

U.S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS  
REGION I

RO Inspection Report No: 50-47/74-01  
Licensee: Army Materials and Mechanics Research Center  
(AMMRC)  
Location: Watertown, Massachusetts

Docket No: 50-47  
License No: R-65  
Priority: \_\_\_\_\_  
Category: G

Type of Licensee: Research Reactor (Deactivated 5MW Pool Type)  
Type of Inspection: Routine (Announced)  
Dates of Inspection: July 10 and 12, 1974  
Dates of Previous Inspection: April 20, 1972

Reporting Inspector: Karl E. Plumlee  
Karl E. Plumlee, Reactor Inspector

7/18/74  
Date

Accompanying Inspectors: NONE  
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Date  
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Date  
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Date  
\_\_\_\_\_  
Date

Other Accompanying Personnel: NONE

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Date

Reviewed By: D. Capton  
D. Capton, Senior Reactor Inspector

7/23/74  
Date

## SUMMARY OF FINDINGS

### Enforcement Action

#### A. Violations

##### 1. Cathodic Protection for Containment Shell

Technical Specification 4.b. requires quarterly and semiannual checks on the cathodic protection system, and records and evaluation thereof.

Contrary to the above the most recent recorded check was dated May, 1973, when the cathodic protection system was found to have failed. The system had not been repaired by the completion of this inspection on July 12, 1974. This apparent violation is repetitive in that a citation was made on the preceding inspection\* for failure to carry out T.S. No. 4.b. (Details, Paragraph 7)

##### 2. Radiation Monitoring

Technical Specification No. 3.a. requires monthly radiation surveys.

Contrary to the above only 7 surveys were made during 1972, 5 during 1973, and 3 during the first six months of 1974\*\* for an average of half the required number of surveys. (Details, Paragraph 5)

##### 3. Posted Information

The Code of Federal Regulations in part 10 CFR 19.11 requires the posting of licenses.

Contrary to the above, no copy of License No. R-65 was posted when inspected on July 10, 1974.

This matter was corrected by the completion of the inspection. (Details, Paragraph 2.c)

#### B. Safety

None

\* Inspection Report No. 50-47/72-01

\*\* Smears made during July had not been counted by July 10, because high seasonal temperature affected the counting equipment.

Licensee Action on Previously Identified Enforcement Items

1. Cathodic Protection System

The preceding inspection identified a failure to perform quarterly checks of the cathodic protection system (required by TS 4.b.). The licensee's reply dated June 5, 1972, following a notice of violation, stated that TS 4.b. would be carried out "effective 4th Qtr FY 72".

A further violation of TS 4.b. was identified on this inspection. (Violations, Item 1)

2. Operability of Fire Alarm Systems

The preceding inspection identified a failure to perform semiannual operability checks of the fire alarm system (required by TS 4.d.). The licensee's reply dated June 5, 1972 stated that semiannual tests would be done commencing June, 1972.

On this inspection these records appeared to be in order but cross checking of fire inspection records against logged entries into the plant area resulted in an unexplained possible discrepancy that remains unresolved. (Details, Paragraph 9)

3. Annual Preventive Maintenance on Crane

The preceding inspection identified an apparent failure to perform annual preventive maintenance on the polar crane\*. The licensee's reply dated June 5, 1972, explained that this maintenance was done when due but the records failed to show this until they were subsequently reviewed and corrected.

On this inspection these matters appeared to be in order. This item is considered closed. (Details, Paragraph 8)

Design Changes

None

Unusual Occurrences

None

\* A commitment stated by the licensee's Deactivation Report for Reactor Facility, dated February 3, 1970.

Other Significant Findings

A. Current (Unresolved)

1. Differences between dates on inspection records and logged entries into the plant area. (Details, Paragraph 9)
2. Identification of a complete file of preventive maintenance records. (Details, Paragraph 11)
3. Semiannual audits by Reactor Safeguards Committee. (Details, Paragraph 2.b.)

B. Status of Previously Reported Unresolved Items

None

Management Interview

The management interview was conducted on July 12, 1974, with the following representatives of the licensee:

Dr. A. E. Gorum,\* Director, AMMRC  
Mr. S. J. Lavery,\* Chief, Administrative and Logistics Services Offices  
Mr. J. J. O'Connor,\*\* Chief, Technology Planning and Exploitation Division  
Mr. S. Levin, Chief, Radiation and Occupational Safety Branch

The following items were reviewed:

A. Scope of Inspection

The inspector stated that this inspection involved the following general categories:

1. Technical Specification requirements.
2. Followup on items from the preceding inspection.
3. Upkeep of the facility.
4. New Regulatory requirements (since April, 1972).

