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LANDER VALLEY REGIONAL MEDICAL CENTER
CAPITOL HILL
LANDER, WYOMING 82520
(307) 332-4420

March 22, 1984

U.S. Nuclear Regulatory Commission
Attention: Mr. Jack E. Whitten
Material Radiation Protection Section
611 Ryan Plaza Drive, Suite 1000
Arlington,Texas 76011

CONTROL No. 15869

Gentlemen:

This is in reference to your letter of January 13, 1984 requesting additional information in regards to our application for renewal of by-product material license # 49-17813-01;

I. Effective November 17, 1982 our combined Isotope/Radiation Safety Committee was revised in accordance with 10CFR35.11(b) as the Radiation Safety Committee including the following;
   A. Ross J. Collie, M.D. Authorized user and Radiation Safety Officer.
   B. Administrator as management representative.
   C. Director of Nursing as Nursing representative.
   D. Chief Technologist as technical representative.

II. Dose Calibrator Calibration
   All radiopharmaceuticals will be assayed to an accuracy of 10 percent with an ionization type dose calibrator. The instrument will be checked for accurate operation at the time of installation and periodically thereafter.
   A. Test for the following:
      1. Instrument constancy (daily).
      2. Instrument accuracy (at installation and annually thereafter).
      3. Instrument linearity (at installation and quarterly thereafter).
      4. Geometrical variation (at installation)
   B. After repair or adjustment of the dose calibrator, repeat all of the appropriate tests listed above (dependent upon the nature of the repairs).
   C. Test for Instrument Constancy
      Prior to each day's use, two reference sources (Co-57,3-5 mCi and Cs-137, 100-200 uCi) will be used to test the instruments performance over a range of photon energies and source activities.
      1. Assay each reference source using the appropriate instrument setting (i.e., Cs-137 setting for Cs-137).
      2. Adjust dose calibrator to correct for any background readings.
      3. Calculate net activity of each reference source.
      4. Log net activity (background corrected) in appropriate log book and compare to calculated activity. Calculate percentage of difference between assayed and calculated activity. Must not exceed ± 5%.

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5. Assay Cs-137 source on all commonly used radionuclide setting. Variation of ± 5% will require instrument repair or adjustment.

D. The dose calibrator is checked at least quarterly to ensure that the measurement chamber liner is in place and that the instrument zero is properly set.

E. Test of Instrument Linearity
The linearity of the dose calibrator is ascertained using the following procedure.
1. A new generator is eluted in order to obtain the highest activity anticipated for calibration.
2. The Tc99m is assayed in the dose calibrator after properly correcting for background activity.
3. Step 2 is repeated at time intervals of 6, 24, 30, and 48 hours after initial assay.
4. Using the 30 hour activity as a base line the predicted activities for the 0, 6, 24, and 48 hour assays are then calculated.
5. Compare the assayed activities against the predicted activities and calculate the percentage of difference.
6. The assayed activities should be within ± 5% of the predicted activities. Readings exceeding the ± 5% range indicate a need for repairs or adjustment.
7. If the instrument linearity cannot be corrected, it will be necessary to measure an aliquot that can be properly assayed.

F. Test for Geometrical Variation
The test for geometrical variation is conducted using the following procedure.
1. Assay a 30 cc vial containing 2 mCi of Tc99m in a volume of 1 ml with background activity properly corrected for.
2. The volume in the vial is increased to 2, 4, 8, 10, 20, and 25 ml by adding the appropriate amount of saline. After each addition, the vial is gently inverted to mix the contents and assayed as in step 1.
3. Using the 10 ml volume as a standard, the ratio of measured activities is calculated for each measured volume and compared to the standard volume to obtain a correction factor for each volume.
4. A list of the correction factors is posted near the dose calibrator for easy reference.
5. Using the same method, a list of correction factors are produced for varying syringe volumes.

G. Test for Instrument Accuracy
The test for instrument accuracy is conducted using the following procedure and the following radionuclides.

