NRC Form 374
(5-84)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Amendment No. 42

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, 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	
1. General Electric Company Space Systems Division Valley Forge Space Center	In accordance with application dated July 26, 1989, 3. License number 37-02006-05 is amended in its entirety to read as follows:
2. P.O. Box 8555 Philadelphia, Pennsylvania 19101	4. Expiration date December 31, 1994
	5. Docket or Reference No. 030-06046

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. Any byproduct material with Atomic Numbers 3 through 83, except for Strontium 90	A. Sealed sources	A. Not to exceed 10 curies per source and 75 curies total
B. Any byproduct material with Atomic Numbers 3 through 83, except except for Krypton 85	B. Any	B. 20 curies total except for: Iodine 129- 100 millicuries Iodine 131- 330 millicuries Iodine 125- 800 millicuries Phosphorus 32- 1.5 curies Strontium 90- 2.5 curies
C. Any byproduct material with Atomic Numbers 3 through 83	C. Neutron irradiated electronic components	C. 2 curies
D. Krypton 85	D. Any	D. 45 curies
E. Strontium 90	E. Sealed sources	E. 10 curies
F. Polonium 210	F. Any	F. 0.6 curies
G. Americium 241	G. Sealed sources	G. 4 curies
H. Uranium 235	H. Sealed sources	H. 4.7 grams
I. Plutonium 238	I. Sealed sources	I. 6 milligrams total in 5 sources
J. Plutonium 239	J. Sealed sources	J. 10 micrograms total in 2 sources
K. Plutonium 239	K. Sealed sources	K. 6 micrograms total in 4 sources
L. Hydrogen-3	L. Any	L. 100 curies

F-17

OFFICIAL RECORD COPY ML 10

9. Authorized use

A. through G. Research and development as defined in 10 CFR 30.4(g).
H. through K. For storage and calibration of instruments.
L. For storage or for use in gas chromatographs for sample analysis.

10. Licensed material may be used at facilities of the licensee located at the Valley Forge Space Center, 230 Goddard Boulevard, King of Prussia, Pennsylvania and ancillary facilities located on Third, Fifth and Vandenburg Avenues and on Allendale Road; 3198 Chestnut Street, D and Luzerne Streets, 401 E. Hunting Park Avenue, Skeats Hi Power Lab, Test Cell No. 6 and Lab Building 20, 7500 Lindbergh Boulevard, Philadelphia, Pennsylvania; Satellite Assembly Building, Cape Canaveral Air Force Station, Cape Canaveral, Florida; Vandenburg Air Force Base, California, and at temporary job sites of the licensee anywhere in the United States where the U. S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.

11. A. Licensed material shall be used by, or under the supervision of, individuals designated by Ionizing Radiation Advisory Group, Dr. S. J. Mucha, Chairman.

B. The Radiation Safety Officer for this license is Alfred W. Kobylinski.

12. Licensed material shall not be used in or on human beings or in field applications where activity is released except as authorized by specific condition of this license.

13. A(1) Each sealed source or detector cell acquired from another person and containing licensed material, other than hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for contamination and/or leakage before use. In the absence of a certificate from a transferor indicating that a test has been made within 6 months before the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.

(2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source or detector cell is exempt from such leak tests when the source or detector cell contains 100 microcuries or less of beta and/or gamma emitting materials or 10 microcuries or less of alpha emitting material.

(3) Except for alpha sources, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage before any use or transfer to another person unless they have been leak tested within 6 months before the date of use or transfer.

(13. Continued) CONDITIONS

B. Each sealed source or detector cell fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to use or transfer as a sealed source or detector cell. If the inspection or test reveals any construction defects or 0.005 microcurie or greater of contamination, the source shall not be used or transferred as a sealed source or detector cell until it has been repaired, decontaminated and retested.

C. Each sealed source containing licensed material, other than hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed 6 months except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed 3 months.

D. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or detector cell or from the surfaces of the device in which the sealed source or detector cell is permanently or semipermanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

E. If the test required by Subsection A. or C. of this condition reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source or detector cell from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U. S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406, describing the equipment involved, the test results, and the corrective action taken.

14. In lieu of using the conventional radiation caution colors (magenta or purple on yellow background) as provided in Section 20.203(a)(1), of 10 CFR Part 20, the licensee is hereby authorized to label detector cells and cell baths, containing licensed material and used in gas chromatography devices, with conspicuously etched or stamped radiation caution symbols without a color requirement.

15. Detector cells containing titanium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 225 degrees Centigrade.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 37-02006-05

Docket or Reference number 030-06046

Amendment No. 42

(Continued) CONDITIONS

16. Detector cells containing scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 325 degrees Centigrade.

17. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 2 years from the date of each inventory.

18. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material".

19. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days for decay-in-storage before disposal in ordinary trash provided:

    A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.

    B. Before disposal as normal waste, radioactive waste shall be surveyed to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.

20. 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 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 July 26, 1989

Date DEC 21 1989

For the U.S. Nuclear Regulatory Commission
Original Signed By:
By John D. Kinneman
Nuclear Materials Safety Branch
Region I
King of Prussia, Pennsylvania 19406

DEC 21 1989

License No. 37-02006-05
Docket No. 030-06046
Control No. 111087

General Electric Company
ATTN: Alfred W. Kobylinski, RSO
Aerospace
P.O. Box 8555
Philadelphia, Pennsylvania 19101

Gentlemen:

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) 337-5239, 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.

OFFICIAL RECORD COPY ML 37-02006-05/LTR - 0001.0.0
09/20/89

ML 10

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

Sincerely,

Original Signed By:
John D. Kinneman
Michael A. Lamastra
Nuclear Materials Safety Section B
Division of Radiation Safety
and Safeguards

Enclosures:
1. Amendment No. 42
2. Requirements for Materials Licensees

RI
Lamastra/bj
11/20/89

OFFICIAL RECORD COPY ML 37-02006-05/LTR - 0002.0.0
09/20/89

GE Aerospace

General Electric Company
P.O. Box 8555, Philadelphia, PA 19101

030-06046

April 12, 1990

U.S. Nuclear Regulatory Commission
Division of Radiation Safety and Safeguards
Region 1
475 Allendale Road
King of Prussia, PA 19406

References: Byproduct Licence 37-02006-05
Source Licence SUB-831
Irradiator Licence 37-02006-09

Dear Sir or Madam:

The General Electric Co., Aerospace Group requests an amendment to each of the above licences to effect the following change:

1) Delete the name Alfred W. Kobylinski as Radiation Safety Officer

2) Insert the name Charles B. Chilton as Radiation Safety Officer.

A copy of Mr. Chilton's resume of experience with radioactive material is attached.

Also attached is a check for $1190.00 to cover the cost of each amendment according to the following schedule:

Licence	Category	Amount
37-02006-05	1D and 3L	$610
37-02006-09	3E	210
SUB-831	2C	370
Total		$1190

If there are any questions relative to this request, please contact Charles Chilton at 354-4570.

Sincerely,

R. J. Mucha

S. J. Mucha, M.D., Chairman
Ionizing Radiation Advisory Group

/ezb

U.S.N.R.C. FEE MGMT. BRANCH

'90 MAY -7 A10:29

RECEIVED

Log May 10
Remitter
Check No. R 205769 ($1,190)
Amount $120 Surplus 1159 to 112460
Fee Category 1D 3L
Type of Fee A M D
Date Check Rec'd. 5/4/90
Date Completed
By

Refunded #830

112458

MAY 01 1990

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CHARLES B. CHILTON, MANAGER
INDUSTRIAL SAFETY AND HYGIENE

Education

B.S. - Virginia Polytechnic Institute, Blacksburg, VA
Agricultural Engineering

M.S. - Temple University, Philadelphia, PA
Industrial Hygiene

Certified Safety Professional - #1410

Registered Professional Engineer in Safety Engineering
State of California - #676

Work Experience

U.S. Army - 6 months active duty, 30 years active reserve
Rank of Colonel.

Taught/attended numerous chemical, biological, radiological (CBR) courses

Factory Insurance Association - Fire Protection Engineer - 5 years

Celanese Corporation - Safety Supervisor - 5 years

Borg-Warner Corporation - Safety Manager - 1 year

General Electric Company - Safety Manager - 20 years

Memberships

ASSE

NFPA

AIHA

AIA

Supervised HP activities 20 years

Attended numerous HP short courses (U.S. Army, AIHA)

Completed two graduate level HP courses (Temple university)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 18 1990

General Electric Company
CBSI-GE Aerospace
Dept-480
P.O. Box 33010
Lakeland, FL 33807-3010

REFUND OF APPLICATION FEE

1. BACKGROUND:

Check Received May 7, 1990

Application Dated April 12, 1990

Check Number R205769

Check Amount $1,190

2. REFUND:

Amount $830

This refund is now being processed and will be sent as soon as possible.

3. REASON FOR REFUND:

Overpayment of amendment fees for application dated April 12, 1990 for Licenses SUB-831, 37-02006-05, and 37-02006-09 as specified in fee Categories 2c ($120), 3L ($120), and 3E ($120) of Section 170.31, 10 CFR 170.

NOTE: THE ENCLOSURE 10 CFR 170 CONTAINS THE COMMISSION'S CURRENT SCHEDULE OF MATERIALS LICENSE FEES. IF YOU HAVE ANY QUESTIONS CONCERNING THE FEES TO BE SUBMITTED WITH FUTURE APPLICATIONS, PLEASE CONTACT US AT 301-492-4650.

Maurice Messier 5/17/90
License Fee and Debt Collection Branch
Division of Accounting and Finance
Office of the Controller

Enclosure: 10 CFR 170

ABOVE CLASS C SOURCE/DEVICE INVENTORY SURVEY

Licensee's (name and address) **License #:** 37-02006-05

Licensee Name: General Electric Co. Aerospace
Contact Name: Alfred W. Kobylinski
Title: Radiation Safety Officer
Department: Astro Space Division Valley Forge & Reentry Systems Department
Street: 230 Goddard Blvd
City: King of Prussia **State:** PA **Zip Code:** 19406
Phone Number: (215) 354-1085 **Ext.:** 1085

Provide accurate and complete responses to each question below:

1) How many sealed sources and/or devices do you have that are above Class C (i.e. Am-241 > 27 mCi, Pu-238 or -239 > 27 mCi, Cm-244 > 27 mCi, Cs-137 > 910 Ci, or any other transuranic > 27 mCi with a half-life greater than five years)? Identify each source or device on the attached inventory sheet.

2) How do you dispose of your sources and/or devices? (check appropriate box)

Manufacturer: ✓
Transfer to another licensee: ✓
Other: ___

If other, please elaborate: ~~No Sealed Sources disposed~~

3)a. Are you able to find and use an authorized recipient to purchase, dispose, or store any sources and/or devices that you no longer want? (check one) Yes ___ No X

If no, please elaborate: We have been unable to identify any organization that will accept the 3, 30 mCi Pu-238 sources including the manufacturer, DOE, or any other private licensee.

b. Are there any diffculties in using this authorized recipient? (check one) Yes ___ No ___

If yes, please elaborate: ___

4) Additional comments - check here ___ and use back of this sheet.

Surveyor: Alfred W. Kobylinski **Date:** 10/31/89

Note: Activity levels described in question 1 were derived from limits established in 10 CFR 61 section 61.55. The levels were based on typical size sources.

