DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service

National Institutes of Health
Bethesda, Maryland 20205

Pacemakers

Materials Licensing Branch
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

February 7, 1983

Dear Sir or Ms:

This letter is to request that the National Institutes of Health's special nuclear materials license SNM-1345, due to expire April 30, 1983, concerning plutonium pacemakers be renewed/amended so that the following authorized activities may continue:

a) Explantation and return of said devices to manufacturer for proper disposal. To consider the return of one pacemaker stored but not implanted.

b) Continued monitoring of patients with implanted devices.

The aforementioned activities shall be conducted by the licensee whose name and mailing address as they should appear in items one(1) and two(2); should read:

1. Department of Health and Human Services

2. National Institutes of Health
Building 21
Room 112
Bethesda, Maryland 20205

The number and type of plutonium pacemakers to be authorized under SNM-1345 are:

Ten (10) Coratomic C-101 Plutonium Pacemakers

One (1) ARCO NU-5 Plutonium Pacemaker

Therefore the current posession limits covered in item eight(8) need be amended to:

8a) 2.5 grams (10 individual sources not to exceed 250 milligram each)

8b) 0.420 grams (1 source not to exceed 420 milligrams)

Annual report by Physician to RSO that he is keeping track of Pts

Authorization for the Coratomic C-100 pacemakers is no longer required as no patients have implanted pacers with this model type. Therefore item 9b should be amended to read:

9b) Implantation in humans as a component of Coratomic Model C-101 nuclear powered cardiac pacemakers for clinical evaluation purposes in accordance with "Human Clinical Protocol for the Coratomic C-101 Radioisotope Powered Cardiac Pacer", dated November 1, 1975.

Presently no update is required to the list of authorized physicians as stated on the current license. No additional changes or amendments are requested at this time other than those previously mentioned. All activities shall continue in accordance with conditions stated in license SNM-1345 as most recently amended June 24, 1982.

If you have any questions regarding this application for renewal or need further information, please contact Dr. R. J. Augustine, Radition Safety Officer, NIH. We appreciate your consideration of this renewal.

Sincerely yours,

Jean R. Herdt, M.D.
Chairman,
Radiation Safety Committee, NIH

Docket Nos: 30-01786
30-07724
30-06922
30-08478
30-17777
30-17787
70-1366

APR 8 1982

License Nos: 19-00296-11
19-00296-12
19-00296-17
19-00296-18
19-00296-19
SNM-1345

Department of Health and Human Services
National Institute of Health
ATTN: Thomas E. Malone
Acting Director
Bethesda, Maryland 20014

Gentlemen:

Subject: Combined Inspection Nos. 30-01786/81-01; 30-07724/81-01; 30-06922/81-01; 30-08478/81-01; 30-17777/81-01; 30-17787/81-01; 70-1366/81-01

This refers to your letter dated March 19, 1982, in response to our letter dated December 18, 1981.

Thank you for informing us of the corrective and preventive actions documented in your letter. These actions will be examined during a future inspection of your licensed program.

Your cooperation with us is appreciated.

Sincerely,

LAURENCE FRIEDMAN

for Thomas T. Martin, Director
Division of Engineering and Technical Programs

cc:
Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
State of Maryland.

bcc:
Region I Docket Room (with concurrences)

R1:DETP for Rowe/wb 4/5/82
R1:DETP for Glenn 4/5/82
R1:DETP for Nicolosi 4/5/82
R1:DETP for McGinness 4/5/82
R1:DETP for Kinneman 4/5/82

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DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH
BETHESDA, MARYLAND 20205

MAR 19 1982

Thomas T. Martin, Director,
Division of Engineering and Technical
Inspection
United States Nuclear Regulatory
Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Docket No. 30-1786
License No. 19-00296-10

Dear Sir:

This is in reply to your letter of 18 December 1981 regarding your findings during Inspection No. 81-01. We appreciate the considerable effort undertaken on the part of your staff in conducting what was characterized by Dr. Glenn as a "Systematic Review of Licensee Performance", and the thought that is reflected in your report. We recognize the dilemma posed by finding a small quantity of unsecured licensed material in an unrestricted area and appreciate your recognition that the material did not create a hazard significant enough to impose a civil penalty. This problem was corrected immediately and we are taking additional steps to prevent future occurrences.

The importance of more directly involving management in securing compliance with radiation safety objectives is recognized and will be accomplished through new procedures we are implementing. These and other concerns addressed in your letter are discussed in more detail in the attachments I through IV to this letter.

I am confident that the actions we are taking will resolve the problems discussed in your letter. If you need clarification of any of the material presented, please do not hesitate to contact Mr. Roger W. Broseus, Radiation Safety Officer, NIH, Building 21, Room 112; phone (FTS) 496-2254.

Sincerely yours,

Thomas E. Malone, Ph.D.
Acting Director, NIH

Attachments

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Attachment I.

NRC FINDING: Failure to adequately secure licensed material (violation; Reference Appendix A, Notice of Violation, Item A, and, DETAILS, Item 12.)

RESPONSE:

The two items of non-compliance specifically referenced in Appendix A, Item 12 - storage of waste in a hallway and I-125 storage in an unlocked refrigerator - were corrected during or shortly after the inspection. Since the inspection, the Radiation Safety Branch (RSB) has given added emphasis to this problem area in its surveillance, training and information, and other activities.

Waste in hallways:

In March of 1981, the RSB reviewed radioactive waste handling procedures at the NIH and issued a reminder of procedures (Attachment I-1). This was mailed to authorized users (principal users of radioactive materials) and individual users working under their supervision - approximately 4000 persons. This material is also included as a handout during safety courses presented by the RSB, and the lectures dealing with this subject were also reviewed and improved. Increased attention is being given to waste handling practices during surveillance activities by RSB and survey contractor personnel. In those isolated instances where poor practice is found, corrective action is taken in an expeditious fashion. The waste is moved immediately to a restricted area or to the waste processing area in Building 21. The infraction is discussed with responsible authorized users and a follow-up survey is made to ensure that the practice does not recur. The NIH stands in substantial compliance with good practice on this item.

Storage of radionuclides in hallways:

Our experience in implementing our current policy regarding the storage of radionuclides in refrigerators and freezers located in corridors has been less than satisfactory (this policy, contained in our letter of 23 June 1978, allowed for storage in corridors of greater than exempt quantities in locked refrigerators and freezers; lesser quantities were not required to be locked). Because of various difficulties experienced in implementing this policy, we are changing it as follows:

1. The USE of radionuclides in corridors will be specifically prohibited, with one exception: we may permit the use of nuclear counters in corridors. In certain buildings, it is quite difficult to locate bulky counters, usually of the multi-sample type, in laboratories. We consider the presence of nuclear counters in corridors to be acceptable because the samples used in such devices are very low in activity content. Indeed, the NRC recognized that the activity content of most liquid scintillation vials is quite low in its change to 10 CFR 20 of March 11, 1981 (46FR16230). (This class of samples is representative of those most frequently used at biomedical research institutions such as ours).

2. The policy relating to STORAGE of radionuclides in corridors will be changed as follows: we will continue to permit the storage of exempt quantities of radionuclides in corridors without their being in a locked refrigerator or cabinet. The storage of greater than exempt quantities in corridors will, however, be specifically prohibited.