B. Violations

The inspector stated the three apparent violations. (See Violations)

\* Present during part of the meeting.

\*\* Reactor Facility Supervisor.

The licensee's representatives stated an intent to restore the cathodic protection system to operation before the end of July, 1974 and to meet the Technical Specification requirements for frequency of radiation surveys and maintenance.

The possibility of obtaining changes to the Technical Specifications and eventually a license termination were discussed.

C. Paint Problems

The inspector stated that paint had deteriorated on the exterior of the containment shell and the stack flanges, and rust was evident. The inspector stated that rust was visible on the inside of the containment shell where insulation had peeled off. (Details, Paragraph 4)

The licensee's representatives stated that a contract was being negotiated to paint the exterior of the containment shell this summer and that indoor humidity was being reduced by operating the air conditioning.

D. Management's Responsibilities

The inspector stated that the Reactor Safeguards Committee was required by the Technical Specifications to audit and verify that omissions did not occur. The inspector stated that two violations, identified on this inspection, had existed for more than a year in spite of a Technical Specification requirement for semiannual audits to verify that effective practices are maintained. (Details, Paragraph 2.b)

This item will be followed up on a subsequent inspection.

E. Developments Since The Preceding Inspection

The following developments were discussed:

1. Relocation of Regional Office I to King of Prussia, Pa.
2. Requirements under 10 CFR 19.
3. Categories of Violations.
4. Public document room copies of inspection reports and correspondence.
5. Proprietary information, and withholding of proprietary information from public disclosure.

## DETAILS

### 1. Persons Contacted

The inspector interviewed the following persons:

Mr. P. J. Burke, Health Physics Technician  
Lt. A. R. D'Arpino, Intelligence and Security Branch  
Mr. J. Druwing, Electrical Engineer  
Dr. A. E. Gorum, Director, AMMRC  
Mr. S. J. Lavery, Chief, Administrative and Logistics Services  
Offices  
Mr. S. Levin, Chief, Radiation and Occupational Safety Branch  
Mr. J. J. O'Connor, Chief, Technology Planning and Exploitation  
Division  
Mr. W. E. Walsh, Chief of Maintenance

### 2. Administration and Organization

#### a. Responsibility for Reactor Facility

The AMMRC Director is Dr. A. E. Gorum.

The AMMRC Commander/Deputy Director is LTC R. B. Henry.

The Reactor Facility Supervisor is Mr. J. J. O'Connor whose title is Chief, Technology Planning and Exploitation Division.

#### b. Reactor Safeguards Committee (RSC)

The Technical Specifications in parts 2.b.(2) and (3) respectively require RSC review of reactor procedures and a semi-annual audit of activities performed in the plant area to verify that effective safety and radiological control practices are maintained.

Review of RSC minutes for the most recent meeting (May 21, 1974) did not confirm that semiannual auditing (if any) was effective. Although awareness of a problem with the cathodic protection was apparent, it appeared that violations Nos. 1 and 2 both existed for more than a year without correction.

RSC activities will again be reviewed on a subsequent inspection.

Membership of the RSC was indicated to be the following:

H. Priest, Chairman  
J. Antal  
D. Chipman  
S. Levin  
J. O'Connor  
K. Tauer

c. Posted Information

Inspection of information posted in accordance with the Code of Federal Regulations in part 10 CFR 19.11 found that License No. R-65 was not posted. (See Violations). The licensee's representative corrected this item before the completion of the inspection.

3. Condition of the Reactor

The licensee's representative described the reactor as defueled and drained.

Visual inspection confirmed that the reactor vessel was open, defueled and dry inside.

No discrepancy was found in comparison to the status described by the licensee's Deactivation Report for Reactor Facility, dated February 3, 1970 (on a sample basis).

The licensee's radiation survey records indicated that the maximum radiation inside the reactor vessel is about 6 R/hr.

No problem was identified involving the condition of the reactor.

4. Containment

a. Paint and Rust

Visual inspection of the exterior found noticeable paint peeling and rust at the flanges of the stack and on top of the containment shell.

Rust was found on visible exterior surfaces that were below grade, such as pipe pits.

