

TO : Files  
THRU : R. S. Cleveland  
FROM : L. Higginbotham

*RCG*  
*12/30/68*

SUBJECT: Department of the Army  
USA Electronics Research & Development Lab  
Fort Monmouth, New Jersey  
License: 29-1022-6

Inspector's Evaluation

Relatively light use of material compared to scope of license, most of that possessed being in the form of sealed sources. Personnel appear competent and supervision exercised, procedures, and control are more than adequate for the program.

Recommend reinspection interval of one year plus six months, March 1970.

License is properly categorized E II.

*Next inspector should cover use of H<sup>3</sup> in accelerator in detail back to 1966. Ditto for Sr<sup>90</sup> and other large am'ts. RCG 12/30/68*

*CC/b*

INSPECTION NOTES FOR AEC 591

Department of the Army  
U S A Electronics Research & Developments Lab  
Fort Monmouth, New Jersey

Reviewed by: BS Date: 12/30/68

Inspector: L. Higginbotham

License: 29-1022-6 EII

Announced reinspection on 10 October 1968.

Persons Accompanying

None, state not notified.

Persons Contacted

Mr B. Markow, Chairman-Isotopes Committee  
Capt Sweeney, Supv-Radiation Facilities  
Lt Lorentz, Ass't to Sweeney  
Mr C. Pullen, Radiation Physicist

Inspection History

License was last inspected in October 1966, a clear 591 was issued.

Inspection Findings, Noncompliance

Program activity is relatively light compared to scope of the license. There has been essentially no change in operations or use since the previous inspection. Mr Markow has been at the facility associated with the program for a number of years and supervises most operations under the license. Facilities and procedures are adequate and personnel appear competent and knowledgeable. Most of the material possessed under the license is in the form of sealed sources with the exception of tritium targets and replenisher cartridge for the neutron generator and some plated Polonium sources.

No items of noncompliance were noted, a clear 591 was issued.

Management Interview.

Inspection findings were reviewed with Mr Markow and Mr Lewis L. Kaplan, Deputy Director-Engineer Support Services Department.

DETAILS

Organization and Administration

1. Essentially the same as found during previous inspection with some, personnel changes. B. Markow remains chairman of the Isotopes Committee with Dr W. Ramm as the Radiation Protection Officer. The Committee has full and complete authority concerning use of licensed material. Markow as Chairman reports to Mr L. Kaplan, Deputy Director-Installation and Services, who in turn reports to the Commanding General, Maj Gen W. Latta. A list of current membership of the Isotopes Committee is attached.

Use of Material, Special License Conditions

2. License condition 11, authorizing use of material at locations other than Fort Monmouth, was reviewed with Mr Markow who supplied the following information:
  - a. 11A. Cobalt-60, sealed source 200 Ci. Last used at Oakhurst Tower Station in 1966; at Nevada Test Site in 1958; at Pacific Proving Grounds in 1959; at Lakehurst Naval Air Station in 1967; no use at Fort Huachuca, Arizona.
  - b. 11B. Cobalt-60, sealed source, 2 Ci. Used at Fort Greely in 1957.
  - c. 11C. Strontium-90, sealed light source, 50 mCi. Last used at Oakhurst Tower station in 1967.
  - d. 11D. Hydrogen-3, sealed light source, 500 mCi in 2 of 250 mCi. Last used at Ft Huachuca, Arizona and Yuma Test Station, Arizona in 1963-1964.
  - e. 11E. Hydrogen-3, titanium tritide target of 10 Ci, replinisher cartridge of 140 Ci, in Kaman Nuclear Neutron generator. Unit was installed at Fort Hancock in 1966 and used intermittently since that time, last used six months ago. Used approximately twice per month for periods of one day. Personnel operating the unit are from the Fort Monmouth (Evans) area and approved by the Isotopes Committee. Material on hand there are two each 7 Ci tritium targets and one 90 Ci tritium replinisher cartridge. Markow stated that an Atomic Accessories Model TSM-91C tritium monitor is on hand at the facility (Hancock) and used whenever entering the area of the generator after its operation.
  - f. 11F. Strontium-90, sealed sources, 120 mCi in AN/UDM-2 radiac calibrator. Checkout of the calibrator at Lakehurst Naval Air Station in June of 1968.
3. License condition 13. Markow stated that all material is used by or under supervision of individuals designated by the Isotopes Committee and at present approximately 50 users are "authorized". Review of records verified this number and the files contained information as specified in ECOM Reg 385-9, Prevention and Control of Radiation Hazards, indicating that the licensee followed written procedures.
4. License condition 14. Leak test records were reviewed and a spot check of sealed sources listed in the inventory revealed they were on the schedule for testing. A total of 44 sources were on a 6-month schedule and 28 were listed on a 3-month schedule. Results were recorded in units of  $\mu\text{Ci}$ , most being recorded as less than  $10^{-4} \mu\text{Ci}$ . No discrepancies were noted. Markow stated that all sealed sources are tested no matter how small the activity content was. Leak tests are performed by Mr C. Pullen of the safety group, his experience and training is documented.

