

TOTAL BODY DOSIMETRY

Patient No.	Lateral Dimension cm	Body Weight kg	Surface Dose R	Midline Air Exposure R	Midline / Absorbed Dose rad	Average Dose R per 100 R in air at midline	Average Dose R	Integral Dose Megarad
1								
2								
3								
4	26.0	40.4	110	100	66	79.6	79.6	3.1
5								
6	35.0	76.7	113	100	34	74.00	74.0	5.5
7	37 -	58.6	187	167	100	76.5	128.0	7.3
8	36.0	80.3	211	185	100	73.4	136.0	10.6
9	29.0	59.0	27(2)	25(2)	16(2)	77.7	38.8	2.2
10	49 -	57.4	174	157	100	78.3	123.0	6.9
11	32.0	71.0	191	170	100	75.9	129.0	8.9
12								
13	32.0	84.0	95	85	50	75.9	64.5	5.3
14								
15	30.5	59.5	185	166	100	76.8	127.0	7.4
16								
17	25.5	57.4	163	149	100	79.8	119.0	6.6
18	29.5	64.0	362	325	200	77.4	251.0	15.6
19		59.0						
20	24.0	49.0	318	294	200	80.8	235.0	11.1
21	36 -	50.0	359	322	200	77.7	250.0	12.1
22	10 +	56.0	277	248	150	77.1	191.0	10.4
23	30.5	85.0	374	336	200	76.8	258.0	21.2
24	29.0	68.0	359	322	200	77.7	250.0	16.5
25	33 +	52.0	261	226	150	78.6	177.0	8.2
26	29.0	49	179	155	100	77.7	120.0	5.7
27	30.5	67	279	238	150	76.8	182.0	11.8
28	29.5	no Rx						
29	34.0	69	303	257	150	74.65	192.0	12.8
30	27.0	48	172	149	100	78.95	117.0	5.4
31	29.0	59	179	155	100	77.70	120.0	6.9
32								
33	28.0	64	176	152	100	78.35	119.0	7.4
34								
35	28.0	61	263	227	150	78.35	178.0	10.5
36	28.5	61	177	153	100	78.0	119.0	7.1
37	54 -	60	270	231	150	77.70	179.0	10.4
38	32.0	79	48	41	25	75.85	31.0	2.4
39								
40	28.0	62	176	152	100	78.35	119.0	7.2
41	9 -	71	90	77	50	77.70	59.8	4.1
42	25.5	53	249	216	150	79.80	172.0	8.8
44	26.5	50	172	149	100	79.25	118.0	5.7
45	33.0	57	296	250	150	75.30	188.0	10.4
51	25.0	43	244	212	150	80.15	170.0	7.1
53	28 + 30.0	59	369	316	200	77.10	243.0	13.9

#412D

TOTAL BODY EXPOSURE

Patient No.	Lateral Dimension cm	Body Weight kg	Surface Dose R	Midline Air Exposure R	Midline Absorbed Dose rad	Average Dose R per 100 R in air at midline	Average Dose R	Integral Dose Madsen-rad	<i>omit</i>
1									
2									
3									
4	26.0	40.4	120 115	100	66 68	70.5 71.7	70.5 71.7	3.1	
5									
6	35.0	76.7	119-119	100	56	64.9	64.9	5.5	
7	31.0	98.6	107 196	167	100 104	67.5	120.0 117.5	57.3	
8	26.0	80.3	111 221	185	100 104	64.3	120.0 118.5	10.6	
9	29.0	59.0	29 27(2)	25(2)	16(2)	68.9	38.8 34.5	2.2	
10	28.0	57.4	174 183	157	100 104	69.7	120.0 109.0	6.9	
11	32.0	71.0	101 201	170	100 104	66.9	120.0 113.5	8.9	
12									
13	32.0	84.0	96 100(3)	85 (3)	57(3)	64.9(3)	64.5 57.0	3.3	
14									
15	30.5	59.5	105 194	166	100 104	67.8	127.0 117.5	7.4	
16									
17	25.5	57.4	105 172	149	100 104	71.6	119.0 106.5	6.6	
18	29.5	64.0	162 380	325	200 208	68.5	281.0 277.5	5.6	
19		59.0							
20	24.0	49.0	118 334	294	200 208	77.7	235.0 243.9	1.1	
21	29.0	50.0	359 377	322	200 208	68.9	230.0 241.5	1.1	
22	30.0	56.0	277 291	248	100 156	68.1	191.0 168.5	10.4	
23	30.5	85.0	374 392	336	200 208	67.8	258.0 227.0	1.2	
24	29.0	68.0	359 377	322	200 208	68.9	260.0 241.5	1.3	
25	27.5	52.0	261	226	150	70.1	177.0 158.5	3.2	
26	29.0	49	179	155	100	68.9	120.0 106.5	5.7	
27	30.5	67	279	238	150	67.8	122.0 116.0	11.8	
28	29.5	no Rx							
29	34.0	69	303	257	150	65.5	192.0 162.0	12.8	
30 * check	27.0	48	172	149	100	70.4	117.0 105.0	5.4	
31	29.0	59	179	155	100	68.9	120.0 106.5	6.9	
32									
33	28.0	64	176	152	100	69.7	119.0 105.5	7.4	
34									
35	28.0	61	263	227	150	69.7	178.0 158.0	10.5	
36	28.5	61	177	153	100	69.3	119.0 106.0	7.1	
37	29.0	60	270	231	150	68.9	179.0 159.0	10.4	
38	32.0	79	48	41	25	66.9	91.0 27.5	2.4	
39									
40	28.0	62	176	152	100	69.7	119.0 105.5	7.2	
41	29.0	71	90	77	50	68.9	99.8 53.0	4.1	
42	25.5	53	249	216	150	71.6	172.0 154.5	8.8	
43	26.5	50	172	149	100	70.8	118.0 106.5	5.7	
44	33.0	97	296	250	150	66.7	180.0 165.5	10.4	
45	25.0	43	264	212	150	77.0	170.0 157.5	7.1	
46	28.0	59	269	216	200	68.1	243.0 245.0	13.9	

TOTAL BODY DOSIMETRY

Patient No.	Lateral Dimension cm	Body Weight kg	Surface Dose R	Midline Air Exposure R	Midline Absorbed Dose rad	Average Dose R per 100 R in air at midline	Average Dose R	Integral Dose Megamrad
1								
2								
3								
4	26.0	40.4	110	100	66	79.6	79.6	3.1
5								
6	35.0	76.7	113	100	54	74.00	74.0	5.5
7	31.0	58.6	187	167	100	76.5	128.0	7.3
8	36.0	80.3	211	185	100	73.4	136.0	10.6
9	29.0	59.0	27(2)	25(2)	16(2)	77.7	38.8	2.2
10	28.0	57.4	174	157	100	78.3	123.0	6.9
11	32.0	71.0	191	170	100	75.9	129.0	8.9
12								
13	32.0	84.0	95	85	50	75.9	64.5	5.3
14								
15	30.5	59.5	185	166	100	76.8	127.0	7.4
16								
1	25.5	57.4	163	149	100	79.8	119.0	6.6
17	29.5	64.0	362	325	200	77.4	251.0	15.6
18								
19		59.0						
20	24.0	49.0	318	294	200	80.8	235.0	11.1
21	29.0	50.0	359	322	200	77.7	250.0	12.1
22	30.0	56.0	277	248	150	77.1	191.0	10.4
23	30.5	85.0	374	336	200	76.8	258.0	21.2
24	29.0	68.0	359	322	200	77.7	250.0	16.5
25	27.5	52.0	261	226	150	78.6	177.0	8.2
26	29.0	49	179	155	100	77.7	120.0	5.7
27	30.5	67	279	238	150	76.8	182.0	11.8
28	29.5	no Rx						
29	34.0	69	303	257	150	74.65	192.0	12.8
30	27.0	48	172	149	100	78.95	117.0	5.4
31	29.0	59	179	155	100	77.70	120.0	6.9
32								
33	28.0	64	176	152	100	78.35	119.0	7.4
34								
35	28.0	61	263	227	150	78.35	178.0	10.5
36	28.5	61	177	153	100	78.0	119.0	7.1
37	29.0	60	270	231	150	77.70	179.0	10.4
38	32.0	79	48	41	25	75.85	31.0	2.4
39								
40	28.0	62	176	152	100	78.35	119.0	7.2
41	29.0	71	90	77	50	77.70	59.8	4.1
42	25.5	53	249	216	150	79.80	172.0	8.8
4	26.5	50	172	149	100	79.25	118.0	5.7
43	33.0	57	296	250	150	75.30	188.0	10.4
51	25.0	43	244	212	150	80.15	170.0	7.1
53	30.0	59	369	316	200	77.10	243.0	13.9

