A-461 37-1258-2

Form AEC-313 (9-55)

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

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

INSTRUCTIONS: Complete Items 1 through 19 if this is a new application. If renewal is requested, complete only Items 1 through 11 provided that with respect to the other items there has been no change in the information previously submitted. Mail two copies to: U. S. Atomic Energy Commission, P. O. Box E, Oak Ridge, Tennessee, Attention: Isotopes Extension, Division of Civilian Application. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. General requirements for issuance of an AEC Byproduct Material License are contained in Title 10, Code of Federal Regulations, Part 30.

1. (a) NAME AND SHIPPING ADDRESS OF APPLICANT *(Institution, firm, hospital, person, etc.)*

Jones & Laughlin Steel Corp.
Building #3 Gateway Center
Pittsburgh 30, Pennsylvania

(b) ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED *(If different from shipping address)*

J&L RESEARCH LAB & STEEL MILL-PITTSBURGH, PA.
J&L STEEL MILL - ALIQUIPPA, PA.
J&L STEEL MILL - YOUNGSTOWN, OHIO

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

RESEARCH & DEVELOPMENT DEPARTMENT - RESEARCH DIVISION

3. INDIVIDUAL USER *(Name and title of individual(s) who will use or directly supervise use of byproduct material)*

WALTER A. WILSON

4. RADIOLOGICAL SAFETY OFFICER *(Name of person qualified in radiological safety, if other than individual user)*

WALTER A. WILSON

5. PREVIOUS LICENSE OR AUTHORIZATION NUMBER *(If this is an application for renewal of a license for byproduct material obtained under a prior license or authorization for radioisotope procurement)*

37-1258-2

TO BE AMENDED FOR 1.) ADDITIONAL SOURCE (BB1006I)
2.) ADDITIONAL PLACES OF USE
3.) ADDITIONAL SOURCE CONTROL RESPONSIBILITY BY LICENSE

BYPRODUCT MATERIAL OR IRRADIATION SERVICE DESIRED

6. BYPRODUCT MATERIAL *(Element and mass number)*	7. CHEMICAL AND/OR PHYSICAL FORM *(Or catalog number)*	8. MAXIMUM AMOUNT OF RADIOACTIVITY IN MILLICURIES THAT YOU WILL POSSESS AT ANY ONE TIME
THALLIUM 204	MODEL BB - 0008	100 M C
STRONTIUM 90	MODEL BB - 0020	25 M C
KRYPTON 85	MODEL BB - 0030	250 M C
KRYPTON 85	MODEL BB - 10061	1000 M C

9. IF IRRADIATION SERVICE IS DESIRED, STATE PERTINENT DETAILS SUCH AS: CHEMICAL COMPOSITION AND WEIGHT IN GRAMS OF TARGET MATERIAL, RADIOACTIVITY, IRRADIATION TIME IN DAYS, AND NEUTRON FLUX

STATEMENT OF USE

10. (a) DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. *(If material is for "human use" complete Supplement A in lieu of this item. If material is to be used in or manufactured as a "sealed source" complete Supplement B in addition to this item.)*

TO BE MOUNTED IN AN INDUSTRIAL NUCLEONICS CORP. ACCURAY BETA GAGE, RBLK, FOR EXPERIMENTAL PRODUCTION LINE MEASUREMENTS.

(b) DESCRIBE PROCEDURES WHICH WILL BE OBSERVED TO MINIMIZE HAZARD FROM HANDLING, STORAGE, AND DISPOSAL OF THE BYPRODUCT MATERIAL

WIPE AND SURVEY TEST WILL BE PERFORMED ON THE SOURCE CAPSULE AND IMMEDIATE SURROUNDINGS. RADIATION SAFETY CLOTHING AVAILABLE TO MINIMIZE HANDLING HAZARD. STORAGE TO BE IN VAULT ACCESSIBLE BY COMBINATION LOCK. ALL PROCEDURES OF HANDLING, STORAGE AND DISPOSAL WILL BE PERFORMED IN ACCORDANCE WITH FEDERAL REGISTER, TITLE 10, CHAPTER I, PART 20, STANDARDS FOR PROTECTION AGAINST RADIATION.

