

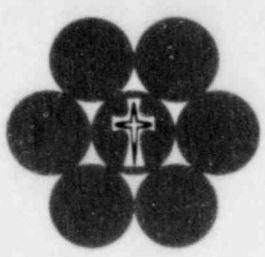
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St. Joseph Mercy Hospital

U.S. NUCLEAR REG.
COMMISSION
MAIL SECTION

November 6, 1979

Patricia C. Vacca
Materials Licensing Branch
Division of Fuel Cycle and Material Safety
United States Nuclear Regulatory Commission
Washington, D.C. 20555

*11/13/79
Called Colvin - 11/13/79
to tell him
license number
PC Vacca*

Dear Mrs. Vacca:

Control #: 01161

This is in response to your letter dated October 23, 1979 concerning the application for a new teletherapy license for St. Joseph Mercy Hospital in Ann Arbor, Michigan. The following is in response to the items listed in your letter:

1. The cobalt teletherapy unit will be used in a stationary installation at 5301 East Huron River Drive, Ann Arbor, Michigan.
2. a. The source will be from AECL source Model C-146 or C-151.
b. The source shipped from AECL will have a maximum activity of 6,600 curies. AECL states that this activity source will give out 110 RMM +0% to -10%. Therefore the maximum will be 110 RMM.
3. a. The beam will intercept the beam stopper for rotation of the unit from 90° around to 360°. This means that the mercury switches will be set such that if the gantry is in any position from 90 to 360° the beam head will not be able to be rotated away from the beam stopper.
b. The beam will be able to be rotated away from the beam stopper when the gantry is in any position from 0 to 90°. The tube head can be rotated from a position of 0° which is pointed toward the beam stopper to 90° away from the beam stopper. This would then mean that the beam would be pointed directly towards the east wall. When the gantry is in 0° position and the tube head is rotated 90° toward the east wall the x-ray field on the east wall will be centered at 6.4 feet above the floor with a field size of 4.2 feet by 4.2 feet. In this position the x-ray field will be at the maximum height above the floor. It will not be intercepted by

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the east wall. When the gantry is in a 90° position and the tube head rotated 90° away from the beam stopper towards the floor the whole x-ray beam will be intercepted by the floor. This description is shown in the attached drawing. The mercury switches will be adjusted such that the beam head can only be pointed towards the east wall or towards the floor in a continuous motion from the east wall down to the floor. The x-ray beam will go up to a height only perpendicular with the east wall and rotated in a downward direction no farther than perpendicular with the floor.

4. The beam stops will not allow the primary beam to be used in any manner other than that described in my calculations.
5. Emergency procedures will be revised to list the name of two individuals to be notified as well as their telephone numbers during working hours and off duty hours. This will be myself, Jeff Colvin, and Dr. D. E. Boblitt.
6. a. All exposed surfaces will be wiped with a 1 inch square piece of paper towel not to exceed a total area of 100 sq. cm. The radioactive standard used in our well counter will be a 1 uCi rod source from New England Nuclear, Catalog No. NES-142R. The accuracy will be + or - 3-5% with a 99% confidence limit.
b. The following will be done to calculate the number of microcuries of removable contamination:
 1. The well counter PHA will have a window setting of 300 KEV centered on 1.25 MEV.
 2. Background will be counted for one minute and recorded.
 3. The cobalt⁶⁰ standard will be counted for one minute and those counts recorded.
 4. Each wipe sample will be counted for one minute and the counts recorded. An example of the conversion will be as follows:

$$\begin{array}{rcl} 1 \text{ uCi cobalt}^{60} & = & 20,000 \text{ CPM} \\ \text{Background} & = & -200 \text{ CPM} \\ \hline & & 19,800 \text{ CPM Net Standard} \end{array}$$

$$\text{Wipe Sample} = 300 \text{ CPM}$$

$$\text{Background} = \frac{-200 \text{ CPM}}{100 \text{ CPM Net Wipe}}$$

$$\frac{1 \text{ uCi}}{19,800 \text{ CPM}} = \frac{X}{100 \text{ CPM}}$$

$$X = 0.005 \text{ uCi cobalt}^{60} \text{ in the wipe sample}$$

November 6, 1979

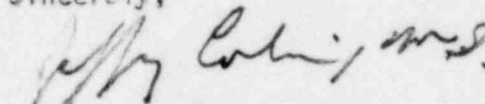
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The above calculations are an example of how the number of microcuries of the wipe sample will be calculated.

7. a. Name of the supplier of the film badges is R. S. Landaur.
b. Type of film badges will be film badges for the whole body (G1) and TLD badges for eye and fingers (V8, U3).
c. The film badges will be changed once a month.
8. a. In addition to the Victoreen Model 550 Radcon we will have a Victoreen R-Meter with a 100 R chamber, a Victoreen 440 and a Victoreen Thyac III.
b. The survey instruments will be calibrated as per the attached form.
c. The radiation source used will be a Tech/OPS Cesium 137 source ^{mCi} Serial Number S-211. It has an activity of 85.5 microcuries in 1976 with an output rate of 0.02736 R per hour at 1 meter in 1976. ^{See -03 license for auth'n}

The delivery of our cobalt⁶⁰ unit is held up pending the receipt of our cobalt⁶⁰ license from you. We would appreciate rapid processing of this application and notification so that we can tell AECL to ship the unit. Thank you.

