

October 11, 2000

Dr. T. Tehan, Director
Rhode Island Nuclear Science Center
Rhode Island Atomic Energy Commission
Reactor Road
Narragansett, RI 02882-1197

SUBJECT: NRC INSPECTION REPORT NO. 50-193/2000-202

Dear Dr. Tehan:

This letter refers to the inspection conducted on September 18-21, 2000, at the Rhode Island Nuclear Science Center (RINSC) Research Reactor facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Various aspects of your safety and security programs were inspected including selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress. Based on the results of the inspection, no significant safety issues were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/NRC/ADAMS/index.html>.

Should you have any questions concerning this inspection, please contact Craig Bassett at (404) 562-4712.

Sincerely,

/RA/

Ledyard B. Marsh, Chief
Events Assessment, Generic Communications
and Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-193
License No.: R-95

Enclosure: NRC Inspection Report No. 50-193/2000-202

cc w/enclosure:
Please see next page

Rhode Island Atomic Energy Commission
(INSPECTION REPORT)

Docket No. 50-193

cc:

Dr. Vincent C. Rose, Chairman, RIAEC
University of Rhode Island
Chemical Engineering Department
118 Crawford Hall
Kingston, RI 02881

Dr. Harry Knickle, Chairman
Nuclear and Radiation Safety Committee
University of Rhode Island
College of Engineering
102 Bliss Hall
Kingston, RI 02881

Mr. Charles McMahon
Supervisor, Radiation Control Specialist
Rhode Island Department of Health
Division of Occupational and
Radiological Health
3 Capitol Hill Cannon
Providence, RI 02808-5097

Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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Distribution: w/enclosure

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U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket Nos: 50-193

License Nos: R-95

Report Nos: 50-193/2000-202

Licensee: Rhode Island Atomic Energy Commission

Facility: Rhode Island Nuclear Science Center

Location: Reactor Road
Narragansett, Rhode Island

Dates: September 18-21, 2000

Inspector: Craig Bassett

Approved by: Ledyard B. Marsh, Chief
Events Assessment, Generic Communications,
and Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Rhode Island Nuclear Science Center
Rhode Island Atomic Energy Commission
Report No.: 50-193/2000-202

This routine, announced inspection included onsite review of various aspects of the licensee's programs concerning operations and emergency preparedness as they relate to the licensee's two megawatt (2 MW) Class 1 non-power research reactor. The licensee's programs were directed toward the protection of public health and safety and were in compliance with NRC requirements. No safety concerns or violations of regulatory requirements were identified.

Organization and Staffing

- The organization structure and functions met the requirements specified in Technical Specifications Section 6.0.

Operations

- The operations program satisfied License and Technical Specification requirements.

Design Control

- The design control program satisfied 10 CFR 50.59 requirements.

Review and Audit Functions

- Review and audit functions required by Technical Specifications Section 6.4 were acceptably completed by the Nuclear and Radiation Safety Committee.

Operator Requalification Program

- Operator requalification was conducted as required by the Operator Requalification Program.

Procedures

- The procedural control and implementation program satisfied Technical Specification requirements.

Fuel Movement and Handling

- The fuel handling and examination program satisfied Technical Specification and licensee procedural requirements.

Maintenance and Surveillance

- The maintenance and surveillance program satisfied Technical Specification requirements.

Experiments

- The program for experiments satisfied Technical Specification and procedural requirements.

Emergency Preparedness

- The emergency preparedness program was conducted acceptably in accordance with the Emergency Plan.

REPORT DETAILS

Summary of Plant Status

The licensee's two megawatt (2 MW) non-power reactor (NPR) continues to be operated in support of laboratory experiments, reactor operator training, and various types of research. During the inspection, the reactor was started-up, operated, and shut down as required to support the irradiation of various samples.

