31-461-10

PLEASE ADDRESS REPLY TO
PURCHASING DIVISION
KODAK PARK WORKS
TELEPHONE-CONGRESS 2500

EASTMAN KODAK COMPANY

ROCHESTER 4, N.Y.

May 24, 1957

United States Atomic Energy Commission
P. O. Box E
Oakridge, Tennessee

Attention of Isotopes Division

Gentlemen:

We are attaching herewith two signed copies of Form AEC-313 (Application for Byproduct Material License) and Form AEC-313b (Supplement B - Sealed Sources).

When these forms have been approved, will you please forward the license marked to the attention of the undersigned.

Yours very truly,

E. W. Guggenheim

EWGuggenheim:bg
Enc.

Kodak

All

31-461-10

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:

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 United States Radium Corporation

B. Make and model number of sealed source and/or device U.S.R.C. Model LAB-252B-1

C. Person who will hold legal title to sealed source Eastman Kodak Company

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*)

See attached letter

(*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:

Light sources will be tested by special ionization instrument designed for tritium if this is deemed necessary by the AEC in dealing with sealed and shielded sources of this nature which use tritium as the active agent.

See explanatory letter

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 accomplished by U.S.R.C. Laboratory Periodic inspection of sources will be carried out by the operating departments and by representatives of the Radiation Committee. No repair of sources will be undertaken and the sources will not be opened. An accurate inventory of all sources will be maintained. Disposal will be carried out in accordance with the AEC Standards (10-CFR-20).

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*):

No Application

(*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 Approximately 60 millicuries of tritium per source. U.S.R.C. Dwg. LAB-252B-1

6. MEANS BY WHICH BYPRODUCT MATERIAL WILL BE DEPOSITED IN SOURCE CONTAINER:
Tritium will be vacuum deposited on a titantium-clad stainless steel foil to form a surface film of titanium tritide. This active material will then be placed in intimate contact with a zinc-sulfide phosphor film, and sealed within a plastic capsule. This plastic capsule subsequently crimped into a metal shell.

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

U.S.R.C. drawing LAB-252B-1 attached

8. TYPE OF SEAL TO BE USED TO PRECLUDE LEAKAGE OF RADIOACTIVITY TO EXTERIOR OF SOURCE:
Plastic to plastic bonding by resinous adhesive to seal the primary plastic capsule which itself contains tritium in the form of a "bound" source. This capsule subsequently crimped into metal container.

9. IF SOURCE HOLDER IS TO BE USED WILL CONTAINER BE PERMANENTLY OR SEMIPERMANENTLY MOUNTED THEREIN?
Sources will normally be used as area marking devices on walls, etc. They will be used in this way in the form shown in LAB-252B-1.

10. DESCRIBE LABEL TO BE AFFIXED TO CONTAINER AND/OR SOURCE HOLDER (*Or attach copy. See instructions*):
The reverse side of outer metal housing will be inscribed with wording "radioactive", isotope symbol, serial number, and sealing date.

11. EVIDENCE OF STABILITY OF SOURCE CONTAINER MATERIAL TO IRRADIATION FROM BYPRODUCT MATERIAL THEREIN (*Omit if such stability is obvious*):
Materials of construction of source have been subjected to long-term testing in U.S.R.C. Laboratory.

12. LEAK TESTING PROCEDURE TO BE EMPLOYED INCLUDING EVIDENCE OF ITS EFFICACY AND INSTRUMENTATION TO BE USED:
Sources wipe tested externally, with measurement of contamination by means of specially devised ionization chamber.

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:

No Application

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

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

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*)

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

18. RADIATION PROFILE OF A PROTOTYPE DEVICE IS ATTACHED. (*Circle your answer*):	YES	NO

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

31-461-10

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.)*

(1) Eastman Kodak Company
(3) Rochester 4, New York

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

Eastman Kodak Company
(2) Kodak Park Works
Rochester 4, New York

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Any

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

As approved by the Radioisotope Committee of applicant institution (see: attached list for names and experience of Radioisotope Comm. members)

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

Dr. Julian H. Webb

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)*

See licenses 31-361- 1 through 7 issued to various departments for other radioisotopes

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
Tritium (H^3)	Titanium-Tritide	400 sealed markers at 60 millicuries each (Total 24 curies)

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

Not Applicable

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.)*

Isotope will be used as exciting agent for zinc-sulfide phosphor in sealed light sources, which will be used for dark room locators to mark dangerous areas or machine parts. These markers are for safer replacement of those containing radium that are in current use.