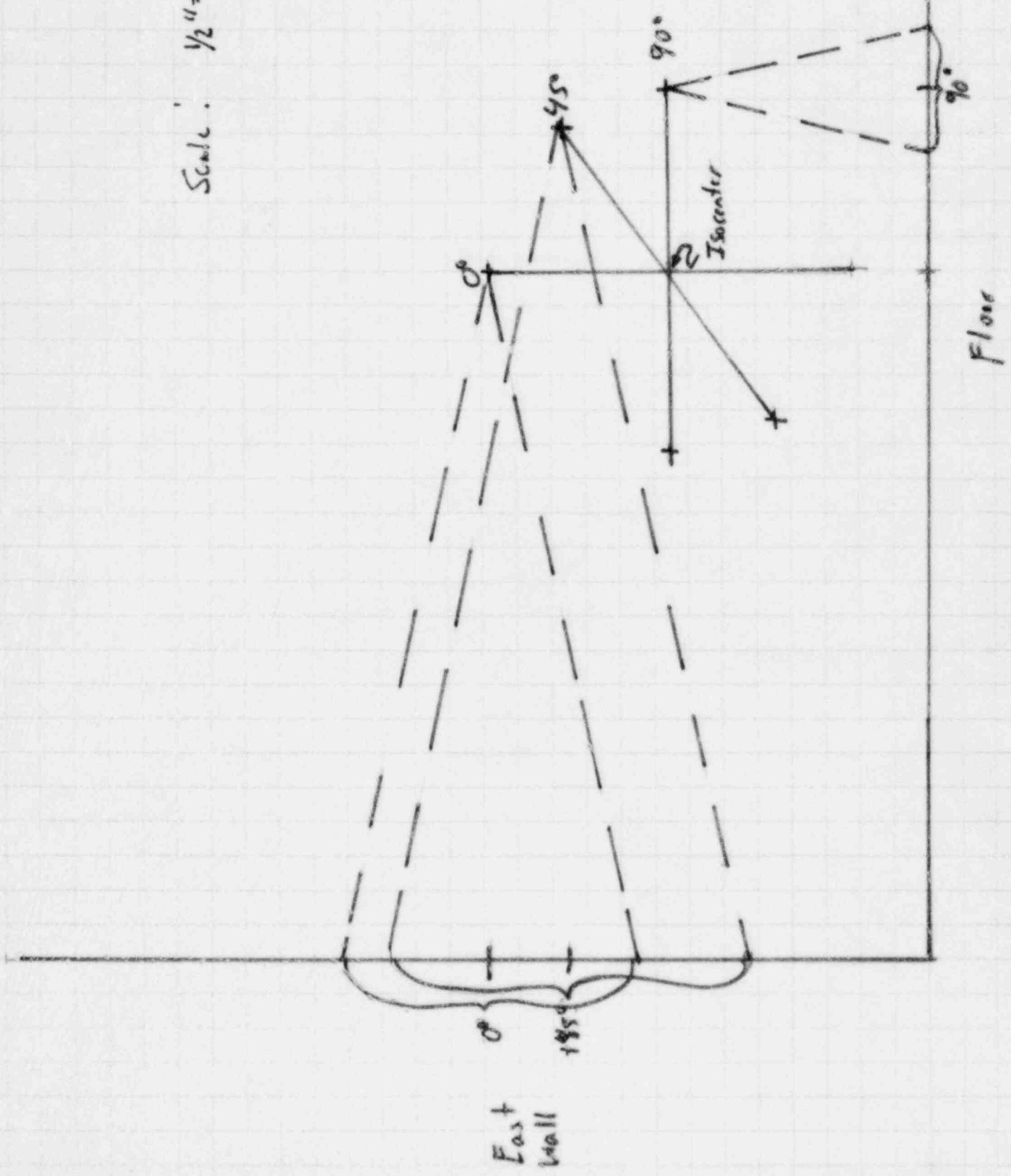
Sincerely,



Jeffrey T. Colvin, M.S.
Medical Physicist

JTC/ss

Scale: $\frac{1}{2}'' = 1'$



CALIBRATION OF SURVEY INSTRUMENTS

Check appropriate items.

- X 1. Survey instruments will be calibrated at least annually and following repair.

- ✓ 2. Calibration will be performed at two points on each scale.

The two points will be approximately 1/3 and 2/3 of full scale. A survey instrument may be considered properly calibrated when the instrument readings are within $\pm 10\%$ of the calculated or known values for each point checked. Readings within $\pm 20\%$ are considered acceptable if a calibration chart or graph is prepared and attached to the instrument.

3. Survey instruments will be calibrated

- a. By the manufacturer
- b. At the licensee's facility

- (1) Calibration source

Manufacturer's name

Model no.

Activity in millicuries

Accuracy

Traceability to primary standard

- (2) The calibration procedures in Section I of Appendix D will be used.

or

- (3) The step-by-step procedures, including radiation safety procedures, are attached.

- c. By a consultant or outside firm

- (1) Name _____

- (2) Location _____

- ### (3) Procedures and sources

have been approved by NRC and are on file in License No.

_____ are attached