

SINAI HOSPITAL OF DETROIT

6767 WEST OUTER DRIVE
DETROIT, MICHIGAN 48235-2899

May 15, 1985

Dr. Bruce S. Mallett
U.S. Nuclear Regulatory Commission
Material Licensing Section
Region III
799 Roosevelt Rd.
Glen Ellyn, IL 60137


Dear Doctor Mallett:

The cobalt source of Sinai Hospital of Detroit was changed on April 20, 1985.

Attached please find the Source Disposal Certificate, Inspection Certificate, Radiation Survey Report on the Teletherapy Head, Certificate of Measurement of Teletherapy Source S-3731, Leak Test Certificate, Radiation Survey Around Cobalt ⁶⁰ Teletherapy Room and Radiation Output in Air For Various Field Sizes.

If you have any further questions, please do not hesitate to contact me.

Yours truly,



Joseph Mantel, Ph.D.
Chief, Radiation Physics Section
(313) 493-5105

JM/sp
attachments (7)

RECEIVED BY LFMD	
Date	5/24/85
Log	May 27 th
By	8
Orig. To	
Action Comp	5/29/85

RECEIVED
MAY 20 1985
REGION III

MAY 20 1985

FEE EXEMPT
re survey report

8508120792 850731
REG3 LIC30
21-00299-06 PDR



Atomic Energy of Canada Limited

SOURCE DISPOSAL CERTIFICATE

TO WHOM IT MAY CONCERN:

This is to certify that the following source has been removed from the unit described herein, and returned to Atomic Energy of Canada Limited, Commercial Products, Ottawa, Ontario, Canada for disposal:

COBALT 60 OR CAESIUM 137 SEALED SOURCE	SERIAL NO. <i>S-3238</i>	DEPLETED URANIUM ID.	UNIT <i>T-80 #91</i>	UNIT SERIAL NO. <i>#91</i>
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LOCATION OF UNIT

SINAI HOSPITAL OF DETROIT

6767 WEST OUTER DRIVE

DETROIT, MI. 48235

Date:

4-19-85

Signed:

William Hughes

A.E.C.L. Service Representative



**Atomic Energy of Canada Limited
Commercial Products**

INSPECTION CERTIFICATE

AUTHORIZED INSPECTION AND SERVICING OF AECL TELETHERAPY UNIT

MODEL NO. T-80 SERIAL NO. 91

TELETHERAPY SOURCE SERIAL NO. S-3731 CURIES 5828 DATE MAR 85

CUSTOMER SINAI HOSPITAL OF DETROIT

6767 WEST OUTER DRIVE DETROIT, MI. 48235

This teletherapy unit was inspected and serviced in accordance with Atomic Energy of Canada Limited USNRC License No. 54-00300-04.

Date of Inspection 4-19-85

This is to certify that the unit was inspected and serviced in accordance with the conditions of the License. Each teletherapy machine shall be fully inspected and serviced during source replacement or at intervals not to exceed five years.

By William Hughes 4-19-85
Authorized Source Handler (date)



Atomic Energy
of Canada Limited

Radiochemical Company

L'Energie Atomique
du Canada, Limitee

Societe radiochimique

RADIATION SURVEY REPORT

Teletherapy Head - Beam Off

P&S 43349

Customer SINAL HOSPITAL OF DETROIT

Location 6767 W. OUTER DRIVE DETROIT MICHIGAN 48235

Model THERATRON 80

Serial Number 91

SOURCE DATA

Serial No. S-3731 Diameter 2.0 CM. Curies 5828 CO⁶⁰

Measured Output 103.4 ($\pm 3\%$) Rmm(ICRU)

Measurement Date MARCH 22 1985

Maximum Unit Output 122.5 ($\pm 5\%$) Rmm

Rated Capacity 125.04 Rmm(ICRU)