We anticipate that this change in policy will overcome the problems experienced but that it will take a period of time to implement due to the impact it will have on space utilization. We will allow a six month grace period for implementation by our research staff; after that time, the RSB will be authorized to impound radioactive materials found in corridors in violation of this policy. The authorized user(s) found to be in violation of this policy will have his or her authorization suspended for a period of at least one week by the Chairman, Radiation Committee, and be required to indicate in writing the actions taken to correct the deficiency and prevent future violations. Any repetition of the violation will result in severe disciplinary measures being taken.

Other issues:

In your discussion relating to the above topics, it was stated that comments attributed to licensee representatives indicated that the NIH has no system for accounting for licensed materials (Appendix A, page 16, Item 12). During inspections, our representatives make every effort to discuss forthrightly the complexities involved in administering a radiation safety program at an institution so large as ours. To portray these complexities as a system lacking controls is to grossly overstate the situation. Fortunately, you deferred action on this matter until a future inspection is conducted; in the meantime, let us briefly describe our accountability and control procedures and describe corrective actions we are implementing to overcome the problems we perceived your representatives to have identified during the inspection.

All radioactive material shipments are received through the RSB's facilities located in Building 21; exceptions to this procedure are rare (e.g., irradiators are delivered directly to the facility where they are to be installed). The RSB controls the distribution of these shipments to ensure they are only delivered to authorized user laboratories. Users are responsible for maintaining control over their materials and for maintaining records on receipt and disposition of radionuclides, e.g., on form NIH-88-16 (Attachment I-2). Wastes are returned to Building 21 for appropriate disposition; transfers of licensed materials are handled through the RSB to assure proper packaging and transfer to appropriately licensed facilities. The RSB also conducts a semiannual inventory program; maintains strict control on materials which are required to be utilized in Building 21; maintains strict accountability for sealed sources in association with its leak testing program; and administers a strict accountability program for brachytherapy sources. (Further information relating to our control system is contained in the application for our licenses, especially 19-00296-10, and accompanying correspondence.)

RSB personnel perceived during the inspection that your principal concerns

are with accountability for those materials which account for the great majority (in terms of numbers) of radionuclide shipments received at the NIH: those distributed to and used in research laboratories. The NIH receives about 18,000 such shipments per year. We are necessarily dependent upon the authorized users of these materials to maintain control over and ensure proper disposition of licensed materials. We will collect data relating to material accountability that may assist in your evaluations during the next inspection. This activity will involve a random selection of shipments received by the NIH and the tracking of those shipments to ensure that its accountability is adequate; violation of good practice will be resolved as described in Attachment III of this reply.

National Institutes of Health

RADIOACTIVE WASTE PROCEDURES FOR LABORATORIES

"RADIOACTIVE WASTE" means any and all wastes that contain, or are contaminated with, any radioactive material used in the laboratory. This includes liquids, solids, trash, animal carcasses and excreta, used scintillation counting liquids, etc.

RADIOACTIVE WASTE shall not be thrown in the ordinary trash cans or poured down the drain. Waste and trash which are not radioactive should never be thrown in with radioactive wastes. The cost to NIH for disposing of radioactive waste is very high. Please help reduce this cost by keeping non-radioactive trash out of the radioactive waste!

RADIOACTIVE WASTE shall NEVER be stored or placed in HALLWAYS or other PUBLIC AREAS.

LIQUID RADIOACTIVE WASTE must be kept separate from dry waste and placed in plastic carboys or other secure containers, tightly capped, and properly labelled with "CAUTION-RADIOACTIVE MATERIALS". Liquid waste carboys can be requested from the waste pickup contractor (call 490-8100). Never fill the carboy above the line indicated (or to a height greater than the maximum diameter of the container). Containers which are over-filled will not be removed until you reduce the volume to the proper level. Solid or dry wastes must never be put in the liquid waste containers. Always place absorbent paper under the liquid waste carboy.

DRY or SOLID RADIOACTIVE WASTE should be placed in special labelled containers which can be requested from the waste pickup contractor (call 490-8100). Absorbent pads may be placed in the bottom of dry waste containers to absorb any residual liquid which may adhere to waste items. Always place absorbent paper under the dry waste container.

SHORT HALF-LIFE WASTE (radioactive half-life of less than 30 days) must be kept separate from LONG HALF-LIFE WASTES (half-life of 30 days or greater). If necessary, use separate carboys or dry waste containers for each category, labelled with the radionuclide(s).

NEEDLES, SCALPELS, PASTEUR PIPETTES, and any other sharp objects must be capped and put in a cardboard box or suitable container (NIH Stock Number 4-0701) to prevent injury to waste pickup personnel, before placing them in the radioactive waste container.

LIQUID SCINTILLATION VIALS containing radioactive liquid must be tightly capped and placed in the original shipping tray. The tray should be labelled with "CAUTION-RADIOACTIVE MATERIALS" and note the radionuclide(s). The shipping tray will be picked up upon request.

EMPTY LIQUID SCINTILLATION VIALS which are contaminated with radioactivity should also be capped and placed in the shipping tray.

UNUSED SCINTILLATION COUNTING LIQUID (not radioactive) should be disposed as a hazardous chemical waste and not put with radioactive waste.

GAMMA COUNTING TUBES should be capped if they contain liquid. Full or empty gamma tubes should be placed in the original trays for pickup, or they can be put in a properly labelled plastic-lined cardboard container.

BIOHAZARDOUS RADIOACTIVE WASTES must be autoclaved or the infectious agent otherwise inactivated before releasing these wastes for pickup.

CARCINOGENIC, PYROPHORIC, or other highly TOXIC or HAZARDOUS substances in the radioactive waste should be clearly identified and precautions taken to provide for safe handling by the radioactive waste pickup personnel. Plans for the proper disposal of these materials should be reviewed with the Radiation Safety Branch in the early design stages of an experiment.

ANIMAL CARCASSES containing radioactivity must be placed in sealed polyethylene bags. Large animal carcasses (dogs, monkeys, etc.) after bagging must be placed in a cardboard container (NIH Stock Number 4-0780). A large carcass should be cut up, if necessary to properly fit in the container. Each carton must be conspicuously marked "CAUTION-RADIOACTIVE MATERIALS", along with the radionuclide and the amount of radioactivity at a specified date. If carcasses are to be held more than 4 hours, they should be refrigerated or frozen. If they will be held more than 24 hours, they must be frozen.

ANIMAL EXCRETA containing radioactivity should be collected, put in a suitable container, and labelled with "CAUTION-RADIOACTIVE MATERIALS", noting the radionuclide and amount of radioactivity.

RADIATION DOSE RATES from stored radioactive waste shall not exceed 2.5 millirem per hour in the laboratory. Radiation dose rates in hallways and other public areas resulting from waste (and other radiation sources) in the laboratory must be limited to less than 2 millirem in any hour or 100 millirem in any 7-day period. If necessary, shield the stored wastes to comply with these limits.

PICKUP of RADIOACTIVE WASTE can be requested by CALLING the radioactive waste contractor at 490-8100. At the time of the request be prepared to provide the following information:

1. Your name, building, and room number.
2. Type of waste, i.e., liquid, solid, carcasses, liquid scintillation vials, etc.
3. The radionuclide(s) in the waste.
4. The estimated amount of activity for each radionuclide.
5. Any special instructions.

QUESTIONS or SPECIAL PROBLEMS involving radioactive waste? Call the Radiation Safety Branch for assistance: 496-5774.

Radiation Safety Branch
Division of Safety
National Institutes of Health

NATIONAL INSTITUTES OF HEALTH

ISOTOPE RECEIPT, UTILIZATION AND DISPOSAL RECORD

INSTRUCTIONS:
Fill out one form for each shipment received and keep on file in your Laboratory.