CERTIFICATE

11. 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 do solemnly swear (or affirm) that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

State of .....
County of .....
Subscribed and sworn to before me this .....
day of .....

Notary Public

JONES & LAUGHLIN STEEL CORPORATION
Applicant named in Item 1

By E. A. Dankelf
Title of Certifying Official

4/23/59
Date

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.

18414

(Continued on reverse side)

16—57264-5

Form AEC-313

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

INSTRUCTIONS: Complete Items 12 through 19 if this is a new application. This information may be omitted from subsequent applications provided there is no change in the information previously submitted, and reference is made in Item 5 to the application on which this information appears.

TRAINING AND EXPERIENCE WITH RADIOACTIVITY OF INDIVIDUAL USER NAMED IN ITEM 3

12. TYPE OF TRAINING

TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)		FORMAL COURSE (Circle answer)	
1. Principles and practices of radiological health safety	INDUSTRIAL NUCLEONICS CORP.	1 YEAR	YES			NO
	UNIVERSITY OF PGH.	2 YEARS	YES			NO
	JONES & LAUGHLIN STEEL CORP.	2.5 YEARS	YES	NO	YES	NO
2. Radioactivity measurement standardization and monitoring techniques and instruments	INDUSTRIAL NUCLEONICS CORP.	1 YEAR	YES		YES	
	UNIVERSITY OF PGH.	2 YEARS	YES			NO
	JONES & LAUGHLIN STEEL CORP.	2.5 YEARS	YES	NO	YES	NO
3. Mathematics and calculations basic to the use and measurement of radioactivity	UNIVERSITY OF PGH.	6 MONTHS	YES	NO	YES	NO
4. Biological effects of radiation	INDUSTRIAL NUCLEONICS	3 DAYS	YES	NO	YES	NO
5. Actual use of radioisotopes in the types and quantities for which application is being made, or equivalent experience	INDUSTRIAL NUCLEONICS	1 YEAR	YES			NO
	JONES & LAUGHLIN STEEL CORP.	25 YEARS	YES	NO	YES	NO

13. ISOTOPE HANDLING EXPERIENCE

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE

14. If Radiological Safety Officer named in Item 4 is different from individual user named in Item 3, use supplementary sheet to provide equivalent information on "Training and Experience With Radioactivity of Radiological Safety Officer." Supplementary sheet is attached (*Circle answer*) Yes No X

PHYSICAL FACILITIES, EQUIPMENT, AND RADIATION INSTRUMENTATION

15. RADIATION DETECTION INSTRUMENTS (*Use separate sheet 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*)
RADIATION SURVEY METER					
UNIVERSAL ATOMIC UAC #407	1	BETA-GAMMA	0-50 MR/HR.	20 TO 30	SURVEYING
TRACER LAB SU-1B	1	BETA-GAMMA	0-2500	2 TO 3	SURVEYING

16. FILM BADGES, DOSIMETERS, AND OTHER PERSONNEL MONITORING DEVICES INCLUDING BIO-ASSAY PROCEDURES

FILM BADGE SERVICE SUPPLIED BY ST. JOHN X-RAY LABORATORY, CALIFON, NEW JERSEY

17. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE (*For film badges specify method of calibration and processing, or name supplier*)

METHOD - MEASUREMENT OF DOSAGE RATE VS. DISTANCE FROM STANDARD.
FREQUENCY - MONTHLY
STANDARD - L.L2 MG RADIUM IN 0.05 MM 90% PT, L0% IR NEEDLE

18. (a) DESCRIBE BRIEFLY REMOTE HANDLING EQUIPMENT, STORAGE CONTAINERS, SHIELDING, AND LABORATORY FACILITIES (*Working areas, fume hoods, etc.*)

STORAGE CONTAINER CONSISTS OF 0.5 INCH THICK STEEL PROPERLY MARKED AND STORED IN UNDERGROUND VAULT ACCESSIBLE BY COMBINATION LOCK ONLY. ALL MODERN CHEMICAL LABORATORY FACILITIES AVAILABLE, E.G. FUME HOOD. SHIELDING ACCOMPLISHED BY COMBINED USE OF STEEL PLATE, LEAD AND LUCITE.

