



Luther Hospital

1221 Whipple Street
Eau Claire, Wisconsin
54702-4105

Phone (715) 839-3311

March 28, 1985

Nuclear Regulatory Commission
Cobalt Licensing, Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Gentlemen:

Enclosed find documentation from our consulting physicist, J. Thomas Payne, Ph.D. concerning the calibration and acceptance tests of our recently installed cobalt teletherapy unit.

The installation of this unit was covered under your recently issued amendment #11 to our reference #030-00540 and License #48-02122-04 dated February 7, 1985.

The source and the old unit, a Picker C-3000-Cat # 590 has been removed by Glenn R. Sibert, NRC licensed engineer and employed by Advanced Medical Systems, Inc. of Cleveland, Ohio, and shipped to Cleveland, Ohio per enclosed Service Report #2149.

I hope that the above information and enclosed documents meet with your approval.

Sincerely,

Gerald C. Pauls,
Radiology Administrator

GCP:s
Enclosures (7)

RECEIVED BY IFMB	
Date	4/1/85
Log	4/1/85
By	[Signature]
Orig. To	[Signature]
Action Compl.	[Signature]

RECEIVED

APR 01 1985

REGION III

Cont of Rec'd Ky.
FEE EXEMPT

8506030646 850515
REG3 LIC30
48-02122-04 PDR

APR 1 1985

CONTROL NO. 78629



Advanced Medical Systems, Inc.

One Factory Row
Geneva, Ohio 44041
(216) 466-4671 TWX 810-4272-183

ACCEPTANCE AGREEMENT

Date: 3-15-85

Unit: Reconditioned Picker C-8 Cobalt Unit

Serial Numbers: stand #191 head #133 control #179
collimator #137 stretcher #191

Location: Luther Hospital, 1221 Whipple Avenue, Eau Claire, WI 54702

Purchaser has made all necessary examinations and tests; and accepts the Teletherapy Unit and accessories, with the following exceptions or conditions:

Purchaser assumes all risks and liability arising from the use of the aforementioned equipment.

ACCEPTED BY: J. Thomas Payne PhD Physicist

Signature: Harold J. Jones 3-15-85
Purchaser or Authorized Representative Date

WITNESSED BY:

Signature: Mark S. Baker 3-15-85
Advanced Medical Systems, Inc. Representative Date

CONTROL NO. 78629



Advanced Medical Systems, Inc.

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

Luther Hospital
1221 Whipple Avenue
Eau Claire, WI. 54702

CERTIFICATE OF MEASUREMENT COBALT-60 SOURCE

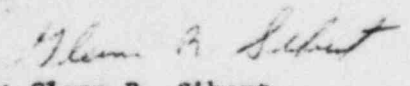
CATALOG NO. AMS-3802
SERIAL NO. AMS-2530

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 an A.M.S. Inc., Catalog Number 6223 60-Cobalt Beam Therapy Treatment equipment with Catalog Number 3347 beam defining device of 25 cm by 25 cm aperture distance of 80 cm.

Under these conditions this source was found to have a radiation output in free air of 7436 roentgens per hour at one meter on 22nd February 1985.

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

This source will contain 7102 curies on 1st March, 1985


Signed: Glenn R. Sibert

Dated: February 26th, 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.

CONTROL NO. 78629



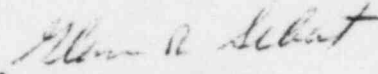
Advanced Medical Systems, Inc.

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

Luther Hospital
1221 Whipple Avenue
Eau Claire, WI. 54702

CERTIFICATE OF WIPE TESTING OF RADIOISOTOPE SOURCE

This is to certify that the radioisotope source identified as ADVANCED MEDICAL SYSTEMS, INC., Catalog No. AMS-3802, Serial No. AMS-2530 Cobalt-60 Therapy Source and to be installed in Picker Model No. 590-n, Serial No. 133 Therapy Unit, was wipe tested on 21st February, 1985 and found to have .00210 microcurie of removable contamination, as determined by comparison of the wipe with a standard Cobalt-60 source of .0633 microcurie in a Picker Model 2804 Welltype Scintillation Detector and a Picker Model 628433 Spectroscaler.


