NRC FORM 313
(1-84)
10 CFR 30, 32, 33, 34, 35 and 40

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 5-31-87

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

FEDERAL AGENCIES FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
MATERIAL RADIATION PROTECTION SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

1. THIS IS AN APPLICATION FOR *(Check appropriate item)*

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [X] C. RENEWAL OF LICENSE NUMBER 12-00963-03

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include Zip Code)*

Saint Francis Hospital
355 Ridge Avenue
Evanston, Illinois 60202
Attn: K. Schreiner

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED.

same as 2

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Eric Zickgraf, M.S.

TELEPHONE NUMBER: 312-492-6105

SUBMIT ITEMS 5 THROUGH 11 ON 8½ x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSEE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY: 7A
AMOUNT ENCLOSED: $ 350.00

13. CERTIFICATION. *(Must be completed by applicant)* THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE–CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
KSchreiner	Kenneth V. Schreiner	Vice President	8/23/84

14. VOLUNTARY ECONOMIC DATA

a. ANNUAL RECEIPTS

- [ ] <$250K
- [ ] $250K–500K
- [ ] $500K–750K
- [ ] $750K–1M
- [ ] $1M–3.5M
- [ ] $3.5M–7M
- [ ] $7M–10M
- [ ] >$10M

b. NUMBER OF EMPLOYEES *(Total for entire facility excluding outside contractors)*

c. NUMBER OF BEDS

d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION *(Dollar and/or staff hours)* ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? *(NRC regulations permit it to protect confidential commercial or financial–proprietary–information furnished to the agency in confidence)*

- [ ] YES
- [ ] NO

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY
Renewal	Aug. 86 III	7A	Control No. 7760	CRP
AMOUNT RECEIVED	CHECK NUMBER			DATE
$350	106892			9/11/84

PRIVACY ACT STATEMENT ON THE REVERSE

PRIVACY ACT STATEMENT

Pursuant to 5 U.S.C. 552a(e)(3), enacted into law by section 3 of the Privacy Act of 1974 (Public Law 93-579), the following statement is furnished to individuals who supply information to the Nuclear Regulatory Commission on NRC Form 313. This information is maintained in a system of records designated as NRC-3 and described at 40 Federal Register 45334 (October 1, 1975).

1. **AUTHORITY:** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).

2. **PRINCIPAL PURPOSE(S):** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 CFR Parts 30, 32, 33, 34, 35 and 40 to determine whether the application meets the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, for the issuance of a radioactive material license or amendment thereof.

3. **ROUTINE USES:** The information may be (a) provided to State health departments for their information and use; and (b) provided to Federal, State, and local health officials and other persons in the event of incident or exposure, for their information, investigation, and protection of the public health and safety. The information may also be disclosed to appropriate Federal, State, and local agencies in the event that the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding. In addition, this information may be transferred to an appropriate Federal, State, or local agency to the extent relevant and necessary for an NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you.

4. **WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION:** Disclosure of the requested information is voluntary. If the requested information is not furnished, however, the application for radioactive material license, or amendment thereof, will not be processed. A request that information be held from public inspection must be in accordance with the provisions of 10 CFR 2.790. Withholding from public inspection shall not affect the right, if any, of persons properly and directly concerned need to inspect the document.

5. **SYSTEM MANAGER(S) AND ADDRESS:** U.S. Nuclear Regulatory Commission
Director, Division of Fuel Cycle and Material Safety
Office of Nuclear Material Safety and Safeguards
Washington, D.C. 20555

Item 5.

5.a. Cobalt-60

5.b.1. AECL sealed source C-146
5.b.2. AECL sealed source C-151
5.b.3. NPI sealed source NPI-20-9000W
5.b.4. NPI sealed source NPI-20-7800W

5.c. 22,000 Curies (two sources of not more than 11,000 curies each)

5.d. One source to be used in an AECL theratron 780 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.

Item 6.

Human Use Only.

Item 7.

7.a. Individual Users: Raymond L. Del Fava, M.D.
Hebe M. Forgione, M.D.
Daniel J. Murphy, M.D.
Robert Greenstein, M.D.
Ki Eun Chung, M.D.

All the above individual users are previously authorized users on 12-963-3.

7.b. Radiation Safety Officer and Qualified Expert

Eric C. Zickgraf, M.S.

Certification in Therapeutic Radiological Physics by the American Board of Radiology, 1984.

