

UNITED STATES ATOMIC ENERGY COMMISSION
APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved
Budget Bureau No. 38-R0027

INSTRUCTIONS.—Complete Items 1 through 16 if this is an initial application or an application for renewal of a license. Information contained in previous applications filed with the Commission with respect to Items 8 through 15 may be incorporated by reference provided references are clear and specific. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail two copies to: U.S. Atomic Energy Commission, Washington, D.C., 20545, Attention: Materials Branch, Directorate of Licensing. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30, and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20, and the license fee provisions of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in Item 16 and the appropriate fee enclosed. (See Note in Instruction Sheet).

1 (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital person, etc. Include ZIP Code and telephone number.)		(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. (If different from 1(a). Include ZIP Code.)	
Daviness County Hospital 1314 Grand Avenue Washington, Indiana 47501		Same	
2. DEPARTMENT TO USE BYPRODUCT MATERIAL		3. PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate and give number.)	
Nuclear Medicine		Application for initial license.	
4. INDIVIDUAL USER(S). (Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in Items 8 and 9.)		5. RADIATION PROTECTION OFFICER. (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)	
Glenn E. Ross, M.D.		William Pavlicek, B.S.	
6. (a) BYPRODUCT MATERIAL. (Elements and mass number of each.)		(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. (If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)	
See Addendum #1			
7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. (If byproduct material is for "human use," supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)			
Human use, except for the 1 mCi Cs-137 standard (Mallinckrodt #045). See Addendum #10.			
8507260573 850709 REG3 LIC30 13-16138-01 PDR			

(Continued on reverse side)

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	Nuclear Medicine Institute 6760 Mayfield Road Cleveland, Ohio 44124 November, 1973 through February, 1974	4 weeks	Yes () No ()	(Yes) No
b. Radioactivity measurement standardization and monitoring techniques and instruments			Yes () No ()	(Yes) No
c. Mathematics and calculations basic to the use and measurement of radioactivity			Yes () No ()	(Yes) No
d. Biological effects of radiation			Yes () No ()	(Yes) No

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
See above. Also see attached preceptorship statement				

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm ²)	USE (Monitoring, surveying, measuring)
See Addendum #2					

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

Survey instruments are checked with Cs-137 standard prior to use.
Survey instruments are calibrated annually by NMA, Cleveland, Ohio.

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

Monthly whole body film and finger TLD exchange service from
R. S. Landauer, Jr.

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) (Yes) No See Addendum #3.

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.
See Addendum #3a, page 2 and Addenda #6 through 12.

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.
See Addendum #3a, page 2 and Addendum #10.

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PART 30, AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

License Fee Category \$ _____

Fee Enclosed \$ _____

Date 4-24-74

Davies County Hospital

Applicant named in item 1

By: William A. Fisher

Administrator

Title of certifying official

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.

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APPLICATION FOR BYPRODUCT MATERIAL LICENSE—MEDICAL

SUPPLEMENT A—PRECEPTOR STATEMENT

This page is to be completed by the applicant physician's preceptor. If more than one preceptor is necessary to document experience, obtain a separate statement from each. Page 2 may be used for comments and additional information.

10. NAME AND ADDRESS OF APPLICANT PHYSICIAN (Include ZIP Code)

Glenn E. Ross, M.D.
Daviness County Hospital
1314 Grand Ave., Washington, Ind. 47501

11. CLINICAL TRAINING AND EXPERIENCE OF PHYSICIAN NAMED IN ITEM 10 ABOVE

(A) ISOTOPE	(B) CONDITIONS DIAGNOSED OR TREATED	(C) No. Cases Observed (See 1 in key below)	(D) No. Cases Involving Personal Participation (See 2 in key below)
I-131 or I-125	Diagnosis of thyroid function		
	Determination of blood and blood plasma volume		5 3
	Liver function studies		
	Fat absorption studies		
	Kidney function studies		3
	In vitro studies		
Cr-51	Gastrointestinal protein loss studies		20
	Determination of red blood cell volume and studies of red blood cell survival		
Fe-59	Iron turn over studies		2
Co-58or Co-60 Co-57	Intestinal absorption studies Schillings Test		3
K-42	Potassium space determinations		
I-131	Thyroid imaging		
	Brain tumor localization and cardiac imaging		5
	Cisternography		
	Lung imaging		
	Liver imaging		
	Kidney imaging		
	Placenta localization		
Cr-51	Placenta localization		
	Spleen imaging		
Au-198	Liver imaging		
Hg-197	Brain imaging		
	Kidney imaging		
Hg-203	Brain imaging		
Sr-85	Bone imaging		
Tc-99m	Brain imaging		
	Thyroid imaging		
	Salivary gland imaging		
	Blood pool imaging		

