

MATERIALS LICENSE

Amendment No. 09

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee		In accordance with letter dated November 18, 1996	
1. Washington University School of Medicine		3. License Number 24-00063-11 is amended in its entirety to read as follows:	
2. Box 8053 4566 Scott Avenue St. Louis, MO 63110		4. Expiration Date September 30, 2003	
		5. Docket or Reference No. 030-17185	
6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License	
A. Cesium-137	A. Sealed source (Nordion International, Inc. Models C 161 Type 8 or 840379)	A. 3,690 curies	
9. Authorized Use:			
A. For use in AECL Gammacell 40 irradiator for biomedical research, excluding explosives or flammables.			

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at Clinical Sciences Research Building, Room 0020 and Clinical Sciences Research Building, North Tower, Room 623, Washington University School of Medicine, 4939 Children's Place, St. Louis, Missouri.
11. Licensed material shall be used by, or under the supervision of, Paul M. Allen, Ph.D., Katherine Frederick, B.S. or Osami Kanagawa, M.D.
12. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as specified by the certificate of registration referred to in 10 CFR 32.210.

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MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

24-00063-11

Docket or Reference Number

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- B. In the absence of a certificate from a transferor indicating that a leak test has been made within 6 months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- C. Sealed sources need not be leak tested if they are in storage, and are not being used. However, when they are removed from storage for use or transferred to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- D. The leak test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region III, 801 Warrenville Road, Lisle, Illinois 60532-4351, ATTN: Chief, Nuclear Materials Safety Branch. The report shall specify the source involved, the test results, and corrective action taken. Records may be disposed of following Commission inspection.
- E. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to Perform such services.
13. The licensee shall not perform repairs or alterations of the irradiator involving removal of shielding or access to the licensed material. Removal, replacement, and disposal of sealed sources in the irradiator shall be performed by a person specifically licensed by the Commission or an Agreement State to perform such services.
14. The procedures contained in AECL's instruction manual for the Model Gammacell 40 device shall be followed and a copy of this manual shall be made available to each person using or having responsibility for the use of the device.
15. Licensed material shall not be used in or on human beings.

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16. Sealed sources containing licensed material shall not be opened or sources removed from source holders by the licensee.
17. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Application dated June 3, 1993; and
- B. Letters dated August 18, 1993, August 24, 1993, November 18, 1996, and December 3, 1996.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date 12/5/96

By

James Mulloney
Nuclear Materials Licensing Branch, Region III

COPY



School of Medicine

Division of Radiation Safety

November 18, 1996

James Mullauer
Licensing Section
US Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

A
030-17185

Dear Mr. Mullauer:

The purpose of this correspondence is to ask for an expedited review of a request to relocate a self-shielded gamma irradiator that is in service at this institution and authorized by US Nuclear Regulatory Commission Materials License 24-00063-11. A request to add the irradiator to the broad scope medical license (USNRC Materials License 24-00167-11) was included in the resubmitted renewal application that was sent to you in correspondence dated 10/2/96. The 10/2/96 renewal application also referred to the planned relocation of the irradiator (see Irradiator #1 of Section III of the application — "Authorization to possess and use self-shielded gamma irradiators"). I suspect the renewal of the broad scope medical license will take several more months and I certainly understand if that is the case. The problem is that a new major building has been completed that will accomodate all research use of animals on the north side of the Medical School Campus, and the irradiator can not be used in its current location after animals are housed in the new building because of barrier restrictions that provide protection of the animals against exposure to any harmful agents, e.g., exposure to other animals with viruses, etc. A letter written by Paul Allen, Ph.D., an authorized user named on the irradiator license, in which he explains the imperative nature of this request, is enclosed.

Accordingly, I am asking that you consider an expedited review of the following amendment request:

Material License No. 24-00063-11

Manufacturer/Model: AECL/Gammacell-40

Present Location: Clinical Sciences Research Building
Room 0020

Proposed New Location: Clinical Sciences Research Building
North Tower, Room 623

Log	NOV 18 1996
Remitter	
Check No.	
Amount	
Fee Category	EX 3E
Type of Fee	AMD
Date Check Rec'd	
Date Completed	12/17/96
By:	SC

170.11(A)(4)
FEE EXEMPT

RECEIVED

NOV 20 1996

REGION III

Washington University School of Medicine
at Washington University Medical Center
Campus Box 8131, 660 S. Euclid Ave.
St. Louis, MO 63110-1093
(314) 362-2988 FAX: (314) 362-XXXX 6666
(Location: 510 S. Kingshighway)

