June 18, 2009

Dr. Dong-Ok Choe
Interim Reactor Administrator
122 S. Central Campus Drive, Room 104
University of Utah
Salt Lake City, UT 84112

SUBJECT: UNIVERSITY OF UTAH – NRC ROUTINE INSPECTION REPORT NO. 50-407/2009-201

Dear Dr. Choe:

On June 1-4, 2009, the U.S. Nuclear Regulatory Commission (NRC, the Commission) conducted an inspection at your University of Utah TRIGA Reactor facility (Inspection Report No. 50-407/2009-201). The enclosed report documents the inspection results, which were discussed on June 4, 2009, with you, Dr. Ronald Pugmire, Associate Vice President for Research, and Karen Langley, Director, Radiological Health Department and Radiation Safety Officer, University of Utah.

The 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 activities, and interviewed 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, and 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).

Should you have any questions concerning this inspection, please contact Craig Bassett at (404) 358-6515 or by electronic mail at Craig.Bassett@nrc.gov.

Sincerely,

/RA/

Johnny H. Eads, Jr., Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-407
License No. R-126

Enclosure: NRC Inspection Report
No. 50-407/2009-201

cc w/encl: Please see next page

University of Utah Docket No. 50-407

cc:

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

Docket No:	50-407
License No:	R-126
Report No:	50-407/2009-201
Licensee:	University of Utah
Facility:	TRIGA Mark-I Research Reactor Facility
Location:	Merrill Engineering Building Salt Lake City, UT
Dates:	June 1-4, 2009
Inspector:	Craig Bassett
Approved by:	Johnny H. Eads, Jr., Chief Research and Test Reactors Branch B Division of Policy and Rulemaking Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

University of Utah
TRIGA Mark-I Research Reactor Facility
Center for Excellence in Nuclear Technology, Energy, and Research
Report No.: 50-407/2009-201

The primary focus of this routine, announced inspection included onsite review of selected aspects of the University of Utah (the licensee's) 100 kilowatt Class II research reactor safety program including: 1) organizational structure and staffing, 2) review and audit and design control functions, 3) reactor operations, 4) operator requalification, 5) facility procedures, 6) fuel handling, 7) maintenance and surveillance, 8) experiments, and 9) emergency preparedness since the last NRC inspection of these areas. The licensee's program was acceptably directed toward the protection of public health and safety and was in compliance with NRC requirements. No safety violations or deviations were identified.

Organizational Structure and Staffing

- The organizational structure and staffing at the facility met the requirements specified in Technical Specification Sections 6.1, 6.2, and 6.3.

Review and Audit and Design Control Functions

- Review and oversight functions required by Technical Specification Section 6.5 were acceptably completed by the Reactor Safety Committee or designated individuals.

- Changes made at the facility had been reviewed and approved in accordance with 10 CFR 50.59.

Operations

- Reactor operations and logs were acceptable and in accordance with procedural and Technical Specification requirements.

Operator Requalification Program

- The operator requalification program was being acceptably implemented and was up-to-date.

- Medical examinations for each licensed operator were being completed biennially as required.

Procedures

- Facility procedures and document reviews satisfied Technical Specification Section 6.8 requirements.

Fuel Handling

- Reactor fuel movements and inspections were made and documented in accordance with procedure.

- Fuel elements were being inspected on a biennial basis as specified by Technical Specification Section 4.4.

Maintenance and Surveillance

- Maintenance was being completed as required.

- The program for completing surveillance checks and Limiting Conditions of Operation confirmations was being implemented in accordance with Technical Specifications requirements.

Experiments

- The program for the control of experiments satisfied regulatory requirements and license commitments.

Emergency Preparedness

- The Emergency Plan and implementing procedures were being reviewed and updated biennially as required and were acceptable.

- Emergency response equipment was being maintained as required and first responders were knowledgeable of proper actions to take in case of an emergency.

- Offsite support was acceptable and communications capabilities were adequate.