NAME OF INVESTIGATOR	BUILDING	ROOM NO.	DATE

ISOTOPE	ACTIVITY	CHEMICAL FORM	SPECIFIC ACTIVITY	SUPPLIER

ENTER BELOW WHEN ANY MATERIAL IS USED OR PLACED IN RADIOACTIVE WASTE CONTAINERS. YOU ARE REMINDED THAT THE NIH RADIATION SAFETY REGULATIONS DO NOT PERMIT ANY RADIOACTIVE RELEASES TO THE SEWER.

DATE OF USE	AMOUNT USED		DATE OF DISPOSAL	ACTIVITY DISPOSED	MANNER OF DISPOSAL (Liquid, solid, or animal carcasses)
	ACTIVITY	VOLUME			

RELEASES TO HOOD

DATE	ACTIVITY	DATE	ACTIVITY

COMMENTS:

Additional comments on back of form ☐

NIH-88-16 (Formerly NIH-2244)
Rev. 11-78

NRC FINDING: Mouth pipetting of solutions in a restricted area (violation; Reference Appendix A, Notice of Violation, Item B, and, DETAILS, Item 6.f.)

RESPONSE:

The deficiency noted in Building 10, Room 11D07 was corrected expeditiously by securing the agreement of laboratory personnel to use remote pipetting aids. Subsequent follow-up surveys have shown the lab area to be in compliance. RSB staff is continuing efforts to ensure that individuals working in restricted areas do not pipet by mouth. This includes giving emphasis to proper pipetting practice in training courses and during surveillance activities. In addition, we will issue a memorandum to radiation users informing them of the necessity of using pipetting aids, rather than pipetting by mouth, in restricted areas. This and the activities of RSB personnel should correct any misunderstandings that some individuals may have about the appropriateness of pipetting non-radioactive materials in restricted areas.

NRC FINDING: Failure to communicate audit results to required level of management (Deviation from written commitment; Reference your cover letter, and DETAILS, Item 4.)

RESPONSE:

Our review of the commitment made in our letter of 13 April 1979 and the procedures needed to implement it indicates that the commitment went far beyond what is needed to meet the spirit and intent of management involvement. For example, we believe that providing a complete list of laboratories inspected to top management is unnecessary and would not provide the best basis for useful management involvement. Many deficiencies are corrected during the surveys conducted by RSB staff and its contractor personnel, or shortly thereafter as a result of follow-up actions. The procedures to involve management will be revised as outlined below; these procedures will be implemented within three months.

I. The Radiation Safety Branch and/or Chairman, Radiation Committee will report the following to the Scientific Director of the appropriate Institute, on a monthly basis:

1. Those instances wherein RSB staff is unable to elicit corrective action in a timely manner through their interactions with the research staff, as evidenced by continuation of problems noted at the time of a follow-up survey. Emphasis will be given to problems that may lead to violation of regulations and license conditions.

2. Patterns of performance that reflect laxity on the part of authorized users in maintaining good radiation safety practices, as exemplified by repeated occurrences of problems that had been previously corrected through the efforts of RSB personnel.

3. The Radiation Safety Officer or Chairman of the Radiation Committee will report other problems that, in their judgement, may be appropriately resolved through the management chain, or serve to keep management informed regarding the status of radiation safety in his or her Institute.

II. In those cases where the Chairman, Radiation Committee, suspends or revokes the authorization of investigators to possess and utilize licensed materials, the appropriate Scientific Director will be informed immediately. This will also be accomplished when the NIH notifies the NRC of overexposures, theft or loss of licensed materials, and other incidents as required by 10 CFR 20.402-405.

Copies of the reports identified will also be provided to the Deputy Director for Science for his information. Scientific Directors will be responsible for assuring that corrective action is taken and that the Radiation Committee Chairman is advised of the corrective steps that have been taken, results achieved, and actions taken to avoid further violations. Unsatisfactory responses will be referred to the Deputy Director for Science for final resolution.

Other Issues:

In your letter summarizing the findings of your inspection, you requested a discussion of "actions taken or planned to improve communications between the Radiation Safety Staff and laboratories and to improve your management control systems..." especially with regard to the assignment and terminations of radiation workers. We are planning to initiate the following steps to facilitate this improvement.

For each person authorized by the Radiation Committee, a memorandum from the Radiation Safety Officer will be placed in that individual's personnel file regarding actions to be taken when an authorized user terminates his or her assignment at the NIH or transfers to a facility not covered by our broad license. The action will require that the RSB be notified by the personnel office of the appropriate Institute of the date that the individual will terminate or transfer, so that an orderly transfer of radioactive materials charged to that person can be effected. This will also allow for the reassignment of radiation workers who are not authorized users to a new authorized user. The Division of Personnel Management, NIH, will issue NIH's instructions for such notification to personnel offices of the Institutes. The RSB will prepare and distribute the formal papers to the personnel offices for each authorized user's personnel file. This management control system should prevent the termination of an authorized user without the knowledge of the RSB. This system should be in effect by April 1, 1982.

For those individual radiation workers who are not authorized users, the RSB will be kept informed of separations from NIH by being sent computer printouts which identify such individuals on a monthly basis.

For new employees, a system is under development in the Division of Safety (DS) which would require the Institutes' personnel offices to inform DS of new employees or appointees. A questionaire will be completed by employees to assist the DS in identifying new employees who may be working in situations that require DS oversight or interaction with the employee. This scheme will be structured to identify new radiation workers to the RSB so that they may be registered with RSB and receive the necessary training, personnel monitors, etc. It is expected that such a screening system for new employees will be operational by October 1, 1982.

NRC FINDING: Failure to maintain records of audits (Deviation from written commitment; Reference DETAILS, Item 7.b.)

RESPONSE:

The individual assigned to supervision of radioactive waste disposal operations has been instructed to maintain written records of quarterly audits. His supervisor, the Radiation Safety Officer, will ensure that this occurs, and, the NIH is in compliance with this commitment.

JUN 2 0 1982

Docket No. 30-01786 License No. 19-00296-10

Department of Health and Human Services
National Institutes of Health
ATTN: W. Emmett Barkley, Ph.D.
Director, Division of Safety
Bethesda, Maryland 20205

Gentlemen:

Subject: ORAU Report-Environmental Surveys Around NIH, Bethesda, Maryland

This refers to your letter dated June 1, 1982, in response to our letter dated May 8, 1982.

Thank you for providing your comments on the suggestions contained in the ORAU Report and your plans to review your environmental monitoring program.

We are pleased that you found the study results helpful.

Your cooperation with us is appreciated.

Sincerely,

Original Signed By:
for MYO CAMPBELL
John D. Kinneman, Chief
Materials Radiological Protection
Section

cc:
Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
State of Maryland
Roger Broccus, Radiation Safety Officer

bcc:
Region I Docket Room (w/concurrences)
R. Wilde, NMSS (with letter from NIH)

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McGinness/ntm Kinneman
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DEPARTMENT OF HEAL..H & HUMAN SERVICES

Public Health Service

National Institutes of Health
Bethesda, Maryland 20205

JUN 1 1982

Mr. John D. Kinneman, Chief
Materials Radiological Protection Section
U.S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

Dear Mr. Kinneman:

This is in reply to your letter of May 3, 1982, regarding the report of the environmental survey performed at the National Institutes of Health by personnel of Oak Ridge Associated Universities in August 1981.

