N 1 FORM 111
ised August 78)

U.S. NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

REGION I

IRRADIATOR INSPECTION

(Field Notes)

see d of Army - CAEMRC t, Monmouth, NJ	Facility Pool irradiator Underground Vault In Air Inside
se No. 29-01022-07 29-01022-10	Inspection Date 10/20 & 11/6/78
ipal Inspector Jerman	Other Accompanying Persons M. Slobodien & M. Ho

iduals Interviewed	Titles	Date of Interview
Stanley Potter, RSO. S. Kronenberg, Investigator Harry Van Gordon, Engineer E.L Bowsman, Commander.	e. f. g. h.	11/6/78 Place of Interview Office of d.

of RSO	Telephone No. of RSO
Stanley Potter	201-544-5292

cement Action(s)

01022-07 — L/C 16 Entry control device did not function.

01022-10 - L/C 15 Alarm system for low pool water not functioning.

11/6/78

FF/12

Scope of Program

1. Number of individuals occupationally exposed 13.
2. Type of Irradiator (eg. Pool, Pit, etc.) Lic 07 In Air - cask storage. 07-5001 Pool irradiator.
3. Number of Curies [-] of Co-60. 07-5001-1800 07-2
4. Frequency of use: 1/d - 1 times per week.

Exposure Evaluation

1. Personnel
   a. Film Badge ✓
   b. Dosimeter ✓
   c. Other chirper.
2. Facility
   a. Independent area radiation monitor Yes
   b. Survey meter when enter HRA Yes - for in div.

Surveys

1. Radiation levels in unrestricted areas < 0.1 mR/hr.
2. Contamination smears in restricted area B.G. in pool area.
3. Leak Tests
   a. Frequency 6 mo.
   b. Method adequate Yes.
4. Interlocks into HRA
   a. Frequency of Testing Quarterly - will be each time use
   b. Functional at time of inspection OK at end of inspection. Not functional before.

Ex 2

They were delet

c. Are they intentionally bypassed or deleted. Yes No

(1) Procedure if yes

None

d. In accordance with license? No

e. Adequate? No

5. Routine maintenance of Hot cell equipment adequate. (Yes) No

Instrumentation

1. Adequate type and number: (Yes) No

2. Calibration as required: (Yes) No

Evaluation of Effluent

1. Liquid OK

2. Airborne N/A

Training

1. Std. Procedures Yes

2. Emergency Procedures Yes

3. NRC Regulations Yes.

Signs/Posting

1. CRM

2. CHRA Yes.

3. 19.11

Evaluation of Incoming Packages (20.205)

None received

Disposal

None.

Evaluation of Outgoing Shipments - (DOT)

N/A

Unusual Occurrences or Events

None.

Independent Measurements (Van, Inspector)

Pool sample

wipes in pool incubator room.

For irradiatiors not completely self-shielded containing:

379 Ci colbalt-60

1042 Ci iridium-192

1515 Ci cesium-137 or more, the following must be determined:

I. Control Devices

1. What control device will prevent entry of individuals into the irradiator when the source is exposed?

Microswitch on door retracts source when door is opened.

2. What control device will retract the source if an individual attempts entry?

Same.

3. What control device prevents operation of the source if an individual is present in the irradiator?

Alarm rings — switch inside is hit to retract source.

4. Do any of the above control devices prevent egress from the irradiator?

No - door can always be opened.

I. If the Entry Control Devices Fails:

1. What control device will retract the source?

None —

one will be added.

2. Are visible and audible alarm signals generated to warn individuals entering of the hazard, and to alert another knowledgeable individual? There is an alarm for 10 seconds before the plug comes up. Flashing light in cell but none at entrance.

If there is credible probability, the physical radiation barriers can fail: No — only the door.

1. What control device will cause the source to retract?

2. Are visible and audible alarms signals generated to warn individuals entering of the hazard, and to alert another knowledgeable individual?

If the Source Is Stored In A Liquid Shield:

1. Is loss of liquid level adequately signaled for immediate action?
Not on 10/20/78 — was on 11/1/78

Exposing the Source

1. What device will automatically generate visible and audible alarm signals to alert individuals before exposing the source?

See N. 2 above

2. What clearly identified device can be activated from inside the irradiator which will prevent the source from becoming exposed?

