2 actions

VOID SHEET

Jul. 13 I
7A
110945

TO: License Fee Management Branch

FROM: REGION I

SUBJECT: VOIDED APPLICATION

Control Number: 110945

Applicant: ST ELIZABETH'S HOSPITAL OF BOSTON

Date Voided: 7-20-89

Reason for Void: ACTION IS BEING COMBINED WITH C/N 109894

EMW
Signature

7-20-89
Date

Attachment:
Official Record Copy of
Voided Action

FOR LFMB USE ONLY

Final Review of VOID Completed:

Refund Authorized and processed

No Refund Due

Fee Exempt or Fee Not Required

Comments: Combined after review.

Log completed

Processed by: S. Kimberly

M v 15/90

OFFICIAL RECORD COPY ML 10

NRC Form 374
(5-84)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Amendment No. 05

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. St. Elizabeth's Hospital of Boston 2. 736 Cambridge Street Boston, Massachusetts 02135	In accordance with letter dated November 18, 1988, 3. License number 20-06579-02 is amended in its entirety to read as follows: 4. Expiration date October 31, 1991 5. Docket or Reference No. 030-17823

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Cobalt 60	A. Teletherapy sealed sources (Neutron Products, Inc. Model NPTT source Series)	A. 10,800 curies (2 sources of not more than 5400 curies each)

9. Authorized use

A. One source for use in a AECL Theratron 80 teletherapy unit for the treatment of humans. One source in its shipping container to be in possession of the licensee as necessary to the replacement of the source in the teletherapy unit only.

CONDITIONS

10. Licensed material shall be used only at St. Elizabeth's Hospital of Boston, teletherapy facility attached to 1st Floor of the Mother Mary Rose Clinic, Washington and Cambridge Streets, Boston, Massachusetts.

11. A. Licensed material shall be used by, or under the supervision of, Hywel Madoc-Jones, M.D., or Lily Lawn-Tsao, M.D.

B. The Radiation Safety Officer for this license is Frank Krasin, Ph.D.

C. The Teletherapy Physicist for this license is Frank Krasin, Ph.D.

12. A. Teletherapy sources shall be tested for leakage at intervals not to exceed 6 months. Records of test results shall be kept in units of microcuries and maintained for inspection by the Commission. In the absence of a certificate from a transferor indicating that a test has been made within 6 months before the transfer, a source received from another person shall not be used until tested for leakage.

(12. Continued) CONDITIONS

B. The tests shall be sufficiently sensitive to detect 0.05 microcurie of contamination on the test sample.

C. The test sample shall be taken from selected accessible surfaces of the teletherapy head. The selected accessible surfaces should be those surfaces on which one might expect contamination (if there were to be leakage) to accumulate and shall include the inner surface of the most frequently used treatment cones or beam collimating device. The test sample shall be taken with the source in the "off" position.

D. If the test reveals the presence of 0.05 microcurie or more of removable contamination, the licensee shall immediately withdraw the source from use and take action to prevent spread of contamination. A report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406. The report shall specify the source involved, the test results, and corrective action taken.

13. Before initiation of a treatment program, each teletherapy unit shall be equipped with electrical or mechanical stops limiting use of the primary beam of radiation so as to ensure compliance with Section 20.105(b) of 10 CFR Part 20 as evidenced by a radiation survey. Necessary use restrictions shall be fully described in radiation survey reports submitted in accordance with Condition 16 of this license.

14. A set of written emergency instructions shall be posted at the teletherapy machine control. These instructions shall inform the machine operator of the procedure to be followed should he be unable to turn the machine's primary beam of radiation "off" with the controls outside the treatment room.

15. A. Access to the teletherapy room shall be controlled by a door at each entrance. Such doors shall be normally closed.

B. Each entrance to the teletherapy room shall be equipped with an electrical interlock system that will turn the teletherapy machine's primary beam of radiation "off" immediately upon opening of any entrance door. The interlock system shall be connected in such a manner that the teletherapy machine's primary beam of radiation cannot be turned "on" until all treatment room entrance doors are closed and the beam "on-off" control is reset at the control panel.

C. Electrical interlocks on entrance doors to the teletherapy room shall be tested for proper operation at least once every 6 months. Records of test results shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

D. In the event of malfunction of any door interlock, the teletherapy machine control shall be locked in the "off" condition and not used, except as may be necessary for repair or replacement of the interlock system, until the interlock system is shown to be functioning properly.

(Continued) CONDITIONS

16. Before initiation of a treatment program, and subsequent to each installation of a teletherapy source, radiation surveys and tests shall be performed in accordance with the following:

A. A radiation survey shall be made of:

(i) The teletherapy source housing, with the teletherapy source in the "off" position. The maximum and average radiation levels at 1 meter from the teletherapy source in the "off" position shall not exceed 10 milliroentgens per hour and 2 milliroentgens per hour, respectively.

(ii) All areas adjacent to the treatment room with the teletherapy source in the "on" position. The survey, except Item (c), shall be performed with a phantom in the primary beam of radiation and shall clearly establish:

(a) That radiation levels in restricted areas are not likely to cause personnel exposure in excess of the limits specified in Section 20.101 of 10 CFR Part 20,

(b) That quantities of radiation in unrestricted areas do not exceed the limits specified in Section 20.105(b) of 10 CFR Part 20.

(c) The intensity of the primary beam of radiation at a specified distance from the teletherapy source.

B. Tests shall be made to determine proper operation of:

(i) Electrical interlocks on entrance doors to the teletherapy treatment room.

(ii) The teletherapy source "on-off" indicators, both at the source housing and on the teletherapy machine control panel.

(iii) Electrical or mechanical stops installed for the purpose of limiting use of the primary beam of radiation (restriction of source housing angulation or elevation, carriage or stand travel and operation of the beam "on-off" mechanism).

