

DOCKET NO. 7-1335



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR LOGISTICS
WASHINGTON, D.C. 20310

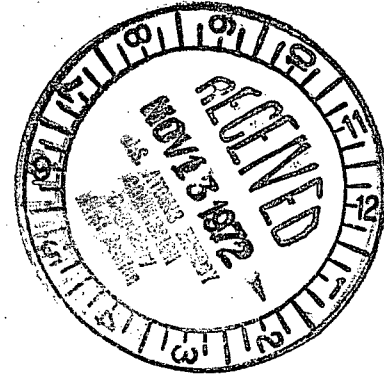
DALO-MAI

Regulatory

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1 November 1972

U.S. Atomic Energy Commission
Division of Materials Licensing
Source & Special Nuclear Materials Branch
Washington, D.C. 20545



Gentlemen:

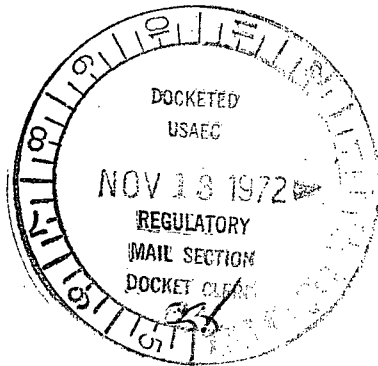
Forwarded for your consideration and approval is a letter-form application from the U.S. Army Electronics Command, Fort Monmouth, New Jersey for a Special Nuclear Material License.

The material is Plutonium-239 for use as check sources. It should be noted that these check sources each contain only 0.01 microcuries of Plutonium and are covered by a general license. A specific license for the Army is requested, however, because it is likely that more than the maximum allowed of 5 microcuries will be in one location while in storage.

Sincerely yours,

ALLEN W. REHRIG
Acting Chief
Industrial Division

1 Incl
As stated (7 cys)



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DEPARTMENT OF THE ARMY

HEADQUARTERS UNITED STATES ARMY ELECTRONICS COMMAND
FORT MONMOUTH, NEW JERSEY 07703

AMSEL-SF

13 October 1972

SUBJECT: Application for Special Nuclear Material License

Director
Division of Materials Licensing
US Atomic Energy Commission
Washington, DC 20545

1. The United States Government, Department of the Army, US Electronics Command, ATTN: AMSEL-SF, Fort Monmouth, New Jersey, hereby makes application for a Special Nuclear Material license to own, acquire, receive, possess, use and transfer said material. The following information is submitted in fulfillment of the requirements of Section 70.21, Title 10, Code of Federal Regulations, Part 70, "Special Nuclear Material".
2. The special nuclear material, Plutonium-239, is to be used in check sources manufactured by Eberline Corp, Eberline check source Model No. CS-1. They will be used in conjunction with the AN/PDR-60 radiac instrument to check functional operations. These check sources will be used worldwide by military and civilian personnel of the Army. This check source is used by holding it against the thin window side of the probe of the AN/PDR-60 and reading the meter of the instrument to check its operation. This check source clips to the end of the probe of the instrument in such a way that it can be swung to or away from the thin window portion of the probe.
3. This license is requested for a period of five years.
4. Each check source contains less than 0.01 microcuries of Plutonium-239. Total amount of Plutonium-239 that will be used under this license is less than 0.01 pound. These sources are covered by general license, but this specific license is requested because of the possibility of more than 5 microcuries being present at one location in the Army supply system.
5. The individual responsible for the overall radiation safety program regarding these check sources is Mr. James M. Garner, Jr. whose qualifications are listed in the application for license number 29-01022-08, Supplement 1, or his alternate Mr. Stanley B. Potter, whose qualifications are listed in Supplement D. Individual users are required to read Technical Manual TM 11-6665-221-15 before using the check source.

Rec'd w/ltr. dtd. NOV 1 1972

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AMSEL-SF

13 October 1972

SUBJECT: Application for Special Nuclear Material License

6. The AN/PDR-60 is used as a radiac instrument with the check source. This is a scintillation type alpha particle radiation intensity measuring device.

7. A radiation sign showing that the check source has Plutonium-239 is painted on the clip holding the source. The active material is all within a small indentation within the clip so that it is difficult to touch the active material. When manufactured, the check sources are adherence tested and show no removable radioactive material. The AN/PDR-60 radiac instrument is used in conjunction with this test sample, and the operational manual (TM 11-6665-221-15) for the AN/PDR-60 has a radiological safety notice on the inside of the front cover (copy included as Supplement A). Within the manual, all procedures that call for the use of a check source refer the user to this safety notice. Verification of quality at time of purchase is assured by testing as delineated in Supplement C. Page 21 of this manual (Supplement B) requires that check sources which are damaged or deformed not be used, but be disposed of as radioactive waste. The underlined portion of Supplement B are pending changes to this manual which will be incorporated within one year. These changes require a report of reason for disposal be forwarded, which will serve as surveillance testing of field items. Also being added are instructions which will preclude the check sources from being sold or donated. These check sources are stored in the metal suitcases which are the carrying cases for the AN/PDR-60 radiac instruments.

