

May 20, 2004

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. 50-193/2004-201

Dear Dr. Tehan:

This letter refers to the inspection conducted on May 3-6, 2004, of the Rhode Island Nuclear Science Center research reactor facility. The inspection included a review of activities authorized for the 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/**

Patrick M. Madden, Section Chief  
Research and Test Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-193/2004-201  
cc w/enclosure: Please see next page

Rhode Island Atomic Energy Commission

Docket No. 50-193

cc:

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University of Rhode Island  
Chemical Engineering Department  
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Dr. Harry Knickle, Chairman  
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Mr. Jack Ferruolo  
State Radiation Control Officer  
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Test, Research, and Training  
Reactor Newsletter  
University of Florida  
202 Nuclear Sciences Center  
Gainesville, FL 32611

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OFFICE	RNRP:RI		RNRP:LA		RNRP:SC	
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DATE	5/ 20 /2004		5/ 20 /2004		5/ 20 /2004	

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

Docket No: 50-193

License No: R-95

Report No: 50-193/2004-201

Licensee: Rhode Island Atomic Energy Commission

Facility: Rhode Island Nuclear Science Center  
University of Rhode Island

Location: Reactor Road  
Narragansett, Rhode Island

Dates: May 3-6, 2004

Inspector: Craig Bassett

Approved by: Patrick M. Madden, Section Chief  
Research and Test Reactors Section  
New, Research and Test Reactors Program (RNRP)  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

Rhode Island Atomic Energy Commission  
Rhode Island Nuclear Science Center  
Report No. 50-193/2004-201

The primary focus of this routine, announced inspection included onsite review of selected aspects of the licensee's Class I research reactor safety programs including: organization and staffing, review and audit and design change functions, procedures, radiation protection, security, material control and accounting, and transportation of radioactive material since the last NRC inspection in these areas. The licensee's programs were acceptably directed toward the protection of public health and safety and were in compliance with NRC requirements.

### Organization and Staffing

- The licensee's organization and staffing remained in compliance with the requirements specified in the Technical Specifications.

### Review and Audit and Design Change Functions

- Review, oversight, and audit functions required by Technical Specifications Section 6.4 were acceptably completed by the Nuclear and Radiation Safety Committee and/or a subcommittee thereof.
- The design change program was carried out in accordance with 10 CFR 50.59.

### Procedures

- The health physics procedures were found to be acceptable and had been reviewed and approved by the Nuclear and Radiation Safety Committee as required.

### Radiation Protection Program

- Surveys were being completed and documented acceptably to permit evaluation of the radiation hazards present.
- Postings and instructions met regulatory requirements.
- Personnel dosimetry was being worn as required and recorded doses were within the licensee's procedural action levels, and NRC's regulatory limits.
- Radiation monitoring equipment was being maintained and calibrated as required.
- The Radiation Protection and ALARA Programs satisfied regulatory requirements.
- Radiation protection training program was completed as required.

#### Effluent and Environmental Monitoring

- Effluent monitoring satisfied license and regulatory requirements and releases were within the regulatory limits.

#### Transportation of Radioactive Materials

- No radioactive material shipments had been made under the reactor license within the past year.

#### Physical Security

- Security system barriers, equipment, tests, and procedures, and related security activities, satisfied Physical Security Plan requirements.

#### Material Control and Accountability

- Special Nuclear Material was acceptably controlled and inventoried as required.

## REPORT DETAILS

### Summary of Plant Status

The licensee's two megawatt research and test reactor continued to be operated in support of laboratory experiments, reactor operator training, various types of research, and irradiation of samples for various clients. During the inspection, the reactor was started-up, operated, and shut down as required to support laboratory experiments and irradiation work.

