

December 8, 2005

Dr. Leslie Tolbert
Vice President for Research
University of Arizona
Tucson, AZ 85721-0066

SUBJECT: NRC INSPECTION REPORT NO. 50-113/2005-201

Dear Dr. Tolbert:

This letter refers to the inspection conducted on October 25 - 27, 2005, at your Nuclear Reactor Laboratory TRIGA Reactor. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation 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 Mr. Kevin M. Witt at (301) 415-4075.

Sincerely,

/RA/

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

Docket No. 50-113
License No. R-52

Enclosure: NRC Inspection Report No. 50-113/2005-201
cc w/encl: Please see next page

December 8, 2005

Dr. Leslie Tolbert
Vice President for Research
University of Arizona
Tucson, AZ 85721-0066

SUBJECT: NRC INSPECTION REPORT NO. 50-113/2005-201

Dear Dr. Tolbert:

This letter refers to the inspection conducted on October 25 - 27, 2005, at your Nuclear Reactor Laboratory TRIGA Reactor. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation 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 Mr. Kevin M. Witt at (301) 415-4075.

Sincerely,

/RA/

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

Docket No. 50-113
License No. R-52

Enclosure: NRC Inspection Report No. 50-113/2005-201
cc w/encl: Please see next page

DISTRIBUTION:

PUBLIC RNR/R&TR r/f AAdams CBassett KWitt
WBeckner PDoyle TDragoun WEresian PYoung
FGillespie MMendonca DHughes EHylton CNagel
PMadden DBarss (MS 06-H2) Plsaac BDavis (Ltr only O5-A4)

NRR enforcement coordinator (Only for IRs with NOVs, O10-H14)

ACCESSION NO.: ML053260538

TEMPLATE #: NRR-106

OFFICE	PRT:RI	PRT:PM	PRT:LA	PRT:SC
NAME	KWitt	MMendonca	EHylton	BThomas
DATE	11/ 23 /2005	11/ 30 /2005	11/ 03 /2005	12/ 01/2005

C = COVER

E = COVER & ENCLOSURE
OFFICIAL RECORD COPY

N = NO COPY

University of Arizona

Docket No. 50-113

cc w/encl:

Office of the Mayor
P.O. Box 27210
Tucson, AZ 85726-7210

Arizona Radiation Regulatory Agency
4814 S. 40th Street
Phoenix, AZ 85040

University of Arizona
Nuclear Research Laboratory
ATTN: Dr. John Williams, Reactor Director
Bldg. 20, Rm 200
Tucson, AZ 85721-0020

University of Arizona
Nuclear Research Laboratory
ATTN: Mike Gavelek, Reactor Supervisor
Bldg. 20, Rm. 200
Tucson, AZ 85721-0020

University of Arizona
ATTN: Dr. Caroline M. Garcia
Assistant Director, Arizona Research Labs
Gould-Simpson Bldg. 1011
P.O. Box 210077
Tucson, AZ 85721-0077

University of Arizona
ATTN: Daniel Silvain, Radiation Safety Officer
1640 North Vine
Tucson, AZ 85721-0020

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

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

Docket No: 50-113

License No: R-52

Report No: 50-113/2005-201

Licensee: University of Arizona

Facility: Nuclear Reactor Laboratory

Location: Engineering Building
Tucson, Arizona

Dates: October 25 - 27, 2005

Inspector: Kevin Witt

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

EXECUTIVE SUMMARY

University of Arizona
Nuclear Reactor Laboratory TRIGA Reactor
Inspection Report No.: 50-113/2005-201

The primary focus of this routine, announced inspection was the on-site review of selected aspects and activities since the last NRC inspection of the licensee's Class II non-power reactor safety programs including: organization and staffing, operations logs and records, procedures, operator requalification, surveillance, experiments, design changes, committees, audits and reviews, emergency preparedness, maintenance logs and records, and fuel handling.

Organization and Staffing

- The organizational structure and staffing were consistent with TS requirements for current operations.

