EXHIBIT A

FORM NRC-313M (8-78) 10 CFR 35	U.S. NUCLEAR REGULATORY COMMISSION APPLICATION FOR MATERIALS LICENSE – MEDICAL	Approved GAO R0557

INSTRUCTIONS – *Complete Items 1 through 26 if this is an initial application or an application for renewal of a license. Use supplemental sheets where necessary. Item 26 must be completed on all applications and signed. Retain one copy. Submit original and one copy of entire application to: Director, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Upon approval of this application, the applicant will receive a Materials License. An NRC Materials 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, Parts 19, 20 and 35 and the license fee provision of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in Item 26 and the appropriate fee enclosed.*

RECEIVED SEP 6 1983

1.a. NAME AND MAILING ADDRESS OF APPLICANT *(Institution, firm, clinic, physician, etc.)* INCLUDE ZIP CODE

LOGAN COUNTY HEALTH CENTER
200 ACADEMY ROAD
GUTHRIE, OKLAHOMA 73044

TELEPHONE NO.: AREA CODE (405) 282-6700

1.b. STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED *(If different from 1.a.)* INCLUDE ZIP CODE

SAME

2. PERSON TO CONTACT REGARDING THIS APPLICATION

MICHAEL MORRIS

TELEPHONE NO.: AREA CODE (918) 372-4229

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

a. ☐ NEW LICENSE
b. ☐ AMENDMENT TO LICENSE NO. _____
c. ☒ RENEWAL OF LICENSE NO. 35-18284-01

4. INDIVIDUAL USERS *(Name individuals who will use or directly supervise use of radioactive material. Complete Supplements A and B for each individual.)*

SEE ADDENDUM 1, Page 1

5. RADIATION SAFETY OFFICER (RSO) *(Name of person designated as radiation safety officer. If other than individual user, complete resume of training and experience as in Supplement A.)*

SEE ADDENDUM 1, PAGE 2

6.a. RADIOACTIVE MATERIAL FOR MEDICAL USE

RADIOACTIVE MATERIAL LISTED IN:	ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS *(In millicuries)*
10 CFR 31.11 FOR IN VITRO STUDIES	X	2.00
10 CFR 35.100, SCHEDULE A, GROUP I	X	AS NEEDED
10 CFR 35.100, SCHEDULE A, GROUP II	X	AS NEEDED
10 CFR 35.100, SCHEDULE A, GROUP III	X	2000
10 CFR 35.100, SCHEDULE A, GROUP IV		AS NEEDED
10 CFR 35.100, SCHEDULE A, GROUP V		AS NEEDED
10 CFR 35.100, SCHEDULE A, GROUP VI		

ADDITIONAL ITEMS:	MARK ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS *(In millicuries)*
IODINE-131 AS IODIDE FOR TREATMENT OF HYPERTHYROIDISM		
PHOSPHORUS-32 AS SOLUBLE PHOSPHATE FOR TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA AND BONE METASTASES		
PHOSPHORUS-32 AS COLLOIDAL CHROMIC PHOSPHATE FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.		
GOLD-198 AS COLLOID FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.		
IODINE-131 AS IODIDE FOR TREATMENT OF THYROID CARCINOMA		
XENON-133 AS GAS OR GAS IN SALINE FOR BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES.		

6.b. RADIOACTIVE MATERIAL FOR USES NOT LISTED IN ITEM 6.a. *(Sealed sources up to 3 mCi used for calibration and reference standards are authorized under Section 35.14(d), 10 CFR Part 35, and NEED NOT BE LISTED.)*

ELEMENT AND MASS NUMBER	CHEMICAL AND/OR PHYSICAL FORM	MAXIMUM NUMBER OF MILLICURIES OF EACH FORM	DESCRIBE PURPOSE OF USE
NONE EXCEPT FOR SEALED CALIBRATION SOURCES			

RECEIVED BY LFMB
Date... 9/14/83
Log... Sept 3 IV
By... Bhorm
Orig. To...
Action Compl. 9/14/83

60073

FEE EXEMPT 170.11(a)(9)

FORM NRC-313M (8-78)

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REG4 LIC30 PDR
35-18284-01

INFORMATION REQUIRED FOR ITEMS 7 THROUGH 23

For Items 7 through 23, check the appropriate box(es) and submit a detailed description of all the requested information. Begin each item on a separate sheet. Identify the item number and the date of the application in the lower right corner of each page. If you indicate that an appendix to the medical licensing guide will be followed, do not submit the pages, but specify the revision number and date of the referenced guide: Regulatory Guide 10.8 , Rev. 1 Date: DECEMBER, 1980

