



George M. McCann
Materials Licensing Section
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

June 28, 1985

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Dear Mr. McCann:

This in reference to your letter of April 8, 1985 and our subsequent conversations.

1. Dose Calibrator Tests

A) Linearity Test

As referenced in our letter of March 14, 1985, we prefer to assay our technetium vial at convenient times of the day. To clarify this further, we will take at least 6 measurements over a minimum period of 48 hours. Measurements will be separated by sufficient time so that we are truly measuring linearity. The dose calibrator will be considered linear if actual measurements agree to within $\pm 10\%$ of calculated values.

B) Instrument Accuracy

"E" vials of Cobalt-57, Cesium-137, Ba-133 and Cobalt-60 are currently used, although we may drop the use of Cobalt-60. The current supplier is NEN and their overall accuracy is stated as $\pm 5\%$ or better. Another supplier may be used in the future. The dose calibrator will be considered to be accurate if it reads to within $\pm 5\%$ of the predicted activity.

C) Instrument Constancy

We use a small radium (~ 16 microcurie) source and test the following channels: In the CRC-22NB: Tl-201, Xe-133, I-131, I-123, In-111, "Moly Assay" Tc-99m, Ga-67, and Ra-226 (via the dial setting) In the mediac: Ra-226, Hg-203, Av-198, Hg-197, Cs-137, Xe-133, I-131, Mo-99, Tc-99m, Sr-87, Se-75, Ga-67, Sr-85, Fe-59, In-111, Cr-51 and I-125.

Of course should we change one or more channels on either instrument, that channel would be checked. The instrument is considered constant if readings agree to within $\pm 5\%$ of the value established after the last repair.

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2. With respect to nursing procedures for patients receiving gold, iodine or phosphorus or brachytherapy treatment, I have checked them and we do not have a statement regarding minimum visiting age

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or pregnancy status of visitors. We are amending our procedures as follows:

- A) Add a statement which says that all visitors must be at least 18 years of age.
- B) Add a statement that no pregnant visitors be allowed.

These statements will also appear on our Radiation Therapy Precaution Checklist. We will print them on until we have a new batch of forms printed.

As a rule, when we know that if nursing personnel are pregnant, they do not work with radioactive patients, however, due to staffing considerations, it may be possible for pregnant nursing personnel to work with radioactive patients. All nursing personnel are given a copy of U.S.N.R.C. Regulatory Guide 8.13, Revision 1 (1975) when they are issued a personnel dosimeter. Each person is allowed to make her own decision whether or not to continue employment during pregnancy.

We believe these changes will make our procedures equivocal to Appendices K and L of Regulatory Guide 10.8

3. Exemption to 20.105(b)

Our typical room setup is detailed in the accompanying drawings. My additions to the drawings are not to scale, but they will provide the general idea.

Usually brachytherapy and thyroid ablation patients are housed in Rooms 509, 510, 511, 512 and 514, the latter 3 being most frequently used. During the course of 1985, we have made exposure rate measurements in adjacent rooms (A), the hallway (H), and the stairwell (S). The average exposure rates and ranges in these areas were 2.1 (0.8-6.0), 0.2 (0.1-0.5) and 3.4 (3.4) mR/hr, respectively. The average length of the brachytherapy procedure was less than 50 hours.

We do have some limitations as to what we can do to reduce exposure to visitors and other patients. First of all, the head of the patients' bed cannot be moved too far from the wall because of the length of the cord on the call button. Sometimes it is possible to keep an adjacent room vacant, however, this is a function of patient census. We do not have a mobile bed shield and, with our low volume of patients (about 30 per year), we feel that the benefits do not justify the cost.

With respect to occupancy factors of adjacent areas, adjacent rooms have had a patient occupancy factor of about 90% over the past seven years. Visitors, according to nursing observations, spend an average of about an hour per day with patients, although there can be great variations in this figure. The hallway has an occupancy factor of less than $\frac{1}{4}$ and the stairwell is rarely used. Under our normal operating procedures, it is highly improbable that any individual present in an unrestricted area has ever received or could ever receive a dose in excess of 500 millirem in a given year.