Pm: 11-17-96

NOV 20 1996

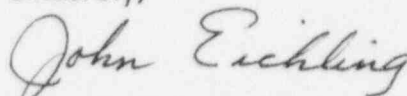
302065

We have experience in relocating irradiators with NRC approval. Nordion, Inc., has been contacted and they will send a representative to supervise the relocation. Nordion has already arranged for a local company (Corrigan, Inc.) to provide the rigging. An Assistant RSO will be present during the move and will conduct a post relocation radiation survey in the vicinity of the unit and in contiguous areas. In addition, a decommissioning radiation survey will be performed at the vacated site. It is requested that the amendment will authorize the irradiator to be used at the two locations. After the relocation is completed, the Region III Office of the NRC will be notified to delete the current basement location (Room 0020) as a site of use. A drawing that shows the intended new location on the sixth floor is also enclosed.

If you choose to accomodate this request for expedited review, I will promise to never ask licensing for another favor during the remainder of my career at this institution.

A check in the amount of \$360 is included for the required amendment fee.

Sincerely,



John Eichling, Ph.D.
Radiation Safety Officer

JE:fi

enclosures

Washington University

School of Medicine

Department of Pathology

Center for Immunology

Box 8118

660 S. Euclid Avenue

St. Louis, MO 63110

Paul M. Allen, Ph.D.

Robert L. Kroc Professor

Phone: (314) 362-8758

Fax: (314) 362-8888

E-Mail: allen@immunology.wustl.edu

November 19, 1996

Dr. John Eichling
Box 8131

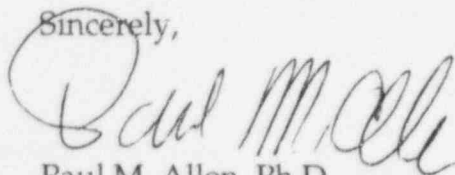
Dear John,

I would like to express my concern about the delay in moving the irradiator into the new CSRB animal facility. This delay will cause a significant disruption in on-going and new experiments. The mice belonging to the investigators in the Pathology Department will be moved onto the 5th floor of the CSRB animal facility during the week of December 16, 1996. The CSRB animal facility is a barrier facility, which means that no mouse cage can return once it has left the facility. Thus, for us to be able to perform important animal experiments which involve irradiation of the mice, we need an irradiator within the barrier facility.