- Annual drills were being conducted and critiques were being held as required by the Emergency Plan.

- Emergency preparedness training for staff and offsite personnel was being completed as required.

REPORT DETAILS

Summary of Plant Status

The University of Utah (the licensee) 100 hundred kilowatt TRIGA Mark-I research and test reactor continued normal, routine operations. The reactor was typically operated in support of educational demonstrations, laboratory experiments, reactor system testing, and sample irradiations. During this inspection, the reactor was not operated.

1. Organization Structure and Staffing

a. Inspection Scope (Inspection Procedure [IP] 69001)

The inspector reviewed the following to verity that the staffing requirements, personnel responsibilities, and organizational structure specified in Sections 6.1, 6.2, and 6.3 of the licensee's Technical Specifications (TS), (as implemented through Facility License Number (No.) R-126 Amendment No. 7, dated June 23, 1999), were being met:

- Organization and staffing for the facility
- TRIGA Operations Log Number (No.) 37
- Administrative controls and management responsibilities
- Description of Operations (DO) Procedure Manual, Section II, "Organization," Part 1, "Divisional Responsibilities," (undated)
- DO Procedure Manual, Section II, "Organization," Part 2, "CENTER Personnel Responsibilities," (undated)
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2006 through June 30, 2007, submitted to the NRC July 2, 2007
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2007 through June 30, 2008, submitted to the NRC July 14, 2008
- American National Standards Institute/American Nuclear Society (ANSI/ANS) Standard 15.1, "Development of Technical Specifications for Research Reactors," dated December 7, 1990
- ANSI/ANS Standard 15.4, "Selection and Training of Personnel for Research Reactors," dated June 9, 1988

b. Observations and Findings

Through discussions with licensee representatives, the inspector determined that designated management responsibilities at the University of Utah TRIGA Mark-I Reactor Facility had not changed since the previous NRC inspection in May 2008 (see Inspection Report No. 50-407/2008-201). The Reactor Supervisor retained direct control and overall responsibility for safe operation and maintenance of the facility as specified in the TS. The Reactor Supervisor reported to the President of the University of Utah through the Reactor Administrator.

The inspector noted that there had been personnel changes since the last NRC inspection. The person who was the Reactor Administrator had resigned from that position effective April 30, 2009 and the Reactor Supervisor had been appointed as interim Reactor Administrator. The inspector also noted that the organization responsible for the reactor was designated as or also known as the Center for Excellence in Nuclear Technology, Energy, and Research (CENTER).

The licensee's current operational organization consisted of the Reactor Administrator/Reactor Supervisor. This individual was also a qualified Senior Reactor Operator (SRO). In addition, there were three graduate students who were SROs. One other student was involved in the operator training program and was scheduled to take an NRC operator examination at the end of June. The Reactor Administrator/Reactor Supervisor position was a full-time position while all the others were part-time.

The organizational structure was as required by TS and was consistent with that specified in the ANSI Standard ANS 15.1, "Development of Technical Specifications for Research Reactors." Qualifications of the staff met TS requirements and were consistent with those specified in the ANSI Standard ANS 15.4, "Selection and Training of Personnel for Research Reactors."

c. Conclusions

The organizational structure and staffing at the facility met the minimum requirements specified in TS Sections 6.1, 6.2, and 6.3.

2. Review, Audit, and Design Change Functions

a. Inspection Scope (IP 69001)

In order to verify that the licensee had conducted reviews and audits as required and to determine whether modifications to the facility were consistent with 10 CFR 50.59 and TS Section 6.5, the inspector reviewed:

- Reactor Supervisor Quarterly Reports for the past two years
- Reactor Administrator Quarterly Reports for the past two years
- Radiation Safety Officer Quarterly Reports for the past two years
- Reactor Safety Committee meeting minutes for 2007 to the present
- University of Utah Center for Excellence in Nuclear Technology, Energy, and Research Audit and Review Plan for NRC License R-126 TRIGA Nuclear Reactor (Docket No. 50-407), Revision (Rev.) 1, dated February 28, 1996
- Completed audits and reviews as noted on Form CENTER-035, Rev. 2, "Audit and Review Program Checklist," Reactor Safety Committee (RSC) approval of the form dated October 5, 2005, including checklists for audits conducted January - June 2007 and July - December 2007 and for audits conducted January – June 2008 and July – December 2008
- DO Procedure Manual, Section II, "Organization," Part 1, "Divisional Responsibilities," (undated)

- 10 CFR 50.59 Review, “Replacement of the Fume Hood in the RadioChemistry Laboratory,” dated October 2008
- 10 CFR 50.59 Review, “Replacement of the Concrete Cap for the TRIGA Reactor,” dated April 2007
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2006 through June 30, 2007, submitted to the NRC July 2, 2007
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2007 through June 30, 2008, submitted to the NRC July 14, 2008

b. Observations and Findings

(1) Reviews and Audits

The inspector reviewed the Reactor Safety Committee (RSC) meeting minutes from January 2007 to the present. These meeting minutes showed that the RSC had met at the required frequency and had considered the types of topics outlined by the TS. Review of the committee meeting minutes also indicated that the RSC provided guidance and direction for safe reactor operations and ensured suitable use and oversight of the reactor.

The inspector noted that the RSC, or individuals specifically designated by the committee, completed audits of the facility operations, programs, and procedures. Since the last NRC inspection, audits had been completed in those areas outlined in the TS. The audits were structured so that the various aspects of the licensee's operations and safety programs were reviewed semiannually. Major facility documents and plans, including the facility procedures, were reviewed biennially. The inspector noted that the audits and the resulting findings were detailed and that the licensee responded and took corrective actions as needed.

(2) Design Change Functions

The inspector reviewed recent changes made at the facility. Records of a change made in October 2008, and review of the steps taken to implement the change, showed that the design control program at the facility was being followed. The Reactor Supervisor (RS) evaluated the proposed modification and made a recommendation to proceed. Subsequently, the Reactor Administrator (RA) reviewed the proposed modification and determined that no safety or TS concern existed. The change resulted in the replacement of the fume hood in the RadioChemistry Lab. The inspector noted that a 2007 change also had been acceptably documented in accordance with 10 CFR 50.59 and applicable licensee requirements. That change resulted in the installation of a new rubber cap to replace the concrete that covered the sand that was used to fill the space between the aluminum and stainless steel tanks which surround the reactor.

The changes mentioned above were deemed not to increase the possibility of an accident nor malfunction not previously evaluated, did not constitute a safety question, and did not require a change to the facility Technical Specifications. Due to the nature of the changes, they were not required to be reviewed and approved by the RSC. However, the RSC was informed of the changes.

c. Conclusions

Review and oversight functions required by TS Section 6.5 were acceptably completed by the RSC. Changes made at the facility had been reviewed and approved in accordance with facility procedures and the guidance of 10 CFR 50.59.

3. Operations

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify operation of the reactor in accordance with TS Sections 2, 3, 4, and 6:

- Organization and staffing for the facility
- TRIGA Operations Procedures and Log No. 37
- Maintenance Procedures and Maintenance Log
- Selected surveillance data sheets, records, and tests
- DO Procedure Manual, Section IV, “Reactor Operations,” (undated)
- DO Procedure Manual, Section VII, “TRIGA Reactor Console,” (undated)
- Start-up and Termination Procedures and Log containing Form CENTER-001, Rev. 10, “TRIGA Pre-start Checklist, TRIGA Start-up Checklist, and TRIGA Termination Checklist,” RSC approval of the form dated April 2, 2004
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2006 through June 30, 2007, submitted to the NRC July 2, 2007
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2007 through June 30, 2008, submitted to the NRC July 14, 2008

b. Observations and Findings

The inspector reviewed the operations log from June 2007 through the present. The inspector also reviewed TRIGA Pre-start, Start-up and Termination Checklists and Monthly Checklists. Information on the operational status of the facility was recorded accurately in the log book or on the required checklists as stipulated by Section 6.9 of the facility TS. The inspector verified that, according to the data recorded, TS operational limits had not been exceeded as stipulated in TS Sections 2, 3, and 4. Scrams were identified in the logs, were reported as required, and were resolved before the resumption of operations. Through records review and interviews with operators, the inspector confirmed that shift

staffing met the minimum requirements for duty and on-call personnel as required by TS Section 6.3. Also, reactor operations were carried out in accordance with written procedures as required by TS Section 6.8.