Signed: Glenn R. Sibert

Dated: February 26th, 1985

CONTROL NO. 78629

CUSTOMER: Luther Hospital		ADDRESS: 1221 Whipple Ave. Eau Claire, WI. 54702		PHONE: 414 344-8800
SERVICE REQUESTED BY:		EQUIPMENT TYPE C-3000	P.O. NO.	METER READINGS
		590-A	JOB NO. U 84-11	H/V FIL
DATE: 1 / 7 / 85		WORK CATEGORY <input type="checkbox"/> INSTALLATION <input type="checkbox"/> WARRANTY <input type="checkbox"/> REMEDIAL MAINTENANCE <input type="checkbox"/> PURCHASE ORDER <input type="checkbox"/> MODIFICATION <input type="checkbox"/> SERVICE CONTRACT <input type="checkbox"/> PREVENTIVE MAINTENANCE <input type="checkbox"/> OTHER		
TIME		AM <input type="checkbox"/> PM <input type="checkbox"/>		

SERVICED BY Glenn R. Sibert	EMP NO.	FAULTS/SYMPTOMS Remove source from C-3000 Unit with 590- A Head
---------------------------------------	---------	---

DATE	IN	OUT	HOURS	CAUSE
3/17/85	0600	2045	14	
1 / 1				
1 / 1				
1 / 1				
1 / 1				
1 / 1				
				WORK CARRIED OUT
				SOURCE OUT OF HEAD
				HEAD AND BARRIER REMOVED
TOTAL				
SHOP HOURS				8
TRAVEL HOURS				12
TOTAL HOURS				20

CUSTOMER'S SIGNATURE: <i>David C. Pauls Radiology Administrator</i>						CONTINUE ON BACK DATE: 3-7-85	
QTY.	PART NO.	SER NO.	SOURCE	DISPOSAL OF FAULTY PARTS	CHARGES	LABOR	CHARGES
						HOURS	\$
						TRAVEL - AIR	\$
						TAXI <input type="checkbox"/> RENTAL <input type="checkbox"/>	\$
						POV MILES _____	\$
						MEALS	\$
						ACCOMMODATIONS	\$
						MISC.	\$
TOTAL						\$	\$

MIDWEST RADIATION CONSULTANTS, INC.

RADIATION THERAPY • RADIATION SAFETY • MEDICAL IMAGING

543 TOMLYN AVENUE
ST. PAUL, MINNESOTA 55112
612/874-4060

March 25, 1985

Gerald Pauls
Radiology
Luther Hospital
310 Chestnut St.
Eau Claire, WI 54701

Dear Gerald:

Enclosed please find 3 copies of the recent cobalt calibration and acceptance tests. Keep 1 copy and send 2 copies to the NRC.

address: Nuclear Regulatory Commission
Cobalt Licensing, Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Enclosed are two calibration output charts for radiation therapy.

The cobalt unit met the specifications of the bid as tested (see below).

1. Isocenter coincidence	$\pm 2\text{mm}$	OK
2. Distance indication SSD	$\pm 0.5\%$	OK
3. Light field accuracy	$\pm 3\text{mm}$	OK
4. Radiation field accuracy	$\pm 3\text{mm}$	OK
5. Timer end effect	less .6 sec	OK
6. Beam symmetry	$\pm 2\%$	OK
7. Beam Dose rate	greater 100 r/min	ok
8. Timer accuracy	less 1%	OK
9. Laser light position		OK
10. Collimator rotation accuracy		OK
11. Emergency controls		OK
12. Cobalt indication lights		OK
13. Rotation speed - 200 degree/min	$\pm 1\%$	OK

Contact me with questions. Also enclose the copies of the leak test of the cobalt source from ATC and their head survey to the NRC. (LaVonne in Cobalt knows where they are). Make sure you have from ATC a statement indicating that they took your old cobalt source (i.e. old cobalt unit). This must be maintained with the NRC records.