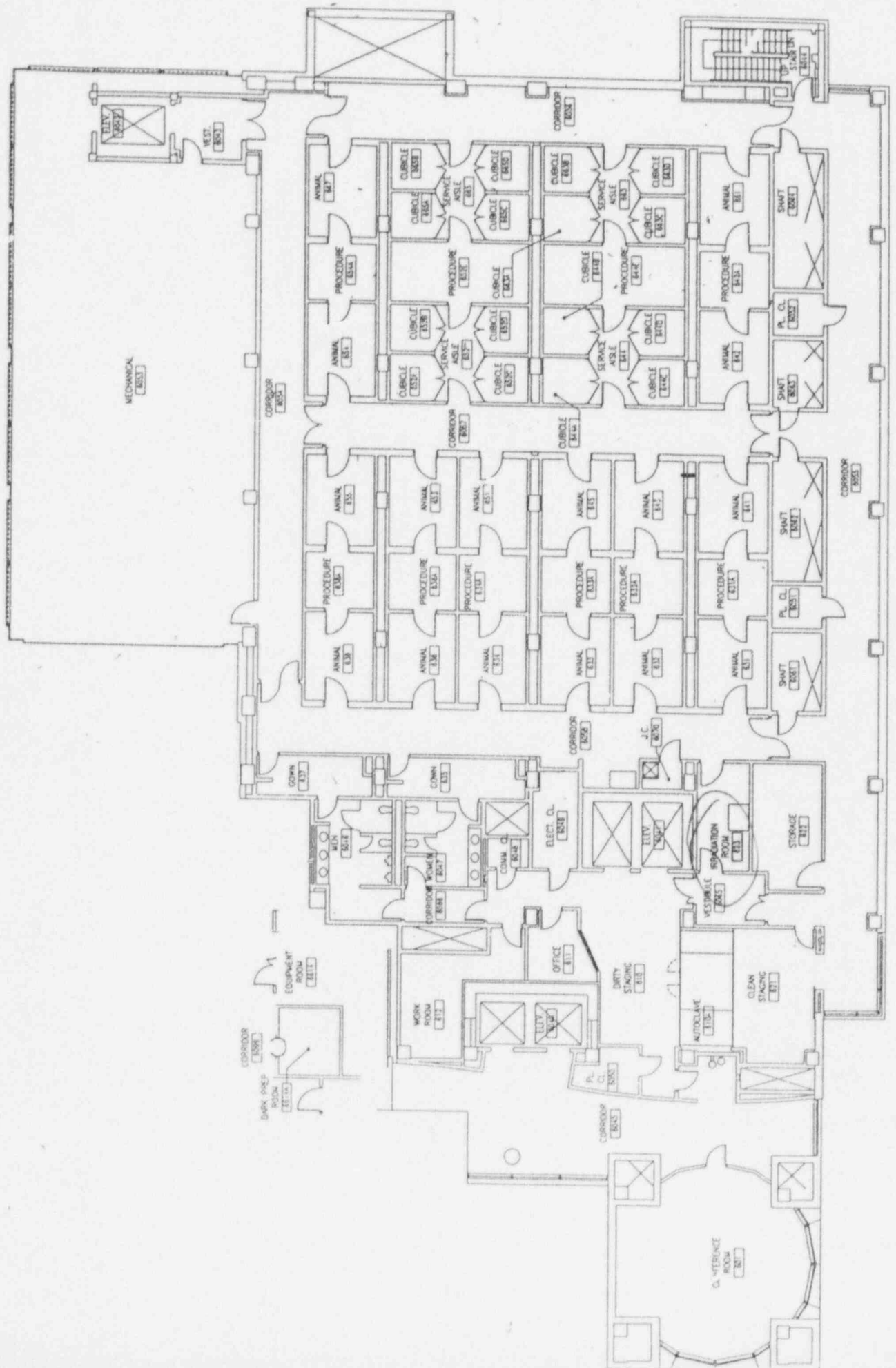
I would like to request from you any assistance you can provide in trying to expedite the movement of the irradiator. Without it being moved, certified, and in operation by December 16, 1996, several important on-going experiments involving bone marrow transplantation and diabetes will be permanently ruined. Thus, it is imperative for our research to have the irradiator moved as soon as possible.

I greatly appreciate any effort you make on our behalf. Please feel free to contact me if you need any additional information or assistance in this matter.

Sincerely,



Paul M. Allen, Ph.D.
Professor of Pathology



DEC 10 1996

John Eichling, Ph.D.
Radiation Safety Officer
Washington University School
of Medicine
Box 8053
4566 Scott Avenue
St. Louis, MO 63110

Dear Dr. Eichling:

Enclosed is Amendment No. 09 to your NRC Material License No. 24-00063-11 in accordance with your request.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region III office at (630) 829-9887 so that we can provide appropriate corrections and answers.

Please also note that the expiration date on your NRC license was extended 5 years in accordance with 10 CFR 30.36(2).

Please be advised that your license expires at the end of the day, in the month, and year stated in the license. Unless your license has been terminated, you must conduct your program involving byproduct materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Notify NRC, in writing, within 30 days:
 - a. When an authorized user or Radiation Safety Officer permanently discontinues performance of duties under the license or has a name change; or
 - b. When the licensee's mailing address changes (no fee is required if the location of byproduct material remains the same).

302065

3. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license when you decide to terminate all activities involving materials authorized under the license.
4. Request and obtain a license amendment before you:
 - a. Receive or use byproduct material for a clinical procedure permitted under Part 35 but not permitted by your license issued pursuant to this Part;
 - b. Permit anyone, except individuals described in 10 CFR 35.13(b), to work as an authorized user under the license;
 - c. Change Radiation Safety Officers;
 - d. Order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;
 - e. Add or change the areas of use or address or addresses of use identified in the license application or on the license; or
 - f. Change ownership of your organization.
5. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

In addition, please note that NRC Form 313 requires the applicant, by his/her signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation, or imposition of a civil penalty, or an order suspending, modifying or revoking your license as specified in the General Policy and Procedures for NRC Enforcement Actions. Since serious consequences to employees and the public can result from failure to comply with NRC requirements,

J. Eichling

-3-

prompt and vigorous enforcement action will be taken when dealing with licensees who do not achieve the necessary meticulous attention to detail and the high standard of compliance which NRC expects of its licensees.