Radionuclides	Activity	Accuracy
Co-57	6.227 mCi	Greater than ± 5%
Ba-133	294.9 uCi	Greater than ± 5%
Cs-137	107 uCi	Greater than ± 5%

1. The reference standard is assayed with background activity properly corrected for.
2. Step 1 is repeated for a total of 3 determinations with the results averaged.
3. The average activity should agree with the decay corrected certified activity within ± 5%.
4. The above steps are repeated for all three sources.

5. Records of calibration checks are maintained.
6. Calibration checks that do not agree within ± 5% indicate that the instrument should be repaired or adjusted.
7. The Cs-137 source is also assayed at our commonly used radionuclide settings on a daily basis to check the instrument accuracy without performing the entire formal procedure.

III. Receipt of Radioactive Material After Normal Duty Hours.

A. Radioactive material will be delivered to the Hospital's Emergency Room.
B. The Emergency Room Nurse will immediately notify the Security Guard of the arrival.
C. The courrier will wait until the package is visually inspected by the Security Guard.
D. If there is no evidence of damage (i.e. crushed package, wet package) the Security Guard will sign for the package.
E. If there is evidence of damage:
1. The courrier will be instructed to remain for survey of possible contamination.
2. Notify the Radiation Safety Officer.
3. Isolate the damaged package from further handling.
4. Keep all personnel from the immediate vicinity.
5. Under no circumstances is anyone to attempt to open the package. This is the responsibility of the Radiation Safety Officer or his duly appointed representative. A copy of these procedures and our emergency procedures will be posted in the Emergency Room.

RADIATION SAFETY OFFICER - Ross J. Collie, M.D.
Office Phone - 332-5337
Hospital phone - 332-4420, ext. 250
Home Phone - 332-2896

Alternate Names and Phone Numbers Designated by Radiation Safety Officer

Allen Boehler 332-4836
Don Stewart - 332-3176

IV. Area Survey Procedures

A. All elution, preparation, and injection areas will be surveyed daily with a low range survey meter.
B. Areas with higher than normal background rates will be immediately wipe tested and decontaminated if necessary.
C. Waste storage areas and all other laboratory areas will be surveyed weekly.
D. Wipe tests will be performed at the areas indicated on exhibit "A", enclosed.
E. A permanent record will be kept of all survey results. The record will include;
1. Location, date, and identification of equipment used.
2. Identification of person conducting the survey.
3. Drawing of area surveyed, identifying all relevent areas.
4. Measured exposure rates, keyed to location on drawing.
5. Detected contamination levels keyed to location on drawing.
6. Corrective action taken in the case of contamination or excessive exposure rates, reduced contamination levels or exposure rates after corrective action and any appropriate comments.

F. Area will be cleaned if contamination levels exceed 200 dpm/ 100 cm. sq.

V. All wipe tests are evaluated with a Picker Spectroscaler 4 and a 1.75"x2" sodium Iodide scintillation well counter.

VI. Emergency Procedures

A. Minor spills

1. Notify all personnel in the area that a spill has occured.
2. Prevent the spread by covering the area with absorbent paper.
3. Clean up the area by using disposable gloves and remote handling devices. Carefully pick up contaminated material and place in a plastic bag along with all other items that may have been contaminated during clean up. Place plastic bag in radioactive waste container.
4. Survey the spill area, hands, and clothing for contamination with low range G-M survey meter.
5. Report incident to the Radiation Safety Officer.

B. Major spills

1. Vacate the area of all personnel not involved with the spill.
2. Cover the spill with absorbent paper and confine the movement of potentially contaminated personnel to prevent the spread.
3. If possible shield the spill area, but only if it can be done without further contamination or without significantly increasing your radiation exposure.
4. Leave the room and lock the door to prevent entry.
5. All personnel should be decontaminated by carefully removing contaminated clothing and stored for inspection by Radiation Safety Officer. Contaminated skin should be thoroughly flushed and cleansed to remove contamination.

