U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION I

CO Inspection Report No. 50-47/72-01

Subject: Army Materials & Mechanics Research Center (AMMRC) License No. R-65

Location: Watertown, Massachusetts Priority

Category G

Type of Licensee: Deactivated Pool-Type Research Reactor

Type of Inspection: Routine, Unannounced

Dates of Inspection: April 20, 1972

Dates of Previous Inspection: March 29 - April 1, 1971

Principal Inspector: Talbot T. Young, Jr. 5/18/72
T. Young, Reactor Inspector Date

Accompanying Inspectors: None Date

Date

Other Accompanying Personnel: None Date

Reviewed By: R. L. Spessard 5/17/72
R. L. Spessard, Reactor Inspector Date

Proprietary Information: None

Section I

Enforcement Action

A. Technical Specification 4.b - the voltage and current readings on the cathadic protection system were not made. (paragraph 6)

B. Technical Specification 4.d - an operability check of the fire alarm system was not performed semiannually. (paragraph 7)

C. License Condition 1.B - annual preventive maintenance was not performed on the overhead crane. (paragraph 8)

Licensee Action on Previously Identified Enforcement Matters

10 CFR 20.401 (b) and Technical Specification V1.7.h - Records of radioactive liquid waste releases were not maintained.

The licensee responded by letter dated May 10, 1971 to this item of noncompliance which was identified during the last site inspection and addressed in RO:I letters dated April 27 and May 19, 1971. Inspection findings confirmed the licensee's answers to be as stated in their letter and the missing records have not been recovered. Item is considered closed.

Unresolved Items

None

Status of Previously Reported Unresolved Items

A. The 40,000 gallon retention tank has been drained and flushed clean. This item is considered resolved. (paragraph 9)

B. The shell cathodic protection system has been made operable. This item is considered resolved. (paragraph 6)

C. Rubber gaskets have been removed from the airlock doors. This item is considered resolved.

D. General radiation surveys including smears have been conducted monthly since April 1971. This item is considered resolved.

The above items were previously observed (RO Report 50-47/71-01) discrepancies with respect to requirements in the licensee's deactivation report dated December 8, 1970.

Unusual Occurrences

None

Persons Contacted

Maj. K. I. Kawano, Commanding Officer
Mr. E. M. Shebek, Chief, Administrative and Logistical Services Division
Mr. J. J. O'Connor, Reactor Facility Supervisor
Mr. S. Smurthwaite, Radiation Safety Officer
Dr. H. Priest, Chairman, RSC
Mr. J. A. Brett, Post Engineer Staff
Mr. P. Burke, Intelligence and Security Branch

Management Interview

1. The inspector stated that records showed that the voltage and current readings on the Cathodic Protection System had not been made quarterly and this was considered to be an item of noncompliance.

   Mr. Shebek stated that this had been an over-site of the Post Engineer, but that they would be performed in the future.

2. The inspector stated that records showed that the fire alarm system was checked annually instead of semiannually as required and this was considered to be an item of noncompliance.

   Mr. Shebek stated that the checks had been performed more often, but records were only maintained when the contractor performed the test.

3. The inspector stated that no maintenance had been performed on the overhead crane and this was considered to be an item of non-compliance.

   Mr. Shebek stated that this maintenance would be performed in the future.

Section II

Additional Subjects Inspected, Not Identified In Section I, Where No Deficiencies Or Unresolved Items Were Found

1. General

Mr. Smurthwaite was hired and has replaced Mr. Dady as Radiation Safety Officer. The RSC has been active in reviewing and inspecting the facility on a semi annual basis.

2. Logs and Records

a. Maintenance records - April 1, 1971 to April 20, 1972
b. Minutes of RSC meetings - April 1, 1971 to April 20, 1972
c. Equipment removal records - April 1, 1971 to April 20, 1972

3. Facility Procedures

a. Control of plant area
b. Use of plant area
c. Facility inspection

4. Radiation Protection

a. Instruments and dosimetry devices
b. Records of radiation surveys including smears, April 20, 1971 to March 24, 1972

5. Miscellaneous

a. Heating and ventilating systems
b. Fire fighting equipment

Details of Subjects Discussed in Section I

6. Cathodic Protection System

A new cathodic protection system for the shell was installed on September 30, 1970. After much difficulty, it was made operational in May 1971. Records show the syster's effectiveness has been checked semiannually using a half-cell, but that current and voltage readings have not been recorded and evaluated quarterly since April 1, 1971 as required by the Technical Specifications.

7. Fire Alarm System

Records indicate that the fire alarm system is operability checked on an annual basis; however, the Technical Specifications require a semi annual check.

8. Overhead Crane

Records show that no preventive maintenance was performed on the overhead crane between April 1, 1971 and April 20, 1972. Paragraph 1.B of License No. R-65 requires the facility to be possessed in conformity to the application, and paragraph c., item 1 of the Deactivation Report, dated February 3, 1970 requires annual preventive maintenance by factory representatives to be performed on the overhead crane.