(b) SKETCHES OF SUCH FACILITIES ARE ATTACHED (*Circle answer*) Yes No

19. DESCRIBE BRIEFLY RADIATION SURVEYING PROCEDURES AND METHODS OF DISPOSING OF RADIOACTIVE WASTES

SURVEY CHECKED AGAINST INITIAL RADIATION PATTERN OF BETA GAGE

U. S. GOVERNMENT PRINTING OFFICE 16—57264-5

Form AEC-313b

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

SUPPLEMENT B—SEALED SOURCES

ALL SEALED SOURCES OTHER THAN THOSE DEFINED IN ITEM 4

5. QUANTITY OF BYPRODUCT MATERIAL PER SOURCE AND MODEL OR DRAWING NUMBER

1.) 100 MC TI (204) BB0008 2.) 25 MC SR (90) BB0020 3.) 250 MC KR (85) BB0030 4.) 1000 MC KR (85) BB10061

6. MEANS BY WHICH BYPRODUCT MATERIAL WILL BE DEPOSITED IN SOURCE CONTAINER:

SEE INDUSTRIAL NUCLEONICS PARTS NOS. BB-0008, BB-0020, BB-0030 ON FILE WITH ISOTOPE DIVISION, AEC. SOURCE BB10061 IS IDENTICAL TO INDUSTRIAL NUCLEONICS PART NO. BB-0030 WITH EXCEPTION TO INCREASED KRYPTON, 85 CONTENT.

7. ATTACH ANNOTATED ENGINEERING DRAWING OF SOURCE CONTAINER AND HOLDER, IF ANY:

ON FILE WITH ISOTOPE DIVISION, AEC.

8. TYPE OF SEAL TO BE USED TO PRECLUDE LEAKAGE OF RADIOACTIVITY TO EXTERIOR OF SOURCE:

SEE NOTE 6 ABOVE.

9. IF SOURCE HOLDER IS TO BE USED WILL CONTAINER BE PERMANENTLY OR SEMIPERMANENTLY MOUNTED THEREIN?

YES

10. DESCRIBE LABEL TO BE AFFIXED TO CONTAINER AND/OR SOURCE HOLDER *(Or attach copy. See instructions)*:

ON FILE WITH ISOTOPE DIVISION, AEC.

11. EVIDENCE OF STABILITY OF SOURCE CONTAINER MATERIAL TO IRRADIATION FROM BYPRODUCT MATERIAL THEREIN *(Omit if such stability is obvious)*:

12. LEAK TESTING PROCEDURE TO BE EMPLOYED INCLUDING EVIDENCE OF ITS EFFICACY AND INSTRUMENTATION TO BE USED:

SEE No. 2, REVERSE SIDE.

DEVICES CONTAINING SEALED SOURCE

(Give following information if sealed source is to be mounted in a device)

13. ATTACH ANNOTATED ENGINEERING DRAWING OF DEVICE INCLUDING MODEL NUMBER AND DETAILS OF MOUNTING OF CONTAINER OR SOURCE HOLDER IN THE DEVICE:

INDUSTRIAL NUCLEONICS MODEL BL MEASURING SYSTEM, MODELS B., BLK, BM AND EXPERIMENTAL RBLK MEASURING SYSTEM, DRAWING ON FILE WITH ISOTOPES DIV., AEC.

14. DESCRIBE CONSTRUCTION AND OPERATION OF THE POSITIONING MECHANISM FOR BRINGING SOURCE INTO "ON" AND "OFF" POSITIONS:

ON FILE WITH ISOTOPES DIVISION, AEC.

15. DESCRIBE CONSTRUCTION AND OPERATION OF READILY VISIBLE INDICATOR OF DEVICE INDICATING "ON" AND "OFF" POSITIONS OF SOURCE:

ON FILE WITH ISOTOPES DIVISION, AEC.