The above RSO and Qualified Expert was previously authorized on 12-963-3.

Item 7
August 24,1984

Item 8.

Training program and schedule in Appendix H of TASK TM 608-4, March 1982.

Item 9.

9.a. No change from current license

9.b. The patient undergoing radiation treatment is observed at the control console on a closed-circuit TV monitor. The camera is mounted on the wall opposite the foot of the treatment couch of the teletherapy unit. The camera is equipped with remote pan, tilt, iris, zoom and focus controls operated from the control console, such that the patient can be observed at any possible position in the room which would be used for a treatment. There is also a direct observation window in the wall above the control console. This window is specified as a zinc-bromide window on the floor plan of the treatment room area, and has a overall thickness of more than 13 inches.

9.c. No change from current license

9.d. The theratron 780 is equipped with a beamstopper counterweight which acts as the primary barrier for the radiation during normal, isocentric use of the unit. When the source head is rotated so that the beam is not intercepted by the beamstopper counterweight, an electrical "off-shield" interlock restricts the beam direction. The maximum angle upward from vertically down for which it is permitted to move the source into the ON position is 100^{0} when the beam direction is rotated toward the northwest, or outside corner of the room, and 35^{0} toward the southeast, orlocation of the control console and viewing window. These limiting beam angles relative to the verticle are effective regardless of the angle to which the arm is rotated.

9.e. No change from current license

10.a. Radiation Safety committee

Thomas G. Cronin, Jr.,M.D., Chairman	Radiologist
Hebe M. Forgione, M.D.	Radiation Oncologist
Mary C. Peters-Usdrowski, M.D.	Radiologist
Carl Boraca, M.D.	Pathologist
Thomis N. Gynn, M.D.	Hematologist/Oncologist
Eric C. Zickgraf, M.S., RSO	Medical Physicist
Kenneth V. Schreiner	Vice President
Lois Van Rensselaer, R.N.	Clinical Specialist

Duties as in Appendix A to the draft guide TASK TM 608-4, March 1982

10.b. ALARA Program attached.

10.c. Instrumentation

Survey Meters

Manufacturer	Model	No.	Full scale minimum	Full scale maximum
Victoreen	440	1	3 mR/hr	300 mR/hr
Victoreen	470A	1	3 mR/hr	1000 R/hr
Victoreen	740F	1	2.5 mR/hr	25 R/hr
Johnson	GSM5	2	0.2 mR/hr	20 mR.hr

Electrometers

Capintec 192A with spokas chamber	50 kV to 50 MV
Capintec 192 with Farmer type chamber	50 kV to 50 MV
Victoreen 570 with 5 probes	50 kV to 4 MV

Beam-On Monitors

Eberline SPI-1 with backup battery supply	(inside the room)
Victoreen VAMP	(outside the room).

10.d. Calibration of survey instruments

Survey instruments will be calibrated on an annual basis, and after repair.

Survey instruments will be calibrated by a consultant or an outside firm that has been approved by the USNRC (such as Health Physics Associates of Northbrook, Illinois).

Item 10
August 24,1984

10.d. continued.

A survey meter wil be considered properly calibrated when the instrument readings are within +/- 10% of the calculated or known values of each point checked. Readings within +/- 20% are considered acceptable if a calibration chart or graph is prepared and attached to the instrument.

Calibration of Electrometers:

Electrometers used for spot checks and full calibrations will be calibrated according to 10CFR35.23.

10.e. Film badges are supplied by Siemens Gammasonics and are replaced on a monthly basis.

10.f. The leak testing of the cobalt-60 teletherapy source will be performed by the manufacturer or by, or under the supervision of, the RSO with leak test kits supplied by HEALTH Physics Associates of Northbrook Illinois. The kit used is HPC-1. The leak test will be performed as per instructions in kit HPC-1.

10.g. Operating and Emergency Procedures:

10.g.1 Operating procedures: Safety Device Checks

Daily: Before the cobalt-60 unit is cleared for use on patients the following tests must be completed:

1) source condition indicators work correctly	on-off lights on control panel on-off lights on wall on-off lights on head of unit on-off lights of in room monitor source movement indicator rod
2) Interlock checks	door interlock reset of unit after door opened emergency off button shuts off beam reset of unit after emergency button pushed

A record of these checks is kept in the cobalt-60 permanent calibration log.