1. Organizational Structure and Functions (IP 39745)

a. Inspection Scope

To verify that staffing, reporting, and record keeping requirements specified in Technical Specification (TS) 6.0 were being met, the inspector reviewed:

- organization and staffing
- administrative controls
- qualifications and management responsibilities
- facility annual reports

b. Observations and Findings

The Rhode Island Nuclear Science Center (RINSC) organizational structure and staffing had not changed since the last inspection. The organizational structure and staffing were as required by TSs and as reported in the Annual Report. Qualifications of the staff met TS requirements. Review of various records verified that management responsibilities were administered as required by TSs and applicable procedures.

c. Conclusions

The organization structure and functions met the requirements specified in TS 6.0.

2. Operations (IP 39745)

a. Inspection Scope

The inspector reviewed selected aspects of:

- operational logs and records
- staffing for operations
- selected operational, startup, and shutdown activities

b. Observations and Findings

The operating logs and records were clear and provided an indication of operational activities. This included documentation of events and/or problems at the facility and tracking or resolution of the problems. The logs and records indicated that shift staffing including on-call personnel was as required by TSs. Logs and records also showed that

operational conditions and parameters were consistent with license and TS requirements. Observation of operational activities in progress during the inspection further confirmed that these conditions and requirements were satisfied.

c. Conclusions

The operations program satisfied TS requirements.

3. **Design Control (IP 40745)**

a. Inspection Scope

The inspector reviewed selected aspects of:

- facility design changes and records
- facility configuration
- Nuclear and Radiation Safety Committee meeting minutes

b. Observations and Findings

Records and observations showed that changes at the facility were acceptably reviewed in accordance with 10 CFR 50.59 and applicable licensee requirements. None of the changes constituted an unreviewed safety question or required a change to the facility TSs.

c. Conclusions

The design control program satisfied 10 CFR 50.59 requirements.

4. **Review and Audit Functions (IP 40745)**

a. Inspection Scope

In order to verify that the licensee had established and conducted reviews and audits as required in TS 6.4, the inspector reviewed:

- Nuclear and Radiation Safety Full Committee meeting minutes
- Nuclear and Radiation Safety Subcommittee meeting minutes
- safety reviews and audits

b. Observations and Findings

Minutes of the Nuclear and Radiation Safety Committee (NRSC) showed that the committee met at the required frequency and that a quorum was present. The topics considered during the meetings were consistent with TS requirements to provide guidance, direction, and oversight, and to ensure acceptable use of the reactor.

A subcommittee of the NRSC typically conducted audits and reviews as required and the full NRSC reviewed the results. Problems noted during audits were discussed and recommendations for improvement were made. The licensee implemented the improvements as necessary.

During the inspection the subject of who conducts the audits and the methods used to ensure the review of all areas was discussed. The inspector noted that the audit documentation was not specific on the items audited and findings. The licensee stated that, with respect to the radiation protection program, an audit procedure and a matrix of areas/items to be audited had been developed and was being reviewed. The licensee agreed to evaluate the feasibility of developing an audit procedure and a matrix that would be applicable to the entire facility and encompass all operations and safety programs. The licensee was informed that the issues of developing an audit procedure and matrix will be tracked by the NRC as an Inspector Follow-up Item (IFI) and will be reviewed during subsequent inspections (IFI 50-193/2000-202-01). The licensee also indicated that a previous practice of having staff members from another NPR facility come and audit the RINSC facility would be reviewed and reinitiated as soon as it was possible to coordinate schedules.

c. Conclusions

Review and audit functions required by TS 6.4 were acceptably completed by the NRSC.

5. **Operator Requalification Program (IP 69003)**

a. Inspection Scope

The inspector reviewed selected aspects of the Requalification Program:

- current operator licenses
- operator training and examination records
- operator physical examination records
- operations logs and records

b. Observations and Findings

The Requalification Program was generally being maintained up to date. Operators' licenses were also current. Two individuals had qualified as Senior Reactor Operators (SROs) during the month of March 2000. Physical examinations of the operators were conducted as required. Records showed that written and operating examinations of the operators were acceptably implemented. Logs showed that operators maintained active duty status as required.