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

Tritium will be present in each marker as a bonded titanium tritide film on surface of a stainless steel foil. This foil will be effectively and permanently sealed into plastic and metal housing so that possible ingestion hazard will be eliminated. Radiation intensity at external surface of each marker is so low as to be immeasurable, thus eliminating any hazard due to external beta ray exposure.

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 New York
County of Monroe
Subscribed and sworn to before me this 24th day of May 1957

Notary Public — STEWART J. LYON, Notary Public, State of New York, Qualified in Monroe County, My Commission Expires March 30, 1958

Eastman Kodak Company, Kodak Park Works
Applicant named in Item 1

By J. E. Doyle
J. E. Doyle, Director of Purchasing
Title of Certifying Official

May 24, 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—57264-5

Form AEC-313 | ATOMIC ENERGY COMMISSION | Page Two

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	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)	FORMAL COURSE (Circle answer)
1. Principles and practices of radiological health safety.	NOTE: Radiation detection instruments and specially trained health physics personnel not necessary in view of the non-hazardous nature of the light sources involved. See attached explanations 1) under 12 form AEC 313 2) and under item 2 form AEC 313b		Yes No	Yes No
2. Radioactivity measurement standardization and monitoring techniques and instruments			Yes No	Yes No
3. Mathematics and calculations basic to the use and measurement of radioactivity.			Yes No	Yes No
4. Biological effects of radiation. . .			Yes No	Yes No
5. Actual use of radioisotopes in the types and quantities for which application is being made, or equivalent experience			Yes No	Yes No

13. ISOTOPE HANDLING EXPERIENCE

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
	Not Applicable			

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

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*)
See attached letter (item 12) and letter attached to form AEC 313b					

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

Not applicable to this license

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

Not applicable to this license

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

Not applicable to this license

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

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

Routine area surveys are made at least once a year of all areas (oftener as demand necessary) with suitable monitoring instruments and film. All radioactive materials are disposed of via supplier or U of R AEC project or in accordance with AEC regulations.

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

31-461-10

FORM AEC 313

Item 3 Radioisotope Committee

The Radiation Committee of Eastman Kodak Company, Kodak Park Works consists of Dr. David W. Fassett, Dr. E. K. Carver, Dr. Julian H. Webb, Mr. James Lees and Dr. William L. Sutton. Experience and training of committee members:

D. W. Fassett: A. B. 1933, M.D. 1940 New York University, Internship and Fellowship--Department of Medicine, New York University 1941-45.

Medical training included a one year series of lectures on the biological effects of x-ray radiation and radium therapy including lectures by Dr. Harrison Martland on specific actions of radium with reference to production of bone tumors and included lectures on x-ray physics and the physical chemical properties of radium. Practical training was given in x-ray and radium therapy. Since 1948 has attended various lectures on the biological effects of radiation at the Atomic Energy Project of the University of Rochester. Since 1949 has had responsibility for all medical problems connected with industrial hygiene and toxicology for Eastman Kodak Company including those from physical agents such as ionizing radiation. He has been a member of the Kodak Park Radiation Committee since its origin in 1950. During this time Dr. Fassett had frequent personal experience with carrying out and interpreting monitoring studies for many types of radiation including industrial and medical x-rays, beta ray gauges, x-ray diffraction equipment and sealed sources containing radium and cobalt 60 as well as monitoring for safety in use of tracer quantities of isotopes.

E. K. Carver: A.B. 1914, Ph.D. 1917 in physical chemistry, National Research Fellow 1919-22 in physical chemistry, instructor in physical chemistry University of Illinois 1922-24, research in physical chemistry Eastman Kodak Research Laboratory 1924-28, superintendent of Manufacturing Experiments 1928-47 Eastman Kodak Company, technical assistant to the General Manager of Kodak Park Eastman Kodak Company 1947 to present.

Dr. Carver was a consultant to the Atomic Energy Commission Manhatten District 1944 on coating methods. He has been in charge of protection of product against radioactive fall out in Eastman Kodak Company from 1950 to the present time. He is chairman of the National Association of Photographic Manufacturer's Committee on Radioactivity (from 1951 to the present). Dr. Carver has been a member of the Radiation Committee of Kodak Park since its origin in 1950 and in this capacity has reviewed all uses of radioactive material and radiation producing equipment at Kodak Park during this period.

