

December 8, 2005

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. 50-193/2005-203

Dear Dr. Tehan:

This letter refers to the inspection conducted on October 3-6, 2005, at your 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.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. Based on the results of this inspection, no safety concerns or noncompliances of NRC requirements were identified. No response to this letter is required.

In accordance with 10 CFR 2.390 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/reading-rm/adams.html>.

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

Sincerely,

**/RA/**

Brian E. Thomas, Branch Chief  
Research and Test Reactors Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-193/2005-203  
cc w/enclosures: Please see next page

Rhode Island Atomic Energy Commission

Docket No. 50-193

cc:

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

Docket No: 50-193

License No: R-95

Report No: 50-193/2005-203

Licensee: Rhode Island Atomic Energy Commission

Facility: Rhode Island Nuclear Science Center  
University of Rhode Island

Location: Narragansett, Rhode Island

Date: October 3-6, 2005

Inspector: Craig Bassett

Approved by: Brian E. Thomas, Branch Chief  
Research and Test Reactors Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

Rhode Island Nuclear Science Center  
Rhode Island Atomic Energy Commission  
Report No.: 50-193/2005-203

This primary focus of this routine, announced inspection was the on-site review of selected aspects of the licensee's two megawatt (2 MW) Class 1 research and test reactor programs concerning organization and staffing, review and audit and design control functions, procedures, operations, operator requalification, fuel movements, maintenance and surveillance, experiments, and emergency preparedness. The licensee's programs were found to be acceptably 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 Specification Section 6.0, entitled "Administrative Controls."

### Review and Audit and Design Control Functions

- Oversight, review, and audit functions required by Technical Specifications Sections 6.1 and 6.4 were acceptably completed by the Nuclear and Radiation Safety Committee.
- The design change program satisfied 10 CFR 50.59 requirements.

### Procedures

- The procedural review, revision, and implementation program satisfied Technical Specification Section 6.5 requirements.

### Operations

- The operations program satisfied Technical Specification and procedural requirements.

### Operator Requalification Program

- Operator training and requalification was being conducted in accordance with the Rhode Island Nuclear Science Center Operator Requalification Program.

### 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 reviewing, authorizing, and conducting experiments satisfied Technical Specification and procedural requirements.

### Emergency Preparedness

- The Emergency Plan and Emergency Implementation Procedures were being audited and reviewed annually as required.
- Emergency equipment and materials were being maintained and inventoried as required.
- Letters of Agreements documenting emergency support provided by offsite agencies were being maintained and updated as required.
- Annual drills were being held and documentation was maintained concerning the follow-up critiques and subsequent corrective actions taken as needed.
- There appeared to be a good working relationship between the licensee and various support groups.

## REPORT DETAILS

### Summary of Plant Status

The licensee's 2 MW Research and Test Reactor (RTR) continued to be operated in support of laboratory experiments, operator training, and various types of research. During the inspection, the RTR was started up, operated, and shut down each day to support the irradiation of various items including tissue samples.

#### 1. Organization and Staffing

##### a. Inspection Scope (Inspection Procedure [IP] 69006)

The inspector reviewed the following to verify that staffing requirements and personnel qualifications and responsibilities specified in Sections 6.1, 6.2 and 6.3 of Rhode Island Nuclear Science Center Technical Specifications (TS), Amendment No. 29, dated December 28, 2004, were being met, maintained, and/or fulfilled:

- staff qualifications and management responsibilities
- staffing requirements for the safe operation of the reactor
- selected portions of the operations logbooks for the past twelve months
- Rhode Island Nuclear Science Center (RINSC) organizational structure and staffing
- RINSC Operating Procedures, Section 1, "General Considerations," original version - not revised to date
- RINSC Annual Reports for July 1, 2003 through June 30, 2004, and July 1, 2004 through June 30, 2005

##### b. Observations and Findings

Through discussions with licensee representatives, the inspector determined that management responsibilities, as well as the organizational structure at the facility, had not changed since the last inspection in the area of operations (refer to NRC Inspection Report No. 50-193/2004-202).