Sincerely,

J. Thomas Payne
J. Thomas Payne, Ph.D.
ABR Certified Physicist

JTP/jp
enc

CONTROL NO. 78629

REPORT OF TELETHERAPY TESTS AND SURVEYS

Licensee Luther Hospital
Address 1221 Whipple Street, Eau Claire, WI 54702
License # 48-02122-04 Amendment # 11

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:

1. Beam electrically limited to the beamstop ($\pm 5^\circ$) crossplane to gantry.
2. Beam mechanically limited to $+15^\circ$ from the vertical to east wall.
3. Beam mechanically limited to $+90^\circ$ from the vertical to west wall.

RADIATION SURVEY FOR CAT, 590-C AND 590-D HEADS

POSITION NO.	SURFACE TO ONE METER	METER READINGS	CORRECT READINGS
1.	77.4 cm	2.4	2.58
2.	73.5	.9	.90
3.	73.0	.8	.78
4.	69.0	1.6	1.60
5.	58.0	1.6	1.60
6.	69.0	1.7	1.58
7.	73.0	.7	.70
8.	73.5	1.8	1.88
9.	74.0	1.0	.98
10.	73.5	.4	.42
11.	69.0	1.3	1.32
12.	66.0	1.2	1.21
13.	65.5	1.7	1.68
14.	69.5	1.6	1.60
15.	73.5	.9	.90
16.	73.5	1.0	.98
17.	67.0	1.2	1.21
18.	67.0	1.2	1.21