License #: 37-02006-05

ABOVE CLASS C SOURCE/DEVICE INVENTORY SHEET

Manufacturer	Model #	TYPE	Isotope	Activity mCi or Ci	Use	Active	Inactive	Explanation
Amersham Searle	PPC-5		Pu-238	30 mCi	G		T	
Amersham Searle	PPC-5		Pu-238	30 mCi	G		T	
Amersham Searle	PPC-5		Pu-238	30 mCi	G		T	
Amersham Searle	X-93		Am-241	1 Ci	G		T	

NOTE: List each source/device separately. If inactive or use is other, please explain.

CODES:

Isotope: Am-241, Cm-244, Cs-137, Pu-238, Pu-239

Inactive: D - Damaged; L - Lost; T - Wants to dispose or transfer; DT - Damaged and wants to dispose or transfer; X - Surplus; O - Other

Use: A - Well logging; B - Irradiator; C - Teletherapy; D - X-ray fluorescence; E - Portable gauges; F - Fixed gauges; G - Broad licenses; H - Pacemakers; I - Waste brokers; O - Other

GE Aerospace

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

October 31, 1989

U.S. Nuclear Regulatory Commission
Region 1
Safety Section B
475 Allendale Road
King of Prussia, PA 19460

Attn: John Jensen

Re: **Byproduct License 37-02006-05**

Attached is the completed copy of our "Above Class C Source/Device Inventory Survey." I apologize for the poor quality of the form, but that is the way it came through on the fax machine.

Although we have several other plutonium, americium, cesium and transuranic sealed sources, we have determined that only the four sources listed meet the criteria indicated in Question One of the form or in 10 CFR 61.55 as greater than Class C wastes.

As indicated on the form, we have no further use for any of the sources listed but have been unable to identify any appropriately licensed facility that is willing to accept them. This includes the manufacturer and the DOE.

If there are any further questions regarding this matter, please contact the undersigned at 354-1085.

Alfred W. Kobylinski

Alfred W. Kobylinski, Radiation Safety Officer
Senior Industrial Hygienist
Industrial Safety & Hygiene

AWK/ezb
cc: S. J. Mucha, M.D.
C. B. Chilton
D. M. Sternberg

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406

AUG 10 1989

DOCKET NO. 030-06046

LICENSE NO. 37-02006-05

CONTROL NO. 111087

General Electric Co.
Aerospace
ATTN: S. J. Mucha, M.D., Medical Director
Chairman, Ionizing Radiation Advisory Group
P. O. Box 8555
Philadelphia, PA 19101

SUBJECT: LICENSE RENEWAL APPLICATION

Gentlemen:

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 and your license number.

Sincerely,

Original Signed By:
Doris J. Foster

Doris J. Foster, Chief
Licensing Assistant Section
Division of Radiation Safety
and Safeguards

OFFICIAL RECORD COPY MI 10

030-06046

GE Aerospace

X

General Electric Company
P.O. Box 8555, Philadelphia, PA 19101

July 26, 1989

U.S. Nuclear Regulatory Commission
Medical, Academic and Commercial Use Safety Branch
Division of Industrial and Medical Nuclear Safety
Region 1
475 Allendale Road
King of Prussia, PA 19406

Re: **License Renewal Application 37-02006-05**
Program Code 03610

Dear Sir or Madam:

Attached are two copies of our license renewal application for the above-referenced license.

Also attached is a check for $1,050.00 to cover the cost of a 1D and a 3L application.

If there are any questions or comments concerning this application, please contact our Radiation Safety Officer, Mr. Al Kobylinski, at (215) 354-1085.

Sincerely,

S. J. Mucha

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

cc: C. B. Chilton
D. M. Sternberg
A. W. Kobylinski

[illegible] for information
application.

111087

JUL 27 1989

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NRC FORM 313
(10-87)
10 CFR 30, 32, 33, 34, 35 and 40

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 8-30-90

APPLICATION FOR MATERIAL LICENSE

030-06046

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.

APPLICATIONS FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
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:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIALS SAFETY SECTION B
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406

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

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

IF YOU ARE LOCATED IN:

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
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:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
NUCLEAR MATERIALS SAFETY SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

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 JURISDICTION.

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

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [X] C. RENEWAL OF LICENSE NUMBER 37-02006-05

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

General Electric Co.
Aerospace
P. O. Box 8555
Philadelphia, PA 19101

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

See Attachment 1.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Alfred W. Kobylinski

TELEPHONE NUMBER: (215) 354-1085

SUBMIT ITEMS 5 THROUGH 11 ON 8½ 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 1D & 3L
AMOUNT ENCLOSED $ 1,050.00

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	TYPED/PRINTED NAME	TITLE	DATE
Alfred W. Kobylinski	Alfred W. Kobylinski	Radiation Safety Officer	7/26/89

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY
Ren	Aug-3-I	1D, 3L		[illegible]
AMOUNT RECEIVED	CHECK NUMBER			DATE
$1050	R 174623		111087	8/7/89

OFFICIAL RECORD COPY

General Electric Co. - Aerospace
Renewal Application-037-02006-05
July 1989

ATTACHMENT 1

ITEM 3. Address where licensed material may be used:

a. Valley Forge Space Center, 230 Goddard Blvd., King of Prussia, PA 19406, and ancillary facilities in King of Prussia on Third and Vandenburg Avenues, on Allendale Road and Pulaski Road; the ancillary facilities include, but are not limited to, the following:

   i. CC&F Bldg. 8, 780 Third Avenue
   ii. Bldg. B, 751 Vandenberg Road
   iii. Bldg. 21, 970 Pulaski Road

b. 3198 Chestnut St., Phila., PA 19101

c. D & Luzerne Sts., Phila., PA 19140

d. 401 E. Hunting Park Ave., Phila., PA 19140

e. Temporary job sites including, but not limited to, the following:

   i. Satellite Assembly Bldg., Cape Canaveral Air Force Station, Cape Canaveral, Florida
   ii. Vandenburg Air Force Base, CA 93437
   iii. 600 Main Str., Johnson City, NY 13902

General Electric Co. - Aerospace
Renewal Application-037-02006-05
July, 1989

ITEM 5. Radioactive Material

Line No.	Element and Mass No. A	Chemical &/or Physical Form B	Maximum Activity per Source and Total C
1	Any byproduct material with Atomic Nos. 3 thru 83 inclusive, except Strontium-90	Sealed	10 Curies maximum per source and 75 Curies total
2	Any byproduct material with Atomic Nos. 3 thru 83 inclusive, except Krypton-85	Any	20 Curies maximum total except for: Iodine-129 - 100 millicuries Iodine-131 - 330 millicuries Iodine-125 - 800 millicuries Phosphorus-32 - 1500 millicuries Strontium-90 - 2500 millicuries
3	Any byproduct material with Atomic Nos. 3 thru 83 inclusive	Neutron-irradiated electronic components	2 Curies total
4	Hydrogen-3	Any	100 Curies total
5	Krypton-85	Any	45 Curies total
6	Strontium-90	Sealed	10 Curies total
7	Uranium-235	Sealed	4.7 grams total
8	Plutonium-238	Sealed	5 sources, 6 milligrams total
9	Plutonium-239	Sealed	3 sources, 1 milligram total
10	Americium-241	Sealed	4 Curies total

ITEM 6. Use of Licensed Material

The by-product material cited in 5.A, will be used for research and development as defined in section 30.4 of 10 CFR 30. The material, cited in A.(1), will also be specifically used for instrument calibration, for density measurements, and for electron capture detection in gas chromatographs; the material, cited in 5.A (2), will also be specifically used for instrument calibration; the material, cited in 5.A.(4), will also be specifically used for instrument calibration and as foils for gas chromatographs; the material, cited in 5.A (5), will also be specifically used for leak detection and for density measurements; the material, cited in 5.A (6), will also be specifically used for density measurements and for instrument calibration; the material, cited in 5.A (10), will also be specifically used for instrument calibration.

The by-product material, cited in 5.A, will be stored in their original shipping containers or in lead brick caves when not in use.

(1) Frequently, it is necessary to possess a large fraction of this total possession limit in one or two specific radionuclides; in the past, this has been the case for selenium-75 (New England Nuclear Model No. NER-8110, 5 sources, 5 Curies each).

Several times each year, sealed sources with activities of several Curies each are installed in re-entry vehicles so that measurement of ablation during flight can be made. Pre-installation calibration procedures using the sources are performed at location 3.a. and 3.b. Final installation is performed usually at location 3.b. In some cases, installation is performed at a launch facility of the U.S. government.

An experimental density gauge at location 3.a. is used to test carbon billets and formed carbon specimens. The source used is a 100 millicurie cobalt-60 source (3M Co., model 4F3B, 1 source).

Instrument calibration and instrument testing using a wide variety of sealed sources in the microcurie and low millicurie range are performed at all locations listed in attachment 1.

ITEM 6. Use of Licensed Material (Continued)
(1) Cont'd

Nickel-63 will be used as foils in electron capture detectors for gas chromatographs. Three detectors with foils will be used in location 3.a. Two of the detectors are made by Varian, and their kit numbers are: 02-000956-000 and 02-001972-000. The third detector is made by Tracor for their Model MT-150 gas chromatograph. These detectors contain 8, 8, and 135 millicuries of nickel-63, respectively. They will be used in gas chromatogrpahs with a 400-degrees-centigrade upper temperature limit.

Ba-133 sources, with 30 microcuries per source activities, are used as instrument calibration sources at locations 3.a. and 3.e.i.

(2) Frequently, it is necessary to possess a large fraction of this total possession limit in one or two specific radionuclides; in the past, this has been the case for tantalum-182 (8 sources, 0.3 Curies each).

Large unsealed sources are installed in re-entry vehicles for measurement of ablation during flight. This type of operation is performed several times each year. The physical form of these sources is always that of a solid, as a wire, ribbon, etc. The chemical form varies but is usually elemental or a carbide. The types and locations of work activities are identical to those enumerated above for sealed sources for the same application.

Various large specimens of structural and electronic gear, exposed at the U.S. Government underground testing site in Nevada or at a reactor facility, are given post-test examinations at locations 3 a. and 3 b. These specimens undergo mostly nondestructive testing and examination. When infrequent destructive testing or examination is required, it is performed at location 3 a. in a facility designed for control of airborne radioactivity.

There are numerous solid, macro-sized, unsealed sources used for instrument calibration and instrument testing at locations 3 a. and 3 b. These sources are in the microcurie and low millicurie range.

Also, there are numerous solid, macro-sized, unsealed sources used for beta thickness gauges at location 3.b.

ITEM 6. Use of Licensed Material (Continued)
(2) Cont'd

At present, there are no liquid, gaseous, or powdered sources in use under this category. There are some liquid sources of calcium-45, sulfur-35, and phosphorus-32 in storage.

(3) The by-product material will be used for evaluating radiation effects. All of the induced activity is firmly fixed in the structure of the electronic components and the boards to which they are attached. Most of the operations performed with these items are nondestructive and are performed at locations 3 a., 3 b. and 3 e. When an infrequent destructive test is required, it is performed at location 3 a. in a facility designed for control of airborne radioactivity.

(4) In the past, tritium (as a gas and as calcium tritide) was employed in experiments involving the measurement of water vapor and calibration of instruments. None of the sources for this application are in use, and they are currently in storage.

