

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION I

IRRADIATOR INSPECTION

(Field Notes)

Licensee Dept. of the Army Ft Monmouth, N.J.	Facility Pool Irradiator Underground Vault In Air Inva
License No. 29-01022-07 29-01022-10	Inspection Date 10/12/79
Principal Inspector P. Jermah	Other Accompanying Persons None
Individuals Interviewed a. Stanley Potter, RSO b. Art. F.C. Norman Pratt c. Gunther Rainz, Electron. Tech. d. Vernon Brien Electronic Tech.	Titles e. f. g. h.
	Date of Interview 10/12/79
	Place of Interview Office of Potter
Name of RSO Stanley Potter	Telephone No. of RSO 201-544-5292

Enforcement Action(s)

None.

See Draft Insp Report Appendix C page attached.

FF/14
R. M. Vintet

A. Scope of Program

1. Number of individuals occupationally exposed 13.
2. Type of Irradiator (eg. Pool, Pit, etc.) "10. Pool" ^{21207 In Air-cask storage}.
3. Number of Curies Co-60.
4. Frequency of use: (67)-2 times per week.

B. 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 or in-air Fw.

C. Surveys

1. Radiation levels in unrestricted areas < 0.1 mR/hr
2. Contamination smears in restricted area BG in powdered.
3. Leak Tests

- a. Frequency 6 mo.
- b. Method adequate Yes

4. Interlocks into HRA

- a. Frequency of Testing In Air - At start of each use.
- b. Functional at time of inspection No - ~~Not~~ The electronics was not functioning at the time of the inspection. - This did not appear to hinder inspection.

c. Are they intentionally bypassed or deleted. Yes No

(1) Procedure if yes

d. In accordance with license? *Yes*

e. Adequate? *Yes*

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

D. Instrumentation

1. Adequate type and number: Yes No

2. Calibration as required: Yes No

E. Evaluation of Effluent

1. Liquid *OK*

2. Airborne *N/A*

F. Training

1. Std. Procedures *Yes*

2. Emergency Procedures *Yes*

3. NRC Regulations *Yes*

G. Signs/Posting

1. CRM

2. CHRA *OK*

3. 19.11

H. Evaluation of Incoming Packages (20.205)

N/A

I. Disposal

N/A

J. Evaluation of Outgoing Shipments - (DOT)

N/A

K. Unusual Occurrences or Events

None reported.

L. Independent Measurements (Van, Inspector)

None.

For irradiations not completely self-shielded containing:

379 Ci cobalt-60

1042 Ci iridium-192

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

M. Control Devices

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

Microswitch on entry door (sliding) retracts source if 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 as 1st step of procedure to raise source is actuated. Anyone inside would hit prominently displayed switch to prevent raising source.

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

N. If the Entry Control Devices Fails:

1. What control device will retract the source?

Beyond the open sliding door is a wooden barricade in the form of a strip across the door opening. Removing this wooden strip actuates second microswitch which would retract source.

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 20 seconds before plug comes up to allow raising the source. There is a flashing light inside the cell and a red light at end of door.*
0. If there is credible probability, the physical radiation barriers can fail: *Only if door comes off its sliding track.*

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

The door microswitch would be activated to retract the source.

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

Yes.

- P. If the Source Is Stored In A Liquid Shield: *Pool irradiator*

1. Is loss of liquid level adequately signaled for immediate action?

Yes - Bell rings in corridor outside Pool room.

- Q. 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 M.3 above.

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

Operator must make visual check of the cell before starting procedure to expose the source.

R. Physical Radiation Measurements

1. Is a physical radiation measurement made upon entry to the irradiator after source operation? *Yes - with a check source*

S. Tests of Entry Control Devices

installed at door to check for functioning instrument.

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.)

Yes

2. Are records of these tests maintained?

Yes

T. 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?

U. Independent Measurements

1. Take water sample and split with licensee. *Not done.*

a. Licensee results

b. IE:I Results

2. Planchet or bottle source standard.

a. Value

b. Licensee's results

3. Results of interlock checks

Not done because electronics were not functioning.

4. Is water continuously circulating through demineralizer?

Yes

5. Results of surveys around demineralizer.

< 0.1 mR/hr.

6. Demineralized conductivity measurement

Yes

7. Results of PH check with litmus paper

N/I

8. Restricted area survey results with meter

< 0.1 mR/hr.

9. Restricted area survey results with wipes

N/I

10. Unrestricted area survey results

60.1 m R/hv.

11. Results of check of liquid level indicator

When liquid level indicator was depressed,
The alarm in the outside corridor
functioned.

APPENDIX C - SUPPLEMENTARY INFO _____

Licensee: _____

License no: _____

 Uncorrected/repeated noncompliance Unresolved items Unusual occurrences, conditions, etc Inspector's comments Basis for change of Category or Priority

In our letter to the licensee dated 11/13/78, we indicated 4 understandings (actions to be taken) as given on page 3 of the letter.

In the licensee's 11/30/78 response to our letter, concurrence was indicated. In this letter the licensee stated that the actions described in items 1 and 4 had been taken. A letter from the licensee received 9/7/79, declined the action in items 2 and 3.

Item 2 was to install a Key operated lock to be operated by the irradiator master control keys. The licensee stated they could come up with no affordable way to do this. ^{one problem was the requirement for egress from the inside.} The purpose of this was to provide an additional entry control device. The door would be locked by the same key that operates the source and there is only one such key available to operators of the equipment. ^{if it appears} This is not essential for safe operation. The irradiator is in a basement area (below grade) with a door off the corridor at top of the stairs, ^{leading} down to the irradiator. Licensee representative stated this door is kept locked when the irradiator area is unattended. This door is the only entry to the irradiator control area.

Item 3 was to install a key switch at the console which would allow the key to be removed only when in the off position thereby causing the source to retract. This revision would be very costly. Its purpose is to ^{provide} another safety feature which is not required by the regulations. Currently a similar

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feature is operating as follows. In order to raise the source, the shield plug must be raised. The operation of the plug involves a separate mini console. A key switch turns on the power. Operation of a manual switch ^{on this console} actuates an audible alarm in the cell. Operation of another manual switch raises the plug. Raising of the source requires the use of the main operating console which is actuated by a key. The key can be removed from the main console safely without lowering the source. During overnight exposures, the key is removed from the main operating console and the door at the top of the stairs to the control room is locked. The key remains in the mini console switch. Turning this key to the off position lowers the plug and the source with it. To remove the key from this switch, the key must be in the locked position.