E-03	1.77
135	Inner Index Tip	1.28E-05	10.49	2.15E-03	2.49	9.47E-06	24.11	2.17E-03	2.47
586	Front Middle Finger Section 2	2.51E-05	5.14	1.94E-03	1.65	7.74E-06	29.44	1.97E-03	1.63
241	Inner Index Section 4	1.10E-05	7.60	1.87E-03	2.09	1.36E-05	21.19	1.89E-03	2.07
599	Front Middle Finger Section 3	1.84E-05	5.75	1.58E-03	1.81	1.65E-06	29.77	1.60E-03	1.79
573	Front Middle Finger Section 1	1.66E-05	6.44	1.49E-03	1.84	1.52E-06	69.31	1.51E-03	1.82
144	Back Index Tip	1.25E-05	9.80	1.36E-03	2.96	5.07E-08	100.00	1.38E-03	2.93
141	Front Index Tip	1.33E-05	10.33	1.28E-03	2.81	0.00E+00	0.00	1.30E-03	2.78
157	Front Thumb Tip	2.34E-05	7.77	1.26E-03	3.06	1.17E-06	58.78	1.29E-03	3.01
147	Thumb Tip	2.18E-05	4.21	1.27E-03	1.40	2.37E-07	45.25	1.29E-03	1.38
160	Back Thumb Tip	2.42E-05	7.40	1.24E-03	3.11	1.23E-07	72.00	1.26E-03	3.05
131	Index Tip	1.36E-05	5.11	1.25E-03	1.49	0.00E+00	0.00	1.26E-03	1.48
250	Back Index Section 4	1.46E-05	6.68	1.21E-03	2.31	1.79E-07	71.78	1.23E-03	2.28
263	Back Thumb Section 4	2.00E-05	5.22	1.20E-03	2.00	7.40E-07	41.96	1.22E-03	1.97
260	Front Thumb Section 4	2.09E-05	6.01	1.16E-03	2.36	7.88E-07	93.68	1.18E-03	2.32
580	Inner Middle Finger Section 2	6.02E-06	11.29	1.17E-03	2.34	4.06E-06	24.03	1.18E-03	2.32
247	Front Index Section 4	1.24E-05	6.29	1.15E-03	2.31	5.95E-08	70.88	1.16E-03	2.29
205	Outer Thumb Section 2	1.46E-05	7.06	1.11E-03	2.41	0.00E+00	0.00	1.13E-03	2.38
192	Outer Index Section 2	1.28E-05	7.04	1.09E-03	2.31	0.00E+00	0.00	1.10E-03	2.28
612	Front Middle Finger Section 4	1.00E-05	8.48	9.96E-04	2.43	9.94E-07	27.57	1.01E-03	2.41
561	Front Middle Finger Tip	1.16E-05	10.42	9.87E-04	3.26	1.83E-06	34.30	1.00E-03	3.22
166	Outer Index Section 1	9.56E-06	9.39	9.60E-04	2.59	0.00E+00	0.00	9.69E-04	2.57
593	Inner Middle Finger Section 3	4.94E-06	10.00	9.56E-04	2.55	3.68E-06	79.34	9.65E-04	2.55
218	Outer Index Section 3	1.08E-05	8.58	9.49E-04	2.49	0.00E+00	0.00	9.60E-04	2.46
567	Inner Middle Finger Section 1	5.86E-06	11.53	9.34E-04	2.74	1.22E-06	51.93	9.41E-04	2.72
231	Outer Thumb Section 3	1.11E-05	6.23	9.15E-04	2.59	0.00E+00	0.00	9.26E-04	2.56
179	Outer Thumb Section 1	9.73E-06	5.81	8.96E-04	2.48	0.00E+00	0.00	9.05E-04	2.45
280	Inner Thumb Section 5	1.39E-05	6.75	8.36E-04	2.64	5.26E-06	36.43	8.55E-04	2.59
138	Outer Index Tip	6.15E-06	13.19	7.39E-04	4.23	1.34E-06	100.00	7.46E-04	4.19
267	Inner Index Section 5	4.71E-06	9.88	7.05E-04	2.97	9.59E-06	24.18	7.20E-04	2.93

**C.3 Smearing Task 1 Nitrile, 2 Vinyl Highest Dose Rates with Respect to Source Term for the  
7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> )							
		<sup>73</sup> As Photon	± 1σ (%)	<sup>74</sup> As Photon	± 1σ (%)	<sup>74</sup> As Beta	± 1σ (%)	Total Cell	± 1σ (%)
202	Inner Thumb Section 2	5.97E-03	0.56	2.86E-02	0.47	4.25E-01	0.14	4.60E-01	0.13
228	Inner Thumb Section 3	2.20E-03	0.90	1.36E-02	0.70	1.47E-01	0.24	1.63E-01	0.22
176	Inner Thumb Section 1	1.80E-03	1.00	1.14E-02	0.78	1.17E-01	0.27	1.30E-01	0.25
189	Inner Index Section 2	2.64E-04	1.63	2.51E-02	0.54	1.70E-02	0.72	4.24E-02	0.43
215	Inner Index Section 3	1.08E-04	2.32	1.18E-02	0.75	5.75E-03	1.11	1.77E-02	0.62
163	Inner Index Section 1	9.07E-05	2.75	1.02E-02	0.79	4.55E-03	1.29	1.48E-02	0.67
211	Back Thumb Section 2	1.84E-04	2.61	3.86E-03	1.20	3.72E-03	1.43	7.77E-03	0.91
208	Front Thumb Section 2	1.86E-04	2.68	3.73E-03	1.24	3.70E-03	1.39	7.62E-03	0.91
195	Front Index Section 2	4.51E-05	3.94	3.69E-03	1.26	1.26E-04	6.89	3.87E-03	1.22
198	Back Index Section 2	4.56E-05	3.68	3.62E-03	1.24	1.13E-04	7.60	3.78E-03	1.21
151	Inner Thumb Tip	8.45E-05	5.87	2.46E-03	2.44	4.24E-04	6.25	2.97E-03	2.22
234	Front Thumb Section 3	7.33E-05	3.89	2.53E-03	1.43	3.66E-04	4.10	2.96E-03	1.33
237	Back Thumb Section 3	7.32E-05	3.81	2.51E-03	1.50	3.27E-04	4.54	2.91E-03	1.39
182	Front Thumb Section 1	6.73E-05	4.03	2.32E-03	1.63	2.04E-04	5.03	2.59E-03	1.52
254	Inner Thumb Section 4	6.47E-05	4.24	2.18E-03	1.74	3.27E-04	4.25	2.57E-03	1.58
185	Back Thumb Section 1	6.32E-05	3.95	2.30E-03	1.57	2.07E-04	5.15	2.57E-03	1.47
221	Front Index Section 3	3.04E-05	5.02	2.48E-03	1.64	5.97E-06	29.19	2.51E-03	1.62
224	Back Index Section 3	3.02E-05	4.70	2.46E-03	1.53	8.32E-06	39.65	2.50E-03	1.51
169	Front Index Section 1	2.99E-05	5.24	2.38E-03	1.63	1.58E-06	29.35	2.41E-03	1.61
172	Back Index Section 1	2.73E-05	4.71	2.29E-03	1.76	1.26E-06	27.81	2.32E-03	1.74
135	Inner Index Tip	1.32E-05	10.89	2.24E-03	2.42	5.03E-05	12.21	2.30E-03	2.37
586	Front Middle Finger Section 2	2.48E-05	4.97	1.95E-03	1.66	2.37E-05	11.36	2.00E-03	1.63
241	Inner Index Section 4	1.12E-05	7.88	1.85E-03	2.08	6.54E-05	9.39	1.93E-03	2.02
599	Front Middle Finger Section 3	1.85E-05	5.78	1.56E-03	1.83	1.11E-05	19.09	1.59E-03	1.80
573	Front Middle Finger Section 1	1.58E-05	5.56	1.49E-03	1.99	8.76E-06	16.19	1.51E-03	1.97
144	Back Index Tip	1.26E-05	9.78	1.33E-03	2.91	5.51E-07	51.04	1.34E-03	2.89
141	Front Index Tip	1.35E-05	10.31	1.30E-03	2.81	6.51E-07	37.35	1.31E-03	2.79
157	Front Thumb Tip	2.37E-05	7.71	1.27E-03	3.05	2.82E-06	29.56	1.30E-03	2.98
147	Thumb Tip	2.19E-05	4.24	1.27E-03	1.39	1.63E-06	34.49	1.29E-03	1.37
160	Back Thumb Tip	2.45E-05	7.76	1.23E-03	3.02	3.50E-06	100.00	1.26E-03	2.96
131	Index Tip	1.34E-05	5.18	1.25E-03	1.49	2.16E-06	39.05	1.26E-03	1.48
263	Back Thumb Section 4	2.01E-05	5.18	1.20E-03	2.00	4.30E-06	31.82	1.23E-03	1.96
250	Back Index Section 4	1.44E-05	6.71	1.21E-03	2.33	1.02E-06	31.69	1.22E-03	2.31
580	Inner Middle Finger Section 2	6.06E-06	11.30	1.19E-03	2.42	1.02E-05	18.57	1.20E-03	2.41
260	Front Thumb Section 4	2.14E-05	5.99	1.18E-03	2.36	2.42E-06	37.84	1.20E-03	2.32
247	Front Index Section 4	1.18E-05	6.18	1.16E-03	2.30	7.39E-07	37.94	1.17E-03	2.28
120	Between Index/Thumb	2.15E-06	22.11	2.07E-04	10.46	9.61E-04	4.48	1.17E-03	4.12
205	Outer Thumb Section 2	1.42E-05	7.14	1.12E-03	2.42	0.00E+00	0.00	1.13E-03	2.40
192	Outer Index Section 2	1.25E-05	7.07	1.09E-03	2.31	0.00E+00	0.00	1.10E-03	2.29
561	Front Middle Finger Tip	1.07E-05	10.48	1.03E-03	3.20	7.23E-06	23.23	1.05E-03	3.14
612	Front Middle Finger Section 4	1.03E-05	8.62	9.83E-04	2.35	1.00E-05	15.67	1.00E-03	2.32
567	Inner Middle Finger Section 1	5.26E-06	10.65	9.66E-04	2.57	9.63E-06	36.32	9.80E-04	2.56
593	Inner Middle Finger Section 3	4.80E-06	10.17	9.66E-04	2.62	5.06E-06	18.02	9.76E-04	2.60
166	Outer Index Section 1	9.07E-06	9.60	9.56E-04	2.59	0.00E+00	0.00	9.65E-04	2.57
218	Outer Index Section 3	1.07E-05	8.63	9.54E-04	2.49	0.00E+00	0.00	9.65E-04	2.46
231	Outer Thumb Section 3	1.06E-05	6.33	9.12E-04	2.65	0.00E+00	0.00	9.22E-04	2.62
179	Outer Thumb Section 1	9.91E-06	5.91	8.89E-04	2.47	0.00E+00	0.00	8.99E-04	2.44
280	Inner Thumb Section 5	1.58E-05	6.55	8.47E-04	2.99	2.10E-05	28.94	8.83E-04	2.95
267	Inner Index Section 5	5.12E-06	10.14	7.24E-04	3.60	3.86E-05	13.17	7.68E-04	3.46