Sincerely,

Original Signed By
James R. Mullauer, M.H.S.
Health Physicist
Nuclear Materials Licensing Branch

License No.: 24-00063-11
Docket No.: 030-17185

Enclosure: Amendment No. 09

DOCUMENT NAME: M:\03017185.CL6

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	DNMS/RIII								
NAME	JMULLAUER:jaw								
DATE	12/1/96								

OFFICIAL RECORD COPY



School of Medicine

Division of Radiation Safety

December 3, 1996

James Mullauer
Licensing Section
US Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Dear Mr. Mullauer:

This correspondence is a response to your request for additional information concerning the relocation of a self-shielded irradiator. The possession and use of the 137-Cs irradiator, an AECL Gammacell40, is authorized by USNRC Materials License 24-00063-11. This letter is being faxed to you as well as being sent via overnight express mail. The mail control number assigned by your office is **302065**.

(1) Description of the facility where the unit will be moved

The new North Tower research addition to the Washington University School of Medicine Clinical Sciences Research Building (CSRB) is comprised of a basement, seven floors of animal facilities and three research laboratory floors (8, 9 and 10th floors) for a total of 223,250 square feet. According to Steven Leary, DVM, the Assistant Vice Chancellor for Veterinary Affairs, the new major building provides state of the art facilities for transgenic and primate studies. Also according to Dr. Leary, the steel and brick facility cost 55 million dollars.

According to Fred DeWeese, Director of the School of Medicine Design and Construction (314-362-8145), the location of the intended site of the irradiator, Room 623 of the North Tower, "was specifically engineered to handle the total load of the irradiator as part of the plans for the building; the structure was "beefed-up" to accommodate the irradiator", which weighs approximately 6,300 pounds.

(2) Security

Electronic card readers are located on exterior doors and at strategic points within the building. The door to the room that will house the irradiator has an electronic code (cipher) lock; only persons who are authorized to use the irradiator will have the Room 623 code added to their electronic cards. Cameras located at the exterior doors and the loading dock are monitored 24 hours a day by Medical Center security personnel. The Medical Center security staff also patrol non-animal barrier areas. This high degree of security is provided to protect the animals against exposure to any harmful agents.

Washington University School of Medicine
at Washington University Medical Center
Campus Box 8131, 660 S. Euclid Ave.
St. Louis, MO 63110-1093
(314) 362-2988 FAX: (314) 362-3333
(Location: 510 S. Kingshighway)

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REGION III

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- (3) The key needed to operate the irradiator will be kept in a designated non-conspicuous location within the irradiator room; the key will be removed from the designated storage location, used and returned after each irradiation. As a reminder, the only persons with electronic access to the irradiator room are individuals approved to use the unit. The electronic code for Room 623 is added to an individual's ID card by the School of Medicine's security group, Protective Services, only if the application of the individual has been approved in writing by the group that manages the animal facilities, the Division of Comparative Medicine, and by Radiation Safety. The Radiation Safety approval requires successful completion of the required training.

- (4) Pre relocation survey

A radiation survey of the dose rates in the vicinity of the unit will be conducted by an Assistant RSO prior to moving the unit and with the unit in a "locked out" position to verify that the dose rates are consistent with those previously measured when the unit is not operating.

- (5) Nordion release of unit

The Nordion, Inc. representative who supervises the relocation of the unit will test the unit to verify that it is properly operating prior to releasing it for routine use by the licensee.

- (6) Leak test

The most recent test for removable contamination (11/5/96) is enclosed.

- (7) Experience of mechanical contractor

According to Walter Eads, the individual with whom preliminary arrangements have been made to move the unit, Corrigan Company Mechanical Contractors has never moved a gamma irradiator. However, he explained that Corrigan, which has been in business for over 100 years, is the 6th largest mechanical contractor in the US. In that capacity, Corrigan has extensive experience in moving sensitive and unusual items. We agreed that the role of Nordion, Inc., is to supervise the radiation safety aspects of the relocation.

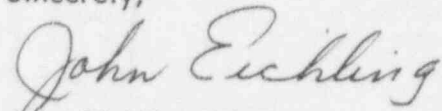
- (8) Safety training for Corrigan workers

I will prepare a brief (1 page) statement concerning a) the nature of the radioactive materials in the irradiator, b) the high degree of safety that is achieved through the massive lead shielding (the dose rates at one foot from the unit when "locked out" are only of the order of 0.02 to 0.03 mrem/hr), c) that the anticipated radiation dose received by any individual will be substantially less than 1 mrem, d) the significance of such a low radiation dose, e) the name of the federal agency that regulates the use of the unit, f) the rights of individuals exposed to licensed materials and g) that they will be provided radiation dosimeters to wear to verify the expected low radiation doses.