Survey Meter BERTHOLD

Model RATO F

Serial No. 1718

Calibration Date MAR. 27, '85

Supplementary Shielding: Donut ☐

Air Cylinder End ☒

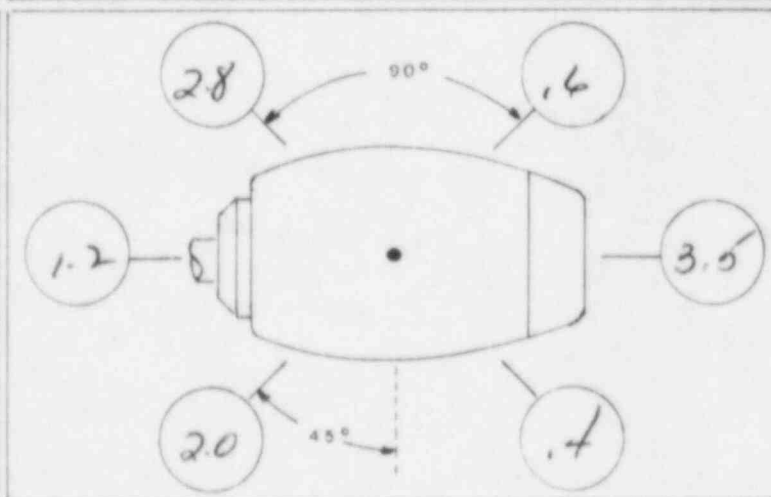
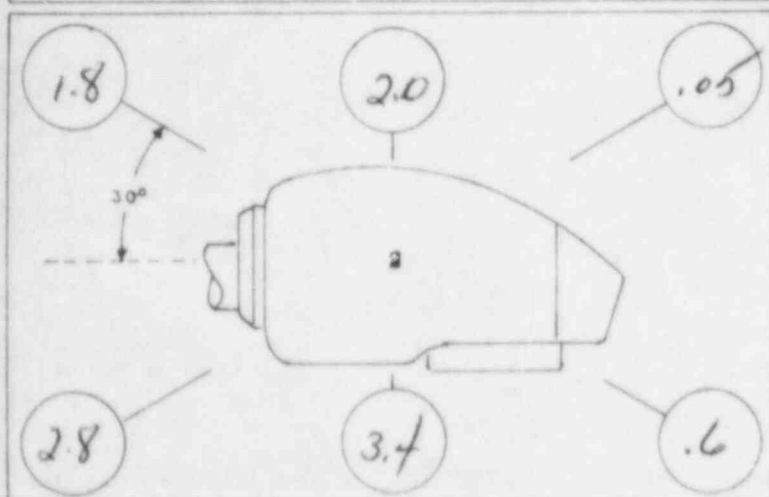
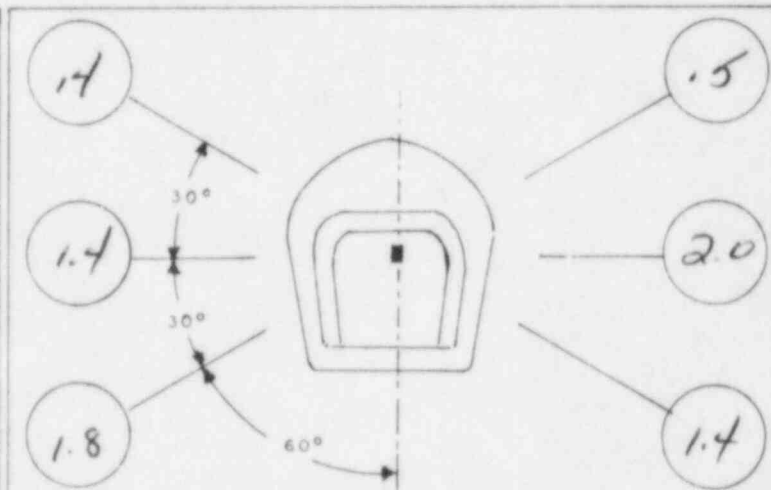
Other ☐

HEAD SURVEY PERFORMED BY W. HUGHES / D. TEGTMEYER

Date APR. 19, '86

NOTES

1. Values at each point are averaged over a 100 square centimetre area in accord with recommendations NCRP Report 33.
2. Values are in mR/h at 1 metre from the source.
3. This report is based on values measured at 18 points and is for compliance verification only. Report is not to be used as a substitute for comprehensive 26 point survey originally performed under controlled conditions at the factory in accord with recommendations NCRP Report 33.
4. Average of values at all 26 points is equal to, or less than, 2 mR/h.
5. No measured value exceeds 10 mR/h.



