



## St. Joseph's Hospital

August 1, 1985

United States Nuclear Regulatory Commission  
Region III  
Materials Licensing Section  
799 Roosevelt Road  
Glen Ellyn, IL 60137

Re: License No. 22-1448-03  
Five-year Head Examination  
New Cobalt Source

Gentleman:

Enclosed are the area surveys required for a new cobalt source. Also enclosed are the reports by Advanced Medical Systems, Inc. regarding the Five-year Head Examination and removal of the old source.

Teletherapy Test, i.e., Beam On/Off Checks:

The room (area) survey meter was observed to determine if the shutter mechanism actually turned the machine off and the safety mechanism was functioning properly.

Beam Limiting Conditions:

These were checked and were found to be as listed. The machine was also checked to make certain that the machine could not be turned on past the zone-guard limit.

Timer:

The timer was checked and correction was applied to the output. Additionally, the timer was checked to make certain that if treatment were stopped and time remained on the timer, that the key switch had to be activated to turn the machine back on. Also, when the timer shut the machine off, the machine could not be turned back on until the timer was reset and the key switch activated.

Teletherapy Facility Survey:

The phantom material was the 30 X 30 X 30 SCRAD phantom.

Enclosed is a copy of the output report which is figured for the middle of the month. This is corrected monthly and is changed on the first workday of the month. Light field to radiation field coincidence was checked by

Applicant

Check No.

Amount/Fee Category

Type of Fee

Date Check Rec'd

Received By

*Sp 3A III*  
*136052*  
*\$230(7A)*  
*And*  
*8/29*  
*Cop*  
*New Cobalt Source*  
*for Fee*

RECEIVED

AUG 19 1985

REGION III

AUG 16 1985

CONTROL NO. 7 9586

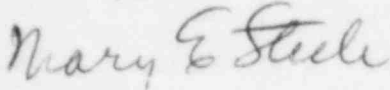
8511180371 851002  
REQ3 LIC30  
22-01448-03 PDR

film exposure and was found to be in agreement. A flatness scan was also performed and is enclosed. The primary treatment distance generally is 80cm. SSD with occasional usage at 100cm. SSD.

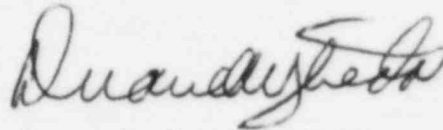
If you have any questions, please contact us.

Thank you for your time and consideration in this matter.

Sincerely,



Mary E. Steele  
Vice President of  
Professional Services



Duane O. Ytredal, M.D.  
Director  
Radiation Therapy Department

DOY/mt  
Enclosures

REPORT OF TELETHERAPY TESTS AND SURVEYS

Licensee St. Joseph's Hospital  
Address 69 West Exchange St., St. Paul, MN 55102  
License # 22-1448-03

TELETHERAPY TESTS

Yes ☒ The interlock on the door(s) to the teletherapy room was tested and found to function properly. When a door was opened with the source "ON", the source returned to the "OFF" position and could not be turned "ON" again until the door was closed and the system reset at the control panel.

Yes ☒ The teletherapy source "ON-OFF" indicators, both at the source housing and on the teletherapy machine control panel, were tested and found to function properly.

Yes ☒ The teletherapy treatment timing device was tested and found to be accurate and to return the source to the "OFF" position when the preset time elapsed.

Yes ☒ Electrical and/or mechanical stops installed to limit the orientation of the teletherapy head with the source "ON" were tested and found to function properly. The limitations are:

Mechanical limit horizontal toward north wall. Mechanical limit  
30 degrees above the vertical down toward maze wall. Zone-guard  
5 degrees above horizontal toward west wall. Yoke prevents aim-  
ing toward control wall.

**TELETHERAPY HEAD SURVEY**  
(Source in "OFF" position.  
Measurements taken one meter  
from source)

Top View - Showing orientation  
of Views A through D

Position No.	Radiation Level (mR/hr)
View A 1	2.1
2	1.3
3	8.0
4	1.2

View B 5	1.0
6	0.9
7	1.4
8	1.3

View C 9	0.5
10	0.5

View D 11	0.8
12	1.4
13	1.2
14	0.5

Average value 1.5

Maximum value 8

Instrument used Picker Nuclear

SM529 - calibrated 10/8/84  
see attached calibration

Curies 4555

&  
Date 7/1/85

Manufacturer's  
name & model #  
of teletherapy  
unit Picker V9M/60

SN6268 Head 590-E

Date: 7/21/85

Rear

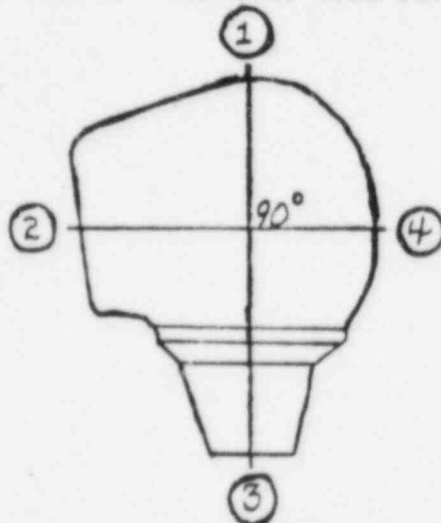
A (left side) →

B (left-front) →

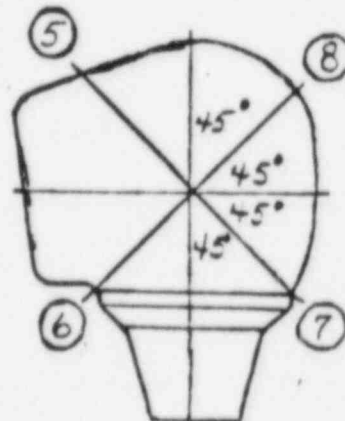
← D (right-front)

C (front)

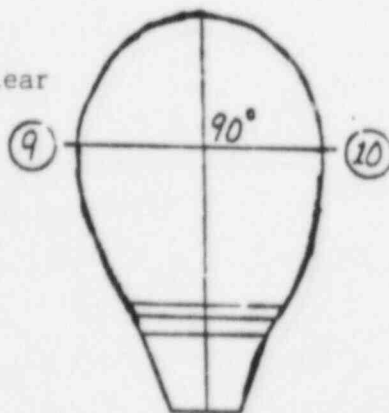
View A - Vertical from left side



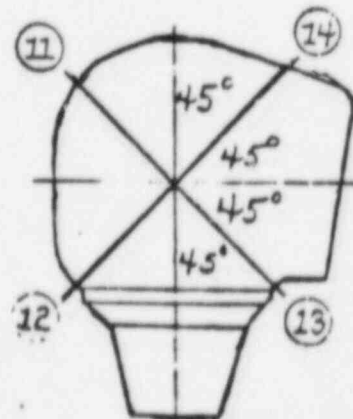
View B - Vertical from left-front



View C - Vertical from front



View D - Vertical from right-front



Signature: Ray R. Shenn  
Surveyor  
ABR Certified Physicist



## TELETHERAPY FACILITY SURVEY AND BEAM CALIBRATION

[illegible]

\*Vertical and horizontal cross section sketches of the facility and adjoining areas must be submitted with this report unless "Positions" are keyed to sketches already on file with the Commission.

\*\*If the radiation level in an unrestricted area exceeds 2 mR/hr, it must be shown that, in keeping with Section 20.105(b) of 10 CFR 20, an individual continuously present in the area would not receive more than 2 millirems in any one hour or 100 millirems in any seven consecutive days. (If your license authorizes Section 20.105(a) limits, the radiation levels should be equal or less than the values specified in your application. If the radiation levels are higher they should be justified pursuant to Section 20.105(a).)

**Signature:**

Ray R. Sherwood  
Surveyor

Date: 7/21/85

ABR Certified Physicist

* Position (keyed to sketches)	** Maximum Radiation Level (mR/hr)	Restricted Area?	Beam Orienta- tion	Maximum Field Size at a Specified Distance	Beam Catcher Used?	Phantom in Beam?	Beam Calibration		
							Distance	Field Size	R/min.
1	0.05	Yes	90° to	36 X 36	No	Yes			
2	0.03	Yes	west	at 80 cm.	No	Yes			
3	0.02	Yes	wall	SSD	No	Yes			
4	1.5	No	(stairs)		No	Yes			
5	0.03	Yes			No	Yes			
6	0.02	Yes			No	Yes			
7	0.03	Yes			No	Yes			
8(roof)	0.03	Yes	↓	↓	No	Yes			
Instrument used: Picker Nuclear SN529 - calibrated 10/8/84							RHM	Curies	

\*\*If the radiation level in an unrestricted area exceeds 2 mR/hr, it must be shown that, in keeping with Section 20.105(b) of 10 CFR 20, an individual continuously present in the area would not receive more than 2 millirems in any one hour or 100 millirems in any seven consecutive days. (If your license authorizes Section 20.105(a) limits, the radiation levels should be equal or less than the values specified in your application. If the radiation levels are higher they should be justified pursuant to Section 20.105(a).)

Surveyor

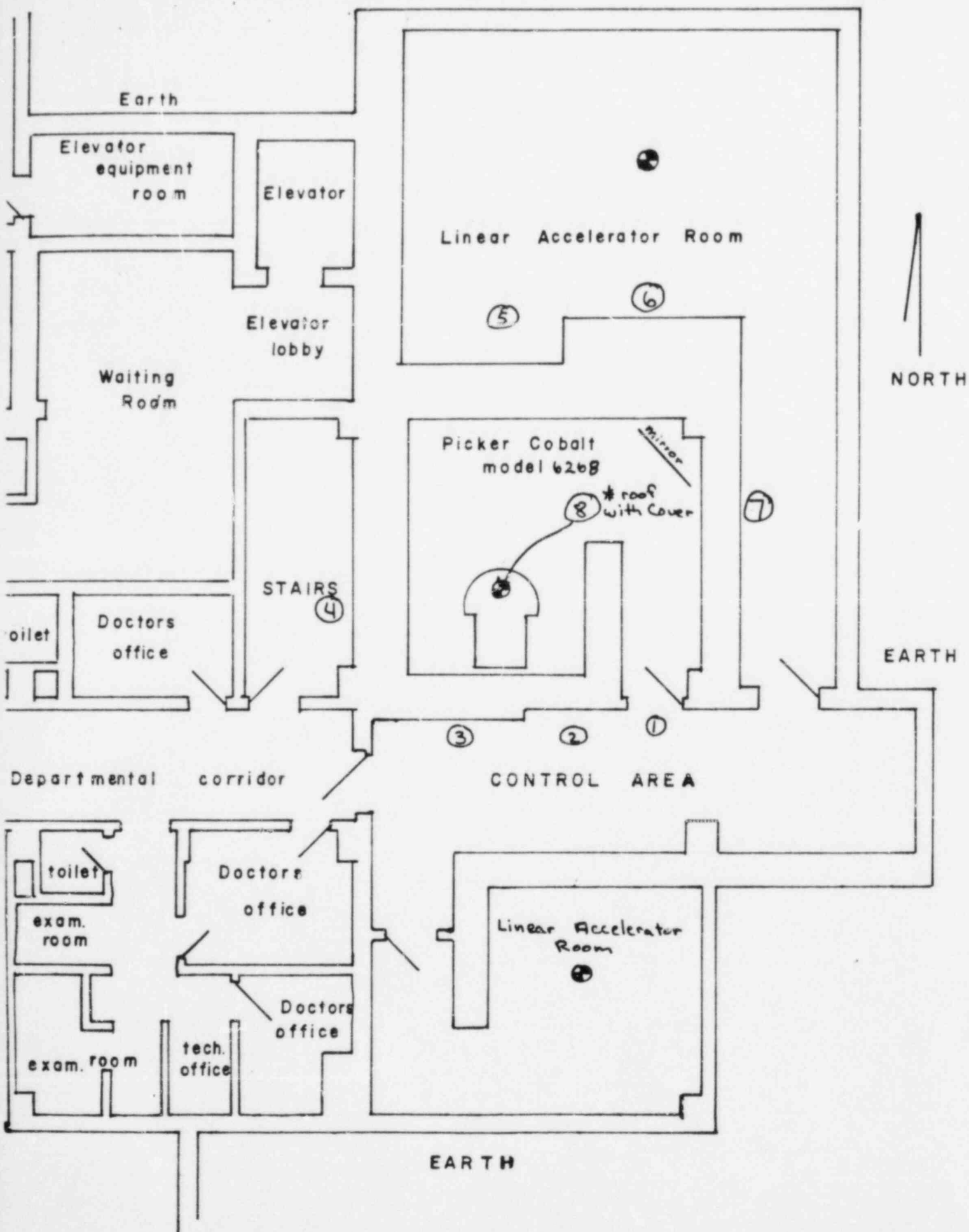
ABR Certified Physicist

* Position (keyed to sketches)	** Maximum Radiation Level (mR/hr)	Restricted Area?	Beam Orienta- tion	Maximum Field Size at a Specified Distance		Beam Catcher Used?	Phantom in Beam?	Beam Calibration		
								Distance	Field Size	R/min.
1	0.5	Yes	90° to	36 X 36		No	Yes			
2	0.08	Yes	north	at 80cm.		No	Yes±			
3	0.03	Yes	wall	SSD		No	Yes			
4	0.01	No	(Linac			No	Yes			
5	0.07	Yes	room)			No	Yes			
6	0.03	Yes				No	Yes			
7	0.03	Yes				No	Yes			
8(roof)	0.04	Yes	↓		↓	No	Yes			
Instrument used: Picker Nuclear SN529 - calibrated 10/8/84								RHM	Curies	

\*Vertical and horizontal cross section sketches of the facility and adjoining areas must be submitted with this report unless "Positions" are keyed to sketches already on file with the Commission.

\*If the radiation level in an unrestricted area exceeds 2 mR/hr, it must be shown that, in keeping with Section 20.105(b) of 10 CFR 20, an individual continuously present in the area would not receive more than 2 millirems in any one hour or 100 millirems in any seven consecutive days. (If your license authorizes Section 20.105(a) limits, the radiation levels should be equal or less than the values specified in your application. If the radiation levels are higher they should be justified pursuant to Section 20.105(a).)

Signature: Guy R. Sherrard  
Surveyor  
ABR Certified Physicist





# Advanced Medical Systems, Inc.

1020 London Road  
Cleveland, OH 44110  
(216) 692-3268

St. Josephs Hospital  
59 West Exchange Street  
St. Paul, Minnesota 55102

Radiation Therapy Department (Cobalt)

Received from the above-named facility as of 7-22-85  
one 60-Cobalt teletherapy source, Model Number P3801A, Serial  
Number PX-2310.

Advanced Medical Systems, Inc., is authorized to receive the above-  
mentioned source under N.R.C. License number 34-19089-01.

Signed: Alvin Murray  
for Advanced Medical Systems, Inc.

Dated: 7/22/85

CONTROL NO. 7 958 6



# Advanced Medical Systems, Inc.

1020 London Road  
Cleveland, OH 44110  
(216) 692-3268

St. Josephs Hospital  
69 West Exchange Street  
St. Paul, Minnesota 55102

## CERTIFICATE OF WIPE TESTING OF RADIOISOTOPE SOURCE

This is to certify that the radioisotope source identified as ADVANCED MEDICAL SYSTEMS, INC., Catalog No. AMS-3801, Serial No. AMS-2540 Cobalt-60 Therapy Source and to be installed in Picker Model No. 590-E, Serial No. 202 Therapy Unit, was wipe tested on 11th July, 1985 and found to have .00156 microcurie of removable contamination, as determined by comparison of the wipe with a standard Cobalt-60 source of .0592 microcurie in a Picker Model 2804 Welltype Scintillation Detector and a Picker Model 628433 Spectroscaler.

Signed:

*Darwin Murray*  
Darwin Murray

Dated: July 11th, 1985



# Advanced Medical Systems, Inc.

1020 London Road  
Cleveland, OH 44110  
(216) 692-3268

St. Josephs Hospital  
69 West Exchange Street  
St. Paul, Minnesota 55102

## CERTIFICATE OF MEASUREMENT COBALT-60 SOURCES

CATALOG NO. AMS-3801  
SERIAL NO. AMS-2540

This is to certify that the radioisotope source as identified above was measured at the Advanced Medical Systems, Inc., 1020 London Road Cleveland, Ohio, U.S.A., in such a fashion that the measurement is equivalent to that obtained when the source is installed in a Picker Corporation Catalog Number 6268 60-Cobalt Beam Therapy Treatment equipment with Catalog Number 3706A beam defining device of 25 cm by 25 cm aperture at a distance of 80 cm.

Under these conditions this source was found to have a radiation output in free air of 4877 roentgens per hour at one meter on 12 JULY 1985.

The attached decay table for this radioisotope will be useful in estimating the activity at future dates.

This source contained 4555 curies on July 1, 1985.

Signed: *Darwin Murray*  
Darwin Murray

Dated: July 11th, 1985

The measurement reported is for invoicing purposes only and A.M.S. Inc, assumes no responsibility for results of exposures computed with this value.