### C.4 Smearing Task 1 Nitrile, 1 Vinyl Highest Dose Rates with Respect to Source Term for the 7 mg cm<sup>-2</sup> Cells

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> )							
		<sup>73</sup> As		<sup>74</sup> As		<sup>74</sup> As		Total Cell	± 1σ (%)
		Photon	± 1σ (%)	Photon	± 1σ (%)	Beta	± 1σ (%)		
202	Inner Thumb Section 2	6.80E-03	0.53	2.86E-02	0.47	6.14E-01	0.11	6.49E-01	0.11
228	Inner Thumb Section 3	2.59E-03	0.84	1.36E-02	0.72	2.17E-01	0.19	2.33E-01	0.18
176	Inner Thumb Section 1	2.13E-03	0.92	1.17E-02	0.76	1.74E-01	0.22	1.87E-01	0.21
189	Inner Index Section 2	2.64E-04	1.65	2.54E-02	0.53	2.29E-02	0.58	4.85E-02	0.39
215	Inner Index Section 3	1.07E-04	2.33	1.19E-02	0.76	7.72E-03	1.01	1.97E-02	0.61
163	Inner Index Section 1	9.17E-05	2.76	1.02E-02	0.81	5.93E-03	1.19	1.62E-02	0.67
211	Back Thumb Section 2	1.98E-04	2.56	3.85E-03	1.22	5.42E-03	1.15	9.47E-03	0.83
208	Front Thumb Section 2	2.01E-04	2.60	3.72E-03	1.23	5.40E-03	1.26	9.32E-03	0.88
151	Inner Thumb Tip	1.29E-04	5.17	2.65E-03	2.34	1.24E-03	3.81	4.02E-03	1.95
195	Front Index Section 2	4.46E-05	3.93	3.69E-03	1.23	1.76E-04	7.34	3.91E-03	1.21
198	Back Index Section 2	4.51E-05	3.68	3.66E-03	1.26	1.76E-04	6.52	3.88E-03	1.23
254	Inner Thumb Section 4	9.65E-05	3.88	2.27E-03	1.76	9.73E-04	2.75	3.34E-03	1.44
234	Front Thumb Section 3	7.96E-05	3.87	2.52E-03	1.42	5.95E-04	3.33	3.19E-03	1.28
237	Back Thumb Section 3	7.82E-05	3.75	2.50E-03	1.51	5.72E-04	4.51	3.15E-03	1.45
182	Front Thumb Section 1	7.10E-05	3.97	2.32E-03	1.62	3.81E-04	3.61	2.77E-03	1.45
185	Back Thumb Section 1	7.00E-05	3.99	2.26E-03	1.61	3.70E-04	4.87	2.70E-03	1.51
221	Front Index Section 3	3.02E-05	5.02	2.49E-03	1.62	2.72E-06	100.00	2.52E-03	1.60
224	Back Index Section 3	2.93E-05	4.64	2.45E-03	1.53	6.95E-06	18.65	2.48E-03	1.51
135	Inner Index Tip	1.30E-05	10.32	2.28E-03	2.67	1.54E-04	14.73	2.45E-03	2.66
169	Front Index Section 1	2.98E-05	5.32	2.37E-03	1.59	4.75E-06	26.36	2.40E-03	1.57
172	Back Index Section 1	2.79E-05	4.92	1.37E-06	1.71	6.13E-06	23.21	2.33E-03	1.69
241	Inner Index Section 4	1.04E-05	7.63	7.96E-07	1.93	1.95E-04	7.16	2.12E-03	1.86
586	Front Middle Finger Section 2	2.46E-05	5.00	1.23E-06	1.67	7.83E-05	7.52	2.06E-03	1.61
120	Between Index/Thumb	2.55E-06	31.40	8.02E-07	9.29	1.68E-03	4.38	1.88E-03	4.04
599	Front Middle Finger Section 3	1.82E-05	5.85	1.06E-06	1.79	2.66E-05	11.05	1.63E-03	1.75
573	Front Middle Finger Section 1	1.59E-05	5.59	8.87E-07	2.07	1.99E-05	14.80	1.55E-03	2.03
144	Back Index Tip	1.25E-05	9.87	1.23E-06	2.95	5.82E-06	52.05	1.36E-03	2.92
141	Front Index Tip	1.33E-05	10.24	1.36E-06	2.84	0.00E+00	0.00	1.32E-03	2.81
147	Thumb Tip	2.22E-05	4.28	9.52E-07	1.40	1.60E-06	100.00	1.30E-03	1.38
160	Back Thumb Tip	2.46E-05	7.77	1.91E-06	3.02	1.42E-05	28.22	1.29E-03	2.95
157	Front Thumb Tip	2.31E-05	6.83	1.58E-06	2.93	1.20E-05	32.19	1.28E-03	2.87
131	Index Tip	1.31E-05	5.25	6.86E-07	1.53	4.71E-06	47.92	1.27E-03	1.52
580	Inner Middle Finger Section 2	5.74E-06	10.43	5.99E-07	2.34	2.75E-05	12.89	1.25E-03	2.30
263	Back Thumb Section 4	2.00E-05	5.15	1.03E-06	2.08	8.05E-06	20.90	1.24E-03	2.04
260	Front Thumb Section 4	2.15E-05	5.98	1.28E-06	2.35	8.80E-06	16.53	1.21E-03	2.30
250	Back Index Section 4	1.42E-05	6.69	9.52E-07	2.31	4.70E-06	31.11	1.21E-03	2.28
247	Front Index Section 4	1.17E-05	6.23	7.32E-07	2.34	3.50E-06	22.83	1.17E-03	2.31
205	Outer Thumb Section 2	1.38E-05	7.27	1.00E-06	2.42	0.00E+00	0.00	1.12E-03	2.39
561	Front Middle Finger Tip	1.18E-05	10.87	1.29E-06	3.63	2.52E-05	31.13	1.10E-03	3.58
704	Palm Arch beside Middle Finger	3.43E-06	32.11	1.10E-06	10.36	8.76E-04	6.87	1.09E-03	5.87
192	Outer Index Section 2	1.23E-05	7.19	8.81E-07	2.30	0.00E+00	0.00	1.09E-03	2.28
280	Inner Thumb Section 5	1.95E-05	7.34	1.43E-06	2.91	8.15E-05	8.13	1.02E-03	2.70
612	Front Middle Finger Section 4	1.04E-05	8.61	8.98E-07	2.48	2.93E-05	15.61	1.01E-03	2.43
593	Inner Middle Finger Section 3	4.73E-06	10.12	4.78E-07	2.54	2.48E-05	14.79	1.00E-03	2.49
567	Inner Middle Finger Section 1	5.06E-06	10.94	5.54E-07	2.50	2.34E-05	12.20	9.88E-04	2.45
218	Outer Index Section 3	1.06E-05	8.66	9.18E-07	2.55	0.00E+00	0.00	9.64E-04	2.52
166	Outer Index Section 1	8.87E-06	9.77	8.67E-07	2.57	0.00E+00	0.00	9.60E-04	2.55
231	Outer Thumb Section 3	1.09E-05	6.56	7.17E-07	2.63	0.00E+00	0.00	9.12E-04	2.60
179	Outer Thumb Section 1	9.61E-06	5.74	5.52E-07	2.57	0.00E+00	0.00	9.00E-04	2.54
267	Inner Index Section 5	5.13E-06	10.24	5.25E-07	3.07	1.56E-04	7.11	8.99E-04	2.81

**C.5 Holding Task 1 Nitrile, 3 Vinyl Highest Dose Rates with Respect to Source Term for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> )							
		<sup>73</sup> As Photon	± 1σ (%)	<sup>74</sup> As Photon	± 1σ (%)	<sup>74</sup> As Beta	± 1σ (%)	Total Cell	± 1σ (%)
147	Thumb Tip	7.42E-04	1.04	3.55E-03	0.92	5.07E-02	0.26	5.50E-02	0.25
151	Inner Thumb Tip	7.64E-04	2.24	6.31E-03	1.41	2.86E-02	0.88	3.57E-02	0.75
157	Front Thumb Tip	1.77E-04	4.29	2.11E-03	2.27	3.98E-03	2.00	6.26E-03	1.49
160	Back Thumb Tip	1.72E-04	4.27	2.20E-03	2.35	3.79E-03	2.12	6.17E-03	1.56
135	Inner Index Tip	3.51E-05	6.07	5.80E-03	1.57	3.22E-04	6.16	6.16E-03	1.51
131	Index Tip	4.10E-05	3.20	3.46E-03	0.94	1.49E-03	1.39	4.99E-03	0.77
176	Inner Thumb Section 1	5.27E-05	4.45	2.21E-03	1.73	6.33E-05	7.97	2.33E-03	1.66
141	Front Index Tip	2.21E-05	8.06	2.08E-03	2.56	7.63E-05	10.27	2.18E-03	2.47
144	Back Index Tip	2.40E-05	7.90	1.99E-03	3.25	7.65E-05	10.29	2.09E-03	3.12
163	Inner Index Section 1	7.92E-06	7.90	1.84E-03	1.93	1.19E-05	20.21	1.86E-03	1.91
561	Front Middle Finger Tip	1.42E-05	8.90	1.37E-03	2.69	3.51E-04	6.30	1.74E-03	2.48
154	Outer Thumb Tip	5.52E-05	8.01	9.67E-04	3.57	6.41E-04	5.37	1.66E-03	2.94
182	Front Thumb Section 1	2.80E-05	5.72	1.22E-03	2.00	1.58E-06	66.18	1.25E-03	1.96
169	Front Index Section 1	1.10E-05	7.44	1.22E-03	2.46	4.35E-08	77.38	1.23E-03	2.44
185	Back Thumb Section 1	2.88E-05	5.59	1.19E-03	2.18	1.37E-06	33.69	1.22E-03	2.13
172	Back Index Section 1	1.35E-05	7.59	1.16E-03	2.26	4.86E-06	39.23	1.18E-03	2.23
138	Outer Index Tip	1.56E-05	11.94	1.01E-03	3.57	4.53E-05	16.78	1.07E-03	3.45
551	Middle Finger Tip	9.32E-06	6.82	8.90E-04	2.02	1.05E-04	4.91	1.00E-03	1.86
573	Front Middle Finger Section 1	1.07E-05	8.12	9.42E-04	2.46	3.71E-05	10.80	9.90E-04	2.38
555	Inner Middle Finger Tip	2.77E-06	20.94	8.50E-04	4.09	2.51E-05	68.95	8.78E-04	4.42
202	Inner Thumb Section 2	1.15E-05	7.46	8.21E-04	2.66	4.46E-06	19.07	8.37E-04	2.61
166	Outer Index Section 1	8.11E-06	9.09	7.59E-04	3.09	2.84E-08	100.00	7.67E-04	3.06
189	Inner Index Section 2	2.81E-06	10.92	6.80E-04	2.99	6.73E-06	19.47	6.89E-04	2.96
179	Outer Thumb Section 1	1.20E-05	8.36	6.69E-04	3.72	1.68E-07	59.25	6.81E-04	3.66
211	Back Thumb Section 2	9.96E-06	8.43	6.49E-04	3.07	1.06E-07	60.73	6.60E-04	3.03
208	Front Thumb Section 2	8.48E-06	6.36	6.09E-04	2.88	1.24E-06	68.67	6.19E-04	2.84
198	Back Index Section 2	5.81E-06	10.40	6.10E-04	3.20	7.90E-07	40.12	6.17E-04	3.17
195	Front Index Section 2	5.57E-06	11.35	6.10E-04	3.21	5.50E-08	100.00	6.16E-04	3.18
558	Outer Middle Finger Tip	5.69E-06	14.65	5.99E-04	5.46	9.82E-06	30.78	6.15E-04	5.35
567	Inner Middle Finger Section 1	1.99E-06	20.68	5.58E-04	3.20	4.05E-05	13.22	6.00E-04	3.11
586	Front Middle Finger Section 2	5.63E-06	13.77	5.87E-04	3.80	5.87E-06	39.99	5.99E-04	3.75
570	Outer Middle Finger Section 1	5.17E-06	13.27	4.52E-04	3.55	4.10E-07	40.86	4.58E-04	3.51
192	Outer Index Section 2	3.92E-06	12.63	4.43E-04	3.62	0.00E+00	0.00	4.47E-04	3.59
205	Outer Thumb Section 2	5.49E-06	13.04	4.30E-04	3.87	9.36E-08	73.41	4.35E-04	3.82
564	Back Middle Finger Tip	3.37E-06	20.06	4.30E-04	4.88	4.68E-07	61.73	4.34E-04	4.84
228	Inner Thumb Section 3	6.52E-06	13.23	4.12E-04	4.02	6.85E-07	29.81	4.20E-04	3.96
224	Back Index Section 3	3.08E-06	15.40	3.79E-04	4.88	3.18E-07	53.88	3.83E-04	4.84
237	Back Thumb Section 3	4.64E-06	10.65	3.72E-04	4.10	7.98E-07	80.24	3.78E-04	4.05
234	Front Thumb Section 3	4.67E-06	8.69	3.71E-04	4.19	8.03E-08	100.00	3.76E-04	4.14
484	1st Half Palm Ext. Back	4.35E-06	6.99	5.94E-05	3.53	2.98E-04	1.92	3.61E-04	1.69
580	Inner Middle Finger Section 2	1.13E-06	22.72	3.43E-04	4.06	1.52E-05	24.75	3.60E-04	4.01
576	Back Middle Finger Section 1	2.81E-06	14.84	3.53E-04	4.24	1.47E-07	100.00	3.56E-04	4.21
221	Front Index Section 3	2.57E-06	15.50	3.53E-04	4.21	1.02E-07	79.19	3.56E-04	4.18
583	Outer Middle Finger Section 2	3.99E-06	14.48	3.51E-04	4.04	0.00E+00	0.00	3.55E-04	4.00
215	Inner Index Section 3	2.03E-06	19.49	3.40E-04	4.41	4.46E-06	33.76	3.44E-04	4.36