c. Conclusions

Based on the procedures and records reviewed, and observations made during the inspection, the inspector determined that reactor operations and logs were acceptable and in accordance with procedural and TS requirements.

4. Operator Licenses, Requalification, and Medical Activities

a. Inspection Scope (IP 69001)

To determine that operator qualification/requalification activities and training were conducted as required by the "University of Utah Center for Excellence in Nuclear Technology, Engineering, and Research Reactor Operator Requalification Plan," Rev. 3, dated February 1996, and that medical requirements were met, the inspector reviewed:

- TRIGA Operations Log No. 37
- Medical examination records for the past four years
- Status of licenses of those operators who routinely operated the reactor
- Form CENTER-001, Rev. 10, "TRIGA Pre-start Checklist, TRIGA Start-up Checklist, and TRIGA Termination Checklist," RSC approval of the form dated April 2, 2004
- Operator requalification status documented on Form CENTER-025, "University of Utah Center for Excellence in Nuclear Technology, Engineering, and Research Reactor Requalification Program Progress Checklist," (no RSC approval date listed) which included reactivity manipulations, written examinations, training and lectures, and SRO duty
- ANSI/ANS Standard 15.4, "Selection and Training of Personnel for Research Reactors," dated June 9, 1988

b. Observations and Findings

As noted previously, there were four qualified SROs at the facility. The operators' licenses were found to be current although two had been suspended. This was because those two individuals were not currently at the facility. One individual was receiving training in the armed forces and one was completing an internship with the NRC. The licensee indicated that, if those individuals returned and wanted to resume operating the reactor at the facility, they would have to be recertified by the RS. That would be accomplished by each operator serving six hours of shift duty under the observation and supervision of the RS.

A review of facility logs and records showed that training continued to be conducted in accordance with the licensee's requalification and training program. Lectures had been given as stipulated and training reviews and examinations had been completed and documented. Records of quarterly reactor operations,

reactivity manipulations, and other operations and supervisory activities were maintained and the required activities completed by each operator. Records indicating the completion of the annual operations tests and supervisory evaluations were also maintained. Biennial written examinations had been completed by the operators as required as well.

The inspector noted that the operators were also receiving the required biennial medical examinations as specified by the program. During the last inspection the inspector had visited the medical doctor who routinely performed the physical examinations for the various reactor operators. The doctor was complying with the requirements specified in ANSI Standard ANS 15.4, "Selection and Training of Personnel for Research Reactors." This inspector verified that this continued to be the case.

c. Conclusions

The requalification/training program was being acceptably maintained and was up-to-date. Medical examinations were being completed biennially as required.

5. Procedures and Procedural Compliance

a. Inspection Scope (IP 69001)

To verify that facility procedures were being reviewed, revised, and implemented as required by TS Section 6.8, the inspector reviewed selected aspects of:

- Selected forms and checklists
- Selected operating and administrative procedures and logs
- Procedural reviews and updates documented in the RSC meeting minutes for the past two years
- DO Procedure Manual, Section II, "Organization," (undated)
- DO Procedure Manual, Section III, "Documentation," (undated)

b. Observations and Findings

The licensee's procedures were found to be acceptable for the current facility status and staffing level. The inspector noted that the procedures specified the responsibilities of the various members of the staff as well as the RSC. The procedures were being audited/reviewed biennially, as noted earlier, and were updated as needed. It was also noted that substantive revisions to procedures, checklists, and forms were routinely presented to the RSC for review and approval as required by TS. The inspector verified that the latest revisions to various procedures and forms had been through this review and approval process as required.

c. Conclusions

Facility procedures and document reviews satisfied TS Section 6.8 requirements.