7. MEDICAL ISOTOPES COMMITTEE			**15. GENERAL RULES FOR THE SAFE USE OF RADIOACTIVE MATERIAL** *(Check One)*		
X	Names and Specialties Attached; and Page 3		x	Appendix G Rules Followed; or	
	Duties as in Appendix 3; or *(Check One)*			Equivalent Rules Attached	
	Equivalent Duties Attached		**16. EMERGENCY PROCEDURES** *(Check One)*		
8. TRAINING AND EXPERIENCE			x	Appendix H Procedures Followed; or Add. 1, P-13	
X	Supplements A & B Attached for Each Individual User; and Addendum 1, Page 2			Equivalent Procedures Attached	
	Supplement A Attached for RSO.		**17. AREA SURVEY PROCEDURES** *(Check One)*		
9. INSTRUMENTATION *(Check One)*			x	Appendix I Procedures Followed; or	
X	Appendix C Form Attached; or Add. 1, Page 4			Equivalent Procedures Attached	
	List by Name and Model Number		**18. WASTE DISPOSAL** *(Check One)*		
10. CALIBRATION OF INSTRUMENTS			x	Appendix J Form Attached; or Add. 1, P-14	
x	Appendix D Procedures Followed for Survey Instruments; or Add, 1 , Page 5 abd 6 *(Check One)*			Equivalent Information Attached	
	Equivalent Procedures Attached; and		**19. THERAPEUTIC USE OF RADIOPHARMACEUTICALS** *(Check One)*		
x	Appendix D Procedures Followed for Dose Calibrator; or Add. 1, P-7 *(Check One)*		N/A	Appendix K Procedures Followed; or	
	Equivalent Procedures Attached			Equivalent Procedures Attached	
11. FACILITIES AND EQUIPMENT			**20. THERAPEUTIC USE OF SEALED SOURCES**		
X	Description and Diagram Attached Add. 1, P-8		N/A	Detailed Information Attached; and	
12. PERSONNEL TRAINING PROGRAM				Appendix L Procedures Followed; or *(Check One)*	
X	Description of Training Attached Add. 1, P-9			Equivalent Procedures Attached	
13. PROCEDURES FOR ORDERING AND RECEIVING RADIOACTIVE MATERIAL			**21. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE GASES (e.g., Xenon – 133)**		
X	Detailed Information Attached Add. 1, P-10		N/A	Detailed Information Attached	
14. PROCEDURES FOR SAFELY OPENING PACKAGES CONTAINING RADIOACTIVE MATERIALS *(Check One)*			**22. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL IN ANIMALS**		
			N/A	Detailed Information Attached	
	Appendix F Procedures Followed; or Add. 1, PP-11,12		**23. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL SPECIFIED IN ITEM 6.b**		
x	Equivalent Procedures Attached		x	Detailed Information Attached Add. 1, P-15	

24. PERSONNEL MONITORING DEVICES

TYPE (Check appropriate box)			SUPPLIER	EXCHANGE FREQUENCY
a. WHOLE BODY	X	FILM	P.O. BOX 1414 SUNNYVALE, CA. 94088 RADIATION DETECTION COMPANY	MONTHLY
		TLD		
		OTHER (Specify)		
b. FINGER		FILM		
	X	TLD	P.O. BOX 1414 SUNNYVALE, CA. 94088 RADIATION DETECTION COMPANY	MONTHLY
		OTHER (Specify)		
c. WRIST		FILM		
		TLD		
		OTHER (Specify)		

d. OTHER (Specify)

25. FOR PRIVATE PRACTICE APPLICANTS ONLY

a. HOSPITAL AGREEING TO ACCEPT PATIENTS CONTAINING RADIOACTIVE MATERIAL

NAME OF HOSPITAL

MAILING ADDRESS

CITY | STATE | ZIP CODE

b. ATTACH A COPY OF THE AGREEMENT LETTER SIGNED BY THE HOSPITAL ADMINISTRATOR.

c. WHEN REQUESTING THERAPY PROCEDURES, ATTACH A COPY OF RADIATION SAFETY PRECAUTIONS TO BE TAKEN AND LIST AVAILABLE RADIATION DETECTION INSTRUMENTS.

26. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 1a certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Parts 30 and 35, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

a. LICENSE FEE REQUIRED *(See Section 170.31, 10 CFR 170)*

(1) LICENSE FEE CATEGORY: TITLE 10 CFR 170.31.7B

(2) LICENSE FEE ENCLOSED: $ EXEMPT per 170.11

b. APPLICANT OR CERTIFYING OFFICIAL *(Signature)*: Keith E. Calvert

(1) NAME *(Type or Print)*: KEITH CALVERT

(2) TITLE: HOSPITAL ADMINISTRATOR

c. DATE: SEPTEMBER 1, 1983

FORM NRC-313M (8-78)

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 Form NRC-313M. 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 30-36 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 used: (a) to provide records to State health departments for their information and use; and (b) to provide information 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 a NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you. A copy of the license issued will routinely be placed in the NRC's Public Document Room, 1717 H Street, N.W., Washington, D.C.

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.

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

INDIVIDUAL USERS

1. Paul Massad, M.D. Licensed on 35-18284-01
2. Larry Killebrew, M.D. Licensed on 35-18284-01
3. Ken Coffee, M.D. Licensed on 35-18284-01
4. J. D. CROOKS, M.D. Licensed on 35-18284-01

ITEM 4
SEPTEMBER 1, a983

RADIATION SAFETY OFFICER

RADIATION SAFETY OFFICER: Larry Killebrew, M.D.

ASSISTANT R.S.O.: Paul Massad, M.D.

ASSISTANT R.S.O.: Ken Coffee, M.D.

ASSISTANT R.S.O.: J. D. Crooks, M.D.

MEMBERSHIP OF RADIATION SAFETY COMMITTEE

1. Larry Killebrew, M.D., R.S.O. or his Assistant R.S.O.
2. Keith Calvert, Administrator
3. Nellie Reeve, Supervisor of Radiology and Nuclear Medicine
4. Michael Morris, C.H.P., Consultant Physicist, License #35-19631-01
5. Director of Nursing Service, Loydean Cain, R.N.
6. Lead Nuclear Medicine Technologist, Christine Ward

NOTE: No other physicians wish to be on this committee at this time. If a Specialist in an interested area becomes available who wishes to be on this committee, he will be offered the opportunity.

APPENDIX C

INSTRUMENTATION

1. Survey meters

   a. Manufacturer's name: DOSIMETER CORPORATION

   Manufacturer's model number: 3700

   Number of instruments available: ONE (1)

   Minimum range: 0 mR/hr to 0.5 mR/hr

   Maximum range: 0 mR/hr to 50 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: CAPINTEC

   Manufacturer's model number: CRC-5

   Number of instruments available: ONE(1)

3. Instruments used for diagnostic procedures

Type of Instrument	Manufacturer's Name	Model No.
WELL SCINTILLATOR	ABBOTT LABORATORIES	

4. Other (e.g., liquid scintillation counter, area monitor, velometer)

ITEM 9
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CALIBRATION OF SURVEY INSTRUMENTS

Each survey meter is calibrated annually and following repair by Radiation Services and Consultants, Inc., P.O. Box 2985, Ripley, Oklahoma. That company uses an approved procedure on file under license # 35-19631-01.

Each survey meter is also checked with a Cs-137 reference source under the direction of a nuclear med. tech. before each use. The same geometry is used each time. Allowable deviation within ± 20% of the reference reading taken immediately after calibration is considered acceptable. For readings outside that range, the batteries will be replaced. Another reading will be taken and if the reading is still outside the ± 20% range, the instrument will be recalibrated as above.

ITEM 10a
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CALIBRATION OF SURVEY INSTRUMENTS

Check appropriate items.

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

_____ 2. Calibration will be performed at two points on each scale used for radiation protection purposes, i.e., at least up to 1 R/hr.

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 ±10 percent of the calculated or known values for each point checked. Readings within ±20 percent are considered acceptable if a calibration chart, graph, or response factor is prepared, attached to the instrument, and used to interpret readings to within ±10 percent. Also, when higher scales are not checked or calibrated, an appropriate precautionary note will be posted on 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 _____
or
Exposure rate at a specified distance _____
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. _____

_____ have been approved by an Agreement State; a copy of the Agreement State license, the procedures, and a description of the sources are attached, and the consultant's report will contain the information on

_____ the attached "Certificate of Instrument Calibration."
_____ the consultant's reporting form as attached.

_____ are described in the attachment, and the consultant's report will contain the information on

_____ the attached "Certificate of Instrument Calibration."
_____ the consultant's reporting form as attached.

CERTIFICATE OF INSTRUMENT CALIBRATION

For:

Instrument:

Manufacturer _____

Type _____

Model No. _____

Serial No. _____

Calibration Data:

Scale	Exposure rate (mR/hr)	Instrument reading (mR/hr)	Exposure rate (mR/hr)	Instrument reading (mR/hr)	Exposure rate (mR/hr)	Instrument reading (mR/hr)

Comments:

Nuclide	Activity or Exposure Rate at Specified Distance	Calibration Accuracy

Calibration Source:

Calibrated by _____ Date _____

ITEM 10
SEPTEMBER 1, 1983

ADDENDUM 1

CALIBRATION OF DOSE CALIBRATOR

The dose calibrator will be checked for instrument linearity by Radiation Services and Consultants, Inc. once each quarter. The test will either be performed using the first elution from a new Mo-99/Tc-99m generator or by using attenuators supplied by Calcorp, Inc. Activities will be checked over the entire range of activities. When Calcorp attenuators are used, they will first be calibrated and compared to a Tc-99m decay linearity. Then procedures presented by the manufacturer to the NRC on March 2, 1982 will be followed. An accuracy of ±5% from predicted activities will be considered acceptable in either method.

The dose calibrator will be checked initially by Radiation Services and Consultants for activities measured as a function of sample volume. Activity variations of 2% will be given correction factors to convert the measured activities to true activities.

The dose calibrator will be checked for accuracy on a quarterly basis by Radiation Services and Consultants by using three reference standards whose activities are traceable to the NBS.

A reference Cs-137 source will be assayed daily to confirm instrument constancy. The source will be assayed on the Cs-137, the I-131, and the Tc-99m settings by a nuclear medicine technologist. Variations of 5% from the predicted activities will indicate the need for instrument repair or adjustment.

ITEM 10b
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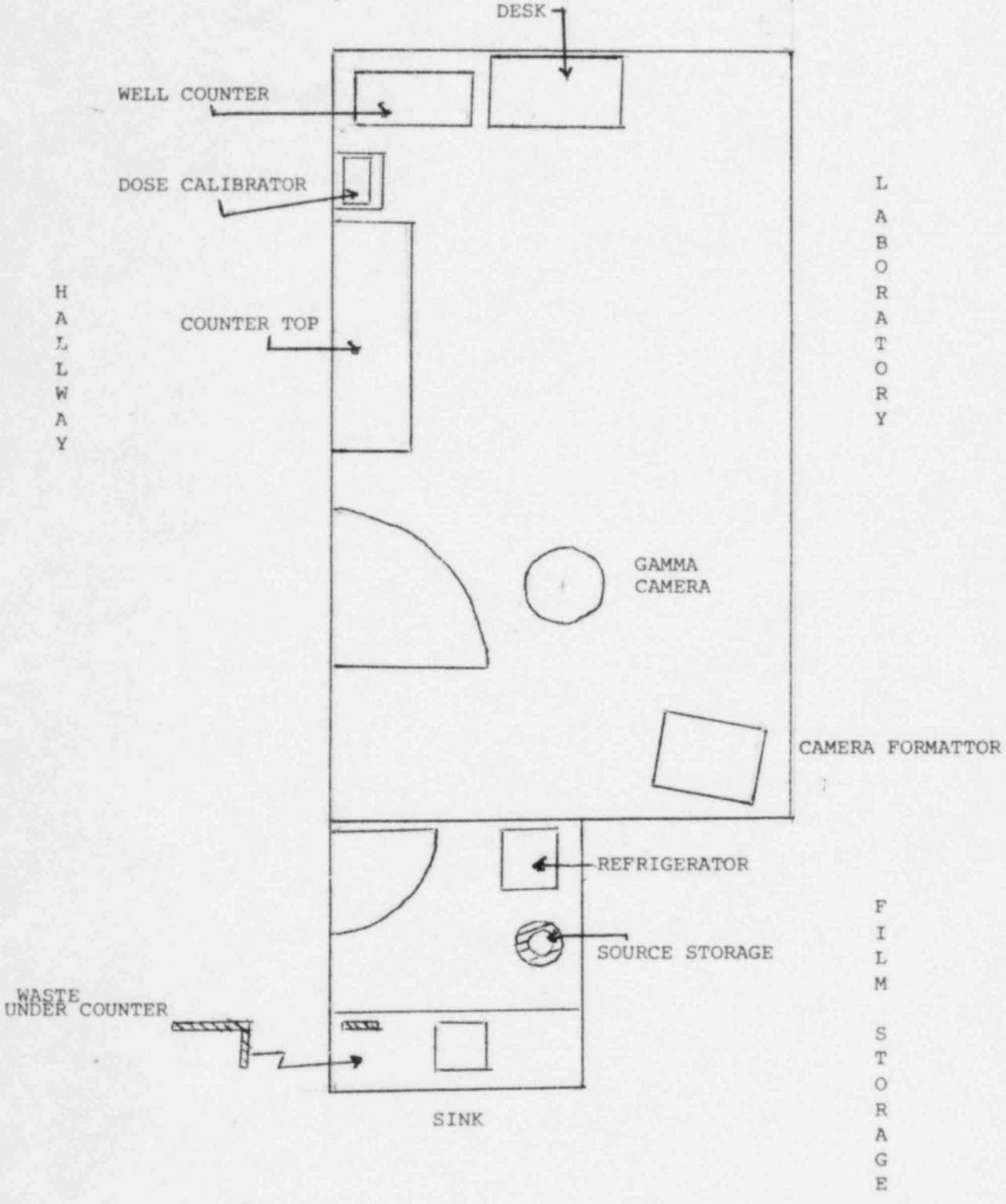