**C.6 Holding Task 1 Nitrile, 2 Vinyl Highest Dose Rates with Respect to Source Term for the  
7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> )							
		<sup>73</sup> As Photon	± 1σ (%)	<sup>74</sup> As Photon	± 1σ (%)	<sup>74</sup> As Beta	± 1σ (%)	Total Cell	± 1σ (%)
147	Thumb Tip	8.17E-04	0.99	3.61E-03	0.88	7.07E-02	0.22	7.51E-02	0.21
151	Inner Thumb Tip	8.35E-04	2.16	6.52E-03	1.47	3.98E-02	0.70	4.72E-02	0.63
160	Back Thumb Tip	1.90E-04	4.14	2.19E-03	2.26	5.47E-03	1.60	7.84E-03	1.28
157	Front Thumb Tip	1.87E-04	4.15	2.14E-03	2.27	5.23E-03	1.78	7.56E-03	1.39
135	Inner Index Tip	3.54E-05	6.01	5.72E-03	1.55	4.56E-04	8.51	6.21E-03	1.56
131	Index Tip	4.13E-05	3.19	3.46E-03	0.93	2.07E-03	1.32	5.57E-03	0.76
176	Inner Thumb Section 1	6.87E-05	4.45	2.20E-03	1.74	2.84E-04	5.98	2.55E-03	1.64
141	Front Index Tip	2.27E-05	8.29	2.09E-03	2.51	1.13E-04	15.39	2.23E-03	2.48
144	Back Index Tip	2.35E-05	7.88	2.02E-03	3.26	1.29E-04	8.97	2.18E-03	3.08
154	Outer Thumb Tip	6.05E-05	7.72	9.75E-04	3.60	9.85E-04	4.20	2.02E-03	2.70
561	Front Middle Finger Tip	1.39E-05	8.92	1.42E-03	2.97	5.53E-04	4.86	1.99E-03	2.52
163	Inner Index Section 1	8.43E-06	7.92	1.83E-03	1.92	4.92E-05	11.56	1.88E-03	1.89
182	Front Thumb Section 1	3.00E-05	5.90	1.23E-03	1.99	2.96E-06	63.20	1.26E-03	1.95
169	Front Index Section 1	1.07E-05	7.17	1.22E-03	2.50	2.89E-06	44.66	1.23E-03	2.48
185	Back Thumb Section 1	2.94E-05	5.63	1.19E-03	2.20	2.04E-06	70.57	1.22E-03	2.15
172	Back Index Section 1	1.28E-05	7.71	1.16E-03	2.30	1.04E-05	23.46	1.18E-03	2.27
138	Outer Index Tip	1.55E-05	11.86	1.01E-03	3.57	7.28E-05	13.88	1.10E-03	3.41
551	Middle Finger Tip	9.40E-06	6.89	8.99E-04	2.03	1.50E-04	4.51	1.06E-03	1.84
573	Front Middle Finger Section 1	1.03E-05	8.21	9.58E-04	2.31	7.92E-05	7.38	1.05E-03	2.19
555	Inner Middle Finger Tip	2.83E-06	20.72	8.33E-04	4.04	5.65E-05	10.75	8.92E-04	3.83
202	Inner Thumb Section 2	1.36E-05	7.96	8.25E-04	2.64	2.70E-05	15.44	8.66E-04	2.56
166	Outer Index Section 1	8.20E-06	9.09	7.42E-04	3.27	2.38E-07	100.00	7.51E-04	3.23
189	Inner Index Section 2	2.61E-06	9.86	6.94E-04	2.82	2.25E-05	31.80	7.19E-04	2.90
179	Outer Thumb Section 1	1.18E-05	8.32	6.66E-04	3.69	3.87E-07	43.46	6.79E-04	3.63
211	Back Thumb Section 2	9.69E-06	8.33	6.40E-04	3.00	2.99E-06	31.32	6.53E-04	2.95
558	Outer Middle Finger Tip	5.54E-06	13.94	6.04E-04	5.43	2.79E-05	21.22	6.37E-04	5.23
195	Front Index Section 2	5.45E-06	11.39	6.12E-04	3.12	3.62E-07	49.65	6.18E-04	3.09
208	Front Thumb Section 2	8.10E-06	6.02	6.06E-04	2.91	2.06E-07	47.07	6.15E-04	2.87
198	Back Index Section 2	5.73E-06	10.53	6.02E-04	3.23	5.36E-06	27.97	6.13E-04	3.18
567	Inner Middle Finger Section 1	2.02E-06	20.59	5.56E-04	3.84	5.48E-05	12.46	6.12E-04	3.66
586	Front Middle Finger Section 2	5.59E-06	13.58	5.72E-04	3.36	1.12E-05	26.73	5.89E-04	3.31
484	1st Half Palm Ext. Back	4.39E-06	6.56	6.23E-05	3.41	4.15E-04	1.77	4.82E-04	1.59
570	Outer Middle Finger Section 1	4.76E-06	13.47	4.58E-04	3.71	1.29E-06	41.06	4.64E-04	3.67
192	Outer Index Section 2	3.75E-06	12.55	4.54E-04	3.91	0.00E+00	0.00	4.57E-04	3.88
564	Back Middle Finger Tip	3.37E-06	20.06	4.47E-04	4.95	2.72E-06	63.00	4.53E-04	4.90
228	Inner Thumb Section 3	6.69E-06	12.53	4.28E-04	3.64	1.21E-05	20.25	4.47E-04	3.53
205	Outer Thumb Section 2	5.38E-06	13.24	4.35E-04	3.83	7.70E-07	53.45	4.41E-04	3.78
701	Palm Behind Thumb Back	4.43E-06	8.14	6.81E-05	6.44	3.23E-04	2.28	3.96E-04	2.17
215	Inner Index Section 3	2.37E-06	19.28	3.71E-04	4.33	1.58E-05	17.96	3.89E-04	4.19
580	Inner Middle Finger Section 2	1.30E-06	24.80	3.55E-04	3.95	2.51E-05	12.05	3.82E-04	3.76
224	Back Index Section 3	2.95E-06	15.57	3.75E-04	4.69	2.86E-06	83.24	3.81E-04	4.66

