February 7, 2003

Dr. William G. Vernetson
Director of Nuclear Facilities
Department of Nuclear and
Radiological Engineering
P. O. Box 11830
University of Florida
Gainesville, FL 32611

SUBJECT: NRC INSPECTION REPORT NO. 50-083/2003-201

Dear Dr. Vernetson:

This letter refers to the inspection conducted on January 13-16, 2003, at your University of Florida Test Reactor facility. The enclosed report presents the results of that inspection.

Various aspects of your reactor operations and security programs were inspected, including selective examinations of procedures and representative records, interviews with personnel, and observations of the facility. Based on the results of this inspection, no safety concern or noncompliance with Nuclear Regulatory Commission (NRC) requirements was identified. No response to this letter is required.

In accordance with 10 CFR 2.790 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/NRC/ADAMS/index.html.

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

Sincerely,

/RA/

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

Docket No. 50-083
License No. R-56

Enclosure: NRC Inspection Report No. 50-83/2003-201
cc w/enclosure: Please see next page

cc:

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Office of Nuclear Reactor Regulation

Docket No. 50-083
License No. R-56
Enclosure: NRC Inspection Report No. 50-82/2003-201
cc w/enclosure: Please see next page

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

Docket No:	50-083
Report No:	50-083/2003-201
Licensee:	University of Florida
Facility:	University of Florida Training Reactor
Location:	University of Florida Gainesville, FL
Dates:	January 13-16, 2003
Inspectors:	Craig Bassett Lawrence Berg
Approved by:	Patrick M. Madden, Section Chief Research and Test Reactors Section Operating Reactor Improvements Program Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

This routine, announced inspection involved onsite review of selected programs and activities since the last NRC inspection including: Organizational Structure and Staffing, Review and Audit Functions, Operations, Experiments, Fuel Handling, Procedures, Maintenance and Surveillance, Design Control, Operator Requalification, Radiation Protection, Effluent and Environmental Monitoring, Emergency Preparedness, Transportation of Radioactive Materials, Security, and Material Control and Accountability.

Organizational Structure and Staffing

- The operations organizational structure and responsibilities were consistent with Technical Specifications Sections 6.2.1 - 6.2.4 requirements.

- Shift staffing met the minimum requirements for current operations.

Review and Audit Functions

- The review and audit program was being conducted acceptably by the Reactor Safety Review Subcommittee as stipulated in Technical Specifications Section 6.2.5.

Operations

- Reactor operations and record maintenance were consistent with applicable Technical Specification and procedural requirements.

Experiments

- Conduct and control of experiments met the requirements specified in the Technical Specifications Sections 3.5 and 6.4 and the applicable experiment authorizations and procedures.

Fuel Handling

- Fuel handling activities and documentation were as required by Technical Specification and facility procedures.

Procedures

- Facility procedural review, revision, control, and implementation satisfied Technical Specification requirements.

Maintenance and Surveillance

- Maintenance logs, records, performance, and reviews satisfied Technical Specification and procedure requirements.

- The program for tracking and completing surveillance checks and verifications satisfied Technical Specification requirements.

Design Control

- The design control program was being implemented as required.

Operator Requalification

- The requirements of the Operator Requalification Plan were being met and the plan was being acceptably implemented.

Radiation Protection Program

- Surveys were being completed and documented acceptably to permit evaluation of the radiation hazards present.

- Postings met the regulatory requirements specified in 10 CFR Parts 19 and 20.

- Personnel dosimetry was being worn as required and doses were well within the NRC's regulatory limits.

- Radiation monitoring equipment was being maintained and calibrated as required.

- The Radiation Protection Program being implemented by the licensee satisfied regulatory requirements.

Effluent and Environmental Monitoring

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

Emergency Preparedness

- Emergency facilities, instrumentation, and equipment were being maintained and controlled, and supplies were being inventoried quarterly as required.

- Emergency drills had been conducted and critiques held following the drills to document the strengths and weaknesses identified during the exercises.

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

Transportation of Radioactive Materials

- Transfer of radioactive material from the University of Florida Training Reactor to the State of Florida (Agreement State) License was completed and documented in accordance with licensee procedural requirements.

Security

- Security facilities, equipment, procedures, and controls satisfied the Physical Security Plan requirements.

Material Control and Accounting

- Special nuclear material was acceptably controlled and tracked as required by 10 CFR Part 70.

REPORT DETAILS

Summary of Plant Status

The licensee's 100 kilowatt Research and Test Reactor continues to be operated in support of education, operator training, surveillance, service work, and experiments. During the inspection, the reactor was not operated due to ongoing maintenance activities.