Operation Logs and Records

- Operational activities were consistent with applicable TS and procedural requirements.

Procedures

- Procedural control and implementation programs satisfied TS requirements.

Operator Requalification

- The Requalification Program was up-to-date, and plan requirements were met.

Surveillance

- The licensee's program for completing surveillance inspections and LCO confirmations satisfied TS and licensee administrative controls.

Experiments

- The approval and control of experiments met TS and applicable regulatory requirements.

Design Changes

- Based on the records reviewed, the inspector determined that the licensee's design change program was being implemented as required.

Committees, Audits, and Reviews

- Review and oversight functions required by the TS were acceptably completed by the Reactor Committee.

Emergency Preparedness

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

Maintenance Logs and Records

- Maintenance logs, records, and performance satisfied TS and procedure requirements.

Fuel Handling

- Fuel handling and inspection activities were completed and documented as required by TS and facility procedures.

REPORT DETAILS

Summary of Plant Status

The licensee's TRIGA Mark I research reactor, licensed to operate at a maximum steady-state thermal power of one hundred and ten kilowatts (110 kW), continues to be operated in support of education, operator training, surveillance, and research involving neutron activation analysis. During the inspection the reactor was operated on Tuesday at various power levels to complete surveillance requirements. Records show that the reactor was utilized on 105 occasions since November 2003.

1. Organization and Staffing

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

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of Sections 6.1 of Technical Specifications (TS), Amendment No. 18, dated April 9, 2001, were being met:

- University of Arizona (UA) Nuclear Reactor Laboratory (NRL) organizational structure and staffing
- management responsibilities and staff qualifications
- staffing requirements for the safe operation of the facility
- Operating Log Number (No.) 46, pages (pp.) 214-304, and Log No. 47, pp. 1-90, documenting facility activities for the past two years
- University of Arizona Research Reactor (UARR) Procedure, UARR 100, "Administrative and Operating Procedures," Revision (Rev.) dated May 1999

b. Observations and Findings

The NRL organizational structure and the responsibilities of the reactor management and staff had not changed since the last inspection (see NRC Inspection Report No. 50-113/2004-201). Current licensed staff consisted of the NRL Director, the Reactor Supervisor (RS), and a graduate student all of whom are qualified Senior Reactor Operators (SROs). One undergraduate student is in the training program to become a licensed operator and is working at the facility as a Research Operations Assistant. There was also an Electronic Technician on staff at the NRL.

The inspector was notified that there is the possibility of the RS leaving the facility to pursue another job opportunity. The inspector discussed the issue with the NRL director and was informed that a job posting has been created and applications have been received. The inspector confirmed that the job posting requirements exceed the qualifications listed for level two management in Standard ANSI/ANS-15.4-1988, "Selection and Training of Personnel for Research Reactors."

The reactor operations staff's qualifications satisfied the training and experience requirements stipulated in the TS. The operations log and associated records confirmed that shift staffing met the minimum requirements for duty personnel.

Review of records verified that management responsibilities were administered as required by TS and applicable procedures.

c. Conclusions

The organizational structure and staffing were consistent with TS requirements for current operations.

2. Operations Logs and Records

a. Inspection Scope (IP 69001)

To verify that the licensee was operating the reactor and conducting operations in accordance with TS Section 3 and procedural requirements, the inspector reviewed selected portions of the following:

- staffing for operations documented in Operating Log No. 46, pp. 214-304 and Log No. 47, pp. 1-90
- Console and Monitor Calibration Data Notebook, pp. 109-187
- Reactor Up-grade and Instrument Maintenance Log No. 4, pp. 56-84 and 149-150
- UARR Annual Reports for the periods from July 1, 2003 - June 30, 2004 and July 1, 2004 - June 30, 2005
- UARR 100, "Administrative and Operating Procedures," Rev. dated May 1999
- UARR 147, "Instructions for Staff Members During Operation of the University of Arizona TRIGA Reactor," Rev. dated November 1998
- UARR 150, "Reactor Operational Rules," Rev. dated September 2000
- UARR 151, "Instructions for Daily Surveillance of Reactor Instrumentation, Safety Systems, Area Monitors, and Continuous Air Monitor," Rev. dated December 2000
- UARR 152, "Preliminary Checklist," Rev. dated November 1998
- UARR 153, "Critical Approach Checklist," Rev. dated February 1994
- UARR 154, "Pulsing Checklist," Rev. dated November 1998
- Completed UARR 152 forms, dated from November 2003 to present
- Completed UARR 153 forms, dated from November 2003 to present
- Completed UARR 154 forms, dated from November 2003 to present

b. Observations and Findings

Reactor operations were carried out following written procedures and TS requirements. Any problems and events, including reactor scrams, were identified in the logs and records, and were reported and resolved as required before the resumption of operations under the authorization of an SRO. The inspector verified that these items, and other TS and procedure required entries, were logged in the operating log and cross-referenced with other logs and checklists as required. A review of the logs and records indicated that TS operational limits had not been exceeded. Operations records confirmed that shift staffing met the minimum requirements for duty personnel. The inspector also reviewed selected Preliminary Checklists and Operation Log records dating from November 2003 through the date of

this inspection. The inspector determined that reactor operations were carried out following written procedures as required by TS Section 6.3.

The main method of shutting the reactor down for the day is initiated by the reactor operator pressing the Scram bar. No unintentional scrams occurred within the previous two years. Problems with reactor safety systems were identified before reactor operations began and were logged in the operations log books. All problems were resolved before the resumption of operations under the authorization of the RS.

The inspector conducted observations of the reactor staff operating the reactor on October 25, 2005, and reviewed the UARR Preliminary Checklist and Operation Record forms and associated records and logs. The inspector noted that the licensed operators on duty and the operator trainee were knowledgeable and competent. Observation of operational activities also confirmed that reactor operations were carried out in accordance with written procedures and TS requirements.

c. Conclusions

Operational activities were consistent with applicable TS and procedural requirements.

3. Procedures

a. Inspection Scope (IP 69001)

To verify compliance with TS Section 6.3.a, the inspector reviewed selected portions of the following:

- Reactor Committee (RC) meeting minutes for December 11, 2003; March 8, May 3, August 31 and December 9, 2004; and March 2, May 13 and September 1, 2005
- administrative controls
- records of changes to procedures
- procedural implementation
- UARR 115, "Procedure for Responding to an Earthquake Scram," Rev. dated March 4, 2005
- UARR 165, "Procedure for Review of Changes, Tests, and Experiments for the University of Arizona Research Reactor," Rev. dated August 31, 2004

b. Observations and Findings

Administrative policies and controls had been developed for changing and reviewing procedures. Written changes were reviewed and approved by the NRL Director and the RC as required and documented in the RC meeting minutes. Training of personnel on procedures and changes was acceptable. Oversight and review of procedure implementation was provided by facility management and the RC. NRL staff members conducted TS activities in accordance with applicable procedures. Records showed that procedures for potential malfunctions (e.g., radioactive releases and contaminations, and reactor equipment problems) were available as required.

The TSs require that substantive changes to procedures be approved by the RC, while temporary changes may be approved by the NRL Director and subsequently reviewed by the RC. The inspector confirmed that procedure changes are reviewed by licensed operators during requalification training sessions.

Review of RC meeting minutes indicated that several procedure revisions were requested and approved. One procedure change slightly revised the process to determine whether a design change requires prior NRC approval. The procedure was approved by the RC and the NRL director in accordance with the abilities granted by the TSs. The inspector noted that the new procedure lays out an effective method of ensuring compliance with NRC regulations. Another procedure change incorporates new contact information for verification of an earthquake, which was primarily an administrative change.

c. Conclusions

Procedural control and implementation programs satisfied TS requirements.