# Advanced Medical Systems, Inc.

1020 London Road  
Cleveland, Ohio 44110  
(216) 692-3268

## TELETERAPY UNIT

### FIVE YEAR INSPECTION & PREVENTATIVE MAINTENANCE REPORT

CUSTOMER: St. Josephs Hospital/69 West Exchange St. St. Paul, Minnesota 55102

(HOSPITAL OR DOCTOR)

(LOCATION)

TYPE OF UNIT: CAT. NO. 6268/ V9M/60

HEAD 590-E

SERIAL NO. 202

DATE OF INSPECTION: 7/19-20/85

LICENSED ENGINEER D. MURRAY

=====

The following items have been inspected and the listed action taken or recommended as indicated. None of the recommended items require that the source be removed for their correction.

#### I. SOURCE HEAD

A. Check for significant radioactive contamination

(X) None Detected

( ) See Notes

B. Shutter Rotor Bearings

1. Inboard

( ) Lubricated ( ) N/A

(X) Replaced

2. OutBoard

( ) Lubricated ( ) N/A

(X) Replaced

C. Shutter Rotor

(X) ~~Cleaned~~ REPLACED

( ) Other - See Notes

D. Shutter Rotor Cavity

(X) Cleaned

( ) Other - See Notes

E. Shutter Rotor Return Spring

(X) Replaced

F. Shutter Rotor Stops

"ON" Position ( ) OK (X) Adjusted ( ) Replaced

"OFF" Position ( ) OK (X) Adjusted ( ) Replaced

G. Shutter Rotor Drive Mechanism

(X) Lubricated (X) Voltage ( 70 Volts)

( ) Deficiency See Notes (X) V Belt Replaced

H. Head Leakage Survey ( 26 Points at 1 meter from source)

Average Leakage 1.1 mrhm

Highest Point Reading 6.0 mrhm

#### II. COLLIMATING DEVICE

A. General Condition: Good





## FIVE YEAR INSPECTION AND PREVENTATIVE MAINTENANCE REPORT

### B. Field Size Indicators - Calibration

#### 1. Distance at which calibrated

( ) 55cm. ( ) 60cm. ( ) 75cm. (X) 80cm. ( ) 95cm.

#### 2. Test Size

4cm. x 4cm.

10cm. x 10cm.

18cm. x 18cm.

25cm. x 25cm.

#### Dials Indicated

4 X 4

10 X 10

18 X 18

25 X 25

#### Light Field

3.9 X 3.9

10 X 10

17.8 X 18

24.8 X 24.7

### C. Distance Localizer Calibration

#### Setting

40cm.

55cm.

60cm.

75cm.

80cm.

100cm.

#### Indicates

\_\_\_\_\_

\_\_\_\_\_

60

\_\_\_\_\_

80

99.2

### D. X-Ray film taken 80 cm. from source with actual field size of

10 X 10

Lines scribed on film indicate edges of light field.

### E. Collimator accessories

- |                       |        |                  |             |
|-----------------------|--------|------------------|-------------|
| 1. Front Pointer      | ( ) OK | ( ) Needs Repair | - See Notes |
| 2. Back Pointer       | ( ) OK | ( ) Needs Repair | - See Notes |
| 3. Pin and Arc        | ( ) OK | ( ) Needs Repair | - See Notes |
| 4. Wedge Filters      | ( ) OK | ( ) Needs Repair | - See Notes |
| 5. Breast Cone        | ( ) OK | ( ) Needs Repair | - See Notes |
| 6. Beam Shaping Block |        |                  |             |
| Holder                | ( ) OK | ( ) Needs Repair | - See Notes |
| 7. Extenders          |        |                  |             |
| (Trimmers)            | ( ) OK | ( ) Needs Repair | - See Notes |
| 8. Other _____        | ( ) OK | ( ) Needs Repair | - See Notes |

## III. UNIT IN GENERAL

### A. Good

- B. Isocenter - The true isocenter has been determined to be at a distance of \_\_\_\_\_ cm. from the end of the collimator. The isocentric accuracy of N.A. the center of the beam was determined to be + or - \_\_\_\_\_ mm.

( ) see Notes and Recommendations which may improve accuracy.

### C. Safety Modifications

- (X) All modifications recommended by Picker and AMS, Inc. have been made.  
( ) The following safety modifications to this unit are recommended by Picker and AMS, Inc. but have not yet been completed. Your local AMS service representative will contact you regarding the following:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_



## FIVE YEAR INSPECTION AND PREVENTATIVE MAINTENANCE REPORT

### D. Treatment Timer Operation

Timer Set for:

30 Seconds

60 Seconds

120 Seconds

Actual Time:

30

60

120

( ) See Notes and Recommendations

### E. Source Transit Time

On 1.5 Sec.

Off 1.5 Sec.

### F. Operational Tests

1. Shutter opens and completely closes at 0,90,180, and 270 or at maximum angles in both directions allowable for this particular installation.

(X) OK ( ) See Notes

2. Where applicable that shutter will not open beyond allowable angles for this particular installation (X) OK ( ) See Notes

3. Timer switch properly closes the shutter. (X) OK ( ) See Notes

4. "Shutter Closes" or "Emergency" button properly closes the shutter (X) OK ( ) See Notes

5. Shutter closes when main power is turned off and does not reopen when power is restored. (X) OK ( ) See Notes

6. Shutter closes when room door is opened and the shutter does not reopen when the door is reclosed. (X) OK ( ) See Notes

7. Where applicable, ~~back printer~~, collimator and localizer lights function properly and are calibrated properly. (X) OK ( ) See Notes

8. Control panel and room warning lights works properly. (X) OK ( ) Repaired ( ) See Notes

*N/A* 9. All control functions work properly (Rotation, Skip Scan, etc.).

### G. Mechanical Inspection

1. Structural Defects

(X) None Noted

( ) Repairs Needed-See Notes

2. Bolts

(X) All Correctly tightened

( ) Adjustments made

( ) Defective - See Notes

### H. Electrical Inspection

Wiring (X) OK ( ) Replaced - See Notes

Components (X) OK ( ) Replaced - See Notes

I. Six (6) Rocker Switches replaced on VG8 Control (Rotational Units)  
( ) Replaced (X) Not Applicable



## FIVE YEAR INSPECTION AND PREVENTATIVE MAINTENANCE REPORT

### J. General Safety

- (X) Unit is safe to operate, however, whether or not the unit is accurate enough for treatment purposes is a determination which must be made by the radiotherapist.
- ( ) Unit UNSAFE to operate or treat - see below for recommendations:

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### IV. Table

#### A. Locks

##### 1. Transverse

( ) OK ( ) Repaired ( ) See Notes

##### 2. Longitudinal

( ) OK ( ) Repaired ( ) See Notes

##### 3. Floor

( ) OK ( ) Repaired

( ) N/A ( ) See Notes

#### B. Vertical Drive Clutch or Motor Mount

( ) OK ( ) Repaired ( ) See Notes

#### C. Chain Tension & Condition

( ) OK ( ) Adjusted ( ) See Notes

#### D. General

( ) 1. Hardware Tightened

( ) 2. Lubricated as Necessary

( ) 3. Checked for signs of Binding and Unusual wear.

#### E. Safety Service Notes

( ) ( ) Performed ( ) See Notes

### V. NOTES AND RECOMMENDATIONS

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DATE INSPECTION COMPLETED: 7/20/85

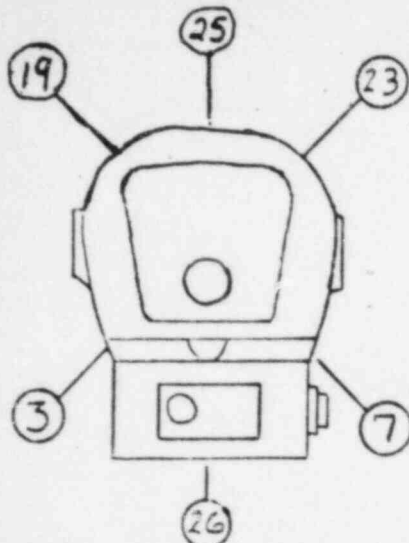
BY ADVANCED MEDICAL SYSTEMS, INC. LICENSED ENGINEER:

D. MURRAY

REPORT EXPLAINED TO AND COPY RECEIVED BY:

R. K. [Signature]

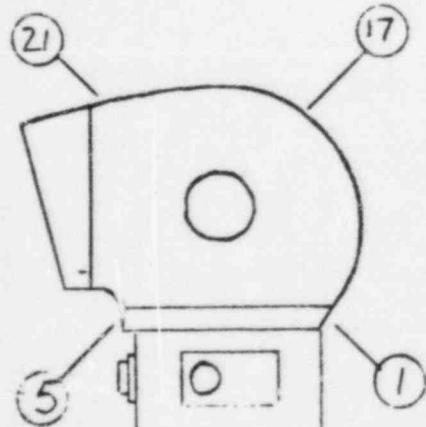
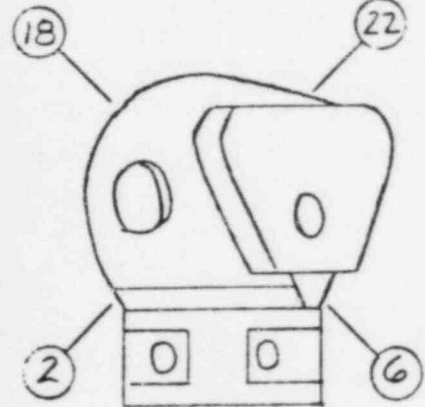
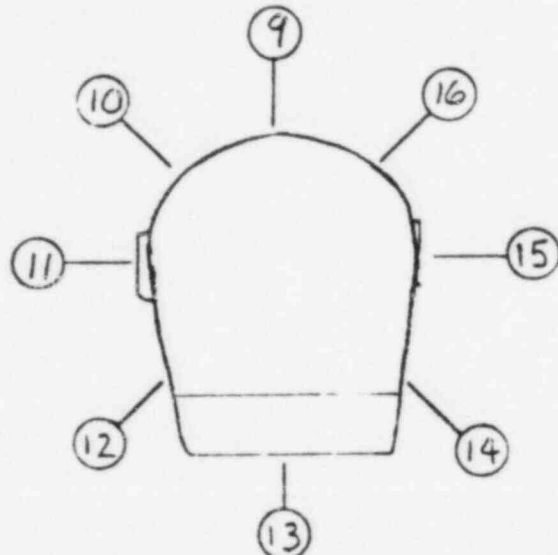
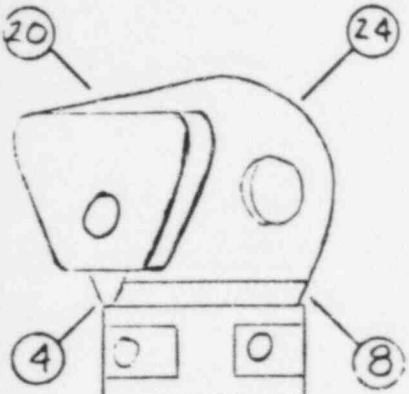
NOTE: N/A - NOT APPLICABLE



BEAM OFF LEAKAGE SURVEY SHEET  
for Cat. #590-E, F, G HEADS

HEAD #590-E SERIAL No. 202  
SOURCE, CAT. #AMS-3801 / 1.5 cm. DIA.  
Rm 4877 on 7/12/85  
CURIES 4555 on 7/1/85  
COBALT HEIGHT 2.8 CAP TYPE SOLID  
SURVEY DATE 7/20/85 ENGR. D. MURRAY  
METER USED MFG. VICTOREEN MODEL 491 SER. # 1572  
METER CALIBRATION DATE 5/7/85

FOR: ST. Joseph Hospital/St. Paul Minn.  
INV. NO. S 85-03



No.	Dist.	Read	True	No.	Dist.	Read	True
1.	70cm.	<u>1.0</u>	<u>1.02</u>	14.	67cm.	<u>0.7</u>	<u>0.72</u>
2.	70	<u>1.3</u>	<u>1.32</u>	15.	73	<u>0.4</u>	<u>0.42</u>
3.	70	<u>1.2</u>	<u>1.20</u>	16.	73	<u>0.5</u>	<u>0.54</u>
4.	70	<u>1.6</u>	<u>1.62</u>	17.	73	<u>0.5</u>	<u>0.54</u>
5.	67	<u>1.3</u>	<u>1.32</u>	18.	73	<u>0.8</u>	<u>0.84</u>
6.	70	<u>1.6</u>	<u>1.62</u>	19.	73	<u>0.8</u>	<u>0.84</u>
7.	70	<u>1.3</u>	<u>1.32</u>	20.	71	<u>0.4</u>	<u>0.42</u>
8.	70	<u>1.4</u>	<u>1.44</u>	21.	69	<u>0.5</u>	<u>0.54</u>
9.	73	<u>0.3</u>	<u>0.30</u>	22.	71	<u>0.5</u>	<u>0.54</u>
10.	73	<u>0.5</u>	<u>0.54</u>	23.	73	<u>0.8</u>	<u>0.84</u>
11.	73	<u>0.5</u>	<u>0.54</u>	24.	73	<u>0.7</u>	<u>0.72</u>
12.	67	<u>0.6</u>	<u>0.60</u>	25.	76	<u>0.9</u>	<u>0.90</u>
13.	63	<u>0.8</u>	<u>0.84</u>	26.*	41	<u>6.0</u>	<u>6.01</u>

Note: \* On test stand multiply true by .74

TOTAL 26 POINTS  
AVERAGE 26 POINTS

27.55  
1.0

# GEIGER METER DATA SHEET

QA-1001

Page 5 of 6

INSTRUMENT: VICTOREEN

MODEL: 491

SERIAL NO: 1572

BACKGROUND: SCALE 0 0 mr/hr : SCALE 0 0 mr/hr

BETA SHIELD ☐ OPENED ☒ CLOSED

DISTANCE SOURCE  
TO PROBE CENTER

RADIUM STANDARD  
READING MR/HR  
(1.6665 mr/1 met.)

METER READINGS

SCALE 3 10 30

187.6 Cm.	.5	0.5	
129.1	1.0	1.0	
91.3	2.0	2.0	
74.5	3.0	2.9	3.0
64.5	4.0		4.0
57.7	5.0		5.0
40.8	10.0		9.5 10.0
33.3	15.0		15.0
28.9	20.0		20.0
25.8	25.0		
23.6	30.0		30.0
21.8	35.0		
20.4	40.0		
19.2	45.0		
18.3	50.0		

BY: T.S

DATE: 5-7-85

CONTROL NO. 79586

# CALIBRATION DATES 7 85

VICTOREEN

491

SERIAL NO.1572

3 MR/H

10 MR/H

30 MR/H

METER TRUE

METER TRUE

METER TRUE

0.00 0.00  
0.06 0.06  
0.12 0.12  
0.18 0.18  
0.24 0.24  
0.30 0.30  
0.36 0.36  
0.42 0.42  
0.48 0.48  
0.54 0.54  
0.60 0.60  
0.66 0.66  
0.72 0.72  
0.78 0.78  
0.84 0.84  
0.90 0.90  
0.96 0.96  
1.02 1.02  
1.08 1.08  
1.14 1.14  
1.20 1.20  
1.26 1.26  
1.32 1.32  
1.38 1.38  
1.44 1.44  
1.50 1.50  
1.56 1.56  
1.62 1.62  
1.68 1.68  
1.74 1.74  
1.80 1.80  
1.86 1.86  
1.92 1.92  
1.98 1.98  
2.04 2.04  
2.10 2.10  
2.16 2.17  
2.22 2.23  
2.28 2.29  
2.34 2.36  
2.40 2.42  
2.46 2.49  
2.52 2.55  
2.58 2.62  
2.64 2.69  
2.70 2.76  
2.76 2.83  
2.82 2.90  
2.88 2.98  
2.94 3.05  
3.00 3.13

0.00 0.00  
0.20 0.20  
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28.80 28.80  
29.40 29.40  
30.00 30.00



K & S ASSOCIATES, INC.  
1954 AIRLANE DRIVE  
NASHVILLE, TENNESSEE 37210

ACCREDITED DOSIMETRY CALIBRATION LABORATORY

CALIBRATION REPORT

SUBMITTED BY: SAINT JOSEPH'S HOSPITAL  
69 WEST EXCHANGE STREET  
SAINT PAUL, MINNESOTA

INSTRUMENT: NEL 2581, SN 163  
KEITHLEY 616, SN 39240A  
KEITHLEY 6169, SN 38200A

REPORT NO.: 479

TEST NO.: 85075

DATE: April 17, 1985

K & S Associates, Inc. certifies that the CALIBRATION FACTORS specified herein were obtained by intercomparison with instruments calibrated by, or directly traceable to, the National Bureau of Standards. K & S Associates, Inc. further certifies that it is licensed by the State of Tennessee (R-1975-L5) to perform calibrations, that it is recognized by the American Association of Physicists in Medicine as an ACCREDITED DOSIMETRY CALIBRATION LABORATORY, and that it is a participant in an annual Quality Assurance program conducted by the National Bureau of Standards.

The CALIBRATION FACTORS stated herein are only valid at the K & S laboratory facility at the time and under the conditions specified. It is the instrument user's responsibility to perform the appropriate constancy tests prior to shipment and after return from calibration. It is also the responsibility of the user to assure that the interpretation of the information in this report is consistent with that intended by K & S Associates, Inc.