### 1. Organization and Staffing

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

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements in Sections 6.1-6.3 of Technical Specifications (TS), Amendment No. 28, dated August 2, 2001, were being met:

- current organizational structure for the Rhode Island Nuclear Science Center (RINSC)
- management responsibilities
- staffing requirements for safe operation of the facility
- RINSC Annual Report for July 2002 through June 2003

#### b. Observations and Findings

Through discussions with licensee representatives, the inspector determined that management responsibilities and the organization at the facility had not changed since the last inspection in the area of radiation protection (refer to NRC Inspection Report No. 50-193/2003-201). The organizational structure and staffing at the facility, as reported in the Annual Report, were as required by TS.

During the inspection, it was noted that the person filling the position of Assistant Director for Reactor Operations will be retiring in August. Until a new Assistant Director can be hired, the licensee has designated the Reactor Supervisor to fill the position. Because there will be only one qualified Senior Reactor Operator at the facility when the current Assistant Director for Reactor Operations leaves, the Director of RINSC will take the necessary steps to reactivate his license which is currently in an "inactive" status.

After discussing facility operations with licensee personnel, the inspector determined that the staffing at the facility was acceptable to support the ongoing activities. The current staffing met the requirements specified in TS Section 6.1.

#### c. Conclusions

The licensee's organization and staffing remained in compliance with the requirements specified in TS Section 6.

## 2. Review and Audit and Design Change Functions

### a. Inspection Scope (IP 69007)

In order to verify that the licensee had established and conducted reviews and audits as required in TS 6.4 and to determine whether modifications to the facility, if any, were consistent with 10 CFR 50.59, the inspector reviewed:

- Nuclear and Radiation Safety Committee meeting minutes for 2003 and 2004
- Nuclear and Radiation Safety Subcommittee meeting minutes for 2003 and 2004
- audits and reviews documented in the Nuclear and Radiation Safety Committee and subcommittee meeting minutes
- RINSC Radiation Safety Office Standard Operating Procedure (SOP) 110, "Radiation Protection Review," Revision (Rev.) 0, dated March 23, 2000

### b. Observations and Findings

#### (1) Review and Audit Functions

The inspector reviewed the meeting minutes of the Nuclear and Radiation Safety Committee (NRSC) and the NRSC subcommittee from January 2003 to the present. These meeting minutes showed that the committee met at the required frequency and that a quorum was present. The topics considered during the meetings were appropriate and as stipulated in the TS. Review of the committee meeting minutes also indicated that the NRSC provided appropriate guidance and direction for reactor operations, and ensured suitable use and oversight of the reactor.

Audits and reviews were conducted by a subcommittee of the NRSC and/or designated persons as required and the full NRSC reviewed the results. It was noted that audits and reviews of different portions of the safety program were completed every quarter such that the entire program was reviewed each year as required. The inspector noted that the audits and reviews were acceptable and that licensee actions taken in response to the findings were appropriate.

#### (2) Design Change

The inspector determined that design changes at the facility required a facility staff review followed by an NRSC review and subsequent approval. Only one design change had been processed during the past several years. It involved replacement of the Start-Up Channel, the Log N Period Channel, and the Log N Power Channel with a new Gamma Metrics Neutron Flux Monitor. The inspector had reviewed the records previously and determined that the licensee review had been performed as required and the replacement had been reviewed and approved by the NRSC. From the review, the inspector also determined that the licensee's design change reviews and approvals were focused on safety and met the intent of 10 CFR 50.59.

c. Conclusions

Review, oversight, and audit functions required by TS Section 6.4 were acceptably completed by the NRSC or the NRSC subcommittee. The licensee's design change program was carried out in accordance with 10 CFR 50.59 as required.

**3. Procedures**

a. Inspection Scope (IP 69008)

To determine whether facility radiation protection procedures met TS Sections 6.4 and 6.5 requirements, the inspector reviewed selected aspects of the following:

- NRSC meeting minutes for 2003 and 2004
- NRSC Subcommittee meeting minutes for 2003 and 2004
- RINSC Radiation Safety Office SOP 100, "Standard Operating Procedures," Rev. 0, dated March 23, 2000

b. Observations and Findings

The inspector reviewed selected RINSC Radiation Safety Office procedures. These procedures provided guidance for the administrative and health physics (HP) functions of the facility. The inspector confirmed that written procedures were available for those tasks and items required by TS Section 6.5. The licensee controlled changes to procedures and the NRSC conducted the review and approval process as required.