4. Operator Requalification

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to ensure that the requirements of the Operator and Senior Operator Requalification Program for the University of Arizona Research Reactor, Rev. 1, dated September 15, 1989, were being met:

- status of operator licenses
- operator active duty confirmation
- operator training and examination records
- operator physical examination records
- Operating Log No. 46, pp. 214-304 and Log No. 47, pp. 1-90
- "Operator and Senior Operator Requalification Program for the University of Arizona Research Reactor," Revision 1, dated September 15, 1989
- UARR 129, "Procedures for the Conduct of Operating Personnel in the Control Room and Reactor Room," Rev. dated July 1994
- Form T-10, "TRIGA Reactor Operator Requalification Program," Rev. Dated January 1998
- Completed T-10 forms for current operators, dated from January 2003 to present

b. Observations and Findings

There are currently three SROs employed at the facility. The inspector verified that the operators' licenses were current. Records showed that operators were given written examinations following each requalification lecture and annual operations tests as required. Logs indicated that operators maintained active duty status as required by operating the reactor the required number of hours quarterly and by taking the annual operating examinations. Tallies of operating hours for each licensed operator

is maintained on a quarterly basis to ensure that each operator complies with the requirements in the requalification program. The inspector verified that physical examinations of the operators were conducted biennially as required. The Operator Requalification Program was being maintained up to date. The inspector also verified that the operators were reviewing the contents of all abnormal and emergency procedures on a regularly scheduled basis.

During the review of written examinations that are administered after requalification lectures, the inspector noted that the exams were very similar to the exams given during the previous requalification cycle. The licensee stated that there are attempts to change a small portion of the exam for the next requalification cycle. The inspector informed the licensee that the NRC looks for effective methods of checking operator proficiency and this includes reducing the potential for duplicating previously examined material. The inspector confirmed that the requalification program was being administered in a manner that sufficiently maintains the effectiveness of all licensed operators.

c. Conclusions

The Requalification Program was up-to-date, and plan requirements were met.

5. Surveillance

a. Inspection Scope (IP 69001)

To verify that the licensee was meeting the requirements of TS Section 4, the inspector reviewed selected aspects of:

- surveillance, calibration, and test data sheets and records
- Operating Log No. 46, pp. 214-304 and Log No. 47, pp. 1-90
- Console and Monitor Calibration Data Notebook, pp. 167-222
- Reactor Up-grade and Instrument Maintenance Log No. 4, pp. 84-105
- UARR Annual Reports for the periods from July 1, 2003 - June 30, 2004 and July 1, 2004 - June 30, 2005
- UARR 122, "Procedures for Measurement of Control Rod Drop Times," Rev. dated July 1994
- UARR 125, "Procedures for Power Calibration of the University of Arizona TRIGA Reactor," Rev. dated October 1997
- UARR 155, "Monthly Checklist," Rev. dated June 1999
- UARR 156, "Annual Checklist," Rev. dated December 2000
- UARR 158, "Annual Test / Test After Maintenance or Modification For Low Water Level Detector," Rev. dated November 1998
- Completed UARR 156 forms, dated from July 2003 to present
- Completed UARR 155 forms, dated from November 2003 to present

b. Observations and Findings

The inspector noted that selected daily, monthly, quarterly, semiannual, and annual checks, tests, and/or calibrations for TS-required surveillance and Limiting Conditions for Operation (LCO) verifications were completed as required. The verifications were completed on schedule and in accordance with licensee procedures. All the recorded results were within the TS and procedurally prescribed parameters. The records and logs were noted to be complete and were being maintained as required. The licensee used various checklists to track the daily, monthly, and other periodic checks, audits, drills, training, and inspections, as well as verifications for TS required LCOs. These checklists provided clear and concise documentation and control of reactor operational tests and surveillances.

The inspector observed the licensee complete a monthly checklist for TS required items on October 26, 2005. All of the items on the checklist were carried out appropriately and the personnel conducting the tests did so in a safe and knowledgeable manner. The inspector verified that all of the checks conducted were in compliance with TS required values and parameters.

c. Conclusions

The licensee's program for completing surveillance inspections and LCO confirmations satisfied TS and licensee administrative controls.