CALIBRATION FACTORS:

R/RDG: Roentgen/reading calibration factors apply to the chamber-electrometer-readout system as a unit, with scales, switch settings and output mode specified. To obtain the exposure in roentgens at the reference point\*, in the absence of the chamber, the calibration factor is applied directly to the instrument reading corrected for temperature and pressure:

$$\text{Exposure} = \text{RDG} \times \text{R/RDG} \times \text{TPC}$$

where TPC = temperature-pressure correction

R/C: Roentgen/coulomb calibration factors apply to the ion chamber alone. To obtain the exposure in roentgens at the reference point\*, in the absence of the chamber, an appropriately calibrated (coulomb/reading) electrometer must be used.

$$\text{Exposure} = \text{RDG} \times \text{R/C} \times \text{C/RDG} \times \text{TPC}$$

where C/RDG = calibration factor of electrometer  
TPC = temperature-pressure correction

TEMPERATURE-PRESSURE CORRECTION FACTOR:

For chambers open to the atmosphere, the instrument readings were normalized to 760 millimeters of mercury and 22 degrees Celsius. Use of the chamber at other pressures and temperatures requires correction by the following multiplicative factor:

$$\frac{(T + 273.15)}{295.15} \times \frac{760}{P}$$

where T is the temperature in degrees Celsius, and P is the chamber pressure in millimeters of mercury.

No corrections were made for air humidity.

CALIBRATION CONDITIONS:

Unless otherwise indicated, the calibration field size is 10 cm x 10 cm for Co-60 and 10 cm diameter circle for x-rays. Stem effect is not investigated; the calibration factor applies only to the field size defined at the stated source-chamber distance (SCD). Field size is the distance between the 50 percent intensity lines of the exposure in air at the central axis.

\*The exposure reference point is at the geometrical center of the chamber volume, except when stated otherwise in the calibration report.



During calibration the chamber was centered in the beam with the stem perpendicular to the beam direction, except for end-window chambers which are calibrated with the stem parallel to the beam direction.

The exposure rate at the calibration position was measured with a transfer-quality ionization chamber which has a calibration that is directly traceable to the National Bureau of Standards.

#### BEAM QUALITY:

X-ray beam quality is described in terms of the first half-value thickness in millimeters of aluminum or copper. The ratio of the first to the second half-value thickness (homogeneity coefficient -H.C.) and the kilovoltage are also given.

The half-value thicknesses were determined under "good geometry" narrow beam conditions with high purity certified aluminum or copper attenuators. The focus-attenuator distance was approximately 50 cm, and the focus-chamber distance was approximately 100 cm.

#### ATMOSPHERIC COMMUNICATION:

All chambers are tested for communication to the atmosphere prior to calibration.

#### CALIBRATION ACCURACY CLASSIFICATION:

The accuracy of the calibration factors stated in this report are described in terms of classifications and represent the maximum deviation from the national dosimetry standard.

The classifications assigned by the ADCL are based on the precision of the laboratory and on the precision, accuracy, and reproducibility of the instrument or system submitted for calibration.

	Cobalt-60	Cesium-137	X-rays
CLASS I	+/- 0.5 %	+/- 0.5 %	+/- 1.0 %
CLASS II	+/- 0.5 %	+/- 0.5 %	+/- 2.0 %
CLASS III	+/- 1.0 %	+/- 1.0 %	+/- 2.0 %
CLASS III A	+/- 2.0 %	+/- 2.0 %	+/- 2.0 %
CLASS IV	-	+/- 5.0 %	+/- 5.0 %
CLASS V	-	+/- 10.0 %	+/- 10.0 %

The calibration information stated in this report is based on one or more of the following NBS test numbers:

DG7925/82, DG8013/82, DG7946/82, DG 8009/82, P-7530,  
NBS204612, NBS228846, DCV-224381, DG-8326/84

ION COLLECTION EFFICIENCY:

The ion collection efficiency ( $A_{ion}$ )<sup>1</sup> stated in this report is based on measurements of the currents (or charges) produced in a Cobalt-60 beam with the stated exposure rate and polarizing potential and has been calculated using the two-voltage method of Boag<sup>2</sup> and Greening<sup>3</sup> for continuous radiation.

$$A_{ion} = \frac{((V_1/V_2)^2 - \text{Ratio})}{((V_1/V_2)^2 - 1)}$$

where  $V_1$  = full polarizing potential

where  $V_2$  = reduced polarizing potential

Ratio = the current (or charge) at  $V_1$

divided by the current (or charge) at  $V_2$

REFERENCES

1. Task Group 21, Radiation Therapy Committee, American Association of Physicists in Medicine, "A protocol for the determination of absorbed dose from high-energy photon and electron beams," Med. Phys., Vol. 10, p. 742 (1983).
2. Boag, J. W., Radiation Dosimetry, 2nd ed., edited by F. Attix and W. Roesch (Academic, New York, 1966), Vol. II.
3. Greening, J. R., Phys. Med. Biol., Vol. 9, p. 143 (1964).

## IONIZATION CHAMBER CALIBRATION

4/16/85

## SUBMITTED BY:

St. Joseph's Hospital  
St. Paul, Minnesota

## CHAMBER:

Mfr: NEL  
Model No. 2581 (0.6 ml, TE plastic)  
Serial No. 163

## ORIENTATION / CONDITIONS:

Black line toward source

ION COLLECTION EFFICIENCY ( $A_{ion}$ ): 0.998

POLARIZING POTENTIAL: -354 V

CHAMBER LEAKAGE:  $-1.0 \times 10^{-15}$  A

BEAM QUALITY			EXPOSURE RATE	SCD (cm)	CALIBRATION FACTOR	CLASS
HVT (mm)	H.C.	kVp				
2.95 Al	.67	80	12.9 R/min	50	$6.402 \times 10^9$ R/C	II
.66 Cu	.64	130	12.4 R/min	50	$5.817 \times 10^9$ R/C	II
1.05 Cu	.61	175	26.1 R/min	50	$5.828 \times 10^9$ R/C	II
3.25 Cu	.80	250	25.5 R/min	50	$5.875 \times 10^9$ R/C	II
*Co-60	---	---	50.6 R/min	74	$5.971 \times 10^9$ R/C	II

COMMENTS: \*with acrylic buildup cap 2581

Reviewed by:

*Thomas W. Sweeney*  
*Director*

Log C-6

Page(s) 12,13

Title:

Log T-6

Page(s) 27,29,31,33

Checked by:

VD LGB

Log

Page(s)

Log

Page(s)

## ELECTROMETER CALIBRATION

### CALIBRATION FACTORS:

C/RDG: This factor is given in coulomb/unit of reading of the electrometer on the indicated switch settings and scales. To obtain the corrected charge in Coulomb, the calibration factor is applied directly to the instrument reading of the appropriate scale:

$$\text{Coulomb} = \text{TRUE RDG} \times \text{C/RDG}$$

### POLARIZING POTENTIAL:

Polarizing potential was measured using a calibrated digital voltmeter and is reported as the potential of the thimble with respect to the circuit low or guard.

### ELECTROMETER LEAKAGE:

Electrometer leakage is indicated in ampere for the indicated setting, and is the net charge in coulomb divided by the time interval in seconds.

### LINEARITY:

Linearity is specified as a percentage of the full scale. If the electrometer is nonlinear on a portion of the scale, a linearity correction factor is given. To correct for nonlinearity, the linearity correction factor is applied to the reading as follows:

$$\text{TRUE RDG} = \text{RDG} \times \text{Linearity Correction Factor}$$

## ELECTROMETER CALIBRATION

4/16/85

## SUBMITTED BY:

St. Joseph's Hospital  
St. Paul, Minnesota

## INSTRUMENT:

Manufacturer: Keithley/Keithley  
Model No. 616/6169  
Serial No. 39240A/38200A

## SCALES, SWITCH POSITIONS, CONDITIONS:

power: ON; SENSITIVITY: AUTO or fixed points  
feedback: FAST; BIAS: TRIAX, OFF; BACKGROUND: off

POLARIZING POTENTIAL: -357 V (BIAS: TRIAX, NEG)

LEAKAGE:  $+7.7 \times 10^{-15}$  ALINEARITY: within +/- 0.1 % of full range or the precision of the  
reading, whichever is greater.

## CHARGE CALIBRATION FACTOR:

RANGE	FACTOR (C/unit of reading)
$10^{-8}$ C	1.001 C/RDG
$10^{-7}$ C	1.005 C/RDG

COMMENTS: The  $10^{-9}$  C capacitor was not calibrated due to  
excessive leakage.Reviewed by: Thomas W. Sovey Log E-3 Page(s) 197Title: Director Checked by: VD LGB

CONTROL NO. 9586

Calculated Ratios of  $N_{\text{gas}}/N_{\text{A ion}}$  for Common Ionization Chambers<sup>(1)</sup>

CHAMBER: Model No. (2) (Wall-Buildup Cap)	$A_{\text{wall}}$ (3)	$\alpha$ (4)	$(\bar{L}/\rho)_{\text{air}}^{\text{wall}} \times (\bar{\mu}_{\text{en}}/\rho)_{\text{wall}}^{\text{air}(5)}$	$(\bar{L}/\rho)_{\text{air}}^{\text{cap}} \times (\bar{\mu}_{\text{en}}/\rho)_{\text{cap}}^{\text{air}(5)}$	$N_{\text{gas}}/N_{\text{A ion}}$ (Gy/R)
Capintec: PR-06C, PR-06G (C552-polystyrene)	0.991	0.46	1.000	1.032	$8.51 \times 10^{-3}$
Capintec: PR-05 (C552-polystyrene)	0.989	0.89	1.000	1.032	$8.61 \times 10^{-3}$
Capintec: PR-05P (C552--polystyrene)	0.988	0.89	1.000	1.032	$8.60 \times 10^{-3}$
Exradin: A1, Spokas (C552-C552)	0.976	0.86*	1.000	1.000	$8.53 \times 10^{-3}$
Exradin: T2, Spokas (A150-A150)	0.985	0.73*	1.037	1.037	$8.50 \times 10^{-3}$
Exradin: T1, min. Shonka (A150-A150)	0.992	0.74*	1.037	1.037	$8.36 \times 10^{-3}$
Exradin: A3, Shonka-Wyckoff (C552)	0.984	1.00	1.000	N/A	$8.60 \times 10^{-3}$
NEL Farmer: 2505, 54-59 (Tufnol-acrylic)	0.992	0.59	1.021	1.020	$8.49 \times 10^{-3}$
NEL Farmer: 2505, 59-67 (Tufnol-acrylic)	0.990	0.59	1.021	1.020	$8.48 \times 10^{-3}$
NEL Farmer: 2505/A, 67-74 (Nylon-acrylic)	0.990	0.53	1.038	1.020	$8.40 \times 10^{-3}$
NEL Farmer: 2505/3A, 71-79 (graphite-acrylic)	0.990	0.54	1.009	1.020	$8.53 \times 10^{-3}$
NEL Farmer: 2505/3B, 74- (Nylon-acrylic)	0.990	0.40	1.038	1.020	$8.42 \times 10^{-3}$
NEL Farmer: 2571, 74- (graphite-Delrin)	0.990	0.54	1.009	1.019	$8.54 \times 10^{-3}$
NEL Farmer: 2581, 80- (A150-Lucentine)	0.990	0.39	1.037	1.032	$8.37 \times 10^{-3}$
NEL NPL Secondary Standard: 2561 (graphite-Delrin)	0.984	0.65	1.009	1.019	$8.49 \times 10^{-3}$

( ) See Notes, Appendix A

Calculated Ratios of  $N_{\text{gas}}/N_{\text{A ion}}$  for Common Ionization Chambers<sup>(1)</sup>

CHAMBER: Model No. (Wall-Buildup Cap)	$A_{\text{wall}}$ (3)	$\alpha$ (4)	$(\bar{L}/\rho)_{\text{air}}^{\text{wall}} \times (\bar{\mu}_{\text{en}}/\rho)_{\text{wall}}^{\text{air(5)}}$	$(\bar{L}/\rho)_{\text{air}}^{\text{cap}} \times (\bar{\mu}_{\text{en}}/\rho)_{\text{cap}}^{\text{air(5)}}$	$N_{\text{gas}}/N_{\text{A ion}}$ (Cy)
PTW: N23323, NA 30-351 (acrylic-acrylic)	0.993	0.51*	1.020	1.020	$8.50 \times 10^{-3}$
PTW: N23333, NA 30-351 NA 30-352, VIC 500-104 (acrylic-acrylic)	0.990	0.48*	1.020	1.020	$8.48 \times 10^{-3}$
PTW: M23332-Normal, NA 30-348 (acrylic-acrylic)	0.993	0.51*	1.020	1.020	$8.50 \times 10^{-3}$
PTW: M23331-Transit, NA30-3-9 (acrylic-acrylic)	0.992	0.51*	1.020	1.020	$8.50 \times 10^{-3}$
PTW: N233641, NA 30-316 (acrylic-acrylic)	0.992	0.65*	1.020	1.020	$8.50 \times 10^{-3}$
Victoreen: 555-100HA (Delrin)	0.990	1.00	1.019	N/A	$8.49 \times 10^{-3}$
Victoreen: 550-6,6A (polystyrene-acrylic)	0.991	0.74	1.032	1.020	$8.42 \times 10^{-3}$
Far West: IC-17 (Al50)	0.983	1.00	1.037	N/A	$8.28 \times 10^{-3}$
Far West: IC-17A (Al50-Al50)	0.984	0.79*	1.037	1.037	$8.29 \times 10^{-3}$
Far West: IC-18	0.991	0.86	1.037	1.037	$8.35 \times 10^{-3}$

(1) See Notes, Appendix A

Calculations by: Robert Gastorf, RPC  
Leroy Humphries, RT Task Grp. 3  
Martin Rozenfeld, RT Task Grp. 3

## APPENDIX A

## NOTES:

- (1) This Table is similar to Table XVII of Reference 1. Only thimble chambers are included in this list.

$N$  is the in-air exposure calibration factor for Co-60 gamma rays and  $A_{ion}$  is the ionization collection efficiency ( $\leq 1.00$ ) at the time of calibration.

- (2) C-552 = air equivalent plastic, A-150 = tissue equivalent plastic, NEL = Nuclear Enterprises Ltd., NA = Nuclear Associates, VIC = Victoreen.
- (3) From Table III of Reference 1 except for the spherical chambers where Reference 2 was used.
- (4) Obtained from a graph of  $\ln(1-\kappa)$  versus wall thickness in  $g/cm^2$ . The data for the graph is from Reference 3, and a smooth curve was drawn through the data points and the origin.
- (5) Except for Delrin, these values are from Table I of Reference 1. The values for Delrin were obtained from J.R. Cunningham. For Co-60 they are 1.087 (stopping power) and 0.937 (mass energy absorption coefficient).

## REFERENCES:

1. Med. Phys. 10, 741 (1983)
2. Med. Phys. 8, 85 (1981)
3. Med. Phys. 10, 1 (1983)



# INSTRUMENT CALIBRATION FORM

Date: Oct 8, 1984

Instrument Data: Model No. Picker Nue

Serial No. 529

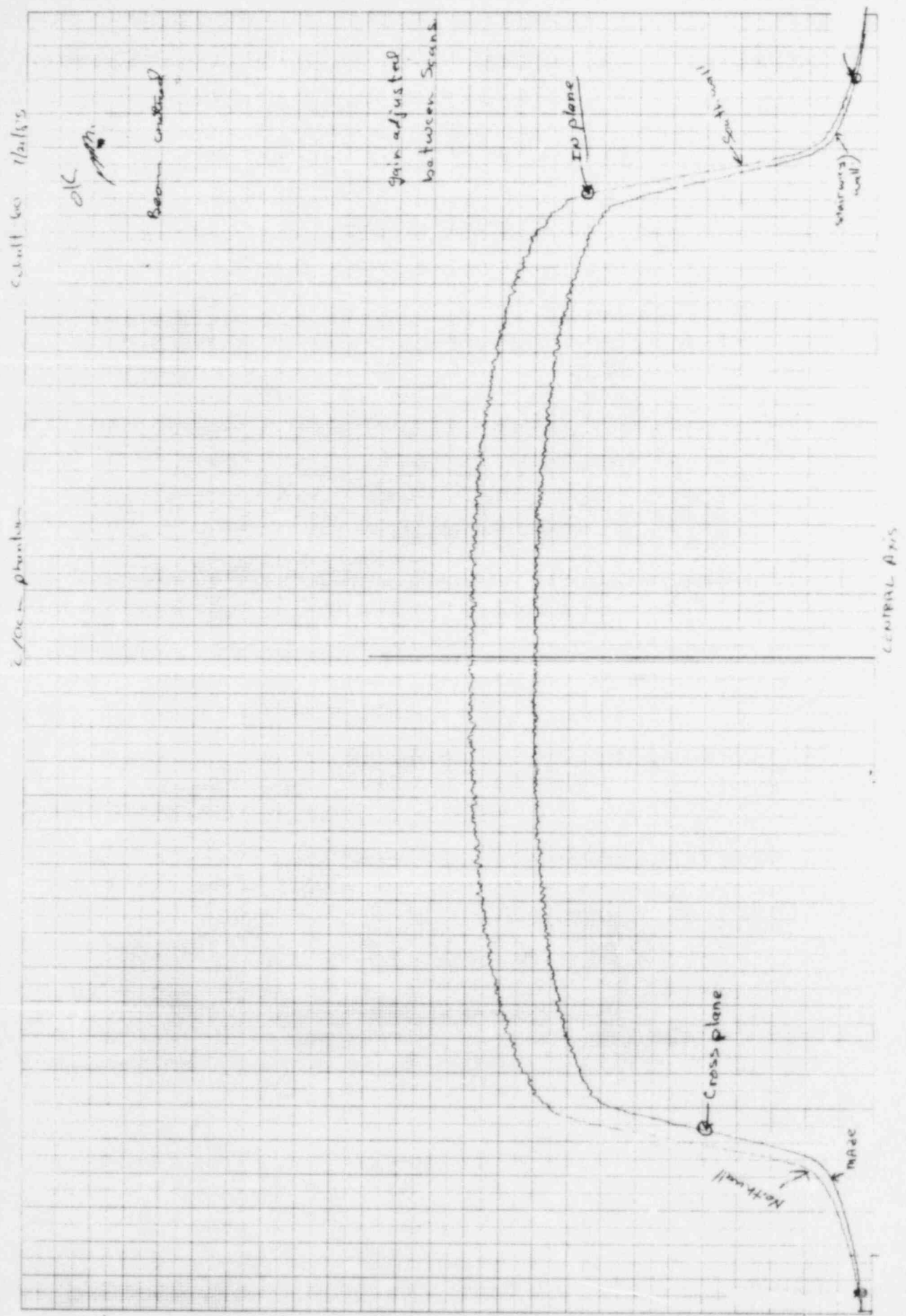
Probe GM Instrument

St Josephs Hosp. (Jeanne Kachelmeyer)  
291-3330

Calibration performed by: J.W. Staiger

Location: St Josephs Hosp.

