

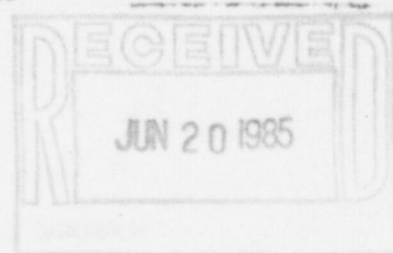
B. AHLUWALIA, PH.D.
RADIOLOGICAL PHYSICIST

Certified By:
American Board of Radiology
American Board of Science of Nuclear Medicine
Radiation Physics Services
Diagnostic Radiology, Nuclear Medicine
Radiation Therapy, Safety, Computer Applications

DEPARTMENT OF RADIOLOGICAL SCIENCES
UNIVERSITY OF OKLAHOMA, HEALTH SCIENCES CENTER
P.O. BOX 26901
OKLAHOMA CITY, OKLAHOMA 73190
Tele# (405) 271-6121

June 17, 1985

Material Licensing Branch
Division of Fuel Cycle and Material Safety
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011



Dear Sir:

This report is being submitted as required by the NRC license No. 35-14046-01 for the St. Joseph Regional Medical Center of Northern Oklahoma, Ponca City, Oklahoma. The Co-60 Teletherapy source has been changed. The new source, Catalog No. AMS-3802, Sr. No. AMS 2536, was installed by representatives of Advanced Medical Systems, Inc., Cleveland, Ohio, on June 6, 1985. The old source, Model No. AMS 3802, Sr. No. AMS 2358, was transferred to them also on June 6, 1985. Copies of the Source Certificate and leak test are enclosed.

List of reports attached:

1. Teletherapy tests
2. Teletherapy Head survey
3. Teletherapy facility survey and beam calibration
4. Plan of the Radiation Therapy Area
5. Survey meter description and calibration date
6. Ionization chamber calibration certificate
7. Source correctness
8. Source transfer certificate
9. 5-year inspection
10. Wipe test certificate
11. Old source transfer certificate
12. Emergency shut down procedures.

Please let me know if any other information is required.

Thank you.

Sincerely yours,

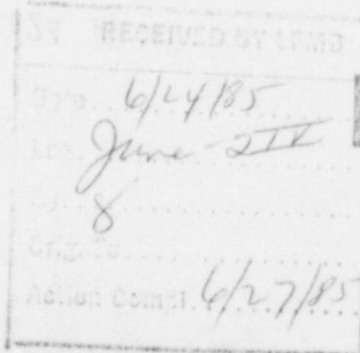
B. Wally Ahluwalia, Ph.D.

B. Wally Ahluwalia, Ph.D.
Radiological Physicist

8510230320 850930
REG4 LIC30
35-14046-01 PDR

BA/db
xc: Gregory G. Guntly
President
St. Joseph Regional Medical Center

Dr. Ellis Oster, M.D.
Ms. Connie Johnson



FEE EXEMPT
to survey report

460681

REPORT OF TELETHERAPY TESTS AND SURVEYS

Licensee St. Joseph Regional Medical Center of North Oklahoma, Inc.
Address 14th and Hartford, P. O. Box 1270, Ponca City, Oklahoma 74602
License # 35-14046-01

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:

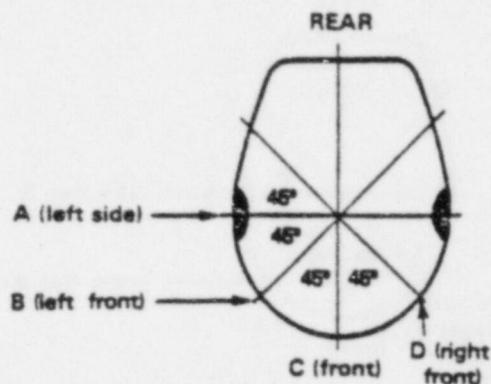
Zoneguard interlocks for head rotation perform satisfactory. Shut off at
after 25° left and 32° right and head does not tilt forward or backward.