A copy of the printed information will be provided to each individual participating in the relocation of the unit.

I trust that this added information will be satisfactory. Again, thank you for your help with this matter.

Sincerely,

A handwritten signature in cursive script that reads "John Eichling". The signature is fluid and elegant, with the first letters of each word being capitalized and prominent.

John Eichling, Ph.D.

JE:fi

SEALED SOURCE
LEAK TEST RESULTS

APPROVED USER(S): Kathy Frederick, Osami Kanagawa, Paul Allen

LOCATION: 0020 CSRB

INSPECTION QUARTERLY
FREQUENCY: X SEMI-ANNUALLYWIPED BY: [Signature]
ASSAYED BY: [Signature]INDIVIDUAL Kathy Frederick
TO CONTACT: 7-2047REVIEWED BY: [Signature]

DESIGNATION	ISOTOPE	REFERENCE DATE ACTIVITY	WT/AS*	DPM*	uCi
AECL Irradiator Gammacell 40 Serial #53	Cs-137	3640 Ci TOTAL (2497 Ci)			
Source #CS-177		1820 Ci	7-11-80		
Source #CS-178		1820 Ci	7-11-80		
1. Top of drawer			1B/3D	70	<0.0001
2. Inside of sample changer			1B/3D	73	<0.0001
3. Upper attenuator			1B/3D	70	<0.0001
4. Lower attenuator			1B/3D	71	<0.0001

COMMENTS: () = Calculated activity at time of leak test.

*AS = Assay System, WT = Wipe Technique, DPM are calculated with 99% confidence (2.58 SIGMA) that values do not exceed those reported.

1. 6 inch cotton swab
3. Packard MINAXI Gamma Counter Model A5530, Serial #400116
- B. moist/w ETOH
- D. Photopeak: 622 to 702 keV, eff. = 11.98%

SEALED SOURCE WORKSHEET

LOCATION(S)

0020 CSRB

APPROVED USER(S)

K. Frederick
O. Kagawa, P. Allen
Kathy Frederick
7-12047

INDIVIDUAL TO CONTACT
PHONE

FREQUENCY:

☒ QUARTERLY
☐ SEMI-ANNUALLY

DATE WIPED:

WIPED BY:

ASSAYED BY:

NOTE:

11-5-96
J. Hardin
J. Hardin

WIPE #	DESIGNATION	ISOTOPE	ACTIVITY	WIPE TECHNIQUE	ASSAY SYSTEM	GROSS COUNTS (cpm)	BKG	NET CPM	NET CPM + 2.58 σ	DPM	uCi
	AECL Irradiator										
	Gamma cell 40										
	SN 53	CS-137	3640 Ci TOTAL (2497 Ci calc.)								
	Source #CS-177		1820 Ci 7-11-80								
	Source #CS-178		1820 Ci 7-11-80								
1	Top of drawer	CS-137	3640 Ci TOTAL (2497 Ci calc.)	1B	3D	19	34	0	8.4	70	<0.0001
2	Inside of sample changer			1B	3D	23	34	0	8.7	73	<0.0001
3	Upper attenuator			1B	3D	19	34	0	8.4	70	<0.0001
4	Lower attenuator			1B	3D	20	34	0	8.5	71	<0.0001

11/27/96

James Mullauer
Licensing Section
USNRC, Region III

Dear Mr. Mullauer:

The following items related to the amendment request to move a self-shielded irradiator are being faxed:

- 1) copy of the results of the most recent leak test (11/5/96); 2 pages
- 2) copy of the most recent quarterly inspection (11/5/96); 3 pages
- 3) copy of the 12/13/84 request to move the same unit; 3 pages
- 4) copy of the USNRC amendment that authorized the re-location; 1 page

Thanks for your help with this matter. I have a nice Thanksgiving.

