

NRC FORM 313M (9-81) 10 CFR 35	U.S. NUCLEAR REGULATORY COMMISSION APPLICATION FOR MATERIALS LICENSE — MEDICAL	Approved by OMB 3150-0041
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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.

1.a. NAME AND MAILING ADDRESS OF APPLICANT (institution, firm, clinic, physician, etc.) INCLUDE ZIP CODE Osteoporosis Testing Center 1916 Thomson Drive Lynchburg, Virginia 24501 TELEPHONE NO.: AREA CODE (804) 845 9051	1.b. STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED (If different from 1.a.) INCLUDE ZIP CODE SAME AS 1.a.
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2. PERSON TO CONTACT REGARDING THIS APPLICATION John W. Cure, III TELEPHONE NO.: AREA CODE (804) 384 7003	3. THIS IS AN APPLICATION FOR: (Check appropriate item) a. <input checked="" type="checkbox"/> NEW LICENSE b. <input type="checkbox"/> AMENDMENT TO LICENSE NO. _____ c. <input type="checkbox"/> RENEWAL OF LICENSE NO. _____
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4. INDIVIDUAL USERS (Name individuals who will use or directly supervise use of radioactive material. Complete Supplements A and B for each individual.) Dr. Henry Davis von Oesen, M.D. Dr. Paul F. Fitzgerald, M.D. Dr. James C. Dunstan, Jr., M.D. Dr. Terry Oliver Miller, M.D.	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.) John W. Cure, III Dr. Henry Davis von Oesen, M.D.
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6.a. RADIOACTIVE MATERIAL FOR MEDICAL USE					
RADIOACTIVE MATERIAL LISTED IN:	ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS (In millicuries)	ADDITIONAL ITEMS:	MARK ITEMS DESIRED "X"	MAXIMUM POSSESSION LIMITS (In millicuries)
10 CFR 31.11 FOR IN VITRO STUDIES			IODINE-131 AS IODIDE FOR TREATMENT OF HYPERTHYROIDISM		
10 CFR 35.100, SCHEDULE A, GROUP I		AS NEEDED	PHOSPHORUS-32 AS SOLUBLE PHOSPHATE FOR TREATMENT OF POLYCYTHEMIA VERA, LEUKEMIA AND BONE METASTASES		
10 CFR 35.100, SCHEDULE A, GROUP II		AS NEEDED	PHOSPHORUS-32 AS COLLOIDAL CHROMIC PHOSPHATE FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.		
10 CFR 35.100, SCHEDULE A, GROUP III			GOLD-198 AS COLLOID FOR INTRACAVITARY TREATMENT OF MALIGNANT EFFUSIONS.		
10 CFR 35.100, SCHEDULE A, GROUP IV		AS NEEDED	IODINE-131 AS IODIDE FOR TREATMENT OF THYROID CARCINOMA		
10 CFR 35.100, SCHEDULE A, GROUP V		AS NEEDED	XENON-133 AS GAS OR GAS IN SALINE FOR BLOOD FLOW STUDIES AND PULMONARY FUNCTION STUDIES.		
10 CFR 35.100, SCHEDULE A, GROUP VI	X	1,500 mCi			

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
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>RECEIVED BY LFMD</p> <p>Date: 5/13/85</p> <p>Lag: May 14</p> <p>By: Brown</p> <p>Orig. To: 5710/125</p> </div> <div style="width: 30%;"> <p>Applicant: 4849</p> <p>Check No.: #580/10</p> <p>Amount: For application</p> <p>Type of Fee: 3/13/85</p> <p>Date Check: 5/13/85</p> <p>Received By: Brown</p> </div> <div style="width: 30%; text-align: right;"> <p>23081</p> <p>50587</p> <p>5/8/85</p> <p>030 28668</p> </div> </div>			