FOR THE COMMANDER:

3 Supplements
as



BERNARD M. SAVAIKO
Chief
Safety Office

SUPPLEMENT A

SUBJECT: Radiological Safety Notice

The following is extracted from inside the front cover of Department of the Army Technical Manual TM 11-6665-221-15, as changed 23 April 1968.

RADIOLOGICAL SAFETY NOTICE

a. Personnel working in high radiation dose rate areas must be extremely careful to prevent bodily harm. While the radiation from radioactive substances cannot be felt or seen, prolonged or intensive exposure may result in serious injury. One-tenth (1/10) of a roentgen (100 milliroentgens) per 5-day (40-hour) week is considered to be the maximum dose rate of such radiation to which the body can be exposed continuously without serious damage.

b. The material used to mark the scales on the meter of Radiac Set AN/PDR-60 is slightly radioactive. Check Source CS-1 contains 0.01 microcuries of Plutonium Pu239 and Check Source CS-12 contains 0.01 microcuries of Thorium (Th230). Do not allow any of this material to come in contact with the skin. Damage to body tissue can occur if the material enters the body through cuts in the skin or by accidental swallowing.

c. When using Calibrator, Radiac AN/UDM-6 for calibration (Sect. IV, para D), be careful not to scrape or abrade the surfaces of the radioactive test samples with the instrument probe or other hard object.

SUPPLEMENT B

SUBJECT: Disposition of Damaged Check Source

The following is extracted from page 21 of Department of the Army Technical Manual TM 11-6665-221-15, as changed 23 April 1968.

F. Disposition of Damaged Check Source

1. Do not use a check source if it is damaged or deformed.

- (a) Deformation of a check source may cause some flaking of the radioactive material (Thorium or Plutonium 239). Such flaking will reduce the radioactivity of the check source and make it useless for calibration purposes. In addition, this flaking will increase the possibility of the user picking up particles of radioactive material that may be transferred to the mouth when smoking or eating.
- (b) Fire can damage a check source. The different rates of expansion of the radioactive material and the check source holder may cause flaking when the check source is exposed to high temperature.

2. Turn in a damaged or deformed check source through Chemical Corps supply channels for disposal as radioactive waste in accordance with AR 755-15. Upon turn in of a check source, mail a report stating reason for turn-in directly to Commander, ECOM, ATTN: AMSEL-SF, Ft Monmouth, NJ 07703.

3. Check sources surplus to the needs of users will be reported as surplus to the appropriate radioactive material control point and will be retained by the user until disposition instructions are received. Radiological Control Officers at radioactive material control points will determine whether surplus check sources can be economically reutilized or handled as radioactive waste, and issue disposal instructions accordingly.

SUPPLEMENT C

SUBJECT: Verification of Quality

Prior to the purchase of a quantity of check sources a sampling of the items will be selected randomly and tested for adherence and quality. The sampling will consist of five or more items not to exceed two per cent of the quantity to be purchased. Adherence and quality testing will be conducted by US Army Electronics Command, Fort Monmouth, NJ. Adherence testing will consist of applying and removing several times the sticky side of a small piece of masking tape to the active area of the check source, then test the masking tape for alpha emitting material with appropriate detecting instrumentation. Quality testing will consist of a visual inspection of the check source, putting the check source in place on the end of the probe, to assure proper fit, and counting alpha particle emission from the check source to assure proper amount of radioactivity. If one or more of the check sources are found to be unsatisfactory that item will be rejected and before the quantity is accepted a sampling three times as large as the original sampling will be tested, and found to be acceptable in its entirety.

SUPPLEMENT D

Resume of Training and Experience

1. Name: Stanley B. Potter
2. Position Title: Health Physicist
Alternate Radiological Protection Officer

3. Educational background:

Colorado State University	4 yrs	1961	BS, Physics
Chemical Corps School	2 wks	1964	Compl Radiation Safety Course
Naval Postgraduate School	2 yrs	1969	Compl Nuclear (Effects) Engineering Curriculum
Nuclear Weapons School	8 wks	1969	Compl SONAC, NET OPS, NHTC

4. Vocational experience with radiation:

1961-1964 At Nuclear Defense Laboratory, Edgewood Arsenal, Md, as research physicist.

1964-1967 With US Army in Germany, as Radiation Protection Officer for the 32d Army Air Defense Command.

1969-1972 With Defense Nuclear Agency in Albuquerque, New Mexico, as Chief, Radiation Safety Support Division, Nuclear Weapons School.

1972 With Pan American Airways, Environmental Health contractor for NASA and the Air Force at Cape Kennedy, Florida, as Chief, Health Physics Division.