TELETHERAPY HEAD SURVEY

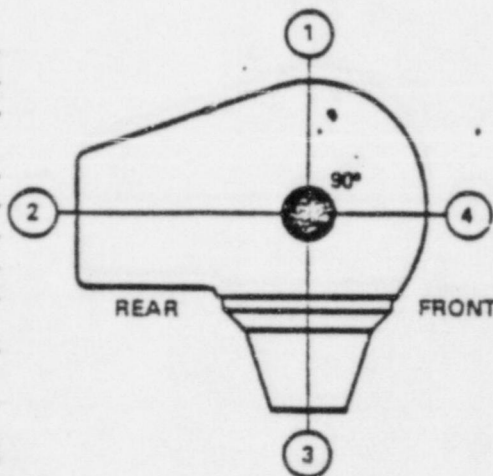
(Source in "OFF" position.
Measurements taken one meter
from source)

Top View-Showing
orientation
of Views A through D

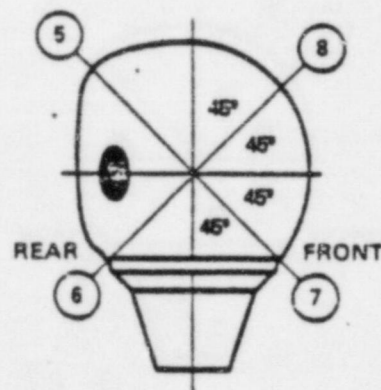
Position No.	Radiation Level (mr/hr)
View A	1 <u>2.8</u>
	2 <u>0.4</u>
	3 <u>6.8</u>
	4 <u>1.4</u>
View B	5 <u>1.2</u>
	6 <u>1.6</u>
	7 <u>2.2</u>
	8 <u>1.3</u>
View C	9 <u>0.5</u>
	10 <u>0.5</u>
View D	11 <u>1.2</u>
	12 <u>1.8</u>
	13 <u>1.2</u>
	14 <u>1.3</u>
Average value	<u>1.73</u>
Maximum value	<u>6.8</u>



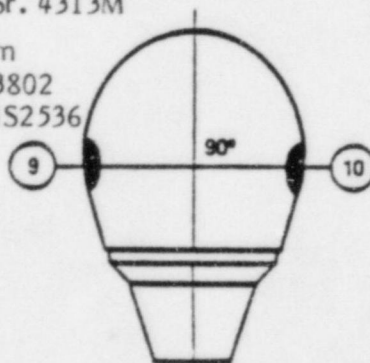
View A-Vertical
from left side



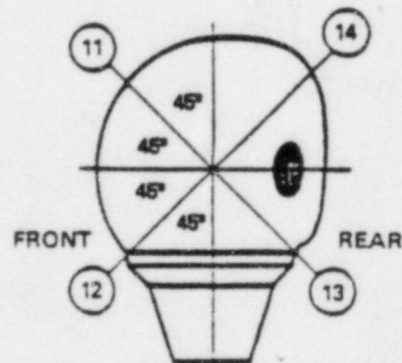
View B-Vertical
from left front



View C-Vertical
from front



View D-Vertical
from right front



Date of survey June 7, 1985

Instrument used Victoreen Thyac III
Probe Model 469, Sr. 4313M

Manufacturer's name & model number Advance Me. System
of teletherapy source Cat. No.: AMS3802
Serial No.: AMS2536