9. 40,000 Gallon Retention Tank

On October 30, 1971 the 100 MCi of activity contained in 8000 gallons of water were discharged to sewerage systems (gross activity - 2.6×10^{-7} uCi/ml), and 300 gallons of water were used to clean the tank. The gross activity of the cleaning water was 4×10^{-6} uCi/ml and this was discharged to the sewerage system on the same date. These discharges were well within the limit specified in 10 CFR 20.303. The tank was surveyed and smeared and the job was completed on September 16, 1971. Records indicated all work was done by AMMRC personnel.

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Field Notes for:

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License No. R-65

Location: Watertown, Massachusetts

Priority

Category G

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Dates of Previous Inspection: March 29 - April 1, 1971

Principal Inspector: T. Young Jr _____ Date

Accompanying Inspectors: None _____ Date

_____ Date

Other Accompanying Personnel: None _____ Date

Reviewed By: _____ Date

Proprietary Information: None

_____

A. Persons Contacted

MAJ K.I. Kawano, Commanding Officer Logistical
Mr. E.M. Shebel, Chief, Administrative & Services Div.
Mr. J.J. O'Connor, Reactor Facility Supervisor
Mr. S. Smurthwaite, RSO
Mr. J.A. Brett, Post Engineer Staff
Dr H. Priest, Chair RSC
Mr. P. Burke, Intelligence & Security Branch

B. Administration and Organization

1. Physical Security

a. Keys to the plant area are kept in the Intelligence and Security Branch (ISB) office.

b. The inner door is monitored by an alarm system which alarms in the ISB office.

c. There is a list in the ISB office of personnel authorized entry into the plant area. (attachment I) as a part of the plant entry procedure.
[ISL.C. is met in its entirety]

d. Entry procedure is posted at the airlock entrance along with AEC form 3, 10CFR20 and other instructions.

2. Reactor Safeguards Committee (RSC)

Members are:

Dr H. Priest, Chairman
Dr Tauer, Chemist
Dr Antal, Physicist
Dr Chitman, Physicist
Mr O'Connor, ~~Facility Supervisor~~
Mr Smeathwaite, RSO

The RSC met on 3/19/71 and 11/18/71 to audit activities of the Plant area. at each audit an inspection of the plant area was made. (ATTACHMENT II)

D. ~~[redacted]~~ Procedures

Written Procedures for control of the plant area, use of the plant area, equipment checklist and facility inspection have been established. Approved or written by the Director and reviewed by the RSC.

K. Containment

Cathodic Protection System

A new cathodic protection system

was installed on September 30, 1970. After much difficulty it was made operational on May 1971 when its effectiveness was checked, using a half-cell. Another half-cell check was performed in October 1971. The voltage and current readings have been performed quarterly.

P. Radiation Protection

1. Radiation Monitoring

Radiation monitoring instruments and dosimetry services are available and used. Procedures have been established and in use.

2. Surveys & Smears

Surveys & smears were performed on the following dates:

4/20/71	
5/19/71	1/27/72
7/23/71	2/23/72
8/24/71	3/24/72
9/24/71	
10/29/71	
13/12/71	

The highest reading in the basement area was .65 mR/hr. The contamination reading was 78 μμ Ci/100 cm². The reading at the grid plate level in the dry-pool is 4.5 R/hr.

3. 40 000 Gallon Tank

100 milli-Ci of activity contained in 8000 gal of water was dumped to sewage system (gross activity - 2.6×10^{-7} μCi/ml) 300 gal of water was used to clean the tank. The gross activity of the cleaning H_2O was; 4×10^{-6} μCi/ml and this was dumped to the sewage on 8/30/71. The tank was surveyed & smeared and the job was completed on 9/16/71. Work was done by AMMRC personnel.

4. Equipment removal.

All equipment removed from the plant area was decontaminated, surveyed and/or smeared. Items removed were:

a. Three glove-boxes 12/10/71

b. Fuel element shipping cast ~~(illegible)~~ shipped to MIT 12/20/71

all smears showed that the equip was free of contamination.

5. Liquid Waste Disposal Records

Mr. O'Connor stated that AMMRC's investigation into the missing records was completed. The records

Could not be found but their conclusion was that proper records had been maintained and that no liquid waste had been discharged without proper analysis.

H. Miscellaneous

1. Heating and Ventilating System
A written monthly checklist has been developed and the checklist is performed on a weekly basis. Checks were made:

6-22-71	9-12-71	1-27-72
6-25-71	9-24-71	2-9-72
7-8-71	10-20-71	3-16-72
7-21-71	11-24-71	4-03-72
8-26-71	12-23-71	4-10-72

2. Fire Fighting Equipment
Records show that the PEB has checked the fire extinguishers monthly. The fire hoses were clean and in place, they appeared to have been maintained.

3. Fire Alarm System
The fire alarm system is checked once per year by contract. Last checked on June 25, 1971

4. Overhead Crane

Preventative maintenance has not been performed since shut down.

5. Rubber Gaskets

The rubber gaskets have been removed from the airlock doors.