See N. 3

3. Is there a procedure to assure that the area is clear of individuals prior to exposing the source?

Operator must make visual check before exposing the source.

. Physical Radiation Measurements

1. Is a physical radiation measurement made upon entry to the irradiator after source operation? Yes — & source to check for functioning in Stuvvent was installed by ORI

. Tests of Entry Control Devices

1. Are tests of the entry control devices conducted each day prior to initial operation of the source? (Note: These tests are not required if operations are uninterruptedly continued from the previous day.)
No but will be

2. Are records of these tests maintained?
No but will be

. Control of Portals Into Irradiator N/A

1. What safety devices and administrative procedures are used to prevent entry by individuals through portals that convey materials in and out?

2. Are exit portals equipped to detect and signal presence of loose radiation sources and to automatically prevent them from being carried out?

J. Independent Measurements

1. Take water sample and split with licensee.

   a. Licensee results
   $< 2.5 \times 10^{-6}$ mCi/ml

   b. IE:I Results
   $< 1 \times 10^{-8}$ mC/ml.

2. Planchet or bottle source standard.

   a. Value

   b. Licensee's results

3. Results of interlock checks

   Source was not retracted on 10/20

   " was retracted on 11/1

4. Is water continuously circulating through demineralizer?

   Yes

5. Results of surveys around demineralizer.

   < 0.3 mR/hr.

6. Demineralized conductivity measurement

   Yes.

7. Results of PH check with litmus paper

   N/I

8. Restricted area survey results with meter

   < 0.3 mrem/hr.

9. Restricted area survey results with wipes

   < 100 d/m

10. Unrestricted area survey results

< 0.1 mR/hr.

11. Results of check of liquid level indicator

On 10/31, alarm did not operate
On 11/1 it did.

Form AEC-591
(7/67)

UNITED STATES ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGMENT

E-III

1. LICENSEE	2. REGIONAL OFFICE
Dept of the Army U. S. Army Electronics Command Fort Monmouth, N.J. 0703	U. S. ATOMIC ENERGY COMMISSION Division of Compliance, Region I 970 Broad Street Newark, N.J. 07102
3. LICENSE NUMBER(S) 29-1022-7	4. DATE OF INSPECTION January 19, 1970 R/I

5. INSPECTION FINDINGS

☒ A. No item of noncompliance was found.

☐ B. Rooms or areas were not properly posted to indicate the presence of a RADIATION AREA. 10 CFR 20.203(b) or 34.42

☐ C. Rooms or areas were not properly posted to indicate the presence of a HIGH RADIATION AREA. 10 CFR 20.203(c) (1) or 34.42

☐ D. Rooms or areas were not properly posted to indicate the presence of an AIRBORNE RADIOACTIVITY AREA. 10 CFR 20.203(d)

☐ E. Rooms or areas were not properly posted to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(e)

☐ F. Containers were not properly labeled to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(f) (1) or (f) (2)

☐ G. A current copy of 10 CFR 20, a copy of the license, or a copy of the operating procedures was not properly posted or made available. 10 CFR 20.206(b)

☐ H. Form AEC-3 was not properly posted. 10 CFR 20.206(c)

☐ I. Records of the radiation exposure of individuals were not properly maintained. 10 CFR 20.401(a) or 34.33(b)

☐ J. Records of surveys or disposals were not properly maintained. 10 CFR 20.401(b) or 34.43(d)

☐ K. Records of receipt, transfer, disposal, export or inventory of licensed material were not properly maintained. 10 CFR 30.51, 40.61 or 70.51

☐ L. Records of leak tests were not maintained as prescribed in your license, or 10 CFR 34.25(c)

☐ M. Records of inventories were not maintained. 10 CFR 34.26

☐ N. Utilization logs were not maintained. 10 CFR 34.27

Charles E Comer CHARLES E COMER
(AEC Compliance Inspector)

6. LICENSEE'S ACKNOWLEDGMENT

The AEC Compliance Inspector has explained and I understand the items of noncompliance listed above. The items of noncompliance will be corrected within the next 30 days.