After discussing facility operations with licensee personnel, the inspector determined that there were three qualified Senior Reactor Operators (SROs) and one qualified Reactor Operator (RO) at the facility. One individual was in training to become an operator. The staffing at the facility was acceptable to support the ongoing activities. The organizational structure and staffing were as required by TS and as reported in the Annual Reports. Qualifications of the staff met TS requirements. The inspector verified, through a review of the various records mentioned above, that management and staff responsibilities were administered and fulfilled as required by TS and applicable procedures.

##### c. Conclusions

The organization structure and functions met the requirements specified in TS Section 6.0, entitled "Administrative Controls."

## 2. Review and Audit and Design Control Functions

### a. Inspection Scope (IP 69007)

In order to verify that the licensee had established and conducted reviews and audits as required in TS Sections 6.1 and 6.4, and to ensure that the licensee's change and design control program was being implemented as required in 10 CFR 50.59, the inspector reviewed selected aspects of:

- facility configuration documents
- proposed facility design changes for the past two years
- Operations Records Review form, latest revision dated March 7, 2005
- Radiation Safety Records Review form, latest revision dated March 7, 2005
- Nuclear and Radiation Safety Full Committee meeting minutes since March 2004 through the present
- Nuclear and Radiation Safety Subcommittee meeting minutes since June 2004 through the present
- safety reviews and audits conducted by the committees and noted in the respective committee and subcommittee meetings minutes
- RINSC Annual Reports for July 1, 2003 through June 30, 2004, and July 1, 2004 through June 30, 2005
- RINSC Operating Procedures, Section 1, "General Considerations," original version - not revised to date

### b. Observations and Findings

#### (1) Review and Audit Functions

Minutes of the Nuclear and Radiation Safety Committee (NRSC), since March 2004 through the present, showed that the committee met at the required frequency and that a quorum was present. The topics considered during these meetings were consistent with TS requirements to provide direction and oversight, and to ensure acceptable use of the reactor.

A subcommittee of the NRSC met each quarter and conducted audits and reviews of specific portions of the operations and safety programs so that all aspects of the licensee's entire program was reviewed annually as required. The full NRSC met annually as required and reviewed the results of all audits. Problems or improvement items noted during these audits were discussed and corrective actions were taken as needed.

#### (2) Design Control Functions

Since the last NRC inspection in the functional area of operations, licensee staff members had noted problems with certain items of equipment at the facility. The staff members determined what was needed to correct the problems and had proposed certain changes. A 10 CFR 50.59 review and evaluation of each change was completed as required. They then made a recommendation to the

NRSC that the changes be made. The inspector noted that the changes involved the modification of the Neutron Flux Monitor HV Trip and the modification of the Shim Safety Blade Position Indicators.

A review of the design change packages demonstrated that they had been acceptably documented in accordance with 10 CFR 50.59 and applicable licensee requirements. In addition, the changes were reviewed and approved by the NRSC as required. Neither of the changes was found to increase the probability or consequence of an accident, create the possibility of a different type of accident, adversely affect the safety margin, or require a change to the facility TS.

c. Conclusions

Oversight, review, and audit functions required by TS Sections 6.1 and 6.4 were acceptably completed by the NRSC. The design change program satisfied 10 CFR 50.59 requirements.

**3. Procedures**

a. Inspection Scope (IP 69008)

To verify that facility procedures were being reviewed, revised, and implemented as required by TS Section 6.5, the inspector reviewed selected aspects of:

- procedural review, revision, implementation, and compliance
- RINSC Operating Procedures, Sections 1-13, and related forms - latest revisions dated March 7, 2000
- RINSC Operating Procedures, Appendices A-AB, latest revisions dated September 22, 2005
- RINSC Operating Procedures, Appendix AC, "Abnormal Procedures," Revision (Rev.) 0, approved June 17, 2004
- Nuclear and Radiation Safety Full Committee meeting minutes since March 2004 through the present

b. Observations and Findings

Procedures had been formulated for the safe, routine operation of the reactor. Records showed that procedures for potential malfunctions (e.g., radioactive releases and contaminations, and abnormal events) had also been developed and were available to be implemented as required. The inspector noted that procedural changes were being reviewed and approved by the NRSC as required by TS. Training of personnel on procedures and changes was acceptable. Through observation of various activities at the facility, including reactor operation and sample handling, the inspector determined that licensee personnel conducted activities in accordance with applicable procedures.

c. Conclusions

The procedural review, revision, and implementation program satisfied TS Section 6.5 requirements.