The inspector interviewed the staff and determined that the training of personnel on procedures and changes to procedures was effective. Personnel were also observed performing operations activities and a weekly survey in accordance with applicable procedures. The inspector determined that use of, and adherence to, procedures was acceptable.

c. Conclusions

The health physics procedures were found to be acceptable and had been reviewed and approved by the NRSC as required.

**4. Radiation Protection**

a. Inspection Scope (IP 69012)

The inspector reviewed the following to verify compliance with 10 CFR Parts 19 and 20, and the requirements outlined in TS Table 3.2 and Sections 3.7, 4.2, and 4.7:

- radiation and contamination survey records documented on survey form, RINSC Form NSC-4
- radiological signs and postings in the Reactor Room and basement level of the facility

- RINSC dosimetry records (personnel and environmental) for 2002, 2003, and 2004
- calibration and periodic check records for selected radiation monitoring instruments documented on the applicable form, RINSC Form NSC-17
- Radiation Protection and ALARA Programs documented in the "Rhode Island Nuclear Science Center Radiation Safety Guide," Rev. 0
- RINSC Radiation Safety Office SOP 101, "Radiation Safety Training," Rev. 0, dated March 23, 2000
- RINSC Radiation SOP 110, "Radiation Protection Review," Rev. 0, dated March 23, 2000
- RINSC Radiation Safety Office SOP 201, "External Monitoring," Rev. 0, dated March 23, 2000
- RINSC Radiation Safety Office SOP 202, "Bioassay," Rev. 0, dated March 23, 2000
- RINSC Radiation Safety Office SOP 203, "Determining TEDE and TODE," Rev. 0, dated March 23, 2000
- RINSC Radiation Safety Office SOP 204, "Skin Exposure," Rev. 1, dated April 29, 2002
- RINSC Radiation Safety Office SOP 205, "Possible Overexposures," Rev. 0, dated March 23, 2000
- RINSC Radiation Safety Office SOP 206, "Pregnancies," Rev. 0, dated March 23, 2000
- RINSC Radiation Safety Office SOP 220, "Pocket Dosimeter Calibration," Rev. 0, dated March 28, 2003
- RINSC Radiation Safety Office SOP 300, "Routine Surveys," Rev. 0, dated June 21, 2001

The inspector also toured the licensee's facility, observed the use of dosimetry and radiation monitoring equipment, conducted a radiation survey of the Control Room and Reactor Bay with an NRC instrument, and interviewed licensee personnel.

b. Observations and Findings

(1) Surveys

The inspector reviewed selected weekly, monthly, quarterly, and annual radiation and contamination surveys for the past 12 months. The survey records were being completed as required by RINSC Radiation Safety Office SOP 300 and documented on the appropriate forms. Results of the surveys were evaluated and corrective actions taken when readings or results exceeded established licensee action levels.

As indicated above, during the inspection, the inspector accompanied a licensee representative during a weekly survey and conducted a radiation survey of the Control Room and Reactor Bay. The readings noted by the inspector were comparable to those found by the licensee. No problems or discrepancies were noted.

(2) Postings and Notices

During tours, the inspector observed that caution signs, postings and controls in the controlled areas were acceptable for the hazards involving radiation, high radiation,

and contaminated areas and were implemented as required by 10 CFR 20, Subpart J. Through observations of and interviews with licensee staff, the inspector confirmed that personnel complied with the signs, postings, and controls. The facility's radioactive material storage areas were noted to be properly posted. No unmarked radioactive material was detected in the facility.

