

MATERIALS LICENSE

Amendment No. 10

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 1, Parts 30, 31, 32, 33, 34, 35, 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.

<p>Licensee</p> <p>1. Martin Marietta Corporation</p> <p>2. P.O. Box 8555 Philadelphia, Pennsylvania 19101</p>	<p>In accordance with letter dated October 14, 1992,</p> <p>3. License number 37-02006-09 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date May 31, 1998</p> <hr/> <p>5. Docket or Reference No. 030-12894</p>
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<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Cobalt 60</p>	<p>7. Chemical and/or physical form</p> <p>A. Sealed sources (AECL Model C-166, C-167, or C-198)</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>(b)(2)High A and (b)(2)High } curies total</p>
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9. Authorized use

A. For use in AECL Model Gammacell 220 Irradiator for irradiation of materials except explosives and flammable materials:

CONDITIONS

- 10. Licensed material shall be used only at 230 Goddard Boulevard, King of Prussia, Pennsylvania.
- 11. A. Licensed material shall be used by individuals designated by the Ionizing Radiation Advisory Group, S. J. Mucha, M.D., Chairman.
- B. The Radiation Safety Officer for this license is John Andrews.
- 12. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders or detector cells by the licensee.
- 13. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as are specified by the certificate of registration referred to in 10 CFR 32.210, not to exceed 3 years.
- B. Notwithstanding Paragraph A of this Condition, sealed sources designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.

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License No. 37-02006-09
Docket No. 030-12894
Control No. 117305

MAY 25 1993

Martin Marietta Corporation
ATTN: S. J. Mucha, M.D.
Chairman
P.O. Box 8555
Philadelphia, Pennsylvania 19101

Dear Dr. Mucha:

Please find enclosed the renewal of your NRC Material License.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the Region I Material Licensing Section, (215) 337-5093, so that we can provide appropriate corrections and answers.

Please be advised that you must conduct your program involving licensed radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, please note the items in the enclosed, "Requirements for Materials Licensees."

Since serious consequences to employees and the public can result from failure to comply with NRC requirements, the NRC expects licensees to pay meticulous attention to detail and to achieve the high standard of compliance which the NRC expects of its licensees.

You will be periodically inspected by NRC. A fee may be charged for inspections in accordance with 10 CFR Part 170. Failure to conduct your program safely and in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in prompt and vigorous enforcement action against you. This could include issuance of a notice of violation, or in case of serious violations, an 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, 10 CFR Part 2, Appendix C.

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ML 10

Martin Marietta Corporation

-2-

We wish you success in operating a safe and effective licensed program.

Sincerely,

Original Signed By:
Francis M. Costello

Francis M. Costello, Chief
Industrial Applications Section
Division of Radiation Safety
and Safeguards

Enclosures:

1. Amendment No. 10
2. Requirements for Materials Licensees
3. NRC Forms 3 and 313
4. 10 CFR Parts 2, 19, 20, 30 and 170

DRSS:RI
McGrath/gc

5/18/93

FMC
DRSS:RI
Costello

5/18/93

Attachment F

RADIATION SAFETY REPORT
FOR
GAMMACELL - 220
FACILITY

PREPARED BY: J. L. Andrews DATE: 11/2/92
J. L. Andrews
Supervising Physicist

REVIEWED BY: J. R. Greenwald DATE: 11/2/92
J. R. Greenwald
Radiation Effects Labs Supervisor

APPROVED BY: C. G. Reinhardt DATE: 11/12/92
C. G. Reinhardt, Manager
Survivability Engineering

REVIEWED BY: C. B. Chilton DATE: 11-19-92
C. Chilton
Principal Health and Safety Specialist

APPROVED BY: S. J. Mucha, M.D. DATE: 11-25-92
S. J. Mucha, M.D., Chairman
Ionizing Radiation Advisory Group

ASTRO SPACE DIVISION
GENERAL ELECTRIC COMPANY
P.O. BOX 8555
PHILADELPHIA, PA 19101

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APPENDICES

- A. GAMMACELL 220 SPECIFICATIONS
- B. GAMMACELL 220 OPERATING INSTRUCTIONS – NORDION
- C. U.S. NUCLEAR REGULATORY COMMISSION MATERIALS LICENSE
- D. AUTHORIZED OPERATORS AND VISITOR ESCORTS
- E. RADIATION EFFECTS LAB EMERGENCY PERSONNEL

1. PURPOSE

The purpose of this radiation safety report is to describe responsibility and approved procedures, identify authorized operators and describe radiation safety precautions for use of two Gammacell 220's at GE-Astro Space Bldg. 1000. The report also contains Nordion's (manufacturer) Gammacell 220 irradiator specifications and operating instructions.

Compliance with this report will minimize radiation hazards in the usage of Gammacell 220 irradiators.

2. RESPONSIBILITIES

The control of this facility is governed by the requirements of Valley Forge Space Center Safety Manual Section M-6.0 (2/89 issue). This Manual describes responsibilities of the following:

1. Personnel working with ionizing radiation
2. Supervision and management of the functional organization using ionizing radiation
3. Ionizing Radiation Advisory Group (IRAG) established in the Astro-Space Division
4. Manager, Environmental Health and Safety
5. Radiation Safety Officer

This report establishes the particular requirements consistent with Section M-6.0 pertaining to the Gammacell 220 Facility. Any changes to this report are to be approved by the IRAG, per GE agreements with the U.S. Nuclear Regulatory Commission.

3. GAMMACELL 220 IRRADIATORS

3.1 Physical Description

The Gammacell 220 Irradiators contain multikilocurie radioactive sources using the Cobalt 60 radioisotope to produce an internal, intense field of high energy gamma rays. It is designed both as a Department of Transportation approved container (international commerce only) and for use in staffed laboratories.