**4. Operations**

a. Inspection Scope (IP 69006)

The inspector reviewed selected aspects of the following to ensure that the operations program was being implemented as required in TS Sections 3, 4, and 6:

- staffing for reactor operations
- RINSC Operations Log Books Nos. 52 and 53
- Operating Data Notebooks for 2004 and 2005
- selected start-up, operational, and shutdown activities on October 4 and 5, 2005
- RINSC Operating Procedures, Section 7, "Routine Startup," latest revision dated August 17, 1992
- RINSC Operating Procedures, Section 8, "Operations at Power and Adjustments in Power Level," latest revision dated January 26, 1995
- RINSC Operating Procedures, Section 9, "Shutdown," latest revision dated October 6, 1999
- RINSC Operating Procedures, Appendix V, "RINSC Pre-Startup Check Sheet," Rev. 8, dated June 17, 2004
- Form NSC-1, "Pre-Startup Check Sheet" - associated with RINSC Operating Procedures, Appendix V
- Form NSC-1.c, "Shutdown Check Sheet," Rev. 4, dated March 28, 2003, - associated with RINSC Operating Procedures, Section 9
- Form NSC-11, "Shift Record Data Sheet," Rev. 2, dated March 28, 2003, - associated with RINSC Operating Procedures, Section 8
- Form NSC-15, "RINSC Checklist for Securing Reactor Facility," Rev. 1, dated July 25, 1995
- NSC-18, "RINSC Reactor Operations Data," Rev. 0, dated March 28, 2003, - associated with RINSC Operating Procedures, Section 8

b. Observations and Findings

The operating logs and records from July 2004 through the present were reviewed. The inspector determined that these documents provided an acceptable indication that operational activities were being conducted as required by TS and procedures. This included documentation of events, surveillance activities, and problems at the facility and tracking or resolution of the problems. These logs and records also indicated that shift staffing was as required by TS. The records further showed that those operational conditions and parameters logged 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 being implemented at the facility satisfied TS requirements.

**5. Operator Requalification Program**

a. Inspection Scope (IP 69003)

The inspector reviewed selected portions of the following to ensure that the Operator Requalification Program was being acceptably implemented:

- operator physical examination records
- qualified operator licenses and expiration dates
- RINSC Operations Log Books Nos. 52 and 53
- RINSC Operating Procedures, Appendix U, "Reactor Operator Re-Qualification," Rev. 1, approved June 29, 2005
- Form NSC-45, "Operator Requalification Program Checksheet" - associated with RINSC Operating Procedures, Appendix U
- Form entitled "The Rhode Island Nuclear Science Center Research Reactor Operator Requalification Exam" - associated with RINSC Operating Procedures, Appendix U
- Summary sheet entitled "Operator Requalification Exam" - associated with RINSC Operating Procedures, Appendix U

b. Observations and Findings

The Requalification Program was outlined in the RINSC Operating Procedures, Appendix U, Rev. 1. As noted above, there were three qualified SROs and one qualified RO at the facility. One individual was in training to become an operator. Through reviewing requalification check sheets and examination records, the inspector found that all operators' licenses were current and that the program was being maintained up-to-date. The RO and SROs were completing the required activities and/or reactivity manipulations to maintain their licenses current and their active duty status. These activities also included completing the required training and the required number of hours of SRO functions, as applicable. Records showed that annual operating tests and biennial written examinations were being completed by the qualified operators as stipulated in the program.

The inspector also verified that physical examinations for operators were completed biennially (interval not to exceed 30 months) as allowed in American National Standard ANSI/ANS 15.4-1988, "Selection and Training for Research Reactors," approved June 9, 1988.

c. Conclusions

Operator training and requalification was being conducted in accordance with the RINSC Operator Requalification Program.