We are pleased with the results of the survey. They indicated that direct radiation levels in unrestricted areas were within Federal guidelines, the radionuclide concentrations in stack effluents (with one exception) and in the sanitary drains were within allowable limits, and that there was no evidence of environmental accumulation of radionuclides attributable to NIH operations, except for low levels of I-125 and H-3 in the immediate vicinity of Building 21. The final conclusion that our environmental monitoring and control program is adequate and that reliable data are being generated for confirming compliance with Federal regulations is reassuring to us.

The one exception to stack effluents being in compliance was due to a ruptured charcoal filter which, as noted in the report, has been replaced. In addition, the exhaust fan for this particular system has recently been renovated.

The NIH Radiation Safety Branch is currently reviewing the environmental monitoring program, including consideration of the usage of radionuclides in each building, the volume of air exhausted, the filtration provided, and the history of effluent measurements to determine if the current monitoring program needs revision. We will keep you advised of the results of this review and any changes in the monitoring program.

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Thank you for giving NIH the opportunity to participate in the study, and please give our compliments to Bernadette Rocco and the project staff of Oak Ridge Associated Universities for the fine report of the study.

Sincerely yours,

W. Emmett Barkley, Ph.D.
Director
Division of Safety

cc:
Donald Nussbaumer, NRC
Robert Corcoran, State of Maryland
Bernadette Rocco, ORAU

JUN 8 1983

Docket No. 30-08478 License No. 19-00296-17

Department of Health and Human Services
National Institutes of Health
ATTN: R. J. Augustine, Ph.D.
Radiation Safety Officer
Bethesda, Maryland 20205

Gentlemen:

Subject: Shipment of AECL Gamma Cell 40

This refers to your letter dated March 15, 1983. Thank you for informing us of the shipment on February 25, 1983, of an AECL Gamma Cell 40 irradiator from NIH, Bethesda, Maryland, to the NIH Frederick Cancer Research Center in Frederick, Maryland. You explained that even though this irradiator was packaged in accordance with applicable regulations, the package was of foreign manufacture and had not received appropriate approval for shipments of radioactive material within the United States. This shipment may represent a violation of the conditions of your license and/or NRC and DOT regulations. You are advised that for such shipments in the future you should obtain an exemption from this requirement by application to both the Department of Transportation and the U. S. Nuclear Regulatory Commission. We will review this matter during the next inspection of your licensed activities.

Your cooperation with us in this matter is appreciated.

Sincerely,

Original Signed by

John D. Kinneman, Chief
Nuclear Materials Section A

cc:
Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
State of Maryland
bcc:
Region I Docket Room (w/concurrences)
R. McDonald, NMSS (w/incoming letter)
R. Grella, IE (w/incoming letter)
RI:DETP
Kinneman/dmg
5/24/83

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

National Institutes of Health
Bethesda, Maryland 20205

March 15, 1983

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

Dear Mr. Kinneman:

This is to advise you that an AECL Gammacell 40 irradiator containing approximately 3600 curies of Cs-137 was transferred on February 25, 1983, from NIH, Bethesda, MD (NRC License No. 19-00296-17) to the NIH Frederick Cancer Research Facility, Frederick, MD (NRC License No. 19-21091-01 issued to the facility contractor, Program Resources, Inc.). The irradiator was packaged in accordance with 10 CFR 71.12(c) and 49 CFR 173.394(b)(4).

The irradiator had not been uncrated and set up at NIH, Bethesda, but had been in storage for a period of time and was then transported, still in its original shipping crate, to the Frederick, MD location by the same commercial riggers and haulers that initially brought the irradiator to Bethesda from Canada.

The NIH had not registered (if applicable) with the DOT as a user of Canadian Certificate No. CDN/2028/B(U)T revalidated by DOT as Certificate No. USA/0132/B(U)T-Revision 1, at the time of the shipment. A copy of these certificates is enclosed for your information.

Sincerely,

R. J. Augustine

R. J. Augustine, Ph.D.
Radiation Safety Officer, NIH

Enclosures

cc: Director, Fuel Cycle and Material Safety Division, NRC
Chief, Transportation Certification Branch, FCMSD, NRC
Director, Office of Hazardous Materials Regulation, DOT

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DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
WASHINGTON, D.C. 20590

IAEA CERTIFICATE OF COMPETENT AUTHORITY

Type B Radioactive Material Package Design

Certificate Number USA/0132/B(U)T
(Revision 1)

REFER TO:

(Revalidation of Canadian Certificate CDN/2028/B(U)T)

This establishes that the packaging design described herein, when loaded with the authorized radioactive contents, has been certified on September, 19, 1980 by the National Competent Authority of Canada (Appendix A), as meeting the regulatory requirements for Type B packaging for radioactive materials as prescribed in IAEA[1] Regulations and constitutes a revalidation of that certificate in accordance with ss 49 CFR 173.393b and 173.395(b) (3) of the USA[2] Regulations for the transport of radioactive materials.

I. Package Identification - Gammacell 40 Irradiator.

II. Packaging Description - Packaging authorized by this certificate consists of two lead-shielded steel weldments mounted on a single skid within a plywood shipping case measuring approximately 2130 mm (84") long, 990 mm (39") wide and 1730 mm (68") high and weighing about 3,000 kg (7,500 pounds).

III. Authorized Radioactive Contents - The authorized contents consist of radioactive materials as not more than 4,000 curies of cesium-137 as further limited in Canadian Certificate CDN/2028/B(U)T (Appendix A).

IV. General Conditions -

a. Each user of this certificate must have in his possession a copy of this certificate.

b. Each user of this certificate, other than Atomic Energy of Canada, Ltd. Ottawa, Canada shall register his identity in writing to the Office of Hazardous Materials Regulations, Materials Transportation Bureau, U. S. Department of Transportation, Washington, D. C. 20590.

c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

V. Marking and Labeling - In addition to the markings precribed in Canadian Certificate CDN/2028/B(U)T the package must also bear the marking USA/0132/B(U) as well as the other marking and labels prescribed by the USA Regulations.

Certificate Number USA/0132/B(U)T, Rev.1

VI. Expiration Date - This certificate, unless renewed, expires on September 30, 1983.

This certificate is issued in accordance with the requirements of the IAEA and USA Regulations and in response to the September 26, 1980 petition by G. E. Dillingham, Ogdensburg, N. Y. and in consideration of the associated information provided in Canadian Certificate CDN/2028/B(U)T (Appendix A).

Certified by:

R. R. Rawl — November 17, 1980 (Date)

R. R. Rawl
Designated U. S. Competent Authority for the
International Transportation of Radioactive
Office of Hazardous Materials Regulation
Materials Transportation Bureau
U. S. Department of Transportation
Washington, D. C. 20590

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[1] "Safety Series No. 6, Regulations for the Safe Transport of Radioactive Materials, 1973 Revised Edition", published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

[2] Title 49, Code of Federal Regulations, Part 100-199, USA.
Revision 1 issued to incorporate Revision 2 of Canadian Certificate CDN/2028/B(U)T, extend expiration date and reflect conformance with the 1973 IAEA regulations.

Atomic Energy Control Board
Commissio.. de contrôle de l'énergie atomique

19 September 1980

Your file Votre référence

Our file Notre référence 30-A2-175

RADIOACTIVE MATERIAL TYPE B(U) PACKAGE DESIGN AND SHIPMENT CERTIFICATE
CDN/2028/B(U)T, REVISION 2

This certifies that the packaging, as described, when loaded with the authorized radioactive contents and prepared for shipment in accordance with the instructions described below, has been demonstrated to meet the regulatory requirements prescribed for Type B(U) packages and shipment as described in IAEA (1) and Canadian regulations (2)(3)(4)(5) as appropriate, for the transportation of radioactive material.