6. Fuel Movement and Handling

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following in order to verify adherence to fuel handling and inspection requirements specified in TS Section 4.4 and the applicable procedures:

- Core Procedures and Log
- TRIGA Operations Log No. 37
- Heavy Water Element Inspection Forms
- Criticality calculations for various storage locations
- University of Utah TRIGA Reactor Core (element location sheet), Core Configuration 24B, last updated February 24, 2009
- Fuel Procedures and Log for Stainless Steel and Aluminum clad fuel elements
- Form CENTER-004, Rev. 1, "Biennial Fuel Rod Inspection," RSC approval of the form dated December 17, 1997
- Form CENTER-005, Rev. 4, "Core Change and Critical Fuel Loading," RSC approval of the form dated March 29, 2000
- Form CENTER-018, "Fuel Element Inventory Sheet," RSC approval of the form dated May 25, 1988
- DO Procedure Manual, Section IV, "Reactor Operations," (undated)
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2006 through June 30, 2007, submitted to the NRC July 2, 2007
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2007 through June 30, 2008, submitted to the NRC July 14, 2008

b. Observations and Findings

The inspector determined that the licensee was maintaining the required records of the various fuel movements that had been completed and verified that the movements were conducted and recorded in compliance with procedure. The latest core reconfiguration was completed in December 2003 and the resulting University of Utah TRIGA core and fuel positioning was designated as Core Configuration 24B. The core configuration was last updated February 24, 2009.

Core loading procedures provided a specific method to move and handle fuel consistent with the requirements and provisions of the TS Section 4.4 and the licensee safety analyses. Fuel movement and fuel examination records showed that the fuel of the current core was moved in accordance with procedures and examined biennially as required. It was also noted that fuel handling tools were controlled and secured when not in use. The procedures and the controls specified for these operations were acceptable.

c. Conclusions

Reactor fuel movements and inspections were completed and documented in accordance with applicable procedures and the fuel was being inspected as specified by TS Section 4.4.

7. Maintenance and Surveillance

a. Inspection Scope (IP 69001)

To determine that Limiting Conditions of Operation and surveillance activities were being completed as stipulated by TS Sections 3 and 4, and that maintenance was being conducted as required, the inspector reviewed:

- TRIGA Operations Log No. 37
- Calibration procedures and records
- Selected Surveillance Procedures and Logs
- Start-up and Termination Procedures and Log
- Maintenance Procedures and Maintenance Log
- Selected surveillance data sheets, records, and tests
- "Technical Specification Calendar," last revised July 19, 2007
- Form CENTER-001, Rev. 10, "TRIGA Pre-start Checklist, TRIGA Start-up Checklist, and TRIGA Termination Checklist," RSC approval of the form dated April 2, 2004
- Form CENTER-002, Rev. 3, "Biennial Control Rod Inspection/Control Rod Movement or Repair," RSC approval of the form dated May 23, 2002
- Form CENTER-003, Rev. 7, "Semi-Annual Control Rod Calibrations," RSC approval of the form dated June 30, 2008
- Form CENTER-008, Rev. 4, "Procedure for Adding Water to the Reactor Tank," RSC approval of the form dated December 17, 1997
- Form CENTER-011, Rev. 2, "Calibration of Temperature Monitoring Channels," RSC approval of the form dated March 12, 1997
- Form CENTER-012, Rev. 3, "Semi-Annual Thermal Power Calibration," RSC approval of the form dated March 18, 1998
- Form CENTER-015, Rev. 3, "Emergency Kit Check," RSC approval of the form dated September 17, 2003
- Form CENTER-020, Rev. 12, "Monthly Inspection Checklist," RSC approval of the form dated April 2, 2004
- Form CENTER-022, Rev. 2, "Maintenance Log," RSC approval of the form dated September 21, 1994
- Form CENTER-023, Rev. 4, "Annual Maintenance and Calibration of the Area Radiation Monitors (ARMs) and Continuous Air Monitor (CAM)," RSC approval of the form dated December 17, 1997
- DO Procedure Manual, Section VII, "The Maintenance and Surveillance of the TRIGA Reactor and Support Systems," (undated)
- DO Procedure Manual, Section VIII, "Auxiliary Surveillance Equipment," (undated)

- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2006 through June 30, 2007, submitted to the NRC July 2, 2007
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2007 through June 30, 2008, submitted to the NRC July 14, 2008

b. Observations and Findings

(1) Maintenance

A review of the reactor console log and the maintenance log forms showed that the logs and forms were being completed as required and problems, if any, were being documented and ultimately resolved. This review also demonstrated that maintenance was being conducted consistent with the TS and applicable procedures. Maintenance activities ensured that equipment remained consistent with the Safety Analysis Report and TS requirements.

(2) Surveillance

The inspector determined that selected daily, monthly, semiannual, annual, and biennial checks, tests, and verifications for TS-required Limiting Conditions of Operation (LCOs) were being documented in the logs and on the appropriate forms. Surveillance checks and tests and LCO verifications reviewed by the inspector were completed on schedule and in accordance with licensee procedures. All the recorded results reviewed by the inspector were within the TS and procedurally prescribed parameters. It was noted that some of the surveillances were being completed more frequently than required by the TS. The records and logs reviewed were complete and were being maintained as required.

c. Conclusions

Maintenance was being completed as required. The program for completing surveillance checks and LCO verifications was being carried out in accordance with TS requirements.

8. Experiments

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following in order to verify that experiments were being conducted within approved guidelines:

- TRIGA Operations Log No. 37
- Experimental Procedures and Log
- Survey and control of irradiated items
- Selected Routine and Modified Routine Experiments

- Selected TRIGA Reactor Irradiation Request and Performance forms
- Selected authorized experiments documented on University of Utah TRIGA Reactor Experiment Authorization Form, RSC approval of the form dated February 20, 1981, including Authorization Number 4-19-06, Authorization Number 4-20-07, Authorization Number 4-18-08, and Authorization Number 4-08-09
- Form CENTER-027, Rev. 4, "TRIGA Reactor Irradiation Request and Performance," RSC approval of the form dated March 26, 1996
- Form CENTER-028, Rev. 1, "Experimental Facility Reactivity Worth Determination," RSC approval of the form dated March 12, 1997
- DO Procedure Manual, Section VI, "Experiment Methods," (undated)
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2006 through June 30, 2007, submitted to the NRC July 2, 2007
- Annual Operating Report for the University of Utah TRIGA Nuclear Reactor for the period of July 1, 2007 through June 30, 2008, submitted to the NRC July 14, 2008

b. Observations and Findings

The licensee classified experiments as "new", "routine", or "modified routine." (It was noted that, historically, routine and modified routine experiments were referred to as Class I and new experiments were referred to as Class II.) New experiments typically included any proposed activity utilizing the CENTER reactor that did not conform to an existing Experiment Authorization (EA). All new experiments were required by the TS and procedural guidance to be reviewed and approved by the RSC. Routine and modified routine experiments were those that had existing approval from the RSC and had an existing EA and TRIGA Reactor EA form. The inspector verified that the EAs were being reviewed every year as required.

The inspector noted that no new experiments had been initiated, reviewed, or approved since the last inspection. However, licensee representatives stated that the RSC review and approval process for new experiments had been, and would continue to be, followed.

The experiments currently being conducted at the facility were those classified as routine or modified routine. The irradiations were completed following the submittal of a TRIGA Reactor Irradiation Request and Performance form. The inspector verified that the experiments in use at the facility had been reviewed and approved by the RS as required and were conducted under the cognizance of the RS and an SRO. The results of the experiments were documented in the TRIGA Operations Log book and on the irradiation request forms. The inspector noted that experiments were conducted in accordance within procedural and EA guidelines and that materials produced were controlled as required by the radiation protection program.

c. Conclusions

The license's program for conducting experiments and controlling products satisfied regulatory requirements and license commitments.