Date of installation June 7, 1985

OUTPUT 6806 ☒ RHM
☐ RMM

Date of output measurement June 7 and 8, 1985

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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	Ra /
Roof	0.04, 0.1	No	0, 90	30 x 30	Yes	Water Phantom	80.0 cm	Output in Roentgen per min. i) for 10x10 cm field size 164.1 ii) for 25x25 cm field size 177.23	
Roof	0.5, 1.8	No	145, 180 Degrees						
Roof	0.1	No	270	"	"	"			
Therapy Room Door	0.05	Yes	0, 90, 145 180, 270	"	"	"			
Stairway	0.05, 1.5	No	0, 90	"	"	"			
Stairway	0.3, 0.07	No	145, 180 & 270	"	"	"			
Ground Level SE of Therapy	0.04	No	All Above	"	"	"			
Control Booth	0.02 0.03	Yes Yes	0, 90, 270 145, 180	"	"	"			
Storage Area Under Therapy	0.03 0.04	No No	0 90, 145 180 & 270 Degrees	"	"	"			
Instrument used: Victoreen Model Thyac III, Probe Model 469, Sr# 4313M							RHM 6805.6	5726 Curies	

on 6/7/85

3/1/85

*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).)

DATE: June 14, 1985

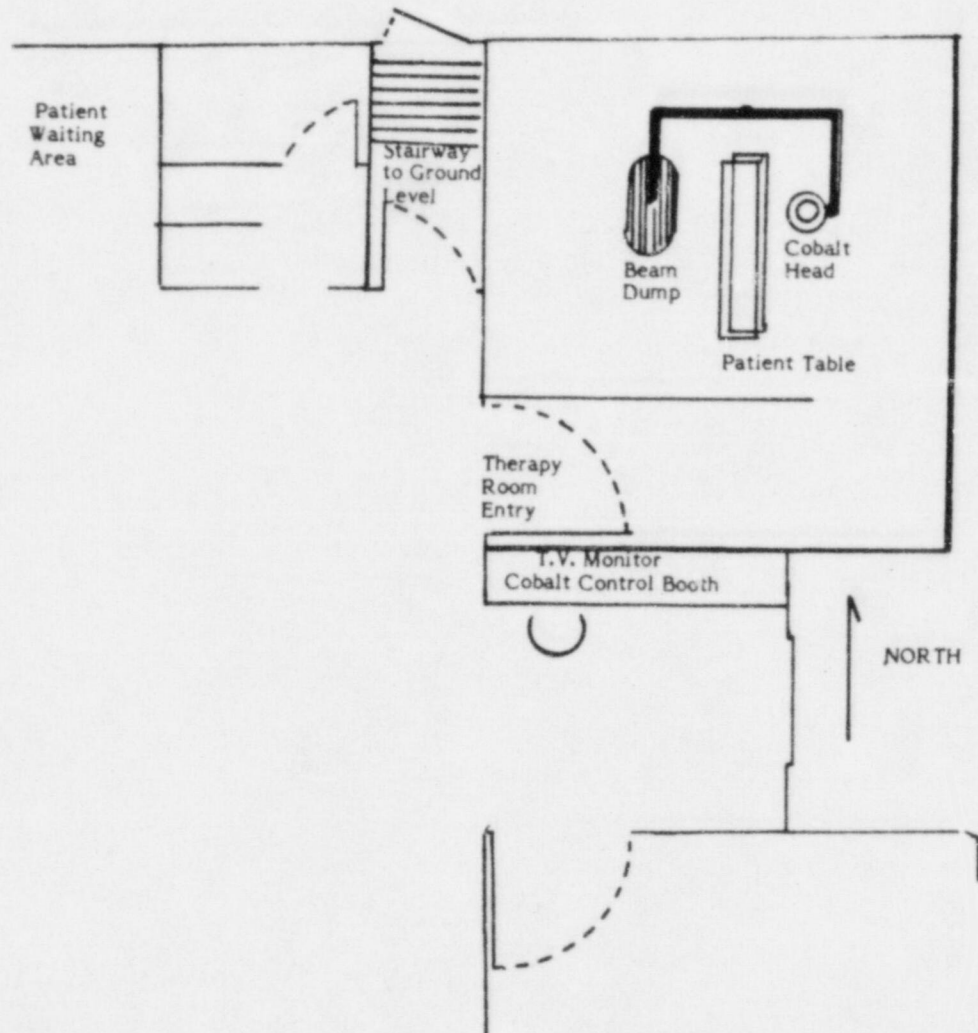
SIGNATURE: B. Wally Ahluwalia, Ph.D.

