

IRVING N. BERAN, M.D., P.A.
RADIOLOGY and NUCLEAR MEDICINE

2169 S. WHITE HORSE PIKE
LINDENWOLD, NEW JERSEY 08021

Telephone 783-4206

July 30, 1985

License No. 29-15749-01
Docket No. 30-09707
Control No. 03160

MS 18
PS

U. S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

Att: John E. Glenn, Ph.D., Chief
Nuclear Materials Safety Section B
Division of Radiation Safety
and Safeguards

Gentlemen:

This is in answer to your communication dated May 9, 1985 referenced to the above, and provides the additional information requested:

- (1) Radioactive materials were used by me at my office in Voorhees for a very brief period of time (although that office had been employed for this purpose by its former occupant). Due to crystal damage to the gamma camera which occurred shortly after I took over, I decided to discontinue work there.

You will find enclosed a copy of the report of my consultant physicist who went over the entire area before I got rid of the equipment.

- (2) It is confirmed that all personnel in the Lindenwold office suite will again be instructed regarding the radiation levels within and beyond the locked nuclear medicine imaging room and of the necessity of maintaining security of this area. Any new personnel will be so instructed as well and all existing employees are now aware that this must be done. At least once yearly, instructions will be repeated to all currently employed.

Cleaning of the imaging room will be undertaken only under my direct supervision and trash removal from this room will be done by me so that nighttime entry of the area by cleaning personnel will not be required. Package deliverers will be admitted by my personnel, to leave packages within the room, but my personnel will not enter.

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REG1 LIC30
29-15749-01 PDR

RECEIVED-REGION I
AUG 1 1985

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"OFFICIAL RECORD COPY"

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IRVING N. BERAN, M.D., P.A.
RADIOLOGY and NUCLEAR MEDICINE

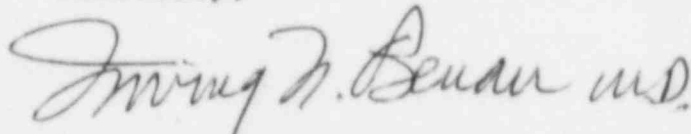
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- 2 -

- (3) External surfaces of the final source containers of all delivered packages will be wiped by me. Wipes are, and will continue to be, assayed in a 2" NaI well scintillation detector. Sensitivity of this device is greater than that of most end window G-M detectors and, with lid closed, background is considerably lower.
- (4) It is confirmed that my laboratory rules (Item 15) now prohibit storage of food, drink or personal effects with radioactive materials.
- (5) I have elected to adopt the model alara program and a signed copy is enclosed.

Sincerely,



Irving N. Beran, MD

Encis. Physicist's report
 Radioactive Shipment Receipt Record
 Alara Program

WAYNE A. MEYERS, M. S.

Radiological Physicist

8306 STENTON AVENUE

PHILADELPHIA, PA. 19118

(215) 247-0438

Irving Beran, M.D.
Echelon Medical Ctr., Suite 117
600 S. Somerdale Road
Voorhees, N.J. 08043

May 10, 1981

Re: Close-out Survey, Nuclear
Medicine Lab., 5/7/1981
NRC Lic. #29-15749-01

Dear Dr. Beran:

This report deals with a survey made of your former nuclear medicine facility at the above address, and follows your decision to discontinue any operations involving radioactive materials at this location. From our conversation last week I understand that all equipment related to these operations will shortly be removed from the premises and that any radioactive materials which had been on hand in this location have been disposed of by decay.

The purpose of this work is to prove that the nuclear medicine laboratory region will be safe for occupancy by persons within your organization who are not associated with use of radioactive materials. As I understand your current operation, no one but you is involved in use of these materials under this license and your x-ray technologists are film badge monitored solely because of their duties in x-ray.

This survey was performed during the early evening of May 7, 1981 and consisted, in the main, of an area radiation survey and wipes of selected regions within the laboratory in search of possible removable contamination. The area survey was done with a Ludlum Mod. 12 survey meter which has a 1" NaI scintillation detector. I have provided frontal shielding on the probe of this instrument in order to reduce background readings and to impart a degree of directionality. The wipes (33 in all) were first screened at your facility with the Ludlum, then taken to my laboratory for assay in a 3" NaI well scintillation detector, with Baird-Atomic Mod. 530 scaler-spectrometer. The methods and standards employed in this assay have been described to the N.R.C. in applications for License #37-10815-01 and are on file with this organization.

Area Radiation Survey

The entire imaging room-hot laboratory area was carefully scanned with the Ludlum Mod. 12. Special attention was paid not only to the floor in the vicinity of the camera and work table but also to the front of the table-top on which most of the radioactive preparations were handled. Regions toward the back of this table were covered thoroughly, being most representative of probable levels in an adjacent office suite not open to me at time of this work. Several area readings were also made in the entry and in other unrestricted rooms adjacent to the imaging room.

Most of the area survey results are shown directly on the plan view diagram employed as the major means of documenting this work. Actual readings with the Ludlum Mod. 12 were in the neighborhood of 300 to 600 C/Min. which, through direct comparison to readings of calibrated G-M survey meters, represents normal background in most locations - 0.02 to

Area Radiation Survey (Cont.)