9. Emergency Preparedness

a. Inspection Scope (IP 69001)

To verify that the licensee was implementing and complying with the "University of Utah Center for Excellence in Nuclear Technology, Engineering, and Research Emergency Plan for NRC License R-126: TRIGA Nuclear Reactor," Rev. 6, dated September 30, 2004, as approved by the NRC, the inspector reviewed selected aspects of:

- Documentation of emergency drills and critiques for 2007 and 2008
- Training records for staff and offsite support personnel
- Emergency response supplies, equipment, and instrumentation
- Emergency (Implementing) Procedures – of the eighteen procedures involved, fourteen were last revised December 31, 2001, three dealing with support organization response were last revised February 2005, and one, "High Level Alarm," was last revised April 25, 2008
- CENTER Annual Emergency Training Attendance Record forms for 2004 and 2005
- Form CENTER-015, Rev. 3, "Emergency Kit Check," RSC approval of the form dated September 17, 2003
- Form CENTER-021, Rev. 25, "CENTER Emergency Call List," RSC approval of the form dated June 3, 2008
- Form CENTER-037, "Radiological Emergency Classification Checklist," RSC approval of the form dated December 14, 1994
- Salt Lake City Fire Department Standard Operating Procedure No. 05-12, "Hazardous Materials Response Plan," revision dated September 7, 2007

b. Observations and Findings

(1) Emergency Plan Implementation

The Emergency Plan (E-Plan) in use at the reactor and emergency facilities was the same as the version most recently approved by the NRC. The E-Plan was being audited and reviewed biennially as required. Implementing procedures were reviewed and revised as needed. Facilities, supplies, instrumentation and equipment were being maintained, controlled, and inventoried as required in the E-Plan. During the inspection, the contents of various emergency kits were inventoried and verified by the inspector and a licensee representative.

Through record reviews and interviews with licensee personnel, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. According to the licensee, agreements with various offsite response organizations, such as the fire department and the hospital, were being maintained between those entities and the University. Therefore, the reactor facility did not need or maintain separate agreements with these groups in addition to those already established with the University. It was noted that communications capabilities with these support groups were acceptable and were tested periodically.

Emergency drills had been conducted annually as required. Critiques were typically held following the drills to discuss the strengths and weaknesses identified during the exercise and to develop possible solutions to any problems identified. The results of these critiques were documented and filed. Training for reactor staff and support personnel was acceptable and was conducted and documented as required.

The inspector visited the Salt Lake City Fire Department (FD) main office and discussed with FD representatives the facilities, supplies, and equipment that would be available in case of a fire or other emergency at the reactor facility. The support that would be provided by the FD in case of an emergency appeared to be more than adequate. Also, there appeared to be a good working relationship between the licensee and this support organization.

(2) Maintaining Emergency Preparedness

University of Utah Center for Excellence in Nuclear Technology, Engineering, and Research Emergency Plan for NRC License R-126: TRIGA Nuclear Reactor, Rev. 6, dated September 30, 2004, Section 10.0, “Maintenance of Emergency Preparedness,” Paragraph 10.4 requires that the RSC shall annually review written agreements that detail arrangements with the contracted ambulance service, Department of Public Safety, and University Hospital to ensure continuity of emergency service.