After the machine power is turned on, the beam shall be turned on and then off at least once before any patients are allowed to enter the room

Monthly: As part of the monthly spot check and annual calibration the following tests are performed according to 10CFR35.

light field-radiation field alignment within 2 mm
uniformity of radiation field
center of light field with radiation field
SSD mechanical indicator
SSD light indicator
isocenter
timer function and accuracy
gantry angle indicator
movement of head, couch, stretcher
head lock
collimators
off shield interlock
on-off beam indicators
battery operated beam monitor inside room
patient viewing system
blocking trays
manual source return rod
laser alignment
signs, instructions and phone numbers posted
emergency off
wipe test within 6 months
mechanical and electrical integrity
control panel interlock and reset
back pointer
back-up timer
mechanical and electrical beam restrictions

The above tests are in addition to the daily checks.

Visual communication is provided by both a closed circuit TV system and a direct viewing port above the control panel. The patient can be viewed at all times, regardless of the availability of electrical power.

If any of the indicators or interlocks fail to work properly, the radiation physicist is to be notified immediately. Patients are not to be treated until clearance is given by the physicist (lightbulbs can be replaced without a physicist's observation).

If the in-room monitor fails for any reason to correctly indicate the source position, a properly set radiation detection device shall be used to determine the position of the source upon entering the treatment room (eg., calibrated ionization meter, chirper, GM meter, etc.).

10.g.2 Personnel Dosimetry

All teletherapy personnel shall wear a personal monitoring device (film or TLD badge) whenever they are working in or around the cobalt-60 treatment room. These monitoring devices will be exchanged on a monthly basis, promptly processed and reported.

If a person receives or suspects that he or she has received a high exposure the monitoring device will be processed immediately.

Monitoring devices shall not be kept in the treatment room during off duty hours. Badges will be kept in the person's office or personal locker when off duty. Hospital policy prohibits the use of radiation monitoring devices to be used at other facilities.

10.g.3. Procedures for securing the teletherapy unit.

The cobalt-60 unit shall not be left unattended unless:

a) the beam and machine power are off
b) the door is locked
c) the hand control box is set to a selection other than CONSOLE

10.g.4. All dosimetry instruments are calibrated at outside facilities and all instruments are sent for calibration in their original container or equivalent. Calibration instruments are calibrated at the frequency required in 10CFR35.23.

Beam on monitors are checked daily as part of the daily functional check.

10.g.5. Full calibration of the teletherapy unit will be performed by a qualified expert according to the SCRAD protocol of 1971 for photon dosimetry or the TG21 protocol of 1983. Both protocols were written and approved by the AAPM. The qualified expert shall meet the requirements set in 10CFR35.

10.g.6. Monthly spot checks will be performed as per 10CFR35.22.

10.g.7. Leak tests will be performed as per 10.f.

10.g.8. All daily, monthly, and annual checks are to be kept in the permanent cobalt-60 calibration log. All dosimetry calculations and calibrations are to be kept in the permanent cobalt-60 log.

10.g.9. Emergency procedures are listed on the following page.

10.g.10. Procedures for Notifying proper persons in the event of an accident or unusual occurrence are listed on the following page.

RADIATION THERAPY DEPARTMENT

saint francis hospital 355 ridge avenue evanston, illinois 60202 312/492-6105

EMERGENCY PROCEDURES IF THE COBALT-60 SOURCE FAILS TO RETURN TO THE SAFE POSITION FOLLOWING COMPLETION OF PATIENT TREATMENT

AT ALL TIMES REFRAIN FROM ENTERING THE PRIMARY BEAM

If the patient is ambulatory: instruct the patient to get off the table and leave the room.

If the patient is not ambulatory:

a) Direct the useful beam away from the patient.

b) Transfer the patient to a stretcher and remove the patient from the room.

If the patient is not ambulatory and cannot immediately be removed from the treatment room:

a) Direct the useful beam away from the patient.

b) Return the source to the safe position with the manual return device.

c) Remove the patient as soon as it is possible.

After the patient is out of the treatment room, close the door and secure the room against unauthorized entry. Notify the authorized personnel for immediate help.