## 6. Fuel Movement and Handling

### a. Inspection Scope (IP 69009)

The inspector reviewed selected aspects of the following to verify compliance with TS Sections 3.9 and 4.9:

- fuel examination records
- fuel handling equipment and instrumentation
- RINSC Operations Log Books Nos. 52 and 53
- RINSC Operating Procedures, Section 2, "Critical Experiments," original version - not revised to date
- RINSC Operating Procedures, Section 3, "Reloading the Core to a Known Configuration," original version - not revised to date
- RINSC Operating Procedures, Section 5, "Moving and Positioning the Core," original version - not revised to date
- Form NSC-58, "RI Nuclear Science Center Core Reloading or Change" - associated with RINSC Operating Procedures, Section 5

### b. Observations and Findings

Core loading procedures provided a prescribed method to move and handle fuel consistent with the requirements and provisions of the TS Sections 3.9 and 4.9 and the licensee safety analyses. Fuel movement and fuel examination records showed that the fuel of the current core, Core No. 3, was moved in accordance with procedures and examined as required. In accordance with a licensee request and the subsequent NRC review and approval, the licensee was inspecting one-fifth of their fuel elements every year so that all elements would be inspected every five years.

### c. Conclusions

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

## 7. Maintenance and Surveillance

### a. Inspection Scope (IPs 69006 and 69010)

The inspector reviewed selected aspects of the following to verify that the licensee's maintenance and surveillance program was being acceptably implemented as required by TS Sections 3 and 4:

- RINSC Reactor Data Notebook
- Operating Data Notebooks for 2004 and 2005
- RINSC Operations Log Books Nos. 52 and 53
- Periodic Maintenance Notebook containing the documentation of all maintenance scheduled for the facility

- RINSC Operating Procedures, Section 10, "Reactor Facility Emergency Systems Checkout Procedure," latest revision dated August 7, 1995
- RINSC Operating Procedures, Appendix A, "Confinement System Semi-Annual Surveillance," Rev. 0, approved November 20, 2001
- RINSC Operating Procedures, Appendix D, "Blade Speeds and Drop Times," Rev. 1, approved March 28, 2003
- RINSC Operating Procedures, Appendix I, "Primary Water Chemistry," Rev. 2, approved December 15, 2004
- RINSC Operating Procedures, Appendix N, "Primary Temperature Channel Calibration," Rev. 0, approved March 26, 2004
- RINSC Operating Procedures, Appendix W, "Alarm, Scram, and Interlock Checks," Rev. 4, approved September 22, 2004
- RINSC Operating Procedures, Appendix X, "Monthly Maintenance," Rev. 4, approved December 15, 2004
- Form NSC-1a, "Alarm, Scram, and Interlock Check Sheet" - associated with RINSC Operating Procedures, Appendix W
- Form NSC-1b, "Monthly Maintenance Check Sheet" - associated with RINSC Operating Procedures, Appendix X
- Form NSC-3b, "Primary Water Chemistry" - associated with RINSC Operating Procedures, Appendix I
- Form NSC-3d, "Weekly Gross Radioactivity Record for Primary Water" - associated with RINSC Operating Procedures, Appendix I
- Form NSC-4f, "Duty Tech Task List Daily/Weekly," latest revision dated July 16, 2001
- Form NSC-4g, "Duty Tech Annual Task," latest revision dated July 16, 2001
- Form NSC-14a, "RINSC Standby Power System Check List," latest revision dated August 7, 1995 - associated with RINSC Operating Procedures, Section 10
- Form NSC-14b, "Evacuation System Check List," latest revision dated March 18, 1996 - associated with RINSC Operating Procedures, Section 10
- Form NSC-43, "Control Blade Parameter Sheet," - associated with RINSC Operating Procedures, Appendix D, as Attachment B
- Form entitled, "Confinement System Surveillance" - associated with RINSC Operating Procedures, Appendix A

b. Observations and Findings

(1) Maintenance Activities

Records reviewed for the time period from 2004 to date indicated that corrective maintenance activities were conducted and problems were addressed as required by the applicable RINSC Operating Procedures and appendices listed above. The records also showed that routine maintenance activities were conducted at the required frequency and in accordance with the applicable Appendix or equipment manual. Maintenance activities ensured that equipment remained consistent with the Safety Analysis Report and TS requirements.