Management Interview

1. The inspector stated that records show that the quarterly Voltage and current readings had not been made on the Cathodic protection system and this was considered to be an item of NC.
Mr Shebek stated that this had been an oversite of the Post Engineer but that they would be performed in the feture.
2. The inspector stated that records show that the fire alarm system was checked on an annual basis and this was considered to be an item of NC. (TS requirement is semi-annual)
Mr Shebek stated that the checks had been performed more ~~—~~ but records were only maintained when the contractor performed the test.
3. The inspector stated that no maintenance had been performed on the overhead Crane. and this ~~was~~ was considered to be an item of N.C.

Mr Shebek stated that this maintenance would be performed in the future.

Steve B
file —

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

REFERENCE OR OFFICE SYMBOL	SUBJECT
AMXMR-CT	Access to the Reactor Facility

TO Ch, Intel & Sec Br FROM Reactor Facility Supv DATE 14 Jul 71 CMT 1

1. The following personnel are authorized access to the reactor facility (the containment shell) in accordance with the precedure outlined in paragraph 2 below:

Mr. J. A. Brett
Mr. P. Burke
Mr. A. J. Hovsepian
Mr. S. Levin
Mr. J. J. O'Connor
Dr. H. Priest
Mr. R. Pulcini
Mr. S. Smurthwaite

2. When a person, authorized in writing by the Reactor Facility Supervisor, desires to enter the containment shell he will:

a. Sign out a key at the Intelligence and Security Branch.

b. Just prior to opening the inner door of the west airlock, he will clear entry by telephone with the Intelligence and Security Branch. (The Intelligence and Security Branch will log the time of entry and names of persons entering.)

3. When the authorized person is leaving the shell, he will:

a. Immediately notify the Intelligence and Security Branch after outer door of the west airlock has been secured.

b. Return the key promptly to the Intelligence and Security Branch. (The Intelligence and Security Branch will log the time of exit and names of persons exiting.)

4. The authorized person will keep the Intelligence and Security Branch informed promptly of any intermediate entrances and exits.

5. All other persons requiring access to the shell, must be escorted by a person authorized by the Reactor Facility Supervisor.

6. Entrance to and exit from the shell will be by the west airlock connecting the shell to Building 97.

7. Upon receipt of an alarm caused by an unauthorized opening, the Intelligence and Security Branch will immediately investigate the case. Persons apprehended will be held and the Facility Supervisor notified (Home Telephone 237-9618).

J. J. O'Connor
J. J. O'CONNOR

Copies furnished:
Dep Dir/CO
Duty Officer Folder
Mr. J. A. Brett
Mr. P. Burke
Mr. A. J. Hovsepian
Mr. S. Levin
Mr. J. J. O'Connor
Dr. H. Priest
Mr. R. Pulcini
Mr. S. Smurthwaite
Reactor Safeguards Com
Ch, Adm Div
Ch, Post Engr Br

DA FORM 1 FEB 62 2496 REPLACES DD FORM 96, EXISTING SUPPLIES OF WHICH WILL BE ISSUED AND USED UNTIL 1 FEB 63 UNLESS SOONER EXHAUSTED.

Steve L
file —

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ATTACHMENT I

DA FORM 1 FEB 62 2496 REPLACES DD FORM 96, EXISTING SUPPLIES OF WHICH WILL BE ISSUED AND USED UNTIL 1 FEB 63 UNLESS SOONER EXHAUSTED.

ARMY MATERIALS AND MECHANICS RESEARCH CENTER
WATERTOWN, MASS.

AMMRC MEMORANDUM
NUMBER 15-1*

1 July 1970

BOARDS, COMMISSIONS & COMMITTEES

REACTOR SAFEGUARDS COMMITTEE

	Paragraph
Purpose	1
Scope	2
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Composition of Committee	4
Procedure	5

1. Purpose. To prescribe the responsibilities and procedures of the Reactor Safeguards Committee.

2. Scope. The Committee will review, evaluate and approve all aspects of operation and use involving nuclear safety and radiological safety for the nuclear reactor.

3. Responsibility. a. The Committee will report to the Director its views, findings and actions taken on all matters brought to its attention.

b. Specific duties of the Committee shall include the following:

(1) Review, evaluation and approval of proposed experiments.

(2) Review, evaluation and approval of operating procedures.

(3) Review, evaluation and approval of those proposed changes in reactor or associated equipment affecting safety of operation.

(4) Review, evaluation and approval of local regulations and procedures for handling of materials and equipment involving radiation hazards.

(5) Review, evaluation and approval of personnel radiation monitoring procedures.

(6) Investigation of accidents involving the reactor and/or associated equipment, and abnormal situations wherein safety is involved or potentially involved.

*This memorandum supersedes AMMRC Regulation 15-1, dated 17 July 1968

(ATTACHMENT II)

h. Committee meetings will be held semi-annually to review previous six months operations of the reactor, or inspect for compliance with stand-by procedures if reactor is not in operation.

(AMXMR-AR)

FOR THE DIRECTOR:

JOHN W. GILLESPIE
LTC, Cml C
Deputy Director/Commanding Officer

OFFICIAL:

D R Parnell
for E. M. SHEBEK
Chief
Administrative Division

DISTRIBUTION:
C