6. Experiments

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with TS Sections 3.7 and 6.8:

- experimental program requirements
- approved reactor experiments documented in Experiment Plans
- RC meeting minutes for December 11, 2003; March 8, May 3, August 31 and December 9, 2004; and March 2, May 13 and September 1, 2005
- experimental administrative controls and precautions
- Operating Log No. 46, pp. 214-304 and Log No. 47, pp. 1-90
- TRIGA Irradiation Request and Material Transfer Forms Nos. 1910-1917
- UARR 10, "Neutron Irradiation and Radioisotope Production in the University of Arizona Nuclear Reactor," Rev. dated November 1998
- UARR 110, "Procedures for Performing Irradiations in the Irradiation Facilities or in the Water Outside the Reactor Core," Rev. dated July 1994
- UARR 116, "Procedures for Installation and Removal of In-Core Irradiation Facilities," Rev. dated July 1994
- UARR 130, "Procedures for the Review and Performance of Experiments," Rev. dated March 2001
- UARR 159, "TRIGA Audit of Operations," Rev. dated May 2000

b. Observations and Findings

There was one experiment frequently conducted at the UARR, which is the routine irradiation of samples. There have been four irradiations consisting of multiple samples since the previous inspection. The two experimental facilities that can be used for sample irradiations are the pneumatic transfer system and the rotary specimen rack. Samples can be loaded and unloaded from the pneumatic system while the reactor is at power. The samples in the rotary specimen rack can only be unloaded after the reactor is shut down. Samples that have been irradiated at the UARR include meteorites, soil, and electronic chips. The Requests for Irradiation forms that had been completed for irradiating samples during the inspection period contained the appropriate information, hazards analyses as applicable, and had been reviewed and approved as required by TS and procedure.

No new experiments had been initiated, reviewed, or approved since September 2001 at the facility. If any experiments were to be initiated, they would be reviewed and approved by the NRL Director, or his designee, and the RC. All new experiments would be completed under the supervision of the RS and in accordance with TS requirements (e.g., reactivity limitations, corrosion resistance, etc.).

c. Conclusions

The approval and control of experiments met TS and applicable regulatory requirements.

7. Design Changes

a. Inspection Scope (IP 69001)

In order to verify that any modifications to the facility were consistent with 10 CFR 50.59 and were reviewed as stipulated in TS Sections 6.2 & 6.3, the inspector reviewed selected aspects of:

- C facility design changes and records for the past two years
- C facility configuration and associated records
 - minor and substantive procedural changes and the associated RC approval
 - Reactor Up-grade and Instrument Maintenance Log No. 4, pp. 84-105
 - UARR 165, "Procedure for Review of Changes, Tests, and Experiments for the University of Arizona Research Reactor," Rev. dated August 31, 2004
 - Completed UARR 165 form for the replacement of PS-202 power supply, dated August 31, 2004

b. Observations and Findings

Through review of applicable records and interviews with licensee personnel, the inspector determined that no significant nor minor changes had been initiated and/or completed at the facility since the last inspection. The Procedure for Review of Changes, Tests, and Experiments at the UARR was required to be completed for all

changes at the facility. Almost all repairs made to facility components during the inspection period were like for like replacements, thus nullifying the need for a 50.59 review. The inspector verified that administrative controls were in place that required the appropriate review and approval of all changes prior to implementation.

During preliminary checks on August 27, 2004, a failed power supply was discovered in the left console, which supplied power to part of the scram circuit. The failed component was labeled as a 14.5 Volt Direct Current (VDC) power supply. The NRL staff could only find a 15 VDC power supply, so they initiated the review process in procedure UARR-165. The reactor staff determined that the change could be made without prior approval from the NRC and the RC agreed with that assessment. The inspector verified that the licensee's determination was within accepted protocol. The change was made and the component has functioned correctly since the replacement.

c. Conclusions

Based on the records reviewed, the inspector determined that the licensee's design change program was being implemented as required.