Basically each unit consists of an annular shaped source which contains pencil shaped Co-60 rods, a thick steel encased lead shield around the source and a long cylindrical radiation exposure chamber which can move vertically through the center of the source. The exposure chamber carries samples (material to be irradiated) from outside the shield to the source exposure region. The exposure chamber is movable either electrically or manually. The two static positions of the radiation chamber are referred to as the loading and irradiation positions. Several views of the Gammacell 220 are shown in Appendix A; note there is lead shielding above and below the exposure chamber.

Irradiation of samples up to six inches in diameter and eight inches in height can be undertaken with complete safety for operating personnel. The lead shield above the radiation chamber has a 3.17 cm (1 1/4") diameter access tube for uses such as introducing liquids and gases as well as electrical and mechanical links.

An electrical timer will automatically terminate irradiations after a maximum interval of 999.9 hours. The basic design of the Gammacell 220 is little changed since 1960.

3.2 Source Safety

The design and basic operating procedure of Gammacells are approved by the U.S. Nuclear Regulatory Commission (NRC).

A key operated master switch controls all power to the unit; radiation chamber movement may be manually or electrically-controlled. Electrical interlocks prevent the radiation exposure chamber from being moved unless its front cover, two access doors and (access tube) top plug are properly positioned.

The manufacturer (Nordion, formerly AECL), assures no possible malfunction can expose personnel to the radiation source. Cobalt loading and unloading is done only at the Nordion plant.

3.3 Radiation Field

3.3.1 Internal

Normalized isodose curves are shown, with use of available lead attenuation inserts, as shown in Figure 1-4. Current dose rates are published and available for any date, based on the half-life of Cobalt-60 (5.26 years).

3.3.1.1 Gammacell 220-S/N 157

(b)(4)

Based on an initial loading on May 6, 1977 of (b)(4) (Ci), the central exposure level in the Gammacell 220, S/N 157 was 4×10^5 R/hr on May 25, 1977. The initial loading used 34 type C198 capsules, each 20.32 cm (8 in.) long.

3.3.1.2 Gammacell 220-S/N 186

(b)(4)

Based on the most recent loading of September 13, 1989 of (b)(4) curies, the central exposure level in Gammacell 220 S/N 186 was (b)(4) on September 15, 1989. This loading used 16 type C-166/167 capsules. Radiation levels in and around this Gammacell 220 are about 25 times higher than for the S/N 157 unit.

3.3.2 External to Gammacell 220

Additional shielding requirements are necessary and designed into the Facility to safely operate the Gammacells, up to maximum loadings of (b)(4) per NRC personnel exposure standards effective in January 1993.

This added shielding is in the form of rebarred concrete walls with a concrete density of at least 147 lbs/cubic foot. These walls are 8 feet high. Referring to Figure 6, the wall thicknesses are as follows:

- North: 12 inches
- East: 24 inches
- South: 12 inches
- West: 6 inches

The shielding is designed to assure that radiation levels outside the laboratory will meet the NRC requirements of less than 100 millrem per year in unrestricted areas.

Annual predicted doses for the facility at various locations are shown in Table 1. These doses assume a hypothetical year with (b)(4) in the South unit (b)(4) in the North unit at start, 2000 hours of annual exposure per cell and an estimated dose contribution from the adjacent, shielded flash x-ray unit. These dose rates are at four feet above the floor and external dose rates are 50% less in the loading than the exposure position.

Table 1. Estimated Annual Doses (See Text)

Location (Figure 6)	One Shift (mRem)	Full Year (mRem)
1	124	286
2	71	169
3	87	298
4	42	45
5	61	82
6		64
7		90
8		69
9		54
10		91

3.4 Installation and Moving

(b)(4)

After initial installation any move of the irradiators with the Gamma Room requires the approval of the Radiation Safety Officer. Any move of the irradiators outside the Gamma room requires approval of the U.S. Nuclear Regulatory Commission.

3.5 Location

(b)(4)

Figure 5 shows the location of the Radiation Effects Lab at the Valley Forge Space Center.

The Gammacell 220's are located in the Gamma Room of Bldg. 1000 at the Valley Forge Space Center in Upper Merion township. The Gamma Room is one of several rooms in the Radiation Laboratory as shown in Figure 6.

3.6 Operating Procedures

The basic operating procedure for the Gammacell 220 is that supplied by Nordion and attached as Appendix B. This basic operating procedure forms a part of the overall operating procedure to be used for this unit. Additions to the basic procedure, for this area of application are discussed below in Section 5.

3.7 Fire Protection

The Gammacell 220 is an approved U.S. Department of Transportation shipping container, for international travel, and as such has been tested for fire resistance. Additionally, there are overhead sprinkler system "heads" and limited local combustibles. Procedures for handling fires as well as those applicable for evacuations may be found in the Division Safety Manual, Instruction F 1.0 and Section 4.4 of this Rad Safety Report.

3.8 License Authority

The possession and use detail for GE-ASD's Gammacell 220 Irradiators are detailed in the current License/Amendments issued by the U.S. Nuclear Regulatory Commission (NRC). Current License/Amendment is reproduced here in Appendix C (License # 37-02006-09).

4. OPERATING PROCEDURES

4.0 Introduction

This section describes procedures for operation, periodic inspection and leak testing, maintenance, and the handling of emergencies which authorized operators are trained to perform. Deviations from these procedures require IRAG approval.

4.1 Operation

- 4.1.1 Operation of the Gammacell 220 shall be by an Authorized Operator (Section 7).
- 4.1.2 All personnel in the Radiation Effects Laboratory shall be provided with personnel dosimetry, signed out at the Personnel Dosimetry Station. (See Flash X-ray IRAG Report for detail.)
- 4.1.3 Experiment samples must be of approved types (Section 6). An exposure log is to be maintained for each Gammacell. Experiment descriptions and dosimetry are to be recorded.
- 4.1.4 The Gammacell key is to be obtained from its locked container.
- 4.1.5 The Nordion Gammacell 220 operating procedures are to be followed. (Appendix B).
- 4.1.6 Any anomalies in Gammacell performance are to be noted in the Maintenance Log Book and brought to Management's attention for correction.
- 4.1.7 The doors to the Gamma Room are to be closed or key locked except for entry and exit. The door can be locked and is openable via either a cipher lock or a key lock.
- 4.1.8 Two radiation survey meters are stationed in the Radiation Effects Laboratory; one to be used to measure area radiation levels and the other as a spare.
- 4.1.9 At the conclusion of an experiment, the Gammacell unit is to be restored to the empty radiation exposure chamber condition, in the Load position with doors and access plug shut.
- 4.1.10 When not in use the key to the Gammacell 220 is secured in a container with a combination lock.