TOTAL OF 18 READINGS

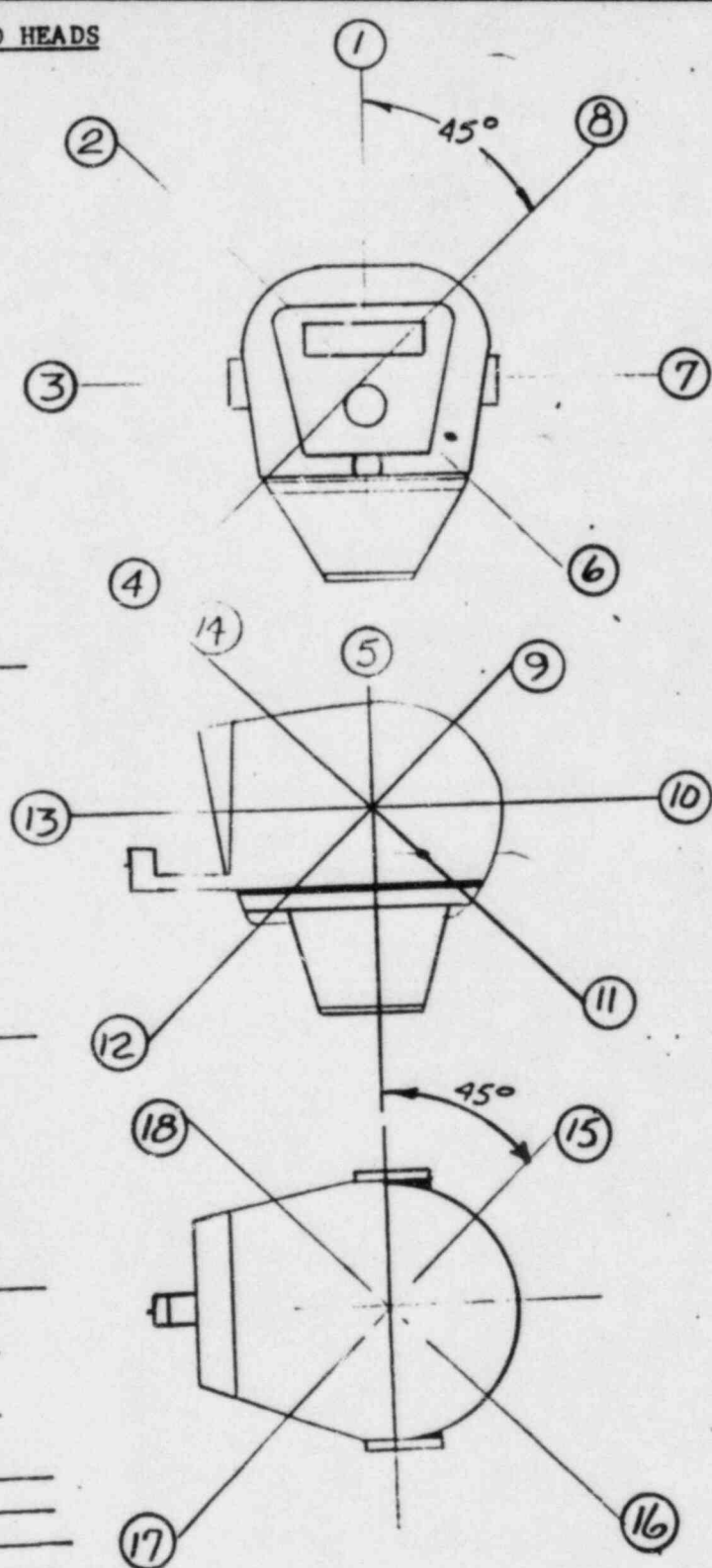
23.0

AVERAGE OF 18 READINGS

1.28

CUSTOMER: Luther Hospital
 HEAD MODEL NO. 590-D SERIAL NO. 133
 SOURCE SERIAL NO. AMS-2530 DIA. 2.0
7436 RHM ON DATE 2nd February, 1985
 DATE SURVEY WAS MADE 3/11/85 BY J. Cochran
 INSTRUMENT Victoreen 491

*MEASURE DISTANCE FROM POINTS SHOWN



CONTROL NO. 78629

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	2.8
2	1.9
3	1.8
4	0.5

View B 5	1.2
6	1.5
7	1.5
8	2.0

View C 9	1.3
10	1.3

View D 11	2.0
12	1.8
13	1.3
14	2.0

Average value 1.64

Maximum value 2.8

Instrument used Calibrated
Ludlum 500 Gm (enclosed) 11/16/84

Curies 7102 Curie
&
Date 3/1/85

Manufacturer's
name & model #
of teletherapy
unit ATC Model 590-D
(Picker C8/80) SN 133

Source: AMS-2530
2 cm

J. Thomas Payne PhD

CONTROL NO. 28623

Rear

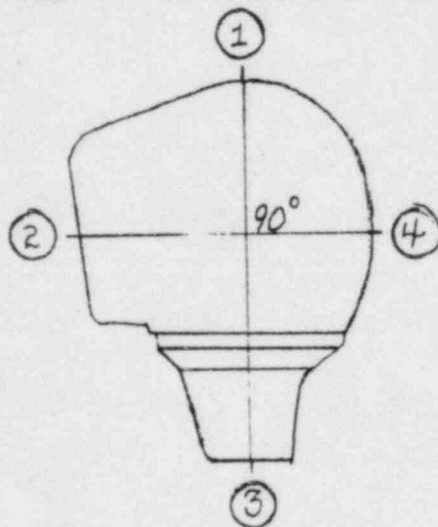
A (left side) →

B (left-front) →

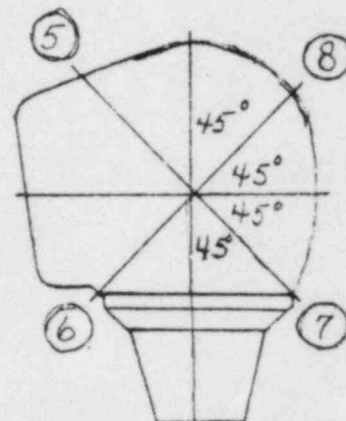
← D (right-front)

C (front)