ITEM 11
SEPTEMBER 1,1983

PERSONNEL TRAINING PROGRAM

I. Individuals who work in or frequent restricted areas will be instructed in the items specified in 10 CFR 19.12 at the time of initial employment and at least annually thereafter.

This instruction will include:

a. All terms of the license pertinent to radiation safety.

b. Areas where radioactive material is used or stored.

c. Potential hazards associated with radioactive material.

d. Radiological safety procedures appropriate to their respective duties.

e. Pertinent NRC regulations.

f. Rules and regulations of the license.

g. Obligation to report unsafe conditions to the radiation safety officer.

h. Appropriate response to emergencies or unsafe conditions.

i. Right to be informed of their radiation exposure and bioassay results.

j. Locations where the licensee has posted or made available notices, copies of pertinent regulations, and copies of pertinent licenses and license conditions (including applications and applicable correspondence), as required by 10 CFR Part 19.

II. Individuals whose duties may require them to work in the vicinity of licensed material will be informed about radiation hazards and appropriate precautions at the time of initial employment and at least annually thereafter. This information will be provided initially at hospital employee orientation sessions and annually thereafter at in-service meetings.

APPENDIX E

PROCEDURES FOR ORDERING AND ACCEPTING DELIVERY OF RADIOACTIVE MATERIAL

1. The Supervisory Nuclear Medicine Technologist will place all orders for radioactive materials and will ensure that the requested materials and quantities are authorized by the license and that possession limits are not exceeded.

2. A system for ordering and receiving radioactive materials will be established and maintained. The system will consist minimally of the following.

   a. Ordering of routinely used materials

      (1) Written records that identify the isotope, compound, activity levels, and supplier, etc., will be used.

      (2) The written records will be referenced when opening or storing radioactive shipment.

   b. Ordering of specially used materials (e.g., therapeutic uses)

      (1) A written request* will be obtained from the physician who will perform the procedure.

      (2) Persons ordering the materials will reference the physician's written request when placing the order. The physician's request will indicate isotope, compound, activity level, etc.

      (3) The physician's written request will be referenced when receiving, opening, or storing the radioactive material.

   c. It is essential that written records* be maintained for all ordering and receipt procedures.

3. During normal working hours, carriers will be instructed to deliver radioactive packages directly to the Nuclear Medicine Department.

4. During off-duty hours, security personnel or other designated individuals will accept delivery of radioactive packages in accordance with the procedures outlined in the sample memorandum below.

*In the case of special orders, the physician's written request and appropriate shipping/receipt records will be referenced and the dose assayed prior to its administration.

SAMPLE** MEMORANDUM

MEMORANDUM FOR: Security Personnel

FROM: Hospital Administrator

SUBJECT: RECEIPT OF PACKAGES CONTAINING RADIOACTIVE MATERIAL

Any packages containing radioactive material that arrive between 4:30 p.m. and 7 a.m. or on Sundays shall be signed for by the Security Guard on duty and taken immediately to the Nuclear Medicine Department. Unlock the door, place the package on top of the counter immediately to the right of the door, and relock the door.

If the package is wet or appears to be damaged immediately contact the Radiation Safety Officer. Ask the carrier to remain until it can be dtermined that neither he nor the delivery vehicle is contaminated.

**RADIATION SAFETY OFFICER _____

**OFFICE PHONE _____

**HOME PHONE _____

**On the actual memo that is used, this information will be filled in and updated as necessary.

PROCEDURES FOR SAFELY OPENING PACKAGES
CONTAINING RADIOACTIVE MATERIAL

1. Special requirements will be followed for packages containing quantities of radioactive material in excess of the Type A quantity limits as specified in paragraphs 20.205 (a)(1) and (c)(1) of 10 CFR Part 20 (more than 20 Ci for Mo-99 and Tc-99m). They will be monitored for surface contamination and external radiation levels within 3 hours after receipt if received during working hours or within 18 hours if received after working hours, in accordance with the requirements of paragraphs 20.205(a) through (c). All shipments of liquids greater than exempt quantities will be tested for leakage. The NRC Regional Office will be notified in accordance with the regulations if removable contamination exceeds 0.01 uCi/100 cm^2 or if external radiation levels exceed 200 mR/hr at the package surface or 10 mR/hr at 3 feet (or 1 m).