Copies of current notices and instructions to workers were posted in appropriate areas in the facility. Radiological signs were typically posted at the entrances to controlled areas. Other postings also showed the industrial hygiene hazards that were present in the areas as well. Copies of NRC Form-3, "Notice to Employees," noted at the facility were the latest issue, as required by 10 CFR Part 19.11, and were posted in various areas throughout the facility. These locations included a bulletin board in the main hallway of the facility and in the lunch room.

### (3) Occupational Exposure

The inspector determined that the licensee used optically stimulated luminescent (OSL) dosimetry supplied and processed by a National Voluntary Laboratory Accreditation Program accredited vendor (Landauer). An examination of the OSL results indicating radiological exposures at the facility for the past two years showed that the highest occupational doses were within 10 CFR Part 20 limitations. The records showed that most of the licensee personnel received occupational exposures of only a few millirem above background. The records revealed that the highest annual whole body exposure received by an individual RINSC staff member for 2002 was 84 millirem (mr) deep dose equivalent (DDE). The highest annual extremity exposure for that year was 230 mr shallow dose equivalent (SDE). For 2003, the highest annual whole body exposure received by a RINSC staff member was 81 mr DDE and the highest annual extremity exposure was 50 mr SDE. The inspector also noted that, during 2002, the highest annual whole body exposure received by an authorized Reactor User, who was not a RINSC staff member, was 279 mr DDE. The highest annual extremity exposure for a Reactor User was 230 mr SDE. For 2003, the highest annual whole body exposure received by a Reactor User, who was not a RINSC staff member, was 238 mr DDE and the highest annual extremity exposure was 290 mr SDE. All of the doses were within the NRC regulatory limits.

Through direct observation the inspector determined that dosimetry was acceptably used by facility personnel and exit frisking practices were in accordance with facility radiation protection protocol.

### (4) Radiation Monitoring Equipment

The calibration of portable survey meters, friskers, fixed radiation detectors, and air monitoring instruments was completed by licensee personnel or the instruments were sent off site to a vendor. The calibrations were tracked and controlled using a Microsoft Access database. The inspector confirmed that the licensee's calibration procedures and the frequencies of the calibrations satisfied the requirements established in the TS Section 4.2.4 and 10 CFR 20.1501(b) or the instrument manufacturers' recommendations. The inspector also verified that the calibration

and check sources were traceable to the National Institute of Standards and Technology.

The calibration records of selected meters, friskers, detectors, and air monitoring equipment in use at the facility were reviewed. The portable meters were calibrated semiannually and records were being maintained as required. Area Radiation Monitors were being calibrated annually as required by TS Section 4.2.4. Calibration frequency met the requirements established in RINSC Radiation Safety Office SOP 220 and records were being maintained as required. All the instruments checked by the inspector had current calibration stickers attached.

During the inspection the inspector observed the calibration range at the facility. The calibration range appeared to be adequate and appropriate techniques for use of the facility were outlined in the applicable procedures. Proper precautions and controls had been established and were being implemented to maintain doses ALARA. The inspector also observed the calibration of a portable survey meter. No problems were noted.

#### (5) Radiation Protection Program

The Radiation Protection Program was established and described in a document entitled "Rhode Island Nuclear Science Center Radiation Safety Guide." This document was revised in 2000 and was approved by the NRSC. It also had been reviewed and approved by the State of Rhode Island Department of Health. The inspector noted that the Guide contained acceptable instructions concerning audits and personnel responsibilities. It was noted that the Radiation Protection Program was reviewed each year in accordance with RINSC Radiation Safety Office SOP 110 and as required by 10 CFR 20.1101(c). The inspector noted that the ALARA Program was also outlined and established in the "Rhode Island Nuclear Science Center Radiation Safety Guide." The ALARA program provided guidance for keeping doses as low as reasonably achievable and was consistent with the guidance in 10 CFR Part 20.