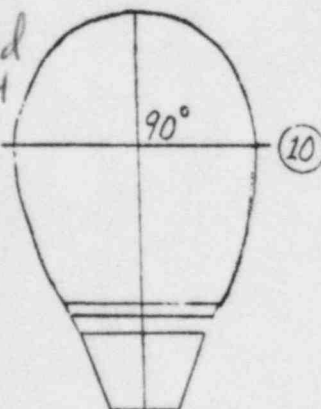
View A - Vertical from left side



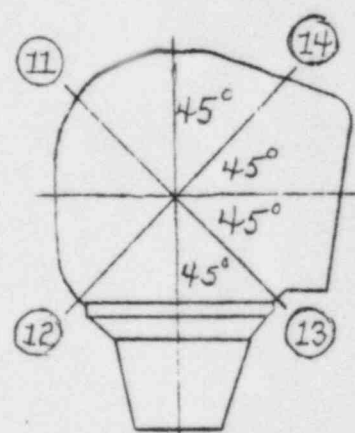
View B - Vertical from left-front



View C - Vertical from front



View D - Vertical from right-front



7436 RHM on Feb 2 1985

3/15/85

TELETHERAPY FACILITY SURVEY AND BEAM CALIBRATION

* 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.
A	1.9	Yes	Down	24x24	Yes	Yes	<u>see attached</u>		
B	1.0			@ 80cm					
C	0.1								
D	0.2								
E	0.2	↓							
F	0.1	No							
G	0.1								
H	0.1								
I	0.1								
J	0.1								
K	0.1	↓							
L	0.3	Yes							
M	0.5	↓							
N	0.2	↓							
O	0.02	No							
P	0.02	No							
Instrument used: Ludlum 500 GM cal. 11/16/84							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:

Surveyor

(Licensee)

Date:

3/15/85

CONTROL NO. 78629

TELETHERAPY FACILITY SURVEY AND BEAM CALIBRATION

3/15/85

* 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.
A	0.2	Yes	90° at	24x24	No	No			
B	0.1		West	@ 80cm					
C	0.2		Wall						
D	0.1								
E	0.1	↓							
F	0.1	No							
G	0.4								
H	0.2								
I	0.1								
J	0.1								
K	0.1	↓							
L	0.1	Yes							
M	0.1								
N	0.1	↓							
O	0.04	No							
P	0.1	No							
Instrument used: See 1							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: _____

Surveyor

Date: _____

(Licensee)

TELETHERAPY FACILITY SURVEY AND BEAM CALIBRATION

3/15/85

* 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.
A	3.2*	Yes	15° at	24x24	No	No			
B	1.3		East	@ 80cm					
C	0.2		Wall						
D	0.1								
E	0.04	↓							
F	0.04	No							
G	0.04								
H	0.04								
I	0.04								
J	0.04								
K	0.04	↓							
L	0.4	Yes							
M	1.5								
N	0.5	↓							
O	0.02	No							
P	0.02	No							
Instrument used: <u>see 1</u>							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: _____

Surveyor

Date: _____

(Licensee)

* * With a beam "on" time of 15min in every 1 hr, the average rate would be 0.8 mR/hr

CONTROL NO. 78629

[Signature]

TELETHERAPY FACILITY SURVEY AND BEAM CALIBRATION

3/15/85

* 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.
A	7 $\frac{1}{2}$	Yes	90° to	24x24	Yes	Yes			
B	4.5 $\frac{1}{2}$		South	@ 80cm					
C	0.6		wall						
D	0.2								
E	0.2	↓							
F	0.2	No							
G	0.1								
H	0.05								
I	0.05								
J	0.05								
K	0.05	↓							
L	0.1	Yes							
M	0.4								
N	0.5	↓							
O	0.1	No							
P	0.1	No							
Instrument used: <u>see 1</u>							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: _____

Surveyor

Date: _____

(Licensee)

* With a beam "on" time of 15 min. in every
 * 1 hr, the average rates would be
1.75 mR/hr at control window and 1.12 mR/hr
 at the control console area.