(Date) (Licensee Representative — Title or Position)

ORIGINAL: LICENSEE. COPIES: ☐ CO REGION ☐ CO HEADQUARTERS ☐ CO ENFORCEMENT

Form AEC-591
(7/67)

NITED STATES ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGMENT

E(1-A)II

1. LICENSEE	2. REGIONAL OFFICE
Dept of the Army U. S. Army Electronics Command Fort Monmouth, N.J. 07703	U. S. ATOMIC ENERGY COMMISSION Division of Compliance, Region I 970 Broad Street Newark, N.J. 07102
3. LICENSE NUMBER(S)	4. DATE OF INSPECTION
29-1022-6	January 19, 1970 R/I

5. INSPECTION FINDINGS

☒ A. No item of noncompliance was found.

☐ B. Rooms or areas were not properly posted to indicate the presence of a RADIATION AREA. 10 CFR 20.203(b) or 34.42

☐ C. Rooms or areas were not properly posted to indicate the presence of a HIGH RADIATION AREA. 10 CFR 20.203(c) (1) or 34.42

☐ D. Rooms or areas were not properly posted to indicate the presence of an AIRBORNE RADIOACTIVITY AREA. 10 CFR 20.203(d)

☐ E. Rooms or areas were not properly posted to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(e)

☐ F. Containers were not properly labeled to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(f) (1) or (f) (2)

☐ G. A current copy of 10 CFR 20, a copy of the license, or a copy of the operating procedures was not properly posted or made available. 10 CFR 20.206(b)

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☐ N. Utilization logs were not maintained. 10 CFR 34.27

Charles E Loher CHARLES E LOHER
(AEC Compliance Inspector)

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(Date) (Licensee Representative — Title or Position)

ORIGINAL: LICENSEE. COPIES: ☐ CO REGION ☐ CO HEADQUARTERS ☐ CO ENFORCEMENT

To: PRN From: CEC

Subject: Dept of the Army
U.S. Army Electronics Command
Fort Monmouth, NJ 07703
Lic Nos 29-1022-6 and -7

License No -6 is properly classified as an E(1-A)III, and Lic No -7 as an EIII. I saw no cause for our concern for health and safety in this well managed program. I recommend reinspection of Lic No -6 at the normal interval (1yr) plus 6mo. (7/71). License No -7 should be reinspected at the normal interval (2yrs) plus 12mo. (1/73).

REGION I, DIVISION OF COMPLIANCE
NEWARK, NEW JERSEY

~~SPECIAL LIMITED INSPECTION~~

1. Name and address of licensee:
Dept of the Army
U.S. Army Electronics Command
Fort Monmouth N.J 07703

2. Date of Inspection: 1/19/70

3. Type of Inspection: Announced reinspe

4. License number(s), docket number(s), number and date of last amendment for each license. Category and Priority of each license:
29-1022-C Amend # 12 9/9/69 E(1-A)E
-7 Amend # 2 10/20/68 E

5. Date of previous inspection: ~~None~~ -C 10/10/68
-7 10/13/66

6. Is "Company Confidential", or proprietory, or classified information contained in report?

Yes _____ No ✓

(Specify paragraphs)

7. Scope of inspection: Complete

Charles E Comer 2/11/70

Paul C. Nelson 4/28/70

icensee:_____

ummary

Moderate sized program - well managed

oncompliance and Safety Items

None

nusual Occurrences

None

tatus of Previously Reported Noncompliance or Safety Items

Both licenses Clear 5 91

anagement Interview

Congratulated Mr Admiris on an excellent program

Licensee: _____

DETAILS

A. Participants

C. Pullen, Supervisor Radiation Facility, Sec. of Commerce
Dr. W. Ramm, RSO
B. Markow, Chairman Isotope Comm.
Mr. J. Admitis Asst. to Deputy Electronics Command

B. Scope of Licensee Program

Very little unsealed material used. Large gamma sealed sources used in hot cell and in collimated calibrators for development and calibration of Dept of Army radiac instruments

C. Organization

According to Pullen Lt Lorenz (who was on leave) does all the leg work on health physics. He reports to Dr. Ramm who reports to Markow who reports to Dr. R.S. Wiseman Jr Deputy for Labs. Lorenz also reports to Savaiko the post safety officer. A list of the present radioisotope committee is on the reverse side of this page. Meetings are held quarterly and the minutes are recorded. I inspected the records.