#### (6) Radiation Protection Training

The radiation protection training program had been revised so that authorized radioisotope users and all radiation workers, including RINSC staff, received the same type training. The inspector noted that individuals who required unescorted access to the research reactor facility and/or who worked with radioactive material completed a Radiation Safety Principles course or provided evidence that they had received such training at another facility. The training was conducted by the University of Rhode Island and the program was determined to be acceptable. The inspector verified through records review and licensee interviews that all staff members had received the required training.

#### (7) Facility Tours

The inspector toured the Control Room, Reactor Bay, selected laboratories, the basement area, and other support areas of the facility with a licensee representative.

No unmarked radioactive material was found in the facility. Licensee personnel observed the indicated precautions for access to controlled areas. No discrepancies were noted.

c. Conclusions

The inspector determined that the Radiation Protection Program being implemented at the facility satisfied regulatory requirements because: 1) surveys were being completed and documented as required, 2) postings met regulatory requirements, 3) personnel dosimetry was being worn and recorded doses were within the NRC's regulatory limits, 4) radiation monitoring equipment was being maintained and calibrated as required, 5) the Radiation Protection Program satisfied regulatory requirements, and 6) radiation protection training program was being completed as required.

**5. Effluent and Environmental Monitoring**

a. Inspection Scope (IP 69004)

The inspector reviewed the following to verify compliance with the requirements of 10 CFR Part 20 and TS Sections 3.7.2, 4.7, and 6.8.4:

- the licensee's environmental monitoring program
- RINSC Annual Report for July 2002 through June 2003 indicating the effluent monitoring and environmental surveillance program results for that period
- counting and analysis records associated with airborne releases
- RINSC dosimetry records (personnel and environmental) for 2003

b. Observation and Findings

Gamma radiation monitoring outside the reactor building was completed using three environmental monitoring OSL badges and the appropriate occupancy factors in accordance with the applicable procedures. Data indicated that there were no measurable doses above the regulatory limits.

The inspector determined that gaseous releases continued to be monitored as required, were calculated according to established protocol, and were acceptably documented in the annual reports. The airborne concentrations of the gaseous releases were within the concentrations stipulated in 10 CFR Part 20, Appendix B, Table 2. Also, the dose rate to the public, as a result of the gaseous releases, was well below the dose constraint specified in 10 CFR 20.1101 (d) of 10 millirem per year. This was acceptably documented in the licensee's Annual Reports. COMPLY code calculations indicated an effective dose equivalent to the public of 1.3 mr for the year 2002 and 1.4 mr for the year 2003. Observation of the facility by the inspector indicated no new potential release paths.

There were no liquid releases from the facility during the past year. The last release occurred in December 2000 and liquid analysis results indicated that it was within the limits specified in 10 CFR 20, Appendix B, Table 3.

c. Conclusion

Effluent monitoring satisfied license and regulatory requirements and releases were within the regulatory limits.

**6. Inspection of Transportation Activities**

a. Inspection Scope (IP 86740)

The inspector interviewed licensee personnel and reviewed the following records to verify compliance with regulatory and procedural requirements for shipping licensed material:

- RINSC Radiation Safety Office SOP 501, "Radioactive Waste Packaging," Rev. 0, dated November 6, 2000
- RINSC Radiation Safety Office SOP 512, "BioPAL Wastes," Rev. 1, dated March 26, 2004
- Federal Express booklet entitled, "Procedures for Shipping Dangerous Goods by Air"
- International Air Transport Association (IATA) publication, "Dangerous Goods Regulations," 42 Edition, effective January 1, 2001

b. Observations and Findings

The licensee continued to work on, but had not completed, development of a procedure for use in shipping radioactive material. However, the licensee used the reference materials from Federal Express and IATA noted above and a data base developed by the Radiation Safety Officer when radioactive material needed to be shipped offsite.

The inspector verified that no shipments of radioactive material had been made under the reactor license since the previous inspection. Records showed that the radioactive material produced in the reactor that was shipped offsite was typically transferred to the RINSC Broad Scope Materials License and shipped under that license (Broad Scope Materials License No. RI 3K-063-01, Amendment No.19, with an expiration date of March 31, 2006).

c. Conclusions

No radioactive material shipments had been made under the auspices of the reactor license during the past year.