Presently, one tritium foil in an electron capture detector for a gas chromatograph is being used in location 3 a. This is an Electron Capture Inc. unit (Model No. 2-2837) containing 200 millicuries. Several tritium electron capture detector units are in storage. Detector cells containing tritium shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperature from exceeding 225 degrees centigrade.

(5) The following sealed sources are presently in storage: five 1 millicurie Kr-85 sources (4/68) (I. Lite Co., Self Luminous Light Source Set, Model GL867, SN31) and one 100 mCi Kr-85 source (9/68) (3M, Model 4E4L, SN3047).

Krypton-85 gas is also used for leak testing of spacecraft as described in GE's letter of March 27, 1980, to the U.S.N.R.C. A copy of this letter is attached.

(6) An experimental density gauge at location 3 a. is used to test carbon billets and formed carbon specimens. The sources used are 81, 100 or 150 millicurie sealed Co-60 sources.

Instrument calibration and instrument testing using a wide variety of sealed sources in the microcurie and low millicurie range are performed at all locations listed in 3.

ITEM 6. Use of Licensed Material (Continued)
(6) Cont'd

A 10 Curie (4/66) Strontium-90 source (3M, Model SrY-90 Beta Irradiator) is in storage at location 3 a.

(7), (8)& (9) These materials are used for instrument calibration.

(10) The by-product material, cited in 3 A. (10), will be used for instrument testing and instrument calibration. Two sealed sources (Radiation Materials Corporation, Model No. LE.2, 10 millicuries and Radiation Materials Corporation, Model No. AR.5, 0.11 microcuries) will be used at location 3 a.

One sealed source (6.1 microcuries, New England Nuclear, Model No. NES 128S) will be used at location 3 b.

One sealed source (2 Curies (1/71), Amersham/Searle, Type X-93), is stored at location 3 a.

ITEM 7

Individuals Who Will Use or Directly Supervise the Use of Licensed Material

Prior to the start of any work with radioactive materials, all operations involving radioactive materials must be approved by the Ionizing Radiation Advisory Group (IRAG) according to mandatory safety procedure M-6.

A copy of M-6 is enclosed. This document includes: policy statement and responsibilities and procedures (for all personnel working with ionizing radiation, for their supervisors, for their managers, for the IRAG, and for each member of the IRAG). Also included in M-6 are the responsibilities and procedures for procuring, receiving, using, transporting, and disposing radioactive materials.

Current members of the IRAG are as follows (resumes enclosed):

Chairman:	S. J. Mucha, M.D.	- Medical Director
Member:	C. B. Chilton	- Mgr. of Industrial Safety & Hygiene
Member:	D. M. Sternberg	- Mgr. Electronic Systems Engineering
Secretary:	A. W. Kobylinski	- Senior Industrial Hygienist Radiation Safety Officer

ITEM 7

Resume

STEPHEN J. MUCHA, M.D., F.A.C.S.
MEDICAL DIRECTOR

A. **Education:** ETP

(b)(6) - B.S. Degree in Biology from Franklin & Marshall College Lancaster, Pa.

1956 - M.D. Degree from the University of Pennsylvania, School of Medicine, Philadelphia, Pa.

B. **Post Graduate Training:**

1956-1957	Internship rotating at U.S. Naval Hospital, Philadelphia, Pa.
1957-1961	General Surgical Residency, U.S. Naval Hospital, Philadelphia, Pa.
1961-1964	Assistant Chief of Surgery, U.S. Naval Hospital, Camp Lejeune, N.C.
1964-1967	Chief of Surgery, U.S. Naval Hospital, Roosevelt Roads, Puerto Rico.
1967-1971	Assistant Chief of Surgery, U.S. Naval Hospital, Philadelphia, Pa.
1971-1978	Chairman, Department of Surgery, Naval Regional Medical Center, Philadelphia, Pa.
1978-	Medical Director, General Electric Company, FESD, Philadelphia, Pa. Private Practice.

C. **Memberships:**

1971-1978	Chairman, Disaster Committee, Naval Regional Medical Center, Philadelphia, Pa.
1971-1978	Member, Radiation Committee, Naval Regional Medical Center, Philadelphia, Pa.
1978-1986	Member, Ionizing Radiation Advisory Group, General Electric Co., Philadelphia, Pa.
1987-	Chairman, Ionizing Radiation Advisory Group, General Electric Co., Philadelphia, Pa.

ITEM 7

Resume

CHARLES B. CHILTON
MANAGER, INDUSTRIAL SAFETY & HYGIENE

A. **Education:**

B.S. - Virginia Polytechnic Institute, Blacksburg, Va. - Agricultural Eng.
M.S. - Temple University, Philadelphia, Pa. - Industrial Hygiene
Certified Safety Professional - #1410
Registered Professional Engineer in Safety Engineering, State of Calif. - #676

B. **Work Experience:**

U. S. Army - 6 months active duty, 30 years active reserve, rank of Colonel.
Taught/attended numerous chemical, biological, radiological (CBR) courses.
Factory Insurance Association - Fire Protection Engineer - 5 years
Celanese Corporation - Safety Supervisor - 5 years
Borg-Warner Corporation - Safety Manager - 1 year
General Electric Company - Safety Manager - 19 years

C. **Member:**

ASSE
NFPA
AIHA
AIA

Supervised HP activities 19 years.
Attended numerous HP short courses (U.S. Army, AIHA).
Completed 2 graduate level HP courses (Temple University).

ITEM 7

Resume

DANIEL M. STERNBERG
MANAGER, ELECTRONIC SYSTEMS ENGINEERING

Professional Experience:

1983 - Present: Manager, Electronic Systems Engineering
Manager of a group of 17 very senior electrical systems engineers involved with all electronic aspects of strategic missile re-entry systems. Typical areas of responsibility include telemetry and tracking, electrical power and distribution, command and control, nuclear weapons safety, radar signal processing, test equipment and flight data analysis.

In addition to managerial responsibilities, I have served on a number of "Tiger Teams" charged with correcting a program experiencing technical, cost or schedule difficulties. I am also called upon to participate in the preparation and review of vital proposals responding to government RFPs.

1981 - 1983: Chief, Reactor Projects Branch
United States Nuclear Regulatory Commission
Region, V Walnut Creek, California

Responsibility for management of inspection program at operational and construction activities, West Coast nuclear power plants. Included was overall branch budgeting, supervision of 2 supervisory, 20 senior technical and 5 administrative personnel, and long-range planning in Reactor Projects. Regional Telecommunications Coordinator and member, ADP Users Group.

1979 - 1981: Chief, Reactor Operations Section, USNRC - Region V

Management of inspection program at operating and pre-operational nuclear plants. Immediate supervisor for 10 Senior Reactor Inspectors and 3 clerical personnel. Position included recommending program changes, recruiting staff, providing oral and written testimony before government and professional bodies.

ITEM 7

Resume (cont.)

DANIEL M. STERNBERG
MANAGER, ELECTRONIC SYSTEMS ENGINEERING

1974 - 1979: Reactor Inspector, USNRC - Region I, King of Prussia, PA

Project Inspector for Boiling Water Reactors, planning program, conducting on-site inspections, and coordinating work of various specialists.

1969 - 1974 Electrical Project Engineer

General Electric Re-Entry and Environmental Division Philadelphia, Pennsylvania

Instrumentation and Communications Subsystem Engineer on Minuteman III Mk 12 Re-entry Vehicle program, responsible for design change support, telemetry data reduction, troubleshooting, and flight test support.

1964-1969: Officer, United States Navy

Completed Navy Nuclear Power School, Reactor Prototype - EOOW Qualification, and Officers Submarine School. Served aboard Polaris submarine as Communications, Sonar, Electrical, and Reactor Controls Officer during four patrols and an 18-month refueling overhaul.

Education: BSEE - (b)(6) University of Pennsylvania, Moore School of Electrical Engineering, Philadelphia, PA. Class Standing: 10 of 42.

E46

ITEM 7

Resume

ALFRED W. KOBYLINSKI
SENIOR INDUSTRIAL HYGIENIST
RADIATION SAFETY OFFICER

A. **Education:**

M.S. - Occupational Health (Industrial Hygiene)
Drexel University, Philadelphia, PA - 1980

B.S. - Biology, Pennsylvania State University
University Park, PA - (b)(6)

- Occupation & Environmental Radiation Protection, August 1985, Harvard School of Public Health, Boston, MA
- Short courses in Radiation Science, January 1987, Rutgers University, New Brunswick, NJ
- Several additional professional development courses dealing with radiation safety presented by the American Industrial Hygiene Association and other professional organizations.

B. **Work Experience:**

1974-1976	Toxicology Technician Ayerst Laboratories, Animal Health Division Chazy, NY 2921 Assisted in the operation of diagnostic x-ray equipment used for the examination of laboratory animals.
1976-1978	Research Technician Physiology Department, Thomas Jefferson University Philadelphia, PA 19107 Performed cardiovascular physiology studies utilizing radioactive tracer microspheres labelled with SR^{85}, Ce^{147} and I^{125}. Responsible for: safe handling and use microspheres, conducting surveys to determine radiation levels in lab area, and for the determination of and safe disposal of all contaminated materials.
12/79-present	Industrial Hygienist General Electric Company, RESD King of Prussia, PA 19406 Under the direction of the Ionizing Radiation Advisory group, I have functioned as Radiation Safety Officer for all activities covered by 3 U.S. NRC and 1 Pennsylvania license.

ITEM 7

Resume (cont.)

ALFRED W. KOBYLINSKI
SENIOR INDUSTRIAL HYGIENIST
RADIATION SAFETY OFFICER

ISOTOPE	MAXIMUM AMOUNT	LOCATION	DURATION	TYPE OF USE
Cerium-147	4 millicuries	Thomas Jefferson University	1.5 years	Medical Research
Strontium-85	4 millicuries	Thomas Jefferson University	1.5 years	Medical Research
Iodine-125	4 millicuries	Thomas Jefferson University	1.5 years	Medical Research
Cobalt-60	(b)(4)	General Electric Company	1980-present	Gamma Irradiation Calibration
Krypton-85	20 curies	General Electric Company	1980-present	Leak Tests
Strontium-90	10 curies	General Electric Company	1980-present	Irradiation Source
Plutonium-238	90 millicuries	General Electric Company	1980-present	Calibration
Plutonium-239	microcuries	General Electric Company	1980-present	Calibration
Cesium-137	100 millicuries	General Electric Company	1980-present	Calibration Source
Americium-241	millicuries	General Electric Company	1980-present	Research
Uranium-235	microcuries	General Electric Company	1980-present	Research
Uranium-238	microcuries	General Electric Company	1980 present	Research
Natural Thorium	100 kilograms	General Electric Company	1980-present	Structural Material

ITEM 8. Training for Individuals Working In or Frequenting Restricted Areas

Training for individual employees required to work in restricted areas is accomplished through a combination of on the job instructions and formal classroom training.