Patient No.	Latral Dimension cm	Body Weight kg	Surface Dose R	Midline Air Exposure R	Midline Absorbed Dose rad	Average Dose R per 100 R in air at midline	Average Dose R	Integral Dose Megarad
57	35.0	83	208	175	100	74.0	129.5	10.4
58	31.5	75	95	81	50	76.2	61.7	4.5
59 f D 3v +	30.5	-	279	238	150	76.8	182.5	-
60 f D 30 +	29.0	83	270	231	150	77.7	179.5	14.4
61	28.5	56	88	76	50	78.0	59.2	3.2
62	29.0	74	270	231	150	77.7	179.5	12.9

PARTIAL BODY (UPPER) DOSIMETRY

50	34.5	78	415	348	200	31.3	78.0	8.3
55	34.0	88	405	341	200	31.4	88.0	9.1
56 D 38 -	28.0	63	175	151	100	32.7	63.0	3.0

PARTIAL BODY (LOWER) DOSIMETRY

43 D 15 -	27.5	42	174	150	100	46.3	69.6	2.8
47	29.5	60	272	233	150	45.6	106.2	6.2
49	28.0	47	352	304	200	45.9	139.5	6.4
52	26.5	59	342	296	200	46.4	137.5	7.9
53	26.0	40	503	436	300	46.6	203.5	8.0
64	27.0	58	515	444	300	46.4	206.0	11.7
65	29.0	68	360	310	200	45.6	141.5	9.3
66	29.0	60	360	310	200	45.6	141.5	8.3
67	26.0	54	168	145	100	46.6	67.7	3.6
68	28.0	53	263	226	150	45.9	103.8	5.4

Patient	Internal Dimension cm	Body Weight kg	Surface Area m ²	Midline Air Exposure R	Midline Absorbed Dose rad	Average Dose R per 100 R in air at midline	Average Dose R	Integral Dose Magna-rad
57	25.0	83	200	173	200	74.0 64.9	229.5 113.0	10.4
58	21.5	75	95	81	90	70.2 67.7	51.7 54.5	4.3
59	20.5	-	279	238	150	70.0 67.8	282.5 161.0	-
60	29.0	83	270	231	150	77.7 68.9	279.5 159.0	14.4
61	28.5	86	88	76	80	70.0 69.3	59.2 57.5	3.2
62	29.0	74	270	231	150	77.7 68.9	279.5 159.0	12.9

PARTIAL BODY (UPPER) DOSIMETRY

10	24.5	78	415	348	200	31.3 65.2	70.0 227.0	8.3
15	24.0	88	405	341	200	31.4 65.5	88.0 223.0	9.1
16	28.0	63	175	131	100	32.7 69.7	63.0 105.0	300

PARTIAL BODY (LOWER) DOSIMETRY

27.5	42	174	150	100	46.3 70.0	69.6 105.0	22.8
29.5	60	272	233	150	45.6 68.5	106.2 159.5	6.2
28.0	47	252	204	200	45.9 69.7	139.5 211.5	6.4
26.5	39	242	296	200	44.4 70.8	137.5 209.0	7.9
26.0	40	203	436	300	46.6 71.7	203.5 310.0	8.0
27.0	38	315	444	300	46.4 70.4	206.0 317.0	11.7
29.0	68	260	310	200	45.6 68.9	141.5 213.5	9.3
29.0	60	260	310	200	45.6 68.9	141.5 213.5	8.3
26.0	34	168	145	100	46.6 71.7	67.7 103.0	3.6
28.0	53	263	226	150	45.9 69.7	103.0 157.5	5.4

Patient #	Lateral Dimension cm	Body Weight kg	Surface Dose R	Midline Air Exposure R	Midline Absorbed Dose rad	Average Dose R per 100 R in air at midline	Average Dose R	Integral Dose Megam- rad
57	35.0	83	208	175	100	74.0	129.5	10.4
58	31.5	75	95	81	50	76.2	61.7	4.5
59	30.5	-	279	238	150	76.8	182.5	-
60	29.0	83	270	231	150	77.7	179.5	14.4
61	28.5	56	88	76	50	78.0	59.2	3.2
62	29.0	74	270	231	150	77.7	179.5	12.9

PARTIAL BODY (UPPER) DOSIMETRY

50	34.5	78	415	348	200	31.3	78.0	8.3
55	34.0	88	405	341	200	31.4	88.0	9.1
56	28.0	63	175	151	100	32.7	63.0	3.0

PARTIAL BODY (LOWER) DOSIMETRY

43	27.5	42	174	150	100	46.3	69.6	2.8
47	29.5	60	272	233	150	45.6	106.2	6.2
48	28.0	47	352	304	200	45.9	139.5	6.4
52	26.5	59	342	296	200	46.4	137.5	7.9
63	26.0	40	503	436	300	46.6	203.5	8.0
64	27.0	58	515	444	300	46.4	206.0	11.7
65	29.0	68	360	310	200	45.6	141.5	9.3
66	29.0	60	360	310	200	45.6	141.5	8.3
67	26.0	54	168	145	100	46.6	67.7	3.6
68	28.0	53	263	226	150	45.9	103.8	5.4