Certificate Of Measurement

of

TELETHERAPY SOURCE S-3731

for

CUSTOMER SINAI HOSPITAL OF DETROIT
DETROIT MICHIGAN

AECL ORDER No. P&S 43349

THERAPY UNIT When installed in THERATRON 80#91 (at maximum
OUTPUT field size) the exposure rate will be 122.5 Rmm (+5%)
based on the source measurement (below), and the
equipment conversion ratio described on sheet 3.

MEASUREMENT Source S-3731 is a 2.0 cm diameter standard source,
OF SOURCE type C-151, containing 5828 curies cobalt 60.
The source exposure rate was 108.4 Rmm (+3%) at the
one metre position of the measurement cell.

DATE OF MEASUREMENT 1985 MARCH 22

MEASUREMENT METHOD

The source exposure rate was measured in the cell described on the following sheet (Form QC 9 Sheet 2). The exposure rate was measured with an air wall cavity ionization chamber having a volume of 0.6 cm³ and fitted with a 4.6 mm lucite equilibrium cap. The instrument is calibrated in a cobalt-60 exposure rate certified by the National Research Council of Canada.

ACCURACY

The uncertainty in the source exposure rate applies only to measurement of this source in the AECL Measurement Cell. It represents the maximum total uncertainty due to all causes including the calibration of the Council's primary exposure rate, the calibration of their instrumentation and the precision of measurement in the Measurement Cell. Additional uncertainty due to the comparative measurements involved, has been included in the statement of unit output.

EXCERPT FROM THE RECOMMENDATIONS OF THE INTERNATIONAL COMMISSION ON RADIATION UNITS & MEASUREMENTS, REPORT ICRU-18, OCTOBER 1970. "It must be emphasized the measurement of exposure rate and/or absorbed dose for treatment purposes should be made locally by the user himself. The statement of equipment conversion ratio by the manufacturer should not be regarded as a substitute for this."

ISSUED 1985 APRIL 3

APPROVED René P.D. Lanoue
Measurement

G.R. Malkoske
Authorization



Atomic Energy of Canada Limited • Radiochemical Company

Kanata • Ontario

NOTE: Rmm stands for roentgens per minute at one metre.

LEAK TEST CERTIFICATE ATTESTATION D'ÉTANCHÉITÉ

ORDER No.
N° DE COMMANDE

43349

DATE

1985 April 4

DESCRIPTION OF SOURCE TESTED DESCRIPTION DES SOURCES VÉRIFIÉES

One Cobalt-60 Teletherapy Source 2.0 CM. Active Diameter, AECL Type C 151
Une source de téléthérapie au Cobalt-60, CM de diamètre actif, ÉACL, Type C

Serial No.
N° de série S-3731 Other
Autre

LEAK TESTS PERFORMED ÉPREUVES D'ÉTANCHÉITÉ EFFECTUÉES

(See reverse for description of tests)
(Description des épreuves au verso)

RESULTS OF TESTS RÉSULTATS DES ÉPREUVES

- ☒ 1. THE DRY WIPE TEST, PROCEDURE DG-0065
ÉPREUVE PAR FROTTEMENT À SEC, PROCÉDÉ DG-0065
- ☐ 2. OTHER TESTS (AS DESCRIBED BELOW)
AUTRES ÉPREUVES (DÉCRITES CI-APRÈS)