0.03 mR/hr.

As may be seen on study of the attached survey diagram, all area survey readings were at background, signifying presence only of sub-microcurie quantities or less of the usual gamma emitting nuclides employed in imaging procedures. Area survey revealed no suspicious surfaces whatsoever and offered no guidance in my later selection of wipe sites.

Wipes for Removable Contamination

Wipes were taken, as shown on the diagram, of randomly selected work and floor surfaces, machine controls, doorknobs, etc. Dry Whatman filter discs were employed for all but one and, insofar as was possible, the areas investigated were held to approximately 100 Cm.².

While close inspection of the sink drain trap with the survey meter had revealed no residual gamma emitting materials, an attempt was made to wipe the interior without dismantling (a task for which I came ill prepared last week). Several cotton swabs brought for this purpose were run about 4 to 5" down the vertical section of the drain and are designated "22a".

Each wipe was individually counted in a plastic counting vial for an initial period of 2 minutes in the 3" NaI well, with a wide window (50 keV to 400 keV) energy setting. Three 10 minute backgrounds were taken at beginning, middle and end of the test run and the average of these employed in conversion of test wipe count rates to net. Of the 33 samples, only 5 revealed net count rates greater than 25 C/Min. These were re-counted for an additional 3 minutes each and the second count proved, in each case, unremarkable.

In a system yielding more than 1000 net C/Min. per 0.001 uCi. of most gamma emitters employed in nuclear medicine today, there were no net sample count rates in excess of 14 C/Min., the group showing a uniform dispersion about 0 net C/Min.

Results - Conclusions

Based on results of this area survey and wipes made, it is my opinion that there exist no significant quantities of any gamma emitting nuclides (as great as 0.001 uCi.) within this laboratory. Radiation levels therein are in no way different from those of the remainder of your office suite and no removable contamination was found on any of the 33 wipes made.

I understand that you intend to retain control of this suite and, eventually, to employ this particular area for diagnostic x-ray equipment. While there seems to be no reason why this cannot be done, it is recommended you retain in your records this survey report against the time the N.R.C. may require proof of decontamination. It is further recommended that you delete this address as a site of use of regulated materials in your next amendment or renewal communication with the Commission. Please contact me if you have any questions, or require additional information on this matter.

Yours sincerely,

Wayne A. Meyers
Wayne A. Meyers

Encl: Survey Diagram,

Copies (2)

- 2 (A.B.R. Certified Radiologic Physicist)