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Respectfully,

Bruce a Baldwin

Bruce A. Baldwin
Administrator

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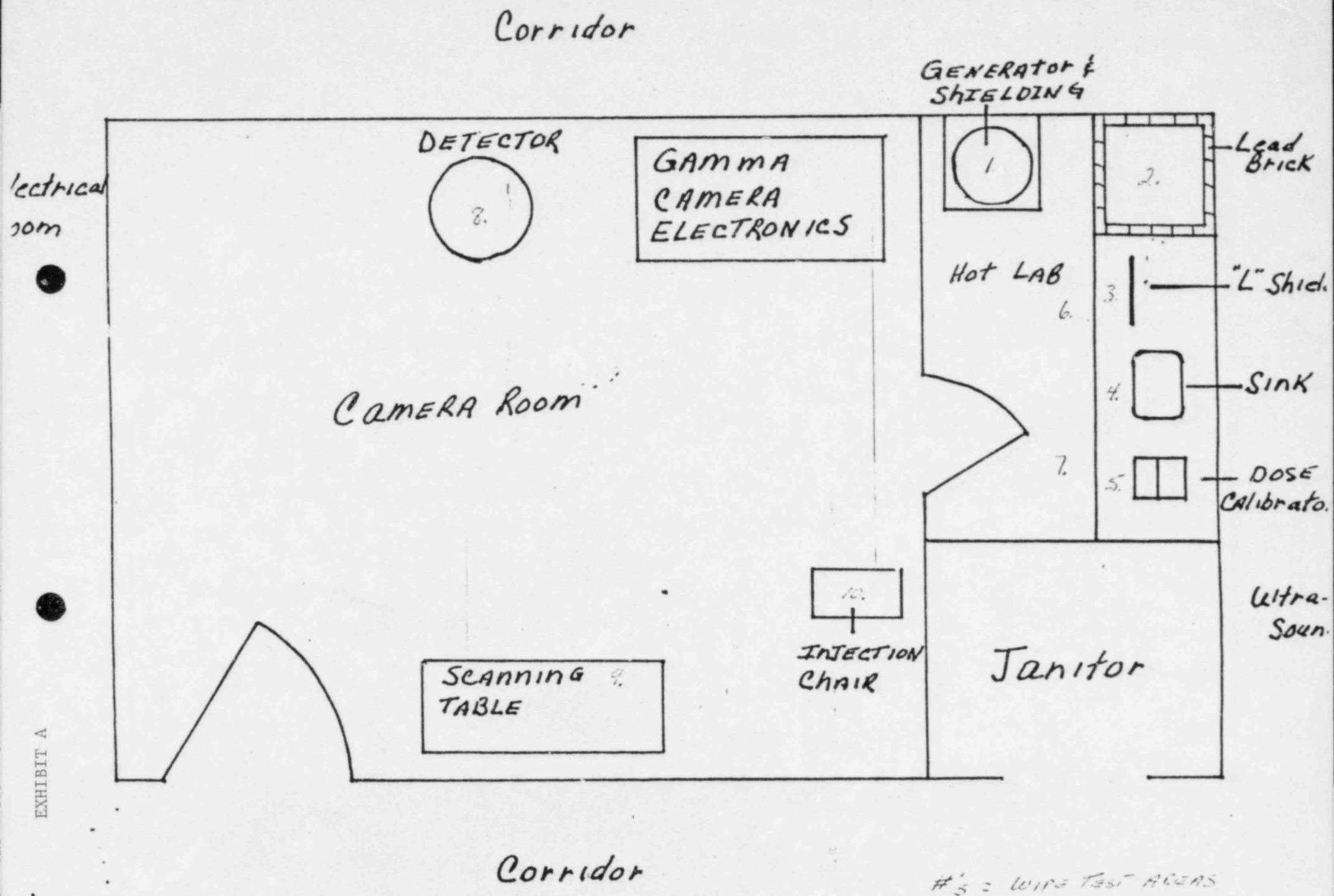
Corridor
GENERATOR & SHIELDING
DETECTOR
8.
GAMMA CAMERA ELECTRONICS
1
2.
Lead Brick
lectrical
om
Hot LAB
3.
"L" Shld.
6.
4.
SINK
CAMERA ROOM
7.
5.
DOSE Calibrato.
10.
Ultra-Soun.
INJECTION CHAIR
Janitor
SCANNING TABLE
9.
Corridor
#'s = WIPE TEST AREAS

EXHIBIT A