Reference Exposure Rate	Instrument Reading	
	Meter	Range/Scale
0.1 $\mu\text{R/hr}$	0.1 mR/hr	X 1
0.3 "	0.3 "	X 1
0.85 "	0.85	X 10
1.9 "	1.9	X 10
4.2 "	4.2	X 10
6.5 "	6.5	X 100
12.5 "	12.5	X 100
26 "	25.5	X 100
52 "	47.5	X 100
103 "		
234 "		



Count 60 12/18/85

OK  
pph

Beam centered

Gain adjusted  
between scans

In plane

Main wall

North wall

CENTRAL AXIS

Cross plane

North wall

Main wall

Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

\*\*\*\*\*  
\*This output sheet is for 80. cm SSD\*  
\*\*\*\*\*

This output sheets is good for  
ONE month only. It is to be used  
STARTING Jul 22, 1985 and REPLACED  
the START of the NEXT month

Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	100.73	1m 59s	2m 29s	2m 59s	3m 28s
5.x 5.	1.25	102.62	1m 57s	2m 26s	2m 55s	3m 25s
6.x 6.	1.50	104.16	1m 55s	2m 24s	2m 53s	3m 22s
7.x 7.	1.75	105.46	1m 54s	2m 22s	2m 51s	3m 19s
8.x 8.	2.00	106.59	1m 53s	2m 21s	2m 49s	3m 17s
9.x 9.	2.25	107.59	1m 52s	2m 19s	2m 47s	3m 15s
10.x 10.	2.50	108.48	1m 51s	2m 18s	2m 46s	3m 14s
11.x 11.	2.75	109.28	1m 50s	2m 17s	2m 45s	3m 12s
12.x 12.	3.00	110.02	1m 49s	2m 16s	2m 44s	3m 11s
13.x 13.	3.25	110.70	1m 48s	2m 16s	2m 43s	3m 10s
14.x 14.	3.50	111.32	1m 48s	2m 15s	2m 42s	3m 9s
15.x 15.	3.75	111.91	1m 47s	2m 14s	2m 41s	3m 8s
16.x 16.	4.00	112.45	1m 47s	2m 13s	2m 40s	3m 7s
17.x 17.	4.25	112.97	1m 46s	2m 13s	2m 39s	3m 6s
18.x 18.	4.50	113.45	1m 46s	2m 12s	2m 39s	3m 5s
19.x 19.	4.75	113.91	1m 45s	2m 12s	2m 38s	3m 4s
20.x 20.	5.00	114.34	1m 45s	2m 11s	2m 37s	3m 3s
21.x 21.	5.25	114.75	1m 45s	2m 11s	2m 37s	3m 3s
22.x 22.	5.50	115.15	1m 44s	2m 10s	2m 36s	3m 2s
23.x 23.	5.75	115.52	1m 44s	2m 10s	2m 36s	3m 2s
24.x 24.	6.00	115.88	1m 44s	2m 9s	2m 35s	3m 1s
25.x 25.	6.25	116.23	1m 43s	2m 9s	2m 35s	3m 1s
26.x 26.	6.50	116.56	1m 43s	2m 9s	2m 34s	3m 0s
27.x 27.	6.75	116.88	1m 43s	2m 8s	2m 34s	3m 0s
28.x 28.	7.00	117.18	1m 42s	2m 8s	2m 33s	2m 59s
29.x 29.	7.25	117.48	1m 42s	2m 8s	2m 33s	2m 58s
30.x 30.	7.50	117.77	1m 42s	2m 7s	2m 32s	2m 58s
31.x 31.	7.75	118.05	1m 42s	2m 7s	2m 32s	2m 58s
32.x 32.	8.00	118.31	1m 41s	2m 7s	2m 32s	2m 57s
33.x 33.	8.25	118.57	1m 41s	2m 7s	2m 32s	2m 57s
34.x 34.	8.50	118.83	1m 41s	2m 6s	2m 31s	2m 56s
35.x 35.	8.75	119.07	1m 41s	2m 6s	2m 31s	2m 56s
36.x 36.	9.00	119.31	1m 41s	2m 6s	2m 31s	2m 56s

\*\*Dose rate to a small mass of tissue  
in freespace. See John's Chapter 9  
for definition

Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

\*\*\*\*\*  
\*This output sheet is for 100. cm SSD\*  
\*\*\*\*\*

This output sheets is good for  
ONE month only. It is to be used  
STARTING Jul 22, 1985 and REPLACED  
the START of the NEXT month

Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	64.16	3m 7s	3m 54s	4m 41s	5m 27s
5.x 5.	1.25	65.36	3m 4s	3m 50s	4m 35s	5m 21s
6.x 6.	1.50	66.34	3m 1s	3m 46s	4m 31s	5m 17s
7.x 7.	1.75	67.17	2m 59s	3m 43s	4m 28s	5m 13s
8.x 8.	2.00	67.89	2m 57s	3m 41s	4m 25s	5m 9s
9.x 9.	2.25	68.53	2m 55s	3m 39s	4m 23s	5m 6s
10.x 10.	2.50	69.09	2m 54s	3m 37s	4m 21s	5m 4s
11.x 11.	2.75	69.61	2m 52s	3m 36s	4m 19s	5m 2s
12.x 12.	3.00	70.08	2m 51s	3m 34s	4m 17s	5m 0s
13.x 13.	3.25	70.51	2m 50s	3m 33s	4m 15s	4m 58s
14.x 14.	3.50	70.91	2m 49s	3m 32s	4m 14s	4m 56s
15.x 15.	3.75	71.28	2m 48s	3m 30s	4m 13s	4m 55s
16.x 16.	4.00	71.62	2m 48s	3m 29s	4m 11s	4m 53s
17.x 17.	4.25	71.95	2m 47s	3m 28s	4m 10s	4m 52s
18.x 18.	4.50	72.26	2m 46s	3m 28s	4m 9s	4m 51s
19.x 19.	4.75	72.55	2m 45s	3m 27s	4m 8s	4m 49s
20.x 20.	5.00	72.83	2m 45s	3m 26s	4m 7s	4m 48s
21.x 21.	5.25	73.09	2m 44s	3m 25s	4m 6s	4m 47s
22.x 22.	5.50	73.34	2m 44s	3m 25s	4m 5s	4m 46s
23.x 23.	5.75	73.58	2m 43s	3m 24s	4m 5s	4m 45s
24.x 24.	6.00	73.81	2m 43s	3m 23s	4m 4s	4m 45s
25.x 25.	6.25	74.03	2m 42s	3m 23s	4m 3s	4m 44s
26.x 26.	6.50	74.24	2m 42s	3m 22s	4m 2s	4m 43s
27.x 27.	6.75	74.44	2m 41s	3m 22s	4m 2s	4m 42s
28.x 28.	7.00	74.64	2m 41s	3m 21s	4m 1s	4m 41s
29.x 29.	7.25	74.83	2m 40s	3m 20s	4m 1s	4m 41s
30.x 30.	7.50	75.01	2m 40s	3m 20s	4m 0s	4m 40s
31.x 31.	7.75	75.19	2m 40s	3m 20s	3m 59s	4m 39s
32.x 32.	8.00	75.36	2m 39s	3m 19s	3m 59s	4m 39s
33.x 33.	8.25	75.52	2m 39s	3m 19s	3m 58s	4m 38s
34.x 34.	8.50	75.68	2m 39s	3m 18s	3m 58s	4m 37s
35.x 35.	8.75	75.84	2m 38s	3m 18s	3m 57s	4m 37s
36.x 36.	9.00	75.99	2m 38s	3m 17s	3m 57s	4m 36s

\*\*Dose rate to a small mass of tissue  
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Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

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STARTING Aug 1, 1985 and REPLACED  
the START of the NEXT month

Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	99.63	2m 0s	2m 31s	3m 1s	3m 31s
5.x 5.	1.25	101.50	1m 58s	2m 28s	2m 57s	3m 27s
6.x 6.	1.50	103.02	1m 56s	2m 26s	2m 55s	3m 24s
7.x 7.	1.75	104.31	1m 55s	2m 24s	2m 53s	3m 21s
8.x 8.	2.00	105.43	1m 54s	2m 22s	2m 51s	3m 19s
9.x 9.	2.25	106.42	1m 53s	2m 21s	2m 49s	3m 17s
10.x 10.	2.50	107.30	1m 52s	2m 20s	2m 48s	3m 16s
11.x 11.	2.75	108.09	1m 51s	2m 19s	2m 47s	3m 14s
12.x 12.	3.00	108.82	1m 50s	2m 18s	2m 45s	3m 13s
13.x 13.	3.25	109.49	1m 50s	2m 17s	2m 44s	3m 12s
14.x 14.	3.50	110.11	1m 49s	2m 16s	2m 43s	3m 11s
15.x 15.	3.75	110.69	1m 48s	2m 16s	2m 43s	3m 10s
16.x 16.	4.00	111.23	1m 48s	2m 15s	2m 42s	3m 9s
17.x 17.	4.25	111.73	1m 47s	2m 14s	2m 41s	3m 8s
18.x 18.	4.50	112.21	1m 47s	2m 14s	2m 40s	3m 7s
19.x 19.	4.75	112.66	1m 47s	2m 13s	2m 40s	3m 6s
20.x 20.	5.00	113.09	1m 46s	2m 13s	2m 39s	3m 6s
21.x 21.	5.25	113.50	1m 46s	2m 12s	2m 39s	3m 5s
22.x 22.	5.50	113.89	1m 45s	2m 12s	2m 38s	3m 4s
23.x 23.	5.75	114.26	1m 45s	2m 11s	2m 38s	3m 4s
24.x 24.	6.00	114.62	1m 45s	2m 11s	2m 37s	3m 3s
25.x 25.	6.25	114.96	1m 44s	2m 10s	2m 37s	3m 3s
26.x 26.	6.50	115.29	1m 44s	2m 10s	2m 36s	3m 2s
27.x 27.	6.75	115.60	1m 44s	2m 10s	2m 36s	3m 2s
28.x 28.	7.00	115.91	1m 44s	2m 9s	2m 35s	3m 1s
29.x 29.	7.25	116.20	1m 43s	2m 9s	2m 35s	3m 1s
30.x 30.	7.50	116.48	1m 43s	2m 9s	2m 35s	3m 0s
31.x 31.	7.75	116.76	1m 43s	2m 8s	2m 34s	3m 0s
32.x 32.	8.00	117.02	1m 43s	2m 8s	2m 34s	2m 59s
33.x 33.	8.25	117.28	1m 42s	2m 8s	2m 33s	2m 59s
34.x 34.	8.50	117.53	1m 42s	2m 8s	2m 33s	2m 59s
35.x 35.	8.75	117.77	1m 42s	2m 7s	2m 32s	2m 58s
36.x 36.	9.00	118.01	1m 42s	2m 7s	2m 33s	2m 58s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	63.46	3m 9s	3m 56s	4m 44s	5m 31s
5.x 5.	1.25	64.65	3m 6s	3m 52s	4m 38s	5m 25s
6.x 6.	1.50	65.62	3m 3s	3m 49s	4m 34s	5m 20s
7.x 7.	1.75	66.44	3m 1s	3m 46s	4m 31s	5m 16s
8.x 8.	2.00	67.15	2m 59s	3m 43s	4m 28s	5m 13s
9.x 9.	2.25	67.78	2m 57s	3m 41s	4m 26s	5m 10s
10.x 10.	2.50	68.34	2m 56s	3m 40s	4m 23s	5m 7s
11.x 11.	2.75	68.85	2m 54s	3m 38s	4m 21s	5m 5s
12.x 12.	3.00	69.31	2m 53s	3m 36s	4m 20s	5m 3s
13.x 13.	3.25	69.74	2m 52s	3m 35s	4m 18s	5m 1s
14.x 14.	3.50	70.13	2m 51s	3m 34s	4m 17s	4m 59s
15.x 15.	3.75	70.50	2m 50s	3m 33s	4m 15s	4m 58s
16.x 16.	4.00	70.84	2m 49s	3m 32s	4m 14s	4m 56s
17.x 17.	4.25	71.17	2m 49s	3m 31s	4m 13s	4m 55s
18.x 18.	4.50	71.47	2m 48s	3m 30s	4m 12s	4m 54s
19.x 19.	4.75	71.76	2m 47s	3m 29s	4m 11s	4m 53s
20.x 20.	5.00	72.03	2m 47s	3m 28s	4m 10s	4m 52s
21.x 21.	5.25	72.29	2m 46s	3m 28s	4m 9s	4m 51s
22.x 22.	5.50	72.54	2m 45s	3m 27s	4m 8s	4m 50s
23.x 23.	5.75	72.78	2m 45s	3m 26s	4m 7s	4m 49s
24.x 24.	6.00	73.00	2m 44s	3m 25s	4m 7s	4m 48s
25.x 25.	6.25	73.22	2m 44s	3m 25s	4m 6s	4m 47s
26.x 26.	6.50	73.43	2m 43s	3m 24s	4m 5s	4m 46s
27.x 27.	6.75	73.63	2m 43s	3m 24s	4m 4s	4m 45s
28.x 28.	7.00	73.82	2m 43s	3m 23s	4m 4s	4m 44s
29.x 29.	7.25	74.01	2m 42s	3m 23s	4m 3s	4m 44s
30.x 30.	7.50	74.19	2m 42s	3m 22s	4m 3s	4m 43s
31.x 31.	7.75	74.37	2m 41s	3m 22s	4m 2s	4m 42s
32.x 32.	8.00	74.54	2m 41s	3m 21s	4m 2s	4m 41s
33.x 33.	8.25	74.70	2m 41s	3m 21s	4m 1s	4m 41s
34.x 34.	8.50	74.86	2m 40s	3m 20s	4m 0s	4m 41s
35.x 35.	8.75	75.01	2m 40s	3m 20s	4m 0s	4m 40s
36.x 36.	9.00	75.16	2m 40s	3m 20s	3m 59s	4m 39s