16. DESCRIBE DESIGN FEATURES WHICH SERVE TO MINIMIZE RADIATION HAZARD FROM THE DIRECT BEAM AND SECONDARY RADIATION *(Including type and amount of shielding as well as limited accessibility inherent in installations where use is contemplated)*

ON FILE WITH ISOTOPES DIVISION, AEC.

17. DESCRIBE LABEL TO BE AFFIXED TO DEVICE *(Or attach copy. See instructions)*:

ON FILE WITH ISOTOPES DIVISION, AEC.

18. RADIATION PROFILE OF A PROTOTYPE DEVICE IS ATTACHED. *(Circle your answer)*:

ON FILE WITH ISOTOPES DIVISION, AEC.

YES | NO

U. S. GOVERNMENT PRINTING OFFICE 16—61444-2

Amdt 1 37-1258-2

Form AEC-313b (9-55)

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

SUPPLEMENT B—SEALED SOURCES

Form approved. Budget Bureau No. 38-R028.3.

If application is for byproduct material to be used in or manufactured as a "sealed source" complete this supplement and attach to the application for byproduct material license. Applicant for *use* of sealed source should complete Section I. An applicant desiring to *manufacture* a sealed source should complete Section II. If information has been submitted previously and there are no changes in the sealed source and/or device design or other changes in information submitted previously, details requested below may be omitted *provided* reference is made on line below to the application or other document on which this information appears:

TO BE AMENDED FOR A.) ADDITIONAL SOURCE (BB-10061)
B.) ADDITIONAL PLACES OF USE
C.) ~~ADDITIONAL SOURCE CONTROL RESPONSIBILITY BY~~ LICENSEE.

LICENSE No. 37-1258-2

SECTION I—USE (*See instructions*)

1. IF SEALED SOURCE OR DEVICE CONTAINING SEALED SOURCE IS MANUFACTURED COMMERCIALLY, GIVE FOLLOWING INFORMATION:

A. Manufacturer or supplier of sealed source and/or device INDUSTRIAL NUCLEONICS CORPORATION.

B. Make and model number of sealed source and/or device 100 MC TI (204) BB-0008 - 25 MC SR (90) BB-0020 -

C. Person who will hold legal title to sealed source 250 MC KR (85) BB-0030 - 1000 MC KR (85) BB-10061

JONES & LAUGHLIN STEEL CORPORATION - RESEARCH DIVISION

2. (a) NAME OF PERSON WHO WILL PERFORM NECESSARY PERIODIC LEAKAGE TESTS (*6-month intervals for beta-gamma; 3-month period for alpha emitters. See instructions*)

WALTER A. WILSON

(b) IF ABOVE PERSON IS NOT THE SUPPLIER, MANUFACTURER, NOR A COMMERCIAL LABORATORY ROUTINELY OFFERING SUCH SERVICES, GIVE BRIEF STATEMENT OF EXPERIENCE OR TRAINING OF SUCH PERSON IN TECHNIQUES TO BE EMPLOYED, A STATEMENT OF LEAK TESTING PROCEDURES INCLUDING EVIDENCE OF ITS EFFICACY AND INSTRUMENTATION TO BE USED:

ABOVE PERSON HAS HAD OVER 5 YEARS TRAINING IN ALL PHASES OF THE PRINCIPLES AND THE PRACTICES OF RADIOACTIVITY. INCLUDED IN EXPERIENCE ARE: ASSISTANT AT THE UNIVERSITY OF PITTSBURGH RADIATION LAB, ENGINEER FOR INDUSTRIAL NUCLEONICS CORP., ENGINEER IN CHARGE OF BETA GAGING FOR JONES & LAUGHLIN STEEL CORP.

LEAK TESTS SHALL BE PERFORMED IN ACCORDANCE WITH STANDARD SOURCE WIPE TEST PROCEDURES PREPARED AND PUBLISHED BY INDUSTRIAL NUCLEONICS CORP. FOR USE OF FIELD ENGINEERS AND AUTHORIZED PERSONNEL.