D. Administrative Control

Pullen stated that all procurements are authorized by either him or Markow and all deliveries are made to Pullen's office

Licensee: _____

E. Use of Material

Inventory: (taken from 12/69 monthly report to the Radioisotope Committee)

Am 241 – 1.1 mCi

C 14 – 15.66 mCi (storage)

Cs 137 – 102.2 mCi plus one 120 Ci sealed source used in UDM-1A calibrator and seven 220 Ci sealed sources stored in UDM-1A calibrators

Co 57 – 52 mCi

H 3 –
Co 60 (all sealed sources) – 3540 Ci (License - 7), 7.12 Ci UDM calibrator, 2 each 1 mCi

Kr 85 – 50 mCi (sealed, never opened or used)

Ni 63 – 2 mCi (gas chromo)

Po 210 (sealed) 3.5 mCi (6 sources)

Pu-239 – 3.162 μCi (held under Gen Authorization to DOD)

Pm 147 (sealed) 4 sources of 300 mCi each

Receipts for 1968-69: 12/18/68 - 1 μCi Am 241, 7/26/68 - 100 μCi Am 241, 11/24/69 10 mCi Ra 3 (sealed) 12/8/69 - 57.2 Ci H-3 (target, not used) 12/9/69 100 mCi Cs 137 (not used, storage)

~~F. Facilities~~

Pullen stated that the only material in use was as follows:

Am 241	1 mCi	Bldg 45	Pm 147	1.82 mCi	Rm H008
Am 241	100 μCi	Rm 3956	H 3	6.4 Ci	Fort Hancock
Cs 137	2.2 mCi	Rm 4008	H 3	9.5 Ci	Bldg 401
Co 57	50 mCi	OA 403			
Co 57	2 mCi	OA 504			
C 14	0.16 mCi	Rm H008			
Co 60	[redacted]	Bldg 401			
Cs 137	[redacted]	Bldg 401			
Co 60	[redacted]	Underground vault (Lic - 7)			
Ni 63	2 mCi	Bldg 45			
Po 210	1.4 mCi	Rm 7 Bldg 11			
Po 210	500 μCi	Lab hood			

Ex 2

Licensee: _____

G. Equipment

I noted that Pullen had several cabinets full of a variety of radiation detection equipment. Specifically I noted the following items:

4 ea Rad-Tad Chirpers
15 ea 0-200 mR pocket dosimeters
3 ea 0-5R pocket dosimeters
2 ea AN/PDR-27S GM survey meters (0-500 mR/hr)
2 ea AN/PDR-39 ionization chamber rate meters 0-50 R/hr
Victoreen Model 740 Cutie pie

I noted that all survey meters were labeled to show last date of calibration and that the dates were within the past three months.

H. Radiological Safety Procedures

Pullen stated that all users are required to affirm that they have read EUCOM Regulations 385-9 (11/15/61) which are the licensee's safety regulations. Pullen had copies of the licensee and of 10 CFR 20 and 30.

censee:_____

Personnel Monitoring and Exposure to External Radiation

Pullen stated that all persons who are occupationally exposed to ionizing radiation are required to wear film badges. I inspected the DD Forms 1141 and noted that no person had been exposed to more than 500 mR in any quarter since 1966

Exposure of Employees to Concentrations of Radioactive Materials

None - sealed sources only

Facilities

I noted that the facilities had not changed from the description given by Higginbotham in 1968 and my report of 1966

[redacted] Records of Leak Test of Sealed Sources

I inspected the records and found that alpha sources were leak tested at 3 mo. intervals, beta gamma at 6 mo. intervals and no source showed removable contamination in excess of 0.005 μCi

icensee: _____

. Disposals

Pullen stated none since 1966

. Miscellaneous Surveys, Evaluations and Records

I inspected records of surveys made by Lt Lorenz on monthly basis. They covered use and storage areas and showed negligible exposure rates and no detectable contamination

. Special License Conditions

I reviewed each license condition with Pullen and found no items of noncompliance

Licensee:_____

). Posting and Labeling

I noted that all areas and containers were properly posted and labeled

?. Independent Measurements

None

?. Operations Observed

None

Licensee: _____

R. Incidents, Overexposures, Theft or Loss, Equipment Malfunction

Pollen stated: none

S. Other information or continuation from previous paragraphs.

None