TOTAL BODY DOSIMETRY

<u>Patient No.</u>	<u>Patient Wt.</u> <u>Kg</u>	<u>Lateral</u> <u>Dimension</u> <u>Cm</u>	<u>Surface</u> <u>Exposure</u> <u>R</u>	<u>Midline</u> <u>Air</u> <u>Exposure</u> <u>R</u>	<u>Midline</u> <u>Absorbed</u> <u>Dose</u> <u>rad</u>	<u>Midline Dose</u> <u>Midline Exposure</u> <u>rad/R</u>
<u>TOTAL BODY</u>						
38	79	32.0	48	41	25	0.61
9	59	29.0	58(2)	50(2)	32(2)	0.64
41	71	29.0	90	77	50	0.65
58	75	31.5	95	81	50	0.62
61	56	28.5	88	76	50	0.66
6	77	35.0	120	100	57	0.57
4	40	26.0	115	100	68	0.68
7	59	31.0	196	167	104	0.62
8	80	36.0	221	185	104	0.56
10	57	28.0	183	157	104	0.66
11	71	32.0	201	170	104	0.61
15	60	30.5	194	166	104	0.63
17	57	25.5	172	149	104	0.70
26	49	29.0	179	155	100	0.65
30	48	27.0	172	149	100	0.67
31	59	29.0	179	155	100	0.65
33	64	28.0	176	152	100	0.66
36	61	28.5	177	153	100	0.66
40	62	28.0	176	152	100	0.66
44	50	26.5	172	149	100	0.67
57	83	35.0	208	175	100	0.57
79	61	24.0	159	139	100	0.72
81	43	24.0	159	139	100	0.72
83	45	26.0	168	144	100	0.69
86	35	25.0	163	142	100	0.70
96	96	35.0	206	172	100	0.58
97	51	27.0	172	148	100	0.68
105	58	29.0	180	154	100	0.65
112	59	27.0	174	149	100	0.67
113	63	29.0	183	155	100	0.65
22	56	30.0	291	248	150	0.61
25	52	27.5	261	226	150	0.67
27	67	30.5	279	238	150	0.63
29	69	34.0	303	257	150	0.58
35	61	28.0	263	227	150	0.67
37	60	29.0	270	231	150	0.65
42	53	25.5	249	216	150	0.70
45	57	33.0	296	250	150	0.60

TOTAL BODY DOSIMETRY

<u>Patient No.</u>	<u>Patient Wt.</u> <u>Kg</u>	<u>Lateral</u> <u>Dimension</u> <u>Cm</u>	<u>Surface</u> <u>Exposure</u> <u>R</u>	<u>Midline</u> <u>Air</u> <u>Exposure</u> <u>R</u>	<u>Midline</u> <u>Absorbed</u> <u>Dose</u> <u>rad</u>	<u>Midline Dose</u> <u>Midline Exposure</u> <u>rad/R</u>
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TOTAL BODY continued

51	43	25.0	244	212	150	0.71
59	68	30.5	279	238	150	0.63
60	83	29.0	270	231	150	0.65
62	74	29.0	270	231	150	0.65
70	74	28.0	263	226	150	0.67
88	66	32.0	288	244	150	0.62
90	59	28.0	264	226	150	0.67
93	32	24.0	238	208	150	0.72

18	64	29.5	380	325	208	0.64
20	49	24.0	334	294	208	0.71
21	50	29.0	377	322	208	0.65
23	85	30.5	392	336	208	0.62
24	68	29.0	377	322	208	0.65
53	59	30.0	369	316	200	0.63
77	52	26.0	335	290	200	0.69
78	52	28.0	351	302	200	0.66
87	54	24.0	318	278	200	0.72
91	50	27.0	344	295	200	0.68
95	52	27.0	344	295	200	0.68
98	64	32.0	385	324	200	0.62
107	45	29.0	360	307	200	0.65
111	54	29.0	365	309	200	0.65

99	45	26.0	386	332	230	0.69
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PARTIAL BODY (UPPER)

56	63	28.0	175	151	100	0.66
50	78	34.5	415	348	200	0.58
55	88	34.0	405	341	200	0.59
84	60	30.0	540	471	300	0.64
108	71	32.0	576	485	300	0.62
110	64	33.0	612	510	300	0.59

PARTIAL BODY (LOWER)

43	42	27.5	174	150	100	0.67
67	54	26.0	168	145	100	0.69
47	60	29.5	272	233	150	0.64
68	53	28.0	263	226	150	0.66

TOTAL BODY DOSIMETRY

<u>Patient No.</u>	<u>Patient Wt.</u> <u>Kg</u>	<u>Lateral</u> <u>Dimension</u> <u>Cm</u>	<u>Surface</u> <u>Exposure</u> <u>R</u>	<u>Midline</u> <u>Air</u> <u>Exposure</u> <u>R</u>	<u>Midline</u> <u>Absorbed</u> <u>Dose</u> <u>rad</u>	<u>Midline Dose</u> <u>Midline Exposure</u> <u>rad/R</u>
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PARTIAL BODY (LOWER) continued

49	47	28.0	352	304	200	0.66
52	59	26.5	342	296	200	0.68
65	68	29.0	360	310	200	0.65
66	60	29.0	360	310	200	0.65
75	61	26.0	335	290	200	0.69
101	73	33.0	508	426	257	0.60
63	40	26.0	503	436	300	0.69
64	58	27.0	515	444	300	0.68
72	74	33.0	592	500	300	0.60
82	58	26.0	503	435	300	0.68
100	95	31.0	566	479	300	0.63
103	64	31.0	566	479	300	0.63
104	51	31.0	566	479	300	0.63
106	47	29.0	542	461	300	0.65
109	74	35.0	625	524	300	0.57

TRUNK (BASE OF NECK TO PUBIS)

92	48	25.0	245	212	150	0.71
94	87	30.0	277	237	150	0.63
89	66	35.0	417	347	200	0.58
102	58	29.0	360	307	200	0.65

LOWER HALF

375

316

#49 LOWER HALF

$$\text{Lat } 28.0 \quad \text{wt} = 47 \text{ kg} \quad \text{M.T.} = 200 \quad \text{M.A.} = 304$$

$$\text{Trunk} = .669 \times \frac{4}{7} \times \frac{1}{2} = .191$$

$$\text{Limbs} = .809 \times \frac{3}{7} \times .68 = .126$$

$$.427 \times .93 \times 115.7 = 45.9$$

$$45.9 \times 3.04 = 139.5 \times 47 = 6.6 \text{ megagm. rad}$$

$$= 6.4 \text{ megagm. rad}$$

#52 LOWER HALF

$$\text{Lat } 26.5 \quad \text{wt} = 59 \text{ kg} \quad \text{M.T.} = 200 \quad \text{M.A.} = 296$$

$$\text{Trunk} = .684 \times \frac{4}{7} \times \frac{1}{2} = .195$$

$$.817 \times \frac{3}{7} \times .68 = .238$$

$$.433 \times .93 \times 115.1 = 46.4$$

$$46.4 \times 2.96 = 137.5 \times 59 = 8.1 \text{ megagm. rad}$$

$$= 7.96 \text{ megagm. rad}$$

TOTAL BODY DOSIMETRY

7
Internal
Dose
measured
at
midline

Patient No.	Lateral Dimension cm	Body weight kg	Surface Dose R	Midline Air Exposure R	Midline Absorbed Dose rad	Average Dose per 100R midline	Average Dose R	7 Internal Dose measured at midline
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30

PARTIAL BODY (UPPER) DOSIMETRY

50	34.5	78	415	348	200	31.3	78.0	8.8
55	34.0	88	405	341	200	31.4	88.0	9.1
56	28.0	63	175	151	100	32.7	63.0	3.0

PARTIAL BODY (LOWER) DOSIMETRY

43	27.5	42	174	150	100	46.3	69.6	2.8
47	29.5	60	272	233	150	45.6	106.2	6.2
49	28.0	47	352	304	200	45.9	139.5	6.4
52	26.5	59	342	296	200	46.4	127.5	7.9
63	26.0	40	503	436	300	46.6	203.5	8.0
64	27.0	58	515	444	300	46.4	206.0	11.7
65	29.0	68	360	310	200	45.6	141.5	9.3
66	29.0	60	360	310	200	45.6	141.5	8.3
67	26.0	54	168	145	100	46.6	67.7	3.6
68	28.0	53	263	226	150	45.9	103.8	5.4