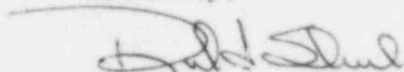
Should our measurements indicate that a patients or visitor in an unrestricted area could receive in excess of 500 millirem in one year we will take the following actions sequentially:

- 1) Rearrange the radioactive patient's room to reduce exposure rates.
- 2) If visitors chairs are adjacent to the head of the radioactive patient's bed we will move these chairs away from the wall.
- 3) If the head of the adjacent patient bed is adjacent to the radioactive patient's bed, we will move the adjacent bed away from the wall.

4. If steps 1 through 3 do not reduce the exposure rate sufficiently, we will move an adjacent patient to another room before he can receive 500 millirem.

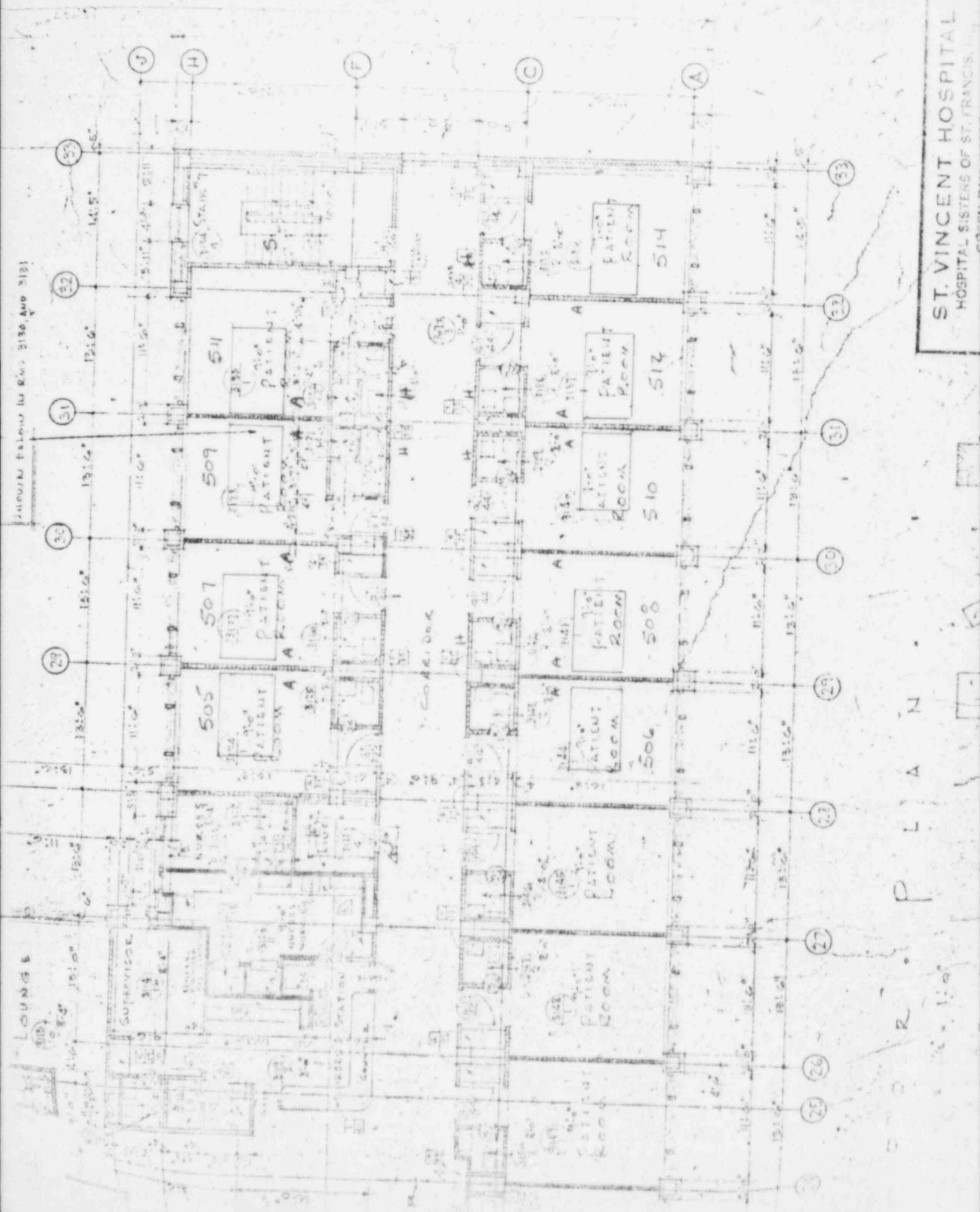
I hope this will clarify previous questions, however, should uncertainty prevail, please call me at (414) 433-8184