Because of the training that had taken place for the two recently qualified SROs, it was noted that the qualification program was functioning. However, the inspector determined that the records documenting the training were not complete. The licensee was informed that the issue of tracking and documenting the training and other required

spects of the Operator Requalification Program will be tracked by the NRC as an Inspector Follow-up Item and will be closely scrutinized during subsequent inspections (IFI 50-193/2000-202-02).

c. Conclusions

Operator requalification was conducted as required by the Operator Requalification Program.

6. **Procedures (IP 42745)**

a. Inspection Scope

To verify that facility procedures were being maintained and implemented as required, the inspector reviewed selected aspects of:

- RINSC Operating Procedures
- RINSC Abnormal Procedures
- procedural implementation
- associated logs, records, and checklists

b. Observations and Findings

Through observation of various activities at the facility, the inspector determined that personnel were conducting activities in accordance with applicable procedures. Records showed that procedures for potential malfunctions (e.g., radioactive releases and contaminations, and reactor equipment problems) were implemented as required.

c. Conclusions

The procedural control and implementation program satisfied TS requirements.

7. **Fuel Movement and Handling (IP 60745)**

a. Inspection Scope

The inspector reviewed selected aspects of:

- fuel handling procedures
- fuel handling equipment and instrumentation
- fuel examination records
- operations logs and records

b. Observations and Findings

Fuel handling procedures provided a prescribed method to move and handle fuel consistent with the provisions of the TSs and the licensee safety analyses. Fuel movement and fuel examination records showed that the fuel was moved and examined

as required. Records also showed that fuel handling and monitoring equipment and instrumentation were operable prior to use. Personnel were knowledgeable of the procedural and equipment requirements for criticality control and assurance of fuel integrity.

c. Conclusions

The fuel handling and examination program satisfied TS and licensee procedural requirements.

8. Maintenance and Surveillance (IP 61745)

a. Inspection Scope

The inspector reviewed selected aspects of the following to verify that the licensee's maintenance and surveillance program was being acceptably implemented:

- equipment maintenance records
- surveillance and calibration procedures
- surveillance, calibration, and test data sheets and records

b. Observations and Findings

Logs indicated that corrective maintenance activities and problems were addressed as required by appendices to the operating procedures. Records showed that routine maintenance activities were conducted at the required frequency and in accordance with the applicable procedure appendix or equipment manual. Maintenance activities ensured that equipment was maintained consistent with the Safety Analysis Report and TS requirements.

Surveillance, test, and limiting conditions for operation (LCO) verifications and calibrations for selected systems or components were reviewed and found to be completed on schedule and in accordance with the TSs and procedures. All the recorded results were within the prescribed parameters. Associated records and logs were complete and were being maintained as required.

c. Conclusions

The maintenance and surveillance program satisfied TS requirements.

9. Experiments (IP 69745)

a. Inspection Scope

The inspector reviewed selected aspects of:

- experimental program requirements
- procedures

- logs and records
- experimental administrative controls and precautions

b. Observations and Findings

The experiments at the facility were typically routine procedures that had been in place for several years. However, one new experiment had been approved since the last inspection. The experiment was conducted using an approved method and with the cognizance of the Reactor Supervisor and an SRO in accordance with TS requirements (e.g., reactivity limitations). The results of the new experiment were documented in appropriate experimental logs and a facility procedure was developed to facilitate continued use of the technique. Engineering and radiation protection controls were implemented as required to limit exposure to radiation.

c. Conclusions

The program for experiments satisfied TS and procedural requirements

10. Emergency Preparedness (IP 82745)

a. Inspection Scope

The inspector reviewed selected aspects of:

- RINSC Emergency Plan (E-Plan)
- Emergency Plan Implementing Procedures
- emergency response facilities, supplies, equipment and instrumentation
- training records
- offsite support and support agreements
- emergency drills and exercises

b. Observations and Findings

The E-Plan in use at the research reactor was the same as the version most recently approved by the NRC. The E-Plan was audited and reviewed as required. Implementing procedures were reviewed and revised as needed to execute the E-Plan effectively.