**7. Physical Security**

a. Inspection Scope (IP 81401, 81402, 81403, 81431, and 81810)

To verify compliance with the licensee's NRC-approved Physical Security Plan (PSP) and to assure that changes, if any, to the plan had not reduced its overall effectiveness, the inspector reviewed:

- lock, code, key, and key card control
- the list of individuals authorized to possess security keys and lock combinations
- Check sheets of physical inventories of locks and keys documented on RINSC Form NSC-86
- facility access controls and procedures
- the list of individuals authorized unescorted access to the facility Security Area (SA) and Controlled Access Area (CAA)
- security systems including intruder detection devices, physical barriers, related equipment, and instruments
- security audits and responses
- completed alarm testing documented on RINSC Form NSC-48
- Safeguards Event Logbook
- Seals Records Logbook

b. Observations and Findings

The Physical Security Plan (PSP), Rev. 7, dated August 22, 1994, was the same as the latest revision approved by the NRC. The PSP implementing procedures, entitled "Security Plan Response Procedures," dated October 31, 1994, were consistent with and detailed the requirements of the PSP. The inspector determined that the PSP was being reviewed annually as required. It was also noted that the licensee was properly controlling and protecting the PSP and other safeguards information as required by the regulations.

The inspector toured the facility and confirmed that the physical protection systems, including barriers, alarms, related equipment, and instrumentation were as specified in the PSP. The inspector also confirmed that the security checks, tests, verifications, and periodic audits were performed and tracked as required by the PSP and licensee procedures.

Appropriate inventory control over locks and keys was being maintained. An up-to-date list of persons authorized entry into the SA was being maintained as well. The access controls implemented at the facility for the SA, the CAA, and the Vital Area were acceptable and as required. Response rosters were current and posted as required.

Through records review and interviews with licensee personnel, the inspector verified that there had been no safeguards events at the facility since the last inspection. Also, although no new fuel has been received by the licensee in the past few years, proper provisions were established to maintain protection of the fuel and other SNM.

The inspector also conducted interviews with representatives from the Narragansett Fire and Police Departments including the Fire Chief, a Police Lieutenant, and a dispatcher and discussed their response plans in case of a problem at the RINSC facility. Members of the Police Department typically provided periodic patrols and initial response to incidents at the reactor. Police and Fire Department personnel were very knowledgeable of the reactor and of their responsibilities in case of an emergency at RINSC. The inspector noted a good working relationship between the RINSC and Fire and Police Department staff members. It was also noted that the Letters of Agreement, concerning offsite support, with the local fire and police departments were current.

Acceptable security response training of the staff was demonstrated through alarm response and drill participation in accordance with emergency procedures. Initial facility familiarization training was being provided to the Narragansett Police Department personnel as needed.

c. Conclusions

Security system barriers, equipment, tests, and procedures, and related security activities, satisfied PSP requirements.

**8. Material Control and Accounting**

a. Inspection Scope (IP 85102)

To verify compliance with 10 CFR Part 70, the inspector reviewed:

- nuclear material transaction and balance reports (DOE/NRC Forms 741 and 742) for the past 18 months
- accountability records and fuel storage locations filed in the "SNM Accounting" Notebook
- physical inventory data documented on RINSC Form NSC-85
- Facility Uranium Totals inventory data documented on RINSC Form NSC-60A
- Megawatt hours of operation data documented on RINSC Form NSC-78
- RINSC Operating Procedure Appendix Z, "SNM Accounting," Rev. 1, dated October 30, 2003

The inspector also participated in a physical inventory of an irradiated fuel element.

b. Observations and Findings

The inspector noted that a procedure for calculating fuel burn-up had been developed by the licensee. The procedure had been reviewed and approved as required by the NRSC subcommittee. The calculations made in accordance with the procedure appeared to be correct and properly documented.