8. Committees, Audits and Reviews

a. Inspection Scope (IP 69001)

In order to verify that the licensee had established and conducted reviews and audits as required in TS Section 6.2 the inspector reviewed selected aspects of:

- RC meeting minutes for December 11, 2003; March 8, May 3, August 31 and December 9, 2004; and March 2, May 13 and September 1, 2005
- The University of Arizona Reactor Committee Charter, dated April 4, 2003
- Appointment Letters for members of the RC, various dates
- minor and substantive procedural changes and the associated RC approval
- Reactor Up-grade and Instrument Maintenance Log No. 4, pp. 56-84 and 149-150
- Memo to the Reactor Committee from the Reactor Supervisor, "Annual Audit of Emergency Plan and Emergency Procedures," dated August 26, 2005
- UARR 100, "Administrative and Operating Procedures," Rev. dated May 1999
- UARR 159, "TRIGA Audit of Operations," Revision dated May 2000
- UARR 160, "University of Arizona Research Reactor Biennial Emergency Plan Audit," Revision dated March 2001
- UARR 165, "Procedure for Review of Changes, Tests, and Experiments for the University of Arizona Research Reactor," Rev. dated August 31, 2004
- Completed UARR 159 forms, dated from September 2003 to August 2005
- Completed UARR 160 form, dated December 13, 2004
- Completed UARR 165 form for the replacement of PS-202 power supply, dated August 31, 2004
- responses to the safety reviews and audits

b. Observations and Findings

The RC membership satisfied TS requirements and the Committee's procedural rules. The RC had quarterly meetings and a quorum was always present as required. Appointment letters for recently appointed members were current as well. Review of the minutes indicated the committees provided guidance, direction and oversight, and ensured suitable use of the reactor. The minutes provided an acceptable record of RC review and audit functions and of RC safety oversight of reactor operations.

Operations audits were performed by rotating members of the RC on a bi-monthly frequency, which met the annual frequency requirements. Other periodic audits, including the biennial audit of the Emergency Plan, were also completed. The audits appeared to be acceptable. The inspector noted that the safety reviews and audits, and the associated findings, were acceptably detailed and that the licensee responded and took corrective actions as needed. The inspector observed the bimonthly operations audit being conducted by a member of the RC. The inspector determined that the RC member had the proper expertise to effectively conduct the audit.

c. Conclusions

Review and oversight functions required by the TS were acceptably completed by the RC.

9. Emergency Preparedness

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- Emergency Plan for the University of Arizona Nuclear Reactor Laboratory, Rev. 9, dated May 2003
- Annual Review Program for Radiation Control Office Staff Members with Emergency Response Responsibilities, dated January 20-21, 2004 and February 1, 2005
- Letters of Agreement between the licensee and the various support organizations
- documentation of the emergency drills held in 2003 and 2004 and the follow-up critiques
- UARR 101, "Emergency Procedures," Rev. dated December 2004
- UARR 101, "Emergency Procedures Implementing Appendix," Rev. dated December 2004
- UARR 160, "University of Arizona Research Reactor Biennial Emergency Plan Audit," Rev. dated March 2001

b. Observations and Findings

The inspector reviewed the Emergency Plan (E-Plan) in use at the NRL and verified that the E-Plan was audited annually by the RS and biennially by the RC as required. The Emergency Implementing Procedures were reviewed and revised as needed to

ensure effective implementation of the E-Plan. Emergency facilities, instrumentation, and equipment were being maintained and controlled, and supplies were being inventoried annually as required in the E-Plan.

Through direct observation, records review, and interviews with emergency organization personnel (i.e., emergency responders), the inspector determined that they were capable to respond, and knowledgeable of the proper actions to take in case of an emergency. Training for NRL staff and Radiation Control Office personnel had been conducted annually as required.