4.2 Periodic Inspection

4.2.1 Operation

Each Gammacell unit is to be mechanically operated at least monthly with performance noted in the Maintenance Log. Such operation will be performed by an operator designated in Paragraph 7.0.

Readings are to be made and recorded in the Exposure Log with the Radiation Survey meter at least once each day for every day the facility is used in accordance with a procedure established by the responsible manager.

4.2.2 Leak Tests

Independent leak tests are to be conducted at nominal six month intervals by the Radiation Safety Officer or his designee. Results are to be recorded in the Maintenance Log.

4.2.3 Radiation Survey Meter Calibrations

The radiation survey meters are to be provided to the Radiation Safety Officer or Calibration Lab at annual intervals and after maintenance for calibration. Results are to be recorded in the Maintenance Log.

4.3 Maintenance

Maintenance is done by an Authorized Operator or the Manufacturer's representative. Maintenance is to be done using procedures established by the manufacturer, Nordion.

Maintenance records are to be kept sequentially in a Maintenance Log Book. Maintenance is limited to activities consistent with the restrictions of the U.S. Nuclear Regulatory Commission Material License, Appendix C.

4.4 Emergencies

The Radiation Safety Officer is to be notified in the event of abnormal operations or emergency conditions. Specific conditions are noted below.

4.4.1 Emergency Personnel List

An emergency personnel list shall be maintained by the IRAG Secretary. This list will identify personnel by name, work phone and home phone who are to be immediately notified in cases of emergency affecting the Gammacell facility. This list is to be distributed to the Plant Protection Center, the Radiation Safety Officer, the Plant Fire Chief and the Manager, Survivability Engineering (See Appendix E).

4.4.2 Fire

For fires in ^{(b)(4)} electric power is to be turned off, Patrol notified, fire extinguishers used if practical. If the fire is not readily containable, personnel should exit the room, taking a radiation survey meter and await fireman.

For fires in adjacent areas, or fires discovered in ^{(b)(4)} the absence of Authorized Operators, an Authorized Operator and the Radiation Safety Officer are to be notified. Fireman are to be appraised of the location of the Gammacells.

4.4.3 Power Failure

In the event of a power failure the electric timer will stop and it will be necessary to raise the sample drawer manually in accordance with Nordion procedures. Emergency battery powered lights are installed to aid in case of power failure.

Test operations are not to be initiated during a power failure. Cipher lock operation is affected by building power failures.

4.4.4 Radiation Emergency

If readings on the radiator survey meter or Area Monitor exceed 25 mR/hr, a radiation emergency exists, the room is to be evacuated and the Radiation Safety Officer notified.

5. RADIATION SAFETY PRECAUTIONS

5.0 Introduction

This section describes the extra radiation safety precautions designed to provide for personnel and physical plant radiation safety.

5.1 Access

Access control to the Gamma Room is to be restricted to those personnel on the posted Access List, and visitors escorted by authorized personnel. Access is restricted by a normally locked door which opens by use of the correct cipher code or a key. The cipher code is changed when the Access List is changed. Visual checks of the entire Gamma Room are aided by the combination of a window in the door and a convex mirror. This room is within a larger area also under cipher lock in a building which has a guard stationed at each entry at all times the building door is open.

5.2 Key Control

The keys for the Gammacell are kept under combination lock with combination known to Authorized Operators only.

5.3 Personnel Dosimetry

(b)(4)

A personnel dosimetry station is located in _____ This station is provisioned with radiation badges. Finger ring dosimeters are also to be worn by users of Gammacell S/N 186. Pocket ionization chambers are also available.

5.4 Radiation Meters

A radiation survey meter and wall-mounted Area Monitor are located in the Gamma Room.

5.5 Authorized Operators

Use of the Gammacell unit is restricted to Authorized Operators (See Section 7).

5.6 Signs

(b)(4)

The doors to _____ and the Gamma Room are marked as Radiation Areas.

The region around a Gamma Cell having a radiation level above 2mRem/hr is marked with a yellow line on the floor (within this line personnel should minimize time to essential activity).

The Gammacell unit will be labeled consistent with regulations.

5.7 Radiation Safety Report Posting

A copy of the approved "Radiation Safety Report for Gammacell 220 Facility" is to be available in _____ (b)(4)

6. AUTHORIZED SAMPLE TYPES

Electronic parts and assemblies in solid form including metals, semiconductor and dielectrics materials are authorized to be exposed in the facility.

Other items may be exposed upon approval of a written request by the Chairman of IRAG.

Explosive materials are explicitly prohibited for exposure.

Care is to be taken with all samples to avoid excessive corrosion of the sample drawer.

Exposure logs for each Gammacell shall be maintained and accessible for inspection. Each exposure log shall contain at least the following:

Date of Test

Sample Description
Exposure Duration
Actual Start Time
Planned or Actual Stop Time
Dosimetry Type, if Used
Authorized Operator
Comments (As Required)
Reading of Survey Meter for Each Day of Use

An example log sheet is shown in Figure 7.

7. REQUIREMENTS AND DUTIES OF OPERATORS

7.1 Requirements

All Operations with the Gammacell 220 shall involve an Authorized Operator.