Each shipper under this authorization, other than the original applicant, shall register his identity with the Atomic Energy Control Board prior to his first use of this authorization and shall certify that he possesses the necessary instructions for preparation of the package for shipment.

This Certificate does not relieve the shipper and carrier from compliance with any requirement of the government of any country through or into which the package will be transported.

PACKAGE IDENTIFICATION: Gammacell 40 Irradiator.

PACKAGING DESCRIPTION

Gammacell 40 Irradiator as described on Atomic Energy of Canada Limited, Commercial Products drawing A10244 (Rev. F) consisting of two steel-encased, 150 mm thick lead-shielded 152 mm source heads. Each head is mounted separately on the supporting skid. The lower head is enclosed in a metal cabinet and mounted on a structural steel base. Each source head is completely wrapped within thermal insulation. The irradiator assembly is shipped within a plywood shipping case having overall dimensions of 2130 mm length by 990 mm width by 1730 mm height. The containment system for each source head consists of the source capsule, the source drawer, the shipping end plate and spacer, and the steel-encased lead-shielded body. The total weight of the package is 3384 kg.

This package shall bear the competent authority identification mark "CDN/2028/B(U)T".

AUTHORIZED RADIOACTIVE CONTENTS

Not more than a total of 148 TBq (4,000 curies) of cesium-137 in the form of cesium chloride compressed powder pellets contained within two AECL-CP C161 Type 8 double-walled welded stainless steel capsules (one capsule in each irradiator head). The total decay heat load is not more than 20 watts.

P.O. Box 1046 Ottawa, Canada K1P 5S9
C.P. 1046 Ottawa, Canada K1P 5S9

SHIPMENT

The package shall be prepared for shipment in accordance with AECL-CP Spec Po.121 "The Preparation of Type B(U) B(M) Packages Containing Radioactive Sources Prior to Shipment" (Rev. C) and shall be further prepared for shipment and shipped and carried in accordance with the most recent Canadian Regulations for road (2), rail (3), marine (4) and air (5) transport and with the international regulations (1). This certificate authorizes shipment by road, rail, marine and air transport.

This Certificate is issued in accordance with the IAEA Regulations (1), the Atomic Energy Control Regulations (2), and by agreement with Canadian transportation regulatory authorities.

EXPIRY DATE

This certificate expires 30 September 1983.

Certified by:

J. G. McManus
Chief - Safeguards - Nuclear Materials
Licensing Division
Directorate of Licensing
Atomic Energy Control Board
P. O. Box 1046
Ottawa, CANADA
(Acting competent authority for
road transport)

Endorsed by:

for E. J. Hase
Director of Operation
Railway Transport Committee
Canadian Transport Commission
Ottawa, CANADA

R. L. Bolduc
Director, Aeronautical Licensing
and Inspection Branch
Civil Aeronautics
Transport Canada
Ottawa, CANADA

for G. W. Graves, Director
Ship Safety Branch
Canadian Coast Guard
Transport Canada
Ottawa, CANADA

REFERENCES

(1) IAEA "Regulations for the Safe Transport of Radioactive Materials", 1973 Edition Safety Series No. 6, International Atomic Energy Agency, Vienna STI/PUB/323.

(2) Atomic Energy Control Regulations, SOR/74-334 dated 4 June 1974, and amendment SOR/78-58 dated 16 January 1978.

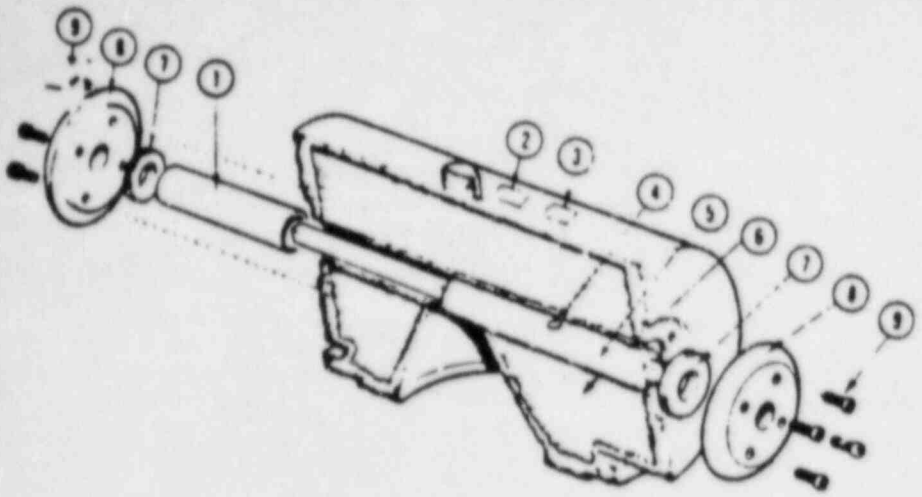
(3) Regulations for the Transportation of Dangerous Commodities by Rail, as issued by the Canadian Transport Commission.

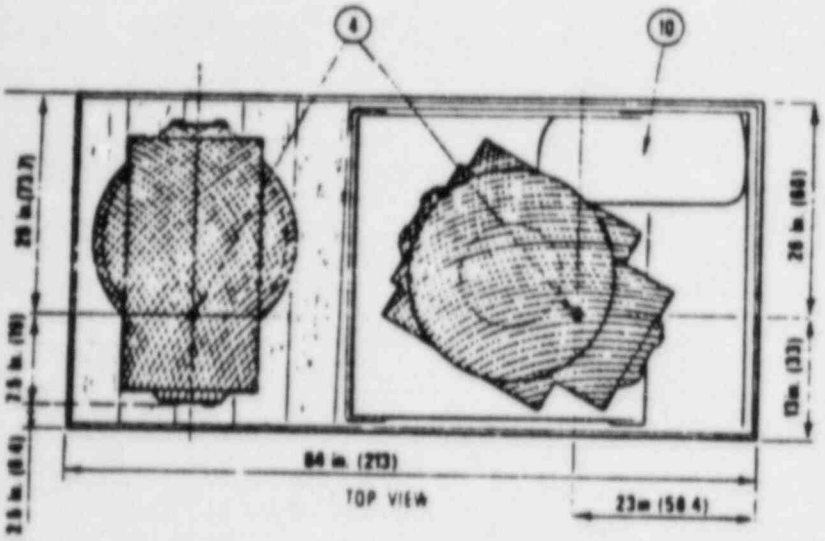
(4) IMCO "International Dangerous Goods Code". Applicable to carriage by water borne vessel.