(iv) The teletherapy treatment timing device.

C. A report of the results of the above surveys and tests shall be sent to the U.S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406, not more than 30 days after each installation of a teletherapy source.

(Continued) CONDITIONS

17. A. Any changes made in the treatment room shielding, location of the unit within the treatment room, or use of the teletherapy unit that could result in increased radiation levels in areas outside the teletherapy treatment room shall be evaluated by a radiation survey made in accordance with Condition 16, and reported to the Commission within 30 days following completion of the change(s).

B. Relocation of the teletherapy unit to a new facility is not permitted without prior approval of all the plans and details by the Commission. Following such approval and relocation, a radiation survey shall be made in accordance with Condition 16, and reported to the Commission within 30 days after completion of the move.

18. The following shall be performed only by persons specifically licensed by the Commission or an Agreement State to perform such services:

A. Installation, relocation, or removal of teletherapy units containing sources.

B. Source exchange.

C. Any maintenance or repair operations on a teletherapy unit involving work on the source drawer, the shutter, or other mechanism that could expose the source, reduce the shielding around the source, or compromise the safety of the unit and result in increased radiation levels.

19. Pursuant to 10 CFR Part 40, "Domestic Licensing of Source Material", the licensee is authorized to possess, use, transfer, and import up to 999 kilograms of uranium contained as shielding material in the teletherapy units authorized by this license.

20. For a period not to exceed 60 days in any calendar year, a visiting physician is authorized to use licensed material for human use under the terms of this license. provided the visiting physician:

A. Has the prior written permission of the hospital's Administrator and Radiation Safety Committee, and

B. Is specifically named as a user on a Nuclear Regulatory Commission license authorizing human use, and

C. Performs only those procedures which the physician is specifically authorized to perform pursuant to a license issued by the Nuclear Regulatory Commission.

The licensee shall maintain for inspection by the Commission copies of the written permission specified in A. above and of the license(s) specified in B. and C. above for a period of 5 years from the date permission is granted under A. above.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number: 20-06579-02

Docket or Reference number: 030-17823

Amendment No. 05

(Continued) CONDITIONS

21. Notwithstanding other authorizations and requirements of this license, the licensee shall have the cobalt-60 source described in Subitem 7.A. of this license removed from the teletherapy head and returned to the supplier if the radiation levels permitted by Condition 16.A.i are exceeded.

22. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Application dated August 26, 1980
B. ALARA Program dated August 27, 1980
C. Letter dated January 9, 1981
D. Letter dated May 10, 1984
E. Letter dated April 29, 1985
F. Letter dated February 7, 1986
G. Letter dated June 28, 1988
H. Letter dated November 18, 1988
I. Letter dated April 3, 1989
J. Letter dated June 26, 1989
K. Letter dated June 28, 1989

For the U.S. Nuclear Regulatory Commission

Date AUG 29 1989

By Original Signed By: Judith A. Joustra

Nuclear Materials Safety Branch
Region I
King of Prussia, Pennsylvania 19406

NRC Form 374
(5-84)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Amendment No. 05

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(12. Continued) CONDITIONS

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MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 20-06579-02
Docket or Reference number 030-17823
Amendment No. 05

(Continued) CONDITIONS

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20. For a period not to exceed 60 days in any calendar year, a visiting physician is authorized to use licensed material for human use under the terms of this license, provided the visiting physician:

A. Has the prior written permission of the hospital's Administrator and Radiation Safety Committee, and

B. Is specifically named as a user on a Nuclear Regulatory Commission license authorizing human use, and

C. Performs only those procedures which the physician is specifically authorized to perform pursuant to a license issued by the Nuclear Regulatory Commission.

The licensee shall maintain for inspection by the Commission copies of the written permission specified in A. above and of the license(s) specified in B. and C. above for a period of 5 years from the date permission is granted under A. above.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 20-06579-02

Docket or Reference number 030-17823

Amendment No. 05

(Continued) CONDITIONS

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G. Letter dated June 28, 1988
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I. Letter dated April 3, 1989
J. Letter dated June 26, 1989
K. Letter dated June 28, 1989

For the U.S. Nuclear Regulatory Commission

Date AUG 29 1989

By Original Signed By: Judith A. Joustra

Nuclear Materials Safety Branch
Region I
King of Prussia, Pennsylvania 19406

AUG 29 1989

License No. 20-06579-02
Docket No. 030-17823
Control No. 109894

St. Elizabeth's Hospital of Boston
ATTN: Frank Krasin, Ph.D.
Radiation Safety Officer
736 Cambridge Street
Boston, Massachusetts 02135

Gentlemen:

Please find enclosed an amendment to your NRC Material License.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the Region I Material Licensing Section, (215) 337-5239, so that we can provide appropriate corrections and answers.

Please be advised that you must conduct your program involving licensed radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, please note the items in the enclosed, "Requirements for Materials Licensees."

Since serious consequences to employees and the public can result from failure to comply with NRC requirements, the NRC expects licensees to pay meticulous attention to detail and to achieve the high standard of compliance which the NRC expects of its licensees.

You will be periodically inspected by NRC. A fee may be charged for inspections in accordance with 10 CFR Part 170. Failure to conduct your program safely and in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in prompt and vigorous enforcement action against you. This could include issuance of a notice of violation, or in case of serious violations, an imposition of a civil penalty or an order suspending, modifying or revoking your license as specified in the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C.

OFFICIAL RECORD COPY ML 20-06579-02/LTR - 0001.0.0
08/26/89

ML 10

We wish you success in operating a safe and effective licensed program.