(2) Surveillance Activities

Surveillances, tests, and limiting conditions for operation (LCO) verifications for selected systems or components were reviewed and found to be completed on schedule and in accordance with the TS and procedures. All the recorded results reviewed by the inspector were within the prescribed parameters. Associated records and logs referenced above were complete and were being maintained as required.

c. Conclusions

The maintenance and surveillance program satisfied TS requirements.

**8. Experiments**

a. Inspection Scope (IP 69005)

The inspector reviewed selected aspects of the following to verify that the licensee was in compliance with TS Sections 3.1, 3.8, and 4.8:

- RINSC Operations Log Books Nos. 52 and 53
- experimental administrative controls and precautions
- RINSC Operating Procedures, Section 1, "General Considerations," original version - not revised to date
- RINSC Operating Procedures, Section 8, "Operations at Power and Adjustments in Power Level," latest revision dated January 26, 1995
- RINSC Operating Procedures, Section 12, "Use of Pneumatic Irradiation Facilities," original version, - not revised to date
- RINSC Operating Procedures, Appendix P, "Incore Irradiation Procedures," latest revision dated October 11, 1995
- Form NSC-7a, "Neutron Irradiation Request Form - Short Irradiation," latest revision dated September 1994
- Form NSC-7b, "Pneumatic System Long Irradiation Request Form," latest revision dated September 1994
- Form NSC-7d, "Incore Long Irradiation Request Form," Rev. 0, approved September 28, 2005
- Form NSC-7x, "Neutron Irradiation Request Form - BioPAL 10-15 Minute Irradiations," Rev. 12, latest revision dated December 1999
- Form NSC-8, "Gamma Irradiation Request Form," latest revision dated February 1994
- Form NSC-11, "Shift Record Data Sheet," Rev. 2, dated March 28, 2003 - associated with RINSC Operating Procedures, Section 8
- Form NSC-18, "RINSC Reactor Operations Data," Rev. 0, dated March 28, 2003 - associated with RINSC Operating Procedures, Section 8
- Form NSC-70, "RINSC Irradiation Sample Tracking Summary Form," latest revision dated September 1994
- Form entitled "Irradiation Tracking Log for BioPAL Rabbits" - associated with Form NSC-7x

b. Observations and Findings

The majority of the experiments conducted at the facility were ones that have been in place for several years. However, since the last inspection in this area in November 2004, one new experiment had been authorized (Authorization No. 1122). The experiment involved determination of the bromine and iodine content of marine atmospheric aerosols by Neutron Activation Analysis (NAA). The inspector verified that the experiment proposal not only included a discussion of the proposed experiment but the hazards involved and the anticipated results as well. The experiment had been reviewed and approved by the reactor staff and was subsequently reviewed and approved by the NRSC as required.

The inspector verified that the appropriate irradiation request forms for the various operations were completed and approved as required. The inspector also noted that the experiments that had been conducted were completed using approved methods and with the cognizance of the SRO in charge and a Health Physics representative, in accordance with TS and RINSC Operating Procedure requirements (e.g., reactivity limitations) and Appendix P instructions. The experiments were documented on the appropriate forms noted above and in the operations log as required. Engineering and radiation protection controls were implemented as required to limit exposure of the workers handling the irradiated experiment samples.

c. Conclusions

The program for reviewing, authorizing, and conducting experiments satisfied TS and procedural requirements.