Julian H. Webb: Ph.D. Wisconsin University 1929 in physics.

Dr. Webb worked for two years on the Manhatten Project 1943-45 at the University of California Berkeley, California and at Oak Ridge, Tennessee. While on the Manhatten Project one of his main responsibilities was radiation hazards. Considerable knowledge was gained in the field of radiation physics and means for its detection at that time. From 1945 to the present Dr. Webb

has had supervisory and investigative responsibilities in physics in the Research Laboratory at the Eastman Kodak Company. In this regard his experience has included measurements of radiations from radium, x-ray machines, artificial radioisotopes etc. All common types of detection instruments including Geiger counters, ionization meters, photographic monitoring films, alpha survey meters etc., have been used. Since 1950 he has been a member of Kodak Park Radiation Committee and has carried out the functions of that committee as detailed below.

James Lees: Graduate from Rochester Institute of Technology in electrical engineering. He has been employed in Manufacturing Experiments Division, Eastman Kodak Company as developmental engineer working on controls and on electronic instruments. A great deal of his time has been spent on devising tests and instruments connected with the control, the effect of fall out particles on Kodak raw materials and products. This work has included the institution of a nation wide monitor system and necessarily involves the knowledge of low level radiation measurements. He has been a member of the Kodak Park Radiation Committee since its origin in 1950.

William L. Sutton: M.D. Stanford University School of Medicine 1953, M.Sc. Industrial Medicine 1955 University of Rochester. Atomic Energy Commission Fellow in industrial medicine University of Rochester 1954-55. This year of training included didactic education in nuclear physics and radiation biology and both didactic and practical training in health physics. Residency in industrial medicine at Eastman Kodak Company 1955-56.

Since 1956 Dr. Sutton has been a member and secretary of the Kodak Park Radiation Committee. It has been his responsibility to maintain day to day contact with radiation protection procedures in Eastman Kodak Company and to maintain adequate records of these activities.

Functions of the Radiation Committee

The Radiation Committee shares with the Laboratory of Industrial Medicine responsibility for radiation protection. The Radiation Committee has been in operation since 1950. All proposed purchases of radioisotopes and radiation producing equipment must be approved by the Radiation Committee members prior to ordering through the Purchasing Division. On receipt of approved purchases the materials or equipment are examined by members of the Radiation Committee or its representatives for contamination and/or adequacy of safety devices. Inspection and monitoring is carried out at the time of installation and reported to the Radiation Committee. The Committee receives reports concerning periodic area, equipment and personnel monitoring surveys and maintains records of all such results. Before disposal of any equipment or materials the Radiation Committee must be notified and must approve. The records of these transactions are also maintained by the Laboratory of Industrial Medicine for the Kodak Park Radiation Committee. Radiation Committee is also responsible for seeing that the regulations stated in the New York State Industrial Code Rule #38 Radiation Protection are complied with.

Procedures for Procurement of Byproduct Material

Proposed purchases of byproduct material must be approved by the Radiation Committee which then assists (if approval is forthcoming) the department in preparing application forms AEC 313, and 313b. In the past it has been out practice to list the department heads as individual users on application forms. Therefore, the byproduct materials individually licensed are used only in the departments having license for use and possession of the material. Radiation Committee maintains a complete inventory of the use and monitoring data and copies of the AEC Licenses in its files. In those departments using byproduct materials departmental radiation safety supervisors are appointed and supervised by the designated radiological safety officer and by the members of the Radiation Committee. For the purposes of this application the Radiation Committee is applying as the individual user for a license to possess the stated quantity of tritium containing sealed markers. The committee will supervise storage procedures, distribution, use, safety procedures and disposal of these markers and will maintain an accurate inventory at all times.

Radiation Safety Practices

Assisting the Radiation Committee in health physics and instrumentation are Mr. H. M. Cleare and Mr. John Castle. Mr. Cleare is a research physicist in the Radiographic Department, Physics Division, Research Laboratory, Eastman Kodak Company doing research in the field of industrial medical radiography. Since 1951 his skills have been employed in personnel and area monitoring services for medical and industrial x-ray installations and for the use of radio-isotopes. He is designated as a radiation safety officer for Eastman Kodak Company with the New York State Labor Department. Mr. Cleare also provides film badge monitoring service for Eastman Kodak Company.