Sincerely,

Original Signed By:
Judith A. Joustra

Josephine M. Piccone, Ph.D.
Nuclear Materials Safety Section A
Division of Radiation Safety
and Safeguards

Enclosures:
1. Amendment No. 05
2. Requirements for Materials Licensees
3. Requirements for Medical Licensees
4. NRC Forms 3 and 313

DRSS:RI
Gresick/tlm
8/29/89

DRSS:RI
Piccone
8/29/89

OFFICIAL RECORD COPY ML 20-06579-02/LTR - 0002.0.0
08/26/89

MB-18
P-5

ST. ELIZABETH'S HOSPITAL OF BOSTON
736 Cambridge Street, Boston, Massachusetts 02135 (617) 782-7000

June 28, 1989

Josephine Piccone, Ph.D.
Nuclear Materials Safety Section A
Division of Radiation Safety
and Safeguards
Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

20-06579-02

Dear Dr. Piccone:

In response to your letter dated May 30, 1989 concerning our application dated November 15, 1988 please find the following numbered items which respond to the corresponding numbered items in your letter.

1. Enclosed is a copy of the calibration report from K&S Associates, Inc. for the NEMCH instrumentation used in the intercomparison with our dosimetry system.

   Also, enclosed are the two copies of the results of the intercomparison done on November 10, 1987 showing agreement well within 2%.

2. Enclosed is a copy of a request by St. Elizabeth's Hospital to substitute Frank Krasin, Ph.D. for R. Junda, M.D. as Radiation Safety Officer. Enclosed is a copy of Dr. Krasin's ABR certification.

3. Dr. Krasin is the Teletherapy Physicist certified by the ABR in Therapeutic Radiological Physics.

Condition 11. of our current license shows the names of Rudolph Junda, M.D. and Patricia McLellan, M.D. as authorized users. Since they are no longer affiliated with St. Elizabeth's Hospital of Boston their names should be deleted.

Sincerely,

Frank Krasin

Frank Krasin, Ph.D.
Medical Physicist

109894
7-5-89

cc: Lily Lawn-Isaac, M.D.

OFFICIAL RECORD COPY ML18

K & S ASSOCIATES, INC.
1854 AIRLANE DRIVE
NASHVILLE, TENNESSEE 37210

ACCREDITED DOSIMETRY CALIBRATION LABORATORY

CALIBRATION REPORT

SUBMITTED BY: NEW ENGLAND MEDICAL CENTER
750 WASHINGTON STREET
BOSTON, MA 02111

INSTRUMENT: VICTOREEN 500, SN 670
PTW N23333, SN 389

REPORT NO.: 1190

TEST NO.: 87250

DATE: September 17, 1987

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-19075-C91) 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:

Exposure = RDG x R/RDG x 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.

Exposure = RDG x R/C x C/RDG x 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

NOTICE

On March 7, 1986 we received notice from the National Bureau of Standards that effective January, 1986 the exposure for Cobalt 60 and Cesium 137 have been adjusted by -1.1% and -0.8% respectively.

We therefore advise you that the calibration factors contained in this report for the above energies have been adjusted by the same amount.

ION COLLECTION EFFICIENCY:

The ion collection efficiency $(A_{ion})^1$ 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[2] and Greening[3] 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).

4. Gastorf, Humphries, Rosenfeld, "Cylindrical chamber dimensions and the corresponding values of Awall and $N_{gas}/(N_x A_{ion})$", Med. Phys., Vol. 13, p. 751 (1986).

5. Schulz, Almond, Kutcher, Loevinger, Nath, Rodgers, Kahn, "Clarification of the AAPM Task Group 21 Protocol," Med.Phys., Vol. 13, p. 755 (1986).

K & S ASSOCIATES, INC.

DOSIMETER SYSTEM CALIBRATION

9/16/87

ELECTROMETER:
Mfgr: Victoreen
Model No. 500
Serial No. 670

SUBMITTED BY:
New England Medical Center
Boston, MA

CHAMBER:
Mfgr: PTW
Model No. N23333 (0.6ml,acrylic)
Serial No. 389

ORIENTATION:
Lock nut hole toward source

SCALES, SWITCH POSITIONS, CONDITIONS:

ON; FUNCTION: EXPOSURE; RANGE: 2; LIGHTS: TRIAX, INNER NEG
TEST: -358 V; ELECTRODE BIAS: norm, NORM
PROBE INPUT: TRIAX; PROBE VOLUME (c.c): 0.6
indication: R, 0.6cc

POLARIZING POTENTIAL: +357 V

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

BEAM QUALITY HVT (mm)	H.C.	kVp	EXPOSURE RATE	SCD (cm)	CALIBRATION FACTOR	CLASS
2.97 Al	.66	84	12.7 R/min	50	1.101 R/RDG	II
*Co-60	---	---	36.4 R/min	74	1.101 R/RDG	II

COMMENTS: *with acrylic buildup cap

Reviewed by: Thomas W. Hoevey
Title: Director
Checked by: VD LGB

Log C-10 Page(s) 153
Log T-11 Page(s) 77
Log Page(s)
Log Page(s)

K & S ASSOCIATES, INC.

IONIZATION CHAMBER CALIBRATION

9/16/87

SUBMITTED BY:
New England Medical Center
Boston, MA

CHAMBER:
Mfgr: PTW
Model No. N23333 (0.6ml,acrylic)
Serial No. 389

ORIENTATION / CONDITIONS:

Lock nut hole toward source

ION COLLECTION EFFICIENCY (A_{ion}): 1.000

POLARIZING POTENTIAL: +358 V CHAMBER LEAKAGE: $<3 \times 10^{-15}$ A

BEAM QUALITY HVT (mm)	H.C.	kVp	EXPOSURE RATE	SCD (cm)	CALIBRATION FACTOR	CLASS
2.97 Al	.66	84	12.7 R/min	50	5.501×10^{9} R/C	II
*Co-60	---	---	36.4 R/min	74	5.502×10^{9} R/C	II

COMMENTS: *with acrylic buildup cap

Reviewed by: Thomas W. Hovey
Title: Director
Checked by: VD LGB

Log C-10 Page(s) 153
Log T-11 Page(s) 77
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:

Coulomb = TRUE RDG x 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:

TRUE RDG = RDG x Linearity Correction Factor

ELECTROMETER CALIBRATION

9/15/87

SUBMITTED BY:
New England Medical Center
Boston, MA

INSTRUMENT:
Manufacturer: Victoreen
Model No. 500
Serial No. 670

SCALES, SWITCH POSITIONS, CONDITIONS:

ON; FUNCTION: EXPOSURE; lights: TRIAX, INNER NEG
RANGE: 1, 2, 3 or AUTO; TEST: -350 V; ELECTRODE BIAS: norm, NORM
PROBE INPUT: TRIAX

POLARIZING POTENTIAL: +357 V

LEAKAGE: $< 1 \times 10^{-15}$ A

LINEARITY: within +/- 0.1 % of full range or the precision of the reading, whichever is greater, except as noted.

CHARGE CALIBRATION FACTOR:

PROBE VOLUME (c.c.)	Indication	FACTOR (C/unit of reading)
ELECTROM	nC	1.001 C/RDG
0.6	R, 0.6cc	2.001×10^{-10} C/RDG

COMMENTS:

Reviewed by: Thomas W. Hoarey Log E-6 Page(s) 276

Title: Director Checked by: VD LCB

St. Elizabeth's Therapeutic Radiology, Medical Physics

Co-60 Quality Assurance

1. Light Field Calibration

F.S. Set	F.S. Measured	O.K.?	Comments
10 x 10cm ± 2mm		( )	
20 x 20cm ± 2mm		( )	

2. Range Finder Calibration

SSD Set	SSD Measured	O.K.?	Comments
65cm ± 0.5cm		( )	
80cm ± 0.1cm		( )	

3. Light/Radiation Coincidence Test

Light F.S. Set	Radiation F.S. Meas.	O.K.?	Comments

4. Dose Rate Calibration (in H_2O phantom)

Electrometer = VICTOREEN 500, SN 670 Chamber = PTW N23333, SN 389

Field size = 10 x 10 cm, SSD = 80 cm, d = 5 cm

769.5 - 2.7

T = (273 + 21.5)°K; p = 766.8 Torrs, $k = \left(\frac{760}{p} \cdot \frac{T}{295}\right) = 0.9894521$

N_c = 5.508, f = 0.948, %DD(5cm) = 78.8

One Minute Readings

R_1 (1 start-stop) = 11.196 ; 11.189 ; 11.195 ; 11.196 avg. 11.194

R_5 (5 start-stops) = _____, _____, _____ avg. _____

Timer error at = $(R_5 - R_1)/(5R_1 - R_5)$ = _____

Dose Rate $D = \frac{R_1 \cdot N_c \cdot k \cdot f}{(1 + \Delta t) \cdot \%DD(5)}$ = 74.13

Book Value = 74.29

Physicist FK

Date 11/10/87

St. Elizabeth's Therapeutic Radiology, Medical Physics

Co-60 Quality Assurance

1. Light Field Calibration

F.S. Set	F.S. Measured	O.K.?	Comments
10 x 10cm ± 2mm		( )	
20 x 20cm ± 2mm		( )	

2. Range Finder Calibration

SSD Set	SSD Measured	O.K.?	Comments
65cm ± 0.5cm		( )	
80cm ± 0.1cm		( )	

3. Light/Radiation Coincidence Test

Light F.S. Set	Radiation F.S. Meas.	O.K.?	Comments

4. Dose Rate Calibration (in H_2O phantom)

Electrometer = KEITHLEY 616/6169 SN1346977/15563 Chamber = PTW 23333 SN A009

Field size = 10 x 10 cm, SSD = 80 cm, d = 5 cm

T = (273 + 21.5)°K; p = 766.8 Torrs, $k = \left(\frac{760}{p} \cdot \frac{T}{295}\right) = 0.9894521$

N_c = 5.80 , f = 0.948 , %DD(5cm) = 78.8

One Minute Readings

R_1 (1 start-stop) = 10.58 ; 10.59 ; 10.58 ; 10.59 avg. 10.59

R_5 (5 start-stops) = _____, _____, _____ avg. _____

Timer error at = $(R_5 - R_1)/(5R_1 - R_5)$ = _____

Dose Rate $D = \frac{R_1 \cdot N_c}{(1 + \Delta t)} \cdot \frac{k \cdot f}{\%DD\ (5)}$ = 73.85

Book Value = 74.29

Physicist FK

Date 11/10/87

030-17832
17823

ST. ELIZABETH'S HOSPITAL OF BOSTON
736 Cambridge Street, Boston, Massachusetts 02135 (617) 789-3000

June 26, 1989

U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Gentlemen:

St. Elizabeth's Hospital hereby requests amendment to license #20-06579-02, covering our Cobalt-60 teletherapy program. The purpose of the amendment is substitute Frank Krasin, Ph.D. for R. Junda, M.D., as Radiation Safety Officer under this program. Dr. Junda has recently retired.

Dr. Krasin has been serving as the therapy physicist in this program for several years. He is certified by ABR in therapy physics. As with all programs at St. Elizabeth's Hospital, the services of F. X. Masse Associates, Inc. are also available on a contract basis for assistance as necessary to Dr. Krasin on health physics matters.

Enclosed is a check for $230 covering the amendment fee under category 7A for this request. Please contact F. X. Masse at (617)245-6600 if you have questions regarding this amendment.

Yours truly,

John C. J. Cronin
Sr. Vice President
Clinical Services

/lad
enclosure
6261t3

Log #13
Remitter 08545
Check No. 230
Amount $230
Fee Category 7A
Type of Fee AMD
Date Check Rec'd. 6/29/89
Date Completed 6/30/89
By: J.R.

