

March 7, 2018

Dr. Cameron Goodwin, Director
Rhode Island Nuclear Science Center
Rhode Island Atomic Energy Commission
16 Reactor Road
Narragansett, RI 02882-1165

SUBJECT: RHODE ISLAND ATOMIC ENERGY COMMISSION – U.S. NUCLEAR
REGULATORY COMMISSION ROUTINE INSPECTION REPORT
NO. 50-193/2018-201

Dear Dr. Goodwin:

From February 5-8, 2018, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the Rhode Island Nuclear Science Center Reactor Facility. The enclosed report documents the inspection results which were discussed on February 8, 2018, with you and members of your staff, as well as Dr. Clinton Chichester, Chairman, Rhode Island Atomic Energy Commission.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspector reviewed selected procedures and records, observed various activities, and interviewed various personnel. Based on the results of this inspection, no findings of significance were identified. No response to this letter is required.

In accordance with Title 10 of the *Code of Federal Regulations* Section 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (Agencywide Documents Access and Management System (ADAMS)). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

If you have any questions concerning this inspection, please contact Craig Bassett at (240) 535-1842 or by electronic mail at Craig.Bassett@nrc.gov.

Sincerely,

/RA Elizabeth Reed for/

Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

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

Enclosure:
As stated

cc: See next page

cc:

Governor
222 State House Room 115
Providence, RI 02903

Howard Chun, Commissioner
Cranston High School East
899 Park Avenue
Cranston, RI 02910

Dr. Clinton Chichester, Chairman
Rhode Island Atomic Energy Commission
College of Pharmacy
Pharmacy Building
7 Greenhouse Road
Kingston, RI 02881

Dr. John Breen, Chairman
Nuclear and Radiation Safety Committee
Providence College
Department of Chemistry and Biochemistry
1 Cunningham Square
Providence, RI 02918

Dr. Nitin Padture, Commissioner
School of Engineering, Brown University
184 Hope Street, Box D
Barus & Holley Building, Room 608
Providence, RI 02912

Dr. Yana K. Reshetnyak, Commissioner
Department of Physics
University of Rhode Island
2 Lippitt Road, East Hall
Kingston, RI 02881

Dr. Nancy E. Breen, Commissioner
Marine and Natural Science Building 226
Roger Williams University
One Old Ferry Road
Bristol, RI 02809

Supervising Radiological Health Specialist
Office of Occupational and
Radiological Health
Rhode Island Department of Health
3 Capitol Hill, Room 206
Providence, RI 02908-5097

Test, Research and Training
Reactor Newsletter
P.O. Box 118300
University of Florida
Gainesville, FL 32611

SUBJECT: RHODE ISLAND ATOMIC ENERGY COMMISSION – U.S. NUCLEAR
REGULATORY COMMISSION ROUTINE INSPECTION REPORT
NO. 50-193/2018-201 DATE: MARCH 7, 2018

DISTRIBUTION:

PUBLIC	RidsNrrDlpPrlb	RidsNrrDlpProb	PROB r/f
MNorris, NSIR	MCompton, NRR	AAdams, NRR	PBoyle, NRR
CBassett, NRR	AMendiola, NRR	NParker, NRR	

ADAMS Accession No. ML18047A240***concurred via e-mail****NRC-002**

OFFICE	NRR/DLP/PROB/PM*	NRR/DLP/PROB/LA*	NRR/DLP/PROB/BC
NAME	CBassett	NParker	AMendiola (EReed <i>for</i>)
DATE	2/26/18	2/26/18	3/7/18

OFFICIAL RECORD COPY

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

Docket No. 50-193

License No. R-95

Report No. 50-193/2018-201

Licensee: Rhode Island Atomic Energy Commission

Facility: Rhode Island Nuclear Science Center Research Reactor

Location: Narragansett, Rhode Island

Dates: February 5-8, 2018

Inspector: Craig Bassett

Accompanied by: Michael Takacs, Security Inspector

Approved by: Anthony J. Mendiola, Chief
Research and Test Reactors Oversight Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Rhode Island Atomic Energy Commission
Rhode Island Nuclear Science Center Research Reactor
Nuclear Regulatory Commission
Inspection Report No. 50-193/2018-201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the Rhode Island Atomic Energy Commission's (the licensee's) 2 Megawatt Class I research reactor safety program, including: (1) organization and staffing, (2) review and audit functions and design change functions, (3) radiation safety, (4) environmental monitoring, (5) procedures, (6) emergency preparedness, and (7) transportation of radioactive material since the last U.S. Nuclear Regulatory Commission (NRC) inspection in these areas. The licensee's program was acceptably directed toward the protection of public health and safety and in compliance with NRC requirements.