The inspector verified that the Letters of Agreement with the various support agencies had been maintained and updated as necessary. The letters were dated as follows: City of Tucson Fire Department dated January 14, 2005; Rural/Metro Southwest Ambulance dated January 11, 2005; University Medical Center dated January 7, 2005; UA Radiation Control Office dated January 4, 2005; and UA Police Department dated January 5, 2005. The inspector also noted that communications capabilities with these support groups were acceptable and had been periodically tested.

Emergency drills had been conducted annually as required by the E-Plan. The drill for 2003 was a table-top exercise, while the drill in 2004 was a practical exercise. Critiques were written and discussed following the drills to document the strengths and weaknesses identified during the exercises and to develop possible solutions to any problems noted. Drill scenarios were challenging and involved response by most of the support organizations. Critiques indicated that the E-Plan was properly implemented. All problems identified during the drills were subsequently corrected and future drills will ensure that similar issues do not occur again. The drill for 2005 is currently being planned and will occur before the end of the year.

The inspector visited the Tucson Fire Department Hazardous Materials (HAZMAT) station and observed the emergency response equipment that would be used during a radiological emergency at the facility. During the tour of the fire station, the inspector talked with the battalion chief and several fire fighters about the support role the fire department provides to the licensee. The battalion chief and fire fighters were very confident of the services that they provide and requested that the licensee set up more tours of the facility for HAZMAT responders at other stations around the city. The licensee staff member who was present at the meeting agreed to the request and is currently working on arrangements for a tour of the NRL. The fire department also requested a copy of the NRL E-Plan and the licensee has agreed to provide a copy to the battalion chief.

c. Conclusions

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

10. Maintenance Logs and Records

a. Inspection Scope (IP 69001)

To verify that the licensee was meeting the requirements of their Preventive Maintenance Program and complying with TS Section 5, the inspector reviewed selected aspects of:

- Operating Log No. 46, pp. 214-304 and Log No. 47, pp. 1-90
- Console and Monitor Calibration Data Notebook, pp. 167-222
- Reactor Up-grade and Instrument Maintenance Log No. 4, pp. 84-105
- UARR Annual Reports for the periods from July 1, 2003 - June 30, 2004 and July 1, 2004 - June 30, 2005
- UARR 108, "Procedures for Repair, Modification, Calibration, or Installation of Electronic Equipment in the Console and Control Rod Drive Systems," Rev. dated March 2001
- UARR 109, "General Procedures for the Repair, Modification, Calibration, or Installation of Equipment," Rev. dated March 2001
- UARR 159, "TRIGA Audit of Operations," Rev. dated May 2000
- Completed UARR 159 forms, dated from September 2003 to August 2005

b. Observations and Findings

The inspector reviewed the maintenance records related to 2003, 2004 and 2005 scheduled and unscheduled preventative and corrective maintenance activities. Routine/preventive maintenance was controlled and documented in the Reactor Up-grade and Instrument Maintenance Log (and cross referenced in the Operating Log). This review indicated that all maintenance activities were controlled and documented in the maintenance and/or operations log consistent with the requirements in 10 CFR 50.59.

Implementation of changes to equipment, systems, tests or experiments are done by any of the SROs or the electronics technician at the facility. After all maintenance items are completed, system operational checks are performed to ensure the affected systems function before returning them to service. This included a statement signed by the RS indicating that the system had been tested for operation and that the reactor was approved for operation. The inspector noted that a majority of maintenance entries was related to the addition of de-ionized water to the reactor pool to replace the water lost from evaporation.

During a facility tour the inspector noted that Control Room and Reactor Room equipment was operational. No missing or malfunctioning equipment was noted. Equipment, and the facility in generally, appeared to be well maintained.

c. Conclusions

Maintenance logs, records, and performance satisfied TS and procedure requirements.