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: October 1980

7. MEDICAL ISOTOPES COMMITTEE		15. GENERAL RULES FOR THE SAFE USE OF RADIOACTIVE MATERIAL (Check One)	
N/A	Names and Specialties Attached; and		Appendix G Rules Followed; or
	Duties as in Appendix B; or _____ (Check One)	X	Equivalent Rules Attached
	Equivalent Duties Attached	16. EMERGENCY PROCEDURES (Check One)	
8. TRAINING AND EXPERIENCE		X	Appendix H Procedures Followed; or
X	Supplements A & B Attached for Each Individual User; and		Equivalent Procedures Attached
X	Supplement A Attached for RSO.	17. AREA SURVEY PROCEDURES (Check One)	
9. INSTRUMENTATION (Check One)			Appendix I Procedures Followed; or
	Appendix C Form Attached; or	X	Equivalent Procedures Attached
X	List by Name and Model Number	18. WASTE DISPOSAL (Check One)	
10. CALIBRATION OF INSTRUMENTS			Appendix J Form Attached; or
	Appendix D Procedures Followed for Survey Instruments; or _____ (Check One)	X	Equivalent Information Attached
X	Equivalent Procedures Attached; and	19. THERAPEUTIC USE OF RADIOPHARMACEUTICALS (Check One)	
	Appendix D Procedures Followed for Dose Calibrator; or _____ (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	N/A	Detailed Information Attached; and
12. PERSONNEL TRAINING PROGRAM			Appendix L Procedures Followed; or _____ (Check One)
X	Description of Training Attached		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	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
X	Appendix F Procedures Followed; or	23. PROCEDURES AND PRECAUTIONS FOR USE OF RADIOACTIVE MATERIAL SPECIFIED IN ITEM 6.b	
	Equivalent Procedures Attached	N/A	Detailed Information Attached

24. PERSONNEL MONITORING DEVICES

TYPE <small>(Check appropriate box)</small>		SUPPLIER	EXCHANGE FREQUENCY
a. WHOLE BODY	<input checked="" type="checkbox"/> FILM	R. S. LANDAUER	MONTHLY
	<input type="checkbox"/> TLD		
	<input type="checkbox"/> OTHER <i>(Specify)</i>		
b. FINGER	<input type="checkbox"/> FILM		
	<input type="checkbox"/> TLD		
	<input type="checkbox"/> OTHER <i>(Specify)</i>		
c. WRIST	<input type="checkbox"/> FILM		
	<input type="checkbox"/> TLD		
	<input type="checkbox"/> OTHER <i>(Specify)</i>		

d. OTHER *(Specify)*

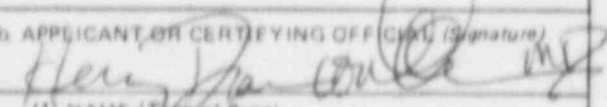
25. FOR PRIVATE PRACTICE APPLICANTS ONLY

a. HOSPITAL AGREEING TO ACCEPT PATIENTS CONTAINING RADIOACTIVE MATERIAL			
NAME OF HOSPITAL		b. ATTACH A COPY OF THE AGREEMENT LETTER SIGNED BY THE HOSPITAL ADMINISTRATOR.	
MAILING ADDRESS			
CITY	STATE ZIP CODE		
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 <i>(See Section 170.31, 10 CFR 170)</i>	b. APPLICANT OR CERTIFYING OFFICIAL <i>(Signature)</i>  (1) NAME <i>(Type or Print)</i> Dr. Henry Davis von Oesen
(1) LICENSE FEE CATEGORY: 7 C	(2) TITLE M.D.
(2) LICENSE FEE ENCLOSED: \$ 580.00	c. DATE 4/30/85

RADIOACTIVE MATERIAL FOR MEDICAL USE

<u>Isotope</u>	<u>Chemical and/or Physical Form</u>	<u>Manufacturer and Model Number</u>	<u>Amount</u>
153-Gd	GdO ₂	Gulf Nuclear Model Gd-1	1,100 mCi each 1,500 mCi total

The radioactive material listed above will be in the form of a sealed source, special form. The device is DP3 and the NRC device registration is NR-430-D-101-S. It will be used in a Lunar Dual-Photon bone mineral analyzer.