Organization and Staffing

- Organizational structure, staffing, and staff responsibilities remain in compliance with the requirements specified in the facility's technical specification (TS).

Review and Audit Functions and Design Change Functions

- The review and audit program was being conducted acceptably and completed by the Nuclear and Radiation Safety Committee, as stipulated in TS Section 6.2.
- Changes made at the facility were being reviewed using guidance in the licensee's Facility Modification Procedure, AP-03, and Title 10 of the *Code of Federal Regulations* Section 50.59.

Radiation Safety

- Periodic surveys were completed and documented as required by procedure.
- Postings and signs met regulatory requirements.
- Personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits.
- Radiation survey and monitoring equipment was being maintained and calibrated as required.
- The radiation safety training program was acceptable and training was being completed as required.
- The radiation safety and the as low as reasonably achievable [ALARA] programs satisfied regulatory requirements.

Environmental Monitoring

- Effluent monitoring satisfied license and regulatory requirements and releases were within the specified regulatory and TS limits.
- The environmental protection program satisfied NRC requirements.

Procedures

- Written procedures were being reviewed, approved, and maintained in accordance with TS Section 6.4 requirements.
- Procedural compliance was acceptable.

Emergency Preparedness

- The licensee maintained an effective emergency preparedness program through implementation of the emergency plan and the associated implementing procedure.

Transportation of Radioactive Material

- The shipments of radioactive material made under the reactor license were in compliance with NRC and Department of Transportation regulations.

REPORT DETAILS

Summary of Facility Status

The Rhode Island Atomic Energy Commission's (the licensee's) Rhode Island Nuclear Science Center (RINSC) 2 Megawatt research reactor continued to be operated in support of education, research, and training. During the inspection, the reactor was operated at various power levels for training classes and to irradiate samples as part of its research mission.

1. Organization and Staffing

a. Inspection Scope (Inspection Procedure (IP) 69006)

The inspector reviewed the following regarding the licensee's organizational structure, staffing, and staff responsibilities to ensure that the requirements of Section 6.1 of the RINSC technical specification (TS), dated December 19, 2016, (which is Appendix A to Facility Operating License No. R-95, dated January 5, 2017), were being met:

- Reactor Logbook – Numbers 63 and 64
- RINSC organization, staffing, and staff responsibilities
- RINSC Annual Report for the period from July 1, 2015, through June 30, 2016, submitted to the U.S. Nuclear Regulatory Commission (NRC) on August 26, 2016
- RINSC Annual Report for the period from July 1, 2016, through June 30, 2017, submitted to the NRC on July 19, 2017

b. Observations and Findings

The inspector reviewed the facility organization and staffing. It was noted that the organizational structure had not changed since the previous inspection. The facility organization consisted of the Facility Director, Assistant Director for Operations, Assistant Director for Radiation and Reactor Safety/Radiation Safety Officer (RSO), Reactor Supervisor, Principle Reactor Operator, Facility Engineer, Reactor Health Physicist (RHP), and administrative support staff.

The Director continued to have responsibility for all of the administrative and technical programs of the facility as stipulated in TS Section 6.1.2.2. A licensed senior reactor operator was assigned each shift with the responsibility for all operational activities during that shift. The inspector verified that shift staffing met TS requirements. The RSO, also designated as the Assistant Director for Radiation and Reactor Safety as noted above, continued to be responsible for assuring that adequate radiation monitoring and control were in effect to prevent undue exposure of individuals to radiation as required by TS Section 6.1.2.4. The organizational structure, staffing, and staff responsibilities at the facility appeared to be in compliance with the TSs.

c. Conclusion

The organizational structure, staffing, and staff responsibilities were in accordance with TS requirements.