109894
110545

RECEIVED REGION 1
'89 JUN 30 A9:49

OFFICIAL RECORD COPY ML 10

JUN 30 1989

ST. ELIZABETH'S HOSPITAL OF BOSTON
736 Cambridge Street, Boston, Massachusetts 02135 (617) 789-3000

June 26, 1989

U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

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Yours truly,

John C. J. Cronin
Sr. Vice President
Clinical Services

/lad
enclosure
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the American Radium Society, the
the Section on Radiology of the
the American Society for The
and the Association of

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Frank Kra

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and clinical work, has met certain
has passed the examinations
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Thereby demonstrating to
that he is qualified to

Therapeutic Rad

M. Paul Capp.

President

THE AMERICAN BOARD OF RADIOLOGY
INCORPORATED IN THE DISTRICT OF COLUMBIA
1934

oard of Radiology

the cooperation of the
American Roentgen Ray Society,
Radiological Society of North America,
American Medical Association,
apeutic Radiology and Oncology,
University Radiologists
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usin, Ph.D.

course of graduate study
standards and qualifications and
conducted under the authority of
Board of Radiology
day of May, 1988
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practice the specialty of

iological Physics

M.D.

Secretary

AMERICAN BOARD
OF
MEDICAL SPECIALTIES
EXCELLENCE
OPTIBUSQUE

CONVERSATION RECORD

TIME 10:00a DATE 6/22/89

TYPE ☐ VISIT ☐ CONFERENCE ☒ TELEPHONE ☒ INCOMING ☐ OUTGOING

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.
Frank Krasin	St. Elizabeth's	

ROUTING

NAME/SYMBOL	INT

SUBJECT Reference: License amendment for source change

SUMMARY

The response to my deficiency letter should be ready + out to us by 7/31/89.

Also, please delete 2 of the four users on the teletherapy license. They are no longer there. He will submit the names with the response to our deficiency.

ACTION REQUIRED

Wait for deficiency letter response

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
	Jan Gresch	7/7/89

ACTION TAKEN

OFFICIAL RECORD COPY ML 10

SIGNATURE	TITLE	DATE

MAY 3 0 1989

License No. 20-06579-02
Docket No. 030-17823
Control No. 109894

St. Elizabeth's Hospital of Boston
ATTN: Frank Krasin, Ph.D.
736 Cambridge Street
Boston, Massachusetts 02135

Gentlemen:

This is to confirm our telephone conversation on May 16, 1989 with Dr. Frank Krasin in which we discussed the information we need to continue review of your application dated November 18, 1988.

The items specified below are those we discussed.

1. Please provide the calibration documentation for the NEMCH instrumentation used in the intercomparison with your dosimetry system, and the date and results of the intercomparison to assure compliance with 10 CFR 35.630(2).

2. Please provide the name and qualifications of the Radiation Safety Officer for this license. If the Radiation Safety Officer is an authorized user, please provide the license number on which he/she is authorized.

3. Please provide the name and qualifications of the Teletherapy Physicist.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we shall assume that you do not wish to pursue your application.

Sincerely,

Original Signed By:
Josephine M. Piccone, Ph.D.

Josephine Piccone, Ph.D.
Nuclear Materials Safety Section A
Division of Radiation Safety
and Safeguards

Enclosure: Part 35

RI:DRSS
Gresick/pmb
5/24/89

RI:DRSS
Piccone
5/30/89

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ML 843 GRESICK - 0001.0.0
05/23/89

ML 10

MB-16
R5

ST. ELIZABETH'S HOSPITAL OF BOSTON
736 Cambridge Street, Boston, Massachusetts 02135 (617) 789-3000

April 3, 1989

U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

License No. 20-06579-02
Docket No. 030-17823
Control No. 109894

Gentlemen:

Following is our response to your letter of January 20, 1989, relative to the source change on our Cobalt-60 Teletherapy unit. Response is numbered in order of questions raised.

1. Instrumentation used was as follows:

   Keithley 616, Serial No. 134697
   Keithley 6169, Serial No. 15563
   PTW N23333, Serial No. A009

   Calibrated by K&S Associated, October 3, 1985
   Crosscalibrated against newly calibrated NEMCH instrument, November 10, 1987 on Co-60

2. Keithley used for 14-point survey was calibrated against NBS-traceable 50 mg Ra-226 standard (±1.0%) on day of measurement at MIT calibration range. Instrument was calibrated on at least two points of each scale.

3. Limits of Beam Orientation. With the gantry set at 0 degrees and the head swivel set at 0 degrees the beam orientation is vertical and pointing directly at the floor. In this orientation the unit will beam on only at head swivel settings clockwise (CW) between 0 degrees to 22 degrees and counterclockwise (CCW) between 0 degrees to 23 degrees; with the gantry set at 90 degrees the unit will beam on with the head

109894

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swivel settings CW from 0 degrees to 4 degrees and CCW from 0 degrees to 3 degrees; with the gantry set at 270 degrees the unit will beam on with the head swivel settings CW from 0 degrees to 3 degrees and CCW from 0 degrees to 2 degrees; with the gantry at 180 degrees the unit will beam on with the head swivel settings CW from 0 degrees to 3 degrees and CCW from 0 degrees to 4 degrees.

For any gantry settings the unit will beam on whenever the beam is pointed perpendicular to the floor and for any head swival settings within 0 to 22 degrees CW of the perpendicular and 0 to 23 degrees CCW from the perpendicular. Angle readings were obtained from the right side of the head.

4. All radiation levels in adjacent areas are less than 0.1 mR/hr.

   a) The phantom used is an acrylic water bath measuring 32 cm x 32 cm x 16 cm deep.

   b) Source to phantom distance was 80 cm.

   c) Field size was maximum 32 cm x 32 cm.