3. ARRANGEMENTS WHICH WILL PREVAIL FOR PERFORMING INITIAL RADIATION SURVEY (*if appropriate*), SERVICING MAINTENANCE, REPAIR, CONTROL, AND DISPOSAL, ETC., OF THE SOURCE:

INITIAL RADIATION SURVEY AND RADIATION PATTERNS HAVE BEEN PERFORMED ON BB-0008, BB-0020, BB-0030. AFTER INSTALLATION OF BB-10061 RADIATION PATTERN WILL BE RUN AND NECESSARY SHIELDING WILL BE INSTALLED TO REDUCE THE RADIATION TO BELOW 5 MR AT 30 INCHES.

SURVEY AND WIPE TEST WILL BE PERFORMED AT A MAXIMUM OF 6 MONTH INTERVALS.

INSTALLATION OF GAUGES, RADIATION SURVEY, MAINTENANCE, AND REMOVAL OF SOURCE TO BE PERFORMED BY LICENSEE.

INDUSTRIAL NUCLEONICS REPRESENTATIVE WILL BE CONTACTED FOR DISPOSAL AND REPAIR OF SOURCE MATERIAL.

SEALED SOURCES SHALL NOT BE OPENED OR COMBINED BY LICENSEE.

SECTION II—MANUFACTURE

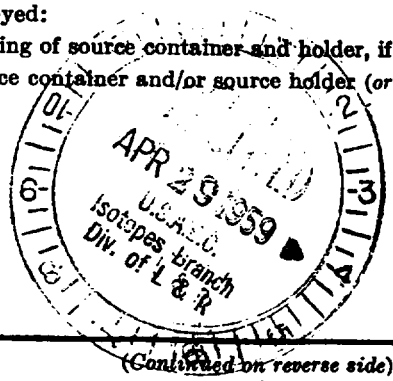
4. IF SEALED SOURCE TO BE MANUFACTURED OR FABRICATED BY THE APPLICANT IS DESIGNED TO TRANSMIT ONLY GAMMA RAYS AND CONTAINS IN ELEMENTAL FORM (*but not powders*) COBALT 60, IRIDIUM 192, GOLD 198, TANTALUM 182, OR THULIUM 170, GIVE FOLLOWING INFORMATION AND DISREGARD QUESTIONS 5 THROUGH 12 ON THIS SUPPLEMENT:

(a) Quantity of byproduct material per source and model number

(b) Leak testing procedure to be employed:

(c) Attach annotated engineering drawing of source container and holder, if any:

(d) Describe label to be affixed to source container and/or source holder (*or attach copy. See instructions*):



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16—61644-2

Form AEC-313 (9-55)

ATOMIC ENERGY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE

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

DUPLICATED

INSTRUCTIONS: Complete Items 1 through 19 if this is a new application. If renewal is requested, complete only Items 1 through 11 provided that with respect to the other items there has been no change in the information previously submitted. Mail two copies to: U. S. Atomic Energy Commission, P. O. Box E, Oak Ridge, Tennessee, Attention: Isotopes Extension, Division of Civilian Application. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. General requirements for issuance of an AEC Byproduct Material License are contained in Title 10, Code of Federal Regulations, Part 30.

1. (a) NAME AND SHIPPING ADDRESS OF APPLICANT *(Institution, firm, hospital, person, etc.)*

Jones & Laughlin Steel Corp.
Bldg. #3, Gateway Center
Pittsburgh 30, Pa.

(b) ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED *(If different from shipping address)*

Jones & Laughlin Research Laboratory
900 Agnew Road
Pittsburgh 27, Pa.

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Research and Development Department - Research Division

3. INDIVIDUAL USER *(Name and title of individual(s) who will use or directly supervise use of byproduct material)*

Walter A. Wilson, or Harry F. Osterman

4. RADIOLOGICAL SAFETY OFFICER *(Name of person qualified in radiological safety, if other than individual user)*

Walter A. Wilson, or Harry F. Osterman

5. PREVIOUS LICENSE OR AUTHORIZATION NUMBER *(If this is an application for renewal of a license for byproduct material obtained under a prior license or authorization for radioisotope procurement)*