1. Organizational Structure and Staffing

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

The inspectors reviewed selected aspects of the following regarding the licensee's organization and staffing to ensure that the requirements of Sections 6.2.1 - 6.2.4 of Technical Specifications (TS), Amendment No. 23, dated December 28, 2001, were being met:

- organizational structure for the University of Florida Training Reactor (UFTR)
- current staff qualifications
- management responsibilities as outlined in the TS
- selected portions of the operations log for the past year through the present
- the most recently available Annual Reports

b. Observations and Findings

The operations organizational structure had not functionally changed since the last inspection (refer to NRC Inspection Report 50-083/2001-201). The operations staff was comprised of two Senior Reactor Operators (SROs), which included the Facility Director, and two people in training to become licensed SROs. TS Section 6.2.4 specifies that the training and qualification criteria contained in the ANSI/ANS (American National Standards Institute) Standard 15.4-1977, "Standards for Selection and Training of Personnel for Research Reactors," are required to be met by UFTR personnel. The inspectors verified that the education, training, and experience of the operations staff met ANSI/ANS 15.4-1977 requirements. Staffing was as reported in the Annual Reports and as required.

c. Conclusions

The operations organizational structure and functions were consistent with TS Section 6.2. Shift staffing met the minimum requirements for current operations.

2. Review and Audit Functions

a. Inspection Scope (IP 69001)

In order to verify that the licensee had established and conducted reviews and audits as required in TS Section 6.2.5, the inspectors reviewed selected aspects of:

- Reactor Safety Review Subcommittee (RSRS) meeting minutes from 2000 through 2002

- safety review and audit records for the past three years
- responses to the safety reviews and audits
- UFTR Standard Operating Procedure (SOP)-0.1, "Operating Document Controls," Revision (Rev) 2, dated July 1991
- the most recently available Annual Reports

b. Observations and Findings

The RSRS committee met twenty times during the period from October 2000 to December 2002. At least one meeting was held each quarter at intervals not to exceed four months as required by TS Section 6.2.5(2). The membership also satisfied the charter requirements stipulated in TS Section 6.2.5(2). Review of the minutes indicated that the committee provided guidance and direction to ensure suitable oversight of reactor operations and that the minutes provided a record of this safety oversight. The RSRS committee minutes and audit records also showed that safety reviews and individual audits had been completed at the required frequency and submitted to the Dean of the College of Engineering within three months of completion for the functional areas specified by TS Section 6.2.5(4). The audits appeared to be comprehensive and well documented. The inspectors noted that the licensee took appropriate corrective actions in response to the audit findings. Committee records documented that procedure changes were reviewed as required by TS Section 6.2.5(3).

During the review of the RSRS meeting minutes, the inspectors noted that the RSRS had been informed that the licensee had not submitted the Annual Reports for September 1, 1999 - August 31, 2000 and for September 1, 2000 - August 31, 2001 as required. When questioned about this issue, the licensee stated that the reports had not been issued to-date. The licensee indicated that the reports were being prepared and made a commitment to issue the 1999-2000 report by January 24, 2003 and the 2000-2001 report by February 10, 2003. This issue will be considered by the NRC as an Inspector Follow-up Item (IFI) and will be reviewed during the next inspection at the facility (IFI 50-083/2003-201-01).

c. Conclusions

Audits and reviews were being conducted by the RSRS in accordance with the requirements specified in TS Section 6.2.5.

3. Operations

a. Inspection Scope (IP 69001)

To verify compliance with License Condition 2.C.2 and related procedural requirements, the inspectors reviewed selected aspects of:

- operational logs and records for 2002 to-date with emphasis on the log entries for October 2002
- staffing during periods of reactor operations

- RSRS meeting minutes for 2002 with emphasis on the minutes for the meeting held November 5, 2002
- UFTR SOP-A.1, “Pre-operational Checks,” Rev 16, dated February 1997
- UFTR SOP-A.2, “Reactor Start-up,” Rev 12, dated May 1987
- UFTR SOP-A.3, “Reactor Operation at Power,” Rev 12, dated November 1994
- UFTR SOP-A.4, “Reactor Shutdown,” Rev 11, dated October 1989
- UFTR SOP-0.6B, “Unscheduled Shutdown Review and Evaluation,” Rev 0, dated May 1997
- UFTR 14-Day Report, “Operation for Checkout without Required Detector,” dated November 5, 2002

b. Observations and Findings

(1) Routine Operations

The inspectors reviewed selected daily operations log pages that were recorded since December 2001. Reactor operations were carried out in accordance with written procedures as required by TS Section 6.3. Information on the operational status of the facility was recorded clearly and concisely in log book and/or on checklists as required by UFTR SOP-A.3. Scrams were identified in the log and associated records, and were reported and resolved as required before the resumption of operations. Operation logs and records confirmed that shift staffing met the minimum requirements for duty and on-call personnel as required by TS Section 6.2.3.