2. Review and Audit Functions and Design Change Functions

a. Inspection Scope (IP 69007)

The inspector reviewed the following to ensure that the requirements of TS Section 6.2 and Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1101 and 10 CFR 50.59 were being implemented effectively:

- Nuclear and Radiation Safety Committee (NRSC) Charter, Revision (Rev.) 5, approval dated September 11, 2017
NRSC meeting minutes for 2016 through the date of this inspection
- Various 10 CFR 50.59 screen/review forms concerning modifications or changes made at the facility and maintained in the Facility Modifications Notebook
- Radiation Safety Office Reports for 2016 and 2017 presented to the NRSC by the RSO
- RINSC Operating Procedure, AP-03, "Facility Modifications," Rev. 1
- RINSC Annual Reports for the last two reporting periods
- RINSC Radiation Safety Annual Audits performed by the RSO for calendar year (CY) 2016, completed during January 24-26, 2017, and for CY 2017, completed during January 26 and 29, 2018

b. Observations and Findings

(1) Review and Audit Functions

The inspector reviewed the proceedings of the NRSC to ensure that the review and audit functions required in the TSs were being completed. It was noted that the NRSC consisted of at least the specified number of individuals with the appropriate backgrounds as required by the TSs. Through a review of the NRSC meeting minutes and associated records for 2016 through the present, the inspector determined that meetings were being held more frequently than required in the TSs. Safety reviews and audits were conducted by various members of the NRSC or other designated persons as required. Topics of these reviews and audits were consistent with TS requirements to provide guidance, direction, and oversight for the facility, and acceptable use of the reactor. It was also noted that the Radiation Safety Program was being audited annually as required by 10 CFR 20.1101.

No significant problems or deficiencies were found during the NRSC's reviews and audits, but some areas for improvement were noted. Corrective actions were taken as needed.

(2) Design Change Control

Through interviews with licensee personnel and document review, the inspector determined that no changes had been initiated and/or completed at the facility since the last NRC inspection. Nevertheless, the inspector reviewed the 10 CFR 50.59 process used at the facility. It was noted that, when required, the licensee would use their 10 CFR 50.59 process including screenings, reviews,

and evaluations prior to making changes to safety-related procedures or structures, systems, and components.

c. Conclusion

The NRSC was meeting as required and reviewing the topics outlined in the TSs. Audits were being completed as required. Procedure and facility changes were being completed using the licensee's change review process outlined in Facility Modification Procedure, AP-03.

3. Radiation Safety

a. Inspection Scope (IP 69012)

The following documents were reviewed to determine compliance with 10 CFR Part 19 and 10 CFR Part 20 and with TS Sections 3.7.1 and 4.7.1 requirements regarding radiation safety:

- Various RINSC Radiation Safety Procedures
- Radiation Safety training modules and records
- RINSC Annual Reports for past two reporting periods
- RINSC Radiation Safety Annual Audit for the past 2 years
- Copies of NRC Form 3, "Notice to Employees," posted at the facility
- Quarterly dosimetry reports for facility personnel from January 2016 through December 2017 (no reports had been issued in 2018)
- RINSC Radiation Safety Office Radiation Safety Manual dated March 2016
- Selected survey program summary data and the associated survey reports for 2017 through the date of this inspection
- Selected calibration records of area radiation monitors (ARMs) for the past 2 years
- Survey meter calibration files documenting the calibration of various portable survey instruments for the past 2 years

b. Observations and Findings

(1) Surveys

The inspector reviewed selected weekly, monthly, quarterly, and semi-annual radiation and contamination surveys. The surveys, which had been completed by trained staff members, were completed in a timely manner. Some areas/items were noted during these surveys with slightly elevated radiation levels, but all areas or materials were properly controlled. When areas were found to be contaminated, they were decontaminated promptly and resurveyed to confirm that the areas were radiologically clean. Results of the surveys were acceptably documented and posted as noted below.

During the inspection, the inspector accompanied the facility RHP during completion of a routine weekly radiation and contamination survey of the Reactor Bay Confinement. The inspector noted that the techniques used by the RHP during the survey were generally adequate and the survey was

conducted and documented as required. The inspector also checked the radiation levels in these areas using an NRC-supplied survey meter. The radiation levels noted by the inspector were comparable to those found by the RHP and no anomalies were noted.