The material control and accountability program established by the licensee tracked locations and content of fuel elements, fission chambers, and other special nuclear material (SNM) maintained under the research reactor license. Possession and use of the SNM was limited to the locations and purposes authorized under the license. Physical inventories were conducted at least annually as required by 10 CFR 70.51(d). Nuclear Material Transaction Reports (DOE/NRC Form 741) and Material Balance Reports (DOE/NRC Form 742) had been completed semiannually and submitted by the licensee to the appropriate regulatory agencies in a timely manner and as required by 10 CFR 74.13(1).

The inspector observed an inventory of an irradiated fuel element removed from a specified location in the core during the inspection. Verification of the serial number and location of the fuel element showed that the fuel was being tracked and controlled as

indicated by licensee records. This also demonstrated that the fuel and other SNM were in the locations specified by the licensee and that records documenting the storage and transfers of SNM were accurate.

The inspector determined that possession and use of SNM was limited to those purposes authorized by the license. The inspector verified that the licensee maintained an amount of SNM that was equal to or less than that authorized by the license. Fuel inspection and movement information was maintained in the "Reactor Data" Notebook. These transactions of material control and accountability were cross referenced in the appropriate Operations Logbooks. The records also showed that the licensee was maintaining control of SNM storage areas as required.

c. Conclusions

SNM was acceptably controlled and inventoried as required.

**9. Exit Interview**

The inspection scope and results were summarized on May 6, 2004, 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. The licensee's Physical Security Program and related documentation was identified and controlled as Safeguards Information.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee

H. Bicehouse, Radiation Protection Officer and Assistant Director for Reactor Safety  
M. Damato, Health Physics Technician and Reactor Operator trainee  
J. Davis, Reactor Supervisor  
D. Johnson, Health Physicist  
B. Macgregor, Facility Engineer and Reactor Operator trainee  
W. Simoneau, Assistant Director for Reactor Operations  
T. Tehan, Director, Rhode Island Nuclear Science Center

### Other Personnel

J. Cotter, Fire Chief, Narragansett Fire Department  
D. Hoxsie, Lieutenant, Narragansett Police Department  
H. Knickle, Chairman, Nuclear and Radiation Safety Committee  
V. Rose, Chairman, Rhode Island Atomic Energy Commission

## **INSPECTION PROCEDURES USED**

IP 69004: Class 1 Research and Test Reactor Effluent and Environmental Monitoring  
IP 69006: Class 1 Research and Test Reactor Organization, Operations, and Maintenance Activities  
IP 69007: Class 1 Research and Test Reactor Review and Audit and Design Change Functions  
IP 69008: Class 1 Research and Test Reactor Procedures  
IP 69012: Class 1 Research and Test Reactor Radiation Protection  
IP 81401: Plans, Procedures, and Reviews  
IP 81402: Reports of Safeguards Events  
IP 81403: Receipt of New Fuel at Reactor Facilities  
IP 81431: Fixed Site Physical Protection of Special Nuclear Material of Low Strategic Significance  
IP 81810: Protection of Safeguards Information  
IP 85102: Material Control and Accounting - Reactors  
IP 86740: Inspection of Transportation Activities

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

### Opened

None

### Closed

None

## LIST OF ACRONYMS USED

ALARA	As low as reasonably achievable
CAA	Controlled Access Area
CFR	Code of Federal Regulations
DDE	Deep dose equivalent
IATA	International Air Transport Association
IP	Inspection Procedure
mr	Millirem
NRC	Nuclear Regulatory Commission
NRSC	Nuclear and Radiation Safety Committee
OSL	Optically stimulated luminescent (dosimeter)
PSP	Physical Security Plan
RIAEC	Rhode Island Atomic Energy Commission
RINSC	Rhode Island Nuclear Science Center
SA	Security Area
SDE	Shallow dose equivalent
SNM	Special Nuclear Material
SOP	Standard Operating Procedure
TS	Technical Specification