**C.7 Holding Task 1 Nitrile, 1 Vinyl Highest Dose Rates with Respect to Source Term for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> )						Total Cell	± 1σ (%)
		<sup>73</sup> As Photon	± 1σ (%)	<sup>74</sup> As Photon	± 1σ (%)	<sup>74</sup> As Beta	± 1σ (%)		
147	Thumb Tip	8.99E-04	0.95	3.55E-03	0.88	9.94E-02	0.19	1.04E-01	0.18
151	Inner Thumb Tip	9.18E-04	2.05	6.54E-03	1.37	5.58E-02	0.63	6.33E-02	0.57
160	Back Thumb Tip	2.04E-04	4.01	2.21E-03	2.26	7.55E-03	1.37	9.96E-03	1.16
157	Front Thumb Tip	2.03E-04	4.02	2.15E-03	2.30	7.45E-03	1.61	9.80E-03	1.33
135	Inner Index Tip	3.79E-05	6.64	5.85E-03	1.55	6.50E-04	4.65	6.54E-03	1.46
131	Index Tip	4.15E-05	3.19	3.44E-03	0.91	2.85E-03	1.11	6.33E-03	0.70
176	Inner Thumb Section 1	9.70E-05	4.00	2.30E-03	1.71	8.32E-04	3.09	3.23E-03	1.46
154	Outer Thumb Tip	6.78E-05	7.42	9.85E-04	3.59	1.43E-03	3.15	2.48E-03	2.32
561	Front Middle Finger Tip	1.47E-05	8.67	1.46E-03	2.76	8.42E-04	3.27	2.32E-03	2.11
144	Back Index Tip	2.35E-05	7.96	2.04E-03	3.24	2.19E-04	6.74	2.28E-03	2.97
141	Front Index Tip	2.29E-05	8.26	2.05E-03	3.08	1.69E-04	8.68	2.25E-03	2.89
163	Inner Index Section 1	9.17E-06	8.39	1.86E-03	1.82	1.49E-04	7.88	2.02E-03	1.78
185	Back Thumb Section 1	3.04E-05	5.71	1.20E-03	2.19	9.67E-06	19.51	1.24E-03	2.13
182	Front Thumb Section 1	2.93E-05	5.84	1.20E-03	1.95	7.41E-06	20.98	1.24E-03	1.90
169	Front Index Section 1	1.03E-05	6.98	1.21E-03	2.52	4.37E-06	22.81	1.23E-03	2.49
172	Back Index Section 1	1.26E-05	7.81	1.16E-03	2.24	1.58E-05	18.58	1.19E-03	2.20
573	Front Middle Finger Section 1	1.00E-05	8.16	9.79E-04	2.67	1.63E-04	5.85	1.15E-03	2.42
138	Outer Index Tip	1.54E-05	11.91	1.02E-03	3.54	1.04E-04	11.80	1.13E-03	3.35
551	Middle Finger Tip	9.39E-06	6.86	8.82E-04	1.99	2.36E-04	3.64	1.13E-03	1.73
555	Inner Middle Finger Tip	3.00E-06	20.86	8.33E-04	4.01	1.18E-04	11.65	9.54E-04	3.79
202	Inner Thumb Section 2	1.69E-05	7.95	8.40E-04	2.66	4.82E-05	22.53	9.05E-04	2.75
189	Inner Index Section 2	3.02E-06	12.70	7.07E-04	2.88	1.51E-04	6.42	8.61E-04	2.62
166	Outer Index Section 1	8.28E-06	9.05	7.34E-04	3.26	2.65E-08	100.00	7.42E-04	3.23
179	Outer Thumb Section 1	1.20E-05	8.23	6.85E-04	3.64	7.99E-07	31.83	6.98E-04	3.58
567	Inner Middle Finger Section 1	2.14E-06	20.47	5.57E-04	3.56	1.22E-04	7.00	6.81E-04	3.17
484	1st Half Palm Ext. Back	5.14E-06	6.49	6.27E-05	3.36	6.00E-04	1.35	6.68E-04	1.25
558	Outer Middle Finger Tip	6.54E-06	15.68	6.26E-04	5.47	2.67E-05	36.17	6.60E-04	5.40
211	Back Thumb Section 2	9.58E-06	8.46	6.44E-04	3.02	2.95E-06	27.12	6.56E-04	2.97
586	Front Middle Finger Section 2	5.95E-06	13.29	5.74E-04	3.26	4.84E-05	11.64	6.28E-04	3.11
195	Front Index Section 2	5.42E-06	11.48	6.14E-04	3.10	2.82E-06	38.94	6.23E-04	3.07
208	Front Thumb Section 2	8.28E-06	6.20	6.00E-04	2.86	1.92E-06	29.39	6.10E-04	2.81
198	Back Index Section 2	5.63E-06	10.19	5.92E-04	3.15	7.83E-06	21.27	6.06E-04	3.09
701	Palm Behind Thumb Back	5.31E-06	7.77	7.13E-05	3.82	4.68E-04	1.88	5.45E-04	1.69
120	Between Index/Thumb	1.23E-06	42.68	9.30E-05	16.01	4.14E-04	6.41	5.08E-04	5.99
490	2nd Half Palm Ext. Back	4.29E-06	7.61	4.69E-05	4.89	4.53E-04	1.49	5.04E-04	1.42
228	Inner Thumb Section 3	7.27E-06	12.67	4.59E-04	3.81	3.70E-05	11.06	9.05E-04	3.57



## APPENDIX D

**D.1 Tong Task 1 Nitrile, 1 Vinyl – Source Term Contribution to Total Cell Dose Rate for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> ) and Percent of Total Cell Dose Rate						Total Cell
		<sup>73</sup> As Photon	(%) of Total	<sup>74</sup> As Photon	(%) of Total	<sup>74</sup> As Beta	(%) of Total	
377	Palm Ext. Front Face 1st Half	4.47E-06	0.75	1.87E-05	3.13	5.73E-04	96.12	5.96E-04
157	Front Thumb Tip	3.98E-06	0.75	2.29E-05	4.31	5.05E-04	94.94	5.32E-04
182	Front Thumb Section 1	3.68E-06	0.69	2.38E-05	4.48	5.03E-04	94.83	5.30E-04
208	Front Thumb Section 2	3.87E-06	0.74	2.30E-05	4.42	4.93E-04	94.84	5.20E-04
234	Front Thumb Section 3	3.69E-06	0.71	2.27E-05	4.40	4.89E-04	94.88	5.16E-04
260	Front Thumb Section 4	3.52E-06	0.71	2.27E-05	4.58	4.69E-04	94.71	4.95E-04
286	Front Thumb Section 5	3.70E-06	0.78	2.26E-05	4.73	4.51E-04	94.49	4.77E-04
312	Front Thumb Section 6	3.56E-06	0.78	1.97E-05	4.32	4.32E-04	94.89	4.56E-04
338	Front Thumb Section 7	3.29E-06	0.78	2.06E-05	4.90	3.96E-04	94.31	4.19E-04
364	Front Thumb Section 8	3.40E-06	0.82	2.07E-05	4.99	3.90E-04	94.19	4.14E-04
371	1st Half Under Palm Ext.	3.57E-06	1.50	1.82E-05	7.67	2.16E-04	90.83	2.38E-04
101	Front Face of Index/Thumb	1.37E-06	0.58	1.62E-05	6.90	2.17E-04	92.51	2.34E-04
169	Front Index Section 1	5.34E-08	0.04	1.90E-05	12.62	1.32E-04	87.34	1.51E-04
195	Front Index Section 2	6.05E-08	0.04	1.92E-05	12.73	1.31E-04	87.23	1.51E-04
141	Front Index Tip	4.25E-08	0.03	1.85E-05	12.62	1.28E-04	87.35	1.47E-04
221	Front Index Section 3	5.83E-08	0.04	1.93E-05	13.39	1.25E-04	86.57	1.44E-04
247	Front Index Section 4	3.26E-08	0.02	1.88E-05	13.19	1.24E-04	86.78	1.43E-04
481	1st Half Under Palm Ext. Mid	2.54E-06	1.79	1.59E-05	11.19	1.24E-04	87.03	1.42E-04
273	Front Index Section 5	6.76E-08	0.05	1.81E-05	13.07	1.20E-04	86.88	1.39E-04
299	Front Index Section 6	8.62E-08	0.06	1.86E-05	13.87	1.15E-04	86.06	1.34E-04
325	Front Index Section 7	4.09E-08	0.03	1.52E-05	12.11	1.10E-04	87.86	1.25E-04
351	Front Index Section 8	2.52E-08	0.02	1.51E-05	12.69	1.04E-04	87.29	1.19E-04
484	1st Half Palm Ext. Back	1.61E-06	2.10	1.17E-05	15.36	6.30E-05	82.53	7.63E-05
154	Outer Thumb Tip	1.10E-06	1.70	2.02E-05	31.29	4.32E-05	67.01	6.44E-05
231	Outer Thumb Section 3	9.46E-07	1.48	2.14E-05	33.32	4.18E-05	65.21	6.41E-05
257	Outer Thumb Section 4	1.02E-06	1.66	2.13E-05	34.80	3.90E-05	63.54	6.13E-05
309	Outer Thumb Section 6	7.17E-07	1.18	2.03E-05	33.37	3.98E-05	65.45	6.08E-05
335	Outer Thumb Section 7	7.61E-07	1.26	1.75E-05	28.96	4.22E-05	69.79	6.05E-05
283	Outer Thumb Section 5	7.70E-07	1.28	1.75E-05	29.09	4.20E-05	69.63	6.03E-05
205	Outer Thumb Section 2	1.02E-06	1.69	1.74E-05	29.00	4.16E-05	69.31	6.01E-05
361	Outer Thumb Section 8	9.83E-07	1.72	1.76E-05	30.85	3.85E-05	67.43	5.71E-05
179	Outer Thumb Section 1	9.79E-07	1.77	1.81E-05	32.64	3.63E-05	65.59	5.54E-05
147	Thumb Tip	8.29E-07	1.59	2.06E-05	39.55	3.06E-05	58.86	5.20E-05
120	Between Index/Thumb	2.20E-07	0.57	1.49E-05	38.49	2.36E-05	60.95	3.87E-05
163	Inner Index Section 1	9.88E-08	0.29	1.85E-05	53.88	1.57E-05	45.83	3.43E-05
215	Inner Index Section 3	1.25E-07	0.39	1.69E-05	53.21	1.48E-05	46.40	3.18E-05
	Total	5.63E-05	0.74	6.83E-04	8.99	6.86E-03	90.26	7.60E-03