Surveyor, Radiological Physicist

B. Wally Ahluwalia, Ph.D.
Diplomate ABR and ABSNM

St. Joseph Medical Center
14th and Hartford
Ponca City, Oklahoma 74602

PLAN OF RADIATION THERAPY AREA
(Not to scale)



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SURVEY METER DESCRIPTION AND CALIBRATION

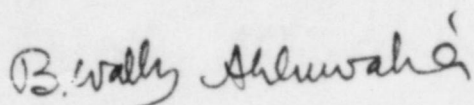
Survey Meter: Victoreen Thyac III
Model 469-4
Serial No.: 41318M
Range: 0.01 to 200 mR/hr

Full Calibration Date: May 13, 1985

Full calibration on record with O. U. Health Sciences Center, Office of Radiation Safety.

Recheck: June 6, 1985

Source Used for Calibration: Radium 226
25.32 mg



B. Wally Ahluwalia, Ph.D.
Radiological Physicist

IONIZATION CHAMBER CALIBRATION

4-20-84

CHAMBER:

Mfgr: NEL
Model No. 2571 (0.6 ml, graphite)
Serial No. 630

SUBMITTED BY:

St. Anthony Hospital
Oklahoma City, Oklahoma

ORIENTATION/CONDITIONS: black line toward source

ION COLLECTION EFFICIENCY (A_{ion}): 0.999

POLARIZING POTENTIAL: -354V CHAMBER LEAKAGE: $-1.1 \times 10^{-14}A$

Beam Quality		kVp	Exposure Rate (R/min)	SCD (cm)	CALIBRATION FACTOR	Class
HVT (mm)	H.C.					

*Co-60 - - 57.6 74 $4.760 \times 10^9 R/c$ II

COMMENTS: *With Delrin buildup cap (#630)

Reviewed by: _____ Log C-4 Page(s) 169

Title: _____ Log _____ Page(s) _____

Log _____ Page(s) _____

Checked by: TWS Log _____ Page(s) _____

St. Joseph Medical Center
14th and Hartford
Ponca City, Oklahoma 74604

Source Correctness
New Co-60 Source

Date of Installation June 7, 1985

Date of Measurement June 7, 1985

Roentgens per min. at 80 cm for field size 10 x 10 cm = 164.1

Conversion factor for exposure rate for 25 x 25 cm field size and
at 100 cm = $1.08 \times 0.64 = 0.691$

RHM = $164.1 \times 0.691 \times 60$
on June 7, 1985 = 6805.6

RHM quoted by Advanced Medical Systems, Inc. on 27 March 1985 = 7053;
corrected for 72 days decay to June 7, 1985 = 6871.7

Relative difference between measured output at Ponca City and those measured
by Advance Medical Systems, Inc. ,

$$= \frac{6805.6 - 6871.7}{6805} \times 100$$
$$= 0.97\%$$

Remarks: The Co-60 source installed on June 7, 1985 has the desired output.



Advanced Medical Systems, Inc.

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

ST. Joseph Medical Center
14th & Hartford
Ponca City, Oklahoma 74601

CERTIFICATE OF MEASUREMENT COBALT-60 SOURCE

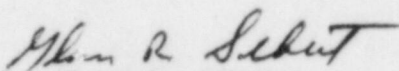
CATALOG NO. AMS-3802
SERIAL NO. AMS-2536

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 6296-D 60-Cobalt Beam Therapy Treatment equipment with Catalog Number 3706E 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 7053 roentgens per hour at one meter on 27 March 19 85.

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

This source contained 5726 curies on March 1, 1985.