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APPLICATION FOR BYPRODUCT MATERIAL LICENSE—MEDICAL

SUPPLEMENT A—HUMAN USE

(A) ISOTOPE	(B) CONDITIONS DIAGNOSED OR TREATED	(C) No. Cases Observed (See 1 in key below)	(D) No. Cases Involving Personal Participation (See 2 in key below)
Tc-99m	Placenta localization		
	Liver and spleen imaging		
	Lung imaging		6
	Bone imaging		6
Xe-133	Blood flow studies and pulmonary function studies		4
Se-75	Pancreas imaging		
P-32	Treatment of polycythemia, leukemia, and Bone metastases		3
	Intracavitary treatment		
I-131	Treatment of thyroid carcinoma		
	Treatment of hyperthyroidism and cardiac condition		
Au-198	Intracavitary treatment		
Co-60 or CO-137	Interstitial treatment		
	Intracavitary treatment		
Ir-192	Interstitial treatment		
Co-60 CO-137	Teletherapy treatment		
Sr-90	Treatment of eye disease		

Key to Column (C) and (D) above

1. Observation should consist of observing radioisotope administration techniques and discussion with preceptor the case histories to establish most appropriate diagnostic and/or therapeutic procedure, limitation, contraindications, etc.
2. Personal participation should consist of (a) supervised examination of patients to determine the suitability for radioisotope diagnosis and/or treatment and recommendation on dosage to be prescribed; (b) collaboration in calibration of the dose and the actual administration of the dose to the patient, including calculation of the radiation dose, related measurements, and plotting of data; and (c) adequate period of training to enable the physician to manage radioactive patients and to follow patients through diagnosis and/or the course of treatment.

12. DATES AND TOTAL NUMBER OF HOURS OF CLINICAL RADIOISOTOPE TRAINING

April 16-18, 1974 (24 hours)

13. THE TRAINING AND EXPERIENCE INDICATED ABOVE WAS OBTAINED UNDER THE SUPERVISION OF

D. Bruce Sodee, M.D., FACP,
ADNM

Nuclear Medicine Inst. Complex/
Hillcrest Hospital
6780 Mayfield Road
Cleveland, Ohio 44124

34-0739-01(J-78)
(Byproduct Material License Number)

x *DB Sodee*
(Signature of Preceptor)

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CURRICULUM VITAE

Name Glenn Elrick Ross, M.D.

Address 1210 Bedford Road, Washington, Indiana 47501

College	<u>University of Illinois, Urbana</u>	<u>1939</u>	to	<u>1942</u>
Medical School	<u>University of Illinois, Chicago</u>	<u>1942</u>	to	<u>1945</u>
Internship	<u>U. S. Naval Hospital, Oakland, California</u>	<u>1945</u>	to	<u>1946</u>
Residency	<u>University of Indiana, Indianapolis</u>	<u>1951</u>	to	<u>1954</u>

Certification American Board of Radiology 1954

General practice of Radiology for the last 18 years at Daviess County Hospital, Washington, Indiana 47501

The above practice includes 10 years experience in the use of:

- 1) radiation detection using gas and scintillation detectors
- 2) radiation protection using survey meters, film badges and appropriate distance shielding and time relationships
- 3) mathematics and calculations basic to the use and measurement of radioactivity
- 4) standardization and calibration of radioactivity counting instruments
- 5) estimation and interpretation of the biological effects of radiation
- 6) interpretation of patient studies performed using radioactive materials.

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TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER Richard Dwight Smith R.T. (Radiation Safety Officer)		2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE N.J.
3. CERTIFICATION		
SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
	Nuclear Medicine Tech. Chief Technologist	June 1977

4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES

FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B	TYPE AND LENGTH OF TRAINING	
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D
a. RADIATION PHYSICS AND INSTRUMENTATION		60	MY TRAINING INCLUDED AN 8-THO-700 TRAINING UNDER REGIONAL TECHNICIANS AND PHYSICIANS. ALL OF THESE AREAS WERE COVERED SIMULTANEOUSLY. TOTAL HOURS IN HOSPITAL UNDER SUPERVISION 1600 HOURS.
b. RADIATION PROTECTION		30	
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY		45	
d. RADIATION BIOLOGY		45	
e. RADIOPHARMACEUTICAL CHEMISTRY		15	