**9. Emergency Preparedness**

a. Inspection Scope (IP 69011)

To verify that the licensee was implementing and complying with the RINSC Emergency Plan, Rev. 1, dated March 2001, as approved by the NRC, and Section 6.1 of the TS, the inspector reviewed selected aspects of:

- emergency response supplies, equipment and instrumentation
- training records for emergency response personnel
- offsite support and support agreements
- synopses and critiques of emergency drills and exercises for 2004 and 2005
- Emergency Plan Implementing Procedures, Rev. 4, dated November 2004
- RINSC Operating Procedures, Section 10, "Reactor Facility Emergency Systems Checkout Procedure," latest revision dated August 7, 1995
- RINSC Operating Procedures, Appendix E, "Iodine Efficiency Test," Rev. 0, dated March 28, 2003
- RINSC Operating Procedures, Appendix W, "Alarm, Scram, and Interlock Checks," Rev. 4, approved September 22, 2004
- Form NSC-1A, "Alarm, Scram, and Interlock Check Sheet" - associated with RINSC Operating Procedures, Appendix W

- RINSC Operating Procedures, Appendix AC, "Abnormal Procedures," Rev. 0, approved June 17, 2004
- Form NSC-14a, "RINSC Standby Power System Check List," latest revision dated August 7, 1995 - associated with RINSC Operating Procedures, Section 10
- Form NSC-14b, "Evacuation System Check List," latest revision dated March 18, 1996 - associated with RINSC Operating Procedures, Section 10
- Form NSC-19, "Emergency Exhaust System Iodine Filter Efficiency Test" - associated with RINSC Operating Procedures, Appendix E
- Form NSC-83, "Emergency Cabinet Inventory List"

b. Observations and Findings

The Emergency Plan (E-Plan) in use at the research reactor was verified to be the same as the version most recently approved by the NRC. The E-Plan was audited and reviewed annually as required. E-Plan Implementing Procedures (EPIPs) were also reviewed and revised as needed to effectively execute the E-Plan. The inspector verified that a list of emergency personnel, management, and offsite agencies was posted in the Control Room as required by TS Section 6.1. An Emergency Call list was also verified to be available at the headquarters office of the local fire department and police department.

Supplies, instrumentation, and equipment maintained at the facility and at the Emergency Support Center located in the Coastal Institute Building, were being controlled and inventoried as required in the E-Plan. This included inspections and testing of the fire extinguishers and the fire suppression system at the facility. Letters of Agreement (LOAs) with offsite response organizations and support groups had been updated biennially and maintained as required. (It was noted that, although the agreements were still in effect, these LOAs were due to be updated in October 2005.) Communications capabilities with these support groups were acceptable and had been tested as required.

The documentation of the drills conducted during the past two years was reviewed. Emergency preparedness and response training was being completed typically just prior to the drills. Through drill scenario and record reviews, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. Emergency drills had been conducted annually as required by the E-Plan. Critiques were written following the drills to document the strengths and weaknesses identified during the exercise. Action items were developed to correct the problems identified. As a result of the latest annual drill, held in July 2005, three action items had been identified. These included updating the EPIPs and the Emergency Communications Test List, providing radiation protection training for Narragansett Fire Department and Emergency Medical Technician (EMT) personnel, and contacting the South County Hospital to verify support in case of emergency. These items, especially the training, were deemed sufficiently important by the inspector that the licensee was informed that these issues will be identified as an Inspector Follow-up Item (IFI) by the NRC and will be reviewed during a future inspection (IFI 50-193/2005-203-01).

The inspector visited the headquarters office of the City of Narragansett Fire Department (NFD). The inspector determined that there were adequate supplies and equipment available at the NFD to handle a fire emergency at the facility. Through talking with the NFD Chief, the inspector noted that NFD personnel had attended preparations for the recent licensee drill at the RINSC in July 2005 (as noted above) and that NFD and EMT personnel were anticipating receiving additional training. The inspector told the Chief that this would be followed by the NRC. There appeared to be a good working relationship between the licensee and this support group.