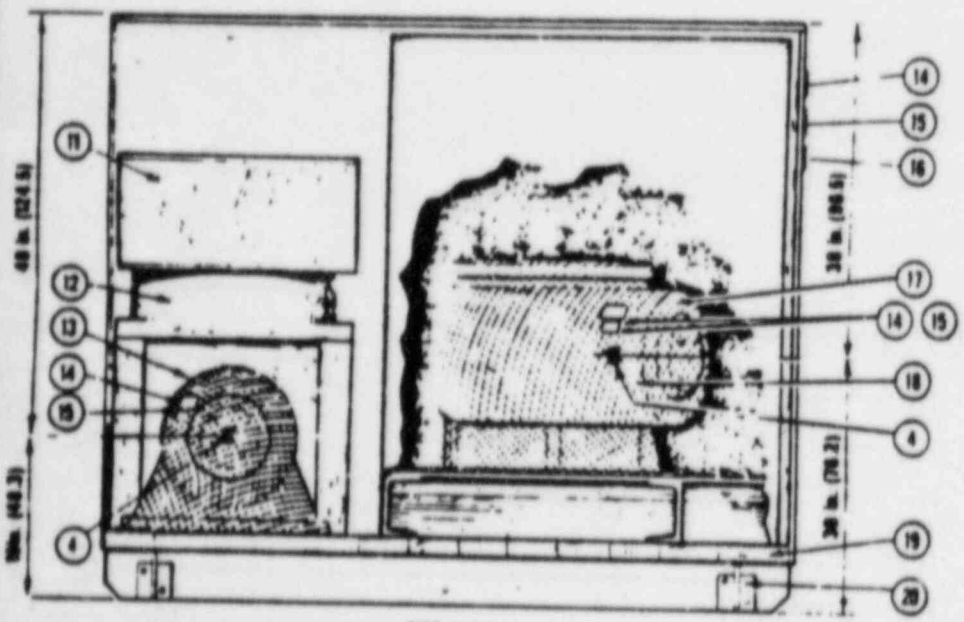
(5) IATA "Restricted Articles Regulations". Applicable to carriage by air.

Revision 1: 12 February 1979. Authorized Radioactive Contents and Shipment modified. References modified.

Revision 2: 19 September 1980. Packaging Description modified. Expiry date changed.





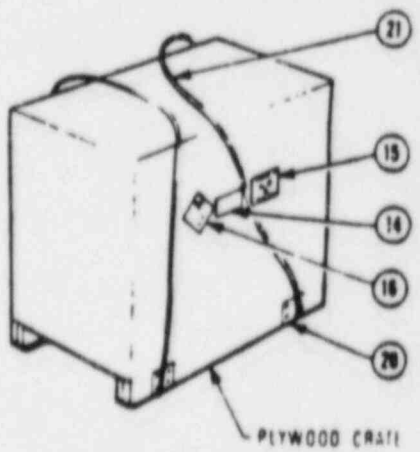


PART LIST

1. SHIPPING SPACER
2. RADIATION CAUTION PLATE - SPECIFIC CONTENT (1) - AECL SPEC NO. DG0095
3. AECB CERTIFICATION PLATE (1) - AECL SPEC NO DG0097
4. CESIUM 137 SOURCE IN STORAGE POSITION
5. SOURCE DRAWER - LEAD FILLED - BRASS
6. LEAD SHIELDING - 6 in (15.2 cm)
7. LOCKING RING
8. SHIPPING END PLATE
9. 3/8 in - 16 x 1 1/2 in LG. SOCKET HD SCREWS (4)
10. COMPRESSOR
11. PNEUMATIC PANEL, AIR CYLINDERS, ATTENUATORS, ETC.
12. FIXED SHIELD AND SAMPLE CHAMBER SHIELD ASSY
13. UPPER HEAD - BASE SECURED WITH 3/8 in LAG BOLTS
14. AECB CERTIFICATION PLATE (2) - AECL SPEC. NO DG0097
15. RADIATION CAUTION PLATE (2) - AECL SPEC. NO DG0096
16. CATEGORY III LABEL (2) AECL SPEC. NO DG0102
17. LOWER HEAD - BASE SECURED 3/8 in. LAG BOLTS.
18. KAOWOOL 0.5 in. (1.27) - WIRE MESH - 1 in. (2.54) - POLYETHELENE - 6mil - STEEL PACKING STRAPS - AECL SPEC. NO P0121
19. 2 x 6 in SPRUCE FASTENED TO 4 x 6 in SKID
20. LIFTING SLING ANCHOR PLATE (4)
21. LIFTING SLING (WIRE ROPES)

NOTES.

AECB CERTIFICATE CDN/2328/B(U)T
CONFORMS TO IAEA TYPE B(U)
TOTAL WEIGHT - 3384 kg (7520 lb)
PROJECTED FLOOR LOADING 0.13 kg/cm^2 (288 lb/ft^2)
BRACKETED DIMENSIONS ARE CENTIMETRES



ATOMIC ENERGY OF CANADA LIMITED
COMMERCIAL PRODUCTS
P.O. BOX 6300, Postal Station J, OTTAWA, CANADA K2A 3W3

TITLE: G.C.40 SHIPPING CRATE AND FIRESHIELD FOR USE WITH SOURCE IN HEAD

REF. DWG. A10244
REVISED JULY 1980
DATE MAY 20 1975
No. DS-0282
REV n
DRAWN
CHECKED
APPROVED

21 MAR 1984

License No. 19-00296-10

Docket No. 030-01796

Department of Health & Human Services
National Institute of Health
ATTN: Dr. James B. Wyngarden
Director
9000 Rockville Pike
Bethesda, Maryland 20205

Gentlemen:

Subject: Inspection No. 030-01796/84-01

This refers to the routine safety inspection conducted by Mr. C. Rowe of this office on February 22-24, 1984 of activities authorized by NRC License No. 19-00296-10 and to the discussions of our findings held by Mr. C. Rowe with Dr. Barkley and Dr. Augustine of your staff, at the conclusion of the inspection.

The inspection was an examination of activities conducted under your license as they relate to radiation safety and to compliance with the Commission's rules and regulations and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, measurements made by the inspector, and observations by the inspector.

Within the scope of this inspection, no violations were observed.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter will be placed in the Public Document Room.

No reply to this letter is required. Your cooperation with us in this matter is appreciated.

Sincerely
Original Signed By:
John D. Kinneman
for Thomas T. Martin, Director
Division of Engineering and
Technical Programs

cc w/encl:
Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
State of Maryland
Dr. Augustine, Radiation Safety Officer

8403260185
13pp

bcc w/encl:
Region I Docket Room (w/concurrences)
Senior Operations Officer (w/o encl)

6

RI/DETP
Rowe/cop

RI/DETP
Kinneman
3/19/84

OFFICIAL RECORD COPY

DL30-01796/84-01 - 0001.0.0
03/16/84

TE:07

MEDICAL

REGION I Form 198-C
(July 82)

LICENSE NO: 19-00296-10

DOCKET NO. (s) 030-01786

PAGE ____ OF ____

ATTACHED
- ☐ Appendix A
- ☐ Appendix B
- ☐ Appendix C
- ☐ Memo

INSPECTION REPORT NO. 84-01
National Institute of Health
Bethesda, Maryland

LICENSEE CONTACT: Dr. Augustine Telephone No: ____

LICENSE NO: 19-00296-10 CATEGORY 4G1 PRIORITY: 2

CATEGORY ____ PRIORITY: ____

CATEGORY ____ PRIORITY: ____

INSPECTION DATE (s): Feb 15-17, 1984

TYPE OF INSPECTION:
- ☐ SPECIAL
- ☐ ANNOUNCED
- ☒ ROUTINE
- ☒ UNANNOUNCED
- ☒ DAYSHIFT
- ☐ OTHER

SUMMARY OF FINDINGS AND ACTION

- ☐ NO NONCOMPLIANCE, CLEAR 591 ISSUED
- ☒ NO NONCOMPLIANCE, LETTER
- ☐ NONCOMPLIANCE, APPENDIX A
- ☐ ACTION ON PREVIOUS NONCOMPLIANCE, APPENDIX B
- ☐ NONCOMPLIANCE, 591 ISSUED
- ☒ SUPPLEMENTAL INFO, APPENDIX C