LOWER HALF

#43 LOWER HALF

Lat 27.5 Body weight 42 kg Midline Tissue 100 rad

TRUNK = 23.1 kg Midline Air 150 r

average dose per 100 r air at midline = 78.6

$$\text{TRUNK} = .674 \times \frac{4}{7} \times \frac{1}{2} = .193$$

$$\text{LIMBS} = .910 \times \frac{3}{7} \times .68 = .186$$

$$.429 \times .93 \times 115.5 = 46.3$$

$$46.3 \times 1.5 = 69.45 \text{ average dose}$$

average dose per 100 r air at midline

$$= \frac{69.45}{42} = 2.9 \text{ megagym.r} = 7.8 \text{ megagym.rad}$$

#47 LOWER HALF

Lat 29.5 Body wt 60 kg Midline Tissue 150 rad

Midline Air 233 r

$$\text{TRUNK} = .657 \times \frac{4}{7} \times \frac{1}{2} = .187$$

$$\text{LIMBS} = .799 \times \frac{3}{7} \times .62 = .234$$

$$.420 \times .93 \times 116.3 = 45.6$$

$$45.6 \times 2.33 = 106.2$$

$$= \frac{106.2}{60} = 6.43 \text{ megagym.r}$$

$$= 6.2 \text{ megagym.rad}$$

LOWER HALF

Patient	Lateral Penetration cm	Body Weight kg	Surface Dose r	Midline Air r	Midline Time rad
43	27.5	42	174	150	100
47	29.5	60	272	233	150
49	28.0	47	352	304	200
52	26.5	59	342	296	200

LOWER HALF

375

316

#49 LOWER HALF

$$\text{Lat } 28.0 \quad \text{wt} = 47 \text{ kg} \quad \text{M.T.} = 200 \quad \text{M.A.} = 304$$

$$\text{Trunk} = .684 \times \frac{47}{7} \times \frac{1}{2} = .191$$

$$\text{Limb} = .817 \times \frac{47}{7} \times .68 = .238$$

$$.433 \times 93 \times 0.67 = .45.4$$

$$\begin{aligned} 45.9 \times 3.04 &= 139.5 \times 47 = 6.6 \text{ megagm. rad} \\ &= 6.4 \text{ megagm. rad} \end{aligned}$$

#52 LOWER HALF

$$\text{Lat } 26.5 \quad \text{wt} = 59 \text{ kg} \quad \text{M.T.} = 200 \quad \text{M.A.} = 296$$

$$\text{Trunk} = .684 \times \frac{59}{7} \times \frac{1}{2} = .195$$

$$.817 \times \frac{59}{7} \times .68 = .238$$

$$.433 \times 93 \times 115.1 = 46.4$$

$$\begin{aligned} 46.4 \times 2.96 &= 137.5 \times 59 = 8.1 \text{ megagm. rad} \\ &= 7.9 \text{ megagm. rad} \end{aligned}$$

LOWER HALF

#63 LOWER HALF

Lat 26 cm Body weight 40.4 kg Midline Tissue 300 rad
Midline Air 436 r

$$\text{Trunk } .689 \times \frac{4}{7} \times \frac{1}{2} = .197$$

$$\text{Limbs } .8195 \times \frac{3}{7} \times .68 = .139$$

$$.436 \times .93 \times 114.9 = 46.6 \text{ r average dose per 100 r in air at midline}$$

$$46.6 \times \frac{.56}{40.4} = 203.5 \text{ average dose}$$

$$8.2 \text{ megagm r} = 8.0 \text{ megagm rad}$$

#64 LOWER HALF

Lat 27 Body weight 58.1 kg Midline Tissue 300 rad
Midline Air 444 r

$$\text{Trunk } .6795 \times \frac{4}{7} \times \frac{1}{2} = .1945$$

$$\text{Limbs } .814 \times \frac{3}{7} \times .68 = .138$$

$$.4375 \times .93 \times 115.3 = 46.35 \text{ r average dose per 100 r in air at midline}$$

$$46.35 \times \frac{4.44}{58.1} = 206.0 \text{ average dose}$$

$$17.0 \text{ megagm r} = 11.7 \text{ megagm rad}$$

#65 LOWER HALF

Lat 29 cm Body weight 67.7 kg Midline Tissue 200 rad
Midline Air 310 r

$$\text{Trunk } .661 \times \frac{4}{7} \times \frac{1}{2} = .189$$

$$\text{Limbs } .802 \times \frac{3}{7} \times .68 = .134$$

$$.473 \times .93 \times 116.1 = 45.6 \text{ r average dose per 100 r in air at midline}$$

$$45.6 \times \frac{3.10}{67.7} = 141.5 \text{ average dose}$$

$$9.6 \text{ megagm r} = 9.3 \text{ megagm rad}$$

LOWER HALF

66 Lower Half

Lat 29 cm Body weight 60.0 kg Medline Tissue 200 rad
Medline Air 310 r

$$\text{Trunk } .661 \times \frac{4}{7} \times \frac{1}{2} = .189$$

$$\text{Limbs } .802 \times \frac{3}{7} \times .68 = .134$$

$$.423 \times .93 \times 116.1 = 45.6 \text{ r average dose per 100 r in air at midline}$$

$$45.6 \times 3.1 = 141.5 \text{ r average dose}$$

60.0

$$8.5 \text{ megagm r} = 8.3 \text{ megagm rad}$$

67 Lower Half

Lat 26 cm Body weight 54.4 kg

Medline Tissue 100 rad
Medline Air 145 r

$$\text{Trunk } .689 \times \frac{4}{7} \times \frac{1}{2} = .197$$

$$\text{Limbs } .8195 \times \frac{3}{7} \times .68 = .239$$

$$.436 \times .93 \times 114.9 = 46.6 \text{ r average dose per 100 r in air at midline}$$

$$46.6 \times 1.45 = 67.7 \text{ r average dose}$$

54.4

$$3.7 \text{ megagm r} = 3.6 \text{ megagm rad}$$

68 Lower Half

Lat 28 cm Body weight 53.3 kg

Medline Tissue 150 rad
Medline Air 226 r

$$\text{Trunk } .669 \times \frac{4}{7} \times \frac{1}{2} = .191$$

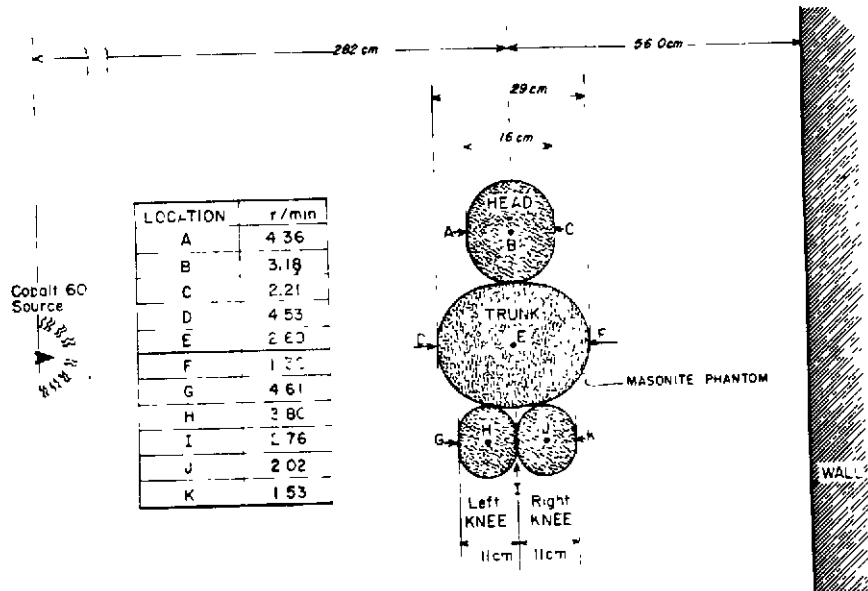
$$\text{Limbs } .808 \times \frac{3}{7} \times .68 = .235$$