7.2 Duties

Duties to be carried out by authorized operations include the following:

1. Assist all personnel and visitors to the Gammacell 220 Room in required use of personnel dosimetry and instruction concerning hazards associated with the Gammacell.
2. Proper use of the Gammacell 220 and physical safety of its key and room cipher lock.
3. Inspect, maintain and keep records on the Gammacell condition and use and radiation safety accessories.
4. Inspection and checkout of irradiation experiments for any recognized hazards and compliance with authorized sample types.
5. Assist in the training of new operators.
6. Conduction of emergency procedures, as may be required.
7. Read and record of radiation levels in the Gamma Room for each day of facility use, using the Radiation Survey meter.

7.3 Appointment and Approval

Authorized Operators will be nominated by the Manager, Survivability Engineering in writing to the Chairman, IRAG Committee. The Chairman, IRAG Committee, or his designee, shall review and approve nominees. After approval, a list of authorized operators shall be posted.

7.4 Qualifications

Qualifications for Authorized Operators shall include the following:

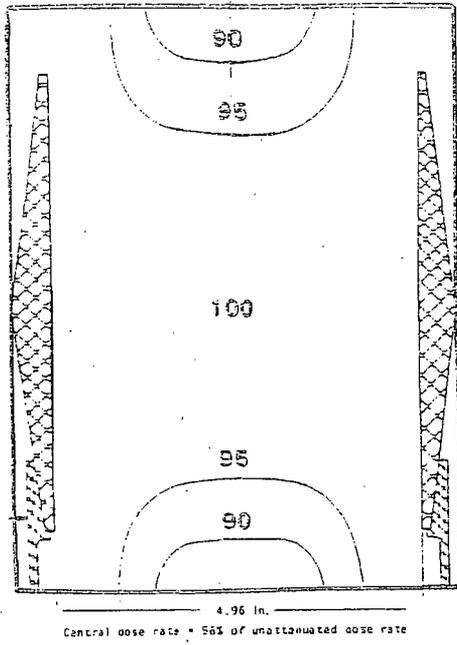
1. Active in Radiation badge program
2. Assignment to test program involving radiation effects

3. Prior test experience
4. Shall have received training in operation of Gammacell consistent with Paragraph 7.5
5. At least annual use of the Gammacell

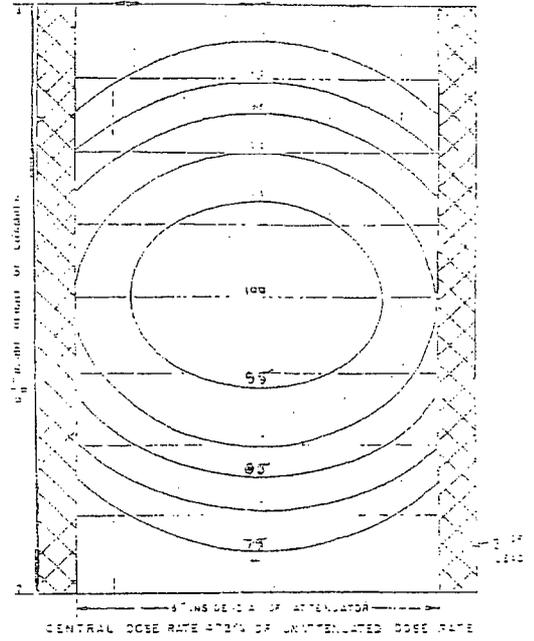
7.5 Training

Training to be an Authorized Operator shall include the following:

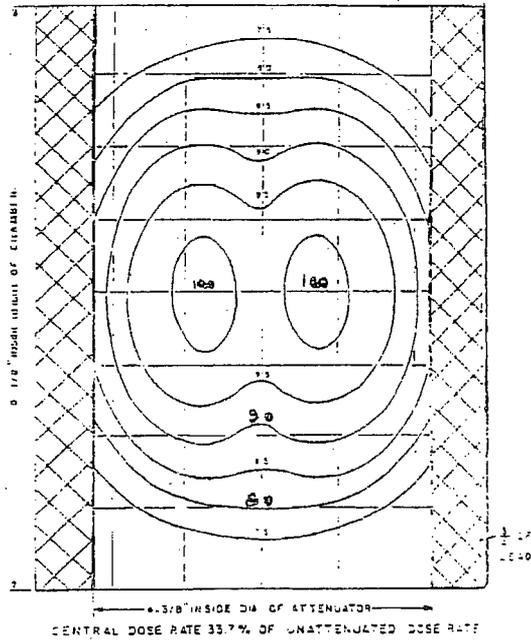
1. Detailed Review of Nordion Operating Instruction for Gammacell 220
2. Instruction and practice operations under supervision of an Authorized Operator for
 - o Normal Operation
 - o Use of Dosimetry
 - o Manual Operation
 - o Record Keeping
3. Detailed review of radiation protection, under direction of Radiation Safety Officer.
4. Detailed review of Radiation Safety Report for Gammacell 220 Facility
5. Visitor control procedures



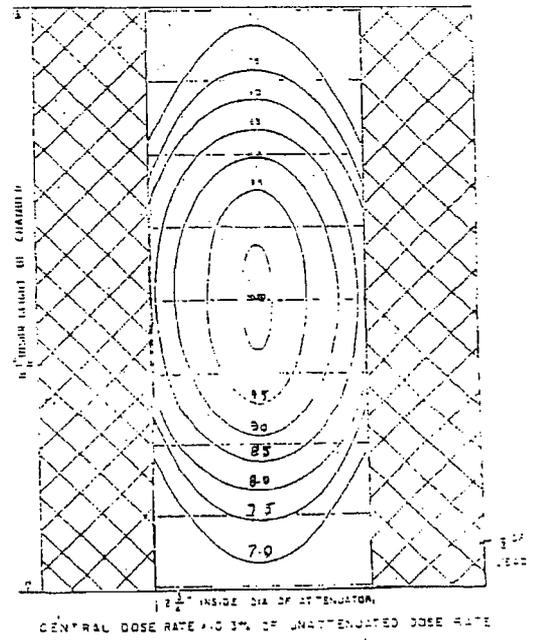
DRAWING No J300-X-5



J300-X-2



J300-X-3



J300-X-4

Figure 1-4 - Normalized Isodose Curves

(b)(4)

Figure 5 – Building 100 Complex

2/2/20

(b)(4)

Figure 6 - Radiation Effects Laboratory



MEMO

To: Bill Jackson, Plant Protection Center, M1141 Date: 10/12/92
 From: J. L. Andrews JSC 04 Room: M2215/100
 Subject: Radiation Laboratory Emergency Personnel Ext: 8*747-3840

GE Astro Space has a Radiation Effects Laboratory in Room (b)(4) Bldg 1000 at back of Bldg. 100) which contains two sealed radioactive sources (Gammacells).