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER Dr. Henry Davis von Oesen, M.D.		2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE Virginia		
3. CERTIFICATION				
SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C		
American Board of Orthopedic Surgery		September 1980		
4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES				
FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B SEE ATTACHED CERTIFICATE	TYPE AND LENGTH OF TRAINING		
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D	
a. RADIATION PHYSICS AND INSTRUMENTATION	LYNCHBURG, VA. 4/3 & 4/20/85	3		
b. RADIATION PROTECTION	LYNCHBURG, VA. 4/3 & 4/20/85	2		
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY				
d. RADIATION BIOLOGY	LYNCHBURG, VA. 4/3 & 4/20/85	3		
e. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		NONE		

THIS IS TO CERTIFY THAT

DR. HENRY DAVIS VON OESSEN, M.D.

has completed eight hours of

RADIATION SAFETY TRAINING

in the use of

BONE MINERAL ANALYZER DIAGNOSTIC DEVICES

April 20, 1985

John W. Cure III

Certified Health Physicist

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER Dr. Paul F. Fitzgerald, M.D.		2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE Virginia		
3. CERTIFICATION				
SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C		
American Board of Orthopedic Surgery		September 1973		
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	
	SEE ATTACHED CERTIFICATE			
a. RADIATION PHYSICS AND INSTRUMENTATION	LYNCHBURG, VA. 4/3 & 4/20/85	3		
b. RADIATION PROTECTION	LYNCHBURG, VA. 4/3 & 4/20/85	2		
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY				
d. RADIATION BIOLOGY	LYNCHBURG, VA. 4/3 & 4/20/85	3		
e. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		NONE		

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has completed eight hours of

in the use of

April 20, 1985

Certified Health Physicist

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER Dr. James C. Dunstan, Jr., M.D.		2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE Virginia		
3. CERTIFICATION				
SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C		
American Board of Orthopedic Surgery		July 1984		
4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES				
FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B SEE ATTACHED CERTIFICATE	TYPE AND LENGTH OF TRAINING		
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D	
a. RADIATION PHYSICS AND INSTRUMENTATION	LYNCHBURG, VA. 4/3 & 4/20/85	3		
b. RADIATION PROTECTION	LYNCHBURG, VA. 4/3 & 4/20/85	2		
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY				
d. RADIATION BIOLOGY	LYNCHBURG, VA. 4/3 & 4/20/85	3		
e. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		NONE		

THIS IS TO CERTIFY THAT

DR. JAMES C. DUNSTAN, JR., M.D.

has completed eight hours of

RADIATION SAFETY TRAINING

in the use of

BONE MINERAL ANALYZER DIAGNOSTIC DEVICES

April 20, 1985

John W. Cure III

Certified Health Physicist

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER Dr. Terry Oliver Miller, M.D.		2. STATE OR TERRITORY IN WHICH LICENSED TO PRACTICE MEDICINE Virginia		
3. CERTIFICATION				
SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C		
American Board of Orthopedic Surgery		September 1973		
4. TRAINING RECEIVED IN BASIC RADIOISOTOPE HANDLING TECHNIQUES				
FIELD OF TRAINING A	LOCATION AND DATE(S) OF TRAINING B SEE ATTACHED CERTIFICATE	TYPE AND LENGTH OF TRAINING		
		LECTURE/ LABORATORY COURSES (Hours) C	SUPERVISED LABORATORY EXPERIENCE (Hours) D	
a. RADIATION PHYSICS AND INSTRUMENTATION	LYNCHBURG, VA. 4/3 & 4/20/85	3		
b. RADIATION PROTECTION	LYNCHBURG, VA. 4/3 & 4/20/85	2		
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY				
d. RADIATION BIOLOGY	LYNCHBURG, VA. 4/3 & 4/20/85	3		
e. RADIOPHARMACEUTICAL CHEMISTRY				
5. EXPERIENCE WITH RADIATION. (Actual use of Radioisotopes or Equivalent Experience)				
ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		NONE		

THIS IS TO CERTIFY THAT

DR. TERRY OLIVER MILLER, M.D.

has completed eight hours of

RADIATION SAFETY TRAINING

in the use of

BONE MINERAL ANALYZER DIAGNOSTIC DEVICES

April 20, 1985

John W. Curo III

Certified Health Physicist

TRAINING AND EXPERIENCE
AUTHORIZED USER OR RADIATION SAFETY OFFICER

1. NAME OF AUTHORIZED USER OR RADIATION SAFETY OFFICER

John W. Cure, III

2. STATE OR TERRITORY IN
WHICH LICENSED TO
PRACTICE MEDICINE N/A

3. CERTIFICATION

SPECIALTY BOARD A	CATEGORY B	MONTH AND YEAR CERTIFIED C
Certified in Health Physics	by the American Board of Health Physics	Nov. 1961