(2) Reportable Occurrence

On October 22, 2002, the licensee reported to the NRC that TS Sections 3.2.3 and 5.5.2 were violated when the reactor mode of operation was changed from shutdown to “operating” without an operable fission chamber being installed in the system. Section 3.2.3 requires that the fission chamber be operable and capable of providing information to the control room operator. Section 5.5.2 requires that the fission chamber be operable as part of the Reactor Safety System.

On October 21, 2002, following an extended maintenance outage of eight months which involved the removal and ongoing trouble shooting of the fission chamber, an SRO and an operator trainee began conducting a preoperational check of the reactor. This included the manipulation of control blades Safety 1 and 2. However, the fact that the fission chamber had not been installed was overlooked. Approximately 15 minutes after commencement of control blade manipulation, the Reactor Manager arrived and, upon discovering that the fission chamber was not installed and functional, directed that both control blades be dropped and the reactor secured.

After reviewing the situation, the licensee determined that, during the occurrence, the reactor did not meet the criteria of "Reactor Secured" as specified in TS Section 1 and therefore the reactor was in the "Reactor Operating" status. Although the preoperational check was not being conducted in preparation to

actually startup the reactor, the licensee noted that the significance of the fission chamber removal was overlooked by the operator and trainee.

Corrective actions taken by the licensee included discussion of the event with all operations staff to ensure adequate understanding of the underlying causes and the necessity of having all specified detectors and instrumentation channels operational when control blades are removed. Also, the licensee did not energize the control blade circuits following the event until it was verified that the fission chamber was installed.

This was determined to be a Non-Cited Violation (NCV) and is not being cited because it was self-identified, non-repetitive, and corrective actions were taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied (NCV 50-083/2003-201-02).

c. Conclusions

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

4. Experiments

a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of the following to assure compliance with TS Sections 3.5 and 6.4:

- experiment logs and records for the year 2002
- approved reactor experiments for the year 2002
- RSRS meeting minutes for 2000 through 2002
- UFTR SOP-A.5, “Experiments,” Rev 4, dated December 1988
- UFTR Form SOP-A.5 A, “Request for UFTR Operation,” Rev 4, dated December 1988

b. Observations and Findings

Experiments at the UFTR were categorized as Class I through Class IV based on their potential hazard and need for review and approval. Class l experiments were those that were required to be approved by the Reactor Manager. Class II experiments were experiments that were required to be reviewed and approved by the Reactor Manager and the Radiation Control Officer. Class III experiments were required to be reviewed and approved by the Reactor Manager and Radiation Control Officer after review and approval by the RSRS. Class IV experiments were those experiments that were required to be reviewed and approved by the Reactor Manager and Radiation Control Officer after review and approval by the RSRS and have specific emergency operating instructions for conducting the experiments.

Review of Requests for Operation and experiment authorizations for 2002 confirmed that experiments proposals were submitted, reviewed, and approved as required above. The experiments were then installed, performed, and removed as outlined in the approved experiment authorizations.

c. Conclusions

Based on the records reviewed, the inspectors determined that the conduct and control of experiments were acceptable and in accordance with procedural and TS Sections 3.5 and 6.4 requirements.

5. Fuel Handling

a. Inspection Scope (IP 69001)

To verify compliance with TS Sections 3.7 and 5.8, the inspectors reviewed selected aspects of:

- fuel handling equipment and instrumentation
- fuel handling and examination records
- UFTR SOP-C.1, “Irradiated Fuel Handling,” Rev 4, dated February 1985
- UFTR SOP-C.2, “Fuel Loading,” Rev 5, dated October 1999

b. Observations and Findings

Following a review of the fuel handling documentation, the inspectors determined that fuel movement, inspection, log keeping, and data recording was being completed as required by procedure and met TS Sections 3.7 and 5.8 requirements. Data recorded for fuel movement was clear and cross referenced in fuel and operations logs.

c. Conclusions

Fuel handling activities and the documentation thereof were acceptable and in accordance with procedural and TS requirements.