Sincerely,

A handwritten signature in dark ink, appearing to read 'Ronald Scheele', with a horizontal line drawn above it.

Ronald Scheele, M.S.
Radiation Safety Officer

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ST. VINCENT HOSPITAL RADIATION THERAPY PRECAUTION CHECKLIST

_____ millicuries of _____ administered _____
(radioisotope) (date)

(a) _____ Rubber gloves and precaution gowns are to be worn.

(b) _____ Soiled linen is to be stored in a separate container to be kept in the patient's room until it has been demonstrated to be free of contamination.

(c) _____ Save tissues soiled with sputum in a separate container.

(d) _____ Save dressings in a separate container.

(e) _____ Disposable dishes are to be used.

(f) _____ Do not release room to Admitting or Housekeeping until approved by the Radiation Safety Officer.

(g) X _____ A dismissal survey must be performed before patient is discharged.

(h) _____ Save urine.

(i) _____ Patient is to flush commode three times after use.

(j) X _____ PATIENT SHOULD NOT USE COMMODE.

(k) X _____ Post "CAUTION - RADIATION AREA" sign on door of patient's room.

(l) X _____ Post bedside safety tag on foot of patient's bed.

(m) X _____ Film badges are to be worn.

(n) X _____ Permissible working times ..
At bedside: _____ minutes/shift
At 6 feet from bedside: _____ minutes/shift

AT BED	MR/HR
AT 1M	MR/HR
AT 6'	MR/HR
AT CHAIR	MR/HR
HALLWAY	MR/HR
ADJACENT ROOM	MR/HR

On/Off Duty Telephone Number

ST. VINCENT HOSPITAL RADIATION THERAPY PRECAUTION CHECKLIST

DATE: _____

PATIENT: _____ ROOM # _____

_____ millicuries of _____ administered _____
(radioisotope) (date)

The following checked precautions are to be followed:

- (a) x Rubber gloves and precaution gowns are to be worn, IF REQUIRED.
- (b) x Soiled linen is to be stored in a separate container to be kept in the patient's room until it has been demonstrated to be free of contamination.
- (c) x Save tissues soiled with sputum in a separate container.
- (d) x Save dressings in a separate container.
- (e) x Disposable dishes are to be used.
- (f) x Do not release room to Admitting or Housekeeping until approved by the Radiation Safety Officer.
- (g) _____ A dismissal survey must be performed before patient is discharged.
- (h) x Save urine.
- (i) x Patient is to flush commode three times after use.
- (j) _____ PATIENT SHOULD NOT USE COMMODE.
- (k) x Post "CAUTION - RADIATION AREA" sign on door of patient's room.
- (l) x Post bedside safety tag on foot of patient's bed.
- (m) x Film badges are to be worn.
- (n) x Permissible working times ..
At bedside: _____ minutes/shift
At 6 feet from bedside: _____ minutes/shift

(o) x Additional notes:

- 1) No PREGNANT VISITORS
- 2) No VISITORS UNDER 18 YEARS
- 3) VISITORS IN CHAIRS AT FOOT OF BED: MIN / DAY

AT BED	HR/HR
AT 1M	HR/HR
AT 6'	HR/HR
AT CHAIR	HR/HR
HALL	HR/HR
ADJACENT ROOM	HR/HR