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	Vanderbilt University 1952-53 Oak Ridge National Laboratory June-Aug. 1953	6 semester hours	3 months field training
b. RADIATION PROTECTION	SAME AS ABOVE	"	"
c. MATHEMATICS PERTAINING TO THE USE AND MEASUREMENT OF RADIOACTIVITY	SAME AS ABOVE	"	"
d. RADIATION BIOLOGY	SAME AS ABOVE	"	"
e. RADIOPHARMACEUTICAL CHEMISTRY	NONE		

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

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
3-83 Pu-239 Co-60 I-131 Mixed Fission Products	Kilocurie Kilogram Megacurie Curie Megacurie	Lynchburg Research Center Babcock & Wilcox Co. Lynchburg, Virginia	1956-1981	Research & Development (see attached resume of Mr. Cure)

Health Physics Consultation

Biographical Highlights
JOHN W. CURE, III

Education

B.S., Virginia Military Institute, Lexington, Virginia.
M.S., Vanderbilt University, Nashville, Tennessee.

Professional Certification

Mr. Cure holds Certificate #62-17 issued by the American Board of Health Physics November 10, 1961. He participates in Continuing Education Programs as required to maintain current valid Certification.

Special Training in Health Physics

1952-1953 Mr. Cure was awarded an AEC Radiological Physics Fellowship for health physics education and training program at Vanderbilt University and Oak Ridge National Laboratory under noted health physics educator, Dr. Elda E. Anderson.
1981 Mr. Cure completed intensive medical health physics training with one of the leading medical physics concerns in the Southeast.

Professional Experience

1981-present Health Physics Consultation--President and founder, providing medical radiation physics services to clinics, hospitals and private physicians.
1970-1981 Supervisor of Radiation and Safety--Babcock and Wilcox Company, Lynchburg Research Center. Responsibility for radiation and safety programs for 1 megawatt pool reactor; hot cell examination facility handling kilocurie quantities of gamma emitters; critical experiment and fuel development facilities and the transportation of radioactive materials. Member of various radiation safety committees at Babcock and Wilcox and the Radiation Safety Committee of Virginia Polytechnic Institute and State University. Consultant to other Babcock and Wilcox divisions and private sector clients. Member of three man team to audit radiation safety operations at Oak Ridge National Laboratory. Teacher of Radiation Safety in Nuclear Technology Curriculum at Central Virginia Community College and numerous courses in health physics and radiation safety for company sponsored educational programs. Active in Speaker's Bureau for educating general public on radiation and nuclear matters.
1964-1970 Health Physicist--Babcock and Wilcox Co., Nuclear Development Center. Developed, initiated and operated the health physics program which included a 6 megawatt test reactor; the Plutonium Development Laboratory handling kilogram quantities of plutonium; and the facilities detailed above.
1956-1963 Health Physicist and Experimental Physicist--Babcock and Wilcox Co., Critical Experiment Laboratory. Implemented Health Physics program and assisted with special experiments.
1954-1956 U.S. Air Force, Kirtland Air Force Base, New Mexico--1st. Lt., research officer. Participated in Nevada test site "Operation Teapot".
1953-1954 Oak Ridge National Laboratory--junior health physicist.

Professional Activities

Served twice as President, Virginia Chapter of Health Physics Society, one term as the founding president.
Member - Health Physics Society, American Nuclear Society, American Industrial Hygiene Association.
Member of several committees of the Health Physics Society on national and state levels and the ANSI Committee on Bioassay Standards.

Licensure

NRC Byproduct License: 45-19958-01
North Carolina Registration: 999-S00164
Virginia Radioactive Material License: 156-01

Medical Radiation Physics Services

INSTRUMENTATION

SURVEY METER

Survey meter will be as listed below or an equivalent of it:

Bicron Surveyor with Model SWGM Probe

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

Maximum range of 0 mR/hr to 50 mR/hr

INSTRUMENT FOR DIAGNOSTIC PROCEDURES

Lunar Dual-photon Spine Scanning System Model DP3.