6. Procedures

a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of the following to ensure that the requirements of TS Section 6.3 were met:

- administrative controls for changing procedures
- records of changes and temporary changes
- RSRS meeting minutes for 2000 through 2002
- UFTR SOP-0.1, “Operating Document Controls,” Rev 2, dated July 1991
- UFTR SOP-0.5, “UFTR Quality Assurance Program,” Rev 2, dated July 1991

b. Observations and Findings

Operational procedures were available for those tasks and items required by TS Section 6.3. The procedures were adequate to perform reactor and other operations which they covered. The licensee controlled changes and temporary changes to procedures, and the associated review and approval processes, by use of administrative procedures UFTR SOPs-0.1 and -0.5. The inspectors reviewed changes and temporary changes to selected procedures. The changes and temporary changes had been controlled, and approved and reviewed by the RSRS committee as required.

The inspectors reviewed training records and interviewed the staff, and determined that the training of personnel on procedures and subsequent changes to procedures was effective. The inspectors observed personnel performing maintenance activities and a weekly survey while using applicable procedures. The inspectors determined that use of and adherence to the procedures was acceptable.

c. Conclusions

The inspectors determined that the procedural change, control, and implementation program was acceptably maintained as required by TS and the applicable procedures.

7. Maintenance and Surveillance

a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of:

- equipment maintenance records
- surveillance, calibration, and test data sheets and records
- reactor operations, periodic checks, tests, and verifications
- UFTR SOP-0.2, “Control of Maintenance,” Rev 4, dated May 1987
- UFTR SOP-0.5, “UFTR Quality Assurance Program,” Rev 2, dated July 1991
- UFTR SOP-E.2, “Alterations to Reactor Shielding and Graphite Configuration,” Rev 4, dated April 2002
- UFTR SOP-E.4, “UFTR Nuclear Instrumentation Calibration Check,” Rev 7, dated October 2001
- UFTR SOP-E.7, “Measurement of Temperature Coefficient of Reactivity,” Rev 0, dated May 1985
- UFTR SOP-E.8, “Verification of UFTR Negative Void Coefficient of Reactivity,” Rev 1, dated April 2002

b. Observations and Findings

(1) Maintenance

The inspectors reviewed the maintenance records related to 2001 and 2002 scheduled and unscheduled preventative, corrective, and modification

maintenance activities. Additionally, the inspectors performed a specific review of maintenance activities involving the replacement of the flow monitor for the primary system.

This review indicated that maintenance was controlled and documented in the maintenance and/or operations log consistent with the procedural requirements. Sign-offs by the Facility Director, Reactor Manager, SRO on duty, and the Radiation Control Officer were as required. Following maintenance, system operational checks were required to be performed to ensure the affected systems functioned before returning them to service.

(2) Surveillance

Surveillances and calibrations required by TS Sections 4.2.1, 4.2.2, and 4.2.5 were completed at the required intervals during the period January 2002 to-date for activities that did not require the reactor to be operational. All the recorded results were within the TS and procedurally prescribed parameters. The inspectors observed that several surveillances had been deferred until reactor startup as a result of the reactor's extended maintenance outage. These surveillances included measurement of control blade drop times (TS 4.2.2), control blade full withdrawal and controlled insertion time (TS 4.2.2), and UFTR Nuclear Instrumentation Calibration Check and Calorimetric Heat Balance (TS 4.2.2).

c. Conclusions

Based on the records reviewed, the inspectors determined that: 1) the licensee's maintenance program was being implemented as required and 2) the licensee's surveillance program and their associated calibrations and verifications satisfied TS requirements.

8. Design Control

a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of:

- facility design changes and records for the past two years
- facility configuration and associated records
- UFTR SOP-0.1, "Operating Document Controls," Rev 2, dated July 1991
- UFTR SOP-0.2, "Control of Maintenance," Rev 4, dated May 1987
- UFTR SOP-0.3, "Control of Documentation of UFTR Modifications," Rev 1, dated October 1999
- UFTR SOP-0.4, "10 CFR 50.59 Evaluation and Determination," Rev 2, dated July 2000
- UFTR Form SOP-0.4A, "10 CFR 50.59 Evaluation and Determination," Rev 2, dated July 2000
- UFTR SOP-0.5, "UFTR Quality Assurance Program," Rev 2, dated July 1991

b. Observations and Findings

Facility design changes were controlled by UFTR SOPs-0.3 and -0.4. The inspectors confirmed that questions posed following a review by the RSRS and replies from the reactor and HP staffs were documented and incorporated into the modification packages using the appropriate form, UFTR Form SOP-0.4A.

