

U. S. NUCLEAR REGULATORY COMMISSION

Docket No: 50-170

License No: R-84

Report No: 98201

Licensee: Defense Nuclear Agency

Facility: Armed Forces Radiobiology Research Institute

Location: Bethesda, Maryland

Dates: February 2-6, 1998

Inspector: Thomas F. Dragoun, Project Scientist

Approved by: Marvin M. Mancoske, Acting Director
Non-Power Reactors and Decommissioning
Project Directorate

EXECUTIVE SUMMARY

The licensee's programs were directed toward the protection of public health and safety and were found to be in compliance with NRC requirements. No safety concerns or violations were identified.

Report Details

Summary of Plant Status

The reactor was operated for training. Pulses of various reactivity values were initiated from subcritical and critical reactor conditions.

O1 Organization and Staffing

a. Inspection Scope (Inspection Procedure 40750)

The inspector reviewed:

- organizational changes,
- staff qualifications, and
- staffing levels

b. Observations and Findings

Since the last inspection in January 1996, incumbents in all supervisory positions described in the Technical Specifications were replaced. In addition, all military reactor operators retired or rotated. The Acting Reactor Facility Director was appointed in a letter dated October 23, 1996, from the licensee to the NRC. The current operations staff consisted of two full time and one half-time civilian reactor operators and five military trainees. Reactor supervisor positions were filled by promotions. The RPO and Assistant RPO positions were filled by personnel transferred from other organizations.

Interviews by the inspector indicated that all personnel were experienced and qualified to perform the duties of their position. The Reactor Facility Director and Reactor Operations Supervisor satisfied requirements specified in T.S. 6.1.3.

c. Conclusions

The organization satisfied T.S. 6.1 requirements. The number of civilian operators was near the minimum (two) required for reactor operation.

O2 Operation Logs and Records

a. Inspection Scope (Inspection Procedure 40750)

The inspector reviewed:

- reactor startup and shutdown: checklists,
- console operations log,
- maintenance report, and
- records of 50.59 reviews.

b. Observations and Findings

Records and logs were clear, detailed, and readily retrievable. The filing system was changed to facilitate retrieval of records required by AFRR administrative requirements as well as satisfying NRC requirements.

Proper use of procedures during training on pulsed operation was noted. Interaction between the trainee and instructor was beneficial.

The inspector noted that names of the duty operator and SRO-on-call were entered in the console log for each reactor startup. However, the radiation control technician and emergency helper on call were not specifically identified. All four positions are required by T.S. 6.1.3.2 (a). The licensee stated that recordkeeping would be modified to identify the additional personnel. This matter will be reviewed in a future inspection (Inspector Follow-up Item 50-170/98201-01).

c. Conclusions

Logs and records were maintained as required.

03 Facility Changes

a. Inspection Scope (Inspection Procedure 40750)

The inspector reviewed:

- potential computer millennium dating issues,
- replacement of the exhaust stack monitor,
- use of the area radiation monitors, and
- 50.59 review process.

b. Observations and Findings

The inspector discussed with the Reactor Facility Director the plans, for the digital console and other computers, to deal with the year 2000 date recognition. The inspector was informed that the facility plans to replace, modify, or upgrade their digital systems prior to the year 2000 to address potential issues (Inspector Follow-up Item 50-170/98201-03).

The licensee stated that the old exhaust stack monitoring system became unreliable and difficult to maintain. The inspector observed that the replacement system was properly installed, calibrated, and maintained. The licensee indicated that this system will be used to demonstrate compliance with constraints on air

emissions specified in 10 CFR 20.1101(d) instead of the environmental TLDs. A revision to the Safety Analysis Report Section 3.6.4 was submitted to incorporate this change.

During reactor pulse operation, the inspector noted that alarm setpoints on the area radiation monitors were set up scale to prevent alarms during the pulse. The alarms were later re-adjusted for routine operation. The inspector commented that this was not good practice. The licensee stated that the ARM system would be changed to eliminate the need to adjust alarm setpoints. This matter will be reviewed in a future inspection (Inspector Follow-up Item 50-170/98201-02).

Records of 50.59 reviews included a description of factors considered for each step leading to the conclusion that the change did not constitute an unreviewed safety question. These reviews were thorough and well documented.

c. Conclusions

Changes to facilities and equipment were properly controlled.

R1 Radiation Protection

a. Scope (Inspection Procedure 40750)

The inspector reviewed:

- organization and staffing,
- Radionuclide and X-Ray Safety Committee meeting,
- radiological signs and postings,
- a routine radiation survey, and
- personnel and environmental exposure records.

b. Observations and Findings

The RSO, Assistant RSO, and technician were new since the last inspection. Interviews indicated that these personnel were knowledgeable and motivated with the background and experience to perform their assigned duties. Staffing in the radiation safety branch appeared adequate for the current level of activity. The RP technician was also a reactor operations trainee, representing the team building efforts between the reactor operations and the safety departments.

The RXSC meeting demonstrated proactive management support for the radiation safety program. An investigation of a potential overexposure by the staff and reported to the committee was thorough.

The inspector accompanied the technician on the weekly radiation survey. The survey included all areas specified in the procedure and the measurements followed generally accepted techniques. Sign, barriers, and postings in the radiologically controlled areas were appropriate.

Dosimetry records indicated that personnel radiation exposure and exposure to the public was well below NRC limits.

c. Conclusions

The radiation protection program has been maintained in accordance with regulatory requirements and licensee commitments.

X1 Exit Meeting Summary (Inspection Procedure 30703)

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on February 6, 1998. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Lt. Col (P) R. Eng, Director
R. George, Reactor Operations Supervisor
Capt. J. Malinoski, Head, Radiation Sources Department
D. McKown, Assistant Radiation Safety Officer
S. Miller, Reactor Facility Director
Capt. M. Ortelli, Reactor Operator trainee
SSG S. Osborne, Reactor Operator trainee
Col C. Pearson, Chairman, RRFSC
Capt. S. Torrey, Head, Safety and Health Department
Maj B. White, Radiation Safety Officer
Maj K. Wisley, Reactor Operator trainee

NRC

M. Mendonca, Senior Program Manager

INSPECTION PROCEDURES USED

IP 30703: ENTRANCE AND EXIT INTERVIEWS
IP 40750: CLASS II NON-POWER REACTORS

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-170/98201-01	IFI	Log the four duty personnel required for reactor operation.
50-170/98201-02	IFI	Eliminate adjustment of ARM for reactor pulse operation.
50-170/98201-03	IFI	Prepare computer to recognize year 2000.

Closed

50-170/98201-03	IFI	Licensee will replace, modify, or upgrade digital systems.
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LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
NRC	Nuclear Regulatory Commission
RP	Radiation Protection
RSO	Radiation Safety Officer
RXSC	Radionuclide and X-Ray Safety Committee
TLD	Thermoluminescent dosimeter
T.S.	Technical Specifications