CALIBRATION OF INSTRUMENTS

SURVEY INSTRUMENT

Survey meter will be calibrated by our consultant, Health Physics Consultation, according to procedures specified in their NRC License 45-19958-01, which expires April 20, 1987. In Brief, the inverse square law will be used to calculate exposure rates at distances from a source of known radiation within $\pm 5\%$ traceable to NBS. The instrument will be placed in that radiation field and adjusted as necessary.

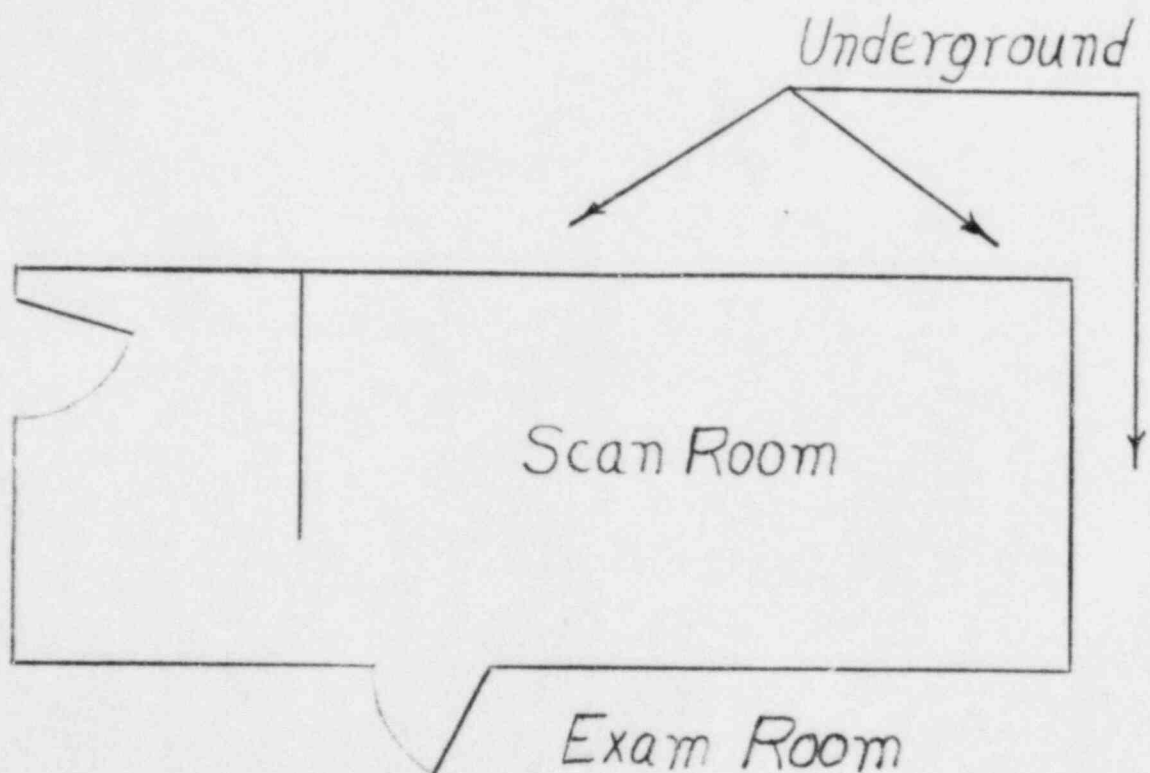
FACILITY

The Lunar Dual-photon Spine Scanner Model DP3 will be located in a room approximately 8 feet by 16 feet. Two walls of this room are underground; a third wall is between an examination room; and the fourth wall separates a 7 ft. by 8 ft. portion of the room from the aforementioned 8 ft. by 16 ft. part. The room will be marked with the appropriate caution signs as required by 10 CFR Part 20.203. Please see FIGURE 1 for a scale drawing of the room.

FIGURE 1

LUNAR DUAL-PHOTON SPINE SCANNING ROOM

Scale 1/4 Inch = 1 Foot



PERSONNEL TRAINING PROGRAM

Other office personnel will be given information pertaining to:

- 1) The potential hazards associated with radiation.
- 2) Recognition of the radiation hazard symbol.
- 3) Special safety precautions they must observe.