Mr. John Castle is a research physicist, Research Laboratories, Eastman Kodak Company since 1938. In addition to research in various physical problems applied to development and production of photographic materials he has been engaged in evaluation and development of nuclear track emulsions including exposure of the emulsions to sources of alpha particles, beta rays, neutrons and mesons and extensive studies of the physical properties of radioactive fall out particles as to half life and effect on photographic material etc. For the past seven years he has assisted in monitoring radiation installations in Kodak Park. This has included the use of beta survey meters, ionization chambers, photographic monitoring and periodic wipe tests on instruments containing radioactive materials.

Overall consultation on radiation protection is provided by Dr. James H. Sterner, M.D. Medical Director, Eastman Kodak Company. Dr. Sterner is chief consultant in industrial health at the U. S. Atomic Energy Commission Washington, D. C. 1948 to present time. He is a member of the main committee of the National Radiation Protection Committee 1954 to present. He was Medical Director of Clinton Engineer Works, Tennessee Eastman Corporation (Manhatten Project) 1943-45. A member of the radiological safety section and medical legal board operation crossroads (Bikini) 1956. Member of the interim Medical

Advisory Board U. S. Atomic Energy Commission 1945-47 and a member of the Radiation Research Society 1952 to present.

Biological procedures involving determination of body deposition of radioisotopes are performed on a consultation basis by the laboratories at the Atomic Energy Commission Project, University of Rochester.

The Radiation Committee at Kodak Park has adopted as a basic philosophy for its health safety procedures the consideration that any unnecessary radiation exposure is too much. In 1950 the Radiation Committee adopted as a basic radiation protection figure the maximum permissible whole body exposure of 0.03 r (30 mr) per week. This is 1/10 of the standard recommended by the National Bureau of Standards and of those detailed in the Federal Register, Title 10, Part 20. Area inspection, personnel monitoring and area surveys are carried out on all facilities and installations (no matter how good the previous experience) atleast once a year and are reported to the Radiation Committee. Accurate lists of names of personnel potentially exposed to ionizing radiation are maintained. The health practices in Kodak Park conform to the recommendations given in the National Bureau of Standards Handbooks on radiation protection and to the requirements of New York State Industrial Code Rule #38 as well as those detailed in the Federal Register, Tuesday, January 9, 1957 Title 10, Part 20.

Radiation Instrumentation

Radiation survey instruments available at Kodak Park are as follows:

1. Two nuclear Chicago Model 2611 Geiger counters with both model D-50 Geiger probe and thin end-window probes.

2. Jordan AGD-10-SR portable ionization chamber rate meter for beta and gamma survey.

3. One Landsverk electrometer.

4. One Victoreen "R" meter for x-ray measurement.

5. One Victoreen alpha survey meter model 356.

For laboratory measurements there are:

1. For beta-gamma: A laboratory counter utilizing variable end window Geiger tubes manufactured by the Victoreen Company with end windows of thicknesses down to 2.5 mg/cm^2 connected to a decade scaler built at the University of Rochester Atomic Energy Commission Project.

2. For alpha counting: A laboratory instrument utilizing a shielded scintillation counter with sensitive phosphor on lucite plates and appropriate photo multiplier tubes connected to a Nuclear Instrument and Chemical Corporation model 162 scaler.