Inspection of the interior showed that a few patches of insulation had dropped from the underside of the containment shell, and some rust was visible, typically in the larger areas.

When questioned, the licensee's representative stated that the exterior was to be painted this summer, and that the cathodic protection system would be restored to service before the end of July.

The licensee's representative stated that one possible cause of the insulation problem was high humidity which might have caused moisture to condense in the insulation. Humidity was being controlled, when inspected, by operation of the air conditioning in the containment.

b. General Condition of Containment Structure

Except for problems with paint, sprayed on insulation, and rust, no deterioration of the containment structure or associated equipment was noticed.

5. Radiation Monitoring

TS 3 requires a monthly radiation survey, including smears, and control of radioactive and contaminated materials removed from the plant area.

Inspection of records of surveys, air samples, and smears indicated that on the average half as many surveys were made as stated by TS 3.

All of the survey results inspected were well below one mr/hr except those taken inside the reactor vessel which were as high as 0.6 R/hr.

Most of the air sample results were recorded as below the detection level and none appeared to be significantly above that level or in excess of 10 CFR 20 limits.

Smears were no higher than 39  $\mu\text{Ci}/\text{cm}^2$   $\beta$  and 2  $\mu\text{Ci}/\text{cm}^2$   $\alpha$  activity.

The recorded dates on the survey record sheets were nominally as follows:

<u>1972</u>	<u>1973</u>	<u>1974</u>
January 21	January 19	January 15
February 23	June 11	May 24
March 24	August 1	June 19
April 21	November 14	July 9*
June 20	December 11	
July 27		
December 5		



\*Smears taken July 9 were not counted by the date of the inspection because of high seasonal temperature, said to affect the performance of the counting equipment.

6. Liquid Radwaste Release Records

Review of the licensee's release record sheets indicated that a total of about 2  $\mu\text{Ci}$  of activity in 5,400 gallons of water was released to the sewer during 1973, and 48  $\mu\text{Ci}$  of activity in 23,000 gallons of water was released during 1974 to date.

No problem was identified with the releases or the records.

7. Cathodic Protection System

Inspection of records indicated that the most recent quarterly check of the cathodic protection system was in May, 1973 at which time it was found to have failed. (See Violations)

A representative of the licensee stated there was difficulty in replacing a rectifier, and that an adaptation was being made. He stated that the cathodic protection system should be back in operation before the end of July.

8. Preventive Maintenance on the Crane

Inspection of preventive maintenance on the crane indicated that the licensee's records on this item are in order. No Technical Specification is involved.

This item is considered closed until the crane is placed in service.

9. Fire Prevention Reports

Records of monthly fire prevention inspection for January through June, 1974 and semiannual operability tests (required by TS 4.c and d., respectively) appeared to be in order.

A cross-check against the logged entries into the containment area (a record required by TS 1.c) confirmed that the fire inspector entered on four of the six dates shown by the reports. (See next item)

10. Physical Security (TS 1.c.)

Observation of physical security did not indicate any violation of Technical Specification requirements on key control or access control for the plant area.

A cross-check between logged entries by personnel and reports of surveys and maintenance confirmed that the number of logged entries (and dates, on a spot check basis) were consistent except for the fire inspections.

Fire prevention reports for 1974 were as follows:

<u>Date</u>	<u>Fire Inspector Access</u>
January 2, 1974	(Logged entry)
January 30, 1974	(Logged entry)
February 28, 1974	(Logged entry)
March 22, 1974	(Logged entry)
April 30, 1974	(No logged entry*)
May 31, 1974	(Others logged entries)
June 25, 1974	(Logged entry)

\*The fire inspector was not logged into the plant area during April, and no one was logged in on April 30.

The lack of a logged entry was not explained unanimously. The fire inspector was on leave at the time of this inspection.

Cross checks of records will again be made on a subsequent inspection.

11. Preventive Maintenance

TS 4.a. requires a weekly visual inspection and a monthly check of all equipment in the plant area. TS 5.b. requires records of inspections.

Inspection of a file of checksheets bearing a weekly notation indicated that 9 were completed during 1971, 13 during 1972, 22 during 1973, and 8 during 1974 to date.

The licensee's representative objected to a possible citation on the above, and this item remains unresolved pending resolution of questions of completeness and proper identification of the file folders for weekly and monthly maintenance surveillance records.

This item will be inspected on a subsequent inspection.