BYPRODUCT MATERIAL OR IRRADIATION SERVICE DESIRED

6. BYPRODUCT MATERIAL *(Element and mass number)*	7. CHEMICAL AND/OR PHYSICAL FORM *(Or catalog number)*	8. MAXIMUM AMOUNT OF RADIOACTIVITY IN MILLICURIES THAT YOU WILL POSSESS AT ANY ONE TIME
Thallium 204	Model BB-0008	100 MC
Krypton 85	Model BB-0030	250 MC
Strontium 90	Model BB-0020	25 MC

9. IF IRRADIATION SERVICE IS DESIRED, STATE PERTINENT DETAILS SUCH AS: CHEMICAL COMPOSITION AND WEIGHT IN GRAMS OF TARGET MATERIAL, RADIOACTIVITY, IRRADIATION TIME IN DAYS, AND NEUTRON FLUX

STATEMENT OF USE

10. (a) DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. *(If material is for "human use" complete Supplement A in lieu of this item. If material is to be used in or manufactured as a "sealed source" complete Supplement B in addition to this item.)*

To be permanently mounted in an Industrial Nucleonics Corp. Accuray Beta Gauge for production line measurement.

(b) DESCRIBE PROCEDURES WHICH WILL BE OBSERVED TO MINIMIZE HAZARD FROM HANDLING, STORAGE, AND DISPOSAL OF THE BYPRODUCT MATERIAL

Source will not be removed from holder. Wipe and survey test will be performed on the source capsule and immediate surroundings. Industrial Nucleonics Corp. representative will be called for repair and disposal of source if required.

CERTIFICATE

11. 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 do solemnly swear (or affirm) that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

State of .....

County of .....

Subscribed and sworn to before me this ..... day of .....

Notary Public

Jones and Laughlin Steel Corp.
Applicant named in Item 1

By Walter A. Wilson
Research Engineer
Title of Certifying Official

May 28, 1957
Date

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.

(Continued on reverse side)

16—57264-6

Form AEC-313 | ATOMIC ENERGY COMMISSION
APPLICATION FOR BYPRODUCT MATERIAL LICENSE
Page Two

INSTRUCTIONS: Complete Items 12 through 19 if this is a new application. This information may be omitted from subsequent applications provided there is no change in the information previously submitted, and reference is made in Item 5 to the application on which this information appears.

TRAINING AND EXPERIENCE WITH RADIOACTIVITY OF INDIVIDUAL USER NAMED IN ITEM 3

12. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
1. Principles and practices of radiological health safety.	Industrial Nucleonics Univ. of Pgh. Radiation Lab.	Period of Year Period of 2 Yrs	Yes No	Yes No
2. Radioactivity measurement standardization and monitoring techniques and instruments	Industrial Nucleonics Univ. of Pgh. Radiation Lab.	Period of Year Period of 2 yrs	Yes No	Yes No
3. Mathematics and calculations basic to the use and measurement of radioactivity.	Univ. of Pittsburgh	6 Months	Yes No	Yes No
4. Biological effects of radiation. . .	Industrial Nucleonics	3 Days	Yes No	Yes No
5. Actual use of radioisotopes in the types and quantities for which application is being made, or equivalent experience	Industrial Nucleonics	1 Year	Yes No	Yes No

13. ISOTOPE HANDLING EXPERIENCE

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE

14. If Radiological Safety Officer named in Item 4 is different from individual user named in Item 3, use supplementary sheet to provide equivalent information on "Training and Experience With Radioactivity of Radiological Safety Officer." Supplementary sheet is attached (*Circle answer*) Yes X No

PHYSICAL FACILITIES, EQUIPMENT, AND RADIATION INSTRUMENTATION

15. RADIATION DETECTION INSTRUMENTS (*Use separate sheet 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*)
Radiation Survey Meter Tracerlab Model SU-1B	1	Beta Gamma	0-2500	2-3	Surveying

16. FILM BADGES, DOSIMETERS, AND OTHER PERSONNEL MONITORING DEVICES INCLUDING BIO-ASSAY PROCEDURES

Film badge service supplied by St. John X-Ray Laboratory, Califon, New Jersey

17. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE (*For film badges specify method of calibration and processing, or name supplier*)