(2) Postings and Notices

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. Caution signs, postings, and controls for radiation areas and high radiation areas were generally as required in 10 CFR Part 20, Subparts G and J. The inspector noted that licensee personnel observed the signs and postings and the precautions for access to the various controlled areas in the facility.

The inspector verified that copies of current notices to workers were posted in appropriate areas in the facility. The copies of NRC Form 3, "Notice to Employees," noted at the facility were the latest issue and were prominently posted as required by 10 CFR 19.11. The locations where these Forms were posted included on the main bulletin board in the hallway by the Radiation Safety Office, in the control room, and in the lunch room.

(3) Dosimetry Reports/Personnel Exposure

The inspector determined that the licensee used thermoluminescent dosimeters (TLDs) for staff and designated users' whole body monitoring of x-ray, beta, gamma, and neutron radiation exposure. The licensee also used TLD finger rings for extremity monitoring. The dosimetry was supplied and processed by a National Voluntary Laboratory Accreditation Program accredited vendor. An examination of the TLD results indicating radiological exposures at the facility for the past 2 years showed that all of the occupational doses for facility personnel, as well as doses to the public, were within 10 CFR Part 20 limits. Through direct observation the inspector determined that dosimetry was acceptably used by facility personnel. It was noted that the licensee provided "dosicards" for monitoring the radiation exposure of tour groups and other visitors.

Copies of each licensee monitored individual's exposure information was maintained by the RSO. If an individual received greater than 100 millirem occupational exposure, a report with the pertinent information (NRC Form 5 equivalent) was provided to the person as required by 10 CFR Part 19.

(4) Maintenance and Calibration of Radiation Monitoring Equipment

Examination of selected items of radiation monitoring equipment indicated that the instruments had the acceptable up-to-date calibration sticker attached. Review of the instrument calibration records for various meters indicated the calibration of portable survey meters was completed by both licensee staff and contractor personnel depending on the type of calibration that was required. The licensee typically conducted electronic calibrations while the vendor conducted source range calibrations. The inspector verified that the survey

instruments were calibrated annually as required and the appropriate calibration records were maintained.

The inspector reviewed the calibration and maintenance records of various ARMs as well. It was noted that the ARMs were being calibrated annually as required and were typically calibrated by licensee staff personnel. Records were current and acceptably maintained.

(5) Radiation Safety Training

The inspector reviewed the licensee's radiation safety training program. It was noted that training was given to RINSC staff members, to those who were not on staff but who were authorized to use the experimental facilities of the reactor (Authorized Users), and to students taking classes at the facility. The training was typically given by the RSO at the facility. Initial radiation worker training was provided for those new to the facility. Following initial training, refresher training was required to be completed on an annual basis.

The initial training consisted of various subjects including: basic concepts and terms, radiobiology, basics of radiation safety, radiation detection, personnel dosimetry, as low as reasonably achievable (ALARA), and radioactive waste management. Additional training was given to each person as appropriate based upon the position and/or duties of the individual. Refresher training consisted of those subjects mentioned above as well as a review of the facility license, TSs, and procedures and NRC regulations. The subjects covered during training appeared to be appropriate.

The inspector reviewed the training given to staff members and other radiation workers who used facility resources. The inspector verified that initial training was being given to new arrivals and annual refresher training was being conducted as required for staff and non-staff members as well. The training program was acceptable.

(6) Radiation Safety Program

The licensee's Radiation Safety and ALARA programs were established and described in the RINSC Radiation Safety Office Radiation Safety Manual, dated March 2016. The programs were also outlined in, and implemented through, the RINSC facility radiation safety procedures that had been reviewed and approved. The programs contained instructions concerning organization, training, monitoring, personnel responsibilities, handling radioactive material (RAM), and maintaining doses ALARA. The program, as established, appeared to be acceptable and satisfied regulatory requirements.

The licensee did not have a respiratory protection program or planned special exposure program; neither program was required based on the current level of activity at the facility.

(7) Facility Tours

The inspector toured the facility with licensee representatives on various occasions and observed areas including the Reactor Bay, Control Room, the basement area, and selected support laboratories. The inspector noted that facility RAM storage areas were properly posted. No unmarked RAM was noted.

c. Conclusion

The inspector determined that the Radiation Safety and ALARA programs, as implemented by the licensee, satisfied regulatory requirements. Specifically, (1) periodic surveys were completed and documented acceptably to permit evaluation of the radiation hazards present; (2) postings and signs met regulatory requirements; (3) personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits; (4) radiation survey and monitoring equipment was being maintained and calibrated as required; and (5) the radiation safety training program was being implemented as stipulated in procedure.