The inspectors also reviewed the 10 CFR 50.59 evaluations and corresponding design change packages for various changes. From these reviews, the inspectors determined that the facility design change evaluations had adequate supporting documentation and information. Additionally, the inspectors found that the 10 CFR 50.59 reviews and approvals conducted by the RSRS were focused on safety and met TS and UFTR procedure requirements. Post installation verification testing of the systems was thorough and adequately documented when completed. Procedure and drawing changes were included in the change packages and were consistent with TS and UFTR requirements for facility changes.

c. Conclusions

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

9. Operator Requalification

a. Inspection Scope (IP 69001)

To verify that the licensee was complying with the requirements of the operator requalification program, the inspectors reviewed selected aspects of:

- UFTR Operator Requalification Plan submitted May 10, 2001
- the effective dates of current operator licenses
- operator training records
- physical examination records
- operator competence evaluation and written examination records
- operator active duty status
- UFTR SOP-0.8, "Operator Licensing Requalification Examination Controls," Rev 1, dated October 1989

b. Observations and Findings

Both currently licensed Senior Reactor Operators were successfully completing the training, reactivity manipulations, and supervisory responsibilities as required by the NRC-approved requalification plan. Individual training records, the Requalification Schedule, and operator active duty status records contained the documentation required by the program. Review of records indicated that operator performance and competence evaluations had been given as required.

During review of the records documenting the medical examinations of the facility operators, it was noted that one operator had not had an examination within the two year time frame required by 10 CFR 55.21 and the UFTR Operator Requalification Plan. The operator had received a medical examination in May of 2000 but had not had another examination until October of 2002. This issue had been noted by the licensee and the examination was scheduled and completed as required. During the period when the operator's medical qualification had lapsed, the reactor was shut down for maintenance and the operator did not operate the reactor. This was determined to be a Non-Cited Violation and is not being cited because it was self-identified, non-repetitive, and corrective actions were taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied (NCV 50-083/2003-201-03).

c. Conclusions

The requirements of the Operator Requalification Plan were being met and the plan was being acceptably implemented.

10. Radiation Protection Program

a. Inspection Scope (IP 69001)

The inspectors reviewed the following to verify compliance with 10 CFR Parts 19 and 20, TS Sections 3.4.1 and 4.2.4, and procedural requirements:

- radiation and contamination survey records documented on the forms UFTR Form SOP-D.1A, "UFTR Radiation Weekly Survey," Rev 5, dated December 1993 and UFTR Form SOP-D.1B, "UFTR Swipe Survey Results," Rev 5, dated December 1993
- UFTR facility dosimetry records for 2000 through 2002
- calibration and periodic check records for radiation monitoring instruments documented on the applicable forms
- UFTR SOP-D.1, "UFTR Radiation Protection and Control," Rev 5, dated December 1993
- UFTR SOP-D.2, "Radiation Work Permit," Rev 10, dated March 1987
- UFTR SOP-D.3, "Primary Equipment Pit Entry," Rev 4, dated October 2001
- UFTR SOP-D.4, "Removing Irradiated Samples from UFTR Experimental Ports," Rev 7, dated October 2001
- University of Florida "Radiation Control Guide" last issued February 1997
- ALARA Policy as outlined the "UFTR ALARA Program," Rev 0, dated December 1993

The inspectors also toured the facility, conducted a radiation survey of selected areas, and observed the use of dosimetry and radiation monitoring equipment. Licensee personnel were interviewed and radiological signs and postings were observed as well.

b. Observations and Findings

(1) Surveys

The inspectors reviewed weekly radiation and contamination surveys conducted by reactor staff personnel of licensee controlled areas including the downstairs classroom and Neutron Activation Analysis (NAA) Laboratory, the Control Room, and the Reactor Cell from 2002 to date. The inspectors also reviewed quarterly general area radiation surveys of restricted and unrestricted areas completed by the licensee and campus Environmental Health and Safety (EH&S) personnel. The results were documented on the appropriate forms and were evaluated and reviewed as required. No readings or results were noted that exceeded set action levels but the licensee indicated that corrective action would be taken if a problem were detected. During the inspection, the inspectors conducted a radiation survey of the NAA Laboratory and the Reactor Cell and compared the readings detected with those found by the licensee. The results were comparable and no anomalies were noted.

(2) Postings and Notices

The inspectors reviewed the postings at the entrances to various controlled areas including the Control Room, the Reactor Cell, and the NAA Laboratory in the UFTR facility. The postings were acceptable and indicated the radiation and contamination hazards present. Other postings also showed the industrial hygiene hazards present in the areas. The facility's radioactive material storage areas were noted to be properly posted. No unmarked radioactive material was detected in the facility. Copies of current notices to workers required by 10 CFR Part 19 were posted on various bulletin boards throughout the facility.

