31-350-5 (260)

Form AEC-313 (2-57)

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

Form approved. Budget Bureau No. 38-R027.3.

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 two copies to: U. S. Atomic Energy Commission, P. O. Box E, Oak Ridge, Tenn. Attention: Isotopes Extension, Division of Civilian Application. 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.)*

Nuclear Development Corporation of America

5 New Street
White Plains, New York

(b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. *(If different from 1 (a).)*

5 New Street, White Plains
90 Grove St., White Plains
Pawling, New York

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Chemistry and/or Materials

3. PREVIOUS LICENSE NUMBER(S). *(If this is an application for renewal of a license, please indicate and give number.)*

31-350-1

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.)*

Dr. Lionel S. Goldring

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.)*

Dr. Irving R. Tabershaw

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.)*

Service irradiation of iron, stainless steels and components thereof, other structural metals and components thereof, soils and mineral and components thereof; 1 mg to 50 gm samples; 0 to 50 mC; 0 to 20 day irradiation time; neutron flux 10^{10} to 3 x 10^{13} neutrons/cm^2-sec.

DUPLICATED
FOR DIV. OF INSP.

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.)*

Corrosion and materials tests, including mass transfer tests and activation analyses.

A/10

10

(Continued on reverse side)

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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	ORNL, Chemistry Division	11/43 to 2/46	(Yes) No	Yes No
b. Radioactivity measurement standardization and monitoring techniques and instruments	MIT, Radioactivity Center	3/46 to 8/46	(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
		see attached		

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)*
SIC-17c Juno	3	α, β, γ	0 to 5000	2	Monitoring, Surveying
Nuclear Chicago 2610	5	β γ	0 to 20	30	"
Proportional	2	α, β		< 1	Measuring
Scintillation	1	γ			"

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

see attached (2)

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

see attached (2)

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 see attached (3)

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.

see attached (3)

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. see attached (4)

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.

Nuclear Development Corp. of Amer.
Applicant named in item 1

Date 4/8/58

By: A. M. Zais

Title of certifying official Treasurer

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.

U. S. GOVERNMENT PRINTING OFFICE : 1957 O-F—424006

ATTACHMENT NO. 1

NDA_ 31-350-5 (E60)

9. EXPERIENCE WITH RADIATION (Individual User)

Isotope	Maximum Amount	Where Experience Gained	Duration of Experience	Type of Use
Fission Prod.	Many curies	ORNL	11/43 to 2/46	Chemical separations
Fission Prod.	Many curies	BNL	6/50 to 12/53	Chemical separations
Fe^{59}, P^{33}, $I^{130;131}$, $Te^{130,131}$, $Na^{22,24}$, Co^{60}, $Mn^{52,54}$, Cr^{51},	Hundreds of Millicuries	MIT	3/46 to 8/46	Chemical separations

8. TRAINING AND EXPERIENCE OF RADIOLOGICAL SAFETY OFFICER

Type of Training	Where Trained	Duration of Training	On The Job	Formal Course
Principles & practices of radiation protection	N.Y.S. Labor Dept NDA	3½ yrs. 1 yr.	Yes Yes	No No
Radioactivity measurement standardization & monitoring techniques & instruments	"	"	"	"
Mathematics & calculations basic to the use & measurement of radioactivity	"	"	"	"
Biological effects of radiation	Practice of Occupational Medicine	16 yrs.	Yes	No

Isotope	Maximum Amount	Where Experience Gained	Duration of Experience	Type of Use
Sealed	34,000 C	N.Y.S.	3½yrs	various
Unsealed	6,000 C	"	"	"

10015

ATTACHMENT NO. 2

NDA_

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

Landauer film badges, changed every two (2) weeks.

Landsverk Chambers, Hi-Vol air samples, SIC-17c (Junos) are calibrated at HASL of USAEC every three (3) months on an instrument recall program. Nuclear Chicago GM units are calibrated at three (3) month intervals using standard Co^{60} sources.

12. FILM BADGES, DOSIMETERS AND BIO-ASSAY PROCEDURES USED.

Landauer monitoring film badges; "Landsverk" x-ray, gamma-ray, and slow neutron chambers; "Hi-Vol", air sampler for airborne contamination; a radiochemical laboratory for any required bio-assay work.

NDA_

ATTACHMENT NO. 3

13. FACILITIES AND EQUIPMENT

We have a variety of shipping casks with lead shielding of from 1" to 9" thick, any of which will be used as needed for this material. Since 50 mc is the maximum activity, 2" thick lead bricks for a shield and tongs for handling would be sufficient shielding, if not, more is available. The work will be done in a radiochemical lab with equipment already approved for up to 15 curies of mixed fission products.

14. RADIATION PROTECTION PROGRAM

A full-time Health and Safety Department maintains the radiation protection program. There is limited access of employees to radiation areas. Film badges and dosimeters are issued to personnel as indicated.

15. WASTE DISPOSAL

U. S. AEC disposal facilities at Earl, New Jersey. 50 millicuries by-product materials.

AEC