5. EXPERIENCE WITH RADIATION, (Actual use of Radioisotopes or Equivalent Experience)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
^{99m} Tc ⁷⁵ Se ¹²⁵ I ⁶⁷ GA ²⁰¹ Tl ¹³¹ I	250 mCi 300 mCi 300 mCi 8 mCi 400 mCi 295 mCi (Therapy)	GAINESVILLE, FLA (SANTA FE COMMUNITY COLLEGE) VETERANS ADMINISTRATION HOSP NORTH FLORIDA REGIONAL HOSP GALATHEA GENERAL HOSP KENDALL MEDICAL CENTER (UNIV. OF FLORIDA)	2 years	DIAGNOSTIC WORK AS STUDENT Technologist AND LIMITED EXPOSURE TO I-131 THERAPY AND P32 THERAPY
^{99m} Tc ¹³¹ I ¹²⁵ I ⁷⁵ Se ⁶⁷ GA	250 mCi 300 mCi 400 mCi 300 mCi 4 mCi	DAYTONA BEACH, FLORIDA DAYTONA COMMUNITY HOSPITAL	17 months	Chief of Nuclear Medicine All Day work - INVOLEMENT

APPENDIX C
INSTRUMENTATION

1. Survey meters

a. Manufacturer's name: Picker Corporation
Manufacturer's model number: 655-186
Number of instruments available: 1
Minimum range: 0 mr/hr to 0.2 mr/hr
Maximum range: 0 mr/hr to 2,000 mr/hr
b. Manufacturer's name: _____
Manufacturer's model number: _____
Number of instruments available: _____
Minimum range _____ mr/hr to _____ mr/hr
Maximum range _____ mr/hr to _____ mr/hr

2. Dose calibrator

Manufacturer's name: Picker Corporation
Manufacturer's model number: 632-507 *Serial No.*
Number of instruments available: 1

3. Diagnostic instruments

Type of Instrument	Manufacturer's Name	Model No.
Anger Scintillation Camera	Picker Corp.	Dyna Camera 14/15 # 615236

4. Other N.A.

The DOSE CALIBRATOR and SURVEY INSTRUMENT of this institution will be calibrated according to Appendix "D" of your manual.

The calibration procedure will be performed by our Radiation Physicist, Mr. Arnold Sorensen. Mr. Sorensen's license number is: 13-00142-02.

Facilities and Equipment

Locations where radioactivity will be handled:

- A. Site of generator.
- B. Hot-Plate
- C. "L" Shield (Where doses are drawn-up)
- D. In scanning-room just prior to injection.

Available facilities and equipment at above sites:

- a. Generator includes lead-shielding intrinsically, installed at the factory. 18 additional 2X1X8 Lead blocks shield the generator from all personnel.
- b. When any radioactive material is boiled, it is placed in a Lead-shield designed purposely to reduce the radiation level to below background levels.
- c. The "L" shield contains lead-glass to reduce the level of radiation which the technologist receives to below background levels. Any materials handled while they are behind the "L" Shield, are handled with 7-inch tongs to aid in reducing the radiation dosage to the technologist. All vials behind the "L" Shield are within lead-containers if they contain radioactivity. This lead-container is designed specifically to reduce the radiation level to below background levels.
- d. Syringes used to inject patients which have radioactive materials in them, are always transported in lead-piggs which wrap directly around the syringe to protect all personnel in the immediate area. The radiation level is reduced greatly in this manner.