Physicians	Telephone Number
Hebe M. Forgione, M.D., Director	251-7743
Ki E. Chung, M.D., Associate Director	736-2862
Radiation Safety Officer	
Eric C. Zickgraf, M.S.	470-9245
A.E.C.L. District Office	593-3242

Item 10
August 24,1984

ST. FRANCIS HOSPITAL PROGRAM FOR MAINTAINING OCCUPATIONAL RADIATION EXPOSURES ALARA

I. Management Commitment

a. We, the management of St. Francis Hospital are committed to the program described in this paper for keeping exposures (individual and collective) as low as reasonably achievable (ALARA). In accord with this commitment, we hereby describe an administrative organization for radiation safety and will develop the necessary written policy, procedures and instructions to foster the ALARA concept within our institution. The organization will include a Radiation Safety Committee (RSC) and a Radiation Safety Officer (RSO).

b. We will perform annual review of the radiation safety program including ALARA considerations. This shall include reviews of operating procedures and past exposure records, inspection, etc., and consultations with the radiation protection staff or outside consultants.

c. Modification to operating and maintenance procedures and to equipment and facilities will be made where they will reduce exposures unless the cost, in our judgement, is considered to be unjustified. We will be able to demonstrate, if necessary, that improvements have been sought, that modifications have been considered, and that they have been implemented where reasonable. Where modifications have been recommended but not implemented, we will be prepared to describe the reasons for not implementing them.

d. In addition to maintaining doses to individuals as far below the limits as is reasonably achievable, the sum of the doses received by all exposed individuals will also be maintained at the lowest practicable level. It would not be desirable, for example. to hold the highest doses to individuals to some fraction of the applicable limit if this involved exposing additional people and significantly increasing the sum of radiation doses received by all involved individuals.

II. Radiation Safety Committee (RSC)

a. Review of Proposed Users and Uses

1. The RSC will thoroughly review the qualifications of each applicant with respect to the types and quantities of materials and uses for which he has applied to assure that the applicant will be able to take appropriate measures to maintain exposure ALARA.

2. When considering a new use of byproduct material, the RSC will review the efforts of the applicant to maintain exposure ALARA. The user should have systematized procedures to ensure ALARA, and shall have incorporated the use of special equipment such as syringe shields, gloves, etc., in his proposed use.

3. The RSC will ensure that the user justifies his procedures and that the dose will be ALARA (individual and collective).

b. Delegation of Authority

1. The RSC will delegate authority to the RSO for enforcement of the ALARA concept.

2. The RSC will support the RSO in those instances where it is necessary for the RSO to assert his authority. Where the RSO has been overruled, the Committee will record the basis for its action in the minutes of the Committee's quarterly meeting.

c. Review of ALARA Program

1. The RSC will encourage all users to review current procedures and develop new procedures as appropriate to implement the ALARA concept.

2. The RSC will perform a quarterly review of occupational radiation expsosure with particular emphasis on instances where Investigational Levels in Table I below are exceeded. The principle purpose of this review is to assess trends in occupational exposure as an index of the ALARA program quality and to decide if action is warranted when Investigational Levels are exceeded (see paragraph VI).

3. The RSC will evaluate our institution;s overall efforts for maintaining exposures ALARA on an annual basis. This review will include the efforts of the RSO, authorized users, and workers as well as those of management.

III. Radiation Safety Officer (RSO)

a. Annual and Quarterly Review

1. Annual review of the Radiation Safety Program. The RSO will perform an annual review of the Radiation Safety Program for adherence to ALARA concepts. Reviews of specific procedures may be conducted on a more frequent basis.

2. Quarterly review of Occupational Exposures. The RSO will review at least quarterly the external radiation exposures of authorized users and workers to determine that their exposures are ALARA in accordance with the provisions of paragraph VI of this program.

3. Quarterly review of records of Radiation Level Surveys. The RSO will review radiation levels in unrestricted and restricted areas to determine that they were ALARA levels during the previous quarter.

b. Education Responsibilities for an ALARA Program

1. The RSO will schedule briefings and educational sessions to inform workers of ALARA program efforts.

2. The RSO will assure that authorized users, workers and ancillary personnel who may be exposed to radiation will be instructed in the ALARA philosophy and informed that management, the RSC and the RSO are committed to implementing the ALARA concept.

c. Cooperative Efforts for Development of ALARA Procedures

Radiation workers will be given opportunities to participate in formulation of the procedures that they will be required to follow.

1. The RSO will be in close contact with all users and workers in order to develop ALARA procedures for working with Radioactive materials.