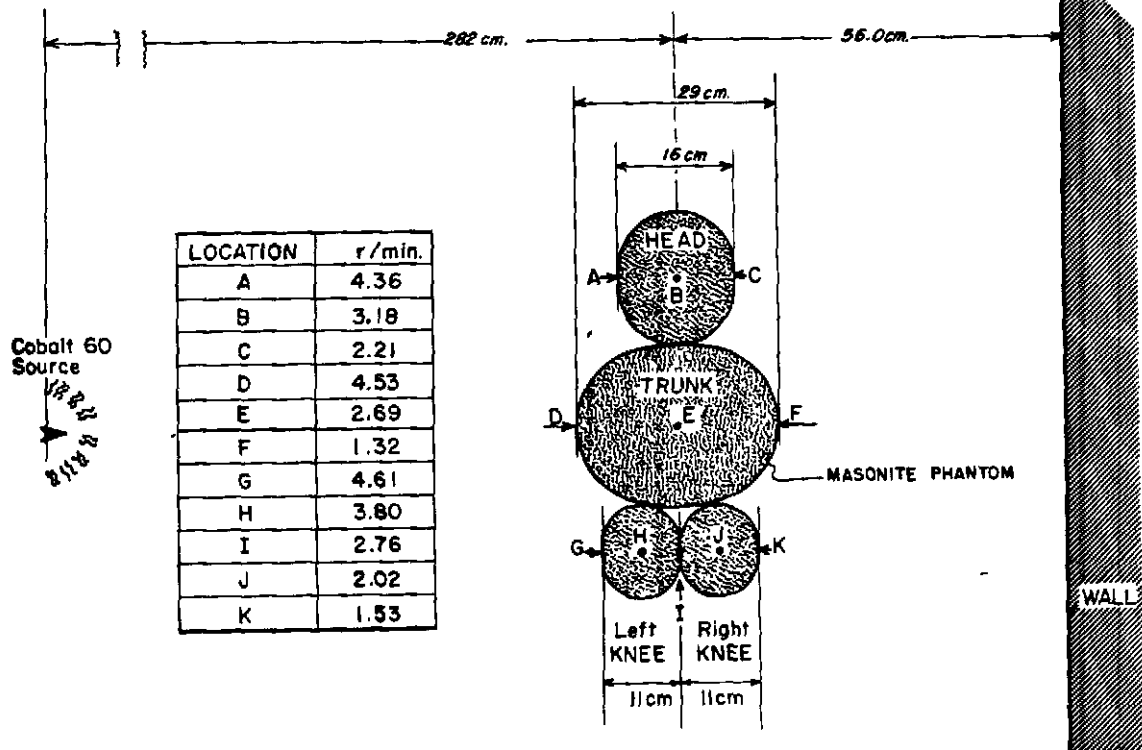
$$.426 \times .93 \times 115.7 = 45.9 \text{ r average dose per 100 r in air at midline}$$

$$45.9 \times 2.26 = 103.8 \text{ r average dose}$$

53.3

$$5.5 \text{ megagm r} = 5.4 \text{ megagm rad}$$





15 more Packard

$$\mu d \frac{1}{2} = .693 \quad 0.577$$

$$\mu = \frac{.693}{12.5} \quad 0.53 \times \left(\frac{205}{192.5} \right)^2 = .053 \quad .063$$

$$\mu = \frac{.693}{17} = .0407 = .041 \quad .03$$

$$.041 \times \left(\frac{282}{265} \right)^2 = .046 \quad .035 \rightarrow .046$$

$$\mu \frac{174}{1.05} = 166 \times \left(\frac{268}{282} \right)^2 = 166 \times .905 = 150$$

$$\frac{100}{150} = .67 \quad \frac{100}{157} = .64$$

$$100 R \times \left(\frac{282}{267} \right)^2 = 111.2 \times 1.05 = 116.8$$

$$100 R \times \left(\frac{282}{262} \right)^2 = 116 \times 1.05 = 121.5$$

$$100 R \times \left(\frac{282}{270} \right)^2 = 114.5 \rightarrow 114.2 \quad \checkmark$$

$$100 R \times \left(\frac{282}{264} \right)^2 = 119.8 \rightarrow 119 \quad \frac{282}{264} = 1.068$$

$$100 R \times \left(\frac{282}{265.5} \right)^2 = 118.4 \quad \frac{282}{265.5} = 1.062$$

$$100 R \times \frac{282}{268.5} = 115 \quad \checkmark \quad \frac{282}{268.5} = 1.05$$

$$\frac{78-71}{78} = \frac{7}{78}$$



30 cm

$$\frac{D_{AV}}{D_S} = .608 \times .935 = .569$$

$$D_{AV} = .569 \times 116.5 = 66.3 R \times .97 \frac{\text{rad}}{R}$$

$$= 64.5 \text{ rad}$$



28 cm

$$\frac{D_{AV}}{D_S} = .63 \times .935 = .59$$

$$D_{AV} = .59 \times 115.7 = 68.3 R \times .97 = 66.5 \text{ rad}$$

36 cm

$$\frac{D_{AV}}{D_S} = .555 \times .935 = .518$$

$$D_{AV} = .518 \times 118.9 = 61.7$$

24 cm

$$\frac{D_{AV}}{D_S} = .669 \times .935 = .625$$

$$D_{AV} = .625 \times 114.1 = 71.5$$

Dr Wyckoff

14 Dec 1966

Hammersmith

Hornsley, Shirley - Hammersmith - dose rate effect

Clinical Dosimetry
Radiobiological Dosimetry

Shonka

air-equivalent chamber
tissue - " "

Memorandum

24	.669	114.4	606	69.4	.700	114.4	625	71.7
25	.659	114.7	596	68.4	.691	114.7	627	72.0
26	.649	115	588	67.6	.681	115	618	71.4
27	.639	115.3	579	66.8	.672	115.3	610	70.4
28	.629	115.7	570	66.0	.663	115.7	601	69.7
29	.619	116.1	561	65.4	.654	116.1	593	68.9
30	.609	116.6	552	64.4	.644	116.6	584	68.1
31	.600	117.1	544	63.6	.635	117.1	576	67.5
32	.591	117.6	536	63.0	.626	117.6	568	66.9
33	.582	118.1	528	62.4	.618	118.1	560	66.4
34	.573	118.6	520	61.7	.609	118.6	552	65.5
35	.565	119.0	512	61.0	.601	119.0	545	64.9
36	.557	119.4	505	60.3	.594	119.4	538	64.3

$$.97 \times .935 = .907$$

22	$\frac{4}{7} \times .660 + \frac{3}{7} \times .798$	.377	
26	$\frac{4}{7} \times .615 + \frac{3}{7} \times .767$	.343	
30	$\frac{4}{7} \times .573 + \frac{3}{7} \times .739$	.329	
35	$\frac{4}{7} \times .528 + \frac{3}{7} \times .704$	.317	
36	$\frac{4}{7} \times .520 + \frac{3}{7} \times .698$	.301	