Sincerely,

John Eichling

10 pages total

**CSRS IRRADIATOR
GAMMACELL 40 IRRADIATOR OPERATORS
Updated 11/5/96**

<u>Operator Name</u>	<u>Laboratory</u>	<u>Exam Date</u>
Allen, Paul	Allen	03/03/86
Bittner, Pat	Lacy	05/12/94
Blair, Libby	Fedde	06/18/96
Cohn, Steve	Cohn	10/31/78
Combs, Tony	Unanue	05/10/88
Coopersmith, Craig	Gordon	03/14/96
Daniel, Claude	Allen	07/16/96
Diao, Rong	Hagerty	07/16/96
Donermeyer, Dave	P. Allen	03/17/87
Fang, Yi Fu	Molina	09/25/96
Fedde, Kenton	Fedde	01/23/96
Ferguson, Tom	Ferguson	04/11/89
Fields, Larry	Fields	03/04/90
Frederick, Kathy	Allen	08/08/78
Fu, Yangxin	Chaplin	04/11/95
George, Robert	Cohn	03/21/94
Graubert, Tim	Ley	08/09/94
Halstead, Linda	Avioli	11/29/95
Hautamaki, Raymond	Shapiro	02/19/96
Herndon, John	Ferguson	07/14/07
Houchen, Courtney	Cohn	04/08/96
Huang, Guangming	Chaplin	10/03/95
Kanagawa, Osami	Kanagawa	01/24/90
Linders, Bruce	Flye	02/06/95
Link, Dan	Link	05/06/96
Liu, FuLu	Link	05/07/96
MacIvor, Debra	Ley	06/11/92
Meko, Jennifer	Doherty	09/19/95
Missey, M. Heather	Sands	06/05/95
Murphy, Ken	Murphy	10/03/88
Nelson, Chris	Unanue	06/26/90
Nicholes, Andy	Sands	06/06/95
Pingel, Jeanette	Thomas	06/23/87
Riehl, Terrence	Stenson	10/11/96
Rodig, Scott	Schreiber	02/02/96
Sands, Mark	Sands	06/05/95
Schloemann, Suzanne	Stenson	10/11/96
Shenoy, Shalini	Mohanakumar	12/09/93
Silverstein, Julie	Fedde	06/18/96
Sturmoski, Mark	Cohn	06/05/95
Tessner, Teresa	Stenson	10/11/96
Tu, Yizheng (Frank)	Flye	02/06/95
Wesselschmidt, Robin	Ley	06/25/85
West, Robert	Lieber	07/09/96
Williams, Matt	Brown	03/21/96
Yim, John	Doherty	11/07/95
Zhang, Hui	Kaplan	07/09/93

**WASHINGTON
UNIVERSITY
SCHOOL OF
MEDICINE**

AT WASHINGTON UNIVERSITY MEDICAL CENTER

December 13, 1984

Bruce Mallett, Ph.D.
US Nuclear Regulatory Commission
Region III
Material Licensing Section
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Dr. Mallett:

The purpose of this correspondence is to request the U.S. Nuclear Regulatory Commission to amend USNRC license 24-00353-11 (self-shielded irradiator) to authorize Washington University Medical Center (St. Louis, Missouri) to move a Gammacell-40 irradiator from its current location (216 S. Kingshighway Avenue) to a new adjacent building, the Clinical Sciences Building, 4939 Audubon Avenue.

A similar irradiator was moved in 1980 and Mr. Michael Lamastra of the Washington, D.C., USNRC Material Licensing Branch employed the following procedure to authorize the re-location:

- (1) the licensee via an amendment request was authorized to operate the unit at two locations - the old and new sites,
- (2) pursuant to the transfer a radiation survey was made by the RSO to verify that radiation levels around the unit were unaffected by the move,
- (3) the institutional safety committee reviewed the radiation survey and decided whether the unit was safe to resume operations, and
- (4) if the committee's action was to resume operations at the new location the USNRC was to be notified within 30 days to delete the original location.

This sequence of events authorized by Mr. Lamastra was suggested by him to achieve the relocation of the irradiator with a minimum interruption of the on-going clinical use of the unit.

Details of the requested move are as follows:

3A

Box 8131

340 S. Kingshighway

St. Louis, Missouri 63110

WU 100-1000

- (1) Type of unit - Gammacell 40 ^{137}Cs self-shielded irradiator manufactured by Atomic Energy of Canada, Ltd., Ottawa, Canada.
- (2) It is proposed to have the unit moved by the Dan Hamm Co., of St. Louis. The transfer will consist of these 3 steps:
(a) the unit will be moved along 300 feet of steel plating placed over the basement floor of the building that currently houses it (Schoenberg Pavilion) to the loading dock, (b) a 20 ton Hyster forklift will transfer the unit from the Schoenberg Pavilion loading dock to the adjacent Clinical Sciences Building loading dock and (c) the unit will be moved over steel plating to the proposed new location in the basement of the Clinical Sciences Building.
- (3) The proposed new location is at the end of an L-shaped corridor in the Clinical Sciences Building basement. The security of the area is excellent. Except for the irradiator, the basement is an animal care facility. All doors to the area require a key and the elevator must be key-operated to go to the basement. Access to the irradiator site requires an elevator key and a door key. In addition, a key is required to operate the unit.