4. Environmental Monitoring

a. Inspection Scope (IP 69004)

The inspector reviewed the following to verify that the requirements of TS Sections 3.7.2 and 4.7.2 were being met:

- Files containing air monitor data sheets
- Main and stack continuous air monitor records
- Environmental dosimetry records for 2016 through the present
- Selected RINSC calibration procedures, including CP-06 and CP-07
- RINSC Radiation Safety Annual Audits for the past 2 years
- RINSC Annual Report for the last two reporting periods

b. Observations and Findings

(1) Environmental Radiation Monitoring

Environmental radiation monitoring was accomplished using TLDs placed at three different monitoring stations. Since the areas monitored had limited public access, the licensee adjusted the readings by using an occupancy factor to approximate annual dose. After applying the annual occupancy factor, the results at those locations indicated dose rates less than the regulatory limit for members of the general public.

(2) Gaseous Effluent Releases

The inspector determined that gaseous releases continued to be monitored as required, calculated according to procedure, and acceptably documented in the annual reports. The predominant environmental release from the

facility was Argon-41 resulting from activated air entrained in the reactor pool water, present in beam tubes, and used for cooling pneumatic transfer tubes. 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 of 10 millirem per year (mrem/yr) specified in 10 CFR 20.1101(d). This was acceptably demonstrated by the licensee through COMPLY code calculations. These calculations indicated an effective dose equivalent to the public of 1.2 mrem/yr for the RINSC fiscal year (FY) 2015-2016 and 3.0 mrem/yr for the FY 2016-2017. Additionally, observations of the interior and exterior of the facility by the inspector indicated no new potential release paths.

(3) Liquid Effluent Releases

A review of the liquid effluent releases from the facility to the sanitary sewer indicated that proper methods were followed prior to the releases. This included recirculation and sampling of the liquid, analyses of samples taken, and review and authorization of each batch. The releases were well within the monthly average concentration limits established in 10 CFR Part 20, Appendix B, Table 3.

(4) Effluent Monitoring Equipment Calibration and Maintenance

The inspector reviewed the calibration and maintenance records of various stack monitors. It was noted that the stack monitors were being calibrated annually as required and were typically calibrated by licensee staff personnel. Records were current and acceptably maintained.

c. Conclusion

Effluent releases were within the specified regulatory and TS limits. The environmental protection program satisfied NRC requirements.

5. **Procedures**

a. Inspection Scope (IP 69008)

The inspector reviewed the following to ensure that the requirements of TS Section 6.4 were being met:

- Selected RINSC Operations procedures
- NRSC meeting minutes from 2016 through the present
- Various RINSC Radiation Safety Office Radiation Safety Procedures including RS-13, RS-21, RS-23, RS-24, and RS-27

b. Observations and Findings

The inspector observed that the licensee maintained written procedures covering the areas specified in TS Section 6.4. A systematic approach was being used to update and reissue procedures. New procedures and major changes to existing procedures were required to be reviewed and approved by the NRSC. These reviews and approvals were typically documented in the minutes of the NRSC meetings.

The inspector reviewed selected Radiation Safety Office procedures. It was noted that generally only minor changes to various procedures had been made since the previous inspection. However, several new procedures had been developed which dealt with calibration of survey instruments, effluent monitors, and analytical equipment. The inspector verified that the new procedures had been reviewed and approved by the NRSC as required. The minor procedure changes had been presented to the NRSC for information.

The activities and operations observed by the inspector during this inspection were completed in accordance with the applicable procedures. These activities included reactor operation and conducting radiation and contamination surveys.

c. Conclusion

The licensee was maintaining and implementing written procedures in accordance with TS Section 6.4 requirements. Procedural compliance was acceptable.

