

SHEBOYGAN MEMORIAL HOSPITAL  
2629 North 7th Street  
Sheboygan, Wisconsin 53081

November 29, 1985

Materials Licensing Section  
U. S. Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Applicant... *Sheboygan Memorial Hospital*  
Check No. *13425*  
Amount *\$120*  
Date *12/1/85*  
Received By *[Signature]*

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U.S. NUC. REG. COM.  
REGION III  
SHEBOYGAN MEMORIAL HOSPITAL

Re: Amendment to materials license no. 48-18654-01

Gentlemen:

This is in request of amendment to the above-referenced materials license to add authorization for I-125 single photon (forearm) and Gd-153 dual photon (spine) bone absorptiometry devices.

Please add a possession limit of 500 millicuries for the I-125 sources, each source not to exceed 250 millicuries. We request this higher possession limit to provide coverage for times when the sources are being exchanged, and to provide coverage for the variability in source activity at time of receipt.

The sources are to be used in a single photon forearm bone mineral analyzer from Lunar Radiation Corporation, Model SP2 Forearm Scanner, (NRC device registration no. SP2 NR-430-D-102-S). The sources will be received only from NRC-approved suppliers such as New England Nuclear, Amersham or AECL.

Please add a possession limit of 2.0 Curies for Gd-153 sealed sources, each source not to exceed 1.3 Curies. We request this possession limit for the same reasons mentioned above. The Gd-153 sources will be obtained only from NRC-approved suppliers. The Gd-153 sources will be used in the Lunar Radiation Corporation, Model DP3 Spine/Femur Scanner, (NRC device registration no. DP3 NR-430-D-101-S). We also request authorization for the Lunar GD-Series.

Attached is a sketch describing the room which is planned for use of the instrument(s) containing the sealed sources. The entrance door will be locked whenever unattended by authorized personnel. When not in use, the instrument(s) will be locked to prevent use and access to the sealed sources. Keys to the instruments and to the room will only be available to authorized personnel.

Source Holder Exchanges:

8604040058 860123  
REG3 LIC30  
48-18654-01 PDR

Manufacturer's instructions for source holder installation and exchanges will be followed, (see enclosed). These are contained in the device registration documents described earlier. At no time will the sealed sources be removed from the shielded holders.

Source holder exchanges will only be performed by individuals who have had device-specific training concerning the radiation safety precautions to be

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followed. One such organization is Standard Nuclear Consultants, Ltd. (NRC license no. 12-20362-C1) whose credentials are on file with your agency.

The devices will be serviced only by the manufacturer or other NRC/Agreement State authorized organizations.

Disposal of unused sealed sources will follow one or more of the following methods:

- a. Return to the supplier according to instructions provided by the supplier.
- b. Transfer to an NRC license commercial waste disposal service.
- c. Transfer to an authorized licensee.

Leak Testing:

Leak tests on the I-125 sources will be performed semi-annually and on the Gd-153 sources annually, according to the frequencies in the above-mentioned device registration documents. The leak tests will be performed with the Standard Nuclear Consultants, Ltd. Leak Test Kit-1, as described in that firm's license application. We also request authorization to use any other leak test kit from other individuals or companies which are licensed by the NRC to perform this service.

We will follow the radioactive materials receipt procedures described in our current application. All other aspects of our radiation safety program remain unchanged. Our \$120 hospital check, payable to the "U. S. Nuclear Regulatory Commission", is enclosed to cover the amendment application processing fees.

Should additional information be needed to complete your review of this amendment request, please contact Standard Nuclear Consultants, Ltd. directly at (312) 344-7308. Thank you.

Sincerely,

  
Administrator

## C.2 INSTALLING AND REMOVING THE SOURCE

**CAUTION:** Only personnel trained in the principles of radiation safety and protection should conduct these procedures. The technician should study the following procedures before an actual source transfer is attempted. A press-on label with the warning "CAUTION - RADIOACTIVE MATERIALS" should be displayed in a location where it can be seen by the operator, patients and/or visitors to that area where measurements are done.