5. Attached are the plan and elevation sketches of this facility as requested.

6. As indicated above, the maximum reading in all surrounding areas is less than 0.1 mR/hr, regardless of beam orientation within the prescribed boundary conditions. Since the beam restrictions essentially allow open beam delivery to only the floor, beam orientation would not be expected to significantly influence measurements in other areas.

7. See the attached daily check list for this unit. All checks on this list were included in the checkout procedure following installation. This satisfies your question as follows:

   a) Door was opened to establish that source is retracted and mechanical motion stops. Door was closed to be sure console reset was necessary to resume operation.

   b) Both the radiation "source on" detectors at the console and in the room as well as the console light and mechanical source rod on the protective source housing were checked for proper operation and indication.

   c) All source control beam orientation limits were

checked to be sure they comply with the requirement outlined in 3 above.

d) The timing device was fully checked out.

The above information should fully respond to your questions. Please do not hesitate to contact F. X. Masse at (617) 245-6600 if further information is required. Please copy Mr. Masse at P.O. Box 95, Middleton, MA 01949 with all correspondence on this license.

Yours truly,

John C. J. Cronin
Senior Vice President
Clinical Services

/lad
cc: F. Masse
F. Krasin

20 JAN 1989

License No. 20-06579-02
Docket No. 030-17823
Control No. 109894

St. Elizabeth's Hospital of Boston
ATTN: F. S. Masse, CHP
736 Cambridge Street
Boston, Massachusetts 02135

Gentlemen:

This is in reference to your request in a letter dated November 18, 1988, to amend License No. 20-06579-02. In order to continue our review, we need the following additional information:

1. Please provide the manufacturer's name and model number of the radiation detection instrument used to measure the intensity of the primary beam of radiation. Please provide the date of the last calibration before making these measurements and the standards (i.e, radionuclide, activity, and accuracy) and procedures used in the calibration.

2. Please provide the date of the last calibration of the Keithley Model 36155 dosimetry system prior to making the fourteen point survey of the teletherapy head, and the standards (i.e., radionuclide, activity, and accuracy) and procedures used in the calibration.

3. Please describe the limits of beam orientation permitted by electrical or mechanical stops installed on the teletherapy unit. Specify each direction in which the teletherapy head can be moved and the maximum angle (from vertical) of the beam orientation in each direction. Also, specify the angle orientation (e.g., 0° is vertical toward the floor; 90° is horizontal toward the east wall; 180° is vertical toward the ceiling; and 270° is horizontal toward the west wall). You may use sketches to describe the beam stops that limit the use of the primary beam. For units with a integral beam absorber, provide this information for orientations with the primary beam directed (a) toward the integral beam absorber and (b) away from the integral beam absorber.

4. Please provide the measurements of radiation levels in adjacent areas. Please also include a description of:

   a. the phantom used, including the material of which it is made and its size;

   b. the source-to-phantom distance; and

   c. the field size (field size should be the maximum permitted by the collimators unless physical means are used to restrict field size).

5. Please submit plan and elevation drawings or sketches of the teletherapy facility; a scale of 1/4 inch = 1 foot is recommended. The drawings or sketches should:

   a. indicate the direction of north;

   b. show the location of the teletherapy unit and source within the treatment room;

   c. identify each area adjacent to the treatment room (including above and below);

   d. indicate the directions of primary beam usage and, in the case of an isocentric unit, the plane of rotation; and

   e. identify the locations at which radiation levels were measured.

6. Please provide the maximum measured radiation levels in each adjacent area correlated with orientation of the beam, producing each measured value. Please include all areas above and below the teletherapy unit, the most adverse orientations, and a designation of whether each area is a "restricted" area or an unrestricted area. Unrestricted areas must meet the requirements of 10 CFR 20.105(b)(1) and (2).

7. Describe (1) the tests that were conducted and (2) the results of these tests that ensure proper operation of the safety systems described below. All tests should use a radiation detection instrument to confirm the "on-off" status of the source.

   a. Teletherapy treatment room door interlock. The test should be sufficient to ensure that the door interlock operates in the manner described in Condition 16.B.(i) of the license.

   b. Teletherapy "on-off" indicators, both mechanical and electrical (e.g., lights or mechanical indicator on protective source housing of teletherapy unit, over door to room, at console).

   c. Electrical or mechanical stops installed to limit use of the primary beam of radiation. The test should be sufficient to ensure that beam stops operate in the manner described in the answer to question number 3 of this letter.

   d. Teletherapy treatment timing device. The test should be sufficient to ensure that the timer is accurate, that the source returns to the off position at the end of the preset time; and that the source does not return to the on position until the timer is reset.

We will continue our review upon receipt of this information. Please reply in duplicate to my attention at the Region I office and refer to Mail Control No. 109894.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we shall assume that you do not wish to pursue your application.

Sincerely,

Original signed By:
John E. Glenn, Ph.D.

John E. Glenn, Ph.D., Chief
Nuclear Materials Safety Section A
Division of Radiation Safety
and Safeguards

Enclosures:
Guide for the Preparation of Applications for Licenses for Medical Teletherapy Programs Task FC 414-4

RI:DRSS
Gresick/pmb
1/19/89

RI:DRSS
Glenn
1/19/89

OFFICIAL RECORD COPY ML 683 GRESICK - 0003.0.0
01/17/89

ML 10

OFFICE:
617-245-6600
508-283-4888

F. X. Massé Associates, Inc.
Health Physics Consultants
Manning Road, P.O. Box 95
Middleton, Mass. 01949

(24 hrs.)
508-283-4888

030-17823

November 18, 1988

US Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia PA 19406

Gentlemen:

Enclosed is the teletherapy source installation report on a new source installed at St. Elizabeth's Hospital, Boston, MA, under license #20-06579-02. The teletherapy head survey was performed by me on 10/21/88 in cooperation with Frank Krasin, PhD, the hospital medical physicist, following completion of installation and before patient treatments were resumed. The new source calibration performed by Frank Krasin indicated a dose rate on the same date of 5761.01 Roentgens per hour at one meter. The fourteen point survey prescribed by NRC yields an average dose of 1.24 mR/hr at one meter around the head with source retracted. The highest reading is at a point above position 4, on axis with source drawer through the emergency shut-down access hole. That reading was 4.8 mR/hr, which would raise the average reading to 1.48 mR/hr for 15 readings.