The classroom training is conducted by the radiation safety officer or an authorized member of his staff. A brief outline of the general topics covered is as follows:

I. Introduction and definitions of terms

II. Basic atomic structure

III. Ionizing versus non-ionizing radiation

IV. Review of the elctromagnetic forms of ionizing radiation

V. Review of the particulate forms of ionizing radiation

VI. Relative penetrating abilities of EM and particulate radiation

VII. Unit of measure

Curie
Roentgen, RAD, REM
Calculations involving the above units

VIII. Measurements and dosimetry

IX. Standards for exposure
ALARA
NRC Parts 19 & 20
Pennsylvania DER regulations
GE company policy

X. Internal versus external exposure

ITEM 8. Training for Individuals Working In or Frequenting Restricted Areas (Cont'd)

XI. Health effects

Chronic vs. acute exposure
Theories on low level exposures

XII. Background radiation

XIII. Personnel protection

Time
Distance
Shielding

XIV. Emergency procedures

XV. Signs, forms, labels, etc.

The above outline is modified to fit the needs of employees, working in various areas involving different processes and equipment. Typically the formal training session can last for one and a half hours to several hours depending on the background and experience of the individuals being trained. At the time of the formal training employees are provided with copies of 10 CFR Parts 19 & 20, the GE Aerospace policy on ionizing radiation and a short reference text on ionizing radiation.

Following the classroom instructions, supervisory personnel are required to provide detailed on the job instruction to individuals under their direction. The on-the-job instruction includes radiation safety awareness. Supervisors are required to observe new personnel as they perform their designated tasks and to report training deficiencies to the Ionizing Radiation Advisory Group.

During routine inspections the radiation safety officer, his staff and the members of the IRAG observe employees conducting tasks involving radioactive material. Deficiencies in training are noted and corrective actions implemented.

ITEM 9. Facilities and Equipment

GE Aerospace has shielding, shielded source containers, shielded rooms, handling equipment (tongs, forceps, etc.), fume hoods, gloveboxes, high-efficiency filtration systems, and other equipment utilized for the control of radioactive materials. The IRAG may require new facilities and equipment, and may require modification of existing facilities and equipment, in order to maintain personnel exposure levels as low as reasonably achievable. The IRAG utilizes the criteria found in various recommendations of national and international groups and regulatory guides to determine the facility and equipment requirements for a particular use.

I. Specific Facilities

A. Health Physics Storage Vault

Room T596 at Chestnut Street is used as the health physics storage area. A sketch of the room is attached. Pertinent dimensions are as follows:

North wall:	12" solid concrete block
South wall:	16" solid concrete block
West wall:	12" solid concrete block
East wall:	16" solid concrete block plus 8" cinder block
Ceiling:	5" concrete
Floor:	room is on level; earth beneath floor
Room elevation:	14'

This room is secured by a combination lock and hasp on the door.

B. Airborne Radioactivity Control Room

As mentioned before, it is occasionally necessary to perform dust producing operations on radioactive material (Usually low specific activity specimens). These operations are performed in Room U8604 of Building 100 King of Prussia. A sketch of the room is attached.

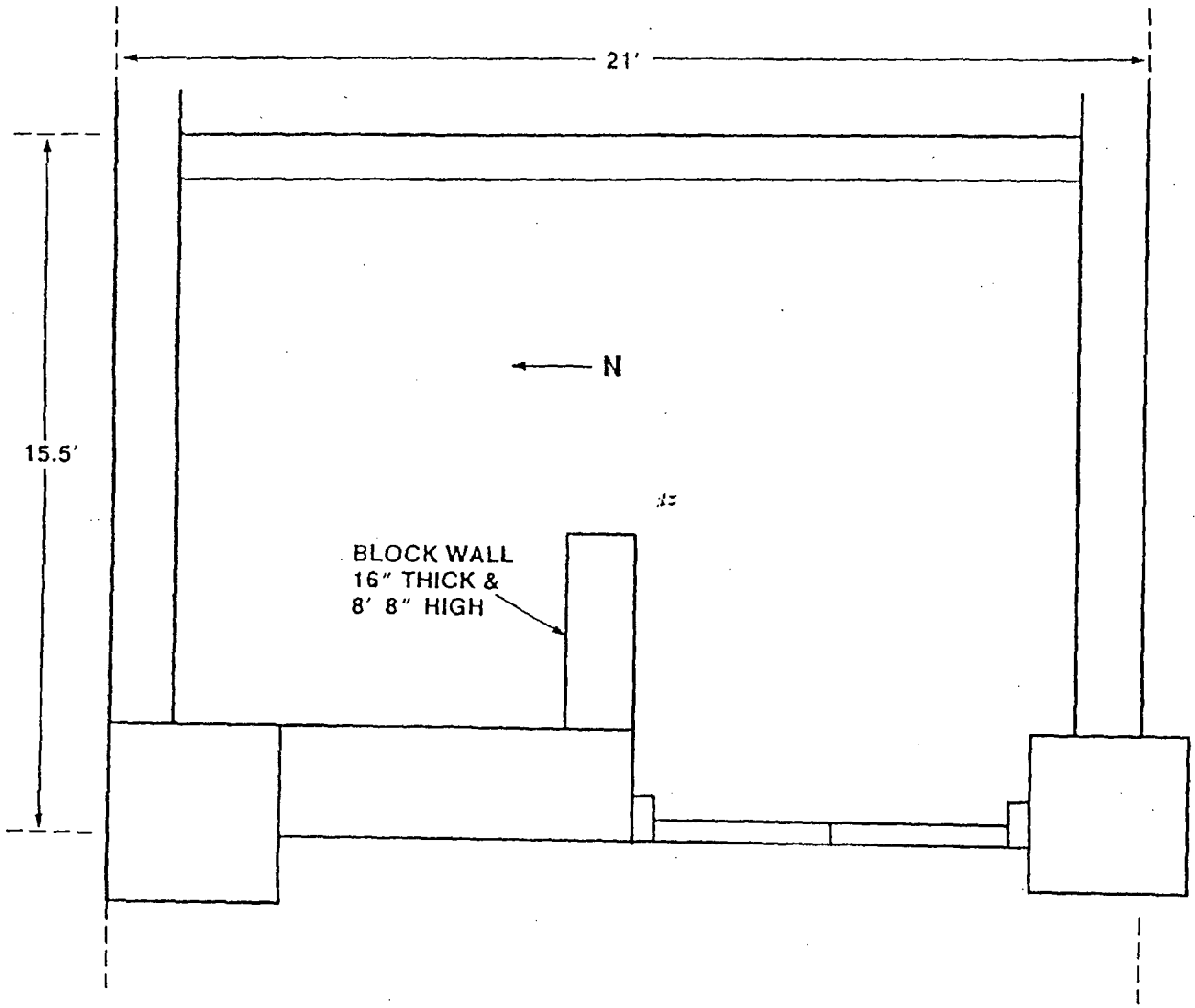
In this room, two hoods and one glovebox are connected to an absolute filter unit. When both doors to the two hoods are two-thirds closed, the face velocity is greater than 100 fpm at each opening.

Entry into this room is controlled by a cypherlock.

HEALTH PHYSICS STORAGE AREA
ROOM T596 – CHESTNUT STREET

MEDICAL SERVICES

CSSD



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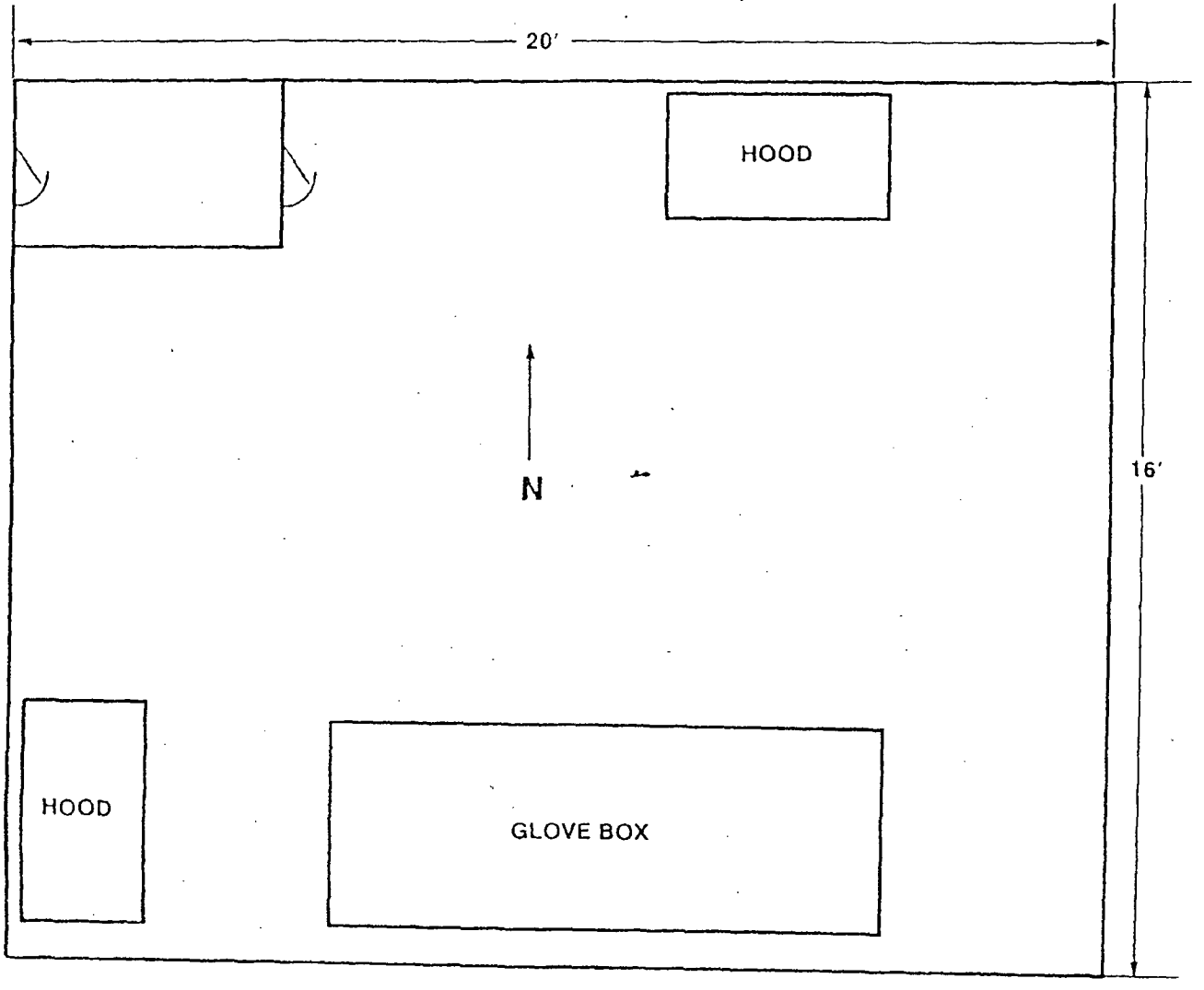
AIR-BORNE RADIOACTIVITY CONTROL ROOM
ROOM U8604 – KING OF PRUSSIA

MEDICAL SERVICES
CSSD



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ITEM 9. Facilities and Equipment
(Cont'd)

C. Radioactive Material Use Lab

Attached is a plan view of Room U8614 of Building 100 in King of Prussia. The glovebox and HEPA-filtered hood are shown; also, the location of lockable storage cabinet where small quantities of radioactive material are stored is indicated.