An emergency situation affecting the Gammacells can exist under several conditions (see below) and requires notification of Emergency Personnel. Emergencies can affect personnel, prime hardware and GE property in the Bldg. 1000 vicinity.

The Emergency Personnel and location detail are shown below:

Position	Name	GE Location/Phone/Beeper	Home Phone
Radiation Safety Officer	John L. Andrews	M2215/x3840	
EHS Specialist	Donald J. Cheater	U2704/X3917/990	
Gammacell Operator	Lawrence J. Bruccoliere (b)(4)	x5902	
Fire Chief	Joseph Thompson	U2704/x2880/577-0576	

Your aid is requested to make the above notifications. Do not hesitate to contact me if there are any questions.

Potential Emergency Situations

- o High Radiation Levels
- o Fire

Distribution:

- Emergency Personnel
- IRAG Members
- Co-60 File
- Manager, Survivability Engineering
- Supervisor, Radiation Effects Laboratory

APPENDIX E
RADIATION EFFECTS LAB
EMERGENCY PERSONNEL

117305

FEB 19 1993

License No. 37-02006-09
Docket No. 030-12894
Control No. 117305

General Electric Company
ATTN: S. J. Mucha, M.D., Chairman
Imaging Radiation Advisory Group
P. O. Box 8555
Philadelphia, Pennsylvania 19101

Dear Dr. Mucha:

This is in reference to your request in a letter dated October 14, 1992, to renew License No. 37-02006-09. In order to continue our review, we need the following additional information:

1. Your current license identifies your cobalt sources as model numbers C-166 or C-168. In your renewal application, you identify the sources as models GS-290 and GS-398. We have no information concerning these sources. Please clarify.
2. You indicate in your application that operating and emergency procedures are available for personnel. Please provide a copy of the emergency procedures that are posted in the area of the irradiators.
3. Please confirm that you will not irradiate flammable or corrosive materials. For this purpose, flammable will mean any material with a flash point at a temperature below the temperature you expect irradiated products to reach during irradiation. However, in no case should any material with a flash point below 145 degrees Fahrenheit be irradiated. For this purpose, corrosive will mean any material with a pH less than 4.0 or greater than 10.0. You may propose different definitions if justification is provided.

We will continue our review upon receipt of this information. Please reply in duplicate to my attention at the Region I office and refer to Mail Control No. 117305. The reviewer for this licensing action is John R. McGrath. If you have any technical questions regarding this deficiency letter please call the reviewer at (215) 337-5245.

General Electric Company

-2-

In order to continue prompt review of your application, we request that you submit your response to this letter within 30 calendar days from the date of this letter.

Sincerely,

Original Signed By:
Francis M. Costello

Francis M. Costello, Chief
Industrial Applications Section
Division of Radiation Safety
and Safeguards

DRSS:RI
McGrath/amw

2/13/93

FM
DRSS:RI
Costello

2/18/93

NOV 25 1992

Docket No. 030-12894
License No. 37902006-09
Control No. 117305

General Electric Co.
Astro - Space Division
ATTN: S.J. Mucha, M.D., Chairman
P.O. Box 8555
Philadelphia, PA 19101

Dear Dr. Mucha:

Subject: LICENSE RENEWAL APPLICATION

This is to acknowledge receipt of your application for renewal of material(s) license identified above. Your application is deemed timely filed, and accordingly, the license will not expire until final action has been taken by this office.

Any correspondence regarding the renewal application should reference the control number specified above.

Sincerely,
Original Signed By:

Sheryl Villar, Chief
Licensing Assistance Section
Division of Radiation Safety
and Safeguards

RJV
11/25/92 *11/27/92*



GE Astro Space

Astro-Space Division
General Electric Company
P.O. Box 8555, Philadelphia, PA 19101
215 354-1000

October 14, 1992

Licensing Assistant Section
Nuclear Materials Safety Branch
US Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

030-12894
X

Re: Renewal of Irradiator License 37-02006-09, Program Code 03520

Dear Sir/Madam:

Attached are two copies of our application for renewal of the above referenced irradiator license for General Electric Co. Astro Space Division, 230 Goddard Boulevard, King of Prussia, PA 19406.

Also attached is a check for \$510.00 to cover the cost of this application.

I trust that you will find this application complete and in order. However, if there are any questions or if further clarification is necessary please contact Mr. John Andrews. Mr. Andrews has been appointed as the Radiation Safety Officer (RSO), replacing Mr. Charles Chilton. Mr. Andrews resume is attachment #2 of item #7.

Sincerely,

John S. Andrews, for S.J. Mucha

S. J. Mucha, M.D.
Medical Director
Chairman, Ionizing Radiation Advisory Group
:dde

- c: T. J. Allers
- J. L. Andrews
- C. B. Chilton
- L. C. Jeffers
- D. M. Sternberg
- M. E. West

117305

OCT 19 1992

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License Fee Information

NRC FORM 313
(3-82)
10 CFR 30, 32, 33,
34, 35 and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120
EXPIRES 6-30-93

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 3.25 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION
NUCLEAR MATERIALS SAFETY BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

NUCLEAR MATERIALS SAFETY SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION II
101 MARIETTA STREET, NW, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

MATERIAL RADIATION PROTECTION SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-8064

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

NUCLEAR MATERIALS SAFETY SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION V
1450 MARIA LANE
WALNUT CREEK, CA 94596-5369

030-12594
X

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- A. NEW LICENSE
- B. AMENDMENT TO LICENSE NUMBER _____
- C. RENEWAL OF LICENSE NUMBER 37-02006-09
Program Code 03520

2. NAME AND MAILING ADDRESS OF APPLICANT (Includes Zip Code)

General Electric Co., Astro Space Division
P. O. Box 8555
Philadelphia, PA 19101
Attn: John Andrews

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED.