600 S. Somerdale Road, Voorhees, N.J. 08043

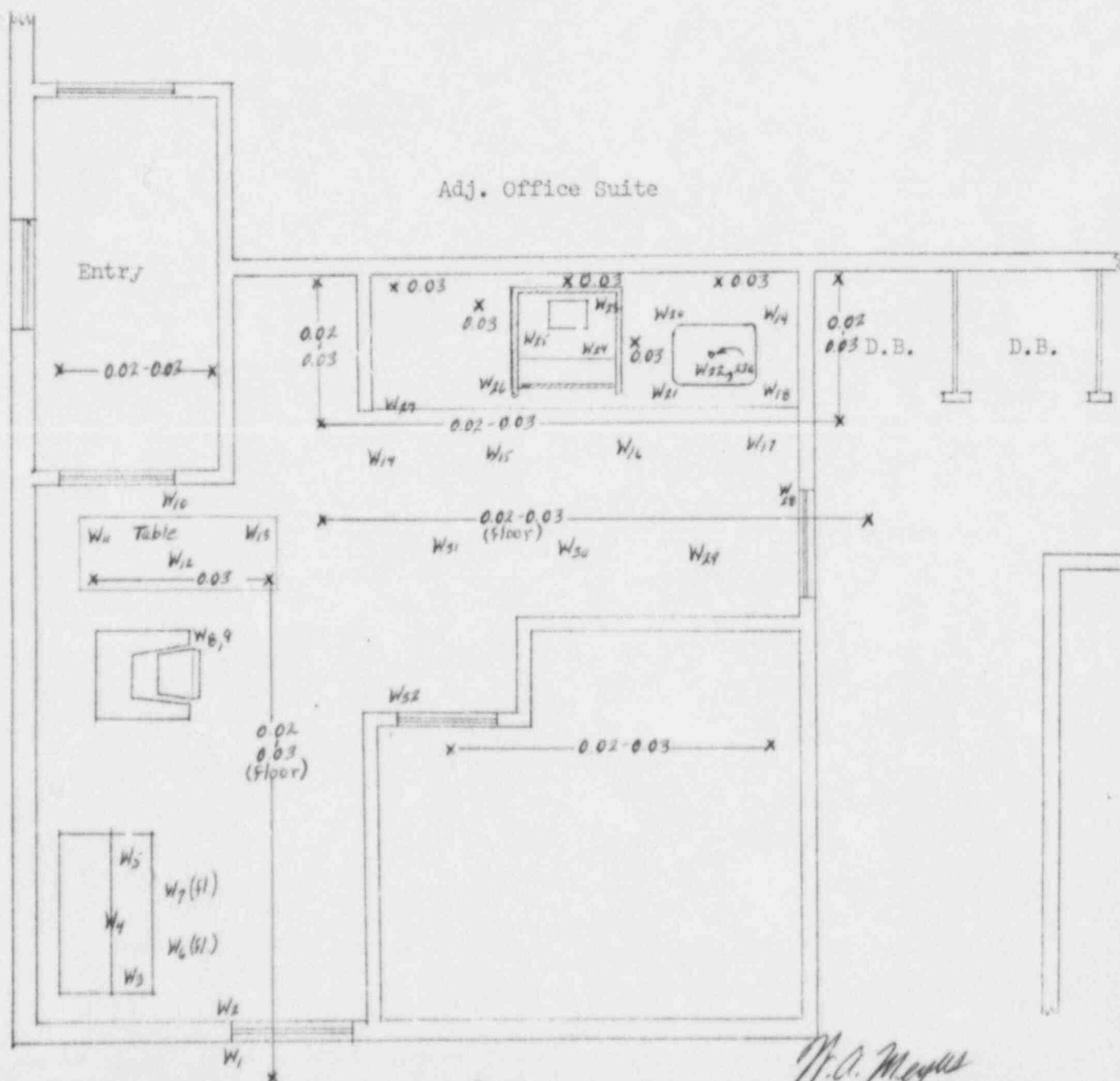
NUCLEAR MEDICINE LABORATORY SURVEY

Survey Date: 5/7/81, Survey by: H.A.M., Survey Inst.: Lundum 12, Inst. Ck: ✓

Survey Sites: (x) mR/hr. Wipe Sites: (W_n) Wipe Assay Date: 5/8/81

Survey Findings, Action Taken:

See attached report.



W. A. Meyers

APPENDIX G

MODEL PROGRAM FOR MAINTAINING OCCUPATIONAL RADIATION EXPOSURES

AT MEDICAL INSTITUTIONS ALARA

IRVING BERAN, MD

(Licensee's Name)

30 JULY 1985

(Date)

Irving Beran MD

1. Management Commitment

- a. We, the management of this (medical facility, hospital, etc.), 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 will develop the necessary written policy, procedures, and instructions to foster the ALARA concept within our institution. The organization will include a Radiation Safety Committee (RSC)¹ 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 protection staff or outside consultants.
- 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 judgment, is considered to be unjustified. We will be able to demonstrate, if necessary, that improvements have been sought, 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 lowest 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.

¹Private practice physician licenses do not include an RSC.

2. Radiation Safety Committee (RSC)²

- 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 dose will be ALARA (individual and collective).
- b. Delegation of Authority

(The judicious delegation of RSC authority is essential to the enforcement of an ALARA program.)

 - (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.

²The RSO on private practice physician licenses will assume the responsibilities of the RSC under Section 2.

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 instances where Investigational Levels in Table 0-1 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 6).³
- (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.

3. Radiation Safety Officer (RSO)

a. Annual and Quarterly Review

- (1) Annual review of the radiation safety program. 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) Quarterly review of occupational exposures. 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 provisions of Section 6 of this program.
- (3) Quarterly review of records of radiation level surveys. 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.

³The NRC has emphasized that the Investigational Levels in this program are not new dose limits but, as noted in ICRP Report 26, "Recommendations of the International Commission on Radiological Protection," serve as check points above which the results are considered sufficiently important to justify further investigations.

- (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 the 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 receiving 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.

4. 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 health physics practices and in maintaining exposures ALARA.

5. 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.

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

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

Table O-1

*Investigational Levels
(mrems per calendar quarter)*

	<i>Level I</i>	<i>Level II</i>
1. Whole body; head and trunk; active blood-forming organs; lens of eyes; or gonads	125	375
2. Hands and forearms; feet and ankles	1875	5625
3. Skin of whole body*	750	2250

*Not normally applicable to nuclear medicine operations except those using significant quantities of beta-emitting isotopes.

The Radiation Safety Officer will review and record on Form NRC-5, "Current Occupational External Radiation Exposures," or an equivalent form (e.g., dosimeter processor's report), 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 as stated in Table O-1:

- a. Quarterly exposure of individuals to less than Investigational Level I.

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 O-1 values for the Investigational Level I.

- b. Personnel exposures equal to or greater than Investigational Level I, 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 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 O-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.

The RSC will review the justification for, and will approve, 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 6.c above will be followed.

7. Signature of Certifying Official⁴

I hereby certify that this institution (or private practice) has implemented the ALARA Program set forth above.

⁴The person who is authorized to make commitments for the administration of the institution (e.g., hospital administrator) or, in the case of a private practice, the licensed physician.

Irving Beran M.D.
Signature
IRVING BERAN M.D.
Name (print or type)
RADIOLOGIST
Title

Institution (or Private Practice) Name and Address:

IRVING BERAN M.D.
2169 S. WHITE HORSE PIKE
LINDENWOOD, N.J. 08021

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