5. The following listed material was on hand in addition to the inventory listed in the last inspection report. Date of receipt is indicated.

<u>Isotope and Form/device</u>	<u>Amount</u>	<u>Location</u>	<u>Received</u>
Americium-241, foil	100 µCi	Bldg 39	9 Sep 68
Cesium-137, density guage	3 mCi	Bldg 383	20 Mar 67
	15 µCi	"	"
Nickel-63, Gas Chromatograph	2 mCi	Bldg 45	20 Mar 67
Polonium-210, plated discs, 5-each	500 µCi	Bldg 41	20 Mar 68
Polonium-210, plated discs, 2-each	1.4 mCi	Bldg 41	6 May 68
Strontium-90, sealed source	100 mCi	Bldg 383	1 Sep 68
Strontium-90, sealed source	25 mCi	Bldg 383	1 Sep 68
Hydrogen-3, neutgenr target 2-each	6.4 Ci	Bldg 383	28 Feb 68
Hydrogen-3, neutgenr target	7 Ci	Ft Hancock	14 Feb 67
Hydrogen-3, replenisher cart for neutgenr	90 Ci	Ft Hancock	2 May 67

#### Facilities

6. Unchanged since previous report. Building 401 contains office space and the AN/UDM-() calibrators (100 Ci Cs-137, 2 Ci Co-60) in a suitably shielded, guarded, secured, and interlocked area. Building 45 nearby contains a counting room and a chemistry lab with hood and glove box, the lab being unused however. Storage of material is in a small building (T-383) nearby. Markow said that all areas are locked and secured when not occupied and keys are controlled from a locked key cabinet by sign-out, this included facilities used at Fort Hancock.
7. The facility at Fort Hancock for the neutron generator has been secured for the past several months and unused. The installation is described in the attachment to license application of May 1967, as are all facilities under the license.

#### Instrumentation

8. A variety of survey and counting instruments are available, a full list and description is attached to application of 24 May 1967. Markow said that survey instruments are calibrated on a quarterly schedule at their facility using either the Cs-137, 100 Ci, AN/UDM-1A or Co-60, 2 Ci, AN/UDM-1 calibrator. He said they calibrate to  $\pm 10\%$  at usually a  $3/4$  reading of each scale. Records were maintained for each instrument on a log sheet in a ring binder. Most current calibration for instruments on hand was August 1968.

#### Radiological Safety Procedures

9. Written procedures are in ECOM Regulation 385-5, copy of which is given to each user according to Markow. He said that specific instructions are given to users for special applications of material.

10. Surveys are conducted monthly in restricted and unrestricted areas. Independent measurement by the Inspector verified recorded reading, highest for unrestricted area, of approximately 0.4 mr/hr at the door of the storage building, T-383. Monthly smear samples are made in building T-383, no contamination noted.
11. A monthly health physics report is prepared and furnished each member of the Isotopes Committee. Report includes personnel dosimetry results, smears and survey of buildings 45, 401, T-383; authorizations issued, special surveys, wipe and leak tests performed, shipments, waste disposal, and other pertinent subjects.

#### Waste Disposal

12. Licensee uses services of Edgewood Arsenal and shipments are made usually annually. Last shipment in January 1968 included a 7 Ci depleted H-3 target, approx 2  $\mu$ Ci of U-238, and approx 90 mCi Ra-226. One shipment was made to Tracerlab, June 1968, of approx 120 mCi Sr-90.

#### Posting and Labeling

13. No discrepancies noted.

#### Personnel Monitoring

14. Film badge service of Lexington Army Depot is used for approx fifty individuals on a monthly change schedule. Records are maintained in the form of DD 1141. Highest period (monthly) dose was noted to be 32 mr.
15. Urinalysis is performed intermittently for individuals involved at the Hancock facility use of the tritium targets in the neutron generator. A typical report was results for two individuals who had performed two days maintenance work on the generator. Records indicated 0.36  $\mu$ Ci/liter and 0.28  $\mu$ Ci/liter respectively. Duplicate samples, taken 24 hours after completion of the work, were sent to both Tracerlab and to the Army Environmental Health Agency. Results of the two separate analyses were in close agreement.

ECOM ISOTOPE COMMITTEE MEMBERS

B. Markow (Chairman)

Dr. W. Ramm (Radiological Protection Officer)

Capt. Sweeney (Supervisor RADIATION FACILITIES)

Richard Rast - (Scientist)

T. Gentile - (Safety officer)

S. Kronenberg (Director - Div "S")

Capt. ~~Giventer~~ Golden (Preventative Medicine)

Dr. Kedesdy Director Div C

Capt. ~~Locke~~ SHERKES (Radiologists)

L. Kaplan - (Depty Director Installation & Services)

B. Savaiko (ECOM Safety officer)

C. Pullen (Secretary)