Facilities, supplies, instrumentation and equipment were generally being maintained, controlled, and inventoried as required in the E-Plan. Through drill scenario and records review, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. Agreements with outside response organizations had been updated and maintained as necessary. Communications capabilities were acceptable with these support groups and had been tested.

Emergency drills had been conducted as required by the E-Plan. Critiques were held following the drills to discuss the strengths and weaknesses identified during the exercise and to develop possible solutions to any problems identified. The results of

these critiques were documented and filed. Emergency preparedness and response training was being completed typically just prior to the drills.

While reviewing the E-Plan and the Implementing Procedures, a few minor discrepancies were noted between what the documents stated compared with what was the actual practice and/or condition. The E-Plan stipulated that the various Memoranda of Agreement with offsite support agencies were maintained as an appendix to the Implementing Procedures. The Memoranda were maintained in a separate notebook but not as an appendix to the Implementing Procedures. One Appendix to the implementing procedures needed to be revised because it required that specific instruments be kept in the cabinet. Two of the instruments specified were neither kept in the cabinet nor maintained on site. The licensee acknowledged these issues. The licensee was informed that the issue of revising the E-Plan and the Implementing Procedures to reflect current practices and/or conditions will be tracked by the NRC as an Inspector Follow-up Item and will be reviewed during a subsequent inspection (IFI 50-193/2000-202-03).

c. Conclusions

The emergency preparedness program was conducted acceptably in accordance with the E-Plan.

11. Exit Interview

The inspection scope and results were summarized on September 21, 2000, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. Although proprietary information was reviewed during the inspection, no such material is included in this report.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

H. Bicehouse, Radiation Protection Officer and Assistant Director for Reactor Safety
J. Davis, Reactor Supervisor
W. Simoneau, Assistant Director for Reactor Operations
T. Tehan, Director, Rhode Island Nuclear Science Center

Other Personnel

V. Rose, Chairman, Rhode Island Atomic Energy Commission

INSPECTION PROCEDURES USED

IP 39745: Class 1 Non-Power Reactors Organization, Operations, and Maintenance Activities
IP 40745: Class 1 Non-Power Reactors Review and Audit and Design Change Functions
IP 42745: Class 1 Non-Power Reactor Procedures
IP 60745 Class 1 Non-Power Reactors Fuel Handling
IP 61745 Class 1 Non-Power Reactors Surveillance
IP 69003 Class 1 Non-Power Reactor Operator Licenses, Requalification, and Medical Activities
IP 69745 Class 1 Non-Power Reactors Experiments
IP 82745: Class 1 Non-Power Reactors Emergency Preparedness

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|--------------------|-----|---|
| 50-193/2000-202-01 | IFI | Follow-up on licensee developing an audit procedure and matrix covering all aspects of the operations and safety programs at the facility. |
| 50-193/2000-202-02 | IFI | Follow-up on the licensee's efforts to properly track and document the training and the other specified requirements of the Operator Requalification Program. |
| 50-193/2000-202-03 | IFI | Follow-up on the issue of revising the Emergency Plan and the Implementing Procedures to reflect current practices and/or conditions at the facility. |

Closed

None

LIST OF ACRONYMS USED

| | |
|--------|---|
| ADAMS | Agencywide Documents Access and Management System |
| ALARA | As low as reasonably achievable |
| CFR | Code of Federal Regulations |
| E-Plan | Emergency Plan |
| IFI | Inspector Follow-up Item |
| IP | Inspection Procedure |
| LCO | Limiting Conditions for Operation |
| MW | Megawatt |
| NPR | Non-Power Reactor |
| NRC | Nuclear Regulatory Commission |
| NRSC | Nuclear and Radiation Safety Committee |
| NVLAP | National Voluntary Laboratory Accreditation Program |
| PAR | Publicly Available Records |
| PSP | Physical Security Plan |
| RIAEC | Rhode Island Atomic Energy Commission |
| RINSC | Rhode Island Nuclear Science Center |
| SNM | Special Nuclear Material |
| SRO | Senior Reactor Operator |
| TS | Technical Specification |
| URI | University of Rhode Island |