JJP

TELETHERAPY FACILITY SURVEY AND BEAM CALIBRATION

3/15/85

* 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.
A	0.1	Yes	90° to	24x24	Yes	Yes			
B	0.1		North	@ 80cm					
C	0.1		Wall						
D	0.1								
E	0.1	✓							
F	0.05	No							
G	0.05								
H	0.1								
I	0.1								
J	0.2								
K	0.1	✓							
L	0.6	- Yes							
M	0.6								
N	0.2	✓							
O	0.1	No							
P	0.1	No							
Instrument used: <u>see 1</u>							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: _____

Surveyor

Date: _____

(Licensee)

TELETHERAPY FACILITY SURVEY AND BEAM CALIBRATION

3/15/85

* 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.
A	1.6	Yes	Up at	24x24	Yes	Yes			
B	0.5		Ceiling	@ 80cm					
C	0.2								
D	0.1								
E	0.1	↓							
F	0.1	No							
G	0.1								
H	0.1								
I	0.1								
J	0.1								
K	0.1	↓							
L	0.3	Yes							
M	0.8								
N	0.3	↓							
O	0.5	No							
P	0.2	No							
Instrument used: <u>see 1</u>							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).)

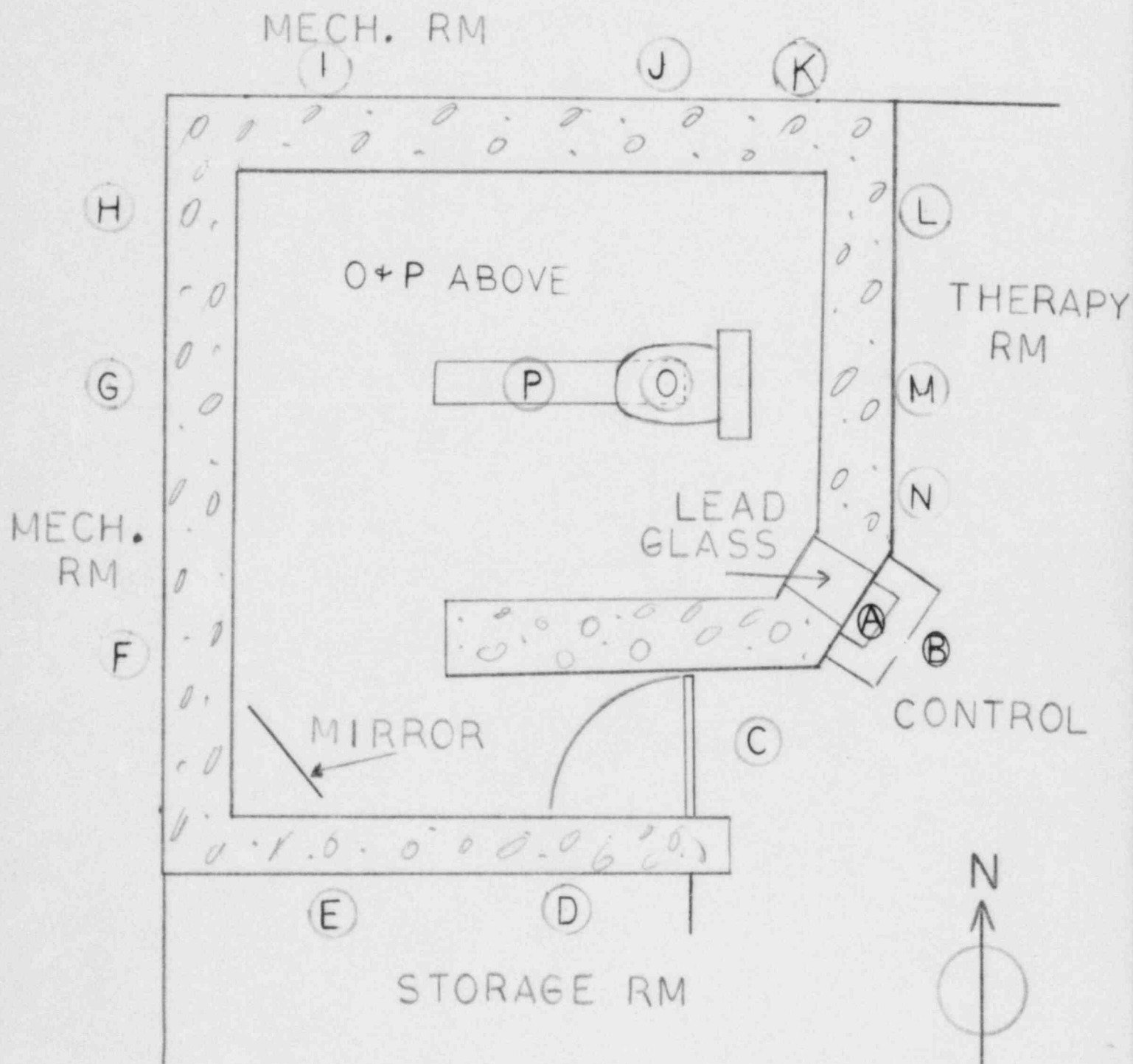
Signature: _____

Surveyor

Date: _____

(Licensee)

LUTHER HOSPITAL



SCALE
1/4" = 1'

CONTROL NO. 786291

PICKER C8 TELETHERPY
7436 RHM ON 2/2/85
AMS 2530 SN 133

Luther Hospital
Eau Claire, WI

J. Thomas Payne
J Thomas Payne PhD
ABR Cert. Physicist

Temp/Pres Correct is 1.022
Capintec 192x

Cal. Date: MAR 15/85

rads/min at SSD+.5cm

SSD [cm]	Field[cm]	MAR, 85	APR, 85	MAY, 85	JUN, 85	JUL, 85	AUG, 85