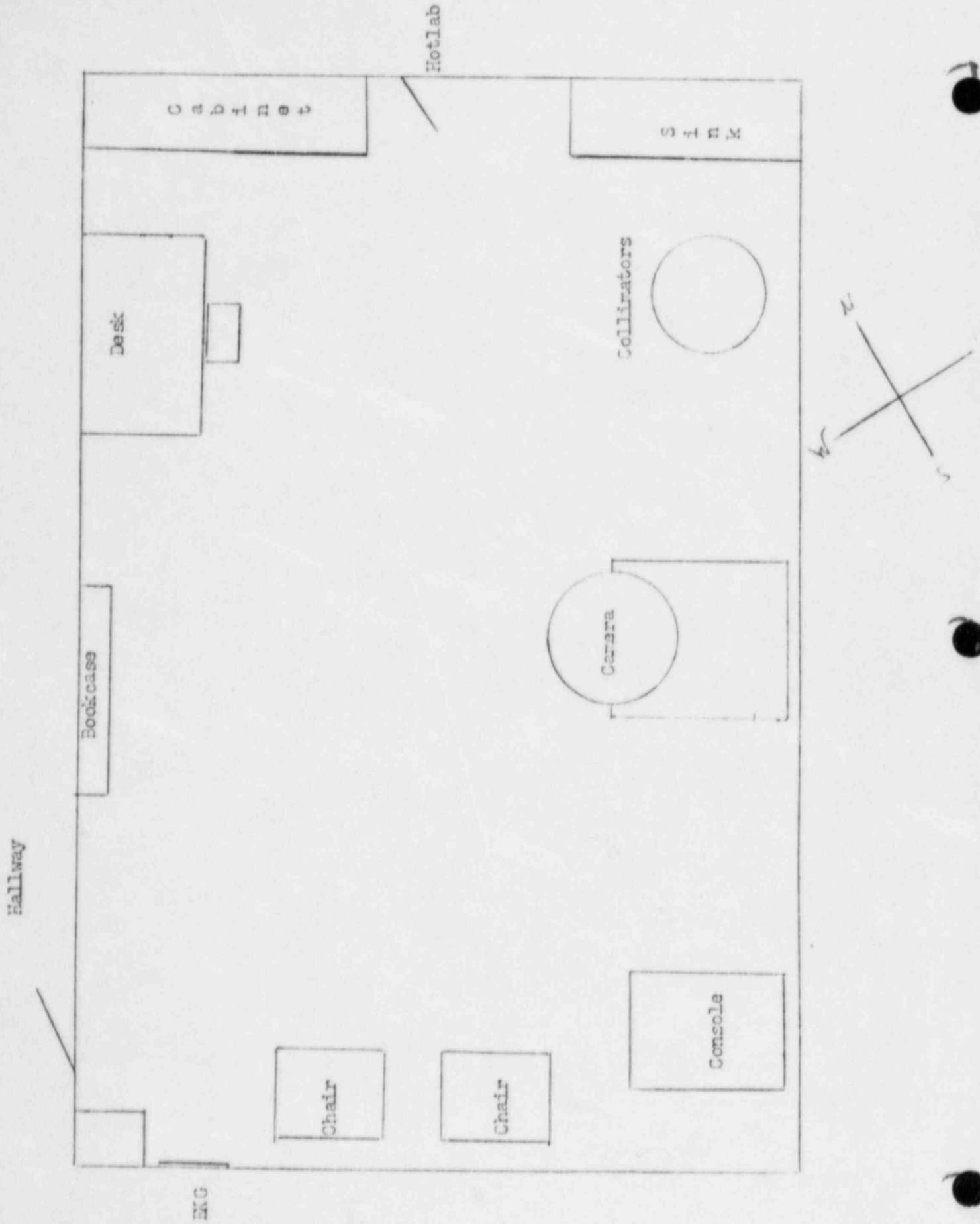
Other areas involving radioactivity are:

- E. Areas of receipt of radioactivity.
- F. Areas of storage of radioactivity. (Including waste)
- G. Areas of measurement of radioactivity.

Available facilities and equipment at above sites:

- e. Generators arrive every Monday morning. The shipper takes the generator immediately to the Nuclear Medicine laboratory and places it on the counter immediately inside the door. The door is kept locked but the shipper obtains a key at the Emergency Room secretary's window to open the department for the delivery and immediately it is replaced to the Emergency Room secretary's window where it is kept on a designated hook at the site of explanations of this process. The generator is protected during this time by the lead-shielding built into its construction at the factory.
- f. The generator is stored as designated above. (See A and a.) Waste material is kept behind the 18 lead-block mentioned in A and a above. Old generators will be kept behind the 18 lead-blocks until they reach a radiation-level of background. The generator being used is behind these same 18 lead-blocks, in addition to the lead-shielding installed at the factory and it is also protected by another lead shield which the generator slips into. This additional shielding was made for this distinct purpose by the manufacturer of the generator, thus, it fits "snug" to the generator and gives adequate protection.
- g. A dose-calibrator is used to measure our levels of radioactivity for doses to be given to our patients. During measurement, the radioactive material is kept in a lead-shield until it is placed inside the calibrator. It is placed inside the generator with 7 inch tongs. Immediately after measurement, the radioactivity is placed into the lead-vial again, to assure levels of below background.