The inspector also visited the Rhode Island Hospital in Providence and observed the emergency response facilities that would be available at the hospital in case of a chemical, biological, or radiological emergency. The inspector noted that there were adequate supplies and equipment available to care for an injured licensee staff member if needed. There appeared to be a good working relationship between the licensee and this support organization as well.

c. Conclusions

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

**10. Follow-up on Previous Open Items**

a. Inspection Scope (IP 92701)

The inspector reviewed the licensee's actions taken in response to two examples of a previously identified Unresolved Item (URI).

b. Observation and Findings

- (1) (Closed) URI 50-193/2004-202-01 - Follow-up on the licensee's actions to correct the problem noted with completing the weekly confinement and emergency exhaust system test in a timely manner (within the 10 day time frame allowed by the TS).

TS Sections 4.4, 4.5, and 4.6 require that the confinement and emergency exhaust system be tested weekly. TS Section 1.38.7 defines weekly as a period not to exceed 10 days.

Prior to the inspection in November 2004, the licensee notified the NRC that a weekly test of the confinement and emergency exhaust system alarm was completed on Wednesday, August 25, 2004, but not again for 15 days. (The test was documented on Form 14b, "Evacuation System Check List.") The weekly test had been missed during the week of August 30 due to numerous problems that arose during that period, as well as the need to complete various annual surveillances within that time frame. Once the licensee realized that the test had not been conducted during the week of August 30, one was conducted on Thursday, September 9, 2004. In the past, the licensee had developed a spread

sheet or chart to track which surveillance items needed to be completed and a way to document the completion so that it was readily available for review. Following the missed weekly surveillance, the licensee prepared further refinements to the spread sheet or chart system of tracking maintenance and surveillance items. The changes developed included having the facility intranet send automatic electronic mail messages (E-mail) to the various members of the staff responsible for completing the various tasks involved.

During the inspection in November 2004, the inspector reviewed the past records of the completion of this test. It was noted that there were four other instances when the test was not completed within the 10 day time frame allowed. In 2003, the confinement and emergency exhaust system alarm was tested on Tuesday, May 20 but not again for 13 days until Monday, June 2; also, the alarm was tested on Wednesday, August 20 but not again for 13 days until Tuesday, September 2. In 2004, the confinement and emergency exhaust system alarm was tested on Tuesday, January 13 but not again for 13 days until Monday, January 26; also, the alarm was tested on Wednesday, April 1 but not again for 12 days until Tuesday, April 13. The licensee explained that these instances were not reported since they interpreted the TS to mean that, if a surveillance had been completed one week but been missed during the following week, it was not a problem as long as it was done the Monday or Tuesday of the subsequent week. Since there had not been enough time to verify that the actions taken to correct the problem of completing surveillance items in a timely manner were effective, the licensee was informed that this issue would be identified as an Unresolved Item (URI).

During this inspection, the inspector reviewed documentation of the completion of the weekly surveillance confinement and emergency exhaust system alarm test. It was noted that there had not been another instance of missing a test and that the licensee's corrective actions appeared to have been effective. This issue is considered closed.

- (2) (Closed) URI 50-193/2004-202-01 (Second Example) - Follow-up on the licensee's actions to correct the problem noted with completing the monthly maintenance documented on RINSC Form NSC-1b in a timely manner (within 6 weeks as allowed by the TS).

TS Section 6.5.3 requires the licensee to have maintenance procedures which could have an effect on the safety of the reactor. RINSC Operating Procedures, Appendix X, "Monthly Maintenance," Rev. 3, approved March 28, 2003, requires in Section II that the steps (specified in the procedure) are to be (i.e., "shall be") performed monthly. TS Section 1.8 defines monthly to mean a period not to exceed six weeks.

During the inspection in November 2004, the inspector reviewed the documentation showing completion of the monthly maintenance required by Appendix X. Appendix X required the following to be checked or inspected monthly: check of the pool overflow drain capacity, operational check of the Walkie-Talkies, inspection of the Delay Tank room for primary water leaks, and a

check of the Primary Pump oil level. Completion of this monthly maintenance is documented on Form NSC-1B. The inspector noted that these activities had been completed in March 31, 2003, but not again until June 14, 2003. Thereafter, during 2003, the activities were completed monthly. As of the date of the inspection in 2004, these activities had been completed only on February 16 and May 24. When asked about these monthly checks and inspections, the licensee indicated that the activities were not directly required by the TS and thus were optional and not actually "required" to be done monthly. However, the licensee indicated that a form would be filled out to indicate whether or not the monthly maintenance had been completed. The licensee was informed that this issue of correcting the problem noted with completing the monthly maintenance in a timely manner would be identified as another example of an Unresolved Item.