2. For all packages, the following additional procedures for opening packages will be carried out:

   a. Put on gloves to prevent hand contamination.

   b. Visually inspect package for any sign of damage (e.g., wetness, crushed). If damage is noted, stop procedure and notify Radiation Safety Officer.

   c. Measure exposure rate at 3 feet (or 1 m) from package surface and record. If 10 mR/hr, stop procedure and notify Radiation Safety Officer.

   d. Measure surface exposure rate and record. If 200 mR/hr, stop procedure and notify Radiation Safety Officer.

   e. Open the package with the following precautionary steps:

      (1) Open the outer package (following manufacturer's directions, if supplied) and remove packing slip.

      (2) Open inner package and verify that contents agree with those on packing slip. Compare requistion, packing slip, and label on bottle.

      (3) Check integrity of final source container (i.e., inspect for breakage of seals or vials, loss of liquid, and discoloration of packaging material).

      (4) Check also that shipment does not exceed possession limits.

   f. Wipe external surface of final source container and remove wipe to low background area. Assay the wipe and record amount of removable radioactivity (e.g., uCi/100 cm^2, etc.). Check wipes with a thin-end-window G-M survey meter, and take precautions against the spread of contamination as necessary.

   g. Monitor the packing material and packages for contamination before discarding.

      (1) If contaminated, treat as radioactive waste.

      (2) If not contaminated, obliterate radiation labels before discarding in regular trash.

   Maintain records of the results of checking each package, using "Radioactive Shipment Receipt Record" (see next page or a form containing the same information).

Item 14
Date SEPTEMBER 1, 1983

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RADIOACTIVE SHIPMENT RECEIPT REPORT

1. P.O. No.: _____ Survey Date _____ Time _____

   Surveyor _____

2. CONDITION OF PACKAGE:

   _____ O.K. _____ Punctured _____ Status _____ Wet

   _____ Crushed _____ Other

3. RADIATION UNITS OF LABEL: _____ Units (mR/hr)

4. MEASURED RADIATION LEVELS:

   a. Package surface _____ mR/hr

   b. 3 feet or 1 meter from surface _____ mR/hr

5. DO PACKING SLIP AND VIAL CONTENTS AGREE?

   a. Radionuclide _____ yes _____ no, difference _____

   b. Amount _____ yes _____ no, difference _____

   c. Chem Form _____ yes _____ no, difference _____

6. WIPE RESULTS FROM:

   a. Outer _____ CPM = _____ DPM

      eff = ( )

   b. Final source container _____ CPM = _____ DPM

      eff = ( )

8. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS _____ mR/hr, CPM

9. DISPOSITION OF PACKAGE AFTER INSPECTION _____

10. IF NRC/CARRIER NOTIFICATION REQUIRED, GIVE TIME, DATE, AND PERSONS NOTIFIED.

_____

Signature Date

ITEM 14
SEPTEMBER 1,1983

APPENDIX F

PROCEDURES FOR SAFELY OPENING PACKAGES CONTAINING RADIOACTIVE MATERIAL

1. Special requirements will be followed for packages containing quantities of radioactive material in excess of the Type A quantity limits as specified in paragraphs 20.205(a)(1) and (c)(1) of 10 CFR Part 20 (more than 20 Ci for Mo-99 and Tc-99m). They will be monitored for surface contamination and external radiation levels within 3 hours after receipt if received during working hours or within 18 hours if received after working hours, in accordance with the requirements of paragraphs 20.205(a) through (c). All shipments of liquids greater than exempt quantities will be tested for leakage. The NRC Regional Office will be notified in accordance with the regulations if removable contamination exceeds 0.01 μCi/100 cm^2 or if external radiation levels exceed 200 mR/hr at the package surface or 10 mR/hr at 3 feet (or 1 m).

2. For all packages, the following additional procedures for opening packages will be carried out:

   a. Put on gloves to prevent hand contamination.

   b. Visually inspect package for any sign of damage (e.g., wetness, crushed). If damage is noted, stop procedure and notify Radiation Safety Officer.

   c. Measure exposure rate at 3 feet (or 1 m) from package surface and record. If >10 mR/hr, stop procedure and notify Radiation Safety Officer.

   d. Measure surface exposure rate and record. If >200 mR/hr, stop procedure and notify Radiation Safety Officer.

   e. Open the package with the following precautionary steps:

      (1) Open the outer package (following manufacturer's directions, if supplied) and remove packing slip.