NEGATIVE

DATE OF COMPLETION OF TESTS
ÉPREUVES TERMINÉES LE

1985 April 4

FOR THE COMPANY
POUR LA SOCIÉTÉ


Source Production Department
Service de la production des sources



Atomic Energy
of Canada Limited

Radiochemical Company

P.O. Box 13500
Kanata, Ontario
Canada
K2K 1X8

L'Énergie Atomique
du Canada, Limitée

Société Radiochimique

C.P. 13500
Kanata, Ontario
Canada
K2K 1X8

TITLE: DRY WIPE TEST — ABSTRACT

The surface of the capsule is thoroughly wiped with a filter paper. The paper is monitored and the amount of radioactive material present is determined. If less than 0.0005 microcuries are present, the results are described as negative. The limit is raised to 0.005 microcuries on the inner capsule of a double encapsulated assembly.

The source assembly is retested after a minimum period of 7 days of storage and within 7 days of final packaging. The limit on the 7 days leak test is 0.005 microcuries.

Procédé DG-0065 ÉACL

TITRE: ÉPREUVE PAR FROTTEMENT À SEC — APERÇU

On essuie soigneusement la surface de la capsule avec un papier filtre. On vérifie le papier pour déterminer la quantité de matières radioactives présentes. Lorsqu'on détecte moins de 0.0005 microcuries, on considère que les résultats sont négatifs. Cette limite est portée à 0.005 microcuries sur la capsule intérieure d'un ensemble doublement encapsulé.

On révérifie l'ensemble de la source après une période minimale de 7 jours de stockage et dans les 7 jours qui précèdent l'emballage définitif. La limite prévue pour l'épreuve détanchéité de 7 jours est de 0.005 microcuries.

RADIATION SURVEY AROUND COBALT ⁶⁰ TELETHERAPY ROOM

A polystyrene phantom was placed in the beam. Its measurements are 25 cm x 25 cm and 20 cm thick. It is placed at 70 cm SSD. The teletherapy collimators are set at 25 cm x 25 cm. A Victoreen G-M meter was used: Model #493, serial #3928M (probe-model #493-5, serial #2495); calibration date: 3-20-85.

For gantry angle (0°) and head angle (0°) a maximum exposure rate of 0.05 mR/hr was found at the north and south walls.

For gantry angle (30°) and head angle (0°) a maximum exposure rate of 0.10 mR/hr was found at the south wall.

For gantry angle (60°) and head angle (0°) a maximum exposure rate of 0.10 mR/hr was found at the south wall.

For gantry angle (90°) and head angle (0°) a maximum exposure rate of 0.10 mR/hr was found at the west wall.

For gantry angle (120°) and head angle (0°) a maximum exposure rate of 0.13 mR/hr was found at the south wall.

For gantry angle (150°) and head angle (0°) a maximum exposure rate of 0.05 mR/hr was found at the south wall.

For gantry angle (180°) and head angle (0°) a maximum exposure rate of 0.07 mR/hr was found at the north wall.

For gantry angle (210°) and head angle (0°) a maximum exposure rate of 0.12 mR/hr was found at the north wall.

For gantry angle (240°) and head angle (0°) a maximum exposure rate of 1.10 mR/hr was found at the north wall.

For gantry angle (270°) and head angle (0°) a maximum exposure rate of 2.20 mR/hr was found at the north wall. The north wall is an exterior wall separating the Co-60 teletherapy room from an uncontrolled area where Plant Management personnel use a sidewalk running parallel to this wall to get to their department.

For gantry angle (300°) and head angle (0°) a maximum exposure rate of 1.50 mR/hr was found at the north wall.

For gantry angle (330°) and head angle (0°) a maximum exposure rate of 0.15 mR/hr was found at the north wall.

A maximum head rotation in the clockwise direction of 15° with the gantry angle at (0°) will permit the Co-60 teletherapy to operate. For any other gantry angle than (0°) or head angle greater than (15°) the unit will not operate. For this setting a maximum exposure rate of 0.08 mR/hr was found at the north wall.

The unit can operate with the head rotation in the counter-clockwise direction to 30° . The maximum exposure rate of 0.05 mR/hr was found for this head angle (30°) and gantry angle (0°) at the south wall.