2. The RSO will establish procedures for receiving and evaluating the suggestions of individual workers for improving health physics practices and encourage the use of those procedures.

d. Reviewing Instances of Deviation from Good ALARA Practices

The RSO will investigate all known instances of deviation from good ALARA practices; and if possible, determine the causes. When the cause is known, the RSO will require changes in the program to maintain exposures ALARA.

IV. Authorized Users

a. New Procedures Involving Potential Radiation Exposures

1. The authorized user will consult with, and receive the approval of, the RSO and/or RSC during the planning stage before using radioactive materials for a new procedure.

2. The authorized user will evaluate all procedures before using radioactive materials to ensure that exposures will be kept ALARA. This may be enhanced through the application of trial runs.

b. Responsibility of the Authorized User to Those He Supervises

1. The authorized user will explain the ALARA concept and his commitment to maintain exposures ALARA to all of those he supervises.

2. The authorized user will ensure that those under his supervision who are subject to occupational radiation exposure are trained and educated in good health physics practices and in maintaining exposures ALARA.

V. Persons Who Receive Occupational Radiation Exposure

a. The worker will be instructed in the ALARA concept and its relationship to his working procedures and work conditions.

b. The worker will know what recourses are available if he feels that ALARA is not being promoted on the job.

VI. Establishment of Investigational Levels in Order to Monitor Individual Occupational External Radiation Exposures

St. Francis Hospital hereby establishes Investigational Levels for occupational external radiation exposure which, when exceeded, will initiate review or investigation by the Radiation Safety Committee and/or the Radiation Safety Officer. The Investigational Levels that we have adopted are listed in Table 1 below. These levels apply to the exposure of the individual workers.

TABLE 1

	Investigational Levels (mrems per calendar quarter)	
	Level I	Level II
1. Whole body; head and trunk; active blood-forming organs; lens of eyes; or gonads	125	375
2. Hands and forearms; feet and ankles	1875	5625
3. Skin of Whole Body*	750	2250

* Not normally applicable to nuclear medicine operations except those using significant quantities of beta emitting isotopes.

The Radiation Safety Officer will review and record on Form NRC-5, Current Occupational External Radiation Exposures, or an equivalent form, results of personnel monitoring, not less than once in any calendar quarter, as is required by 10 CFR 20, Part 20.401. The following actions will be taken at the Investigational Levels as stated in Table 1:

a. Quarterly exposure of individuals to less than Investigational Level I.

Except when deemed appropriate by the RSC, no further action will be taken in those cases where an individual's exposure in less than Table I Values for the Investigational Level I.

b. Personnel exposures equal to or greater than Investigational Level I, but less than Investigational Level II.

The RSC will review the exposure of each individual whose quarterly exposures equal or exceed Investigational Level I. He will report results of his reviews at the first RSC meeting following the quarter when the exposure was recorded. If the exposure does not equal or exceed Investigational Level II, no action related specifically to the exposure is required unless deemed appropriate

by the Committee. The Committee will, however, consider each such exposure in comparison with those of others performing similar tasks as an index of ALARA program quality and will record the review in the Committee minutes.

c. Exposure equal to or greater than Investigational Level II.

The RSC will investigate in a timely manner the cause(s) of all personnel exposures equaling or exceeding Investigational Level II and, if warranted, take action. A report of the investigation, actions taken, if any, and a copy of the individual's Form NRC-5 or its equivalent will be presented to the RSC at the first RSC meeting following completion of the investigation. The details of these reports will be recorded in the Committee minutes. Committee minutes will be sent to the management of this institution for review. The minutes, containing details of the investigation, will be made available to NRC inspectors for review at the time of the next inspection.

d. Re-establishment of an Individual Occupation Worker's Investigational Level II Above that Listed in Table I.

In cases where a worker's or a group of workers' exposures need to exceed Investigational Level II, a new, higher Investigational Level II may be established on the basis that it is consistent with good ALARA practices for that individual or group. Justification for a new Investigational Level II will be documented.

The Radiation Safety Committee will review the justification for, and will approve, all revisions of Investigational Levels II. In such cases, when the exposure equals or exceeds the newly established Investigational Level II, those actions listed in paragraph c above will be followed.

VII. Signature of Certifying Official

I hereby certify that this institution has implemented the ALARA Program set forth above.

Kenneth V. Schreiner

Kenneth V. Schreiner
Vice President

Control No. 77360 Item 10
August 24,1984

Item 11. Waste Management

All sources are returned to the manufacturer for disposal.

Control No. 77360

Item 11
August 24,1984