Method - Measurement of dosage rate versus distance from standard
frequency - semimonthly.
Standard - 1.12 mg. Radium in 0.05 mm. 90% Pt, 10% Ir Needle

18. (a) DESCRIBE BRIEFLY REMOTE HANDLING EQUIPMENT, STORAGE CONTAINERS, SHIELDING, AND LABORATORY FACILITIES (*Working areas, fume hoods, etc.*)

(b) SKETCHES OF SUCH FACILITIES ARE ATTACHED (*Circle answer*) Yes No

19. DESCRIBE BRIEFLY RADIATION SURVEYING PROCEDURES AND METHODS OF DISPOSING OF RADIOACTIVE WASTES

U. S. GOVERNMENT PRINTING OFFICE 16—57364-5

Form AEC-313b (9-55)

APPLIC ON FOR BYPRODUCT MATERIAL LIC E

SUPPLEMENT B—SEALED SOURCES

Form approved. Budget Bureau No. 38-R028.3.

If application is for byproduct material to be used in or manufactured as a "sealed source" complete this supplement and attach to the application for byproduct material license. Applicant for *use* of sealed source should complete Section I. An applicant desiring to *manufacture* a sealed source should complete Section II. If information has been submitted previously and there are no changes in the sealed source and/or device design or other changes in information submitted previously, details requested below may be omitted *provided* reference is made on line below to the application or other document on which this information appears:

SECTION I—USE (*See instructions*)

1. IF SEALED SOURCE OR DEVICE CONTAINING SEALED SOURCE IS MANUFACTURED COMMERCIALLY, GIVE FOLLOWING INFORMATION:

A. Manufacturer or supplier of sealed source and/or device: Industrial Nucleonics Corp.

B. Make and model number of sealed source and/or device: 100 MC T1(204)BB0008-250 MCKr(85)BB0030 25 MC SR(90)BB0020

C. Person who will hold legal title to sealed source: Jones & Laughlin Research

2. (a) NAME OF PERSON WHO WILL PERFORM NECESSARY PERIODIC LEAKAGE TESTS (*6-month intervals for beta-gamma; 3-month period for alpha emitters. See instructions*)

Walter A. Wilson

(b) IF ABOVE PERSON IS NOT THE SUPPLIER, MANUFACTURER, NOR A COMMERCIAL LABORATORY ROUTINELY OFFERING SUCH SERVICES, GIVE BRIEF STATEMENT OF EXPERIENCE OR TRAINING OF SUCH PERSON IN TECHNIQUES TO BE EMPLOYED, A STATEMENT OF LEAK TESTING PROCEDURES INCLUDING EVIDENCE OF ITS EFFICACY AND INSTRUMENTATION TO BE USED:

We intend to perform survey and source wipe test only, any source handling, replacement or repair will be done by Industrial Nucleonics or other approved contractor.

3. ARRANGEMENTS WHICH WILL PREVAIL FOR PERFORMING INITIAL RADIATION SURVEY (*if appropriate*), **SERVICING MAINTENANCE, REPAIR, CONTROL, AND DISPOSAL, ETC., OF THE SOURCE:**

Initial radiation survey will be performed by Industrial Nucleonics Corp. using appropriate beta-gamma survey instrument. Industrial Nucleonics representative will be called when necessary for maintenance, repair or disposal of source material. Survey and wipe tests will be performed at 6 month intervals.

SECTION II—MANUFACTURE

4. IF SEALED SOURCE TO BE MANUFACTURED OR FABRICATED BY THE APPLICANT IS DESIGNED TO TRANSMIT ONLY GAMMA RAYS AND CONTAINS IN ELEMENTAL FORM (*but not powders*) **COBALT 60, IRIDIUM 192, GOLD 198, TANTALUM 182, OR THULIUM 170, GIVE FOLLOWING INFORMATION AND DISREGARD QUESTIONS 5 THROUGH 12 ON THIS SUPPLEMENT:**

(*a*) Quantity of byproduct material per source and model number

(*b*) Leak testing procedure to be employed:

(*c*) Attach annotated engineering drawing of source container and holder, if any:

(*d*) Describe label to be affixed to source container and/or source holder (*or attach copy. See instructions*):