Enclosed also is a copy of the 5 year inspection and servicing report, which was completed during this source replacement. As indicated in that report, this unit continues to operate satisfactorly in all respects.

Please contact the undersigned if further information is required.

Sincerely,

F.X. Massé

F.X. Massé, CHP

Enclosure
cc Frank Krasin, St. Elizabeth's Hospital
Neutron Products, Inc.

FEE EXEMPT
Th survey

St. Elizabeth Hospital of Boston
Boston, MA

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

	Position No.	Radiation Level (mR/hr)
View A	1	1.5
	2	0.3
	3	3.2
	4	0.2
View B	5	1.3
	6	2.3
	7	0.5
	8	0.1
View C	9	2.2
	10	1.6
View D	11	0.1
	12	0.3
	13	2.4
	14	1.4

Average value 1.24 (1.48)

Maximum value 4.8

(source drawer axis front)

Instrument used

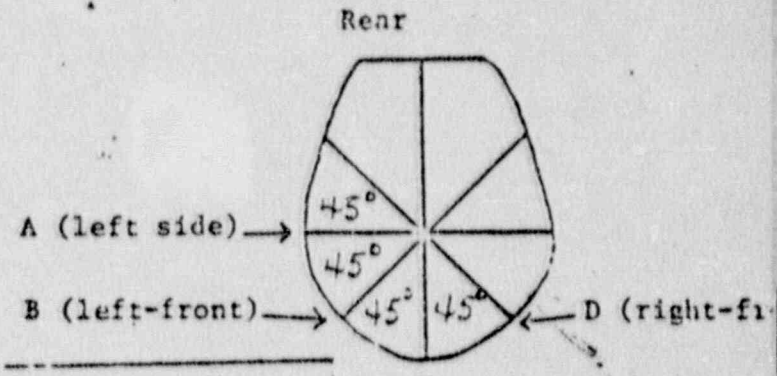
Keithley Model 36155

Curies & Date 4750 10/1/88

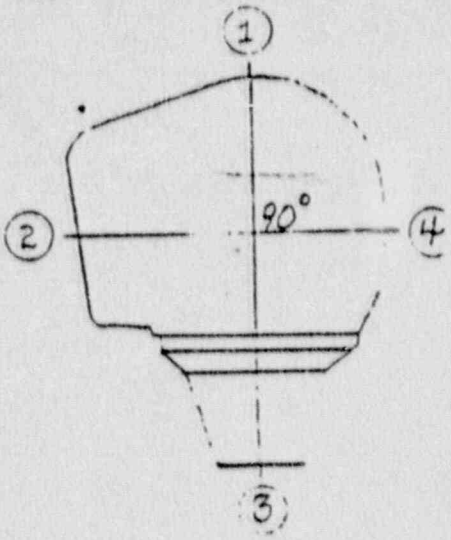
Manufacturer's name & model # of teletherapy unit AECL

Theratron 80

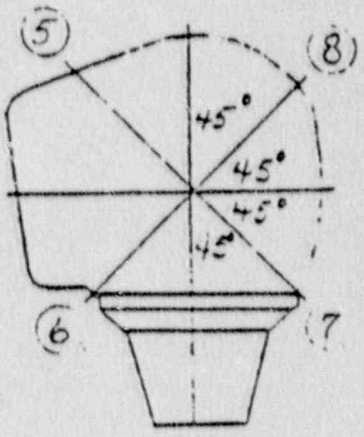
Top View - Showing orientation of Views A through D



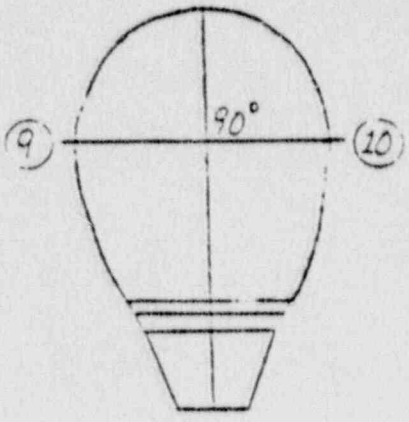
View A - Vertical from left side



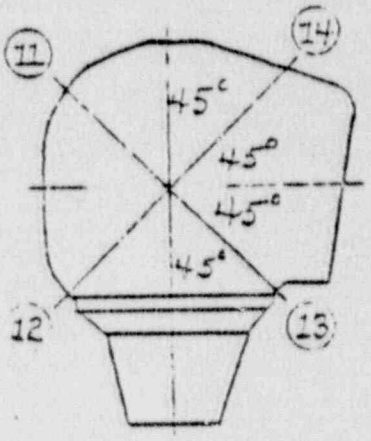
View B - Vertical from left-front



View C - Vertical from front



View D- Vertical from right-front



TELETHERAPY SOURCE TRANSFER

This is to certify that a cobalt-60 source:

Catalog Number: NPI-20-5500W
Model Number: NPTT-Series
Serial Number: T-962
Containing 4750 curies as of 10/1/88

and which has been determined by helium pressure test and by wipe test to be leak free, has been installed in a teletherapy unit described as follows:

Manufacturer: AECL
Model Number: Theratron 80
Serial Number: 79

This source is hereby transferred from Neutron Products' Radioactive Materials License MD-31-025-03 to St. Elizabeth Hospital of Boston's Radioactive Materials License No. 20-06579-02, Amendment #4.