11. Fuel Handling

a. Inspection Scope (IP 69001)

To verify that TS Section 4.1 and procedural requirements were being met, the inspector reviewed selected aspects of:

- Operating Log No. 46, pp. 214-304 and Log No. 47, pp. 1-90
- Fuel Logbook
- fuel handling equipment and instrumentation
- fuel movement and inspection records
- UARR 105, "Procedures for Fuel Element Changing," Rev. dated July 1994
- UARR 107, "Procedures for Control Element Removal and Inspection," Rev. dated July 1994
- UARR 121, "Procedures for Use of the Fuel Element Inspection Tool," Rev. dated December 1999

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. All fuel movements were noted in the operation logs as well as the fuel movement log and generally included all of the fuel elements every five years for the fuel inspections and inspection of the control rods on a biennial frequency. The last fuel inspection was conducted on May 24, 2002 and the last control rod inspection was conducted on June 14, 2002. Inspections of the fuel elements and control rods showed consistency with accepted values and did not indicate any deterioration of cladding. Data recorded for fuel handling was clear and cross-referenced in fuel and operations logs. Log entries clearly identified, as required by procedure, that a minimum of two persons were present when fuel was being moved. The inspector determined that the procedures and the controls specified for these operations were acceptable.

c. Conclusions

Fuel handling and inspection activities were completed and documented as required by TS and facility procedures.

12. Follow-up on Previous Open Items

a. Inspection Scope (IP 69001)

The inspector reviewed the actions taken by the licensee following identification of Inspector Follow-up Items during a previous inspection.

b. Observations and Findings

- (1) NCV 50-113/2003-201-01 - Failure to provide an escort for a visitor in the Control Room as required by procedure UARR 100.

NRC Inspection Report No. 50-113/2003-201, dated November 28, 2003, outlined the situation. During that inspection, the inspector asked to review various logbooks and records that were stored in the Control Room, which is part of the Reactor Laboratory. The inspector inquired as to whether or not it would be acceptable to remain in the Control Room while reviewing the records instead of taking all the records to another area. The licensee indicated that the inspector could remain in the Control Room during the review. After the Reactor Supervisor admitted the inspector into the Control Room, the Reactor Supervisor left the area and allowed the inspector to remain behind with no escort. After approximately 45 minutes, the inspector left the Control Room to attend the debriefing concerning the Campus Emergency Exercise that had been conducted earlier that day. Upon returning, the licensee informed the inspector that a violation of the facility procedure, UARR 100, had occurred.

During this inspection, the inspector confirmed that the licensee was recording the additional person in the facility on the appropriate forms. The inspector also noted that the procedure concerning visitor control was strictly followed when the inspector was inside the reactor room. This issue is considered closed.

c. Conclusions

The issue regarding the failure to properly escort a visitor was closed.

13. Exit Interview

The inspection scope and results were summarized on October 27, 2005, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. Although proprietary information was reviewed during the inspection no such material is included in this report.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Bahill	Chairman of the UARR Reactor Committee
M. Gavelek	Reactor Supervisor and Senior Reactor Operator
W. Lohmeier	Electronic Technician
A. Moden	Research Operations Assistant
R. Offerle	Senior Reactor Operator
D. Silvain	Reactor Radiation Safety Officer
J. Williams	Director, Nuclear Radiation Laboratory

Other Personnel

R. Rodriguez Battalion Chief, City of Tucson Fire Department

INSPECTION PROCEDURE USED

IP 69001: Class II Non-Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-113/2003-201-01 NCV Failure to provide an escort for a visitor in the Control Room as required by procedure UARR 100.

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
E-Plan	Emergency Plan
HAZMAT	Hazardous Materials
kW	Kilowatt
LOA	Letter of Agreement
LCO	Limiting Conditions for Operation
NRC	Nuclear Regulatory Commission
NRL	Nuclear Reactor Laboratory
RC	Reactor Committee
RO	Reactor Operator
RS	Reactor Supervisor
SRO	Senior Reactor Operator
TS	Technical Specification
UA	University of Arizona
UARR	University of Arizona Research Reactor
VDC	Volt Direct Current