1972 With US Army, Fort Monmouth, NJ as Health Physicist.

5. Formal Training in Radiation:

- a. Principles and practices of radiation protection.

<u>Where Trained</u>	<u>Duration of Training</u>
Colorado State University	24 weeks
Chemical Corps School	2 weeks
Naval Postgraduate School	2 years
Nuclear Weapons School	8 weeks

b. Radioactivity measurement, standardization, and monitoring techniques and instruments.

<u>Where Trained</u>	<u>Duration of Training</u>
Colorado State University	12 weeks
Chemical Corps School	2 weeks
Naval Postgraduate School	36 weeks
Nuclear Weapons School	8 weeks

c. Mathematics and calculations basic to the use and measurement of radioactivity.

<u>Where Trained</u>	<u>Duration of Training</u>
Colorado State University	24 weeks
Chemical Corps School	2 weeks
Naval Postgraduate School	2 years
Nuclear Weapons School	8 weeks

d. Biological effects of radiation.

<u>Where Trained</u>	<u>Duration of Training</u>
Chemical Corps School	2 weeks
Naval Postgraduate School	36 weeks
Nuclear Weapons School	2 weeks

6. On-the-job training in radiation.

a. Principles and practices of radiation protection.

<u>Where Trained</u>	<u>Duration of Training</u>
Nuclear Defense Laboratory Germany	3 yrs - 1961-1964
Albuquerque, New Mexico	3 yrs - 1964-1967
Cape Kennedy, Florida	3 yrs - 1969-1972
Fort Monmouth, New Jersey	1 mo - 1972
	1 mo - 1972

b. Radioactivity measurement, standardization, and monitoring techniques and instruments.

<u>Where Trained</u>	<u>Duration of Training</u>
Nuclear Defense Laboratory Germany	3 yrs - 1961-1964
Albuquerque, New Mexico	3 yrs - 1964-1967
Cape Kennedy, Florida	3 yrs - 1969-1972
Fort Monmouth, New Jersey	1 mo - 1972
	1 mo - 1972

c. Mathematics and calculations basic to the use and measurement of radioactivity.

<u>Where Trained</u>	<u>Duration of Training</u>
Nuclear Defense Laboratory	3 yrs - 1961-1964
Germany	3 yrs - 1964-1967
Albuquerque, New Mexico	3 yrs - 1969-1972
Cape Kennedy, Florida	1 mo 1972
Fort Monmouth, New Jersey	1 mo 1972

7. Experience with radioisotopes.

<u>Isotope</u>	<u>Maximum Activity</u>	<u>Place of Experience</u>	<u>Duration of Experience</u>
Ra ²²⁶	Less than 10 curries	Colorado State University	3 mo
Co ⁶⁰	Kilocurries	Naval Postgraduate School	3 mo
		Colorado State University	3 mo
Am ²⁴¹	Millicurries	Chemical Corp School	6 mo
		Naval Postgraduate School	3 mo
Pr ¹⁴⁷	Hundreds of curries	Albuquerque, New Mexico	3 yrs
Pu ²³⁸	Kilocurries	Albuquerque, New Mexico	3 yrs
		Cape Kennedy, Florida	1 mo
Pu ²³⁹	Curries	Albuquerque, New Mexico	3 yrs
		Cape Kennedy, Florida	1 mo
Co ⁵⁷	Millicurries	Albuquerque, New Mexico	1 yr
Th ²³²	Kilocurries	Albuquerque, New Mexico	3 yrs
Th ²²⁹	Curries	Edgewood, Maryland	3 yrs
Tritium	Hundreds of curries	Edgewood, Maryland	3 yrs
		Albuquerque, New Mexico	3 yrs
I ¹³¹	Millicurries	Edgewood, Maryland	1 yr
		Naval Postgraduate School	1 yr
Po Be	Curries	Edgewood, Maryland	3 yrs
Pu Be	Curries	Edgewood, Maryland	3 yrs
Ir ¹⁹²	Hundreds of curries	Cape Kennedy, Florida	1 mo
Kr ⁸⁵	Hundreds of curries	Cape Kennedy, Florida	1 mo
U ²³⁸	Millicurries	Albuquerque, New Mexico	3 yrs
Sr ⁹⁰	Millicurries	Germany	3 yrs
		Albuquerque, New Mexico	3 yrs
		Colorado State University	3 mo
		Germany	3 yrs
Y ⁹⁰	Millicurries	Albuquerque, New Mexico	3 yrs
		Colorado State University	3 mo

8. Experience with devices equivalent to that of actual use of radioisotopes.

<u>DEVICE</u>	<u>PLACE OF EXPERIENCE</u>	<u>DURATION</u>
Cockroft Walton Accelerator	Edgewood, Maryland	2 years
Betatron	Edgewood, Maryland	1 year
Van de Groff Accelerator	Naval Postgraduate School	1 year