Signed: Glenn R. Sibert

Dated: May 30th, 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.

4 60681



Advanced Medical Systems, Inc.

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

TELETHERAPY UNIT

FIVE YEAR INSPECTION & PREVENTATIVE MAINTENANCE REPORT

CUSTOMER: ST. Joseph Medical Center 14th & Hartford, Ponca City, Oklahoma 74601
(HOSPITAL OR DOCTOR) (LOCATION)
TYPE OF UNIT: CAT. NO. 6296-D/C9M/90 HEAD 590-E SERIAL NO. 206
DATE OF INSPECTION: 6/6-7/85 LICENSED ENGINEER Darwin 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.

1. SOURCE HEAD

- A. Check for significant radioactive contamination
(☒) None Detected
() See Notes
- B. Shutter Rotor Bearings
1. Inboard
() Lubricated () N/A
(☒) Replaced
2. OutBoard
() Lubricated () N/A
(☒) Replaced
- C. Shutter Rotor
(☒) Cleaned
() Other - See Notes
- D. Shutter Rotor Cavity
(☒) Cleaned
() Other - See Notes
- E. Shutter Rotor Return Spring
(☒) Replaced
- F. Shutter Rotor Stops
"ON" Position (☒) OK () Adjusted () Replaced
"OFF" Position (☒) OK () Adjusted () Replaced
- G. Shutter Rotor Drive Mechanism
(☒) Lubricated (☒) Voltage (74.2 Volts)
() Deficiency See Notes (☒) V Belt Replaced
- H. Head Leakage Survey (26 Points at 1 meter from source)
Average Leakage 1.46 mrehm
Highest Point Reading 7.05 mrehm

I. 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

Dials Indicated

Light Field

4cm. x 4cm.

4 X 4

4 X 3.9

10cm. x 10cm.

10 X 10

10 X 10

18cm. x 18cm.

18 X 18

18 X 17.9

25cm. x 25cm.

25 X 25

25.1 X 24.7

C. Distance Localizer Calibration

Setting

Indicates

40cm.

55cm.

60cm.

75cm.

80cm.

95cm.

60

75

80

94.7

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 (X) OK () Needs Repair - See Notes
3. Pin and Arc (X) OK () Needs Repair - See Notes
4. Wedge Filters (X) OK () Needs Repair - See Notes
5. Breast Cone (X) OK () Needs Repair - See Notes
6. Beam Shaping Block Holder (X) OK () Needs Repair - See Notes
7. Extenders (Trimmers) () OK () Needs Repair - See Notes
8. Other Accessories (X) OK () Needs Repair - See Notes

III. UNIT IN GENERAL

A. GOOD - YOKE TILT MOTOR BROKEN (3 HEAD STYLE MOTOR)

B. Isocenter - The true isocenter has been determined to be at a distance of 35.5 cm. from the end of the collimator. The isocentric accuracy of the center of the beam was determined to be + or - 1.5 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

() See Notes and Recommendations

Actual Time:

30

60

120

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 pointer, 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
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
(X) 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)
(X) Replaced () 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:

IV. Table

A. Locks

1. Transverse

(X) OK () Repaired () See Notes

2. Longitudinal

(X) OK () Repaired () See Notes

3. Floor

(X) OK () Repaired

() N/A () See Notes

B. Vertical Drive Clutch or Motor Mount

(X) OK () Repaired () See Notes

C. Chain Tension & Condition

(X) OK () Adjusted () See Notes

D. General

(X) 1. Hardware Tightened

(X) 2. Lubricated as Necessary

(X) 3. Checked for signs of Binding and Unusual Wear.

E. Safety Service Notes

(X) () Performed () See Notes

V. NOTES AND RECOMMENDATIONS

DATE INSPECTION COMPLETED: 6/7/85

BY ADVANCED MEDICAL SYSTEMS, INC. LICENSED ENGINEER:

R. Murray

REPORT EXPLAINED TO AND COPY RECEIVED BY:

Connie Johnson

NOTE: N/A - NOT APPLICABLE



Advanced Medical Systems, Inc.