D. Health Physics Storage Vault - L1310 - Bldg. 100

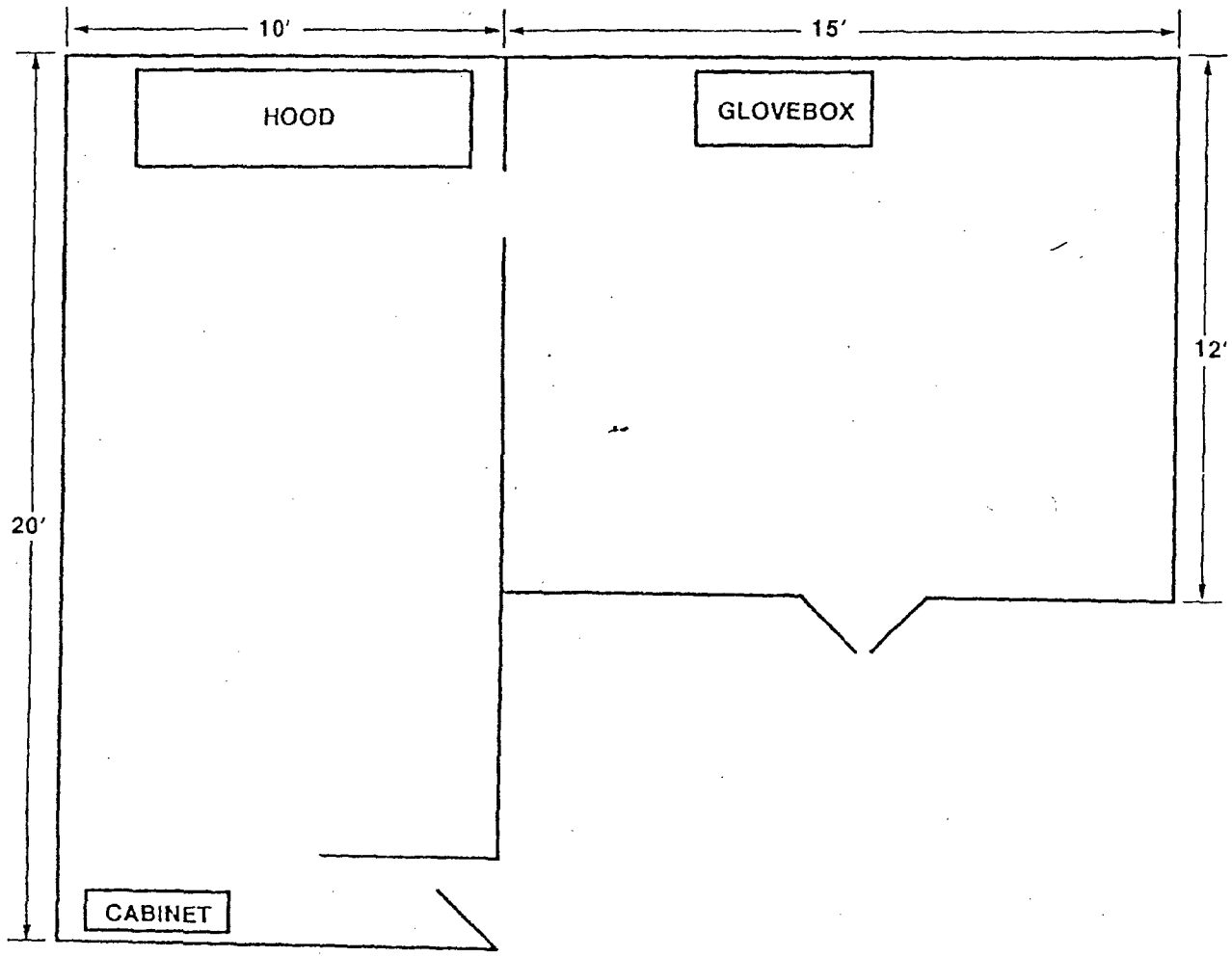
Attached is a sketch of the health physics storage vault, room L1310, Bldg. 100, King of Prussia. The inside dimensions of the room are 6.5 feet in length, 6 feet in width, and 8.25 feet in height. The walls are constructed of double-reinforced poured concrete with the following thicknesses: north, west, and east walls (10 inches) and south wall (13 inches). The steel door in the east wall has an equivalent thickness of approximately 0.125 inch of steel. The poured concrete floor is over earth. The roof, a six-inch-thick poured concrete slab, is covered by a 1.75 feet-thick layer of earth. The steel door has a keylock.

E. Krypton-85 Storage Facility

This facility is for storage only of Krypton-85 gas cylinders used for satellite propulsion system leak tests. The facility is located outside the west end of Building 100 (230 Goddard Blvd., King of Prussia, PA). The interior of the building is 13.5 feet long by 5 feet wide by 11.5 feet high. Solid concrete block walls 2 feet thick and 815 feet tall surround the facility. The top 3 feet of the facility, between the top of the block walls and the roof, is enclosed with expanded steel mesh which provides ventilation from the outside atmosphere.

RADIOACTIVE MATERIAL USE LAB
ROOM U8614 – KING OF PRUSSIA

MEDICAL SERVICES
CSSD



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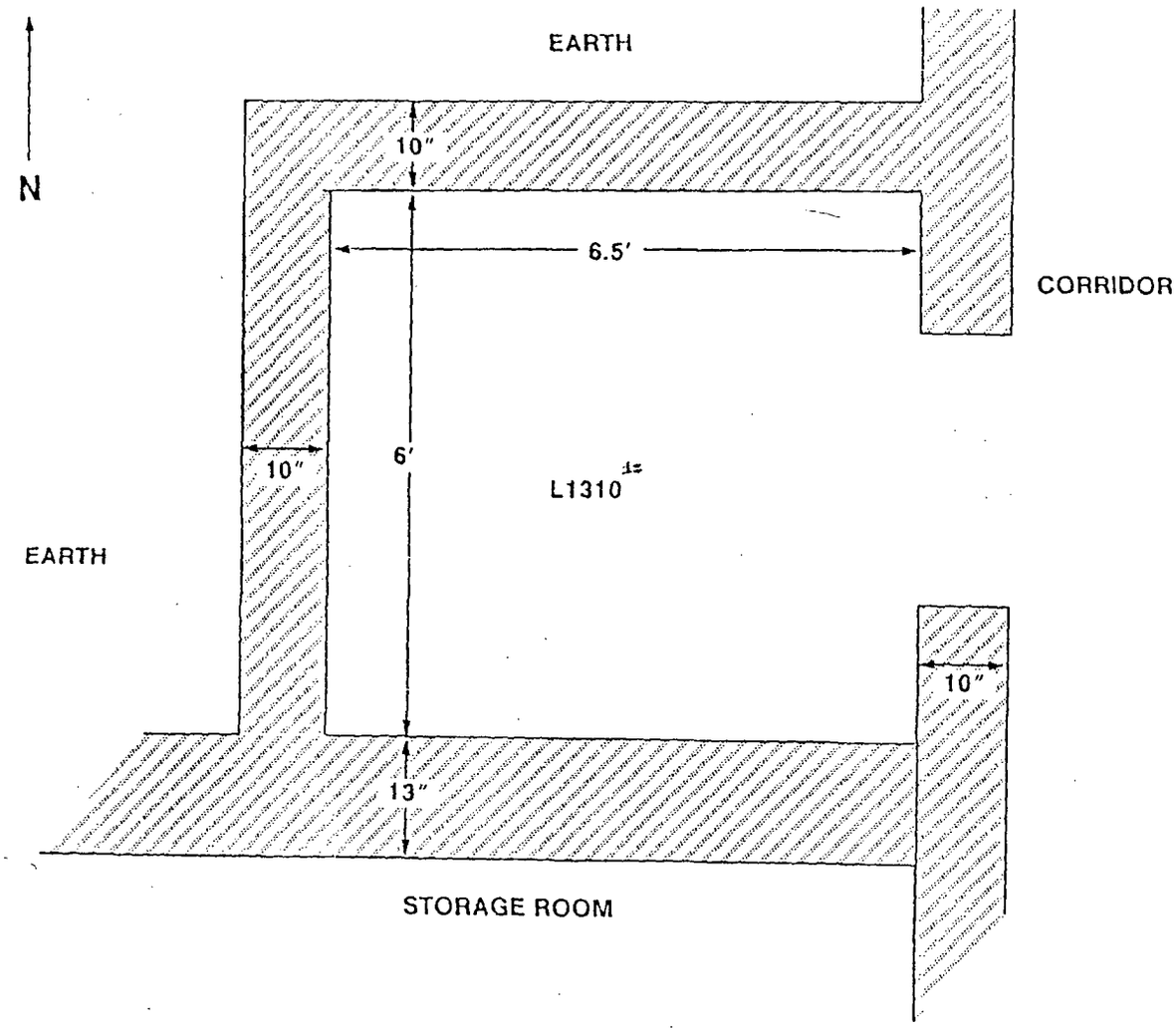
HEALTH PHYSICS STORAGE VAULT
L1310 BLDG 100 – VALLEY FORGE

MEDICAL SERVICES
CSSD



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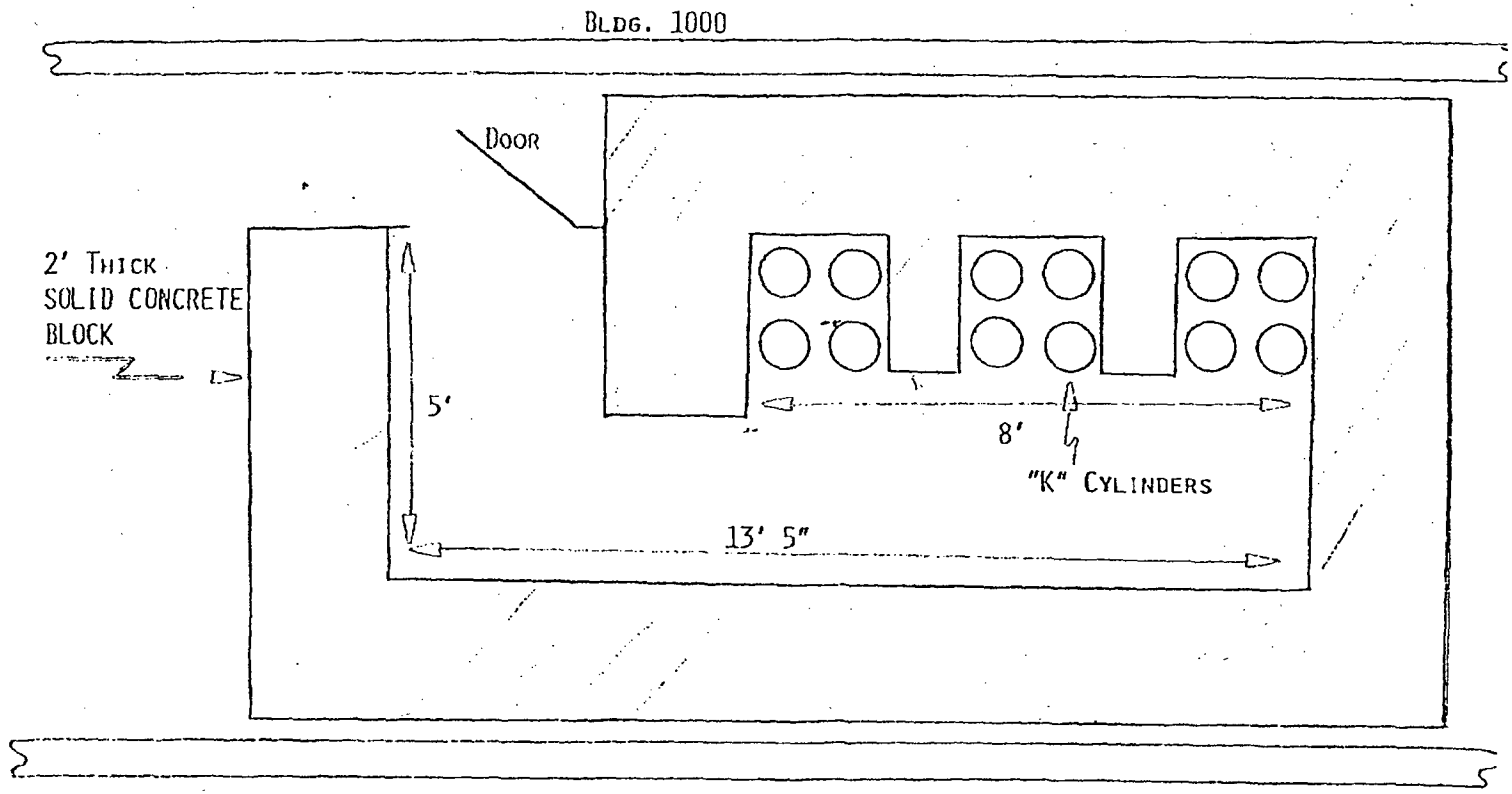
MEDICAL
SERVICES