$$\begin{array}{r} .297 \\ .299 \\ \hline .596 \end{array}$$

17.1

$$\frac{4}{7} \times 0.4 + \frac{3}{7} \times 0.71 = 0.55$$

rad kerma

$$\frac{0.693}{13} \text{ cm}$$

$$\frac{12.21}{18.36}$$

$$0.55 \rightarrow 18.2$$

$$.693 = \mu_d$$

$$\frac{7}{.055} = 12.7 \rightarrow 25.5$$

$$\mu = \frac{.693}{13} = .0533 = .0555$$

$$\frac{4}{7} \times 0.6 + \frac{3}{7} \times 0.76$$

$$.055 \times 1.145$$

$$\frac{203}{190}$$

$$= 1.145$$

$$= .061$$

$$\frac{.693}{12.5}$$

$$\frac{.055}{.041}$$

$$\frac{30}{2} = 15$$

$$4.8$$

$$\downarrow$$

$$\times \rightarrow 100$$

$$\mu_a = 15$$

$$3.9$$

$$a = \frac{15}{.03}$$

Ar Dose 63 → 71
 Ar Dose = 59 → 71
 Ar Dose

$$\mu = \frac{.693}{17} = .0409$$

$$.0550 \text{ Sinclair}$$

$$\frac{282}{265} = \frac{795}{702}$$

$$1.13$$

$$= 0.461$$

Kerangka

$$135 \rightarrow$$

$$30 \text{ cm } \frac{4}{7} \cdot 0.652 + \frac{3}{7}$$

$$30 \frac{4}{7} \times .534 + \frac{3}{7} \cdot 0.708$$

$$.306$$

$$\frac{.306}{.534}$$

$$\times \frac{4}{7} \times .441 + \frac{3}{7} \cdot 0.636$$

$$\frac{.55 \times .608}{.534}$$

$$\frac{4}{7} \times .65 + \frac{3}{7} \times .79$$

$$\frac{.371}{.534}$$

$$\frac{.339}{.534}$$

$$\mu_a = 0.8$$

Ar Dose

$$.676$$

$$\mu_a$$

$$.13$$

$$0.749$$

$$\mu = .63$$

$$a = 17 \rightarrow 34$$

$$100 \rightarrow 20$$

June 29, 1965

Mr. Samuel Alderson
Alderson Research Laboratories
Long Island City, New York

Dear Sam:

Enclosed is a simple schematic of the blocks required for the study I mentioned on the phone; namely, to get some experimental checks of a theoretical calculation (Monte Carlo techniques) for certain inhomogeneities. This would be done by using Lithium Fluoride. We would need approximately 72 blocks (each as shown in diagram) 72 blocks of the tissue equivalent material and 36 blocks each of the lung and fat equivalent material. As you indicated, one of the large blocks given in your catalogue could be cut up to give the blocks shown in the schematic.

Would you please send me the quote on this as soon as possible. We would like to have this material as soon as possible, as we have some graduate students here who could carry out this work within the next month.

Thank you for your help in this matter.

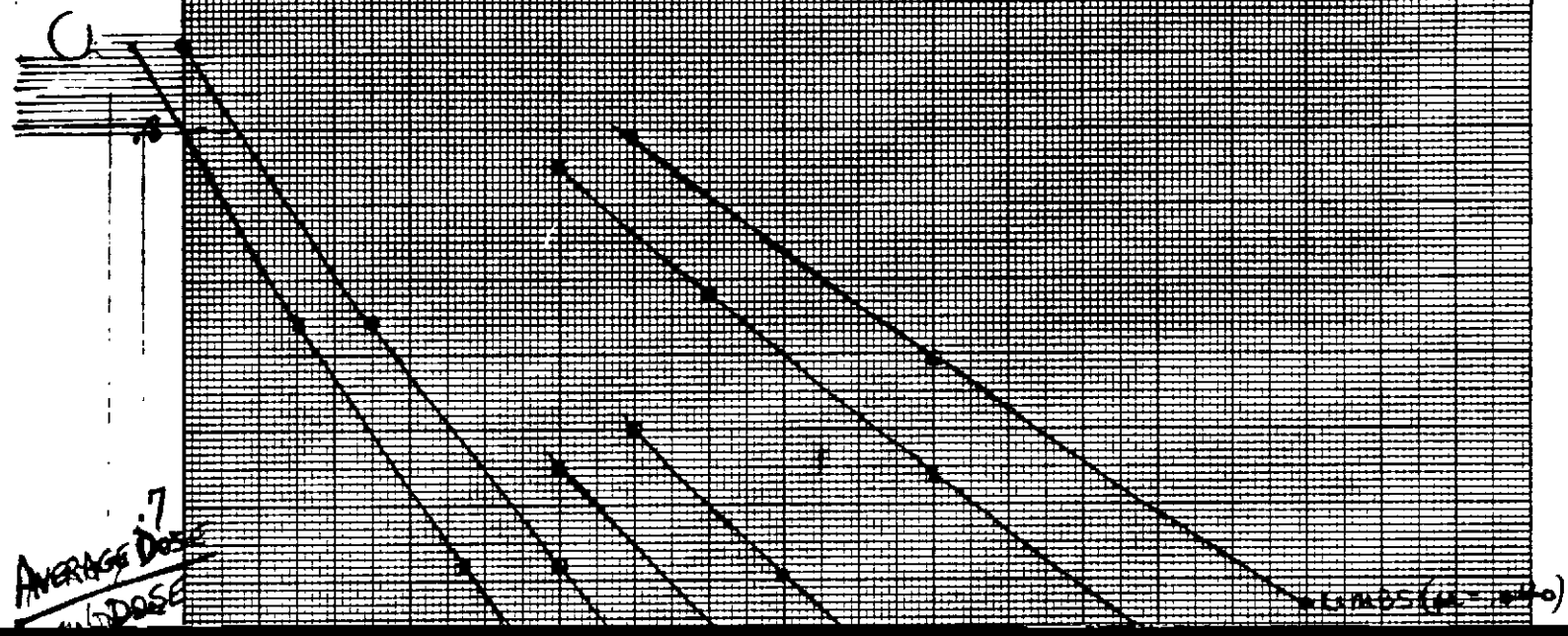
Sincerely,

James G. Kerefakes, Ph.D.