70	5X5	219.50	217.09	214.70	212.34	210.00	207.69
	8X8	228.60	226.09	223.60	221.14	218.71	216.30
	10X10	236.00	233.40	230.84	228.30	225.79	223.30
	15X15	244.50	241.81	239.15	236.52	233.92	231.35
	20X20	247.30	244.58	241.89	239.23	236.60	233.99
80	5X5	168.20	166.35	164.52	162.71	160.92	159.15
	8X8	175.20	173.27	171.37	169.48	167.62	165.77
	10X10	178.94	176.97	175.02	173.10	171.20	169.31
	15X15	183.60	181.58	179.58	177.61	175.65	173.72
	24X24	189.20	187.12	185.06	183.02	181.01	179.02
100	15X15	115.20	113.93	112.68	111.44	110.21	109.00
	30X30	120.90	119.57	118.25	116.95	115.67	114.40

80cm is 53cm from bottom of collimator (not trimmers)

Transmission Factors	Trans. Factor	Timer Correction
2 Plate Block Holder	.90	1.11
Treatment table (PA beam)	.90	1.11

Shutter Factor = 0.45sec
Output Exact at Middle of Each Month

CONTROL NO. 18629

DOSIMETRY CALIBRATION LABORATORY
DEPARTMENT OF MEDICAL PHYSICS
UNIVERSITY OF WISCONSIN, MADISON

REPORT OF ELECTROMETER CALIBRATION

CALIBRATION DATE: October 5, 1983

REPORT DATE: October 10, 1983

ELECTROMETER: Manufacturer : Capintec
 Model : 192A
 Serial number : 96C762

CALIBRATION INSTRUMENTS: Keithley Picoampere Source (S.N. 44195A)
 Micronta Stopwatch (S.N. 951-TA2)

<u>ELECTROMETER SETTINGS</u>	<u>First Scale</u>	<u>Second Scale</u>
Probe :	Electrometer	Electrometer
Meter Range :	Normal	Normal
Mode :	Total	Total
Exposure Level:	Medium	High
Comp. Factor :	1.00	1.00
Bias. :	Neg.	Neg.