      (2) Open inner package and verify that contents agree with those on packing slip. Compare requisition,* packing slip, and label on bottle.

      (3) Check integrity of final source container (i.e., inspect for breakage of seals or vials, loss of liquid, and discoloration of packaging material).

      (4) Check also that shipment does not exceed possession limits.

   f. Wipe external surface of final source container and remove wipe to low background area. Assay the wipe and record amount of removable radioactivity (e.g., μCi/100 cm^2, etc.). Check wipes with a thin-end-window G-M survey meter, and take precautions against the spread of contamination as necessary.

   g. Monitor the packing material and packages for contamination before discarding.

      (1) If contaminated, treat as radioactive waste.

      (2) If not contaminated, obliterate radiation labels before discarding in regular trash.

3. Maintain records of the results of checking each package, using "Radioactive Shipment Receipt Record" (see next page) or a form containing the same information.

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*In the case of special orders (e.g., therapy doses), also compare with physician's written request.

EMERGENCY PROCEDURES

Minor Spills

1. NOTIFY: Notify persons in the area that a spill has occurred.

2. PREVENT THE SPREAD: Cover the spill with absorbent paper.

3. CLEAN UP: Use disposable gloves and remote handling tongs. Carefully fold the absorbent paper and pad. Insert into a plastic bag and dispose of in the radioactive waste container. Also insert into the plastic bag all other contaminated materials such as disposable gloves.

4. SURVEY: With a low-range, thin-window G_M survey meter, check the area aound the spill, hands, and clothing for contamination.

5. REPORT: Report incident to the Radiation Safety Officer.

Major Spills

1. CLEAR THE AREA: Notify all persons not involved in the spill to vacate the room.

2. PREVENT THE SPREAD: Cover the spill with absorbent pads, but do not attempt to clean it up. Confine the movement of all personnel potentially contaminated to prevent the spread.

3. SHIELD THE SOURCE: If possible, the spill should be shielded, but only if it can be done without further contamination or without significantly increasing your radiation exposure.

4. CLOSE THE ROOM: Leave the room and lock the door(s) to prevent entry.

5. CALL FOR HELP: Notify the Radiation Safety Officer immediately.

6. PERSONNEL DECONTAMINATION: Contaminated clothing should be removed and stored for further evaluation by the Radiation Safety Officer. If the spill is on the skin, flush thoroughly and then wash with mild soap and lukewarm water.

RADIATION SAFETY OFFICER: LARRY KILLEBREW, M.D.
OFFICE PHONE: (405) 282-6700 ext. 201
HOME PHONE: (405) 751-6782

ALTERNATE NAMES AND TELEPHONE NUMBERS DESIGNATED BY RADIATION SAFETY OFFICER:

Christine Ward (405) 364-5640
Michael Morris (918) 372-4229

Item 16
Date 9/1/83

APPENDIX J

WASTE DISPOSAL PROCEDURES

1. Liquid Waste will be disposed of

Check as appropriate

____ By commercial waste disposal service (See also No. 4 below)

__X__ In the sanitary sewer system in accordance with Section 20.303 of 10 CFR Part 20.

____ Other (specify): _____

2. Mo-99/Tc-99m generators will be: NOT NORMALLY USED. All Tc-99m IS PURCHASED FROM A LOCAL NUCLEAR PHARMACY IN OKLAHOMA CITY. IF GENERATORS ARE PURCHASED, THEN----

(Check as appropriate)

__X__ Returned to the manufacturer for disposal

____ Held for decay until radiation levels as measured with a low-level survey meter and with all shielding removed, have reached background levels. All radiation labels will be removed or obliterated and the generators disposed of asnormal trash. (Note: this method of disposal may not be practical for generators containing long-lived radioactive contaminants)

____ Disposed of by commercial waste disposal service (See also No. 4 below)

____ Other (specify): _____

_____

3. Other Solid Waste will be:

(Check as appropriate)

__X__ Held for decay until radiation levels as measured with a low-level survey meter and with all shielding removed) have reached background levels. All radiation labels will be removed or obliterated and the waste will be disposed of in normal trash.

Item No. 18
Date: SEPTEMBER 1,1983

Procedures and Precautions
for Use of Radioactive Material
Specified in Item 6b

All sealed sources will be wipe tested every six months by an approved NRC Health Physicist.