If authorized, the following actions will be done prior, during and after the relocation:

- (1) radiation surveys will be conducted of the exposure levels in the immediate vicinity of the unit and of the approximate dose rate in the sample drawer prior to the move,
- (2) radiation safety personnel will be present during the move,
- (3) radiation surveys similar to those indicated in part (1) will be conducted immediately after re-location,
- (4) appropriate signs will be posted at the new site including an OUT-OF-SERVICE sign,
- (5) the institutional committee, the Radiation Safety Committee, will be convened to review the details of the move and the radiation surveys, and
- (6) if the Committee authorizes the use of the unit, I will promptly notify the U.S. Nuclear Regulatory Commission of the move and request that the former location be deleted from the license.

In summary, I request that the U.S. Nuclear Regulatory Commission amend condition 10 of license 24-000-63-11 to read "Licensed material shall be used only at 216 S. Kingshighway, St. Louis, Missouri and 4939 Audubon Avenue, St. Louis, Missouri and condition 15 to include the representations of this letter.

LEAK TEST DATE: 11-5-96SEALED SOURCE
LEAK TEST RESULTS

APPROVED USER(S): Kathy Frederick, Osami Kanagawa, Paul Allen

LOCATION: 0020 CSRB

INSPECTION FREQUENCY: QUARTERLY
 X SEMI-ANNUALLYINDIVIDUAL TO CONTACT: Kathy Frederick
7-2047WIPED BY: Merdin
ASSAYED BY: Merdin
REVIEWED BY: Fickling

DESIGNATION	ISOTOPE	REFERENCE DATE ACTIVITY	WT/AS*	DPM*	uCi
AECL Irradiator Gammacell 40 Serial #53	Cs-137	3640 Ci TOTAL (2497 Ci)			
Source #CS-177		1820 Ci	7-11-80		
Source #CS-178		1820 Ci	7-11-80		
1. Top of drawer			1B/3D	70	<0.0001
2. Inside of sample changer			1B/3D	73	<0.0001
3. Upper attenuator			1B/3D	70	<0.0001
4. Lower attenuator			1B/3D	71	<0.0001

COMMENTS: () = Calculated activity at time of leak test.

*AS = Assay System, WT = Wipe Technique, DPM are calculated with 99% confidence (2.58 SIGMA) that values do not exceed those reported.

- 6 inch cotton swab
- Packard MINAXI Gamma Counter
Model A5530, Serial #400116

- moist/w ETOH
- Photopeak: 622 to 702 keV, eff. = 11.98%

11/27/98 WED 15:27 FAX 314 382 4778 WU RAD SAFETY 2003

0020 CSRB

K. Frederick
O. Kagawa, P. Allen
Ruthy Frederick
7-2047

Ruthy Frederick
7-12047

☒ QUARTERLY
☐ SEM-ANNUALLY

NOTE:

11-5-96
Gardner
Gardner

WIPE #	DESIGNATION	ISOTOPE	ACTIVITY	WIPE TECHNIQUE	ASSAY SYSTEM	GROSS COUNTS (cpm)	BKG	NET CPM	NET CPM + 2.58 σ	DPM	UCI
	AECL Irradiator Gamma cell 40 SN 53	CS-137	3640 Ci TOTAL (2497 Ci calc)								
	Source #CS-177		1820 Ci 7-11-80								
	Source #CS-178		1820 Ci 7-11-80								
1.	Top of drawer	CS-137	3640 ^{Ci} TOTAL (2497 Ci calc)	1B	3D	19	34	0	8.4	70	<0.0001
2.	Inside of sample changer			1B	3D	23	34	0	8.7	73	<0.0001
3.	Upper attenuator			1B	3D	19	34	0	8.4	70	<0.0001
4.	Lower attenuator			1B	3D	20	34	0	8.5	71	<0.0001

60 Ci 137Cs

IRRADIATOR INSPECTION

Dr. Allen, ms. Frederick,
Memorandum to Dr. Kanagawa License # 24-00063-11
Location 0020 CSRB Date 11-5-96