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Picker Stationary Cobalt Teletherapy  
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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	98.55	2m 2s	2m 32s	3m 3s	3m 33s
5.x 5.	1.25	100.39	2m 0s	2m 29s	2m 59s	3m 29s
6.x 6.	1.50	101.90	1m 58s	2m 27s	2m 57s	3m 26s
7.x 7.	1.75	103.18	1m 56s	2m 25s	2m 54s	3m 24s
8.x 8.	2.00	104.28	1m 55s	2m 24s	2m 53s	3m 21s
9.x 9.	2.25	105.26	1m 54s	2m 23s	2m 51s	3m 20s
10.x 10.	2.50	106.13	1m 53s	2m 21s	2m 50s	3m 18s
11.x 11.	2.75	106.92	1m 52s	2m 20s	2m 48s	3m 16s
12.x 12.	3.00	107.64	1m 51s	2m 19s	2m 47s	3m 15s
13.x 13.	3.25	108.30	1m 51s	2m 19s	2m 46s	3m 14s
14.x 14.	3.50	108.91	1m 50s	2m 18s	2m 45s	3m 13s
15.x 15.	3.75	109.48	1m 50s	2m 17s	2m 44s	3m 12s
16.x 16.	4.00	110.01	1m 49s	2m 16s	2m 44s	3m 11s
17.x 17.	4.25	110.52	1m 49s	2m 16s	2m 43s	3m 10s
18.x 18.	4.50	110.99	1m 48s	2m 15s	2m 42s	3m 9s
19.x 19.	4.75	111.44	1m 48s	2m 15s	2m 42s	3m 8s
20.x 20.	5.00	111.86	1m 47s	2m 14s	2m 41s	3m 8s
21.x 21.	5.25	112.26	1m 47s	2m 14s	2m 40s	3m 7s
22.x 22.	5.50	112.65	1m 47s	2m 13s	2m 40s	3m 6s
23.x 23.	5.75	113.02	1m 46s	2m 13s	2m 39s	3m 6s
24.x 24.	6.00	113.37	1m 46s	2m 12s	2m 39s	3m 5s
25.x 25.	6.25	113.71	1m 46s	2m 12s	2m 38s	3m 5s
26.x 26.	6.50	114.03	1m 45s	2m 12s	2m 38s	3m 4s
27.x 27.	6.75	114.34	1m 45s	2m 11s	2m 37s	3m 4s
28.x 28.	7.00	114.64	1m 45s	2m 11s	2m 37s	3m 3s
29.x 29.	7.25	114.93	1m 44s	2m 11s	2m 37s	3m 3s
30.x 30.	7.50	115.21	1m 44s	2m 10s	2m 36s	3m 2s
31.x 31.	7.75	115.49	1m 44s	2m 10s	2m 36s	3m 2s
32.x 32.	8.00	115.75	1m 44s	2m 10s	2m 36s	3m 1s
33.x 33.	8.25	116.00	1m 43s	2m 9s	2m 35s	3m 1s
34.x 34.	8.50	116.25	1m 43s	2m 9s	2m 35s	3m 0s
35.x 35.	8.75	116.49	1m 43s	2m 9s	2m 35s	3m 0s
36.x 36.	9.00	116.72	1m 43s	2m 9s	2m 34s	3m 0s

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Picker Stationary Cobalt Teletherapy  
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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	62.77	3m 11s	3m 59s	4m 47s	5m 35s
5.x 5.	1.25	63.94	3m 8s	3m 55s	4m 42s	5m 28s
6.x 6.	1.50	64.90	3m 5s	3m 51s	4m 37s	5m 24s
7.x 7.	1.75	65.72	3m 3s	3m 48s	4m 34s	5m 20s
8.x 8.	2.00	66.42	3m 1s	3m 46s	4m 31s	5m 16s
9.x 9.	2.25	67.04	2m 59s	3m 44s	4m 29s	5m 13s
10.x 10.	2.50	67.60	2m 58s	3m 42s	4m 26s	5m 11s
11.x 11.	2.75	68.10	2m 56s	3m 40s	4m 24s	5m 8s
12.x 12.	3.00	68.56	2m 55s	3m 39s	4m 23s	5m 6s
13.x 13.	3.25	68.98	2m 54s	3m 37s	4m 21s	5m 4s
14.x 14.	3.50	69.37	2m 53s	3m 36s	4m 20s	5m 3s
15.x 15.	3.75	69.73	2m 52s	3m 35s	4m 18s	5m 1s
16.x 16.	4.00	70.07	2m 51s	3m 34s	4m 17s	5m 0s
17.x 17.	4.25	70.39	2m 50s	3m 33s	4m 16s	4m 58s
18.x 18.	4.50	70.69	2m 50s	3m 32s	4m 15s	4m 57s
19.x 19.	4.75	70.98	2m 49s	3m 31s	4m 14s	4m 56s
20.x 20.	5.00	71.25	2m 48s	3m 31s	4m 13s	4m 55s
21.x 21.	5.25	71.50	2m 48s	3m 30s	4m 12s	4m 54s
22.x 22.	5.50	71.75	2m 47s	3m 29s	4m 11s	4m 53s
23.x 23.	5.75	71.98	2m 47s	3m 28s	4m 10s	4m 52s
24.x 24.	6.00	72.21	2m 46s	3m 28s	4m 9s	4m 51s
25.x 25.	6.25	72.42	2m 46s	3m 27s	4m 9s	4m 50s
26.x 26.	6.50	72.63	2m 45s	3m 27s	4m 8s	4m 49s
27.x 27.	6.75	72.83	2m 45s	3m 26s	4m 7s	4m 48s
28.x 28.	7.00	73.02	2m 44s	3m 25s	4m 7s	4m 48s
29.x 29.	7.25	73.21	2m 44s	3m 25s	4m 6s	4m 47s
30.x 30.	7.50	73.38	2m 44s	3m 24s	4m 5s	4m 46s
31.x 31.	7.75	73.56	2m 43s	3m 24s	4m 5s	4m 46s
32.x 32.	8.00	73.72	2m 43s	3m 23s	4m 4s	4m 45s
33.x 33.	8.25	73.89	2m 42s	3m 23s	4m 4s	4m 44s
34.x 34.	8.50	74.04	2m 42s	3m 23s	4m 3s	4m 44s
35.x 35.	8.75	74.20	2m 42s	3m 22s	4m 3s	4m 43s
36.x 36.	9.00	74.34	2m 41s	3m 22s	4m 2s	4m 42s

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CONTROL NO. 79586

Picker Stationary Cobalt Teletherapy  
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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	97.47	2m 3s	2m 34s	3m 5s	3m 35s
5.x 5.	1.25	99.30	2m 1s	2m 31s	3m 1s	3m 31s
6.x 6.	1.50	100.79	1m 59s	2m 29s	2m 59s	3m 28s
7.x 7.	1.75	102.05	1m 58s	2m 27s	2m 56s	3m 26s
8.x 8.	2.00	103.14	1m 56s	2m 25s	2m 55s	3m 24s
9.x 9.	2.25	104.11	1m 55s	2m 24s	2m 53s	3m 22s
10.x 10.	2.50	104.97	1m 54s	2m 23s	2m 51s	3m 20s
11.x 11.	2.75	105.75	1m 53s	2m 22s	2m 50s	3m 19s
12.x 12.	3.00	106.46	1m 53s	2m 21s	2m 49s	3m 17s
13.x 13.	3.25	107.12	1m 52s	2m 20s	2m 48s	3m 16s
14.x 14.	3.50	107.72	1m 51s	2m 19s	2m 47s	3m 15s
15.x 15.	3.75	108.29	1m 51s	2m 19s	2m 46s	3m 14s
16.x 16.	4.00	108.82	1m 50s	2m 18s	2m 45s	3m 13s
17.x 17.	4.25	109.31	1m 50s	2m 17s	2m 45s	3m 12s
18.x 18.	4.50	109.78	1m 49s	2m 17s	2m 44s	3m 11s
19.x 19.	4.75	110.22	1m 49s	2m 16s	2m 43s	3m 11s
20.x 20.	5.00	110.64	1m 48s	2m 16s	2m 43s	3m 10s
21.x 21.	5.25	111.04	1m 48s	2m 15s	2m 42s	3m 9s
22.x 22.	5.50	111.42	1m 48s	2m 15s	2m 42s	3m 8s
23.x 23.	5.75	111.79	1m 47s	2m 14s	2m 41s	3m 8s
24.x 24.	6.00	112.13	1m 47s	2m 14s	2m 41s	3m 7s
25.x 25.	6.25	112.47	1m 47s	2m 13s	2m 40s	3m 7s
26.x 26.	6.50	112.79	1m 46s	2m 13s	2m 40s	3m 6s
27.x 27.	6.75	113.10	1m 46s	2m 13s	2m 39s	3m 6s
28.x 28.	7.00	113.39	1m 46s	2m 12s	2m 39s	3m 5s
29.x 29.	7.25	113.68	1m 46s	2m 12s	2m 38s	3m 5s
30.x 30.	7.50	113.96	1m 45s	2m 12s	2m 38s	3m 4s
31.x 31.	7.75	114.23	1m 45s	2m 11s	2m 38s	3m 4s
32.x 32.	8.00	114.49	1m 45s	2m 11s	2m 37s	3m 3s
33.x 33.	8.25	114.74	1m 45s	2m 11s	2m 37s	3m 3s
34.x 34.	8.50	114.98	1m 44s	2m 10s	2m 37s	3m 3s
35.x 35.	8.75	115.22	1m 44s	2m 10s	2m 36s	3m 2s
36.x 36.	9.00	115.45	1m 44s	2m 10s	2m 36s	3m 2s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	62.08	3m 13s	4m 2s	4m 50s	5m 38s
5.x 5.	1.25	63.25	3m 10s	3m 57s	4m 45s	5m 32s
6.x 6.	1.50	64.20	3m 7s	3m 54s	4m 42s	5m 27s
7.x 7.	1.75	65.00	3m 5s	3m 51s	4m 37s	5m 23s
8.x 8.	2.00	65.70	3m 3s	3m 48s	4m 34s	5m 20s
9.x 9.	2.25	66.31	3m 1s	3m 46s	4m 31s	5m 17s
10.x 10.	2.50	66.86	2m 59s	3m 44s	4m 29s	5m 14s
11.x 11.	2.75	67.36	2m 58s	3m 43s	4m 27s	5m 12s
12.x 12.	3.00	67.81	2m 57s	3m 41s	4m 25s	5m 10s
13.x 13.	3.25	68.23	2m 56s	3m 40s	4m 24s	5m 8s
14.x 14.	3.50	68.61	2m 55s	3m 39s	4m 22s	5m 6s
15.x 15.	3.75	68.97	2m 54s	3m 37s	4m 21s	5m 4s
16.x 16.	4.00	69.31	2m 53s	3m 36s	4m 20s	5m 3s
17.x 17.	4.25	69.62	2m 52s	3m 35s	4m 19s	5m 2s
18.x 18.	4.50	69.92	2m 52s	3m 35s	4m 17s	5m 0s
19.x 19.	4.75	70.20	2m 51s	3m 34s	4m 16s	4m 59s
20.x 20.	5.00	70.47	2m 50s	3m 33s	4m 15s	4m 58s
21.x 21.	5.25	70.73	2m 50s	3m 32s	4m 15s	4m 57s
22.x 22.	5.50	70.97	2m 49s	3m 31s	4m 14s	4m 56s
23.x 23.	5.75	71.20	2m 49s	3m 31s	4m 13s	4m 55s
24.x 24.	6.00	71.42	2m 48s	3m 30s	4m 12s	4m 54s
25.x 25.	6.25	71.63	2m 48s	3m 29s	4m 11s	4m 53s
26.x 26.	6.50	71.84	2m 47s	3m 29s	4m 11s	4m 52s
27.x 27.	6.75	72.03	2m 47s	3m 28s	4m 10s	4m 52s
28.x 28.	7.00	72.22	2m 46s	3m 28s	4m 9s	4m 51s
29.x 29.	7.25	72.41	2m 46s	3m 27s	4m 9s	4m 50s
30.x 30.	7.50	72.58	2m 45s	3m 27s	4m 8s	4m 49s
31.x 31.	7.75	72.75	2m 45s	3m 26s	4m 7s	4m 49s
32.x 32.	8.00	72.92	2m 45s	3m 26s	4m 7s	4m 48s
33.x 33.	8.25	73.08	2m 44s	3m 25s	4m 6s	4m 47s
34.x 34.	8.50	73.24	2m 44s	3m 25s	4m 6s	4m 47s
35.x 35.	8.75	73.39	2m 44s	3m 24s	4m 5s	4m 46s
36.x 36.	9.00	73.53	2m 43s	3m 24s	4m 5s	4m 46s