**D.2 Smearing Task 1 Nitrile, 3 Vinyl – Source Term Contribution to Total Cell Dose Rate for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> ) and Percent of Total Cell Dose Rate						Total Cell
		<sup>75</sup> As		<sup>74</sup> As		<sup>74</sup> As		
		Photon	(%) of Total	Photon	(%) of Total	Beta	(%) of Total	
202	Inner Thumb Section 2	5.28E-03	1.58	2.85E-02	8.52	3.00E-01	89.900	3.34E-01
228	Inner Thumb Section 3	1.92E-03	1.63	1.34E-02	11.38	1.02E-01	86.998	1.18E-01
176	Inner Thumb Section 1	1.55E-03	1.65	1.14E-02	12.15	8.11E-02	86.199	9.41E-02
189	Inner Index Section 2	2.65E-04	0.70	2.47E-02	64.99	1.30E-02	34.308	3.80E-02
215	Inner Index Section 3	1.08E-04	0.67	1.17E-02	72.48	4.33E-03	26.852	1.61E-02
163	Inner Index Section 1	9.18E-05	0.67	1.02E-02	74.97	3.33E-03	24.358	1.37E-02
208	Front Thumb Section 2	1.73E-04	2.65	3.75E-03	57.59	2.59E-03	39.760	6.52E-03
211	Back Thumb Section 2	1.70E-04	2.62	3.86E-03	59.46	2.46E-03	37.917	6.49E-03
195	Front Index Section 2	4.57E-05	1.20	3.68E-03	96.71	7.94E-05	2.085	3.81E-03
198	Back Index Section 2	4.66E-05	1.24	3.62E-03	96.64	7.93E-05	2.118	3.74E-03
234	Front Thumb Section 3	6.97E-05	2.47	2.54E-03	90.19	2.07E-04	7.335	2.82E-03
237	Back Thumb Section 3	6.86E-05	2.50	2.48E-03	90.41	1.95E-04	7.088	2.75E-03
151	Inner Thumb Tip	6.02E-05	2.26	2.52E-03	94.52	8.58E-05	3.221	2.66E-03
182	Front Thumb Section 1	6.33E-05	2.51	2.33E-03	92.73	1.20E-04	4.756	2.52E-03
224	Back Index Section 3	2.93E-05	1.17	2.47E-03	98.95	0.00E+00	0.000	2.50E-03
221	Front Index Section 3	3.02E-05	1.21	2.46E-03	98.69	2.53E-06	0.102	2.49E-03
185	Back Thumb Section 1	6.05E-05	2.47	2.28E-03	93.09	1.09E-04	4.449	2.45E-03
169	Front Index Section 1	3.00E-05	1.25	2.37E-03	98.74	3.80E-07	0.016	2.40E-03
254	Inner Thumb Section 4	4.90E-05	2.14	2.16E-03	94.20	8.40E-05	3.662	2.29E-03
172	Back Index Section 1	2.79E-05	1.22	2.26E-03	98.77	2.27E-07	0.010	2.29E-03
135	Inner Index Tip	1.28E-05	0.59	2.15E-03	98.97	9.47E-06	0.437	2.17E-03
586	Front Middle Finger Section 2	2.51E-05	1.27	1.94E-03	98.33	7.74E-06	0.393	1.97E-03
241	Inner Index Section 4	1.10E-05	0.58	1.87E-03	98.70	1.36E-05	0.719	1.89E-03
599	Front Middle Finger Section 3	1.84E-05	1.15	1.58E-03	98.75	1.65E-06	0.104	1.60E-03
573	Front Middle Finger Section 1	1.66E-05	1.10	1.49E-03	98.80	1.52E-06	0.101	1.51E-03
144	Back Index Tip	1.25E-05	0.91	1.36E-03	99.09	5.07E-08	0.004	1.38E-03
141	Front Index Tip	1.33E-05	1.03	1.28E-03	98.97	0.00E+00	0.000	1.30E-03
157	Front Thumb Tip	2.34E-05	1.82	1.26E-03	98.09	1.17E-06	0.091	1.29E-03
147	Thumb Tip	2.18E-05	1.69	1.27E-03	98.29	2.37E-07	0.018	1.29E-03
160	Back Thumb Tip	2.42E-05	1.92	1.24E-03	98.07	1.23E-07	0.010	1.26E-03
131	Index Tip	1.36E-05	1.08	1.25E-03	98.94	0.00E+00	0.000	1.26E-03
250	Back Index Section 4	1.46E-05	1.19	1.21E-03	98.79	1.79E-07	0.015	1.23E-03
263	Back Thumb Section 4	2.00E-05	1.64	1.20E-03	98.30	7.40E-07	0.060	1.22E-03
260	Front Thumb Section 4	2.09E-05	1.77	1.16E-03	98.17	7.88E-07	0.067	1.18E-03
580	Inner Middle Finger Section 2	6.02E-06	0.51	1.17E-03	99.14	4.06E-06	0.345	1.18E-03
247	Front Index Section 4	1.24E-05	1.07	1.15E-03	98.93	5.95E-08	0.005	1.16E-03
205	Outer Thumb Section 2	1.46E-05	1.29	1.11E-03	98.71	0.00E+00	0.000	1.13E-03
192	Outer Index Section 2	1.28E-05	1.16	1.09E-03	98.84	0.00E+00	0.000	1.10E-03
612	Front Middle Finger Section 4	1.00E-05	1.00	9.96E-04	98.91	9.94E-07	0.099	1.01E-03
561	Front Middle Finger Tip	1.16E-05	1.16	9.87E-04	98.66	1.83E-06	0.183	1.00E-03
166	Outer Index Section 1	9.56E-06	0.99	9.60E-04	99.01	0.00E+00	0.000	9.69E-04
593	Inner Middle Finger Section 3	4.94E-06	0.51	9.56E-04	99.11	3.68E-06	0.381	9.65E-04
218	Outer Index Section 3	1.08E-05	1.12	9.49E-04	98.88	0.00E+00	0.000	9.60E-04
567	Inner Middle Finger Section 1	5.86E-06	0.62	9.34E-04	99.25	1.22E-06	0.130	9.41E-04
231	Outer Thumb Section 3	1.11E-05	1.19	9.15E-04	98.81	0.00E+00	0.000	9.26E-04
179	Outer Thumb Section 1	9.73E-06	1.07	8.96E-04	98.93	0.00E+00	0.000	9.05E-04
280	Inner Thumb Section 5	1.39E-05	1.63	8.36E-04	97.76	5.26E-06	0.615	8.55E-04
138	Outer Index Tip	6.15E-06	0.82	7.39E-04	99.00	1.34E-06	0.180	7.46E-04
267	Inner Index Section 5	4.71E-06	0.66	7.05E-04	98.01	9.59E-06	1.333	7.20E-04
Total		1.05E-02	1.52	1.73E-01	25.95	5.10E-01	73.38	6.95E-01

### D.3 Smearing Task 1 Nitrile, 2 Vinyl – Source Term Contribution to Total Cell Dose Rate for the 7 mg cm<sup>-2</sup> Cells

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> ) and Percent of Total Cell Dose Rate						Total Cell
		<sup>73</sup> As Photon	(%) of Total	<sup>74</sup> As Photon	(%) of Total	<sup>74</sup> As Beta	(%) of Total	
202	Inner Thumb Section 2	5.97E-03	1.30	2.86E-02	6.22	4.25E-01	92.39	4.60E-01
228	Inner Thumb Section 3	2.20E-03	1.35	1.36E-02	8.34	1.47E-01	90.18	1.63E-01
176	Inner Thumb Section 1	1.80E-03	1.38	1.14E-02	8.77	1.17E-01	90.00	1.30E-01
189	Inner Index Section 2	2.64E-04	0.62	2.51E-02	59.20	1.70E-02	40.09	4.24E-02
215	Inner Index Section 3	1.08E-04	0.61	1.18E-02	66.67	5.75E-03	32.49	1.77E-02
163	Inner Index Section 1	9.07E-05	0.61	1.02E-02	68.92	4.55E-03	30.74	1.48E-02
211	Back Thumb Section 2	1.84E-04	2.37	3.86E-03	49.68	3.72E-03	47.88	7.77E-03
208	Front Thumb Section 2	1.86E-04	2.44	3.73E-03	48.95	3.70E-03	48.56	7.62E-03
195	Front Index Section 2	4.51E-05	1.17	3.69E-03	95.35	1.26E-04	3.26	3.87E-03
198	Back Index Section 2	4.56E-05	1.21	3.62E-03	95.77	1.13E-04	2.99	3.78E-03
151	Inner Thumb Tip	8.45E-05	2.85	2.46E-03	82.83	4.24E-04	14.28	2.97E-03
234	Front Thumb Section 3	7.33E-05	2.48	2.53E-03	85.47	3.66E-04	12.36	2.96E-03
237	Back Thumb Section 3	7.32E-05	2.52	2.51E-03	86.25	3.27E-04	11.24	2.91E-03
182	Front Thumb Section 1	6.73E-05	2.60	2.32E-03	89.58	2.04E-04	7.88	2.59E-03
254	Inner Thumb Section 4	6.47E-05	2.52	2.18E-03	84.82	3.27E-04	12.72	2.57E-03
185	Back Thumb Section 1	6.32E-05	2.46	2.30E-03	89.49	2.07E-04	8.05	2.57E-03
221	Front Index Section 3	3.04E-05	1.21	2.48E-03	98.80	5.97E-06	0.24	2.51E-03
224	Back Index Section 3	3.02E-05	1.21	2.46E-03	98.40	8.32E-06	0.33	2.50E-03
169	Front Index Section 1	2.99E-05	1.24	2.38E-03	98.76	1.58E-06	0.07	2.41E-03
172	Back Index Section 1	2.73E-05	1.18	2.29E-03	98.71	1.26E-06	0.05	2.32E-03
135	Inner Index Tip	1.32E-05	0.57	2.24E-03	97.39	5.03E-05	2.19	2.30E-03
586	Front Middle Finger Section 2	2.48E-05	1.24	1.95E-03	97.50	2.37E-05	1.19	2.00E-03
241	Inner Index Section 4	1.12E-05	0.58	1.85E-03	95.85	6.54E-05	3.39	1.93E-03
599	Front Middle Finger Section 3	1.85E-05	1.16	1.56E-03	98.11	1.11E-05	0.70	1.59E-03
573	Front Middle Finger Section 1	1.58E-05	1.05	1.49E-03	98.68	8.76E-06	0.58	1.51E-03
144	Back Index Tip	1.26E-05	0.94	1.33E-03	99.25	5.51E-07	0.04	1.34E-03
141	Front Index Tip	1.35E-05	1.03	1.30E-03	99.24	6.51E-07	0.05	1.31E-03
157	Front Thumb Tip	2.37E-05	1.82	1.27E-03	97.69	2.82E-06	0.22	1.30E-03
147	Thumb Tip	2.19E-05	1.70	1.27E-03	98.45	1.63E-06	0.13	1.29E-03
160	Back Thumb Tip	2.45E-05	1.94	1.23E-03	97.62	3.50E-06	0.28	1.26E-03
131	Index Tip	1.34E-05	1.06	1.25E-03	99.21	2.16E-06	0.17	1.26E-03
263	Back Thumb Section 4	2.01E-05	1.63	1.20E-03	97.56	4.30E-06	0.35	1.23E-03
250	Back Index Section 4	1.44E-05	1.18	1.21E-03	99.18	1.02E-06	0.08	1.22E-03
580	Inner Middle Finger Section 2	6.06E-06	0.51	1.19E-03	99.17	1.02E-05	0.85	1.20E-03
260	Front Thumb Section 4	2.14E-05	1.78	1.18E-03	98.33	2.42E-06	0.20	1.20E-03
247	Front Index Section 4	1.18E-05	1.01	1.16E-03	99.15	7.39E-07	0.06	1.17E-03
120	Between Index/Thumb	2.15E-06	0.18	2.07E-04	17.69	9.61E-04	82.14	1.17E-03
205	Outer Thumb Section 2	1.42E-05	1.26	1.12E-03	99.12	0.00E+00	0.00	1.13E-03
192	Outer Index Section 2	1.25E-05	1.14	1.09E-03	99.09	0.00E+00	0.00	1.10E-03
561	Front Middle Finger Tip	1.07E-05	1.02	1.03E-03	98.10	7.23E-06	0.69	1.05E-03
612	Front Middle Finger Section 4	1.03E-05	1.03	9.83E-04	98.30	1.00E-05	1.00	1.00E-03
567	Inner Middle Finger Section 1	5.26E-06	0.54	9.66E-04	98.57	9.63E-06	0.98	9.80E-04
593	Inner Middle Finger Section 3	4.80E-06	0.49	9.66E-04	98.98	5.06E-06	0.52	9.76E-04
166	Outer Index Section 1	9.07E-06	0.94	9.56E-04	99.07	0.00E+00	0.00	9.65E-04
218	Outer Index Section 3	1.07E-05	1.11	9.54E-04	98.86	0.00E+00	0.00	9.65E-04
231	Outer Thumb Section 3	1.06E-05	1.15	9.12E-04	98.92	0.00E+00	0.00	9.22E-04
179	Outer Thumb Section 1	9.91E-06	1.10	8.89E-04	98.89	0.00E+00	0.00	8.99E-04
280	Inner Thumb Section 5	1.58E-05	1.79	8.47E-04	95.92	2.10E-05	2.38	8.83E-04
267	Inner Index Section 5	5.12E-06	0.67	7.24E-04	94.27	3.86E-05	5.03	7.68E-04
Total		1.18E-02	1.29	1.74E-01	19.04	7.27E-01	79.62	9.13E-01