**WARNING:** All steps should be conducted without tools. Use of pliers, clamps, etc. may cause irreparable damage to parts.

### C.2.a Removing the Source

1. Remove the pad if it is on the table. Using the key provided with the system, unlock the lucite insert and remove it from the table.
2. Select OPTION 5 (STATIC COUNTER) of the "DP3 SYSTEM" diskette menu to position the arm and source at the center of the window.
3. Place a lead source holder cap onto the source collimator (Fig. 10 and 11).
4. Select the "SHUTTER OPEN" command of OPTION 5. Alternatively, the shutter can be manually opened. Be careful to keep hands and other body parts clear of the actual radiation beam. If the shutter is opened manually, do not force the shutter blade to swing more than 35 degrees; then tape the shutter in this (open) position.
5. Turn the chuck ring (Fig. 12) counterclockwise until the collimator is loose in the chuck. Do not completely loosen the chuck ring.
6. Slide the source collimator (Fig. 13), which will have the source holder attached to the end of it, out of the chuck. The source collimator and holder can now be handled as a unit.
7. Holding the source collimator and source holder upright (as they are positioned in the scanner assembly enclosure), unscrew the source holder from the collimator. Immediately put a lead cap on the source holder and tape it in place.

**CAUTION:** RADIATION PRESENT! After the collimator is removed and before the lead cap is positioned a broad beam of high intensity radiation projects from the top of the source holder. Exercise due caution.

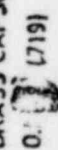
This completes the source removal procedure.

### C.2.b Installing a Source

1. Unlock and remove the lucite insert on the scan table.
2. Load and run the "DP3 SYSTEM" diskette. Use the "shutter open" command ("O") of OPTION 5 (STATIC COUNTER). Alternatively the shutter can be manually opened. Be careful to keep hands and other body parts clear of the actual radiation beam. If the shutter is opened manually, do not force the shutter blade to swing more than 35 degrees; then tape the shutter in this (open) position.
3. Remove the lead cap from the source holder and place it on the brass collimator provided with the system. Thread the source holder onto the base of the collimator. Do not force the collimator onto the source holder or it may cross-thread. The source collimator and holder can now be handled as a single unit (Fig. 10).
4. Slide the source collimator/holder assembly into the source chuck (Fig. 12) so the lower pin on the collimator fits into the notch on the source chuck. The collimator shoulder should rest on the top of the chuck (not the chuck ring).
5. Use the "shutter close" command ("C") of OPTION 5 or remove the tape if the shutter is held opened manually.
6. Turn the chuck ring clockwise until the collimator is held firmly in the chuck.
7. Verify that the shutter can swing into the notch on the collimator (Fig. 12) and fully occludes the source beam. Open and close the shutter using the "O" and "C" commands in OPTION 5 (STATIC COUNTER). If actuation is not smooth, adjust the collimator position. If actuation still is not smooth, notify LUNAR. Close the shutter.
8. Remove the source holder (lead) cap from the top of the collimator.
9. Replace and lock the lucite window. NOTE: The "HOME" position should be nearest the scan arm side of the table.
10. Monitor radiation levels around the table to insure operator safety.
11. Return to the computer's main menu and select OPTION 3 - "SCAN STANDARD AND Q/A". All measurements should yield a passing status.

This completes the source installation procedures.