\*\*Dose rate to a small mass of tissue  
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Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	96.41	2m 4s	2m 36s	3m 7s	3m 38s
5.x 5.	1.25	98.22	2m 2s	2m 33s	3m 3s	3m 34s
6.x 6.	1.50	99.69	2m 0s	2m 30s	3m 1s	3m 31s
7.x 7.	1.75	100.94	1m 59s	2m 29s	2m 58s	3m 28s
8.x 8.	2.00	102.02	1m 58s	2m 27s	2m 56s	3m 26s
9.x 9.	2.25	102.97	1m 57s	2m 26s	2m 55s	3m 24s
10.x 10.	2.50	103.83	1m 56s	2m 24s	2m 53s	3m 22s
11.x 11.	2.75	104.60	1m 55s	2m 23s	2m 52s	3m 21s
12.x 12.	3.00	105.30	1m 54s	2m 22s	2m 51s	3m 19s
13.x 13.	3.25	105.95	1m 53s	2m 22s	2m 50s	3m 18s
14.x 14.	3.50	106.55	1m 53s	2m 21s	2m 49s	3m 17s
15.x 15.	3.75	107.11	1m 52s	2m 20s	2m 48s	3m 16s
16.x 16.	4.00	107.63	1m 51s	2m 19s	2m 47s	3m 15s
17.x 17.	4.25	108.12	1m 51s	2m 19s	2m 46s	3m 14s
18.x 18.	4.50	108.58	1m 51s	2m 18s	2m 46s	3m 13s
19.x 19.	4.75	109.02	1m 50s	2m 18s	2m 45s	3m 13s
20.x 20.	5.00	109.44	1m 50s	2m 17s	2m 44s	3m 12s
21.x 21.	5.25	109.83	1m 49s	2m 17s	2m 44s	3m 11s
22.x 22.	5.50	110.21	1m 49s	2m 16s	2m 43s	3m 11s
23.x 23.	5.75	110.57	1m 49s	2m 16s	2m 43s	3m 10s
24.x 24.	6.00	110.91	1m 48s	2m 15s	2m 42s	3m 9s
25.x 25.	6.25	111.24	1m 48s	2m 15s	2m 42s	3m 9s
26.x 26.	6.50	111.56	1m 48s	2m 14s	2m 41s	3m 8s
27.x 27.	6.75	111.86	1m 47s	2m 14s	2m 41s	3m 8s
28.x 28.	7.00	112.16	1m 47s	2m 14s	2m 40s	3m 7s
29.x 29.	7.25	112.44	1m 47s	2m 13s	2m 40s	3m 7s
30.x 30.	7.50	112.72	1m 46s	2m 13s	2m 40s	3m 6s
31.x 31.	7.75	112.98	1m 46s	2m 13s	2m 39s	3m 6s
32.x 32.	8.00	113.24	1m 46s	2m 12s	2m 39s	3m 5s
33.x 33.	8.25	113.49	1m 46s	2m 12s	2m 39s	3m 5s
34.x 34.	8.50	113.73	1m 46s	2m 12s	2m 38s	3m 5s
35.x 35.	8.75	113.96	1m 45s	2m 12s	2m 38s	3m 4s
36.x 36.	9.00	114.19	1m 45s	2m 11s	2m 38s	3m 4s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	61.41	3m 15s	4m 4s	4m 53s	5m 42s
5.x 5.	1.25	62.56	3m 12s	4m 0s	4m 48s	5m 36s
6.x 6.	1.50	63.50	3m 9s	3m 56s	4m 44s	5m 31s
7.x 7.	1.75	64.29	3m 7s	3m 53s	4m 40s	5m 27s
8.x 8.	2.00	64.98	3m 5s	3m 51s	4m 37s	5m 23s
9.x 9.	2.25	65.59	3m 3s	3m 49s	4m 34s	5m 20s
10.x 10.	2.50	66.13	3m 1s	3m 47s	4m 32s	5m 18s
11.x 11.	2.75	66.62	3m 0s	3m 45s	4m 30s	5m 15s
12.x 12.	3.00	67.07	2m 59s	3m 44s	4m 28s	5m 13s
13.x 13.	3.25	67.48	2m 58s	3m 42s	4m 27s	5m 11s
14.x 14.	3.50	67.86	2m 57s	3m 41s	4m 25s	5m 9s
15.x 15.	3.75	68.22	2m 56s	3m 40s	4m 24s	5m 8s
16.x 16.	4.00	68.55	2m 55s	3m 39s	4m 23s	5m 6s
17.x 17.	4.25	68.86	2m 54s	3m 38s	4m 21s	5m 5s
18.x 18.	4.50	69.16	2m 54s	3m 37s	4m 20s	5m 4s
19.x 19.	4.75	69.44	2m 53s	3m 36s	4m 19s	5m 2s
20.x 20.	5.00	69.70	2m 52s	3m 35s	4m 18s	5m 1s
21.x 21.	5.25	69.95	2m 52s	3m 34s	4m 17s	5m 0s
22.x 22.	5.50	70.19	2m 51s	3m 34s	4m 16s	4m 59s
23.x 23.	5.75	70.42	2m 50s	3m 33s	4m 16s	4m 58s
24.x 24.	6.00	70.64	2m 50s	3m 32s	4m 15s	4m 57s
25.x 25.	6.25	70.85	2m 49s	3m 32s	4m 14s	4m 56s
26.x 26.	6.50	71.06	2m 49s	3m 31s	4m 13s	4m 56s
27.x 27.	6.75	71.25	2m 48s	3m 31s	4m 13s	4m 55s
28.x 28.	7.00	71.44	2m 48s	3m 30s	4m 12s	4m 54s
29.x 29.	7.25	71.62	2m 48s	3m 29s	4m 11s	4m 53s
30.x 30.	7.50	71.79	2m 47s	3m 29s	4m 11s	4m 53s
31.x 31.	7.75	71.96	2m 47s	3m 28s	4m 10s	4m 52s
32.x 32.	8.00	72.13	2m 46s	3m 28s	4m 10s	4m 51s
33.x 33.	8.25	72.28	2m 46s	3m 28s	4m 9s	4m 51s
34.x 34.	8.50	72.44	2m 46s	3m 27s	4m 9s	4m 50s
35.x 35.	8.75	72.59	2m 45s	3m 27s	4m 8s	4m 49s
36.x 36.	9.00	72.73	2m 45s	3m 26s	4m 7s	4m 49s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	95.36	2m 6s	2m 37s	3m 9s	3m 40s
5.x 5.	1.25	97.15	2m 4s	2m 34s	3m 5s	3m 36s
6.x 6.	1.50	98.61	2m 2s	2m 32s	3m 3s	3m 33s
7.x 7.	1.75	99.84	2m 0s	2m 30s	3m 0s	3m 30s
8.x 8.	2.00	100.91	1m 59s	2m 29s	2m 58s	3m 28s
9.x 9.	2.25	101.85	1m 58s	2m 27s	2m 57s	3m 26s
10.x 10.	2.50	102.69	1m 57s	2m 26s	2m 55s	3m 25s
11.x 11.	2.75	103.46	1m 56s	2m 25s	2m 54s	3m 23s
12.x 12.	3.00	104.15	1m 55s	2m 24s	2m 53s	3m 22s
13.x 13.	3.25	104.79	1m 55s	2m 23s	2m 52s	3m 20s
14.x 14.	3.50	105.39	1m 54s	2m 22s	2m 51s	3m 19s
15.x 15.	3.75	105.94	1m 53s	2m 22s	2m 50s	3m 18s
16.x 16.	4.00	106.46	1m 53s	2m 21s	2m 49s	3m 17s
17.x 17.	4.25	106.94	1m 52s	2m 20s	2m 48s	3m 16s
18.x 18.	4.50	107.40	1m 52s	2m 20s	2m 48s	3m 16s
19.x 19.	4.75	107.83	1m 51s	2m 19s	2m 47s	3m 15s
20.x 20.	5.00	108.24	1m 51s	2m 19s	2m 46s	3m 14s
21.x 21.	5.25	108.63	1m 50s	2m 18s	2m 46s	3m 13s
22.x 22.	5.50	109.01	1m 50s	2m 18s	2m 45s	3m 13s
23.x 23.	5.75	109.36	1m 50s	2m 17s	2m 45s	3m 12s
24.x 24.	6.00	109.70	1m 49s	2m 17s	2m 44s	3m 11s
25.x 25.	6.25	110.03	1m 49s	2m 16s	2m 44s	3m 11s
26.x 26.	6.50	110.34	1m 49s	2m 16s	2m 43s	3m 10s
27.x 27.	6.75	110.65	1m 48s	2m 16s	2m 43s	3m 10s
28.x 28.	7.00	110.94	1m 48s	2m 15s	2m 42s	3m 9s
29.x 29.	7.25	111.22	1m 48s	2m 15s	2m 42s	3m 9s
30.x 30.	7.50	111.49	1m 48s	2m 15s	2m 41s	3m 8s
31.x 31.	7.75	111.75	1m 47s	2m 14s	2m 41s	3m 8s
32.x 32.	8.00	112.01	1m 47s	2m 14s	2m 41s	3m 7s
33.x 33.	8.25	112.25	1m 47s	2m 14s	2m 40s	3m 7s
34.x 34.	8.50	112.49	1m 47s	2m 13s	2m 40s	3m 7s
35.x 35.	8.75	112.72	1m 46s	2m 13s	2m 40s	3m 6s
36.x 36.	9.00	112.95	1m 46s	2m 13s	2m 39s	3m 6s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	60.74	3m 18s	4m 7s	4m 56s	5m 46s
5.x 5.	1.25	61.88	3m 14s	4m 2s	4m 51s	5m 39s
6.x 6.	1.50	62.80	3m 11s	3m 59s	4m 47s	5m 34s
7.x 7.	1.75	63.59	3m 9s	3m 56s	4m 43s	5m 30s
8.x 8.	2.00	64.27	3m 7s	3m 53s	4m 40s	5m 27s
9.x 9.	2.25	64.87	3m 5s	3m 51s	4m 37s	5m 24s
10.x 10.	2.50	65.41	3m 3s	3m 49s	4m 35s	5m 21s
11.x 11.	2.75	65.90	3m 2s	3m 48s	4m 33s	5m 19s
12.x 12.	3.00	66.34	3m 1s	3m 46s	4m 31s	5m 17s
13.x 13.	3.25	66.75	3m 0s	3m 45s	4m 30s	5m 15s
14.x 14.	3.50	67.12	2m 59s	3m 43s	4m 28s	5m 13s
15.x 15.	3.75	67.48	2m 58s	3m 42s	4m 27s	5m 11s
16.x 16.	4.00	67.81	2m 57s	3m 41s	4m 25s	5m 10s
17.x 17.	4.25	68.11	2m 56s	3m 40s	4m 24s	5m 8s
18.x 18.	4.50	68.41	2m 55s	3m 39s	4m 23s	5m 7s
19.x 19.	4.75	68.68	2m 55s	3m 38s	4m 22s	5m 6s
20.x 20.	5.00	68.94	2m 54s	3m 38s	4m 21s	5m 5s
21.x 21.	5.25	69.19	2m 53s	3m 37s	4m 20s	5m 4s
22.x 22.	5.50	69.43	2m 53s	3m 36s	4m 19s	5m 2s
23.x 23.	5.75	69.66	2m 52s	3m 35s	4m 18s	5m 2s
24.x 24.	6.00	69.87	2m 52s	3m 35s	4m 18s	5m 1s
25.x 25.	6.25	70.08	2m 51s	3m 34s	4m 17s	5m 0s
26.x 26.	6.50	70.28	2m 51s	3m 33s	4m 16s	4m 59s
27.x 27.	6.75	70.47	2m 50s	3m 33s	4m 15s	4m 58s
28.x 28.	7.00	70.66	2m 50s	3m 32s	4m 15s	4m 57s
29.x 29.	7.25	70.84	2m 49s	3m 32s	4m 14s	4m 56s
30.x 30.	7.50	71.01	2m 49s	3m 31s	4m 14s	4m 56s
31.x 31.	7.75	71.18	2m 49s	3m 31s	4m 13s	4m 55s
32.x 32.	8.00	71.34	2m 48s	3m 30s	4m 12s	4m 54s
33.x 33.	8.25	71.50	2m 48s	3m 30s	4m 12s	4m 54s
34.x 34.	8.50	71.65	2m 47s	3m 29s	4m 11s	4m 53s
35.x 35.	8.75	71.80	2m 47s	3m 29s	4m 11s	4m 53s
36.x 36.	9.00	71.94	2m 47s	3m 29s	4m 10s	4m 52s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4. x 4.	1.00	94.32	2m 7s	2m 39s	3m 11s	3m 43s
5. x 5.	1.25	96.89	2m 5s	2m 36s	3m 7s	3m 39s
6. x 6.	1.50	97.53	2m 3s	2m 34s	3m 5s	3m 35s
7. x 7.	1.75	98.75	2m 2s	2m 32s	3m 2s	3m 33s
8. x 8.	2.00	99.81	2m 0s	2m 30s	3m 0s	3m 30s
9. x 9.	2.25	100.74	1m 59s	2m 29s	2m 59s	3m 28s
10. x 10.	2.50	101.57	1m 58s	2m 28s	2m 57s	3m 27s
11. x 11.	2.75	102.33	1m 57s	2m 27s	2m 56s	3m 25s
12. x 12.	3.00	103.02	1m 56s	2m 26s	2m 55s	3m 24s
13. x 13.	3.25	103.65	1m 56s	2m 25s	2m 54s	3m 23s
14. x 14.	3.50	104.24	1m 55s	2m 24s	2m 53s	3m 21s
15. x 15.	3.75	104.79	1m 55s	2m 23s	2m 52s	3m 20s
16. x 16.	4.00	105.30	1m 54s	2m 22s	2m 51s	3m 19s
17. x 17.	4.25	105.78	1m 53s	2m 22s	2m 50s	3m 19s
18. x 18.	4.50	106.23	1m 53s	2m 21s	2m 49s	3m 18s
19. x 19.	4.75	106.66	1m 53s	2m 21s	2m 49s	3m 17s
20. x 20.	5.00	107.06	1m 52s	2m 20s	2m 48s	3m 16s
21. x 21.	5.25	107.45	1m 52s	2m 20s	2m 48s	3m 15s
22. x 22.	5.50	107.82	1m 51s	2m 19s	2m 47s	3m 15s
23. x 23.	5.75	108.17	1m 51s	2m 19s	2m 46s	3m 14s
24. x 24.	6.00	108.51	1m 51s	2m 18s	2m 46s	3m 14s
25. x 25.	6.25	108.83	1m 50s	2m 18s	2m 45s	3m 13s
26. x 26.	6.50	109.14	1m 50s	2m 17s	2m 45s	3m 12s
27. x 27.	6.75	109.44	1m 50s	2m 17s	2m 44s	3m 12s
28. x 28.	7.00	109.73	1m 49s	2m 17s	2m 44s	3m 11s
29. x 29.	7.25	110.00	1m 49s	2m 16s	2m 44s	3m 11s
30. x 30.	7.50	110.27	1m 49s	2m 16s	2m 43s	3m 10s
31. x 31.	7.75	110.53	1m 49s	2m 16s	2m 43s	3m 10s
32. x 32.	8.00	110.78	1m 48s	2m 15s	2m 42s	3m 10s
33. x 33.	8.25	111.03	1m 48s	2m 15s	2m 42s	3m 9s
34. x 34.	8.50	111.26	1m 48s	2m 15s	2m 42s	3m 9s
35. x 35.	8.75	111.49	1m 48s	2m 15s	2m 41s	3m 8s
36. x 36.	9.00	111.72	1m 47s	2m 14s	2m 41s	3m 8s

\*\*Dose rate to a small mass of tissue in freespace. See John's Chapter 9 for definition

Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4. x 4.	1.00	60.08	3m 20s	4m 10s	5m 0s	5m 50s
5. x 5.	1.25	61.20	3m 16s	4m 5s	4m 54s	5m 43s
6. x 6.	1.50	62.12	3m 13s	4m 1s	4m 50s	5m 38s
7. x 7.	1.75	62.90	3m 11s	3m 59s	4m 46s	5m 34s
8. x 8.	2.00	63.57	3m 9s	3m 56s	4m 43s	5m 30s
9. x 9.	2.25	64.16	3m 7s	3m 54s	4m 41s	5m 27s
10. x 10.	2.50	64.70	3m 5s	3m 52s	4m 38s	5m 25s
11. x 11.	2.75	65.18	3m 4s	3m 50s	4m 36s	5m 22s
12. x 12.	3.00	65.62	3m 3s	3m 49s	4m 34s	5m 20s
13. x 13.	3.25	66.02	3m 2s	3m 47s	4m 33s	5m 18s
14. x 14.	3.50	66.39	3m 1s	3m 46s	4m 31s	5m 16s
15. x 15.	3.75	66.74	3m 0s	3m 45s	4m 30s	5m 15s
16. x 16.	4.00	67.07	2m 59s	3m 44s	4m 28s	5m 13s
17. x 17.	4.25	67.37	2m 58s	3m 43s	4m 27s	5m 12s
18. x 18.	4.50	67.66	2m 57s	3m 42s	4m 26s	5m 10s
19. x 19.	4.75	67.93	2m 57s	3m 41s	4m 25s	5m 9s
20. x 20.	5.00	68.19	2m 56s	3m 40s	4m 24s	5m 8s
21. x 21.	5.25	68.44	2m 55s	3m 39s	4m 23s	5m 7s
22. x 22.	5.50	68.67	2m 55s	3m 38s	4m 22s	5m 6s
23. x 23.	5.75	68.90	2m 54s	3m 38s	4m 21s	5m 5s
24. x 24.	6.00	69.11	2m 54s	3m 37s	4m 20s	5m 4s
25. x 25.	6.25	69.32	2m 53s	3m 36s	4m 20s	5m 3s
26. x 26.	6.50	69.51	2m 53s	3m 36s	4m 19s	5m 2s
27. x 27.	6.75	69.70	2m 52s	3m 35s	4m 18s	5m 1s
28. x 28.	7.00	69.89	2m 52s	3m 35s	4m 18s	5m 1s
29. x 29.	7.25	70.07	2m 51s	3m 34s	4m 17s	5m 0s
30. x 30.	7.50	70.24	2m 51s	3m 34s	4m 16s	4m 59s
31. x 31.	7.75	70.40	2m 50s	3m 33s	4m 16s	4m 58s
32. x 32.	8.00	70.56	2m 50s	3m 33s	4m 15s	4m 58s
33. x 33.	8.25	70.72	2m 50s	3m 32s	4m 15s	4m 57s
34. x 34.	8.50	70.87	2m 49s	3m 32s	4m 14s	4m 56s
35. x 35.	8.75	71.01	2m 49s	3m 31s	4m 13s	4m 56s
36. x 36.	9.00	71.16	2m 49s	3m 31s	4m 13s	4m 55s

\*\*Dose rate to a small mass of tissue in freespace. See John's Chapter 9 for definition

Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

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\*This output sheet is for 80. cm SSD\*  
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STARTING Feb 1, 1986 and REPLACED  
the START of the NEXT month

Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	93.29	2m 9s	2m 41s	3m 13s	3m 45s
5.x 5.	1.25	95.04	2m 6s	2m 38s	3m 9s	3m 41s
6.x 6.	1.50	96.47	2m 4s	2m 36s	3m 7s	3m 38s
7.x 7.	1.75	97.67	2m 3s	2m 34s	3m 4s	3m 35s
8.x 8.	2.00	98.72	2m 2s	2m 32s	3m 2s	3m 33s
9.x 9.	2.25	99.64	2m 0s	2m 31s	3m 1s	3m 31s
10.x 10.	2.50	100.47	1m 59s	2m 29s	2m 59s	3m 29s
11.x 11.	2.75	101.21	1m 59s	2m 28s	2m 58s	3m 27s
12.x 12.	3.00	101.90	1m 58s	2m 27s	2m 57s	3m 26s
13.x 13.	3.25	102.52	1m 57s	2m 26s	2m 56s	3m 25s
14.x 14.	3.50	103.10	1m 56s	2m 25s	2m 55s	3m 24s
15.x 15.	3.75	103.64	1m 56s	2m 25s	2m 54s	3m 23s
16.x 16.	4.00	104.15	1m 55s	2m 24s	2m 53s	3m 22s
17.x 17.	4.25	104.62	1m 55s	2m 23s	2m 52s	3m 21s
18.x 18.	4.50	105.07	1m 54s	2m 23s	2m 51s	3m 20s
19.x 19.	4.75	105.49	1m 54s	2m 22s	2m 51s	3m 19s
20.x 20.	5.00	105.90	1m 53s	2m 22s	2m 50s	3m 18s
21.x 21.	5.25	106.28	1m 53s	2m 21s	2m 49s	3m 18s
22.x 22.	5.50	106.64	1m 53s	2m 21s	2m 49s	3m 17s
23.x 23.	5.75	106.99	1m 52s	2m 20s	2m 48s	3m 16s
24.x 24.	6.00	107.32	1m 52s	2m 20s	2m 48s	3m 16s
25.x 25.	6.25	107.64	1m 51s	2m 19s	2m 47s	3m 15s
26.x 26.	6.50	107.95	1m 51s	2m 19s	2m 47s	3m 15s
27.x 27.	6.75	108.25	1m 51s	2m 19s	2m 46s	3m 14s
28.x 28.	7.00	108.53	1m 51s	2m 18s	2m 46s	3m 14s
29.x 29.	7.25	108.81	1m 50s	2m 18s	2m 45s	3m 13s
30.x 30.	7.50	109.07	1m 50s	2m 18s	2m 45s	3m 13s
31.x 31.	7.75	109.33	1m 50s	2m 17s	2m 45s	3m 12s
32.x 32.	8.00	109.58	1m 50s	2m 17s	2m 44s	3m 12s
33.x 33.	8.25	109.82	1m 49s	2m 17s	2m 44s	3m 11s
34.x 34.	8.50	110.05	1m 49s	2m 16s	2m 44s	3m 11s
35.x 35.	8.75	110.28	1m 49s	2m 16s	2m 43s	3m 10s
36.x 36.	9.00	110.50	1m 49s	2m 16s	2m 43s	3m 10s

