Form AEC-313 (5-58)	ATOMIC ENERGY COMMISSION **APPLICATION FOR BYPRODUCT MATERIAL LICENSE**	Form approved. Budget Bureau No. 38-R027.4.

INSTRUCTIONS.—Complete Items 1 through 16 if this is an initial application. If application is for renewal of a license, complete only Items 1 through 7 and indicate new information or changes in the program as requested in Items 8 through 15. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail three copies to: U. S. Atomic Energy Commission, Washington 25, D. C. Attention: Isotopes Branch, Division of Licensing and Regulation. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30 and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20.

1. (a) NAME AND STREET ADDRESS OF APPLICANT. *(Institution, firm, hospital, person, etc.)*	(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. *(If different from 1 (a).)*
U. S. Army Electronics Research and Development Laboratory Fort Monmouth, New Jersey	Underground Vault Evans Area Belmar, New Jersey
2. DEPARTMENT TO USE BYPRODUCT MATERIAL	**3. PREVIOUS LICENSE NUMBER(S).** *(If this is an application for renewal of a license, please indicate and give number.)*
Exploratory Research Division 'S'	29-1022-6 (renewal in process)
4. INDIVIDUAL USER(S). *(Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in Items 8 and 9.)*	**5. RADIATION PROTECTION OFFICER** *(Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)*
Persons designated by the Isotope Committee. Mr. B. Markow, Chairman	~~Mr. James G. Aldrich~~ 2d Lt. Stephen Foster

6. (a) BYPRODUCT MATERIAL. *(Elements and mass number of each.)*	(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. *(If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)*
Cobalt 60	Sealed Source, [redacted] double encapsulated in welded stainless steel capsule General Electric Company Vallecitos Atomic Laboratory P. O. Box 846 Pleasanton, California (Drawing 985C515 inclosure 1)

Ex 2

7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. *(If byproduct material is for "human use," supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)*

7 (a) To be used for exposing instruments in research program as described in application for 29-1022-6 (inclosure 2)

7 (b) Storage container described in answer to Item 13.

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Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions 2
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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 *(Use supplemental sheets if necessary)*

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
a. Principles and practices of radiation protection	(Same as 29-1022-6)		Yes No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	Inclosure 3		Yes No	Yes No
c. Mathematics and calculations basic to the use and measurement of radioactivity			Yes No	Yes No
d. Biological effects of radiation			Yes No	Yes No

9. EXPERIENCE WITH RADIATION. *(Actual use of radioisotopes or equivalent experience.)*

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		(Same as 29-1022-6) Inclosure 3		

10. RADIATION DETECTION INSTRUMENTS. *(Use supplemental sheets if necessary.)*

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm²)	USE (Monitoring, surveying, measuring)
(Same as 29-1022-6) Inclosure 4					

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

(Same as 29-1022-6 Inclosure 5)

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. *(For film badges, specify method of calibrating and processing, or name of supplier.)*

(Same as 29-1022-6 Inclosure 6)

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. *(Circle answer)* Yes No Inclosure 7

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

(Same as 29-1022-6 Inclosure 8)

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. (Same as 29-1022-6 Inclosure 9)

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PART 30, AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

RECEIVED SEP 25 1963 U.S. ATOMIC ENERGY COMMISSION Division of Licensing & Regulation

Date 24 July 1963

Basil Markow

BASIL MARKOW
Chairman, Isotope Committee

Applicant named in item 1

James G. Aldrich

JAMES G. ALDRICH
Radiological Protection Officer
Title of certifying official

25 July 63

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.

Inclosure 2

7 (a) Description of Purpose for which Byproduct Material will be used.

The research and development program requiring radioisotopes at USAELRDL can be divided into four (4) broad categories.

1. Radiation detection instrument research and development.
2. Radiation effects on electronic parts and components.
3. Radiation power sources.
4. Basic Research.

A large group in this Laboratory is concerned with the design and development of radiation detecting instruments, both rate meters and integrating dosimeters. These instruments range from background to such intensities as are found in the fireball of atomic explosions and are sensitive to gammas, betas, alphas, thermal or fast neutrons. It is this program that requires most of the high intensity sealed sources and accelerators. New detectors are also frequently irradiated at reactor facilities which induce radioactivity in the instruments. These instruments must be brought back to USAELRDA for evaluation and further testing, and since it would be impossible to predict the exact isotopes that result, a broad license is necessary.

The Electronic Components Research Department of the Agency is devoted to research and development of electronic parts and components since it is necessary to know the effects of nuclear radiation on new parts as well as to develop radiation resistant parts, considerable effort is spent irradiating parts and components to various sources of nuclear radiation; both in the laboratory and at other installations. As mentioned above the nature of induced activity is not known and time spent to determine it would make experiments useless. A broad license is therefore required in

this work too.

The work on nuclear batteries and small nuclear power sources could be continued with specific licenses but would be somewhat hampered by delays.

The use of isotopes in basic research is two-fold. Small amounts of radioactive material are needed in experiments requiring high energy ions such as alpha particles and fission fragments while other isotopes are used in experiments involving nuclear decay schemes. Experiments involving high intensity nuclear radiation necessitates their being conducted at outside facilities such as, Godiva, TRIGA, KEWB, and local steady state reactors and accelerators. The problem of bringing activated experimental equipment back to the laboratory again necessitates the possession of a general specific license.

It is not anticipated that possession of elements 3-83 up to 1 curie each would ever reach 80 curies total at any one time since activated apparatus and parts are disposed of as soon as experiments are completed.