JGK:sjt

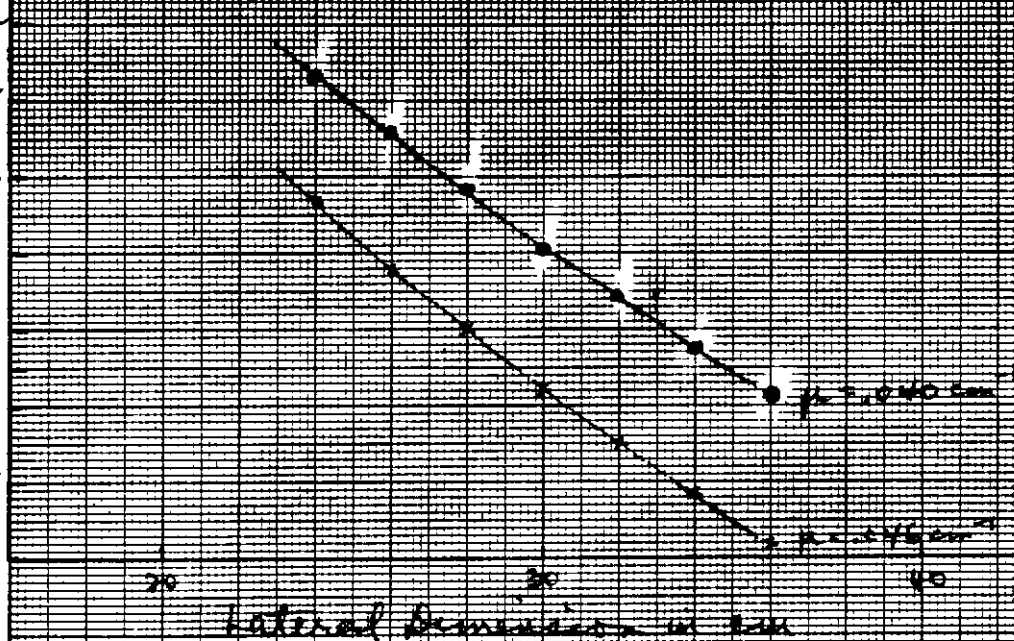
.9

7 March 1967



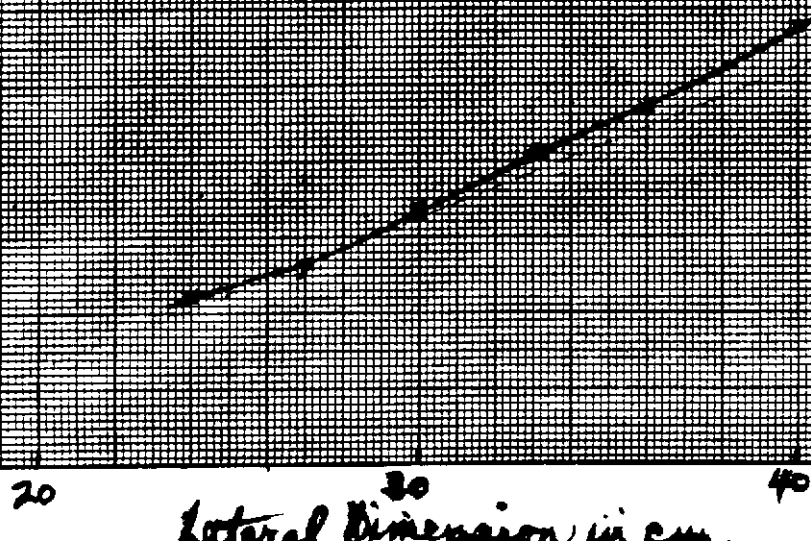
7 March 1967

AVERAGE
DOSE
PER
100 R
in air
at
midline



Skin Dose
100 R in air at midline

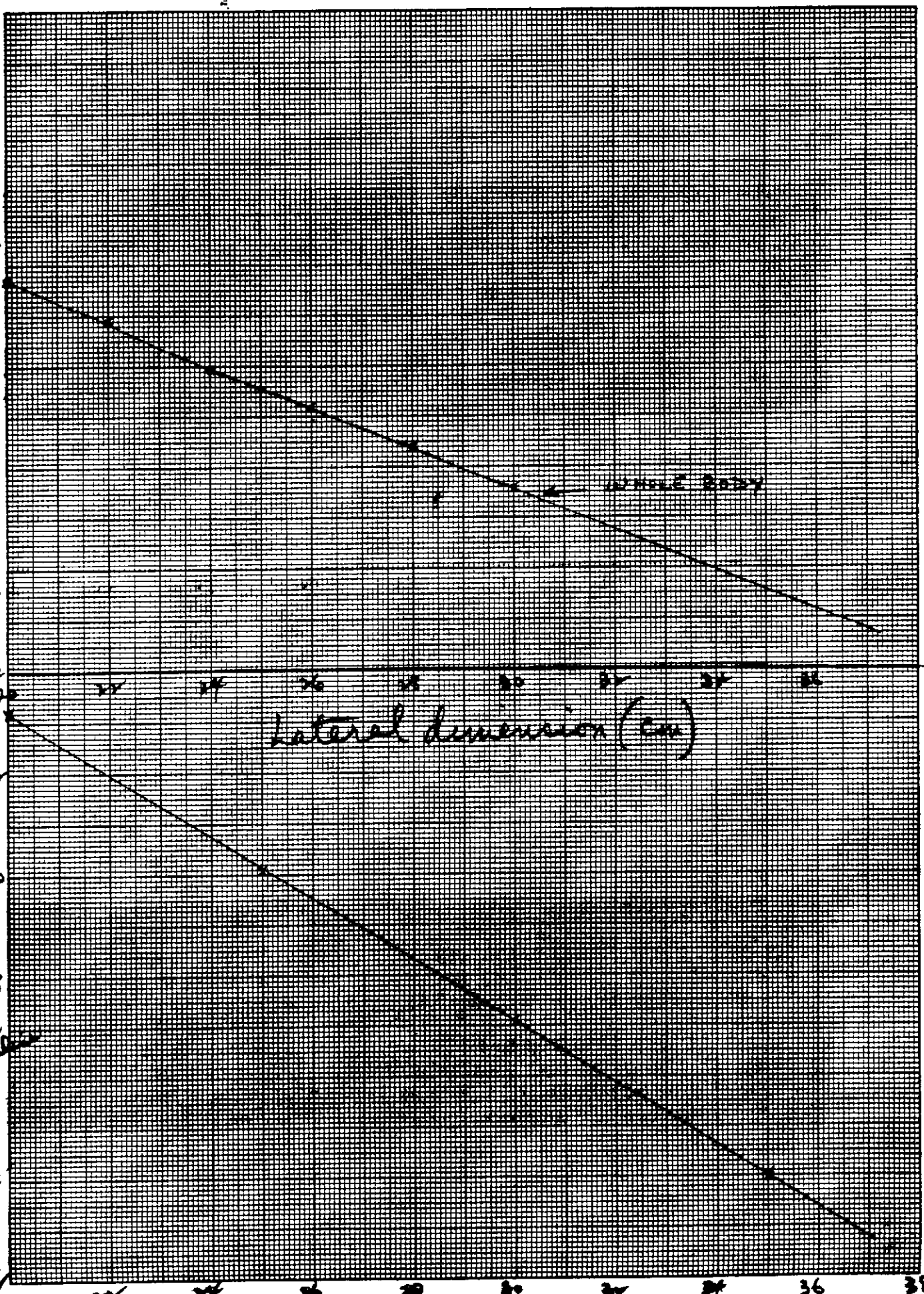
SKIN
DOSE
118
116
114
112
110



Orange Box
in Box 18

10 A 100 THE STANTIMETER 46 1510,
18 X 25 CM. MADE IN U.S.A.
NEUMANN & NEUMANN CO.
P. 100
in air
at 1000 ft

7
64
82
90
78
74
72

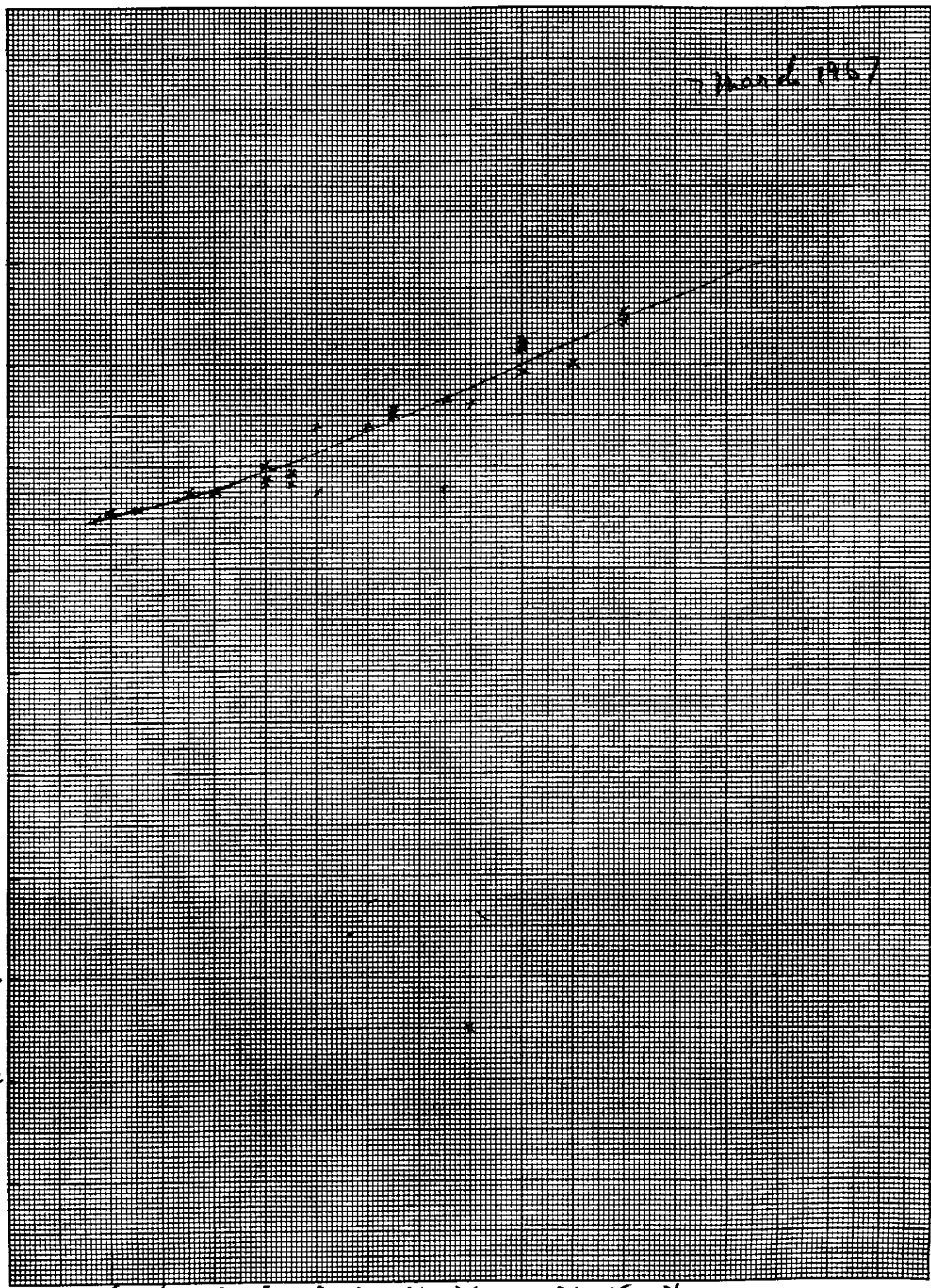


Lateral dimension (cm)

K-E 10 X 10 TO THE CENTIMETER 46 1210
MADE IN U.S.A.
KEUFFEL & ESSER CO.

March 1957

100
102
104
106
108
110
112
114
116
118
120



upper half

50

55

56

lower half

43

47

49

52

✓ 63

✓ 64

✓ 65 M = 57 kg

✓ 66

✓ 67 = .55M

✓ 68

$$\pi(a_2 b_2 - a_1 b_1) l \rho_b + \pi a_1 b_1 l \rho_x$$

$$\left[\pi(14 \times 10 - 9 \times 5) 1.8 + \pi(9 \times 5) \right] l = .55$$

TBR = 5x

	6.9	100	7@ 100R
	6.9	100	4@ 150R
	7.1	100	
	7.2	100	2@ 200R
	7.3	100	
	7.4	100	
Median	8.2	150	
	10.4	100	
	10.4	150	
	11.1	200	
	12.1	200	
	12.8	150	
	12.9	150	

T.B.R		PB(L)	PB(U)
6.6	①	72.8, 53.6	②
6.9-7.4	⑧	5.4, 6.2, 6.4	③
8.2	①	7.9, 8.0, 8.3	③
8.8 + 8.9	②	9.8 + 11.2	②
10.4 - 10.6	⑥	11.7	
11.1	①		
11.8 + 12.1	②		
12.8 + 12.9	②		
13.9 - 14.4	②		
15.6 + 16.5	②		
15.7			
21.2	①		

Comments: 2 @ 200 rad but 11.1 + 12.1 megagyrad (no symptoms)
 4 @ 150 rad but 15.9, 16.6, 16.8 + 17.0 megagyrad (symptoms)
 150 rad { 8.2, 10.4 + 10.8 + 10.9 megagyrad (no symptoms)
 150 rad with 10.4, 10.5, 11.8 + 14.4 megagyrad (symptoms)