RECOMMENDATIONS
SEE BASIS IN APPENDIX C

- ☐ CHANGE CATEGORY TO: ____
- ☒ NEXT INSPECTION DATE: 02-86
- ☐ CHANGE PRIORITY TO: ____

PERSONS CONTACTED

* Dr. W. E. Barkley, Director, Division of Safety
Dr. R. J. Augustine, Radiation Safety Officer
Robert Zoon, Chief Health Physics Section
R. Brosens, Special Projects Health Physics Section
Numerous others including Rad. Saf. staff; authorized users and contractor surveyors and Rad Waste personnel,

* Exit Interview only

INSPECTOR: C. Rowe 2-23-84

APPROVED: [signature] 2-24-84

REGION I Form 19[illegible].1
(July 82)

78710B - Medical

INSPECTION PLAN AND REPORT NUMBER _____ Page _____ of _____

Plan Approved: _____ Date: _____

Licensee: _____ License No. _____

Inspection Items	Scheduled for Inspection	Post Inspection Status	Module No.
Management Meeting - Entrance and Exit Interviews (Required)		✓	30703B
Program Requirements, MC 2860 (Required)		✓	78710B
Followup on Noncompliance and Deviations			92702B
Independent Inspection Effort (Required)		✓	92706B
Transportation		✓	86740B

REGION 2 FORM 1540.2
(July 82)

INSPECTION REPORT NUMBER _____ Page ____ of ____

78710B - Medical

AREAS INSPECTED AND FINDINGS

Licensee: _____ License No: _____ Amendment No: _____

	INSPECTION ITEMS	CRITERIA	FINDING
1.	Organization	Lic Cond _____	C
	Structure of organization as described in requirements? ✓		
	Scope of Program? Patient load? ✓		Medical Med. Dept. and Pharmacy; Research; approximately 2000 laboratories using rad. material for research
	NOTES & REMARKS:		
2.	Licensee Internal Audits	Lic Cond _____	C
	Scope and frequency of audits as required? ✓		H.P. staff members conduct audits in private I and II labs. Contractor surveys other laboratories
	Conducted by appropriate persons? ✓		
	Records maintained? ✓		
	Reviewed by management? ✓		
	Deficiencies identified and corrected? ✓		HP staff follows-up on deficiencies and obtains corrective actions
	NOTES & REMARKS:		
3.	Training and Qualification of Personnel	Lic Cond _____	C
	Training & retraining conducted as required?		Large training program geared to personal needs. About 1700 persons received training in 1983
	Written & oral exams conducted?		
	Examination results reviewed by management?		
	Instructions to workers per 19.12?	19.12	
	Authorized users? On license? Available in emergency?	Lic Cond _____	
	NOTES & REMARKS:		
4.	Radiation Protection Procedures	Lic Cond _____	C
	Procedures available and implemented? Identify radiopharmaceutical and dose(s)? Cover handling of patients receiving therapeutic doses? Cover handling of cadavers?		
	Close out Surveys on Patients receiving temporary implants?	35.14 (b)(5)(v)	
	Emergency procedures for spills, etc? Personnel understand procedures?		
	NOTES & REMARKS:		

INSPECTION REPORT NUMBER _____ Page _____ of _____

87710B - Medical

AREAS INSPECTED AND FINDINGS

Licensee: _____ License No: _____ Amendment No: _____

INSPECTION ITEM	CRITERIA	FINDING
5. Use of Materials		C
Procurement and use as required? Authorized form & route of administration?	35.14(b) ✓	
Special tests (moly breakthrough, leak tests, etc) required?	35.14(b)(4) ✓	
Inventory of brachytherapy sources?	35.14(b)(5)	
Dose calibration checks performed?	✓	
Posting & labeling as required?	20.203 ✓	
NOTES & REMARKS:		
6. Storage of Materials		C
Material secured in both restricted and unrestricted areas? Adequately?	20.207	
NOTES & REMARKS:		
7. Facilities	Lic Cond____	C
As described in lic cond or application?		
Any changes made? Adequacy?		
NOTES & REMARKS:		
8. Instruments	Lic Cond____	C
Survey meters & instruments adequate for program?		
Instruments & meters operable? Calibrated? Calibration adequate?		
NOTES & REMARKS:		

INSPECTION REPORT NUMBER _____ Page ____ of ____

87710B - Medical

AREAS INSPECTED AND FINDINGS

Licensee: _____ License No: _____ Amendment No _____

INSPECTION ITEMS	CRITERIA	FINDING
9. Receipt and Transfer of Material		C
Written procedures for pickup, receiving, opening packages?	20.205	All packages received are wipe tested, surveyed, checked against user protocol and distributed from the Rad. Safety building
Survey of packages when received?	20.205(c)(1)	
Records of survey of packages?	20.401(b)	
Transfer of materials proper? Transfer records maintained?	30.41, 30.51	
Authorized containers used? Shipping papers & package labels proper for packages on hand?	71.5	
NOTES & REMARKS:		
10. Personnel Protection - External		C
Personnel monitoring controls adequate? Exposures minimized?	20.101, 20.202 ✓	
Exposure records (NRC-4 or 5) maintained? Available for employee review?	20.102(b), 20.401(a) ✓	
Surveys conducted? Adequate?	20.201 ✓	
Records of monitoring, surveys?	20.401 ✓	
Levels in unrestricted areas within limits? (Particularly around nuclear med. hot lab rooms of brachytherapy patients)	20.1, 20.105 ✓	
NOTES & REMARKS: Licensee does minor investigation of exposures reported for badge period > 100 mRem and major investigation > 400 and for extremity > 800 mRem minor and > 3000 mRem major inv.		
11. Personnel Protection - Internal		C
Airborne concentrations in restricted areas? (Xe-133, patients treated with I-131)	20.103	
Exposures to minors?	20.104	
Posting of airborne radioactivity areas?	20.203(d)	
Survey, monitoring bioassay adequate for airborne radioactivity, surface contamination? Records maintained?	20.201 20.401	
Procedures for use of Xe-133 followed?		
NOTES & REMARKS: Minor Investigation of any positive whole body count or urine only > 3 nCi thyroid Major Investigation of any exceeding 10% of quarterly ALI/Yrs		

AREAS INSPECTED AND FINDINGS

Licensee: _____ License No: _____ Amendment No: _____

INSPECTION ITEM	CRITERIA	FINDING
12. Effluent Controls, Waste Disposal		C
Release of effluents contolled? (particularly Xe-133, radioiodine where used)	20.106, 20.33	
Waste disposals controlled?	20.301, 20.303, 20.304, 20.305	
Procedures, records maintained?	20.401, Lic Cond_____	
Surveys made? Adequate?	20.401	
NOTES & REMARKS:		
13. Notifications and Reports		C
To individuals?	19.13 ✓	
Overexposures, excessive levels & concentrations, incidents?	20.403, 20.405 None	
Personnel exposures and monitoring, termination reports?	20.407, 20.408 ✓	
Theft or loss of licensed material?	20.402 None	
Misadministrations?	35.41-35.45 None	
NOTES & REMARKS:		
14. Posting of Notices		C
Part 20, license & documents, procedures, notice of violations posted?	19.11(a)	
NRC-3 posted?	19.11(c)	
NOTES & REMARKS:		
15. Other License Conditions		C

AREAS INSPECTED AND FINDINGS

Licensee: _____ License No: _____ Amendment No: _____

INSPECTION ITEMS	CRITERIA	FINDING
16. Confirmatory Measurements		C

NRC Instrument: #7764 Calibration Due Date: March 1984

17. Independent Inspection Effort — C

Had Levels in labs. and unrestricted areas accompanied contractor tech. on lab. surveys. Discussion of Part 61 requirements