(3) Dosimetry

The licensee used a National Voluntary Laboratory Accreditation Program-accredited vendor (Landauer) to process personnel dosimetry. Through direct observation, the inspectors determined that dosimetry was acceptably used by facility personnel.

An examination of the records for the past two years through November of 2002, showed that all exposures were well within NRC limits and within licensee action levels. Extremity monitoring, accomplished through the use of finger rings, also showed low doses to the hands or feet of staff members. The highest annual whole body exposure received by a single individual for the past two years was less than 60 millirem. The highest annual extremity exposure for the past two years was less than 70 millirem.

(4) Radiation Monitoring Equipment

The calibration of portable survey meters, friskers, fixed radiation detectors, and air monitoring instruments were completed by either licensee or campus EH&S personnel. The calibration records of selected meters, friskers, detectors, and air

monitoring equipment in use at the facility were reviewed. Calibration frequency met the requirements established in TS Section 4.2.4 and records were being maintained as required.

(5) Radiation Protection Program

The licensee's Radiation Protection Program was established in the University of Florida "Radiation Control Guide" dated February 1997 and the UFTR SOPs. The program required that all personnel who had unescorted access to work in a radiation area or with radioactive material receive training in radiation protection, policies, procedures, requirements, and facilities prior to entry. The program was being reviewed annually as required.

(6) ALARA Policy

The ALARA Policy was outlined and established in the "UFTR ALARA Program." The ALARA Policy and program provided guidance for keeping doses as low as reasonably achievable and was consistent with the guidance in 10 CFR Part 20.

(7) Facility Tours

The inspectors toured the Control Room, Reactor Cell, and other selected support laboratories and offices. Control of radioactive material and control of access to radiation and high radiation areas were acceptable. As noted earlier, the postings and signs for these areas were appropriate.

c. Conclusions

The inspectors determined that, because: 1) surveys were being completed and documented acceptably; 2) postings met regulatory requirements; 3) personnel dosimetry was being worn as required and doses were well within the NRC's regulatory limits; and, 4) radiation monitoring equipment was being maintained and calibrated as required, the Radiation Protection Program being implemented by the licensee satisfied regulatory and TS requirements.

11. Effluent and Environmental Monitoring

a. Inspection Scope (IP 69001)

The inspectors reviewed the following to verify compliance with the requirements of 10 CFR Part 20 and TS Sections 3.4.2 - 3.4.6 and 4.2.4:

- licensee Annual Report for reporting period July 1998 - June 1999 and the data to be used for reporting periods July 1999 - June 2000 and July 2000 - June 2001
- airborne release records documented in the Average Monthly Concentration of Ar-41 Released section of the Reactor Operations Summary Log for the period from 2000 to-date

- liquid release records also documented in the Average Monthly Concentration of Ar-41 Released and contained in the Reactor Operations Summary Log for the period from 2000 to-date
- UFTR SOP-D.1, "UFTR Radiation Protection and Control," Rev 5, dated December 1993
- UFTR SOP-D.5, "UFTR Reactor Waste Transfer," Rev 2, dated June 2002
- UFTR SOP-D.7, "Circulation, Sampling, Analysis, and Discharge of Holdup Tank Wastewater," Rev 1, dated April 2002
- UFTR Form SOP-D.1C, "Portable Air Sample Activity and LLD Calculation," Rev 5, dated December 1993
- UFTR Form SOP-D.1D, "Liquid Sample Activity and LLD Calculation," Rev 5, dated December 1993
- UFTR Form SOP-D.7A, "Liquid Sample Activity and LLD Calculation," Rev 1, dated April 2002
- UFTR Form SOP-D.7B, "UFTR Waste Water Holdup Tank Release Authorization," Rev 1, dated April 2002

b. Observation and Findings

The inspectors reviewed the calibration records of the area and stack monitoring systems. These systems had been calibrated quarterly as required by TS Section 4.2.4.