Personnel functioning as radiation workers will be trained as required by 10 CFR Part 19.12. This will be documented by the licensee who will train workers as shown in the attached TABLE 1.

TABLE 1

RADIATION PROTECTION TRAINING

- 1) Biological Effects of Radiation
 - a) Carcinogenesis
 - b) Genetic effects
 - c) Acute effects
 - d) Latent effects

- 2) Measurement and Control of Radiation Exposure
 - a) Gamma radiation
 - b) External dosimetry
 - c) Time, distance and shielding
 - d) Radioactive decay
 - e) G. M. survey meter use

- 3) Radiation Protection Program
 - a) ALARA
 - b) Control Zones
 - c) Signs and labels
 - d) Personnel monitoring
 - e) Radiation survey techniques
 - f) Background radiation
 - g) Typical radiation levels
 - h) Exposure limits
 - i) NRC regulations
 - j) Part 19.12 requirements
 - k) Contact RSO for additional information
 - l) NRC Regulatory Guides 8.13 and 8.29

RADIOACTIVE MATERIAL ORDERING AND RECEIVING PROCEDURES

A replacement source will be ordered when it has been determined that the source has decayed beyond the point of usefulness (which is 12 to 18 months, approximately). The proper source as recommended by the supplier will be selected. A written request will be made by one of the physicians who is a user of the Lunar Dual-photon Scan Spine Scanner. The person placing the order will refer to the physician's written request when placing the order. Written records will be maintained of all ordering and receipt procedures. All incoming and outgoing shipments of radioactive material will be surveyed as required by 10 CFR Part 20 and 49 CFR Parts 100-199.

During normal working hours, carriers will be instructed to deliver radioactive packages directly. There will be no deliveries accepted after normal working hours.

GENERAL RULES FOR SAFE USE OF RADIOACTIVE MATERIALS

General rules for the safe use of radioactive materials, as found in APPENDIX G, are written for the handling of radioactive solids and liquids which offer the potential for contamination spread. Since the radioactive material referred to in this application is a sealed source, there is minimal to no possibility of radiation contamination. Therefore, most of the rules of APPENDIX G do not apply. However, the following rules do apply:

- 1) Wear personnel monitoring device on person at all times while in the room where the radioactive source is located.
- 2) Surveys will be as specified in ATTACHMENT 17.

APPENDIX H

EMERGENCY PROCEDURES

In case of emergency contact:

- 1) Dr. Henry David von Oesen, M.D.
Office: 804 847-8831
Answering Service: 804 847-8831

- 2) John W. Cure, III, CHP
Office: 804 384-7003
Home: 804 384-5060

AREA SURVEY PROCEDURES

DIRECT COPY AS PROVIDED BY THE MANUFACTURER

Routine Radiation Survey

The term "survey" means an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the levels of radiation or concentrations of radioactive material present. The following situations should necessitate a survey:

1. Incoming and outgoing shipments of byproduct material,
2. Contamination of equipment due to leakage of sealed sources,
3. Sealed source leak testing,
4. Emergency procedures,
5. Routine quality control procedures.

During a survey systematic measurements must be made to determine the following: (1) dose rate, (2) surface contamination, (3) atmospheric contamination, and (4) presence of an unknown radiation source.

A routine survey should be conducted monthly. Records and the results of surveys and monitoring must be preserved for two years after completion of the survey except that the following records shall be maintained until the Radiation Authority (i.e., NRC) authorizes their disposal when they pertain to: (1) records of the results used to determine compliance with regulations, (2) in the absence of personnel monitoring data, records of the results of surveys to determined external radiation doses, and (3) evaluation of the release of radioactive effluents to the environment.

WASTE DISPOSAL

Expendable Gd-153 sources will be shipped to Gulf Nuclear in Webster, Texas for disposal or turned over to John W. Cure, III, of Health Physics Consultation, who has an NRC License 45-19958-01 which allows him to possess up to 1 Ci of Gd-153 as a sealed source for the purpose of checking shielding of x-ray facilities.