General Electric Co., Astro Space Division
230 Goddard Boulevard
King of Prussia, PA 19406

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

John Andrews

TELEPHONE NUMBER

215-354-3840

SUBMIT ITEMS 5 THROUGH 11 ON 8 1/2 x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY 3E AMOUNT ENCLOSED \$ 510.00

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE - CERTIFYING OFFICER

John Andrews for S.J. Mucha

TYPED/PRINTED NAME

S. J. Mucha, M.D.

TITLE

Chairman, Ionizing Radiation Advisory Group

DATE

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS
Renewal	Nov 10	3E	
AMOUNT RECEIVED	CHECK NUMBER		
\$510	117528		

APPROVED BY

Mac

DATE

11-19-92

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Item 5

Radioactive Material to be Processed

A. Isotope:

Cobalt - 60

B. Type of Sources:

Two Nordion International (formally AECL) sources in irradiators.

- (1) GS-290 source
- (2) GS-398 source

C. Amount of Radioactive Material at Any One Time:

(b)(2)High

curies maximum for each at any one time
(current total inventory is less than (b)(2)High)

D. Type and Model Number of Irradiators:

- Serial Number 157 (Source GS-290)
Nordion Gammacell 220 Irradiator
GE #NX^{(b)(4)}8256
Contains (b)(2)High Curies of Cobalt, 60 as slugs in 34 pencils
(May 10, 1977)
- Serial Number 186 (Source GS-398)
Nordion Gammacell 220 Irradiator
GE #A27680
Contains (b)(2)High Curies of Cobalt, 60 as slugs and pellets in 16 pencils.
(September 13, 1989)

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Item 6

Purpose(s) for Which Licensed Material Will be Used

Both Irradiators are used for development and production studies on the response of various electronic components and materials to radiation exposure.

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Item 7

Individuals Responsible for Radiation Safety Program.
Their Training & Experience

Prior to the start of any new activity with radioactive sources, all operations must be reviewed and approved by the Ionizing Radiation Advisory Group (IRAG) according to General Electric's mandatory safety procedures.

The current members of IRAG are as follows:

<u>Attachment #</u>	<u>Status</u>	<u>Name</u>	<u>Title</u>
1	Chairman	S. J. Mucha, M.D.	Medical Director
2	R.S.O.	John Andrews	Principal Development Engineer
3	Member	Tim Allers, CIH	Sr. Industrial Hygienist
4	Member	C. B. Chilton	Principal Health & Safety Specialist
5	Member	D. M. Sternberg	Mgr., Electrical Systems Engineering
6	Member	Mike West	Mgr., EHS

Resumes detailing training and experience with radioactive materials for each of the above individuals are attached. (Attachments 1 through 6)

The individual assigned oversight of the daily operation of the Gammacells is Mr. J. L. Andrews, Principal Development Engineer. Mr. Andrews has 30 years experience with irradiators at this and other General Electric facilities.

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Item 7

Attachment 1
Resume

Stephen J. Mucha, M.D., F.A.C.S.
Medical Director

A. Education:

B.S. Degree in Biology from Franklin & Marshall College,
Lancaster, PA

M.D. Degree from the University of Pennsylvania, School of Medicine,
Philadelphia, PA

B. Experience:

- Medical Director, General Electric Co., Astro Space Division, King of Prussia, PA & Private Practice
- Chairman, Department of Surgery, Naval Regional Medical Center, Philadelphia, PA
- Assistant Chief of Surgery, U.S. Naval Hospital, Philadelphia, PA
- Chief of Surgery, U.S. Naval Hospital, Camp Lejeune, NC
- Assistant Chief of Surgery,
- General Surgical Residency, U.S. Naval Hospital, Philadelphia PA
- Internship rotating at U.S. Naval Hospital, Philadelphia, PA

C Memberships:

- Radiation Committee, Naval Regional Medical Center, Philadelphia, PA
- Disaster Committee, Naval Regional Medical Center, Philadelphia, PA

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Item 7

Attachment 2
Resume

John L. Andrews
Principal Development Engineer

A. Education:

S.B. Degree in Physics, Massachusetts Institute of Technology
M.S. Degree in Nuclear Science and Engineering,
Rensselaer Polytechnic Institute

B. Experience:

- GE Astro Space Division, King of Prussia, PA
Principal Development Engineer
- GE Space Systems Division, King of Prussia, PA
Systems Development Engineer
- GE Space Division, King of Prussia, PA
Supervising Physicist
- GE Spacecraft Department, King of Prussia, PA
Radiation Effects Engineer
- GE Advanced Nuclear Systems Operation, King of Prussia, PA
Nuclear Systems Engineer
- GE Radiation Effects Laboratory, Syracuse, NY
Experimental Physicist
- GE, Aircraft Nuclear Propulsion Department, Evendale, OH
Nuclear Test Engineer

Twenty-five years experience in project supervision performing nuclear survivability studies principally on semiconductor electronics and shielding for various aerospace programs. Thirty-three years experience in radiation measurement, damage analysis and shielding for a wide variety of nuclear environments. Sixteen years experience in operation of AECL Gammacell Model 220 Irradiators.