During this inspection, the inspector reviewed the monthly check lists. On occasion the checks had not been completed but the form was completed to indicate that no maintenance was needed. The inspector noted that there had not been another instance of missing the completion of the monthly maintenance checklist. In addition, it was noted that RINSC Operating Procedures, Appendix X had been changed. Section II of Appendix X, Revision 4, approved December 15, 2004, now states that the steps "should be" performed monthly to further clarify that this was not a requirement but rather a judgement call by the operator on whether or not the maintenance was actually needed. The licensee's corrective actions appeared to have been effective. This issue is considered closed.

c. Conclusions

One Unresolved Item with two examples was closed.

**11. Exit Interview**

The inspection scope and results were summarized on October 6, 2005, 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.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee Personnel

H. Bicehouse, Radiation Protection Officer and Assistant Director for Reactor Safety  
J. Davis, Reactor Supervisor  
M. Damato, Health Physics Technician and Reactor Operator Trainee  
D. Johnson, Health Physicist  
B. MacGregor, Reactor Operator and Facility Engineer  
S. Mecca, Chairman, Rhode Island Atomic Energy Commission  
M. Middleton, Assistant Director for Reactor Operations  
T. Tehan, Director, Rhode Island Nuclear Science Center

### Other Personnel

J. Cotter, Chief, Narragansett Fire Department  
G. Donovan, Radiation Safety Technologist, Medical Physics Department, Rhode Island Hospital

## **INSPECTION PROCEDURES USED**

IP 69003	Class 1 Research and Test Reactor Operator Licenses, Requalification, and Medical Activities
IP 69005	Class 1 Research and Test Reactors Experiments
IP 69006	Class 1 Research and Test Reactors Organization, Operations, and Maintenance Activities
IP 69007	Class 1 Research and Test Reactors Review and Audit and Design Change Functions
IP 69008	Class 1 Research and Test Reactor Procedures
IP 69009	Class 1 Research and Test Reactors Fuel Movement
IP 69010	Class 1 Research and Test Reactors Surveillance
IP 69011	Class 1 Research and Test Reactors Emergency Preparedness
IP 92701	Followup

## **ITEMS OPENED, CLOSED, AND DISCUSSED**

### Opened

50-193/2005-203-01	IFI	Follow-up with the licensee to ensure that the EIPs and the Emergency Communications Test List were updated, that health physics training for Narragansett Fire Department personnel was conducted, and that the South County Hospital was contacted to verify support in case of emergency.
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Closed

50-193/2004-202-01      URI      Follow-up on the licensee's actions to correct the problem noted with completing the weekly confinement and emergency exhaust system test in a timely manner (within the 10 day time frame allowed by the TS). Also, follow-up on the licensee's actions to correct the problem noted with completing the monthly maintenance documented on Form NSC-1b in a timely manner (within 6 weeks as allowed by the TS).

**LIST OF ACRONYMS USED**

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
EMT	Emergency Medical Technician
E-Plan	Emergency Plan
EPIP	Emergency Plan Implementing Procedures
IFI	Inspector Follow-up Item
IP	Inspection Procedure
IR	Inspection Report
LCO	Limiting Conditions for Operation
LOA	Letter of Agreement
MW	Megawatt
NFD	Narragansett Fire Department
No.	Number
NRC	Nuclear Regulatory Commission
NRSC	Nuclear and Radiation Safety Committee
NSC	Nuclear Science Center
PAR	Publicly Available Records
Rev.	Revision
RIAEC	Rhode Island Atomic Energy Commission
RINSC	Rhode Island Nuclear Science Center
RNRP	New, Research and Test Reactor Program (Branch, NRC)
RO	Reactor Operator
RTR	Research and Test Reactor
SRO	Senior Reactor Operator
TS	Technical Specification
URI	Unresolved Item