18. Incidents and Events — C

Any incidents of misadminstrations, contamination, etc., not otherwise covered by reports?	35.41 -35.45 20.402, 20.403, 20.405

REGION I Form 198-C.3
(July 82)

INSPECTION REPORT NUMBER _____ Page _____ of _____

APPENDIX A - DOCUMENTATION OF NONCOMPLIANCE

Licensee: _____ License No: _____

Reference	Basis for noncompliance
Report item _____ 10 CFR _____ Lic Cond _____ Type n/c _____	
Report item _____ 10 CFR _____ Lic Cond _____ Type n/c _____	
Report item _____ 10 CFR _____ Lic Cond _____ Type n/c _____	
Report item _____ 10 CFR _____ Lic Cond _____ Type n/c _____	
Report item _____ 10 CFR _____ Lic Cond _____ Type n/c _____	
Report item _____ 10 CFR _____ Lic Cond _____ Type n/c _____	

REGION I Form 198-C.
(July 82)

INSPECTION REPORT NUMBER _____ Page _____ of _____

APPENDIX B - LICENSEE ACTION ON PREVIOUS INSPECTION FINDINGS

Licensee: _____ License No: _____

Identification and summary of action taken	Status
Report No: _____ Type n/c: _____ Describe: _____ Action taken:	OPEN CLOSED
Report No: _____ Type n/c: _____ Describe: _____ Action taken:	OPEN CLOSED
Report No: _____ Type n/c: _____ Describe: _____ Action taken:	OPEN CLOSED
Report No: _____ Type n/c: _____ Describe: _____ Action taken:	OPEN CLOSED
Report No: _____ Type n/c: _____ Describe _____ Action taken:	OPEN CLOSED
Report No: _____ Type n/c: _____ Describe _____ Action taken:	OPEN CLOSED

REGION I Form 198-C.5
(July 82)
INSPECTION REPORT NUMBER _____ Page ____ of ____

APPENDIX C - SUPPLEMENTARY INFORMATION

Licensee: _____ License No: _____

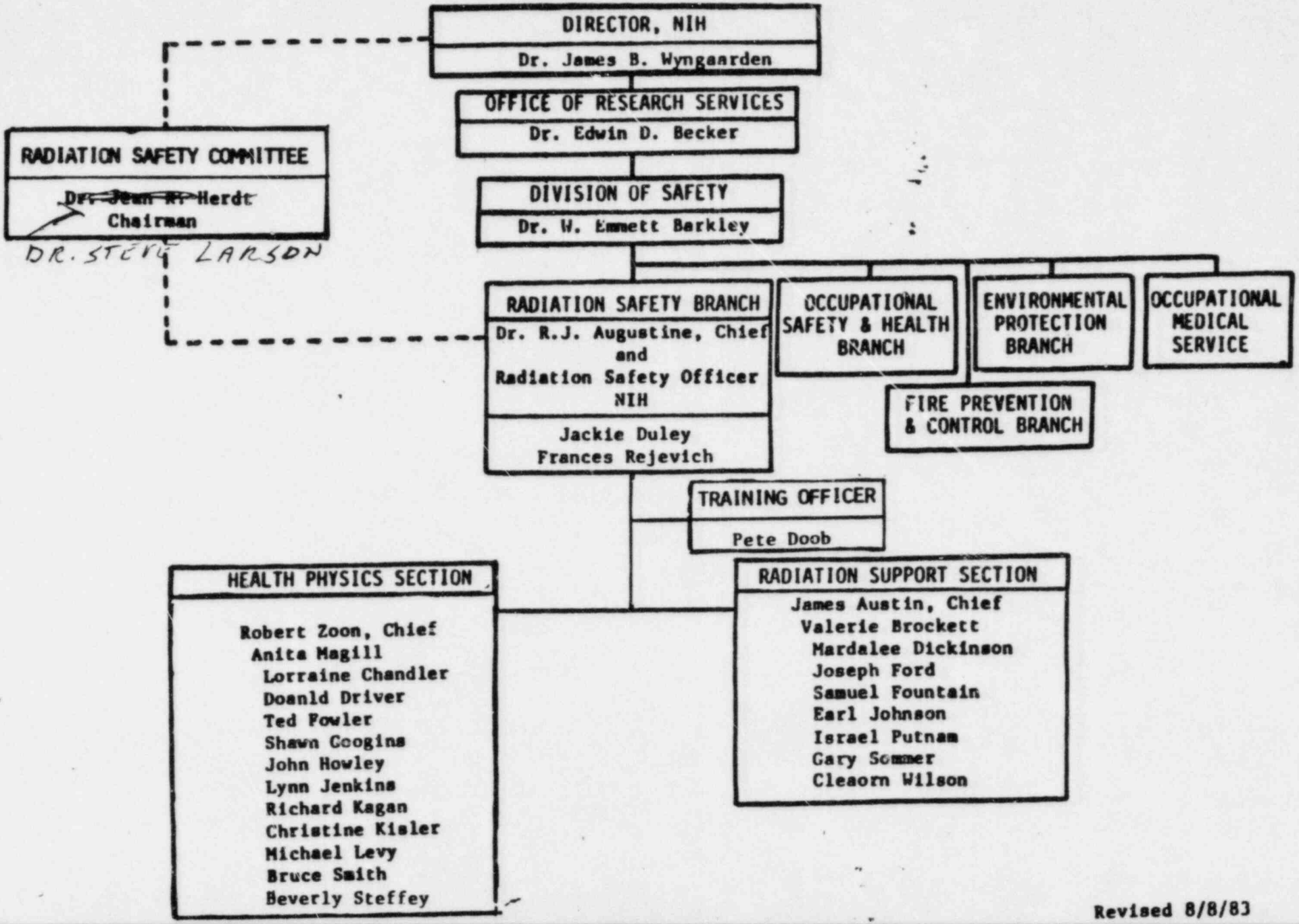
( ) Uncorrected/repeated noncompliance
( ) Unusual occurrence, conditions, etc
( ) Basis for change of Category or Priority
( ) Unresolved items
(✓) Inspector's comments

Upgrading of program evident in many areas since Dr. Augustine appointed R.S.O. i.e. source inventory and control; staff performing lab surveys and personal contact with users; actions taken to correct deficiencies identified; working Users authority to order and use material for repeated violations.

Next inspection should concentrate on Medical use of material vs research.

Impression: Program greatly improved since previous inspection and will continue to improve under Dr. Augustine's direction.

NATIONAL INSTITUTES OF HEALTH - RADIATION SAFETY ORGANIZATIONAL CHART



Revised 8/8/83

RADIATION SAFETY BRANCH

Health Physicists are assigned to specific areas.

CALL your AREA HEALTH PHYSICIST for information and assistance 496-5774

Building/Floors	Primary Health Physicist	Backup Health Physicist
21	James Austin	Bob Augustine
2,3,4 & 5	John Howley	Donald Driver
6,7,8 & 9	Donald Driver	John Howley
10/Floors B3 to 4	Bruce Smith	Shawn Googins
10/Floors 5 to 8	Shawn Googins	Bruce Smith
10/Floors 9 to 13	Michael Levy	Lynn Jenkins
29, 29A, 30	Lynn Jenkins	Michael Levy
32A & 36	Richard Kagan	Ted Fowler
37 & 41	Ted Fowler	Richard Kagan
Danac, Parklawn, 18, & 28	Mardalee Dickinson	James Austin

Revised 8/1/83