\*\*Dose rate to a small mass of tissue  
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Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	59.42	3m 22s	4m 12s	5m 3s	5m 53s
5.x 5.	1.25	60.53	3m 18s	4m 8s	4m 57s	5m 47s
6.x 6.	1.50	61.44	3m 15s	4m 4s	4m 53s	5m 42s
7.x 7.	1.75	62.21	3m 13s	4m 1s	4m 49s	5m 38s
8.x 8.	2.00	62.88	3m 11s	3m 59s	4m 46s	5m 34s
9.x 9.	2.25	63.47	3m 9s	3m 56s	4m 44s	5m 31s
10.x 10.	2.50	63.99	3m 8s	3m 54s	4m 41s	5m 28s
11.x 11.	2.75	64.47	3m 6s	3m 53s	4m 39s	5m 26s
12.x 12.	3.00	64.90	3m 5s	3m 51s	4m 37s	5m 24s
13.x 13.	3.25	65.30	3m 4s	3m 50s	4m 36s	5m 22s
14.x 14.	3.50	65.67	3m 3s	3m 48s	4m 34s	5m 20s
15.x 15.	3.75	66.01	3m 2s	3m 47s	4m 33s	5m 18s
16.x 16.	4.00	66.34	3m 1s	3m 46s	4m 31s	5m 17s
17.x 17.	4.25	66.64	3m 0s	3m 45s	4m 30s	5m 15s
18.x 18.	4.50	66.92	2m 59s	3m 44s	4m 29s	5m 14s
19.x 19.	4.75	67.19	2m 59s	3m 43s	4m 28s	5m 13s
20.x 20.	5.00	67.45	2m 58s	3m 42s	4m 27s	5m 11s
21.x 21.	5.25	67.69	2m 57s	3m 42s	4m 26s	5m 10s
22.x 22.	5.50	67.92	2m 57s	3m 41s	4m 25s	5m 9s
23.x 23.	5.75	68.15	2m 56s	3m 40s	4m 24s	5m 8s
24.x 24.	6.00	68.36	2m 56s	3m 39s	4m 23s	5m 7s
25.x 25.	6.25	68.56	2m 55s	3m 39s	4m 23s	5m 6s
26.x 26.	6.50	68.76	2m 55s	3m 38s	4m 22s	5m 5s
27.x 27.	6.75	68.95	2m 54s	3m 38s	4m 21s	5m 5s
28.x 28.	7.00	69.13	2m 54s	3m 37s	4m 20s	5m 4s
29.x 29.	7.25	69.30	2m 53s	3m 36s	4m 20s	5m 3s
30.x 30.	7.50	69.47	2m 53s	3m 36s	4m 19s	5m 2s
31.x 31.	7.75	69.63	2m 52s	3m 35s	4m 19s	5m 2s
32.x 32.	8.00	69.79	2m 52s	3m 35s	4m 18s	5m 1s
33.x 33.	8.25	69.95	2m 52s	3m 34s	4m 17s	5m 0s
34.x 34.	8.50	70.09	2m 51s	3m 34s	4m 17s	5m 0s
35.x 35.	8.75	70.24	2m 51s	3m 34s	4m 16s	4m 59s
36.x 36.	9.00	70.38	2m 51s	3m 33s	4m 16s	4m 58s

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Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	92.28	2m 10s	2m 43s	3m 15s	3m 48s
5.x 5.	1.25	94.00	2m 8s	2m 40s	3m 11s	3m 43s
6.x 6.	1.50	95.42	2m 6s	2m 37s	3m 9s	3m 40s
7.x 7.	1.75	96.61	2m 4s	2m 35s	3m 6s	3m 37s
8.x 8.	2.00	97.64	2m 3s	2m 34s	3m 4s	3m 35s
9.x 9.	2.25	98.56	2m 2s	2m 32s	3m 3s	3m 33s
10.x 10.	2.50	99.37	2m 1s	2m 31s	3m 1s	3m 31s
11.x 11.	2.75	100.11	2m 0s	2m 30s	3m 0s	3m 30s
12.x 12.	3.00	100.79	1m 59s	2m 29s	2m 59s	3m 28s
13.x 13.	3.25	101.41	1m 58s	2m 28s	2m 58s	3m 27s
14.x 14.	3.50	101.98	1m 58s	2m 27s	2m 57s	3m 26s
15.x 15.	3.75	102.51	1m 57s	2m 26s	2m 56s	3m 25s
16.x 16.	4.00	103.01	1m 56s	2m 26s	2m 55s	3m 24s
17.x 17.	4.25	103.48	1m 56s	2m 25s	2m 54s	3m 23s
18.x 18.	4.50	103.93	1m 55s	2m 24s	2m 53s	3m 22s
19.x 19.	4.75	104.34	1m 55s	2m 24s	2m 53s	3m 21s
20.x 20.	5.00	104.74	1m 55s	2m 23s	2m 52s	3m 21s
21.x 21.	5.25	105.12	1m 54s	2m 23s	2m 51s	3m 20s
22.x 22.	5.50	105.48	1m 54s	2m 22s	2m 51s	3m 19s
23.x 23.	5.75	105.82	1m 53s	2m 22s	2m 50s	3m 18s
24.x 24.	6.00	106.15	1m 53s	2m 21s	2m 50s	3m 18s
25.x 25.	6.25	106.47	1m 53s	2m 21s	2m 49s	3m 17s
26.x 26.	6.50	106.77	1m 52s	2m 20s	2m 49s	3m 17s
27.x 27.	6.75	107.07	1m 52s	2m 20s	2m 48s	3m 16s
28.x 28.	7.00	107.35	1m 52s	2m 20s	2m 48s	3m 16s
29.x 29.	7.25	107.62	1m 52s	2m 19s	2m 47s	3m 15s
30.x 30.	7.50	107.88	1m 51s	2m 19s	2m 47s	3m 15s
31.x 31.	7.75	108.14	1m 51s	2m 19s	2m 46s	3m 14s
32.x 32.	8.00	108.38	1m 51s	2m 18s	2m 46s	3m 14s
33.x 33.	8.25	108.62	1m 50s	2m 18s	2m 46s	3m 13s
34.x 34.	8.50	108.85	1m 50s	2m 18s	2m 45s	3m 13s
35.x 35.	8.75	109.08	1m 50s	2m 18s	2m 45s	3m 13s
36.x 36.	9.00	109.29	1m 50s	2m 17s	2m 45s	3m 12s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	58.77	3m 24s	4m 15s	5m 6s	5m 57s
5.x 5.	1.25	59.87	3m 20s	4m 11s	5m 1s	5m 51s
6.x 6.	1.50	60.77	3m 17s	4m 7s	4m 56s	5m 46s
7.x 7.	1.75	61.53	3m 15s	4m 4s	4m 53s	5m 41s
8.x 8.	2.00	62.19	3m 13s	4m 1s	4m 49s	5m 38s
9.x 9.	2.25	62.77	3m 11s	3m 59s	4m 47s	5m 35s
10.x 10.	2.50	63.29	3m 10s	3m 57s	4m 44s	5m 32s
11.x 11.	2.75	63.76	3m 8s	3m 55s	4m 42s	5m 29s
12.x 12.	3.00	64.19	3m 7s	3m 54s	4m 40s	5m 27s
13.x 13.	3.25	64.59	3m 6s	3m 52s	4m 39s	5m 25s
14.x 14.	3.50	64.95	3m 5s	3m 51s	4m 37s	5m 23s
15.x 15.	3.75	65.29	3m 4s	3m 50s	4m 36s	5m 22s
16.x 16.	4.00	65.61	3m 3s	3m 49s	4m 34s	5m 20s
17.x 17.	4.25	65.91	3m 2s	3m 48s	4m 33s	5m 19s
18.x 18.	4.50	66.19	3m 1s	3m 47s	4m 32s	5m 17s
19.x 19.	4.75	66.46	3m 1s	3m 46s	4m 31s	5m 16s
20.x 20.	5.00	66.71	3m 0s	3m 45s	4m 30s	5m 15s
21.x 21.	5.25	66.95	2m 59s	3m 44s	4m 29s	5m 14s
22.x 22.	5.50	67.18	2m 59s	3m 43s	4m 28s	5m 13s
23.x 23.	5.75	67.40	2m 58s	3m 43s	4m 27s	5m 12s
24.x 24.	6.00	67.61	2m 57s	3m 42s	4m 26s	5m 11s
25.x 25.	6.25	67.81	2m 57s	3m 41s	4m 25s	5m 10s
26.x 26.	6.50	68.01	2m 56s	3m 41s	4m 25s	5m 9s
27.x 27.	6.75	68.19	2m 56s	3m 40s	4m 24s	5m 8s
28.x 28.	7.00	68.37	2m 56s	3m 39s	4m 23s	5m 7s
29.x 29.	7.25	68.55	2m 55s	3m 39s	4m 23s	5m 6s
30.x 30.	7.50	68.71	2m 55s	3m 38s	4m 22s	5m 6s
31.x 31.	7.75	68.88	2m 54s	3m 38s	4m 21s	5m 5s
32.x 32.	8.00	69.03	2m 54s	3m 37s	4m 21s	5m 4s
33.x 33.	8.25	69.18	2m 53s	3m 37s	4m 20s	5m 4s
34.x 34.	8.50	69.33	2m 53s	3m 36s	4m 20s	5m 3s
35.x 35.	8.75	69.47	2m 53s	3m 36s	4m 19s	5m 2s
36.x 36.	9.00	69.61	2m 52s	3m 35s	4m 19s	5m 2s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	91.27	2m 11s	2m 44s	3m 17s	3m 50s
5.x 5.	1.25	92.98	2m 9s	2m 41s	3m 14s	3m 46s
6.x 6.	1.50	94.38	2m 7s	2m 39s	3m 11s	3m 43s
7.x 7.	1.75	95.56	2m 6s	2m 37s	3m 8s	3m 40s
8.x 8.	2.00	96.58	2m 4s	2m 35s	3m 6s	3m 37s
9.x 9.	2.25	97.48	2m 3s	2m 34s	3m 5s	3m 35s
10.x 10.	2.50	98.29	2m 2s	2m 33s	3m 3s	3m 34s
11.x 11.	2.75	99.02	2m 1s	2m 31s	3m 2s	3m 32s
12.x 12.	3.00	99.69	2m 0s	2m 30s	3m 1s	3m 31s
13.x 13.	3.25	100.30	2m 0s	2m 30s	2m 59s	3m 29s
14.x 14.	3.50	100.87	1m 59s	2m 29s	2m 58s	3m 28s
15.x 15.	3.75	101.40	1m 58s	2m 28s	2m 57s	3m 26s
16.x 16.	4.00	101.89	1m 57s	2m 27s	2m 56s	3m 25s
17.x 17.	4.25	102.36	1m 57s	2m 26s	2m 55s	3m 24s
18.x 18.	4.50	102.79	1m 56s	2m 25s	2m 54s	3m 23s
19.x 19.	4.75	103.21	1m 56s	2m 25s	2m 54s	3m 23s
20.x 20.	5.00	103.60	1m 55s	2m 24s	2m 53s	3m 22s
21.x 21.	5.25	103.97	1m 55s	2m 24s	2m 53s	3m 21s
22.x 22.	5.50	104.33	1m 55s	2m 23s	2m 52s	3m 21s
23.x 23.	5.75	104.67	1m 54s	2m 23s	2m 51s	3m 20s
24.x 24.	6.00	105.00	1m 54s	2m 22s	2m 51s	3m 19s
25.x 25.	6.25	105.31	1m 54s	2m 22s	2m 50s	3m 19s
26.x 26.	6.50	105.61	1m 53s	2m 22s	2m 50s	3m 18s
27.x 27.	6.75	105.90	1m 53s	2m 21s	2m 50s	3m 18s
28.x 28.	7.00	106.18	1m 53s	2m 21s	2m 49s	3m 17s
29.x 29.	7.25	106.45	1m 52s	2m 21s	2m 49s	3m 17s
30.x 30.	7.50	106.71	1m 52s	2m 20s	2m 48s	3m 16s
31.x 31.	7.75	106.96	1m 52s	2m 20s	2m 48s	3m 16s
32.x 32.	8.00	107.20	1m 52s	2m 20s	2m 48s	3m 15s
33.x 33.	8.25	107.44	1m 51s	2m 19s	2m 47s	3m 15s
34.x 34.	8.50	107.67	1m 51s	2m 19s	2m 47s	3m 15s
35.x 35.	8.75	107.89	1m 51s	2m 19s	2m 47s	3m 14s
36.x 36.	9.00	108.10	1m 51s	2m 19s	2m 47s	3m 14s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	58.13	3m 26s	4m 18s	5m 10s	6m 1s
5.x 5.	1.25	59.22	3m 23s	4m 13s	5m 4s	5m 55s
6.x 6.	1.50	60.11	3m 20s	4m 10s	5m 59s	5m 49s
7.x 7.	1.75	60.86	3m 17s	4m 6s	5m 56s	5m 45s
8.x 8.	2.00	61.51	3m 15s	4m 4s	5m 53s	5m 41s
9.x 9.	2.25	62.09	3m 13s	4m 2s	5m 50s	5m 38s
10.x 10.	2.50	62.60	3m 12s	4m 0s	5m 48s	5m 35s
11.x 11.	2.75	63.07	3m 10s	3m 58s	5m 45s	5m 33s
12.x 12.	3.00	63.49	3m 9s	3m 56s	5m 44s	5m 31s
13.x 13.	3.25	63.88	3m 8s	3m 55s	5m 42s	5m 29s
14.x 14.	3.50	64.25	3m 7s	3m 53s	5m 40s	5m 27s
15.x 15.	3.75	64.58	3m 6s	3m 52s	5m 39s	5m 25s
16.x 16.	4.00	64.90	3m 5s	3m 51s	5m 37s	5m 24s
17.x 17.	4.25	65.19	3m 4s	3m 50s	5m 36s	5m 22s
18.x 18.	4.50	65.47	3m 3s	3m 49s	5m 35s	5m 21s
19.x 19.	4.75	65.74	3m 3s	3m 48s	5m 34s	5m 19s
20.x 20.	5.00	65.99	3m 2s	3m 47s	5m 33s	5m 18s
21.x 21.	5.25	66.22	3m 1s	3m 46s	5m 32s	5m 17s
22.x 22.	5.50	66.45	3m 1s	3m 46s	5m 31s	5m 16s
23.x 23.	5.75	66.67	3m 0s	3m 45s	5m 30s	5m 15s
24.x 24.	6.00	66.88	2m 59s	3m 44s	5m 29s	5m 14s
25.x 25.	6.25	67.07	2m 59s	3m 43s	5m 28s	5m 13s
26.x 26.	6.50	67.27	2m 58s	3m 42s	5m 27s	5m 12s
27.x 27.	6.75	67.45	2m 58s	3m 42s	5m 26s	5m 11s
28.x 28.	7.00	67.63	2m 57s	3m 41s	5m 26s	5m 10s
29.x 29.	7.25	67.80	2m 57s	3m 41s	5m 25s	5m 9s
30.x 30.	7.50	67.96	2m 56s	3m 40s	5m 24s	5m 8s
31.x 31.	7.75	68.12	2m 56s	3m 40s	5m 24s	5m 8s
32.x 32.	8.00	68.28	2m 55s	3m 39s	5m 23s	5m 7s
33.x 33.	8.25	68.43	2m 55s	3m 39s	5m 23s	5m 6s
34.x 34.	8.50	68.58	2m 55s	3m 38s	5m 22s	5m 6s
35.x 35.	8.75	68.72	2m 55s	3m 38s	5m 21s	5m 5s
36.x 36.	9.00	68.85	2m 54s	3m 38s	5m 21s	5m 5s

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	90.27	2m 13s	2m 46s	3m 19s	3m 53s
5.x 5.	1.25	91.97	2m 10s	2m 43s	3m 16s	3m 48s
6.x 6.	1.50	93.35	2m 9s	2m 41s	3m 13s	3m 45s
7.x 7.	1.75	94.52	2m 7s	2m 39s	3m 10s	3m 42s
8.x 8.	2.00	95.53	2m 6s	2m 37s	3m 8s	3m 40s
9.x 9.	2.25	96.42	2m 4s	2m 36s	3m 7s	3m 38s
10.x 10.	2.50	97.22	2m 3s	2m 34s	3m 5s	3m 36s
11.x 11.	2.75	97.94	2m 3s	2m 33s	3m 4s	3m 34s
12.x 12.	3.00	98.60	2m 2s	2m 32s	3m 3s	3m 33s
13.x 13.	3.25	99.21	2m 1s	2m 31s	3m 1s	3m 32s
14.x 14.	3.50	99.77	2m 0s	2m 30s	3m 0s	3m 30s
15.x 15.	3.75	100.29	2m 0s	2m 30s	2m 59s	3m 29s
16.x 16.	4.00	100.78	1m 59s	2m 29s	2m 59s	3m 28s
17.x 17.	4.25	101.24	1m 59s	2m 28s	2m 58s	3m 27s
18.x 18.	4.50	101.67	1m 58s	2m 28s	2m 57s	3m 27s
19.x 19.	4.75	102.08	1m 58s	2m 27s	2m 56s	3m 26s
20.x 20.	5.00	102.47	1m 57s	2m 26s	2m 56s	3m 25s
21.x 21.	5.25	102.84	1m 57s	2m 26s	2m 55s	3m 24s
22.x 22.	5.50	103.19	1m 56s	2m 25s	2m 54s	3m 23s
23.x 23.	5.75	103.53	1m 56s	2m 25s	2m 54s	3m 23s
24.x 24.	6.00	103.85	1m 56s	2m 24s	2m 53s	3m 22s
25.x 25.	6.25	104.16	1m 55s	2m 24s	2m 52s	3m 21s
26.x 26.	6.50	104.46	1m 55s	2m 24s	2m 52s	3m 20s
27.x 27.	6.75	104.75	1m 55s	2m 23s	2m 51s	3m 20s
28.x 28.	7.00	105.02	1m 54s	2m 22s	2m 51s	3m 19s
29.x 29.	7.25	105.29	1m 54s	2m 22s	2m 51s	3m 19s
30.x 30.	7.50	105.54	1m 54s	2m 22s	2m 50s	3m 19s
31.x 31.	7.75	105.79	1m 53s	2m 21s	2m 50s	3m 18s
32.x 32.	8.00	106.03	1m 53s	2m 21s	2m 49s	3m 18s
33.x 33.	8.25	106.27	1m 53s	2m 21s	2m 49s	3m 17s
34.x 34.	8.50	106.49	1m 52s	2m 21s	2m 49s	3m 17s
35.x 35.	8.75	106.71	1m 52s	2m 20s	2m 48s	3m 16s
36.x 36.	9.00	106.93	1m 52s	2m 20s	2m 48s	3m 16s