- ☒ 1. Current NRC -3 form is posted
- ☒ 2. Caution Radioactive Materials sign is posted
- ☒ 3. Emergency instructions are posted
- ☒ 4. Copy of operating instructions is available at Irradiator
- ☒ 5. Operators have passed radiation safety exam
- ☒ 6. Operators are observed to be wearing radiation monitors Robt. George
- ☒ 7. Operators' monitors are appropriately stored when not being used
- ☒ 8. Operators' monitors are timely returned for processing see attached list
- ☒ 9. Operators' exposure records are accessible
- ☒ 10. All identified operators have had required training
- ☒ 11. Documentation of training is on file
- ☐ 12. Continuous monitor check records are adequate (Not Applicable ☒)
- ☒ 13. Responsible persons listed in license are current
- ☒ 14. Irradiator utilized as specified in license
- ☒ 15. Leak tests are current (Date of last test 6-12-96, 11-5-96)
- ☒ 16. License is current (Date of expiration 9-30-98)
- ☒ 17. Security precautions are practiced
- ☒ 18. Radiation levels are acceptable (refer to attached radiation survey)

Comments _____

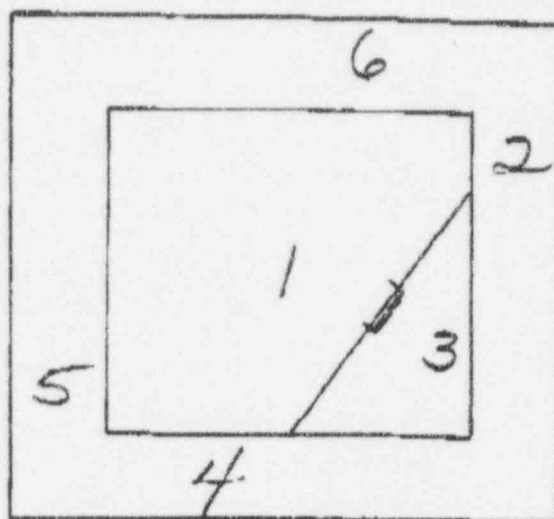
Inspected by Deanne Hardin

AEC LTD. GAMMACELL 40 137 β IRRADIATOR
MODEL GC-40, TYPE B, SN-53

DR. PAUL ALLEN
MS. KATHY FREDERICK

DATE: 11-5-96

DR. OSAMI KANAKAWA
LICENSE #24-00063-11



READINGS ARE TAKEN APPROXIMATELY 1 FOOT FROM IRRADIATOR.

THE HIGHEST MEASUREMENT IN THAT AREA IS RECORDED.

UNIT NOT OPERATING
(mrem/hr)

1.	0.02
2.	0.03
3.	0.03
4.	0.03
5.	0.02
6.	0.02

UNIT OPERATING
(mrem/hr)

1.	0.12
2.	0.60
3.	1.5
4.	0.50
5.	0.60
6.	0.35

Bicron Surveyor 2000 #A554X

J Hardin
J.A.



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION III
801 WARRENVILLE ROAD
LISLE, ILLINOIS 60532-4351

November 21, 1996

John Eichling
Radiation Safety Officer
Washington University Medical School
Box 8053
4566 Scott Avenue
St. Louis, MO 63110

SUBJECT: ACKNOWLEDGEMENT OF CORRESPONDENCE
(Letter Dated 11/18/96)

Dear Licensee:

In response to your request, we have completed the initial processing, which is an administrative review of your application for a(n):

☐ New License ☒ Amendment ☐ Renewal
☐ Termination ☐ Auth User (Amendment not required)
☐ Other _____

No administrative deficiencies were identified during this initial review. However, it should be noted that a technical review may identify omissions in the submitted information.

It appears that your request is routine (see 1-3 below, as applicable).

1. New and amendment actions are normally processed within 90 days, unless we find major deficiencies, or policy issues requiring central program office assistance.
2. Renewal actions are normally processed within 180 days, however, under timely filing (before expiration), you may continue to operate under your existing license.
3. Termination actions are normally processed within 90 days, unless confirmatory surveys following decontamination/decommissioning activities are involved.

A copy of your correspondence has been forwarded to our Licensing Fee and Debt Collection Branch (301/415-6097) for approval of the fee category and amount, if required.

If you have a compelling safety or business-related reason for requesting expedited review, please contact the Materials Licensing Branch at (630) 829-9887. We will try to complete your request as soon as practicable. Any correspondence about this request should reference the control number.

Nuclear Materials Support Branch

Mail Control No. 302065
License No. 24-00063-11