6. Emergency Preparedness

a. Inspection Scope (IP 69011)

The inspector interviewed staff members and reviewed various documents to verify compliance with regulatory requirements and the RINSC emergency plan (E-Plan) Rev. 6 (approved by the NRC as part of the facility license renewal dated January 5, 2017):

- Emergency Preparedness Notebook containing documentation of various activities including:
 - Fire Alarm Tests
 - Completion of annual Emergency Supply Inventories documented on Form NSC-83
 - Emergency training and drills conducted during the past 2 years
 - Emergency Communication Tests conducted with various support agencies
- RINSC Emergency Procedure (EP), EP-01, "Emergency Plan Implementing Procedures," Rev. 4
- Letter of Agreement between Narragansett Police Department and RINSC, signed by Mr. M. J. Davis and by Chief S. Corrigan, dated December 11, 2017
- Letter of Agreement for Medical Services, signed by L. Sivaprasad, MD, Vice President of Medical Affairs and Chief Medical Officer, Rhode Island Hospital, addressed to Dr. C. Goodwin, RIAEC, dated June 23, 2016
- Letter of Agreement between Narragansett Fire Department and RINSC, signed by Mr. M. J. Davis and Chief S. Partington on December 11, 2017

b. Observation and Findings

The inspector reviewed the E-Plan in use at the reactor and verified that it was being reviewed and updated biennially as required. The inspector reviewed the associated implementing procedures as well, and noted that they were also reviewed biennially and revised as needed.

Through records review and interviews with staff personnel (e.g., emergency responders), the inspector determined that they were knowledgeable of the proper actions to take in case of an emergency. Training for these individuals was accomplished annually, typically following the evacuation and emergency drills. Training for support organization personnel was provided whenever those organizations were available and/or requested such training.

The documentation of the training and drills conducted during the past 2 years was reviewed. Through drill scenarios and records review, and personnel interviews, off-site emergency responders were determined to be knowledgeable of the appropriate actions to take when responding to an emergency at the RINSC facility. Emergency and evacuation drills had been conducted annually as required by the E-Plan. Critiques following each drill had been conducted as required and the results documented. Recommendations were made to correct any deficiencies noted during the drill.

The inspector verified that the Letters of Agreement between the RINSC facility and the Narragansett Police Department and Narragansett Fire Department remained in effect. These agreements stipulated that police and fire personnel would respond during an emergency and would provide support for the facility. The inspector also verified that the agreement between the reactor facility and Rhode Island Hospital remained in effect. That agreement ensured that the hospital would provide RINSC personnel with needed support in case a staff member became contaminated and also needed emergency medical care.

Communications capabilities with support groups were acceptable and the various items of equipment (e.g., telephones and the building public address system) were in use daily. Portable radios were also available for use as needed and were checked annually. Emergency call lists had been revised and were available in the control room and in various areas around the facility as required, as well as in the Emergency Support Center. The call list was being updated annually as required.

c. Conclusion

The licensee maintained an effective emergency preparedness program through implementation of the E-Plan and the associated implementing procedure.

7. Transportation of Radioactive Material

a. Inspection Scope (IP 86740)

The inspector reviewed the following documents to determine compliance with NRC and Department of Transportation (DOT) regulations governing the transportation of

RAM as specified in 10 CFR Part 20 and 10 CFR Part 71, and in 49 CFR Parts 171-178.

- RAM shipping papers and related records
- Training records for those designated as “shippers”
- RINSC Radiation Safety Annual Audit for the past 2 years
- Selected RINSC Radiation Safety Office procedures
- Licenses of those persons or entities receiving a RAM shipment from the licensee

b. Observations and Findings

Through records review and discussions with licensee personnel, the inspector determined that the licensee had made various exempt quantity transfers of RAM for training purposes and various shipments of RAM in 2017. The records indicated that the shipments had been surveyed as required. The RAM shipments had been completed in accordance with DOT and NRC regulations.

The inspector verified that the licensee was maintaining a copy on file of each shipment recipient's license to possess RAM as required. The licenses were verified to be current prior to initiating a shipment. The inspector also reviewed the training of RINSC staff members responsible for shipping RAM. The inspector verified that three staff members are currently designated as a “shipper” had received the appropriate training covering the DOT, International Air Transport Association, and International Civil Aviation Organization requirements within the past 3 years. The licensee plans to have the new Health Physicist and the Principle Reactor Operator attend a hazardous material transportation course this coming April.

c. Conclusion

The licensee shipments of RAM under the facility's reactor license were verified to have been completed in accordance with NRC and DOT requirements.