The inspectors also reviewed the records documenting liquid and airborne releases to the environment for the past two years. The inspectors determined that gaseous releases continued to be calculated as required by procedure and were adequately documented. The releases were determined to be within the annual dose constraints of 10 CFR 20.1101 (d), 10 CFR Part 20 Appendix B concentrations, and TS limits. Liquid releases were approved by the Facility Director or Reactor Supervisor and the Radiation Control Officer after analyses indicated that the releases would meet regulatory requirements for discharge into the sanitary sewer.

c. Conclusions

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

12. Emergency Preparedness

a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of:

- Emergency Preparedness Plan for the UFTR
- emergency response facilities, supplies, equipment and instrumentation
- training records for licensee staff and support personnel
- offsite support as documented in Letters of Agreement
- emergency drills and exercises for the past two years

- UFTR SOP-B.1, “Radiological Emergency,” Rev 5, dated January 1995
- UFTR SOP-B.2, “Emergency Procedure - Fire,” Rev 9, dated January 1995
- UFTR SOP-B.4, “Flood,” Rev 2, dated August 1997
- UFTR SOP-D.1, Table 2, “Emergency Support Center Equipment Inventory,” Rev 5, dated December 1993

b. Observations and Findings

The Emergency Plan (E-Plan) in use at the UFTR facility was the same as the version most recently approved by the NRC, Rev 12, dated February 11, 2002. The E-Plan was audited and reviewed biennially as required. Implementing procedures were reviewed and revised as needed to effectively implement the E-Plan. Emergency facilities, instrumentation, and equipment were being maintained and controlled, and supplies were being inventoried quarterly as required in the E-Plan.

Through records review and through interviews with licensee personnel, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. Agreements with outside response organizations, i.e., the Shands Hospital and the University Police, had been updated and maintained as necessary. Communications capabilities were acceptable with these support groups and had been tested weekly and monthly as stipulated in the E-Plan. Off-site support for the facility was verified to be in accordance with the E-Plan.

Emergency drills had been conducted as required by the E-Plan. Critiques were written following the drills to document the strengths and weaknesses identified during the exercises and to develop possible solutions to any problems noted.

Emergency preparedness and response training for reactor staff and support groups was being completed and documented.

The inspectors visited the Shands Hospital and observed the supplies and equipment at this support site that would be available in case of an emergency. There appeared to be a good working relationship between the licensee and this support organization.

c. Conclusions

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

13. Transportation

a. Inspection Scope (IP 86740)

The inspectors reviewed the following to verify compliance with procedural requirements for transferring licensed material:

- records of radioactive material shipments for 2002 and to-date

- UFTR SOP-D.6, "Control of UFTR Radioactive Material Transfers," Rev 1, dated April 2000
- UFTR Form SOP-D.4A, "Record of Sample Irradiation and Disposition," Rev 6, dated May 1995
- UFTR Form SOP-D.6A, "University of Florida Training Reactor/University of Florida Radioactive Material Transfer Record," Rev 1, dated April 2000
- UFTR Form SOP-D.6B, "University of Florida/University of Florida Training Reactor Radioactive Material Transfer Record," Rev 1, dated April 2000
- UFTR Form SOP-D.6C, "University of Florida Training Reactor/University of Florida Activated Foil Transfer Record," Rev 1, dated April 2000
- UFTR Form SOP-D.6D, "University of Florida Training Reactor/University of Florida Neutron Radiography Film Cassette Transfer Record," Rev 1, dated April 2000
- UFTR Form SOP-D.6E, "University of Florida Training Reactor/University of Florida Rabbit System Package Transfer Record," Rev 1, dated April 2000

The inspectors also interviewed licensee personnel.

b. Observations and Findings

Through records review and discussions with licensee personnel, the inspectors determined that the licensee had transferred radioactive material and solid waste produced by reactor operations to the University of Florida's State of Florida license (Agreement State License), License No. 356-1, expiration date February 28, 2005, for possession, shipment, or disposal. All transfers were recorded on the applicable forms. Transfer documentation was kept on file as required.

c. Conclusions

Transfer of radioactive material from the UFTR to the State of Florida (Agreement State) License was completed and documented in accordance with licensee procedural requirements.

14. Security

a. Inspection Scope (IPs 81402 and 81431)

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

- security systems, equipment, and instrumentation
- logs, records, and reports concerning security
- audits of security
- access and key control
- UFTR SOP-F.7, "Security Procedure Controls," Rev 3, dated April 2002
- UFTR SOP-F.8, "UFTR Safeguards Reporting Requirements," Rev 1, dated December 1997

b. Observations and Findings

The PSP was the same as the latest revision approved by the NRC with the latest revision, Rev 14, dated September 25, 1997. University police personnel provided security as required by the plan. The inspectors toured the facility and confirmed that the physical protection systems (barriers and alarms), equipment, and instrumentation were as required by the PSP. The inspectors confirmed that security checks, tests, verifications, and periodic audits were performed and tracked as required. Corrective actions were taken when problems with security or the equipment were noted. Access control was implemented as required by the PSP and licensee procedures. Periodic training was provided to both the UFTR staff and the university police. Response rosters were current and posted as required. Communication between the reactor staff and the University police was acceptable and checked periodically.