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Item 7

Attachment 3
Resume

Timothy J. Allers, CIH
Sr. Industrial Hygienist

A. Education:

M.S. in Industrial Hygiene, University of Southern California
B.S. in Community Health Education, State University of New York at
Brockport
A.S. in Liberal Arts Science, State University of New York at Cobleskill

B. Experience:

- GE Astro Space, King of Prussia, PA
Sr. Industrial Hygienist
- International Business Machines, Fishkill, NY
Industrial Hygienist
- Mercy College, Dobbs Ferry, NY
Adjunct Professor
- Hughes Aircraft Co., Torrance, CA
EHS Engineer

C. Memberships:

- American Industrial Hygiene Association (AIHA)
- NYCON (AIHA)
- American Academy of Industrial Hygiene
- Semiconductor Safety Association

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Attachment 4
Resume

Charles B. Chilton
Principal Health & Safety Specialist

A. Education:

Graduate Studies, Temple University, Philadelphia, PA
M.S. in Industrial Hygiene, Temple University, Philadelphia, PA
B.S. in Agricultural Engineering Virginia Polytechnic Institute,
Blacksburg, VA

B. Experience:

- GE Astro Space
Safety Manager
- Borg-Warner Corporation
Safety Manager
- Celanese Corporation
Safety Supervisor
- Factory Insurance Association
Fire Protection Engineer
- U.S. Army
Colonel/Instructor

C. Memberships:

- ASSE
- NFPA
- AIHA

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Item 7

Attachment 5
Resume

Daniel M. Sternberg
Manager, Electronic Systems Engineering

A. Education:

B.S.in Electrical Engineering, University of PA, Moore School of Electrical Engineering, Philadelphia, PA

B. Experience:

- GE Astro Space, King of Prussia, PA
Manager, Electronic Systems Engineering
- US NRC, Region V, Walnut Creek, CA
Chief, Reactor Projects Branch
Chief, Reactor Operations Section
- US NRC, Region I, King of Prussia, PA
Reactor Inspector
- GE RESD, Philadelphia, PA
Electrical Project Engineer
- US Navy
Communications, Sonar, Electrical, and Reactor Controls Officer

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Item 7

Attachment 6
Resume

Michael E. West
Manager, Environmental, Health & Safety Department

A. Education:

Graduate Studies, University of Charleston, Charleston, WV
A.S. in Engineering, North Virginia Community College, Annandale, VA
B.S. in Civil Engineering, Virginia Polytechnical Institute, Blacksburg, VA

B. Experience:

- GE Astro Space, King of Prussia, PA
Environmental, Health & Safety Manager
- Exxon Company, Bayonne, NJ
Senior Environmental Engineer
- Exxon Company, Huston, TX
Staff Environmental Engineer
- Exxon Company, Charleston, WV
Facilities Engineer
- Exxon Company, New Orleans, LA
Drilling Engineer

C. Member:

- NFPA
- Virginia State Board of Architects and Professional Engineers

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Item 8

Training for Individuals Working in or Frequenting Restricted Areas

Gammacell operators and their supervisors are required to have knowledge of radiation commensurate with the radiological health problems involved in the use of the irradiators. No one other than approved operators or escorts are permitted to enter the Gammacell Room unless specifically authorized by the Radiation Effects Supervisor and escorted.

The original Gammacell operators received detailed instruction in the safe use of this equipment from the manufacturers (AECL) when the first unit was installed in 1976. This information has been passed on in the form of the on-the-job training of new operators. The manufacturers' instructions were repeated in 1992 when the Gammacells were relocated to their present site.

All individuals required to frequent the Radiation Effects Lab are provided with formal radiation safety training. Participative lecture, completion of assigned readings, and on-the-job instruction in combination are used to provide radiation safety training. Topics included in the training program are; (1) the principles and fundamentals of radiation safety and good safety practices related to the use of radioactive materials, (2) the use of radiation detection instruments, and (3) the design and operation of the irradiator.

The competency of an operator is verified by various methods. The most common method is observed operation under the supervision of an authorized operator. The unit manager then certifies to the IRAG that the new user has demonstrated the capability to perform the required work safely. Observation by the RSO is also used as a means of verifying operator competency.

A current list of authorized Gammacell operators is maintained by the Radiation Effects Laboratory. The number of operators is currently ten (10), geared to the current utilization of the Gammacells.

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Item 9

Facilities & Equipment

The Gammacell irradiator facility is located within the Building 100 Complex of the Valley Forge Space Center. The address for the Building 100 Complex is 230 Goddard Boulevard, King of Prussia, PA 19406.

Figure 1 - Floor plan of Radiation Effects Laboratory within Building 100 Complex.

Figure 2 - Floor Plan of interior of Radiation Effects within Building 100 Room

Figure 1:

The Building 100 complex is secured by

(b)(2)High

Figure 2:

The irradiators are located in a secured area of Building 100. Normal access is controlled to the general laboratory area by a (b)(2)High Access to the irradiator room is controlled by a (b)(2)High door. The Gamma Room has 8 ft. high heavy concrete walls of (b)(2)High thickness. These walls were designed for a two Gammacell total source inventory of (b)(2)High Curies to ensure the adjacent public area radiation levels are kept below 100 milliRem/yr.

(b)(2)High

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Work stations within the radiation lab have been located to minimize radiation exposures (ALARA). The Gamma room has warning signs on its door pertinent to the radiation hazards.

An access list is maintained of personnel authorized to possess the combination to the cipherlock at location B. Personnel on this list shall have the prior approval of the Ionizing Radiation Advisory Group (IRAG). When an individual is removed from the list, the cypherlock combination will be changed.

Certain personnel, as approved by the RSO shall have the authority to admit visitors to the irradiator room. A visitors log is maintained and unique radiation monitor badges are issued before entering the Gammacell area.

Keys to operate the Gammacells are secured at all times when not in use.

Fire Protection Configuration:

The room where the two irradiators are located is equipped with an automatically operated fire protection central system (wet sprinkler system) that is adequate to protect the integrity of the irradiators and sources in case of a fire. Also, an automatic water flow central alarm is in place which is supervised by the Plant Protection Center and monitored 24 hours a day.

RADIATION
EFFECTS
LABORATORY

(b)(2)High

UNCLASSIFIED

(b)(4)

FEET

HALLWAY

Figure 2— Radiation Effects Laboratory

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Item 10

Radiation Safety Program

10.1 Personnel Monitoring Equipment

Just inside Ramp Area 2 on Figure 2 is the radiation dosimeter badge station. No one is permitted access to the Gammacell room unless they are wearing a dosimeter badge. This requirement is strictly enforced.