 100 rad with 6.9, 6.9, 7.1, 7.2, 7.3, 7.4 and 10.4 megagyrad (no symptoms)
 150 rad with 6.6, 7.1, 7.4, 7.9 1 rad megagyrad (symptoms)

60 day lethality

200 rad

150 rad

200 rad

$$2.3 \quad 1 \times 32 = 32$$

$$6.9 \quad 1 \times 49 = 49$$

$$1 \times 60 = 720$$

$$14 \overline{) 801} \quad 57.2 \text{ days}$$

$$1 \times 10 = 10$$

$$1 \times 33 = 33$$

$$1 \times 54 = 54$$

$$1 \times 25 = 25$$

$$1 \times 32 = 32$$

$$1 \times 30 = 30$$

$$6 \times 60 = 360$$

$$14 \overline{) 534} \quad 48.5 \text{ days}$$

$$1 \times 36 = 36$$

$$1 \times 28 = 28$$

$$1 \times 60 = 240$$

$$3 \overline{) 304} \quad 50.7 \text{ days}$$

$$121 \overline{) 121}$$

P B

P B

P B

$$7.3 \quad 1 \times 32 = 0$$

$$6.9 \quad 1 \times 49 = 0$$

$$5.4 \quad 1 \times 60 = 0$$

$$5.7 \quad 0$$

$$5.7 \quad 0$$

$$6.6 \quad +$$

$$6.9 \quad 0$$

$$7.1 \quad 0$$

$$7.2 \quad 0$$

$$7.4 \quad 0$$

$$7.4 \quad +$$

$$8.9 \quad +$$

$$10.4 \quad 0$$

$$10.6 \quad +$$

$$10.4 \quad 1 \times 10 = +$$

$$10.4 \quad 1 \times 33 = +$$

$$14.4 \quad 1 \times 30 = +$$

$$12.0 \quad 1 \times 32 = +$$

$$8.2 \quad 1 \times 30 = +$$

$$10.4 \quad 1 \times 54 = 0$$

$$7.1 \quad 1 \times 60 = +$$

$$8.8 \quad +$$

$$10.6 \quad +$$

$$11.8 \quad \frac{1}{6} +$$

$$12.8 \quad 0$$

$$12.9 \quad 0$$

$$53.9 \quad 1 \times 28 = +$$

$$11.1 \quad 1 \times 36 = 0$$

$$11.1 \quad 1 \times 60 = 0$$

$$11.1 \quad 1 \times 60 = +$$

$$9.65 \quad 1 \times 60 = \frac{3}{4} +$$

$$12.2 \quad 1 \times 60 = +$$

no deaths below 6.9 days
no symptoms below 6.6 days