\*\*Dose rate to a small mass of tissue  
in freespace. See John's Chapter 9  
for definition

Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

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\*This output sheet is for 100. cm SSD\*  
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This output sheets is good for  
ONE month only. It is to be used  
STARTING May 1, 1986 and REPLACED  
the START of the NEXT month

Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	57.50	3m 29s	4m 21s	5m 13s	6m 5s
5.x 5.	1.25	58.58	3m 25s	4m 16s	5m 7s	5m 59s
6.x 6.	1.50	59.46	3m 22s	4m 12s	5m 3s	5m 53s
7.x 7.	1.75	60.20	3m 19s	4m 9s	4m 59s	5m 49s
8.x 8.	2.00	60.84	3m 17s	4m 7s	4m 56s	5m 45s
9.x 9.	2.25	61.41	3m 15s	4m 4s	4m 53s	5m 42s
10.x 10.	2.50	61.92	3m 14s	4m 2s	4m 51s	5m 39s
11.x 11.	2.75	62.38	3m 12s	4m 0s	4m 49s	5m 37s
12.x 12.	3.00	62.80	3m 11s	3m 59s	4m 47s	5m 34s
13.x 13.	3.25	63.19	3m 10s	3m 57s	4m 45s	5m 32s
14.x 14.	3.50	63.55	3m 9s	3m 56s	4m 43s	5m 30s
15.x 15.	3.75	63.88	3m 8s	3m 55s	4m 42s	5m 29s
16.x 16.	4.00	64.19	3m 7s	3m 54s	4m 40s	5m 27s
17.x 17.	4.25	64.48	3m 6s	3m 53s	4m 39s	5m 26s
18.x 18.	4.50	64.76	3m 5s	3m 52s	4m 38s	5m 24s
19.x 19.	4.75	65.02	3m 5s	3m 51s	4m 37s	5m 23s
20.x 20.	5.00	65.27	3m 4s	3m 50s	4m 36s	5m 22s
21.x 21.	5.25	65.50	3m 3s	3m 49s	4m 35s	5m 21s
22.x 22.	5.50	65.73	3m 3s	3m 48s	4m 34s	5m 20s
23.x 23.	5.75	65.94	3m 2s	3m 47s	4m 33s	5m 18s
24.x 24.	6.00	66.15	3m 1s	3m 47s	4m 32s	5m 17s
25.x 25.	6.25	66.34	3m 1s	3m 46s	4m 31s	5m 17s
26.x 26.	6.50	66.53	3m 0s	3m 45s	4m 31s	5m 16s
27.x 27.	6.75	66.72	3m 0s	3m 45s	4m 30s	5m 15s
28.x 28.	7.00	66.89	2m 59s	3m 44s	4m 29s	5m 14s
29.x 29.	7.25	67.06	2m 59s	3m 44s	4m 28s	5m 13s
30.x 30.	7.50	67.22	2m 59s	3m 43s	4m 28s	5m 12s
31.x 31.	7.75	67.38	2m 58s	3m 43s	4m 27s	5m 12s
32.x 32.	8.00	67.54	2m 58s	3m 42s	4m 27s	5m 11s
33.x 33.	8.25	67.68	2m 57s	3m 42s	4m 26s	5m 10s
34.x 34.	8.50	67.83	2m 57s	3m 41s	4m 25s	5m 10s
35.x 35.	8.75	67.97	2m 57s	3m 41s	4m 25s	5m 9s
36.x 36.	9.00	68.10	2m 56s	3m 40s	4m 24s	5m 8s

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CONTROL NO. 79586



Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

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STARTING Jun 1, 1986 and REPLACED  
the START of the NEXT month

Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	89.29	2m 14s	2m 48s	3m 22s	3m 55s
5.x 5.	1.25	90.96	2m 12s	2m 45s	3m 18s	3m 51s
6.x 6.	1.50	92.33	2m 10s	2m 42s	3m 15s	3m 47s
7.x 7.	1.75	93.49	2m 8s	2m 40s	3m 13s	3m 45s
8.x 8.	2.00	94.49	2m 7s	2m 39s	3m 11s	3m 42s
9.x 9.	2.25	95.37	2m 6s	2m 37s	3m 9s	3m 40s
10.x 10.	2.50	96.16	2m 5s	2m 36s	3m 7s	3m 38s
11.x 11.	2.75	96.87	2m 4s	2m 35s	3m 6s	3m 37s
12.x 12.	3.00	97.53	2m 3s	2m 34s	3m 5s	3m 35s
13.x 13.	3.25	98.13	2m 2s	2m 33s	3m 3s	3m 34s
14.x 14.	3.50	98.68	2m 2s	2m 32s	3m 2s	3m 33s
15.x 15.	3.75	99.20	2m 1s	2m 31s	3m 1s	3m 32s
16.x 16.	4.00	99.68	2m 0s	2m 30s	3m 1s	3m 31s
17.x 17.	4.25	100.14	2m 0s	2m 30s	3m 0s	3m 30s
18.x 18.	4.50	100.56	1m 59s	2m 29s	2m 59s	3m 29s
19.x 19.	4.75	100.97	1m 59s	2m 29s	2m 58s	3m 28s
20.x 20.	5.00	101.35	1m 58s	2m 28s	2m 58s	3m 27s
21.x 21.	5.25	101.72	1m 58s	2m 27s	2m 57s	3m 26s
22.x 22.	5.50	102.07	1m 58s	2m 27s	2m 56s	3m 26s
23.x 23.	5.75	102.40	1m 57s	2m 26s	2m 56s	3m 25s
24.x 24.	6.00	102.72	1m 57s	2m 26s	2m 55s	3m 24s
25.x 25.	6.25	103.03	1m 56s	2m 26s	2m 55s	3m 24s
26.x 26.	6.50	103.32	1m 56s	2m 25s	2m 54s	3m 23s
27.x 27.	6.75	103.60	1m 56s	2m 25s	2m 54s	3m 23s
28.x 28.	7.00	103.88	1m 56s	2m 24s	2m 53s	3m 22s
29.x 29.	7.25	104.14	1m 55s	2m 24s	2m 53s	3m 22s
30.x 30.	7.50	104.39	1m 55s	2m 24s	2m 52s	3m 21s
31.x 31.	7.75	104.64	1m 55s	2m 23s	2m 52s	3m 21s
32.x 32.	8.00	104.88	1m 54s	2m 23s	2m 52s	3m 20s
33.x 33.	8.25	105.11	1m 54s	2m 23s	2m 51s	3m 20s
34.x 34.	8.50	105.33	1m 54s	2m 22s	2m 51s	3m 19s
35.x 35.	8.75	105.55	1m 54s	2m 22s	2m 51s	3m 19s
36.x 36.	9.00	105.76	1m 53s	2m 22s	2m 50s	3m 19s

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Picker Stationary Cobalt Teletherapy  
St. Joseph's Hospital, St. Paul, MN

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Field size	AoP	Rads per minutes	Treatment times for selected Freespace** Doses in rads			
			200	250	300	350
4.x 4.	1.00	56.87	3m 31s	4m 24s	5m 17s	6m 9s
5.x 5.	1.25	57.94	3m 27s	4m 19s	5m 11s	6m 2s
6.x 6.	1.50	58.81	3m 24s	4m 15s	5m 6s	5m 57s
7.x 7.	1.75	59.54	3m 22s	4m 12s	5m 2s	5m 53s
8.x 8.	2.00	60.18	3m 19s	4m 9s	4m 59s	5m 49s
9.x 9.	2.25	60.74	3m 18s	4m 7s	4m 56s	5m 46s
10.x 10.	2.50	61.25	3m 16s	4m 5s	4m 54s	5m 43s
11.x 11.	2.75	61.70	3m 15s	4m 3s	4m 52s	5m 40s
12.x 12.	3.00	62.12	3m 13s	4m 1s	4m 50s	5m 38s
13.x 13.	3.25	62.50	3m 12s	4m 0s	4m 48s	5m 36s
14.x 14.	3.50	62.85	3m 11s	3m 59s	4m 46s	5m 34s
15.x 15.	3.75	63.18	3m 10s	3m 57s	4m 45s	5m 32s
16.x 16.	4.00	63.49	3m 9s	3m 56s	4m 44s	5m 31s
17.x 17.	4.25	63.78	3m 8s	3m 55s	4m 42s	5m 29s
18.x 18.	4.50	64.05	3m 7s	3m 54s	4m 41s	5m 28s
19.x 19.	4.75	64.31	3m 7s	3m 53s	4m 40s	5m 27s
20.x 20.	5.00	64.56	3m 6s	3m 52s	4m 39s	5m 25s
21.x 21.	5.25	64.79	3m 5s	3m 52s	4m 38s	5m 24s
22.x 22.	5.50	65.01	3m 5s	3m 51s	4m 37s	5m 23s
23.x 23.	5.75	65.22	3m 4s	3m 50s	4m 36s	5m 22s
24.x 24.	6.00	65.43	3m 3s	3m 49s	4m 35s	5m 21s
25.x 25.	6.25	65.62	3m 3s	3m 49s	4m 34s	5m 20s
26.x 26.	6.50	65.81	3m 2s	3m 48s	4m 34s	5m 19s
27.x 27.	6.75	65.99	3m 2s	3m 47s	4m 33s	5m 18s
28.x 28.	7.00	66.16	3m 1s	3m 47s	4m 32s	5m 17s
29.x 29.	7.25	66.33	3m 1s	3m 46s	4m 31s	5m 17s
30.x 30.	7.50	66.49	3m 0s	3m 46s	4m 31s	5m 16s
31.x 31.	7.75	66.65	3m 0s	3m 45s	4m 30s	5m 15s
32.x 32.	8.00	66.80	3m 0s	3m 45s	4m 29s	5m 14s
33.x 33.	8.25	66.95	2m 59s	3m 44s	4m 29s	5m 14s
34.x 34.	8.50	67.09	2m 59s	3m 44s	4m 28s	5m 13s
35.x 35.	8.75	67.23	2m 59s	3m 43s	4m 28s	5m 12s
36.x 36.	9.00	67.36	2m 58s	3m 43s	4m 27s	5m 12s

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Picker Stationary Cobalt Teletherapy  
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STARTING Jul 1, 1986 and REPLACED  
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Field size	Aop	Rads per minutes	Treatment times for selected FreeSpace** Doses in rads			
			200	250	300	350
4. x 4.	1.00	88.32	2m 16s	2m 50s	3m 24s	3m 58s
5. x 5.	1.25	89.97	2m 13s	2m 47s	3m 20s	3m 53s
6. x 6.	1.50	91.32	2m 11s	2m 44s	3m 17s	3m 50s
7. x 7.	1.75	92.47	2m 10s	2m 42s	3m 15s	3m 47s
8. x 8.	2.00	93.46	2m 8s	2m 41s	3m 13s	3m 45s
9. x 9.	2.25	94.33	2m 7s	2m 39s	3m 11s	3m 43s
10. x 10.	2.50	95.11	2m 6s	2m 38s	3m 9s	3m 41s
11. x 11.	2.75	95.82	2m 5s	2m 37s	3m 8s	3m 39s
12. x 12.	3.00	96.46	2m 4s	2m 36s	3m 7s	3m 38s
13. x 13.	3.25	97.06	2m 4s	2m 35s	3m 5s	3m 36s
14. x 14.	3.50	97.61	2m 3s	2m 34s	3m 4s	3m 35s
15. x 15.	3.75	98.12	2m 2s	2m 33s	3m 3s	3m 34s
16. x 16.	4.00	98.60	2m 2s	2m 32s	3m 3s	3m 32s
17. x 17.	4.25	99.04	2m 1s	2m 31s	3m 2s	3m 31s
18. x 18.	4.50	99.47	2m 1s	2m 30s	3m 1s	3m 30s
19. x 19.	4.75	99.87	2m 0s	2m 30s	3m 0s	3m 29s
20. x 20.	5.00	100.25	2m 0s	2m 29s	2m 59s	3m 28s
21. x 21.	5.25	100.61	1m 59s	2m 29s	2m 58s	3m 27s
22. x 22.	5.50	100.96	1m 59s	2m 28s	2m 58s	3m 26s
23. x 23.	5.75	101.29	1m 58s	2m 28s	2m 57s	3m 25s
24. x 24.	6.00	101.60	1m 58s	2m 27s	2m 56s	3m 24s
25. x 25.	6.25	101.90	1m 58s	2m 26s	2m 56s	3m 23s
26. x 26.	6.50	102.19	1m 57s	2m 26s	2m 55s	3m 22s
27. x 27.	6.75	102.47	1m 57s	2m 25s	2m 55s	3m 21s
28. x 28.	7.00	102.74	1m 57s	2m 25s	2m 54s	3m 20s
29. x 29.	7.25	103.00	1m 57s	2m 24s	2m 54s	3m 19s
30. x 30.	7.50	103.26	1m 56s	2m 24s	2m 54s	3m 18s
31. x 31.	7.75	103.50	1m 56s	2m 23s	2m 54s	3m 17s
32. x 32.	8.00	103.73	1m 56s	2m 23s	2m 53s	3m 16s
33. x 33.	8.25	103.96	1m 55s	2m 23s	2m 53s	3m 15s
34. x 34.	8.50	104.18	1m 55s	2m 22s	2m 52s	3m 14s
35. x 35.	8.75	104.40	1m 55s	2m 22s	2m 52s	3m 13s
36. x 36.	9.00	104.61	1m 55s	2m 21s	2m 51s	3m 12s

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Field size	Aop	Rads per minutes	Treatment times for selected FreeSpace** Doses in rads			
			200	250	300	350
4. x 4.	1.00	56.25	3m 33s	4m 27s	5m 20s	6m 13s
5. x 5.	1.25	57.31	3m 29s	4m 22s	5m 14s	6m 6s
6. x 6.	1.50	58.17	3m 26s	4m 18s	5m 9s	6m 1s
7. x 7.	1.75	58.89	3m 24s	4m 15s	5m 6s	5m 57s
8. x 8.	2.00	59.53	3m 22s	4m 12s	5m 2s	5m 53s
9. x 9.	2.25	60.08	3m 20s	4m 10s	5m 0s	5m 50s
10. x 10.	2.50	60.58	3m 18s	4m 8s	4m 57s	5m 47s
11. x 11.	2.75	61.03	3m 17s	4m 6s	4m 55s	5m 44s
12. x 12.	3.00	61.44	3m 15s	4m 4s	4m 53s	5m 42s
13. x 13.	3.25	61.82	3m 14s	4m 3s	4m 51s	5m 40s
14. x 14.	3.50	62.17	3m 13s	4m 1s	4m 50s	5m 38s
15. x 15.	3.75	62.49	3m 12s	4m 0s	4m 48s	5m 36s
16. x 16.	4.00	62.80	3m 11s	3m 59s	4m 47s	5m 34s
17. x 17.	4.25	63.08	3m 10s	3m 58s	4m 45s	5m 33s
18. x 18.	4.50	63.35	3m 9s	3m 57s	4m 44s	5m 31s
19. x 19.	4.75	63.61	3m 9s	3m 56s	4m 43s	5m 29s
20. x 20.	5.00	63.85	3m 8s	3m 55s	4m 42s	5m 28s
21. x 21.	5.25	64.08	3m 7s	3m 54s	4m 41s	5m 26s
22. x 22.	5.50	64.30	3m 7s	3m 53s	4m 40s	5m 25s
23. x 23.	5.75	64.51	3m 6s	3m 53s	4m 39s	5m 24s
24. x 24.	6.00	64.71	3m 5s	3m 52s	4m 38s	5m 23s
25. x 25.	6.25	64.91	3m 5s	3m 51s	4m 37s	5m 22s
26. x 26.	6.50	65.09	3m 4s	3m 50s	4m 36s	5m 21s
27. x 27.	6.75	65.27	3m 4s	3m 49s	4m 35s	5m 20s
28. x 28.	7.00	65.44	3m 3s	3m 49s	4m 34s	5m 19s
29. x 29.	7.25	65.61	3m 3s	3m 48s	4m 33s	5m 18s
30. x 30.	7.50	65.77	3m 2s	3m 48s	4m 33s	5m 17s
31. x 31.	7.75	65.92	3m 2s	3m 47s	4m 32s	5m 16s
32. x 32.	8.00	66.07	3m 1s	3m 47s	4m 31s	5m 15s
33. x 33.	8.25	66.22	3m 1s	3m 46s	4m 31s	5m 14s
34. x 34.	8.50	66.36	3m 0s	3m 46s	4m 30s	5m 13s
35. x 35.	8.75	66.49	3m 0s	3m 45s	4m 30s	5m 12s
36. x 36.	9.00	66.63	3m 0s	3m 45s	4m 30s	5m 11s

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