CSSD

KRYPTON-85 STORAGE FACILITY



ITEM 9. Facilities and Equipment
(Cont'd)

F. Carbon Billet Density Guage Facility

An experimental density guage is used in this facility to test carbon billets and formed carbon specimens. Two walls are earth backed and about twelve inches thick (poured concrete). On a third side, a six-foot-high barrier of solid cinder block with a thickness of eight inches has been erected. A permanent wooden barrier has been erected in the two foot opening between the earth-backed wall and the cinder block barrier. A lab bench with a wooden gate (equipped with a lock) completes the enclosure of the radiation area. When the operator is not in attendance the sources are stored in locked/shielded containers and the door to the room is also locked.

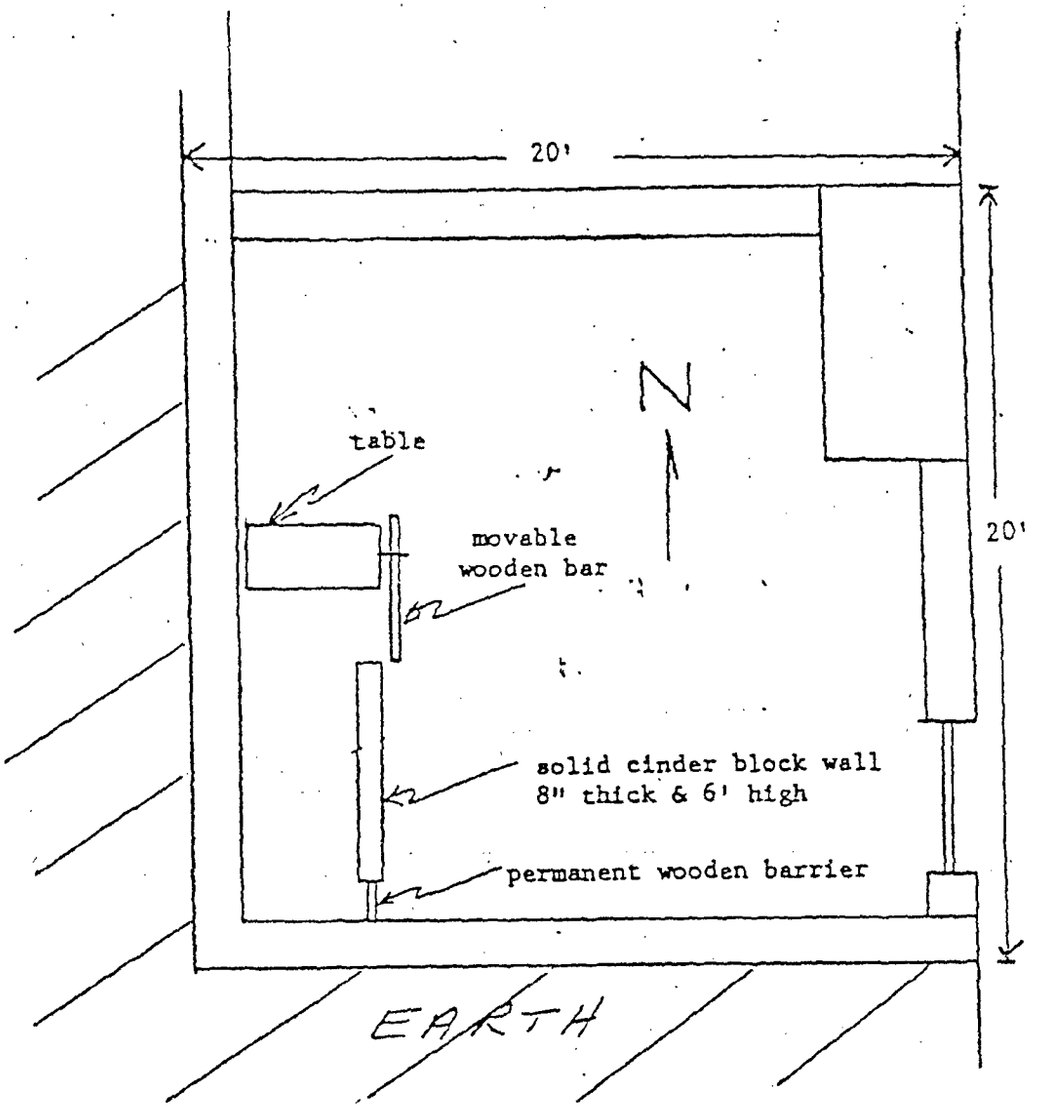
II. Air Sampling Equipment

UNICO Model 300, 6.7 cfm thru 4-inch diameter Whatman 41 filter, equipped with rotameter, one unit available.

Gelman Little Giant, 14 lpm (0.49 cfm) at vacuum load of 10 inches of mercury (from manufacturer's pressure-volume characteristic curve), one unit available.

DuPont Personnel Air Sampler, 2 pm (0.07 cfm), three units available.

Bendix Model 4-16003, 15 cfm thru 4-inch diameter Whatman 41 filter, equipped with gauge reading directly in cfm based on calibrated orifice principle.



CARBON BILLET DENSITY GUAGE

ROOM T9278 BLDG. 100 KING OF PRUSSIA

MEDICAL SERVICES
CSSD

ITEM 9

III Radiation Detection Instruments

RADIATION DETECTION EQUIPMENT	Q	RADIATION DETECTED	RANGES	WINDOW THICKNESS	USE
Nuclear Measurements Corp. Model PC-55 Proportional Counting System	1	Alpha, Beta Gamma	0-3500 kdpm	Windowless	Counting wipe samples and air filters
Victoreen Model 470A Air Ionization Survey Meter IC #610261	2 1	Alpha, Beta Gamma, X-ray	0-3, 10, 30 100, 300 1000 mR/hr and R/hr	17 mg/cm^2	Exposure rate surveys X-ray monitoring
Nuclear Measurements Corp. Model PC-4 Proportional Counting System	1	Alpha, Beta Gamma	0-3500 dpm	Windowless	Counting wipe samples and air filters
Eberline Model E-120 GM Survey	1	Beta, Gamma X-ray	0.5, 5, 50 mR/hr	30 mg/cm^2	Contamination determination and radiation surveys
Eberline Model E-520 GM Survey	2	Beta, Gamma	0-0.2, 2, 20, 200	30 mg/cm^2	Contamination determination and radiation surveys
Eberline Rm-20 Radiation Monitor	1	Alpha, Beta Gamma	1-500, x1 x10, x100, x1k	1.4 to 2.0 mg/cm^2	Contamination determination and radiation surveys
Victoreen Model 440 Air Ionization Survey Meter	1	Alpha, Beta Gamma, X-ray	0-3, 10, 30 100, 300 mR/hr	3.0 mg/cm^2	Exposure rate surveys

ITEM 9

III. Radiation Detection Instruments (cont.)

RADIATION DETECTION EQUIPMENT	Q	RADIATION DETECTED	RANGES	WINDOW THICKNESS	USE
Eberline Portable Lin-log Gas Proportional Counter Model PAC-4G-3	1	Low level Alpha, Beta	0-500 K cpm	0.85 mg/cm^2	Alpha detection
Eberline Teletector Model 6112	1	Gamma, Beta	0.1 mR/h to 1000 R/h	30 mg/cm^2	Gamma measurement, Beta detection, contamination determination
Victoreen Model 6870 Minometer II (Indirect-Reading Dosimeters 362 and 365)	1	X-ray, Gamma	0 40 mR or 0 200 mR		Detect and measure X and Gamma radiation
TLD - Radiation Dosimetry Service: R.S. Landauer Jr & Co. Tech/Ops Landauer, Inc. 2 Science Road Glenwood, IL 60425-1586	350	Beta, Gamma X-ray	Quarterly exchanged dosimeters used for whole body, extremity and area monitoring. Minimum measurable exposure of 10m Rem/Qtr for X and gamma rays and 40 m Rem/Qtr. for energetic Beta particles		Dosimetry

ITEM 10. Radiation Protection Plan

Uses of radioactive material under this license will extend to those uses permitted by NRC regulations and the NRC license and approved by the Ionizing Radiation Advisory Group (IRAG) which was established to meet the requirements for a broad scope license. Administrative control is achieved through use of mandatory procedure M-6, "Ionizing Radiation Control," of the Safety Manual.

The Safety Manual is established by Division Policies. Mandatory Procedure M-6, "Ionizing Radiation Control", establishes policy for use of ionizing radiation and authorities of the Ionizing Radiation Advisory Group.

Policies and Authorities

It is the policy of all components to keep the ionizing radiation exposure of all personnel as low as reasonably achievable (ALARA) and, in particular, below all existing federal, state, and company regulations.

All proposed uses of ionizing radiation shall be reviewed and prior written approval for use secured from the Ionizing Radiation Advisory Group consisting of at least 4 senior level employees. Presently the committee consists of:

Chairman:	Medical Director
Member:	Manager, Industrial Safety and Hygiene
Memeber:	Manager, Systems & Subsystems Performance Evaluation
Secretary:	Radiation Safety Officer

The composition of the IRAG currently is: S.J. Mucha M.D., Chairman; C.B. Chilton, Member; D.M. Steinberg, Member; A.W. Kobylinski, Secretary. Their resumes are attached under ITEM 7.

IRAG approval of a proposed use of ionizing radiation is contingent upon a satisfactory completion of a safety evaluation of the proposed use which takes into consideration such matters as the adequacy of facilities and equipment, training and experience of the user, and the operating or handling procedures.

ITEM 10. Radiation Protection Plan
(Cont'd)

All ionizing radiation machines and radioactive materials shall be procured, received, used, stored, handled, transported, transferred, or disposed in accordance with existing regulations and approvals (i.e., Nuclear Regulatory Commission, Commonwealth of Pennsylvania, General Electric Company, and the IRAG).

The IRAG may revoke any approval which it has issued when an investigation shows justification for such action. In such an event, the radiation user shall immediately relinquish all radioactive materials and ionizing radiation machines to the Radiation Safety Officer.

Accidents involving radioactive materials in which there is a possibility of ingestion or inhalation of radioactive materials or body contamination shall be reported immediately to the members of the IRAG. Accidental exposures (actual or suspected) in excess of the quarterly limits stated in M-6 shall be immediately reported to IRAG.