The inspectors contacted the University Police Department. This Department provided periodic patrols and initial response to events at the facility. The inspectors interviewed one supervisor and a dispatcher and determined that they were knowledgeable of the reactor facility and their responsibilities in case of a security event. The inspectors determined that a current response roster was being maintained at the police dispatch office as required.

The inspectors also visited the Campus Key Shop. The inspectors interviewed the supervisor there and determined that proper control was being maintained over access to facility keys and the key making process.

c. Conclusions

Security facilities, equipment, training, and procedures satisfied PSP requirements.

15. Material Control and Accounting

a. Inspection Scope (IP 85102)

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

- control of Special Nuclear Material (SNM) storage areas
- UFTR SOP-C.3, “Fuel Inventory Procedure,” Rev 4, dated August 1997
- annual fuel inventory results
- Nuclear Material Transaction Reports for the time period from October 2000 through October 2002
- Special Nuclear Material (SNM) accountability program

b. Observations and Findings

The records reviewed by the inspectors showed that the licensee was maintaining control of SNM storage areas as required. Records also showed that physical inventories were conducted at least annually as required by 10 CFR 70.51(d). Nuclear Material Transaction Reports (DOE/NRC Form 741) and Material Status Reports

(DOE/NRC Form 742) had been completed semiannually and submitted by the licensee to the appropriate regulatory agencies in a timely manner and as required by 10 CFR 74.13(1).

The inspectors determined that, in accordance with licensee procedure UFTR SOP-C.3, the licensee's material control and accountability program tracked locations and quantity of fuel and other SNM against the operating license possession limits. Fuel burn-up related measurements and calculations were found to be acceptable and properly documented.

c. Conclusions

The licensee's program for controlling and tracking SNM as required by 10 CFR Part 70 was being implemented acceptably.

16. Exit Meeting Summary

The inspectors reviewed the inspection results with members of licensee management at the conclusion of the inspection on January 16, 2003. The licensee acknowledged the findings presented and did not identify as proprietary any of the material provided to or reviewed by the inspectors during the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

A. Haghighat	Chairman, Nuclear and Radiological Engineering Department
C. Hartsock	Reactor Operator Trainee
B. Shea	Reactor Operator Trainee
W. Vernetson	Facility Director
A. Vierbicky	Senior Reactor Operator

Other Personnel

J. Holcomb, Lieutenant, University Police Department, University of Florida
D. Munroe, University of Florida Radiation Control Officer
G. Snyder, Assistant University of Florida Radiation Control Officer
L. Solt, Maintenance Specialist, Key Shop, Physical Plant Division, University of Florida
G. Weisbaum, RN, Nurse Manager, Shands Hospital, University of Florida

INSPECTION PROCEDURE (IP) USED

IP 69001	Class II Research and Test Reactors
IP 81401	Plans, Procedures, and Reviews
IP 81431	Fixed Site Physical Protection of Special Nuclear Material of Low Strategic Significance
IP 85102	Material Control and Accounting
IP 86740	Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-083/2003-201-01	IFI	Follow-up to verify that the licensee issued the 1999-2000 Annual Report by January 24, 2003 and the 2000-2001 Annual Report by February 10, 2003.
50-083/2003-201-02	NCV	Failure to have an operating fission chamber installed in the reactor when the reactor was placed in an operating condition.
50-083/2003-201-03	NCV	Failure to complete a biennial medical examination for one operator as required by 10 CFR 55.21 and the UFTR Operator Requalification Plan.

Closed

50-083/2003-201-02	NCV	Failure to have an operating fission chamber installed in the reactor when the reactor was placed in an operating condition.

50-083/2003-201-03	NCV	Failure to complete a biennial medical examination for one operator as required by 10 CFR 55.21 and the UFTR Operator Requalification Plan.

PARTIAL LIST OF ACRONYMS USED

ANSI	American National Standards Institute
ALARA	As Low As Reasonably Achievable
E-Plan	Emergency Plan
EH&S	Environmental Health and Safety Department
LCO	Limiting Conditions for Operation
LLD	Lower Limit of Detection
NAA	Neutron Activation Analysis
NRC	Nuclear Regulatory Commission
RSRS	Reactor Safety Review Subcommittee
PSP	Physical Security Program
SNM	Special Nuclear Material
SOP	Standard Operating Procedure
SRO	Senior Reactor Operator
TS	Technical Specifications
UFTR	University of Florida Test Reactor