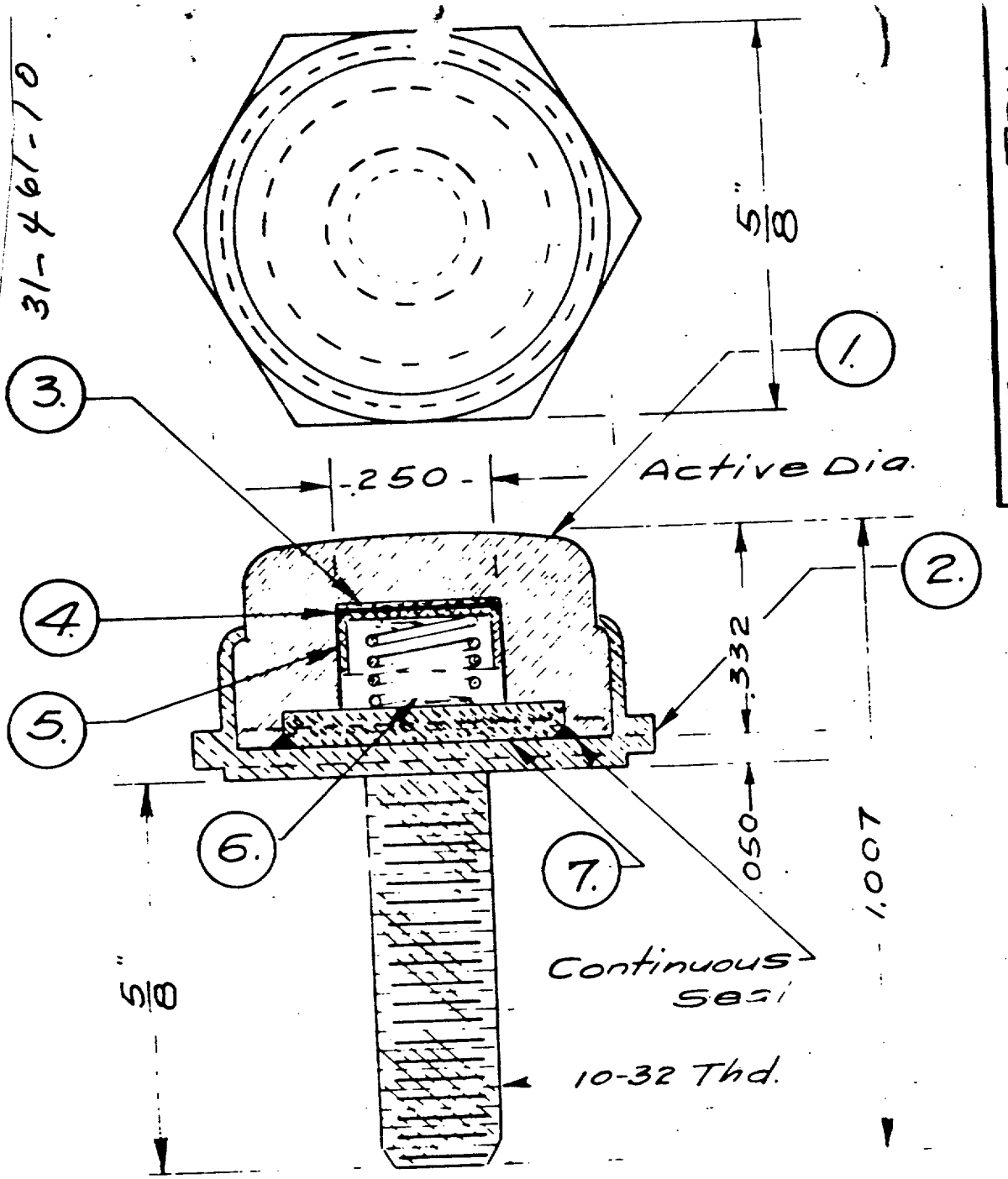
3. For laboratory measurements of isotopes with soft beta emission in the laboratory: A gas flow proportional counter connected to a suitable scaler.

31-461-10

FORM AEC 313b

The Radiation Committee does not plan to carry out twice yearly leak tests on all tritium containing light sources that will be in use in Kodak Park. It is believed by the Committee that the hazard from these sources is small. The main purpose for requesting license for this use of tritium is to replace radium containing light sources which in all respects are more hazardous than those containing tritium. It is believed that such periodic testing of all sources would be impractical in our use situation and such a requirement might prevent acceptance of these safer substitutes for radium markers.

31-461-10



TITLE: TRITIUM FOIL LIGHT SOURCE

UNITED STATES RADIUM COR
BLOOMSBURG, PA.

D'WN BY | APPR'D | DATE 1-11-5
C'K'D BY | SCALE 4X | DWG NO. LA

PROJ ENGR
MACH SHOP
MATERIAL

LEGEND

1. Plexiglas Shell.
2. Housing Brass.
3. .010 Plastic., Phosphor Cooted on bottom.
4. Tritium Foil.
5. Aluminum Cup.
6. Compression Spring.
7. Plexiglas Back Plate

NOTE:
Plexiglas Shell Detail (Dwg. LAB. 252A.)
Brass Housing Detail (Dwg. LAB 252 B.)

U.S.R.C. Code. I-906.