Control of potential radiation hazards will be achieved through the application of criteria in the NRC regulations and guidelines and supplemented by criteria in standards and guides of organizations such as ICRP, NCRP, ANSI, ACGIH, etc.

The specific control measures adopted will be commensurate with the potential hazard and will be based on the safety evaluation of the proposed use. The adequacy of these control measures will be monitored by a specific radiation survey program.

The IRAG does not contemplate approving any proposed use which would require (a) a respiratory protection program, (b) a routine bioassay program, (c) the generation of airborne radioactivity which would cause concentration levels in restricted areas greater than those specified in 10 CFR 20.103 (b) (1), or (d) the generation of airborne radioactivity which could cause concentration levels in unrestricted areas greater than a few percent of levels specified in 10 CFR 20.106 (a).

Responsibilities of the Radiation Safety Officer (RSO)

1. Providing radiation safety evaluation and assistance before, during, and at termination of proposed/approved uses.

ITEM 10. Radiation Protection Plan
(Cont'd)

2. Radiation safety orientation and training.

3. Ongoing evaluation of radiation hazards incident to receipt, use, storage, handling, transport, and disposal of radioactive materials by approved users (radiation survey program).

4. Ongoing evaluation of radiation safety procedures incident to procurement, receipt, use, storage, handling, transport, transfer, and disposal of radioactive materials by approved users (radiation inspection program).

5. Management of radiation safety records (surveys, inspections, material inventories, personnel exposures, and receipt, use, and disposal of materials).

6. Radioactive waste disposal.

General Radiation Protection Plan

I. Radiation Safety Evaluations

As mentioned previously, a safety evaluation is performed before approval of any use. Control measures are imposed on the approved use and are based on the preoperational evaluation. The appropriateness and adequacy of these control measures are operationally evaluated by the radiation survey and radiation inspection programs described later. A further safety evaluation is conducted at termination of an approved use which considers such matters as transfer or disposal of the balance of radioactive material and the contamination levels of material and the contamination levels of facilities and equipment.

II. Radiation Safety Orientation and Training

Personnel whose work involves potential exposure to ionizing radiation and their supervisors are expected to have knowledge of radiation safety commensurate with the potential radiological health problems involved in the proposed use. The requirements for instruction of individuals vary with the proposed use and with the experience of the individual. Personnel with prior similar experience are normally considered qualified by the IRAG. Personnel without the required prior experience receive instruction commensurate with the potential radiological health problems involved in the proposed use and in accordance with the requirements of 10 CFR 19.12.

ITEM 10. Radiation Protection Plan
II. (Cont'd)

The instructor normally is the radiation safety officer. However, with IRAG approval, other qualified persons have provided this training.

Participative lecture, completion of assigned readings, and on-the-job instruction, separately and in combination, have been used to provide radiation safety training, and the choice is based again on the proposed use and on the experience of the individuals. An orientation session can take anywhere from one to several hours. The competency of an authorized user is verified by various methods. The most common method is observed use under the supervision of an authorized and certified user. The supervising user then certifies to the IRAG that the new user has demonstrated the capability to perform the required work safely. Observation by the radiation safety officer has also been used as a means of verifying user competency. Oral or written tests are seldom used.

III. Radiation Survey Program

This involves measurements of levels of radiation or concentrations of materials present and the evaluation of the consequent radiation hazards incident to receipt, productions, use, release, shipping, handling, transport, disposal, or presence of radioactive materials under the specific set of conditions of approved use.

The survey program utilizes standard instrumentation and techniques in various combinations and at various frequencies depending on the types and degrees of potential exposure.

Frequency of surveys will ordinarily be greater during pilot studies, initial phases of routine operations, and when there is a change in operations which could increase levels of radiation or concentrations of radioactive material.

A. Air Sampling Surveys: Types include personnel (Lapel), restricted area, and unrestricted area, air sampling and can be performed pre--operationally, during pilot/initial operation, during routine/established operations, and when nature or degree of a routine/established operation changes. Unrestricted area air sampling should be performed at the release point and/or at the common boundary of the restricted and unrestricted areas and/or in the environment as appropriate to the specific approved use and release conditions.

ITEM 10. Radiation Protection Plan (Cont'd)

B. Surface Contamination Surveys: Surface types include personnel (ex. skin, hands, etc.), personnel protective clothing (ex. gloves, boots, etc.), equipment and tools, and facilities and plant surfaces. Surface contamination can be classified as fixed or removable. Fixed surface contamination can be measured during exposure/ radiation level surveys.

Removable surface contamination of areas and equipment where powdered and liquid radioactive materials are stored and used must be checked by smear/wipe surveys at a frequency based on wipe results, work activity, type of work activity, and type of radioactivity. Busy areas must be checked at least monthly. Busy areas of operations with a high incidence or risk of producing removable radioactive contamination must be surveyed daily or weekly by the material users as directed by the IRAG approved procedures.

Surface contamination evaluation should include unrestricted areas surrounding a restricted area which contains surface contamination requiring periodic surveys.

C. Surface Contamination Standards

Acceptable average surface contamination levels for unrestricted use of premises and equipment (dpm/100 cm^2) are as follows:

	Fixed	Removable
Transurancies, Ra-226	100	20
Th-nat, Th-232, Sr-90, U-232, I-131	1000	200
U-nat, & U-238 (and associated decay products)	5000	1000
Other beta/gamma emitters	5000	1000

ITEM 10. Radiation Protection Plan
III. (Cont'd)

D. Exposure/Radiation Rate Surveys

External radiation levels from concentrated radioactive sources and fixed surface contamination must be checked by direct radiation surveys at a frequency based on the external radiation hazard and quantity of the radioactive material involved, work activity, and type of work activity. Low and medium risk areas must be surveyed at least monthly, and high risk area, daily or weekly, by the material users as directed by the IRAG approved procedures.

E. Effluent Monitoring

Effluent monitoring for releases to unrestricted areas: for airborne effluents, calculational evaluations, calculational evaluations supplemented by stack monitoring, or other environmental monitoring is required as appropriate for any planned and potential releases; for liquid effluents, calculational evaluations, calculational evaluations supplemented by waste stream monitoring/water sampling, or other environmental monitoring as required as appropriate for any planned and potential releases.

As stated previously, the IRAG does not as a policy permit "airborne radioactivity areas" in restricted areas. In almost all cases, this policy results in the use of HEPA-filtered contaminated-air-control equipment for filtering air before release to unrestricted areas. At present, there is no generation of contaminated liquid waste. When such waste was generated, it was disposed through a licensed disposal company. Using the method cited in 10 CFR 20.303 would only be considered for small and infrequent amounts of liquid radioactive waste.

F. Personnel Dose Monitoring

Personnel radiation badges must be worn by all personnel engaged in operations which have been designated as requiring badges by IRAG. Each individual who enters a restricted area under such circumstances that he receives, or is likely to receive, a dose in any calendar quater in excess of 25 percent of the applicable value specified in paragraph (a) of 10 CFR 20.101 must wear a personnel radiation badge. Badges may be required by the RSO/IRAG even if one could not or would not likely receive 25 percent of the values referenced previously.

ITEM 10. Radiation Protection Plan
III. F. (Cont'd)

The vendor may be the one listed or any other supplier with high quality and accuracy of service. The normal badge exchange frequency is quarterly. More frequent exchanges would be used if warranted. For example, highly variable dose rates to personnel or dose rates above three rems per year would warrant a monthly or more frequent exchange. Currently, there is no need for badge exchanges more frequent than quarterly.

Self-reading pocket dosimeters are used only to supplement the badge. The need for pocket dosimeters is very rare for licensed activities. Pocket dosimeter readings are not used for record purposes under licensed activities.

G. Sealed Source Leak Test

The radiation safety officer performs a leak test on each sealed source at the frequency indicated by the appropriate license. The tests normally consist of wipes of the source with moistened filter paper followed, after drying, by counting in a windowless flow counter. Tongs, etc., are used as required. Leaking sources are normally disposed to radioactive waste. Arrangements may be made with the original supplier to return a source when required.

H. Bioassay Program

The IRAG does not contemplate approving programs which would require routine use of bioassay. Control of exposure to unsealed radioactive materials is achieved through engineered controls. The need for bioassay is therefore limited to accident or emergency situations. Bioassay would, for example, be required in the event an emergency entry is made to clean up a contamination spill outside a hood or glove box. Another example is the situation in which an employee is found to be contaminated on the face or head.

Bioassay, when needed, is performed by commercial vendors. Vendors which may be used include Eberline Co., Teledyne Isotopes, Radiation Management Consultants, Helgeson Nuclear Services or others depending on the specific isotope to be assayed and the vendor's detection capabilities.

ITEM 10. Radiation Protection Plan
(Cont'd)

IV. Radiation Inspection Program

A. IRAG-approved Radiation Safety Conditions and Procedures

Conditions and procedures, based on the safety evaluation of the proposed use, specific to the proposed use, and documented for the approved use, are used as a baseline for periodic tailored inspections. Documented changes to the IRAG approval, which are a result of operational experience, become part of the baseline inspection.

B. Postings, Signs, Labels, and Tags

Areas and containers in which radioactive material is present must be approved and properly posted and labeled. The radioactive material itself must be tagged or labeled if feasible.

C. Materials Control Provisions for Procurement, Receipt, Use, Shipping, and Disposal through the Radiation Safety Organization

Written procedures require the RSO's written approval (i) before purchase of any source of ionizing radiation, (ii) before its release to user (after receipt), and (iii) before its shipment. Incoming shipments are surveyed per 10 CFR 20.205 and for dose rate levels before release to user.

Outgoing shipments receive a dose rate and removable contamination (when appropriate) surveys of the unpackaged material to assure that radiological shipping regulations are met.

D. Engineering Controls for Exposure Rate Reduction

Shielding and remote manipulation are used as much as possible to keep exposures as low as reasonably achievable.

ITEM 10. Radiation Protection Plan (Cont'd)

E. Engineering Controls for Control of Aiborne Radioactivity

Operations producing significant airborne radioactive contamination in a restricted area must provide engineering controls for contaminated air control (complete enclosure, booth/hood-type enclosure or, only as a last resort, local exhaust) approved by the RSO. Airborne contamination is considered significant either when concentrations, equal to or in excess of the amounts specified in Appendix B, Table I, column I of 10 CRF 20, exist (for no matter how short a duration) or when concentrations, which, averaged over the number of hours in any week during which individuals are in the area, exceed 25 percent of the amounts specified in the prior reference. Operations producing any airborne radioactive contamination should provide contaminated air control in order to keep exposures as low as reasonably achievable. All operations given approval must be resurveyed if warranted by increased work activity, new work procedures, or changes in room ventilation.

All exhaust systems are designed following specifications in the "Industrial Ventilation" manual published by the American Conference of Governmental Industrial Hygienists or equivalent specifications. If air sampling indicates a need for contaminated air control, exhaust systems equipped with HEPA filters are used; for booths, air flow is maintained at 100 to 200 cfm per square foot face; for local exhaust, air capcity and distance between exhaust line intake and point of operation are adjusted to give the recommended capture velocity at the point of operation. Ventilation equipment, if required, is checked for proper air flow at least annually using an air velocity meter. Filters are checked periodically and replaced when saturated.