**D.4 Smearing Task 1 Nitrile, 1 Vinyl – Source Term Contribution to Total Cell Dose Rate for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> ) and Percent of Total Cell Dose Rate						Total Cell
		<sup>73</sup> As		<sup>74</sup> As		<sup>75</sup> As		
		Photon	(%) of Total	Photon	(%) of Total	Beta	(%) of Total	
202	Inner Thumb Section 2	6.80E-03	1.05	2.86E-02	4.41	6.14E-01	94.55	6.49E-01
228	Inner Thumb Section 3	2.59E-03	1.11	1.36E-02	5.83	2.17E-01	93.06	2.33E-01
176	Inner Thumb Section 1	2.13E-03	1.14	1.17E-02	6.23	1.74E-01	92.63	1.87E-01
189	Inner Index Section 2	2.64E-04	0.55	2.54E-02	52.32	2.29E-02	47.14	4.85E-02
215	Inner Index Section 3	1.07E-04	0.54	1.19E-02	60.27	7.72E-03	39.18	1.97E-02
163	Inner Index Section 1	9.17E-05	0.56	1.02E-02	62.87	5.93E-03	36.57	1.62E-02
211	Back Thumb Section 2	1.98E-04	2.09	3.85E-03	40.65	5.42E-03	57.26	9.47E-03
208	Front Thumb Section 2	2.01E-04	2.16	3.72E-03	39.89	5.40E-03	57.95	9.32E-03
151	Inner Thumb Tip	1.29E-04	3.20	2.65E-03	66.03	1.24E-03	30.77	4.02E-03
195	Front Index Section 2	4.46E-05	1.14	3.69E-03	94.35	1.76E-04	4.50	3.91E-03
198	Back Index Section 2	4.51E-05	1.16	3.66E-03	94.30	1.76E-04	4.54	3.88E-03
254	Inner Thumb Section 4	9.65E-05	2.89	2.27E-03	67.93	9.73E-04	29.17	3.34E-03
234	Front Thumb Section 3	7.96E-05	2.49	2.52E-03	78.86	5.95E-04	18.64	3.19E-03
237	Back Thumb Section 3	7.82E-05	2.48	2.50E-03	79.37	5.72E-04	18.14	3.15E-03
182	Front Thumb Section 1	7.10E-05	2.56	2.32E-03	83.70	3.81E-04	13.74	2.77E-03
185	Back Thumb Section 1	7.00E-05	2.59	2.26E-03	83.71	3.70E-04	13.70	2.70E-03
221	Front Index Section 3	3.02E-05	1.20	2.49E-03	98.69	2.72E-06	0.11	2.52E-03
224	Back Index Section 3	2.93E-05	1.18	2.45E-03	98.54	6.95E-06	0.28	2.48E-03
135	Inner Index Tip	1.30E-05	0.53	2.28E-03	93.17	1.54E-04	6.30	2.45E-03
169	Front Index Section 1	2.98E-05	1.24	2.37E-03	98.56	4.75E-06	0.20	2.40E-03
172	Back Index Section 1	2.79E-05	1.20	1.37E-06	98.54	6.13E-06	0.26	2.33E-03
241	Inner Index Section 4	1.04E-05	0.49	7.96E-07	90.30	1.95E-04	9.21	2.12E-03
586	Front Middle Finger Section 2	2.46E-05	1.19	1.23E-06	95.00	7.83E-05	3.80	2.06E-03
120	Between Index/Thumb	2.55E-06	0.14	8.02E-07	10.32	1.68E-03	89.54	1.88E-03
599	Front Middle Finger Section 3	1.82E-05	1.12	1.06E-06	97.24	2.66E-05	1.64	1.63E-03
573	Front Middle Finger Section 1	1.59E-05	1.02	8.87E-07	97.69	1.99E-05	1.28	1.55E-03
144	Back Index Tip	1.25E-05	0.92	1.23E-06	98.65	5.82E-06	0.43	1.36E-03
141	Front Index Tip	1.33E-05	1.01	1.36E-06	98.99	0.00E+00	0.00	1.32E-03
147	Thumb Tip	2.22E-05	1.71	9.52E-07	98.17	1.60E-06	0.12	1.30E-03
160	Back Thumb Tip	2.46E-05	1.91	1.91E-06	96.99	1.42E-05	1.10	1.29E-03
157	Front Thumb Tip	2.31E-05	1.80	1.58E-06	97.26	1.20E-05	0.94	1.28E-03
131	Index Tip	1.31E-05	1.03	6.86E-07	98.60	4.71E-06	0.37	1.27E-03
580	Inner Middle Finger Section 2	5.74E-06	0.46	5.99E-07	97.34	2.75E-05	2.20	1.25E-03
263	Back Thumb Section 4	2.00E-05	1.61	1.03E-06	97.75	8.05E-06	0.65	1.24E-03
260	Front Thumb Section 4	2.15E-05	1.77	1.28E-06	97.50	8.80E-06	0.73	1.21E-03
250	Back Index Section 4	1.42E-05	1.17	9.52E-07	98.44	4.70E-06	0.39	1.21E-03
247	Front Index Section 4	1.17E-05	1.00	7.32E-07	98.70	3.50E-06	0.30	1.17E-03
205	Outer Thumb Section 2	1.38E-05	1.23	1.00E-06	98.77	0.00E+00	0.00	1.12E-03
561	Front Middle Finger Tip	1.18E-05	1.08	1.29E-06	96.63	2.52E-05	2.29	1.10E-03
704	Palm Arch beside Middle Finger	3.43E-06	0.31	1.10E-06	19.51	8.76E-04	80.18	1.09E-03
192	Outer Index Section 2	1.23E-05	1.13	8.81E-07	98.87	0.00E+00	0.00	1.09E-03
280	Inner Thumb Section 5	1.95E-05	1.92	1.43E-06	90.07	8.15E-05	8.01	1.02E-03
612	Front Middle Finger Section 4	1.04E-05	1.04	8.98E-07	96.05	2.93E-05	2.92	1.01E-03
593	Inner Middle Finger Section 3	4.73E-06	0.47	4.78E-07	97.06	2.48E-05	2.47	1.00E-03
567	Inner Middle Finger Section 1	5.06E-06	0.51	5.54E-07	97.12	2.34E-05	2.37	9.88E-04
218	Outer Index Section 3	1.06E-05	1.10	9.18E-07	98.90	0.00E+00	0.00	9.64E-04
166	Outer Index Section 1	8.87E-06	0.92	8.67E-07	99.08	0.00E+00	0.00	9.60E-04
231	Outer Thumb Section 3	1.09E-05	1.20	7.17E-07	98.80	0.00E+00	0.00	9.12E-04
179	Outer Thumb Section 1	9.61E-06	1.07	5.52E-07	98.93	0.00E+00	0.00	9.00E-04
267	Inner Index Section 5	5.13E-06	0.57	5.25E-07	82.09	1.56E-04	17.34	8.99E-04
Total		1.35E-02	1.08	1.40E-01	11.26	1.06E+00	85.00	1.25E+00

**D.5 Holding Task 1 Nitrile, 3 Vinyl – Source Term Contribution to Total Cell Dose Rate for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> ) and Percent of Total Cell Dose Rate						Total Cell
		<sup>73</sup> As Photon	(%) of Total	<sup>74</sup> As Photon	(%) of Total	<sup>74</sup> As Beta	(%) of Total	
147	Thumb Tip	7.42E-04	1.35	3.55E-03	6.46	5.07E-02	92.19	5.50E-02
151	Inner Thumb Tip	7.64E-04	2.14	6.31E-03	17.68	2.86E-02	80.18	3.57E-02
157	Front Thumb Tip	1.77E-04	2.83	2.11E-03	33.68	3.98E-03	63.49	6.26E-03
160	Back Thumb Tip	1.72E-04	2.79	2.20E-03	35.73	3.79E-03	61.48	6.17E-03
135	Inner Index Tip	3.51E-05	0.57	5.80E-03	94.20	3.22E-04	5.23	6.16E-03
131	Index Tip	4.10E-05	0.82	3.46E-03	69.29	1.49E-03	29.89	4.99E-03
176	Inner Thumb Section 1	5.27E-05	2.27	2.21E-03	95.01	6.33E-05	2.72	2.33E-03
141	Front Index Tip	2.21E-05	1.01	2.08E-03	95.48	7.63E-05	3.51	2.18E-03
144	Back Index Tip	2.40E-05	1.15	1.99E-03	95.20	7.65E-05	3.66	2.09E-03
163	Inner Index Section 1	7.92E-06	0.43	1.84E-03	98.94	1.19E-05	0.64	1.86E-03
561	Front Middle Finger Tip	1.42E-05	0.82	1.37E-03	79.02	3.51E-04	20.16	1.74E-03
154	Outer Thumb Tip	5.52E-05	3.32	9.67E-04	58.14	6.41E-04	38.54	1.66E-03
182	Front Thumb Section 1	2.80E-05	2.24	1.22E-03	97.63	1.58E-06	0.13	1.25E-03
169	Front Index Section 1	1.10E-05	0.90	1.22E-03	99.10	4.35E-08	0.00	1.23E-03
185	Back Thumb Section 1	2.88E-05	2.36	1.19E-03	97.53	1.37E-06	0.11	1.22E-03
172	Back Index Section 1	1.35E-05	1.15	1.16E-03	98.44	4.86E-06	0.41	1.18E-03
138	Outer Index Tip	1.56E-05	1.46	1.01E-03	94.31	4.53E-05	4.23	1.07E-03
551	Middle Finger Tip	9.32E-06	0.93	8.90E-04	88.57	1.05E-04	10.50	1.00E-03
573	Front Middle Finger Section 1	1.07E-05	1.08	9.42E-04	95.17	3.71E-05	3.74	9.90E-04
555	Inner Middle Finger Tip	2.77E-06	0.32	8.50E-04	96.83	2.51E-05	2.85	8.78E-04
202	Inner Thumb Section 2	1.15E-05	1.37	8.21E-04	98.10	4.46E-06	0.53	8.37E-04
166	Outer Index Section 1	8.11E-06	1.06	7.59E-04	98.94	2.84E-08	0.00	7.67E-04
189	Inner Index Section 2	2.81E-06	0.41	6.80E-04	98.62	6.73E-06	0.98	6.89E-04
179	Outer Thumb Section 1	1.20E-05	1.76	6.69E-04	98.22	1.68E-07	0.02	6.81E-04
211	Back Thumb Section 2	9.96E-06	1.51	6.49E-04	98.47	1.06E-07	0.02	6.60E-04
208	Front Thumb Section 2	8.48E-06	1.37	6.09E-04	98.43	1.24E-06	0.20	6.19E-04
198	Back Index Section 2	5.81E-06	0.94	6.10E-04	98.93	7.90E-07	0.13	6.17E-04
195	Front Index Section 2	5.57E-06	0.90	6.10E-04	99.09	5.50E-08	0.01	6.16E-04
558	Outer Middle Finger Tip	5.69E-06	0.93	5.99E-04	97.48	9.82E-06	1.60	6.15E-04
567	Inner Middle Finger Section 1	1.99E-06	0.33	5.58E-04	92.93	4.05E-05	6.74	6.00E-04
586	Front Middle Finger Section 2	5.63E-06	0.94	5.87E-04	98.08	5.87E-06	0.98	5.99E-04
570	Outer Middle Finger Section 1	5.17E-06	1.13	4.52E-04	98.78	4.10E-07	0.09	4.58E-04
192	Outer Index Section 2	3.92E-06	0.88	4.43E-04	99.12	0.00E+00	0.00	4.47E-04
205	Outer Thumb Section 2	5.49E-06	1.26	4.30E-04	98.72	9.36E-08	0.02	4.35E-04
564	Back Middle Finger Tip	3.37E-06	0.78	4.30E-04	99.12	4.68E-07	0.11	4.34E-04
228	Inner Thumb Section 3	6.52E-06	1.55	4.12E-04	98.28	6.85E-07	0.16	4.20E-04
224	Back Index Section 3	3.08E-06	0.81	3.79E-04	99.11	3.18E-07	0.08	3.83E-04
237	Back Thumb Section 3	4.64E-06	1.23	3.72E-04	98.56	7.98E-07	0.21	3.78E-04
234	Front Thumb Section 3	4.67E-06	1.24	3.71E-04	98.74	8.03E-08	0.02	3.76E-04
484	1st Half Palm Ext. Back	4.35E-06	1.20	5.94E-05	16.44	2.98E-04	82.35	3.61E-04
580	Inner Middle Finger Section 2	1.13E-06	0.31	3.43E-04	95.46	1.52E-05	4.23	3.60E-04
576	Back Middle Finger Section 1	2.81E-06	0.79	3.53E-04	99.17	1.47E-07	0.04	3.56E-04
221	Front Index Section 3	2.57E-06	0.72	3.53E-04	99.25	1.02E-07	0.03	3.56E-04
583	Outer Middle Finger Section 2	3.99E-06	1.12	3.51E-04	98.88	0.00E+00	0.00	3.55E-04
215	Inner Index Section 3	2.03E-06	0.59	3.40E-04	98.80	4.46E-06	0.61	3.44E-04
Total		2.36E-03	1.60	5.46E-02	36.97	9.07E-02	61.41	1.48E-01

