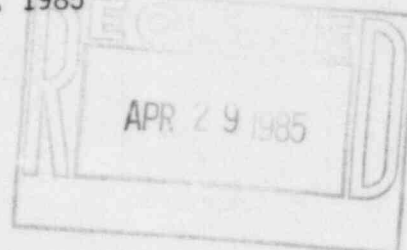


RECEIVED BY LEM
Date... 5/13/85
Log... App 6 IV
By... Brown
Orig To
Action Count... 5/14/85

ST. JOHN MEDICAL CENTER • 1923 SOUTH UTICA AVENUE • TULSA, OKLAHOMA 74104 • 918 / 744-2345

April 26, 1985



Materials Licensing Branch
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

Gentlemen:

Following are the data that we are required to submit after the installation of a new Cobalt-60 source. The format of this report is from Appendix F of the "Guide for the Preparation of Applications for Licenses in Medical Teletherapy Programs".

A. Owner of source:

St. John Medical Center
1923 S. Utica
Tulsa, OK 74104

Byproduct Material License
#35-00376-05

B. Survey completed by:

Keith M. Jones, Ph.D.
(Same address as above)

C. Reason survey done:

New Source installation

D. Source installed on:

April 4, 1985

E. Survey conducted on:

April 5 and 8, 1985

F. Instruments used:

- ✓ Victoreen GM Survey Meter, Model 491.
- ✓ Calibrated on 2-11-85 by placing it at varying distances from a 5 mg (\pm 5%)
- ✓ Ra-226 Source.
- ✓ Keithly Digital Electrometer, Model 616; Capintec PRO6-G ion chamber.
- ✓ Calibrated on 2-6-85 by K&S Associates, Inc., Nashville, Tennessee.

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REG4 LIC30
35-00376-05 PDR

G. Teletherapy unit manufactured by ✓ Siemens, Inc., Model - Gammatron S.

H. Cobalt-60 source was manufactured by Neutron Products Inc. Model NP0-20-7000W Serial #T769.



Shall by NPI?
FEE EXEMPT
tt survey report
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- I. Source Activity: 6470 Curies on 4-4-85
- J. Beam intensity: 173.2 rads/minute for 20 x 20 field at 80 cm SSD at d-max in a tissue equivalent phantom. Date: 4-5-85.
- K. Figure F-1 "TeleTherapy Head Survey" attached.
- L. Possible beam orientation and motions:
1. In synchrony with the beam stopper, 360° rotation about the axis of gantry rotation.
 2. With the beam stopper stationary, 11° toward the gantry and 120° away from the gantry. The plane of rotation passes through the source and is perpendicular to the plane of 1.
 3. With the beam stopper stationary, $\pm 180^{\circ}$ about an axis passing through the source. The plane of rotation is coplanar with 1.
 4. Mercury switches located in the teletherapy head prevent the source from being activated unless the radiation field is centered on the beam stopper whenever the therapy beam is directed less than $\pm 52^{\circ}$ from straight up.
- M. Set-up for measuring radiation levels in adjacent areas:
1. A 40 cm x 40 cm x 30cm water-filled lucite tank was used for scattering.
 2. It was placed on the treatment table at 80 cm SAD.
 3. The maximum field size (40 cm x 40 cm) was directed toward it.
- N. Sketch of facility is attached.
- O. Radiation survey results

Upstairs (General Stores - Point D)

1. Beam directed upward (180°) with phantom and beam stopper in position - .02 mR/hr
2. Beam directed upward but 45° from vertical so scatter from phantom just clear beam stopper (i.e. gantry angle = 225°) - .04 mR/hr
3. Beam directed upward but 53° from vertical with phantom in place but no beam stopper (this is the minimum angle allowed by the electrical interlockers) - 1.5 mR/hr.

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Simulator Room (Point B)

1. Beam directed horizontally toward the simulator room with the phantom and beam stopper in place - .02 mR/hr.
2. Beam directed toward the simulator room but angled 45° below the horizontal so that scatter from the phantom just cleared the edge of the beam stopper - .03 mR/hr
3. Beam directed toward simulator room (gantry 270°) with phantom in place but no beam stopper - 2.0 mR/hr

Control Area (Point A)

Beam directed downward with phantom and beam stopper in place - .03 mR/hr

Hallway (Point C)

Beam directed downward with phantom and beam stopper in place - .02 mR/hr

P. No exposure rate was greater than 2 mR/hr.

Q. Tests done to ensure proper operation of unit.

1. Teletherapy unit would not come on with treatment room door open. When unit was on and the door is opened, the unit automatically turns off. Upon reclosing the door, the unit has to be reset at the console before unit is able to be turned back on. A survey meter was used to assure unit was off when the above were tested.
2. A red marker is viewed on the source head when the source is on. Otherwise a green marker is seen. A light over the treatment door also comes on when the source is on. One can also hear the timer on the unit click every hundredth of a second while the source is on. Four lights on the control panel are lit when the source is on. These were tested and found to be working properly.
3. The radiation surveys with and without the beam stopper indicate all stops to be working properly.
4. Timer error was measured and found to be .0068 minutes. This is consistent with previous measured errors. A back-up timer is present and working. When the unit was turned off by any means, it would not turn back on until the timer was reset.

R. The old source was removed on:

1. April 4, 1985.
2. Possession was transferred to Neutron Products, Inc., License #MD-31-025-03.

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T. No safety recommendation was made.

Sincerely,

Keith M. Jones, Ph.D.

Keith M. Jones, Ph.D.
Radiation Physicist

KMJ:amd

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