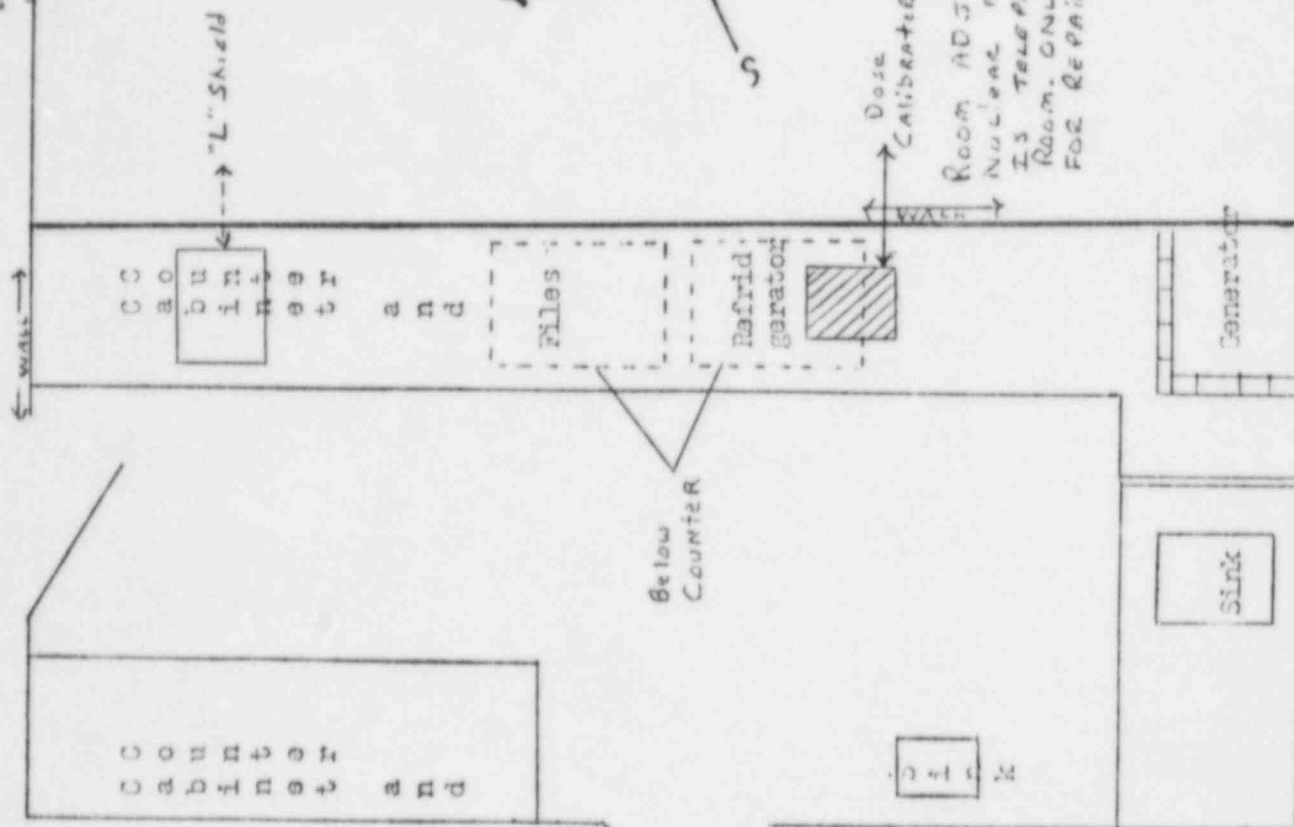
(62-8-5) 11



(62-8-5) 11

Corridor

DOOR



Below Counter

Scanning Room

OUTSIDE OF BUILDING

Personnel Training Program

The Nuclear Medicine department at this institution is presently a one-person department. There are no students rotating through this department.

The only person working in this department is the chief technologist. The training required to fill this position is to have attended an A.M.A. approved program for Nuclear Medicine and to have passed the National Registry of the American Registry of Radiologic Technologists.

A brochure was designed and distributed to all personnel who may enter the department of Nuclear Medicine for any reason. This included Maintenance and Housekeeping personnel. This brochure included a diagram of the department with all areas of radioactivity marked. (These areas will be marked with appropriate signs.) All the necessary instructions were given to these people to assure their safety while in this department.

I have included a copy of the credentials of the chief technologist.

Control No. 01731

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