8. Follow-up on Previously Identified Item

a. Inspection Scope (IP 92701)

The inspector reviewed the licensee's actions taken in response to two inspector followup item (IFI).

b. Observation and Findings

- (1) IFI 50-193/2015-201-01 – Follow-up on the licensee's actions to complete the review and revision of the RINSC Radiation Safety Office procedures.

During an inspection in February 2015, it was noted that various RINSC Radiation Safety procedures were being reviewed by the RSO. These procedures were to be either revised or eliminated and replaced with new procedures as deemed necessary. The licensee was informed that completion of the review and revision of all necessary RINSC Radiation Safety procedures would be considered an IFI.

During this inspection it was noted that the majority of the Radiation Safety procedures had been revised/written and submitted to the NRSC. All procedures needed for routine operation were in place. Only one or two other procedures were being contemplated and these dealt with unusual circumstances such as bioassay and whole body counting following an emergency. Since all necessary procedures were now established, the inspector determined that the licensee had completed the actions required to close this IFI. This issue is considered closed.

- (2) IFI 50-193/2017-202-01 – Follow-up on the licensee's actions to revise those procedures that needed to be revised to reflect the proper TS references that are now applicable as a result of the newly issued TSs.

During an inspection in October, 2017, the inspector verified that, following the facility's license renewal and issuance of the new TSs, many procedures needed to be revised to reflect the proper TS references. In some cases the procedures needed to be revised to include the new requirements that became applicable as a result. It was noted that many procedures had been revised as of the date of the inspection but some remained to be reviewed. The licensee indicated that the remainder of the procedures were scheduled to be revised by the end of the year. The licensee was informed that this issue would be tracked by the NRC as an IFI.

During this inspection the inspector found that a good deal of progress had been made on revising the procedures that were affected by the TS changes. However, some procedures still remained to be updated. This issue will remain open pending completion of the revisions of all affected procedures and review and approval as appropriate.

c. Conclusion

Two IFIs were reviewed. One IFI dealing with revising or developing Radiation Safety Office procedures is closed. The IFI dealing with revision of various operations procedures will remain open pending final action by the licensee.

8. Exit Interview

The inspection scope and results were summarized on February 8, 2018, with members of licensee management and staff. The inspector described the areas inspected and discussed in detail the inspection findings. The licensee acknowledged the results of the inspection and did not identify as proprietary any material provided to or reviewed by the inspector during the inspection of these program areas.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Davis	Assistant Director for Operations
C. Goodwin	Director, Rhode Island Nuclear Science Center
M. Marrapese	Principal Reactor Operator
P. Martin	Reactor Supervisor
S. Nam	Assistant Director for Radiation and Reactor Safety/Radiation Safety Officer
A. Olson	Reactor Health Physicist
B. Sirr	Facility Engineer

Other Personnel

C. Chichester 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 Reactors Organization and 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 Reactors Procedures
IP 69011	Class I Research and Test Reactor Emergency Preparedness
IP 69012	Class 1 Research and Test Reactor Radiation Protection
IP 86740	Transportation
IP 92701	Follow-up on Previously Identified Items

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-193/2015-201-01	IFI	Follow-up on the licensee's actions to complete the review and revision of the RINSC Radiation Safety Office procedures.
--------------------	-----	--

Discussed

50-193/2017-202-01	IFI	Follow-up on the licensee's actions to revise those procedures that needed to be revised to reflect the proper TS references that are now applicable as a result of the newly issued TSs.
--------------------	-----	---

LIST OF ACRONYMS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ALARA	As Low As Reasonably Achievable
ARM	Area Radiation Monitor
CY	Calendar Year
DOT	Department of Transportation
EP	Emergency Procedure
E-Plan	Emergency Plan
FY	Fiscal Year
IFI	Inspector Followup Item
IP	Inspection Procedure
Mrem/Yr	Millirem per Year
NRC	U.S. Nuclear Regulatory Commission
NRSC	Nuclear and Radiation Safety Committee
RAM	Radioactive Material
Rev.	Revision
RHP	Reactor Health Physicist
RINSC	Rhode Island Nuclear Science Center
RSO	Radiation Safety Officer
TLD	Thermoluminescent Dosimeter
TS	Technical Specification