**D.6 Holding Task 1 Nitrile, 2 Vinyl – Source Term Contribution to Total Cell Dose Rate for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> ) and Percent of Total Cell Dose Rate						Total Cell
		<sup>73</sup> As		<sup>74</sup> As		<sup>74</sup> As		
		Photon	(%) of Total	Photon	(%) of Total	Beta	(%) of Total	
147	Thumb Tip	8.17E-04	1.09	3.61E-03	4.81	7.07E-02	94.10	7.51E-02
151	Inner Thumb Tip	8.35E-04	1.77	6.52E-03	13.82	3.98E-02	84.41	4.72E-02
160	Back Thumb Tip	1.90E-04	2.42	2.19E-03	27.86	5.47E-03	69.72	7.84E-03
157	Front Thumb Tip	1.87E-04	2.47	2.14E-03	28.29	5.23E-03	69.24	7.56E-03
135	Inner Index Tip	3.54E-05	0.57	5.72E-03	92.09	4.56E-04	7.34	6.21E-03
131	Index Tip	4.13E-05	0.74	3.46E-03	62.13	2.07E-03	37.13	5.57E-03
176	Inner Thumb Section 1	6.87E-05	2.69	2.20E-03	86.17	2.84E-04	11.14	2.55E-03
141	Front Index Tip	2.27E-05	1.02	2.09E-03	93.93	1.13E-04	5.05	2.23E-03
144	Back Index Tip	2.35E-05	1.08	2.02E-03	92.98	1.29E-04	5.94	2.18E-03
154	Outer Thumb Tip	6.05E-05	2.99	9.75E-04	48.26	9.85E-04	48.75	2.02E-03
561	Front Middle Finger Tip	1.39E-05	0.70	1.42E-03	71.54	5.53E-04	27.76	1.99E-03
163	Inner Index Section 1	8.43E-06	0.45	1.83E-03	96.94	4.92E-05	2.61	1.88E-03
182	Front Thumb Section 1	3.00E-05	2.38	1.23E-03	97.39	2.96E-06	0.23	1.26E-03
169	Front Index Section 1	1.07E-05	0.87	1.22E-03	98.90	2.89E-06	0.24	1.23E-03
185	Back Thumb Section 1	2.94E-05	2.40	1.19E-03	97.43	2.04E-06	0.17	1.22E-03
172	Back Index Section 1	1.28E-05	1.08	1.16E-03	98.04	1.04E-05	0.88	1.18E-03
138	Outer Index Tip	1.55E-05	1.41	1.01E-03	91.95	7.28E-05	6.63	1.10E-03
551	Middle Finger Tip	9.40E-06	0.89	8.99E-04	84.90	1.50E-04	14.21	1.06E-03
573	Front Middle Finger Section 1	1.03E-05	0.98	9.58E-04	91.45	7.92E-05	7.56	1.05E-03
555	Inner Middle Finger Tip	2.83E-06	0.32	8.33E-04	93.35	5.65E-05	6.33	8.92E-04
202	Inner Thumb Section 2	1.36E-05	1.57	8.25E-04	95.31	2.70E-05	3.12	8.66E-04
166	Outer Index Section 1	8.20E-06	1.09	7.42E-04	98.88	2.38E-07	0.03	7.51E-04
189	Inner Index Section 2	2.61E-06	0.36	6.94E-04	96.50	2.25E-05	3.13	7.19E-04
179	Outer Thumb Section 1	1.18E-05	1.75	6.66E-04	98.20	3.87E-07	0.06	6.79E-04
211	Back Thumb Section 2	9.69E-06	1.48	6.40E-04	98.06	2.99E-06	0.46	6.53E-04
558	Outer Middle Finger Tip	5.54E-06	0.87	6.04E-04	94.75	2.79E-05	4.38	6.37E-04
195	Front Index Section 2	5.45E-06	0.88	6.12E-04	99.06	3.62E-07	0.06	6.18E-04
208	Front Thumb Section 2	8.10E-06	1.32	6.06E-04	98.65	2.06E-07	0.03	6.15E-04
198	Back Index Section 2	5.73E-06	0.93	6.02E-04	98.19	5.36E-06	0.87	6.13E-04
567	Inner Middle Finger Section 1	2.02E-06	0.33	5.56E-04	90.73	5.48E-05	8.94	6.12E-04
586	Front Middle Finger Section 2	5.59E-06	0.95	5.72E-04	97.15	1.12E-05	1.90	5.89E-04
484	1st Half Palm Ext. Back	4.39E-06	0.91	6.23E-05	12.93	4.15E-04	86.16	4.82E-04
570	Outer Middle Finger Section 1	4.76E-06	1.03	4.58E-04	98.69	1.29E-06	0.28	4.64E-04
192	Outer Index Section 2	3.75E-06	0.82	4.54E-04	99.18	0.00E+00	0.00	4.57E-04
564	Back Middle Finger Tip	3.37E-06	0.74	4.47E-04	98.66	2.72E-06	0.60	4.53E-04
228	Inner Thumb Section 3	6.69E-06	1.50	4.28E-04	95.80	1.21E-05	2.71	4.47E-04
205	Outer Thumb Section 2	5.38E-06	1.22	4.35E-04	98.60	7.70E-07	0.17	4.41E-04
701	Palm Behind Thumb Back	4.43E-06	1.12	6.81E-05	17.21	3.23E-04	81.67	3.96E-04
215	Inner Index Section 3	2.37E-06	0.61	3.71E-04	95.34	1.58E-05	4.05	3.89E-04
580	Inner Middle Finger Section 2	1.30E-06	0.34	3.55E-04	93.09	2.51E-05	6.57	3.82E-04
224	Back Index Section 3	2.95E-06	0.77	3.75E-04	98.47	2.86E-06	0.75	3.81E-04
	Total	2.54E-03	1.39	5.32E-02	29.10	1.27E-01	69.50	1.83E-01

**D.7 Holding Task 1 Nitrile, 1 Vinyl – Source Term Contribution to Total Cell Dose Rate for the 7 mg cm<sup>-2</sup> Cells**