(*Continued on reverse side*)

Form AEC-313b	APPLICATION FOR BYPRODUCT MATERIAL LICENSE SUPPLEMENT B—SEALED SOURCES	Page Two

ALL SEALED SOURCES OTHER THAN THOSE DEFINED IN ITEM 4

5. QUANTITY OF BYPRODUCT MATERIAL PER SOURCE AND MODEL OR DRAWING NUMBER
(A) 100 MC Tl(204) BB-0008 (B) 250 MC Kr(85) BB-0030 (C) 25 MC Sr(90) ~~BB-0020~~

6. MEANS BY WHICH BYPRODUCT MATERIAL WILL BE DEPOSITED IN SOURCE CONTAINER:
See Industrial Nucleonics Part Nos. BB-0008, BB-0030 and BB-0020 on file with Isotopes Division, AEC.

7. ATTACH ANNOTATED ENGINEERING DRAWING OF SOURCE CONTAINER AND HOLDER, IF ANY:
On file with Isotopes Division, AEC.

8. TYPE OF SEAL TO BE USED TO PRECLUDE LEAKAGE OF RADIOACTIVITY TO EXTERIOR OF SOURCE:
See No. 6 Above.

9. IF SOURCE HOLDER IS TO BE USED WILL CONTAINER BE PERMANENTLY OR SEMIPERMANENTLY MOUNTED THEREIN?
Yes

10. DESCRIBE LABEL TO BE AFFIXED TO CONTAINER AND/OR SOURCE HOLDER (*Or attach copy. See instructions*):
On file with Isotopes Division, AEC.

11. EVIDENCE OF STABILITY OF SOURCE CONTAINER MATERIAL TO IRRADIATION FROM BYPRODUCT MATERIAL THEREIN (*Omit if such stability is obvious*):

12. LEAK TESTING PROCEDURE TO BE EMPLOYED INCLUDING EVIDENCE OF ITS EFFICACY AND INSTRUMENTATION TO BE USED:
See No. 2, Reverse Side.

DEVICES CONTAINING SEALED SOURCE
(*Give following information if sealed source is to be mounted in a device*)

13. ATTACH ANNOTATED ENGINEERING DRAWING OF DEVICE INCLUDING MODEL NUMBER AND DETAILS OF MOUNTING OF CONTAINER OR SOURCE HOLDER IN THE DEVICE:
Industrial Nucleonics Model BL Measuring System, Models BL, BLK and BM Measuring System, Drawing on file with Isotopes Division, AEC.

14. DESCRIBE CONSTRUCTION AND OPERATION OF THE POSITIONING MECHANISM FOR BRINGING SOURCE INTO "ON" AND "OFF" POSITIONS:
On file with Isotopes Division, AEC.

15. DESCRIBE CONSTRUCTION AND OPERATION OF READILY VISIBLE INDICATOR OF DEVICE INDICATING "ON" AND "OFF" POSITIONS OF SOURCE:
On file with Isotopes Division, AEC.

16. DESCRIBE DESIGN FEATURES WHICH SERVE TO MINIMIZE RADIATION HAZARD FROM THE DIRECT BEAM AND SECONDARY RADIATION (*Including type and amount of shielding as well as limited accessibility inherent in installations where use is contemplated*)
On file with Isotopes Division, AEC.

17. DESCRIBE LABEL TO BE AFFIXED TO DEVICE (*Or attach copy. See instructions*):
On file with Isotopes Division, AEC.

18. RADIATION PROFILE OF A PROTOTYPE DEVICE IS ATTACHED, (*Circle your answer*):
On file with Isotopes Division, AEC. | YES | NO

5814

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SUPPLEMENTARY SHEET OF HARRY F. OSTERMAN

Training and Experience with Radioactivity:

Item	Where Trained	Duration of Training	On the Job	Formal Course
1	U. S. Army	2 Weeks	No	Yes
2	U. S. Army	2 Weeks	No	Yes
	C.I.T.	2 Weeks	No	Yes
3	C.I.T.	2 Months	No	Yes
4	U. S. Army	Taught CBR Course		