F. Use of Respiratory Protection

The IRAG does not contemplate approving programs which would require routine respiratory protection. Control of exposure to unsealed radioactive materials is achieved through engineered controls. The need for respiratory protection is therefore limited to accident or emergency situations. Its use would, for example, be required in the event that an emergency entry is made to clean up a contamination spill outside a hood or glove box.

ITEM 10. Radiation Protection Plan
(Cont'd)

G. Use of Protective Clothing

Protective clothing must be worn by personnel as specified by IRAG approved procedures in order to prevent personnel contamination and the possible incorporation of radioactive materials.

H. Protective Covering for Plant Surfaces, Equipment and Instruments

Protective coverings (trays, etc.) on lab benches and other working surfaces must be used to prevent their contamination when working with powdered or liquid radioactive material (unsealed radioactive material); with liquid radioactive material, the covering should be absorbent and have a leak-proof backing.

I. Surface Contamination Control Areas

Where the spread of surface contamination cannot be limited to a tray or bench top area, a barricaded area may be set up; in the case where the contamination is released with high initial velocity, the barricade may have solid walls and/or ceiling. In either case, the designated surface contamination zone would have a single access/egress point and written procedures for entering or leaving at that point would address the use/disposition of protective clothing and the use of contamination survey instrumentation if required.

J. Storage Conditions

All storage containers and areas for radioactive material must be approved and properly posted by the RSO. Storage areas for large quantities of radioactive materials (especially those in liquid or powdered form) which produce gaseous radioactive decay products must be well ventilated. Periodic contamination surveys are taken of the storage areas.

K. Radiation Emergency Procedures

See page 9 thru 11 of the attached mandatory safety procedure, "Ionizing Radiation Control".

ITEM 10. Radiation Protection Plan
(Cont'd)

V. Records Management

Management of radiation safety records is the responsibility of the RSO. Records maintained include, but are not limited to, the following: radiation level surveys, radiation safety inspections, radioactive material inventories, personnel exposure results, and the receipt, use, transfer and disposal of radioactive materials.

VI. Waste Disposal

Radioactive waste must be kept segregated and disposed of through the Safety Office. Presently, all waste generated is in the solid form including scrap radioactive material, below specification products, contaminated tools and protective coverings, contaminated filters, and decontamination materials. All solid waste and normally all liquid waste, if liquid waste is produced, is disposed through a licensed disposal firm. Small amounts of liquid waste can be disposed through the sanitary sewer system.

VII. Calibration of Instruments

Radiation monitoring equipment is calibrated every six months and following repair at four different distances from one of the following three sources: Cobalt-60, 15 millicuries on 2/19/70, in Radiation Products Division's Model 571 meter calibration kit, SN 108; Cesium-137, 100 millicuries on 12/77, in Eon Corporation/Nuclear Associate's Model 64-764 gamma calibrator, source SN 224; Cobalt-60, 36 millicuries on 12/18/64, in Nuclear Chicago's Model RR-62 source holder, SN B7.

ITEM 10. Radiation Protection Plan
VII. (Cont'd)

Radiation counting equipment is calibrated on each day that counting operations are performed. The following calibrated sources are used:

AM-241	6.1	Microcuries on 07/06/77
Ba-133	1.19	" " 10/07/77
C-14	0.046	" " 06/18/76
Cd-109	11.0	" " 05/12/77
Co-57	1.17	" " 08/09/77
Co-60	0.01	" " 09/18/69
Co-60	1.25	" " 08/11/77
Ca-137	1.08	" " 08/18/77
I-129	0.099	" " 01/77
Na-22	0.36	" " 04/01/69
Ni-63	0.0345	" " 12/06/76
Pu-239	0.005	" " 12/10/74
Sr-90	0.01	" " 02/26/69

Personnel monitoring badges (TLD-type) are presently supplied by and processed quarterly by R.S. Landauer, Jr. & Co., 2 Science Road, Glenwood, Illinois 60425-1586.

Air sampling equipment is calibrated once per year or before use. Low volume samplers are calibrated using a Mark III flow meter kit from Fisher Scientific Co. (0.4 to 23,400 cc/minute), high volume samplers are calibrated using a tubular extension (21.5 inches long and 4 inches in diameter) with Alnor Instrument Co. Series 600 Velometer (30-300 fpm).

Calibrations are normally performed by, or under the direction of the RSO.

6.1 PURPOSE

To state the requirements that shall apply in the use of all ionizing radiation, ionizing radiation machines, and radioactive materials to insure the maximum safety to all persons in the Valley Forge Space Center. These requirements are intended to be consistent with the regulations of the Nuclear Regulatory Commission, Pennsylvania Department of Environmental Resources, U. S. Department of Labor, and recommended practices of the General Electric Company.

6.2 DEFINITIONS

6.2.1 Ionizing Radiation

Gamma rays and x-rays, alpha and beta particles, high-speed electrons, neutrons, protons, and other nuclear particles; but not sound or radio waves, or visible, infrared or ultraviolet light.

6.2.2 Ionizing Radiation Machine

Any device which produces ionizing radiation when the associated control devices are energized.

6.2.3 Radioactive Materials

Any material (solid, liquid, gas) which emits ionizing radiation spontaneously, for example: carbon-14, cesium-137, cobalt-60, radium, thorium, etc. Note: all compounds of uranium, thorium and radium and all general-licensed sources are included, whether labeled radioactive or not by the vendor.

6.2.4 Occupational Dose

Includes exposure of an individual to ionizing radiation, (1) in a restricted area; or (2) in the course of employment in which the individual's duties involve exposure to ionizing radiation. Occupational dose shall not include any exposure of an individual to ionizing radiation for the purpose of medical therapy or diagnosis.

6.2.5 Rem

The quantity of any type of ionizing radiation which causes the same biological effect as one roentgen of X or gamma radiation.

6.2.6 Permissible Doses

1. Every reasonable effort shall be made to maintain all radiation exposures as low as reasonably achievable and within applicable limits. (ALARA)

2. Personnel who are occupationally exposed to radioactive materials licensed by the U. S. Nuclear Regulatory Commission or who are working under DOE contracts involving ionizing radiation shall adhere to the provisions found in U.S. Code of Federal Regulations, Title 10, Part 20, "Standards for Protection Against Radiation". Copies of the regulations, licenses, and operating procedures are available for examination in the Industrial Safety and Hygiene Office.

3. Personnel who are occupationally exposed to other radioactive materials or to ionizing radiation machines shall be governed by the regulations found in 29 CFR 1910.96, "Occupational Safety and Health Standards - Ionizing Radiation", and in Pennsylvania Title 25, Part I, Subpart D, Article V, Chapter 219, "Standards for Protection Against Radiation.

4. Permissible Limits for External Exposure

PART OF BODY	REMS PER CALENDAR QUARTER
Whole body, head and trunk, active blood-forming organs, lens of eyes, gonads	1.25
Hands and forearms, feet and ankles	18.75
Skin of whole body	7.5

5. Exposure to airborne radioactivity shall not exceed the concentrations listed in the applicable regulations.

6. Individuals have the right to request a report of their occupational radiation exposure data. Contact the Industrial Safety and Hygiene Office for further information.

6.2.7 Contamination

The unintentional spread of radioactive material to places where it may harm personnel or interfere with experiments.

6.3 POLICY

6.3.1 It is the policy of ASTRO Space Division - Valley Forge to keep the ionizing radiation exposure of all personnel as low as practicable and, in particular, below all existing federal, state and Company regulations.

6.3.2 All Proposed uses of radioactive material or ionizing radiation-producing devices shall be reviewed and prior written approval for use secured from the Ionizing Radiation Advisory Group (IRAG) consisting of:

Chairman:	Medical Director
Member:	Manager, Industrial Safety & Hygiene
Member:	RESD Engineering
Member:	SCO Engineering
Secretary:	Sr. Industrial Hygienist Radiation Safety Officer (RSO)

6.3.3 All ionizing radiation producing machines and radioactive materials shall be used, stored, handled, transported, or disposed of in accordance with existing regulations and approvals (i.e., Nuclear Regulatory Commission, Commonwealth of Pennsylvania, General Electric Company and the IRAG).

6.3.4 All ionizing radiation machines and radioactive materials shall be used only in the manner approved by the IRAG; the IRAG may revoke any approval it has issued when an investigation shows justification for such action. In such event, the radiation user shall immediately relinquish all radioactive materials or ionizing radiation producing devices to the RSO.

6.3.5 Accidents involving radioactive materials in which there is a possibility of ingestion or inhalation of radioactive material or severe body contamination shall be reported immediately to the RSO. Accidental exposures (actual or suspected) in excess of the quarterly limits stated above shall be immediately reported to the IRAG.

6.3.6 Where the aforementioned rules or regulations may not necessarily apply, the Ionizing Radiation Advisory Group's activity will be guided by recommendations of organizations such as the National Committee on Radiation Protection and Measurement and also by Company recommendations, particularly where recommendations establishing lower levels of exposure are concerned.

6.4. RESPONSIBILITIES AND PROCEDURES

6.4.1 It is the responsibility of all personnel working with ionizing radiation to acquaint themselves with the regulations bearing on their duties and their responsibility with regard to ionizing radiation safety. In particular, each individual is responsible for:

1. Wearing the prescribed monitoring equipment (i.e., TLD badge, etc.) whenever working with radiation.

2. Using the recommended contamination control equipment and following contamination control procedures as required.

3. Keeping his or her exposure as low as possible by recommending improvement procedures, etc., when applicable.

4. Observing and obeying all signs, tags, etc., posted by the RSO.

5. Reporting conditions that are considered hazardous or may result in overexposure, a violation of procedures or regulations, or unnecessary exposure.

6. Adhering to the approved program unless prior approval of the IRAG has been obtained for any deviations there from.

6.4.2 Supervisors are responsible for the ionizing radiation safety of all personnel reporting to them. In particular, each supervisor is responsible for:

1. Assuring that each individual understands and follows all regulations regarding ionizing radiation safety.

2. Assuring that each individual is aware of the location of the NRC or state Notice to Employees posted in the area.

3. Coordinating with the RSO to obtain all necessary radiation safety advice and assistance.

4. Disposal of radioactive material in accordance with NRC, EPA, and State of Pennsylvania regulations as set forth by the RSO.

6.4.3 The manager of a component requiring radioactive material or ionizing radiation-producing devices shall:

1. Submit a written request to the Chairman of the IRAG prior to performing any work on the requested program. The request shall include as a minimum, the following information:

   a. Quantity, type and form of any radionuclides to be used and a description of any ionizing radiation-producing equipment.

   b. Name, title and radiation or radioactive materials experience of the individual responsible for the work to be performed.

   c. Names, title and radiation or radioactive materials experience of individuals who will work with the materials or equipment.

   d. A description of the work to be performed and facilities to be used.

   e. A specific description of the safety precautions to be taken and procedures to be followed. (Assistance in preparing this section may be obtained from the RSO.)

2. Provide such information to the IRAG as it may require for periodic audits of the approved ionizing radiation program.

3. Assure that personnel under his or her direction shall not deviate from the approved program without the prior approval of the IRAG.

4. Follow all Safe Work Practices in this Manual, specifically those applicable to ionizing radiation.

5. Post the safety requirements provided by IRAG.

6. Obtain the approval of the RSO prior to performing any operation involving machining, melting, welding, heating, or otherwise altering any source of radiation.

7. Deliver radioactive materials for disposal to the RSO.