Currently we are utilizing thermoluminescent personnel body dosimeters and finger ring dosimeters supplied by R. S. Landauer, Jr. and Company, 2 Science Road, Glenwood, IL. The dosimeters are exchanged quarterly, and accumulated dose records are kept of all workers and visitors who have a need to be within the Radiation Effects Laboratory. Dose records are provided to employees on an annual basis.

R. S. Landauer, Jr. and Co. holds current personnel dosimeter accreditations from the National Laboratory Accreditation Program of NIST.

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10.2 Radiation Detection Instruments

Radiation detection instrumentation is available on site to perform such survey's that are necessary to evaluate the extent of radiation hazards that may be present and to comply with NRC regulations. Table 1 lists the instruments that are available to determine normal radiation levels in the room housing the irradiators and in adjacent unrestricted areas.

These instruments are calibrated to within $\pm 20\%$ of actual values over the range of the instrument on an annual basis and after servicing. Calibration records will be maintained for a minimum of two (2) years after each calibration.

Table 1
Radiation Instrumentation

<u>Type</u>	<u>Number Available</u>	<u>Radiation Detected</u>	<u>Ranges</u>	<u>Window Thickness</u>	<u>Use</u>
Nuclear Measurements Corp. PC-55	1	Alpha Beta Gamma	0/99,000K counts	Windowless Gas Flow Counter	Measuring Swipes
Victoreen Model 470A	1	Alpha Beta Gamma	0/3, 10, 30, 100, 300 1000 mR/hr and R/hr	17 mg/cm ² 500 mg/cm ²	Surveying
Victoreen Model 471	1	Alpha Beta Gamma	0/1, 3, 10, 30, 100 300 mR/hr and R/hr	0.6 mg/cm ² 500 mg/cm ²	Surveying
Eberline Geiger Counter Model E 520	1	Alpha Beta Gamma	.01/200 mR/hr		Surveying
Ludlum Model 18	1	Alpha Beta	0/500,000 CPM	0.8 mg/cm ²	Surveying

All calibration is currently performed by Radiation Management Consultants (RMC), EIN #23-2401158, located at 5301 Tacony Street, Box 208, Philadelphia, PA 19137. RMC telephone number is 215-537-0672.

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10.3 *Leak Test*

Leak tests are performed with swipes to determine if there is any leakage from the sealed sources in the irradiators at 6 month intervals. The measurement of the leak test sample is determined by quantitative measurement and is sufficiently sensitive to detect 0.005 microcuries of activity. A windowless proportional counter, NMC PC-55, is used to make these measurements.

Leak test samples are taken and measured by personnel within the EHS Office under the direction of the RSO.

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10.4 Surveys

Long term radiation levels at the perimeter of the Radiations Effects Laboratory ("restricted area") are performed using TLD type personnel dosimeter badges (see 10.1) with readouts on a quarterly basis. These surveys, combined with lay out and shield design constitute compliance with NRC Regulations to be effective on January 1, 1993. Survey records are retained for at least three (3) years.

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10.5 *Operating & Emergency Procedures*

All personnel who use the irradiators are provided with written operating and emergency procedures. The IRAG Gammacell Radiation Safety Report is conspicuously placed in the gamma room and contains all the necessary instructions. Our procedures include the following topics:

1. Irradiator step-by-step operations. These operations include recording data on daily radiation monitoring and a record of each Gammacell operation.
2. Occupational dose exposure and record keeping.
3. Methods to ensure only authorized persons will use the irradiators.
4. Inspections, test procedures, and maintenance to ensure that all safety equipment is functioning properly. Modifications to the irradiators are prohibited without prior RSO approval.
5. Emergency situations. The continuously manned Plant Protection Center is tasked with instructions for any emergency potentially affecting the Gammacells.

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10.6 Repairs

Repairs or alterations involving removal of shielding or access to the licensed material will be performed only by the supplier or others specifically licensed by the NRC. Removal, replacement and disposal of sealed sources shall be performed only by persons specifically licensed by the NRC, or an Agreement State, to perform such services.

Any repairs not described above and normal maintenance shall be conducted according to manufacturer direction and noted in the Maintenance Log.

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Item 11

Waste Disposal

11.1 Authorized Waste Disposal

Due to the intended use of the irradiators, the generation of radiological waste is not expected. In the event of leaking source(s), Nordion International will provide for repair/disposal. Contaminated smears and the like will be disposed of by transfer to a licensee specifically authorized to receive it in accordance with applicable regulations.

11.2 Transportation of Irradiators

For purposes of repair or other unspecified reasons, transportation will be done in accordance with 10 CFR Part 71, "Packing and Transportation of Radioactive Material."

: (FOR LFMS USE)
 : INFORMATION FROM LTS
 :

: PROGRAM CODE: 03520
 : STATUS CODE: 2
 : FEE CATEGORY: 3E
 : EXP. DATE: 19921130
 : FEE COMMENTS:

: DECOM FIN ASSUR REQD: Y
 :

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
 AND
 REGIONAL LICENSING SECTIONS

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED
 APPLICANT/LICENSEE: GENERAL ELECTRIC CO.
 RECEIVED DATE: 921019
 DOCKET NO: 3012894
 CONTROL NO.: 117305
 LICENSE NO.: 37-02003-09
 ACTION TYPE: RENEWAL

2. FEE ATTACHED
 AMOUNT: ~~\$510.00~~
 CHECK NO.: ~~117328~~

3. COMMENTS

SIGNED Rebecca J. Brown
 DATE 10/20/92

8. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED)

7. FEE CATEGORY AND AMOUNT: 3E \$510

6. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
 AMENDMENT _____
 RENEWAL _____
 LICENSE _____

5. OTHER _____

SIGNED Crutchfield
 DATE 11-19-92

1992 OCT 22 AM 11:42