PROGRAM FOR MAINTAINING OCCUPATIONAL RADIATION EXPOSURES ALARA

I. Management Commitment

A. We, the management of this hospital, are committed to the program described in this paper for keeping exposures (individual and collective) As Low As is Reasonably Achievable (ALARA). In accord with this commitment, we hereby describe an administrative organization for radiation safety and have developed the necessary written policies, procedures, and instructions to foster the ALARA concept within our institution. The organization includes a Radiation Safety Committee (RSC) and a Radiation Safety Officer (RSO).

B. We will perform a formal annual review of the radiation safety program including ALARA considerations. This shall include reviews of operating procedures and past exposure records, inspections, etc., and consultations with the radiation physics consultant and with the radiation protection staff.

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 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 losest 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 ensure 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, rubber gloves, etc., in his proposed use.
3. The RSC will ensure that the user justifies his procedures and that doses 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/her 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 exposure with particular attention to instance where Investigational Levels in Table 1 below are exceeded. The principal 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 Section 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. 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. 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 provision of Section VI of this program.
3. The RSO will review radiation levels in unrestricted and restricted areas to determine that they were at ALARA levels during the previous quarter.

B. Education Responsibilities for ALARA Program

1. The RSO will schedule briefings and educational sessions to inform workers of ALARA program efforts.
2. The RSO will ensure 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 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 reviewing and evaluating the suggestions of individual workers for improving health physics practices and will 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, will 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 Authorized User to Persons Under His/Her Supervision

1. The authorized user will explain the ALARA concept and his/her commitment to maintain exposures ALARA to all persons under his/her supervision.
2. The authorized user will ensure that persons under his/her supervision who are subject to occupational radiation exposure are trained and educated in good heath 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 working procedures and work conditions.

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

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

This institution hereby extablishes Investigational Levels for occupational external radiation exposure which, when exceeded, will initiate a review or investigation by the RSC and/or the RSO. The Investigational levels that we have adopted are listed in Table 1 below. These levels apply to the exposure of individual workers.

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

VI. A. Quarterly exposure of individuals to less than Investigational Level 1.

Except when deemed appropriate by the RSO, no further action will be taken in those cases where an individual's exposure is less than Table 1 values for the Investigational Level 1.

B. Personnel exposures equal to or greater than Investigational Level 1, but less than Investigational Level II.

The RSO will review the exposure of each individual whose quarterly exposures equal or exceed investigational Level I and will report the results of the 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 RSO will investigate in a timely manner the cause(s) of all personnel exposures equaling or exceeding Investigational Level II, and, if warranted, will 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 RSC 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 the NRC inspectors for review at the time of the next inspection.

D. Reestablishment of an individual occupational worker's Investigational Level II to a level above that listed in Table 1

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.

VI. D. The RSC will review the justification for, and will approve or disapprove, all revisions of Investigational Level II. In such cases, when the exposure equals or exceeds the newly established Investigational Level II, those actions listed in paragraph VI.C. above will be followed.

TABLE I

INVESTIGATIONAL LEVELS
(mRems per calendar quarter)

	LEVEL I	LEVEL II
1. Whole body, head and trunk; active blood-forming organs; lens of eyes; and gonads	125	375
2. Hands and forearms; feet and ankles	1875	5625

VII. Membership of the Radiation Safety Committee is:

1. Larry Killebrew, M.D., R.S.O. or his Assistant R.S.O.
2. Keith Calvert, Administer
3. Nellie Reeve, Supervisor of Radiology and Nuclear Medicine
4. Michael Morris, C.H.P., Consultant Physicist, License #35-19631-01
5. Director of Nursing Service, Loydean Cain, R.N.
6. Christine Ward, Lead Nuclear Medicine Technologist

VIII. Signature of Certifying Official

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

Keith E Calvert
Signature

KEITH CALVERT
Name (print or type)

HOSPITAL ADMINISTRATOR
Title

Institution: Name and address

LOGAN COUNTY HEALTH CENTER
200 ACADEMY ROAD
GUTHRIE, OKLAHOMA 73044

60073

EXPOSURE INVESTIGATION

NAME:_____

EXPOSURE PERIOD:_____

WHOLE BODY EXPOSURE_____ FOR PERIOD_____

ACTION LEVEL_____ WHICH IS _____

I. PROBABLE CAUSE(S) FOR HIGH EXPOSURE:_____

_____

_____

_____

II. POSSIBLE WAYS TO REDUCE EXPOSURE:_____

_____

_____

_____

III. FOLLOW-UP ACTION:_____

_____

_____

_____

DATE:_____

INVESTIGATORS:_____

_____

SIGNATURE OF PERSON INVESTIGATED STATING THAT THE ABOVE INFORMATION IS ACCURATE AND COMPLETE TO THE BEST OF HIS/HER KNOWLEDGE:

_____

SIGNATURE OF INVESTIGATED PERSON