This will also certify that a cobalt-60 source described as follows:

Model Number: NPI-20-4500W
Serial Number: T-766
Containing 2600 curies as of 11-88

has been determined by a wipe test to be leak free and has been removed from the above teletherapy unit and transferred from St. Elizabeth Hospital of Boston's Radioactive Materials License No. 20-06579-02 to Neutron Products' License MD-31-025-03.

We have witnessed the inspection and operation of the above teletherapy unit after completion of the installation by Neutron Products, Inc. and have found the unit to be operating properly and safely.

Frank Krasin
Date 10/21/88

D. L. L. Rapp
Neutron Products, Inc.
Date 10-21-88

NEUTRON PRODUCTS INC

22301 Mt. Ephraim Road • P.O. Box 68 • Dickerson, Maryland 20842 USA • 301/349-5001
TWX: 710-828-0542 • FAX: 301/349-5007

REPORT OF INSPECTION AND SERVICING
("FIVE YEAR INSPECTION" REPORT)

This is to certify that the Atomic Energy of Canada, Ltd. (AECL) teletherapy unit, Model Theratron 80, Serial Number 79 located at St. Elizabeth Hospital of Boston, 736 Cambridge Street, Boston, Massachusetts, 02135 was inspected and serviced on 10-20+21 1988 by Dale Repp to assure the proper function of the source exposure mechanism as authorized by Maryland License MD-31-025-03.

Signed Dale L. Repp Date 10-21-88

Parts: DETENT-PIN - 1 RUBBER RING.

Nonstandard Service:

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Facility Address:
St. Elizabeth Hospital of Boston
736 Cambridge St.
Boston, MA 02135

INSPECTION CHECK LIST

Revision Date
July 25, 1983

Unit: Theratron 80 Serial Number: 79

OPERATION	Prior to Transfer*	Subsequent to Transfer**
1. Determine Operating History	X ✓	
2. Head Movement	X ✓	X ✓
3. Electrical and Mechanical Source Condition-Indicator Check	X ✓	X ✓
4. Manual Source/Shutter Return	X ✓	X ✓
5. Timer	X ✓	X ✓
6. Source Holder/Shutter Movement Check	X ✓	X ✓
7. Pneumatic Activating System	X ✓	X ✓
8. ~~Mercury Shutter System~~	X	X
9. Stand and Stretcher		X ✓
10. Protective Source Housing, Beam-Off Leakage (Confirm Measured by Medical Physicist)		X
11. Source-Surface Distance (SSD)		X ✓
12. Beam Orientation	X ✓	X ✓
13. Congruence of Light and Radiation Fields		X ✓
14. Full Calibration (Confirm Performed by Medical Physicist)		X
15. Facility Door Interlock	X ✓	X ✓
16. Teletherapy Units with Moving Source Drawer	X ✓	X ✓
17. ~~Teletherapy Units with Moving Shutter Blocks~~	X	X
18. ~~Teletherapy Units with Rotating Shutter~~	X	X
19. Indicator Light	X ✓	X ✓
20. Emergency Shutoffs	X ✓	X ✓
21. Collimator	X ✓	X ✓

Note: *Circle all items not meeting attached criteria.
**Circle all items not meeting attached criteria after servicing.

Signed: J. Rapp Date: 10.21.88

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TELETHERAPY SOURCE CERTIFICATION

This certifies that the cobalt-60 source:

Model Number: NPTT-Series
Catalog Number: NPI-20-5500W
Serial Number: T-962

Containing 4750 curies as of: 10/1/88

was fabricated by Neutron Products, Inc. in accordance with NPI specification P-4 per Drawing Number A20005 and was leak tested by the helium pressure test and found to be leak free on 10-7-88. The source was wipe tested and the removable activity was .044, and .0008 microcuries from the inner and outer encapsulations, respectively.

Performed by and certified to by:

Don S. Franklin

Jeffrey W. Corun, Manager
Hot Cell Operations

Reviewed and approved by:

for

Wayne J. Costley
Quality Assurance Manager

10/13/88

Date

OFFICIAL RECORD COPY ML10

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109894

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 02300
STATUS CODE: 0
FEE CATEGORY: 7A
EXP. DATE: 19911031
FEE COMMENTS: _____

LICENSE FEE TRANSMITTAL

A. REGION 1

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: ST. ELIZABETH'S HOSPITAL OF BOSTON
RECEIVED DATE: 881121
DOCKET NO: 3017823
CONTROL NO.: 109894
LICENSE NO.: 20-06579-02
ACTION TYPE: AMENDMENT

2. FEE ATTACHED
AMOUNT: $0
CHECK NO.: 0

3. COMMENTS

SIGNED EGM(W)
DATE Nov 22, 1988

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED 12/7)

1. FEE CATEGORY AND AMOUNT: 7A FEE EXEMPT

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT ✓
RENEWAL _____
LICENSE _____

3. OTHER _____
_____

SIGNED S Kimbrell
DATE 12/2/88

D.
-89

Voided

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE: 02300
STATUS CODE: 0
FEE CATEGORY: 7A
EXP. DATE: 19911031
FEE COMMENTS: _____

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: ST. ELIZABETH'S HOSPITAL OF BOSTON
RECEIVED DATE: 890630
DOCKET NO: 3017623
CONTROL NO.: 110945
LICENSE NO.: 20-06579-02
ACTION TYPE: AMENDMENT

2. FEE ATTACHED
AMOUNT: $230.00
CHECK NO.: 08545

3. COMMENTS

SIGNED EMW
DATE 7-3-89

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED / 7)

1. FEE CATEGORY AND AMOUNT: 7A $230

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT ✓
RENEWAL _____
LICENSE _____

3. OTHER _____

SIGNED S. Kimberly
DATE 7/13/89

Voided
Combined with
C.N. 109894