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

ST. Joseph Medical Center
14th & Hartford
Ponca City, Oklahoma 74601

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-2536 Cobalt-60 Therapy Source and to be installed in Picker Model No. 590-E, Serial No. 206 Therapy Unit, was wipe tested on 27th February, 1985 and found to have .00138 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: May 30th, 1985



Advanced Medical Systems, Inc.

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

St. Joseph Medical Center
14th & Hartford
Ponca City, Oklahoma 74601

Radiation Therapy Department (Cobalt)

Received from the above-named facility as of 7 JUNE 85
one 60-Cobalt teletherapy source, Model Number AMS-3802, Serial
Number AMS-2358.

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

Signed: R. Murray
for Advanced Medical Systems, Inc.

Dated: 7 JUNE 1985

EMERGENCY SHUT-DOWN PROCEDURE

Ready Reference

Hang near control unit

For emergency termination of treatment before the preset treatment time has elapsed or if the beam does not turn "off" after the normal exposure cycle has been completed:

1. Press the EMERGENCY Bar on Control Unit.

If the beam still remains on:

2. CLOSE THE SHUTTER MANUALLY BY TURNING EMERGENCY SHUTTER HAND-WHEEL ON FRONT OF THE HEAD IN THE CLOCKWISE DIRECTION AS INDICATED BY THE ARROWS (red segment on handwheel signal disk will be "up" in furthest position from collimator when source has moved to "off" position).

WARNING

AVOID DIRECT EXPOSURE TO THE BEAM, DO NOT REMAIN IN THE TREATMENT ROOM LONGER THAN ABSOLUTELY NECESSARY WHILE BEAM IS "ON".

Should the beam still remain on:

3. QUICKLY REMOVE PATIENT FROM THE TREATMENT ROOM; GRASP REAR HANDLE OF TREATMENT TABLE TIGHTLY (pressure on rear handle releases floor brakes) AND PULL BACKWARD FIRMLY ON REAR HANDLE UNTIL TABLE MOVES OUT OF PRIMARY BEAM; WHEEL TABLE AND PATIENT OUT OF TREATMENT ROOM.

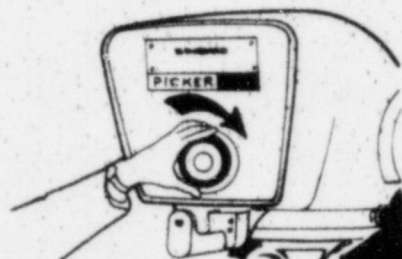
If beam is still on and patient cannot be removed quickly:

4. ROTATE SOURCEHEAD USING "HEAD" PUSH-BUTTONS ON PENDANT SWITCH SO THAT BEAM IS DIRECTED AWAY FROM PATIENT. (Head can be swiveled in either direction.)
5. REMOVE PATIENT BY MOST CONVENIENT MEANS AS QUICKLY AS POSSIBLE.
6. LEAVE THE ROOM, CLOSE AND LOCK THE DOOR OR POST A GUARD TO PREVENT UNAUTHORIZED ENTRY.
7. NOTIFY Dr Ellis Oster RADIATION SAFETY OFFICER, AND CALL PICKER CORPORATION SERVICE.
Bill Ausmus 918-628-1020

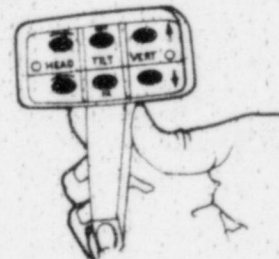
①



②



④



Hosp: 765-3321
Home 742-4666

RADIATION SAFETY
INSTRUCTIONS
FOR COBALT
THERAPY UNITS

T55B-6 PM44-E

460681