1

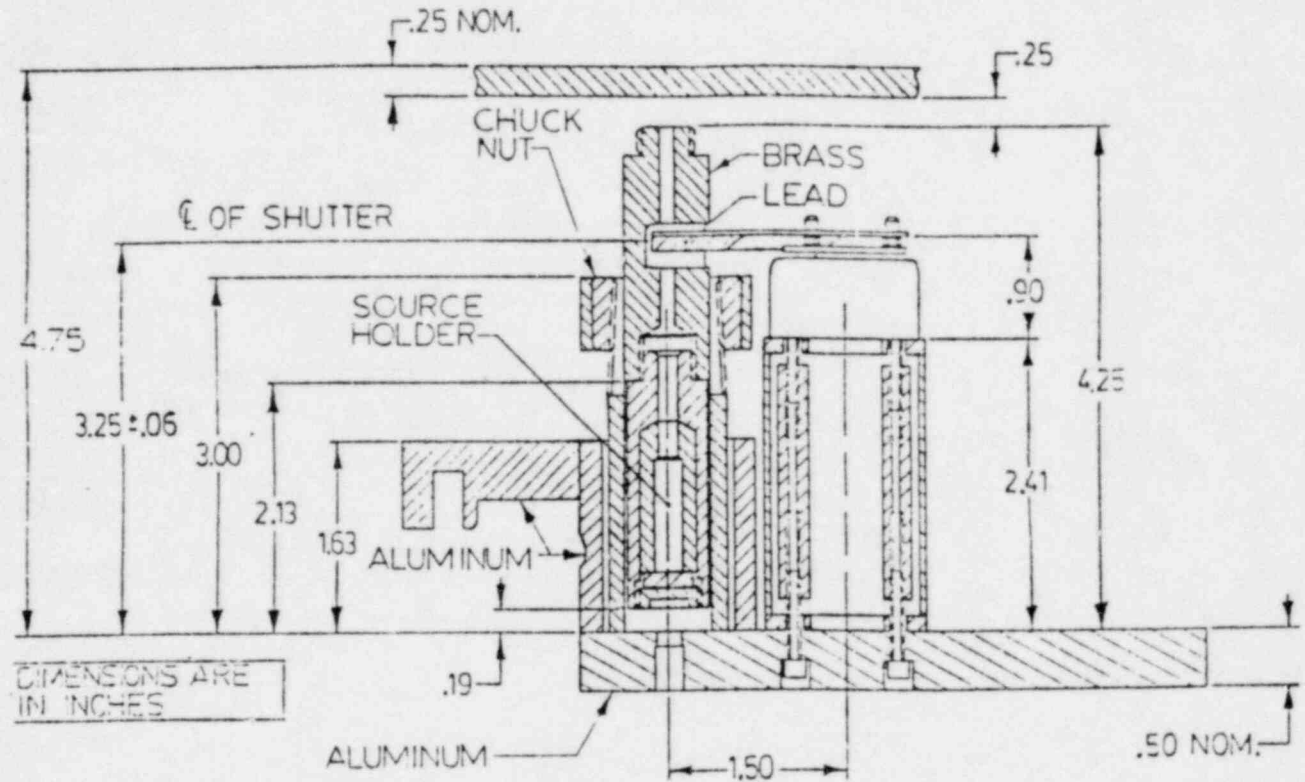


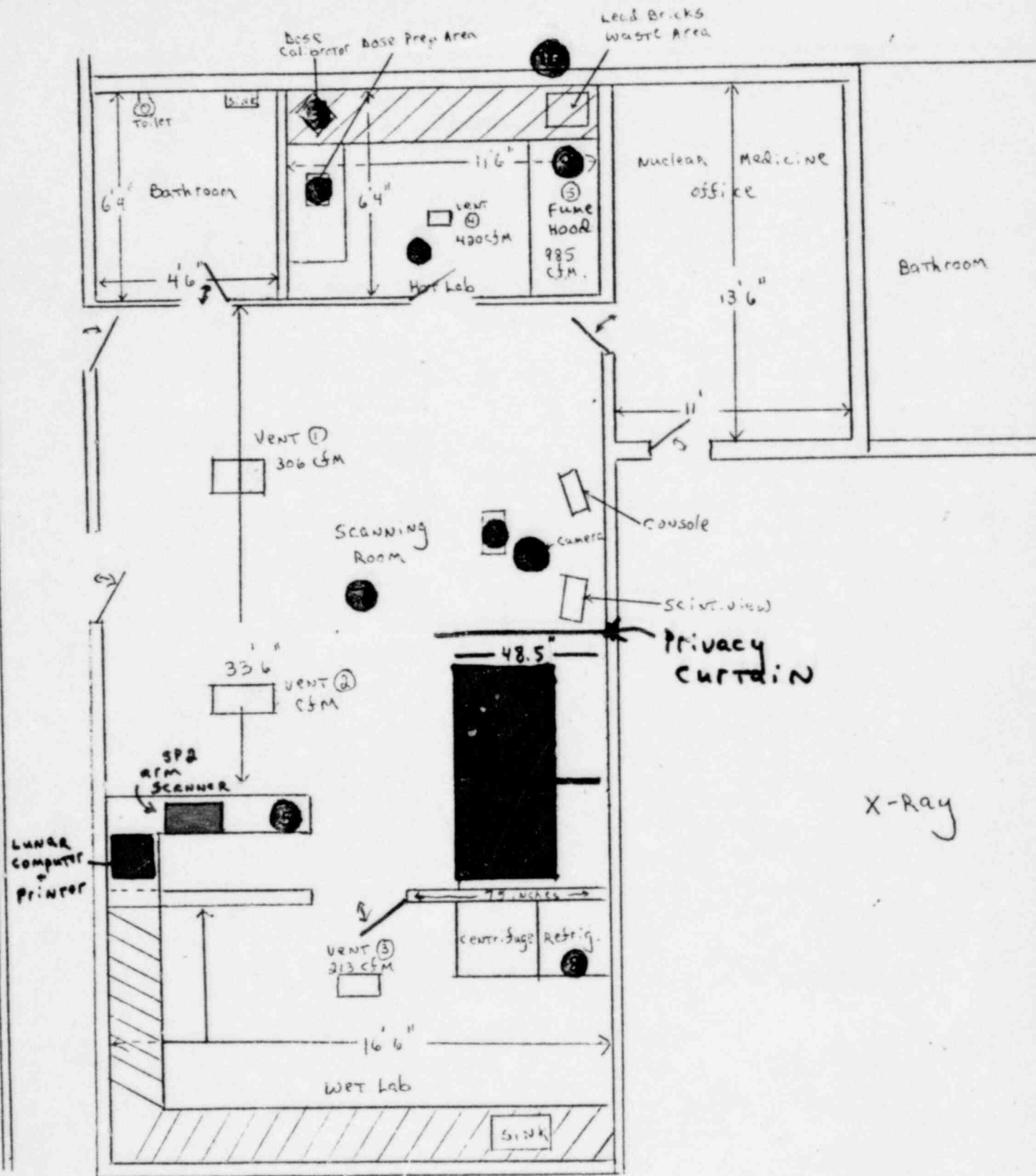
REVISIONS			GULF NUCLEAR, INC.		
10	DATE	BY	GADOLINIUM CAPSULE		
1					
2					
3			DRAWN BY FGI	SCALE NONE	MATERIAL 47-4 PH33
4			CHK'D	DATE 4-3-77	DRAWING NO.
5			TRACED	APP'D	A-120

LUNAR RADIATION CORP. & MADISON, WISCONSIN		
TITLE GADOLINIUM IS <sup>137</sup> SOURCE HOLDER		
PART #		MATERIAL BRASS & LEAD
FOR ASSEMBLY	TOLERANCES (UNLESS OTHERWISE SPECIFIED)	
	.0001	.0005
SCALE 4:1	DIMENSIONS ARE IN INCHES AND DECIMALS THEREOF	
DRAWN BY: J. H. BUSH 2/6/61 CHECKED BY: G. H. BUSH		



FIGURE 12  
Side View of Transverse Carriage Assembly





VENT = Exhaust VENT

● = Survey or wipe site

▨ = Under Counter Cabinets

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