CHARGE CALIBRATION FACTOR:

<u>SCALE</u>	<u>nCOULOMB/rdg</u>	<u>Zero Drift</u>	<u>Leakage</u>
First*	0.99 ₆	-1.5*10 ⁻¹³ A	1.0*10 ⁻¹³ A
Second*	0.99 ₈	-1.7*10 ⁻¹³ A	5.0*10 ⁻¹³ A

* See Electrometer Settings above.

NOTES: Charge calibration factor for both scales is a dimensionless multiplier. Relative humidity was 51% at the time of measurement.

DATA BOOK UW-ADCL 2

PAGE(s) 90-91

S. J. Goetsch
Calibrated by
S.J. Goetsch, Chief Physicist

L.A. DeWerd
Reviewed by
L.A. DeWerd, Director

CONTROL NO. 7 9 8 3 3

ACCREDITED DOSIMETRY CALIBRATION LABORATORY
DEPARTMENT OF MEDICAL PHYSICS
UNIVERSITY OF WISCONSIN, MADISON

MEASUREMENT DATA

CALIBRATION DATE: October 7, 1983REPORT DATE: October 12, 1983IONIZATION CHAMBER

Manufacturer : Capintec
Model : PR-06C
Size : 0.6 cc
Serial number : CII.62752
Build up cap : Co-60

DOSEMETER

Manufacturer : Capintec
Model : 192X
Serial No. : 96C762
Range : Normal
Exp. Level : High

IRRADIATION CONDITIONS:

Field size : 10 x 10 cm
Source-chamber dist. : 95 cm
Source-collim. dist. : 61 cm
Pre-irrad. leakage : 8.5×10^{-14} amp
Orientation : Air Vent Towards Beam
Polarizing voltage : -300 V

BEAM QUALITY	EXPOSURE RATE (R/min)	TOTAL EXPOSURE (R)	CORRECTION* FACTOR (R/rdg)
Co-60	33.3	66.6	4.95 ₉

* At 22°C, 760 mm Hg.

The chamber was determined to be open to atmospheric communication.

Notes: The chamber was 99.0% saturated at -150V. Relative humidity was 63%. The correction factor is in R per reading. Example: The system reads 100.0 nCoulomb. True exposure is: $100.0 \times 4.959 = 495.9$ R.

Recorded in data book: UW ADCL 4 Pages: 51-55ELECTROMETER CALIBRATION: EM014

S.J. Goetsch
Calibrated by
S.J. Goetsch, Chief Physicist

DATA BOOK: UW ADCL 4

L.A. DeWerd
Reviewed by
L.A. DeWerd, Director



LUDLUM MEASUREMENTS, INC.

915 • 235-5494 TELEX No. 466832 UD

POST OFFICE BOX 248

501 OAK STREET

SWEETWATER, TEXAS, U. S. A. 79556

GM Survey Meter Calibration

CUSTOMER: Midwest Rod Corp ORDER NO. 84-2728Model No. 14C S/N 36177Detector Model No. 44-7 S/N PR 20764

Type of Source: Cs137

Size of Source: 150 mCi

Range	Calibration Point	Dial Reading
<u>X1000</u>	<u>1.5 R/hr</u>	<u>1.5</u>
<u>"</u>	<u>500 mr/hr</u>	<u>.5</u>
<u>X100</u>	<u>150 "</u>	<u>1.5</u>
<u>"</u>	<u>50 "</u>	<u>.5</u>
<u>X10</u>	<u>15 "</u>	<u>1.5</u>
<u>"</u>	<u>5 "</u>	<u>.5</u>
<u>X1</u>	<u>1.5 "</u>	<u>1.5</u>
<u>"</u>	<u>1 "</u>	<u>1</u>
<u>X0.1</u>		

Range(s) calibrated with a Ludlum Model 500 Pulser

Cs137 source traceable to NBS, 142 Mr/HR @ 1 meter TFN224008—Oct. 2, 1980.

Date 11-16-84 Signature Rb

CONTROL NO. 78629

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