As noted above, the licensee was completing the various reviews, training of personnel, and conducting emergency drills and critiques as required by the E-Plan. However, when the inspector questioned the RS/RA about the requirement to have the RSC review written agreements to ensure continuity of emergency service every year, he was not certain whether this was being done. There was also some question as to whether or not some administrative function of the University (i.e., the legal department or some other group) should actually be reviewing these agreements instead of the facility and the RSC. Because this matter could not be resolved during the inspection, and because more information was needed to determine the proper disposition of this issue, the licensee was informed that this issue

would be identified as an Unresolved Item[1] (URI) by the NRC and will be reviewed during a future inspection (URI 50-407/2009-201-01).

c. Conclusions

The emergency preparedness program was being implemented adequately as evidenced by the following: 1) the Emergency Plan and Implementing Procedures were being reviewed and updated biennially as required and were acceptable, 2) emergency response facilities and equipment were being maintained as required and responders were knowledgeable of proper actions to take in case of an emergency, 3) offsite support was acceptable and communications capabilities were adequate, 4) annual drills were being conducted and critiques were being held as required by the Emergency Plan, and 5) emergency preparedness training for staff and offsite personnel was being completed as required. One Unresolved Item was identified.

10. Follow-up on Previously Identified Items

a. Inspection Scope (IP 92701)

The inspector reviewed the licensee's actions taken in response to a previously identified Inspector Follow-up Item.

b. Observation and Findings

Inspector Follow-up Item (IFI) 50-407/2007-201-01 - Follow-up on the licensee's actions to certify that one SRO had completed six hours of shift duty under the supervision of the RS before being allowed to resume routine operation of the reactor.

During a previous inspection in July 2007, the inspector noted that one SRO had not completed the four hours per quarter of reactor operation for the previous two quarters, as required by the Requalification Program. The licensee was aware of the issue and indicated that the operator's license was suspended. The licensee indicated further that the operator would not be allowed to operate the reactor until that person was certified to do so by the RS.

The inspector followed up on the actions taken by the licensee during this inspection. It was noted that the operator in question had not been allowed to operate the reactor during the period of the suspension. Subsequently, the operator, who was the Reactor Administrator at the time, had resigned her position and the license was terminated. Because of the actions taken by the licensee and the operator, this item is considered closed.

[1] An Unresolved Item is a matter about which more information is required to determine whether the issue in question is an acceptable item, a deviation, a nonconformance, or a violation.

c. Conclusions

One IFI identified during a previous inspection was closed.

11. Exit Interview

The inspection scope and results were summarized on June 4, 2009, with licensee representatives. The inspector discussed the findings for each area reviewed. The licensee acknowledged the findings and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

D. Choe	Reactor Supervisor and interim Reactor Administrator
M. Cho	Graduate Student and Reactor Operator trainee
R. Pugmire	Associate Vice President for Research, University of Utah

Other Personnel

S. Freitag	Division Director, Public Relations/Communications/Technology, Salt Lake City Fire Department
K. Langley	Director, Radiological Health Department and Radiation Safety Officer, University of Utah
D. Slaughter	Member, Reactor Safety Committee and former Reactor Administrator and CENTER Director
M. Taylor	Paramedic Coordinator, Medical Division, Salt Lake City Fire Department

INSPECTION PROCEDURE USED

IP 69001	Class II Research and Test Reactors
IP 92701	Review of Previously Identified Items

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-407/2009-201-01	URI	Follow-up to determine whether the RSC should annually be reviewing written agreements that detail arrangements with various offsite support groups to ensure continuity of emergency service or whether those reviews should be conducted by the University instead of the RSC.

Closed

50-407/2007-201-01	IFI	Follow-up on the licensee's actions to certify that one SRO had completed six hours of shift duty under the supervision of the RS before being allowed to resume routine operation of the reactor.

LIST OF ACRONYMS USED

CENTER	Center for Excellence in Nuclear Technology, Engineering, and Research
CFR	Code of Federal Regulations
EA	Experiment Authorization
E-Plan	Emergency Plan
FD	Fire Department
IFI	Inspector Follow-up Item
IP	Inspection Procedure
LCO	Limiting Conditions of Operation
No.	Number
NRC	Nuclear Regulatory Commission
RA	Reactor Administrator
Rev.	Revision
RS	Reactor Supervisor
RSC	Reactor Safety Committee
SRO	Senior Reactor Operator
TS	Technical Specifications