Cell No.	Cell Description	Dose Rate (Gy s <sup>-1</sup> ) and Percent of Total Cell Dose Rate						Total Cell
		<sup>73</sup> As Photon	(%) of Total	<sup>74</sup> As Photon	(%) of Total	<sup>74</sup> As Beta	(%) of Total	
147	Thumb Tip	8.99E-04	0.87	3.55E-03	3.42	9.94E-02	95.72	1.04E-01
151	Inner Thumb Tip	9.18E-04	1.45	6.54E-03	10.33	5.58E-02	88.22	6.33E-02
160	Back Thumb Tip	2.04E-04	2.04	2.21E-03	22.21	7.55E-03	75.75	9.96E-03
157	Front Thumb Tip	2.03E-04	2.07	2.15E-03	21.93	7.45E-03	76.01	9.80E-03
135	Inner Index Tip	3.79E-05	0.58	5.85E-03	89.48	6.50E-04	9.94	6.54E-03
131	Index Tip	4.15E-05	0.66	3.44E-03	54.35	2.85E-03	45.00	6.33E-03
176	Inner Thumb Section 1	9.70E-05	3.01	2.30E-03	71.21	8.32E-04	25.78	3.23E-03
154	Outer Thumb Tip	6.78E-05	2.74	9.85E-04	39.71	1.43E-03	57.55	2.48E-03
561	Front Middle Finger Tip	1.47E-05	0.63	1.46E-03	63.06	8.42E-04	36.31	2.32E-03
144	Back Index Tip	2.35E-05	1.03	2.04E-03	89.36	2.19E-04	9.61	2.28E-03
141	Front Index Tip	2.29E-05	1.02	2.05E-03	91.47	1.69E-04	7.51	2.25E-03
163	Inner Index Section 1	9.17E-06	0.45	1.86E-03	92.17	1.49E-04	7.37	2.02E-03
185	Back Thumb Section 1	3.04E-05	2.44	1.20E-03	96.78	9.67E-06	0.78	1.24E-03
182	Front Thumb Section 1	2.93E-05	2.36	1.20E-03	97.04	7.41E-06	0.60	1.24E-03
169	Front Index Section 1	1.03E-05	0.84	1.21E-03	98.80	4.37E-06	0.36	1.23E-03
172	Back Index Section 1	1.26E-05	1.07	1.16E-03	97.60	1.58E-05	1.33	1.19E-03
573	Front Middle Finger Section 1	1.00E-05	0.87	9.79E-04	85.01	1.63E-04	14.12	1.15E-03
138	Outer Index Tip	1.54E-05	1.36	1.02E-03	89.50	1.04E-04	9.14	1.13E-03
551	Middle Finger Tip	9.39E-06	0.83	8.82E-04	78.20	2.36E-04	20.97	1.13E-03
555	Inner Middle Finger Tip	3.00E-06	0.31	8.33E-04	87.31	1.18E-04	12.38	9.54E-04
202	Inner Thumb Section 2	1.69E-05	1.86	8.40E-04	92.81	4.82E-05	5.33	9.05E-04
189	Inner Index Section 2	3.02E-06	0.35	7.07E-04	82.08	1.51E-04	17.57	8.61E-04
166	Outer Index Section 1	8.28E-06	1.12	7.34E-04	98.88	2.65E-08	0.00	7.42E-04
179	Outer Thumb Section 1	1.20E-05	1.72	6.85E-04	98.16	7.99E-07	0.11	6.98E-04
567	Inner Middle Finger Section 1	2.14E-06	0.31	5.57E-04	81.73	1.22E-04	17.96	6.81E-04
484	1st Half Palm Ext. Back	5.14E-06	0.77	6.27E-05	9.39	6.00E-04	89.84	6.68E-04
558	Outer Middle Finger Tip	6.54E-06	0.99	6.26E-04	94.95	2.67E-05	4.05	6.60E-04
211	Back Thumb Section 2	9.58E-06	1.46	6.44E-04	98.09	2.95E-06	0.45	6.56E-04
586	Front Middle Finger Section 2	5.95E-06	0.95	5.74E-04	91.35	4.84E-05	7.70	6.28E-04
195	Front Index Section 2	5.42E-06	0.87	6.14E-04	98.68	2.82E-06	0.45	6.23E-04
208	Front Thumb Section 2	8.28E-06	1.36	6.00E-04	98.33	1.92E-06	0.31	6.10E-04
198	Back Index Section 2	5.63E-06	0.93	5.92E-04	97.78	7.83E-06	1.29	6.06E-04
701	Palm Behind Thumb Back	5.31E-06	0.97	7.13E-05	13.09	4.68E-04	85.94	5.45E-04
120	Between Index/Thumb	1.23E-06	0.24	9.30E-05	18.31	4.14E-04	81.45	5.08E-04
490	2nd Half Palm Ext. Back	4.29E-06	0.85	4.69E-05	9.30	4.53E-04	89.85	5.04E-04
228	Inner Thumb Section 3	7.27E-06	1.44	4.59E-04	91.21	3.70E-05	7.34	9.05E-04
Total		2.77E-03	1.18	5.08E-02	21.67	1.80E-01	76.90	2.35E-01

## APPENDIX E

**E.1 Right Hand Nonuniform Skin Dose MCNP Results**

Cell No.	Cell Description	Area (cm <sup>2</sup> )	Cell Dose (Gy)	Dose Fraction (Gy) Over the 100 cm <sup>2</sup>
202	Inner Thumb Section 2	2	2.11E+00	4.20E-02
228	Inner Thumb Section 3	2	7.59E-01	1.51E-02
147	Thumb Tip	4.42	6.81E-01	2.99E-02
176	Inner Thumb Section 1	2	6.30E-01	1.25E-02
151	Inner Thumb Tip	0.94	4.34E-01	4.06E-03
189	Inner Index Section 2	2	1.88E-01	3.73E-03
215	Inner Index Section 3	2	7.89E-02	1.57E-03
163	Inner Index Section 1	2	7.88E-02	1.57E-03
157	Front Thumb Tip	1.081	7.44E-02	7.99E-04
160	Back Thumb Tip	1.081	7.38E-02	7.92E-04
135	Inner Index Tip	0.94	6.16E-02	5.76E-04
131	Index Tip	4.42	5.19E-02	2.28E-03
208	Front Thumb Section 2	2.3	4.09E-02	9.34E-04
211	Back Thumb Section 2	2.3	4.01E-02	9.16E-04
141	Front Index Tip	1.081	2.42E-02	2.60E-04
144	Back Index Tip	1.081	2.39E-02	2.57E-04
182	Front Thumb Section 1	2.3	2.30E-02	5.26E-04
195	Front Index Section 2	2.3	2.19E-02	4.99E-04
561	Front Middle Finger Tip	1.081	2.18E-02	2.35E-04
198	Back Index Section 2	2.3	2.12E-02	4.83E-04
185	Back Thumb Section 1	2.3	2.12E-02	4.83E-04
154	Outer Thumb Tip	0.94	2.09E-02	1.95E-04
169	Front Index Section 1	2.3	2.07E-02	4.72E-04
172	Back Index Section 1	2.3	1.96E-02	4.47E-04
234	Front Thumb Section 3	2.3	1.76E-02	4.01E-04
237	Back Thumb Section 3	2.3	1.60E-02	3.66E-04
573	Front Middle Finger Section 1	2.3	1.55E-02	3.53E-04
254	Inner Thumb Section 4	2	1.48E-02	2.95E-04
221	Front Index Section 3	2.3	1.41E-02	3.22E-04
224	Back Index Section 3	2.3	1.38E-02	3.14E-04
586	Front Middle Finger Section 2	2.3	1.37E-02	3.13E-04
138	Outer Index Tip	0.94	1.25E-02	1.17E-04
551	Middle Finger Tip	4.42	1.12E-02	4.94E-04
241	Inner Index Section 4	2	1.09E-02	2.16E-04
555	Inner Middle Finger Tip	0.94	1.05E-02	9.85E-05
166	Outer Index Section 1	2	1.04E-02	2.07E-04
120	Between Index/Thumb	0.5232	1.03E-02	5.34E-05
599	Front Middle Finger Section 3	2.3	9.88E-03	2.26E-04
179	Outer Thumb Section 1	2	9.74E-03	1.94E-04
567	Inner Middle Finger Section 1	2	9.57E-03	1.90E-04
260	Front Thumb Section 4	2.3	8.91E-03	2.04E-04
205	Outer Thumb Section 2	2	8.74E-03	1.74E-04
580	Inner Middle Finger Section 2	2	8.65E-03	1.72E-04
192	Outer Index Section 2	2	8.54E-03	1.70E-04
558	Outer Middle Finger Tip	0.94	7.46E-03	6.96E-05
247	Front Index Section 4	2.3	7.41E-03	1.69E-04
263	Back Thumb Section 4	2.3	7.41E-03	1.69E-04
250	Back Index Section 4	2.3	7.07E-03	1.62E-04
218	Outer Index Section 3	2	6.61E-03	1.31E-04
612	Front Middle Finger Section 4	2.3	6.50E-03	1.48E-04
Estimated nonuniform dose of tasks over the 100.8282 cm <sup>2</sup>				<b>0.126 Gy ± 0.0008 (1σ)</b>



**E.2 Left Hand Nonuniform Skin Dose MCNP Results**

Cell No.	Cell Description	Area (cm <sup>2</sup> )	Cell Dose (Gy)	Dose Fraction (Gy) Over the 100 cm <sup>2</sup>
202	Inner Thumb Section 2	2	2.09E+00	4.16E-02
228	Inner Thumb Section 3	2	7.46E-01	1.48E-02
176	Inner Thumb Section 1	2	5.99E-01	1.19E-02
189	Inner Index Section 2	2	1.77E-01	3.53E-03
215	Inner Index Section 3	2	7.32E-02	1.46E-03
163	Inner Index Section 1	2	6.09E-02	1.21E-03
211	Back Thumb Section 2	2.3	3.32E-02	7.59E-04
208	Front Thumb Section 2	2.3	3.28E-02	7.49E-04
195	Front Index Section 2	2.3	1.55E-02	3.54E-04
198	Back Index Section 2	2.3	1.53E-02	3.49E-04
151	Inner Thumb Tip	0.94	1.37E-02	1.28E-04
234	Front Thumb Section 3	2.3	1.22E-02	2.78E-04
237	Back Thumb Section 3	2.3	1.20E-02	2.73E-04
254	Inner Thumb Section 4	2	1.15E-02	2.29E-04
182	Front Thumb Section 1	2.3	1.06E-02	2.43E-04
185	Back Thumb Section 1	2.3	1.04E-02	2.38E-04
221	Front Index Section 3	2.3	1.00E-02	2.29E-04
224	Back Index Section 3	2.3	9.97E-03	2.28E-04
169	Front Index Section 1	2.3	9.62E-03	2.20E-04
135	Inner Index Tip	0.94	9.36E-03	8.74E-05
172	Back Index Section 1	2.3	9.28E-03	2.12E-04
586	Front Middle Finger Section 2	2.3	8.09E-03	1.85E-04
241	Inner Index Section 4	2	8.05E-03	1.60E-04
599	Front Middle Finger Section 3	2.3	6.44E-03	1.47E-04
573	Front Middle Finger Section 1	2.3	6.11E-03	1.40E-04
120	Between Index/Thumb	0.5232	5.54E-03	2.88E-05
144	Back Index Tip	1.081	5.43E-03	5.84E-05
141	Front Index Tip	1.081	5.25E-03	5.64E-05
147	Thumb Tip	4.42	5.18E-03	2.27E-04
157	Front Thumb Tip	1.081	5.16E-03	5.54E-05
160	Back Thumb Tip	1.081	5.10E-03	5.48E-05
131	Index Tip	4.42	5.06E-03	2.22E-04
263	Back Thumb Section 4	2.3	4.94E-03	1.13E-04
580	Inner Middle Finger Section 2	2	4.88E-03	9.69E-05
250	Back Index Section 4	2.3	4.87E-03	1.11E-04
260	Front Thumb Section 4	2.3	4.81E-03	1.10E-04
247	Front Index Section 4	2.3	4.67E-03	1.07E-04
205	Outer Thumb Section 2	2	4.49E-03	8.92E-05
192	Outer Index Section 2	2	4.38E-03	8.70E-05
561	Front Middle Finger Tip	1.081	4.25E-03	4.56E-05
612	Front Middle Finger Section 4	2.3	4.02E-03	9.18E-05
593	Inner Middle Finger Section 3	2	3.95E-03	7.85E-05
567	Inner Middle Finger Section 1	2	3.90E-03	7.75E-05
166	Outer Index Section 1	2	3.85E-03	7.66E-05
218	Outer Index Section 3	2	3.85E-03	7.66E-05
280	Inner Thumb Section 5	2	3.77E-03	7.49E-05
231	Outer Thumb Section 3	2	3.67E-03	7.30E-05
179	Outer Thumb Section 1	2	3.60E-03	7.16E-05
267	Inner Index Section 5	2	3.29E-03	6.53E-05
Estimated nonuniform dose of tasks over the 100.6482 cm <sup>2</sup>				<b>0.0819 Gy ± 0.0005 (1σ)</b>

## VITA

Name: Alisha Marie Stallard

Address: Los Alamos National Laboratory, P.O. Box 1663 Mail Stop G761,  
Los Alamos, NM 87545

Email Address: [alisha@lanl.gov](mailto:alisha@lanl.gov)

Education: B.S., Education, Baylor University, 2002  
M.S., Health Physics, Texas A&M University, 2010