

April 14, 2014

Dr. Kelly Jordan
Director of University of Florida Training Reactor
Nuclear and Radiological Engineering Department
P. O. Box 11830
University of Florida
Gainesville, FL 32611

SUBJECT: UNIVERSITY OF FLORIDA - NRC ROUTINE INSPECTION REPORT NO.
50-083/2014-201

Dear Dr. Jordan:

This refers to the inspection conducted on March 18 - 20, 2014 at the University of Florida facility (Inspection Report No. 05000083/2014-201 enclosed). The enclosed report presents the results of this inspection.

During this inspection, the U.S. Nuclear Regulatory Commission (NRC) staff examined activities conducted under your license as they relate to public health and safety to confirm compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response, if you choose to provide one for cases where a response is not required, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

K. Jordan

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Should you have any questions concerning this inspection, please contact Craig Bassett at (301) 466-4495 or electronic mail at Craig.Bassett@nrc.gov.

Sincerely,

/RA by Plsaac for/

Gregory T. Bowman, Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosure:
NRC Inspection Report No. 50-083/2014-201

cc w/encl: See next page

University of Florida

Docket No. 50-083

Administrator
Department of Environmental Regulation
Power Plant of Siting Section
State of Florida
2600 Blair Stone Road
Tallahassee, FL 32301

State Planning and Development Clearinghouse
Office of Planning and Budgeting
Executive Office of the Governor
The Capitol Building
Tallahassee, FL 32301

Chief, Bureau of Radiation Control
Department of Health
4052 Bald Cypress Way
Tallahassee, FL 32399-1741

Test, Research and Training
Reactor Newsletter
Director of Nuclear Facilities
University of Florida
202 Nuclear Science Building
Gainesville, FL 32611-8300

Brian Shea, Reactor Manager
Nuclear & Radiological Engineering Dept
202 Nuclear Sciences Center
P.O. Box 118300
University of Florida
Gainesville, FL 32611-8300

Dean Cammy Abernathy
University of Florida College of Engineering
PO Box 116550
Gainesville, FL 32611

K. Jordan

- 2 -

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NRC-002

OFFICE	PROB:RI*	PROB:RI	PROB:BC
NAME	CBassett	TLamb	GBowman (Plsaac for)
DATE	3/25/2014	3/26/2014	4/14/2014

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

Docket No: 50-083

Report No: 50-083/2014-201

Licensee: University of Florida

Facility: University of Florida Training Reactor

Location: Gainesville, Florida

Dates: March 18 – 20, 2014

Inspector: Craig Bassett

Approved by: Gregory T. Bowman, Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

University of Florida
University of Florida Training Reactor
Inspection Report No. 50-083/2014-201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the University of Florida's (the licensee's) Class II research reactor safety program including: organization and staffing, surveillance and limiting conditions for operation, health physics, committee review and audit functions, maintenance logs and records, and transportation since the last U.S. Nuclear Regulatory Commission (NRC) inspection of these areas. The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements.

Organization and Staffing

- Organizational structure and responsibilities were consistent with Technical Specification (TS) requirements.

Surveillance and Limiting Conditions for Operation

- Limiting conditions for operation and surveillances required by Technical Specifications were being properly implemented.

Health Physics

- Surveys were being completed and documented acceptably to permit evaluation of the radiation hazards present.
- Postings met the regulatory requirements specified in Title 10 of the *Code of Federal Regulations*, Parts 19 and 20.
- Dosimeters were being worn by staff members as required and doses were within the NRC's regulatory limits.
- Radiation monitoring equipment was being maintained and calibrated as required.
- Radiation protection training for facility staff was being completed as required.
- The radiation protection program being implemented by the licensee satisfied regulatory requirements.
- Effluent monitoring satisfied procedural and regulatory requirements and releases were within the specified regulatory and Technical Specification limits.

Committees, Audits and Reviews

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

Maintenance Logs and Records

- Maintenance was performed and logs and records were maintained consistent with Technical Specification and licensee procedure requirements.

Transportation Activities

- 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.
- The licensee maintained a program for shipping radioactive material in accordance with the regulations.

REPORT DETAILS

Summary of Plant Status

The University of Florida's (the licensee's) 100 kilowatt modified Argonaut training reactor continued to be shutdown due to piping repair, refueling, and design of a new digital console.

1. Organizational Structure and Staffing

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

The inspector reviewed the following to verify compliance with the requirements in Technical Specification (TS) 6.2:

- Current staff qualifications
- Management responsibilities as outlined in the TS
- University of Florida Training Reactor (UFTR) organizational structure and staffing
- Select UFTR Operating Log Records for 2012, 2013, and to present 2014

b. Observations and Findings

The organizational structure has not functionally changed since the last routine inspection (refer to the U. S. Nuclear Regulatory Commission (NRC) Inspection Report No. 50-083/2013-201). It was noted that Dr. Kelly Jordan had been appointed to a Level 1 position as Interim Chair of the Nuclear & Radiological Engineering Department at the University of Florida. Dr. Jordan also remained as the Director of Nuclear Facilities while Brian Shea remained as Reactor Manager of the UFTR. The operations staff is comprised of two Senior Reactor Operators (SROs) and four individuals in training.

c. Conclusion

The facility organizational structure and functions were consistent with TS Section 6.2.

2. Surveillance and Limiting Conditions for Operation

a. Inspection Scope (IP 69001)

To verify compliance with various requirements of TS Sections 3 and 4, the inspector reviewed selected aspects of:

- Surveillance, calibration, and test data sheets and records
- Reactor operations, periodic checks, tests, and verification logs and forms
- Selected UFTR Operating Log Records for 2012, 2013, and to present 2014

- UFTR Standard Operating Procedure (SOP)-0.5, "UFTR Quality Assurance Program," Revision (Rev.) 3, dated February 2003, and the latest Temporary Change Notice (TCN) dated October 2011

b. Observations and Findings

Those daily, weekly, monthly and other periodic checks, tests, and verifications for TS required limiting conditions for operation (LCOs) that could be performed with the reactor in a shutdown status were being completed as required. The inspector performed a random sampling of the completed surveillances and verified that all of 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.

c. Conclusion

The program for surveillance and LCO confirmation was implemented in accordance with TS Sections 3.0 and 4.0 requirements.

3. Health Physics

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Parts 19 and 20 and TS Sections 3.4 and 4.2.4:

- UFTR facility quarterly dosimetry records for 2012 to the present
- Radiation and contamination survey records for 2012 to the present
- Calibration and periodic check records for selected radiation monitoring instruments documented on the applicable forms for 2012, 2013, and to date in 2014
- As Low As Reasonably Achievable (ALARA) Policy as outlined the "University of Florida Training Reactor Facility As Low As Reasonably Achievable (ALARA) Program," Rev. 1, dated August 2002
- Selected UFTR SOPs related to Radiation Protection including D.1, D.2, and D.3, and associated Appendices and Forms
- Selected UFTR Quarterly Surveillances including Quarterly #2, Quarterly #4, Quarterly #5, and Quarterly #9

The inspector also toured the facility, observed the various radiological signs and other postings, and conducted a radiation survey of various areas as well.

b. Observations and Findings

(1) Surveys

The inspector reviewed weekly radiation and contamination surveys conducted by reactor staff personnel. These were surveys of facility controlled areas including the Radiochemistry Laboratory (Lab) and classroom, the Neutron Activation Analysis Laboratory (NAA Lab), the Control Room, and the Reactor Cell from 2012 through the date of the inspection. The inspector also reviewed quarterly general area radiation surveys of restricted and unrestricted areas completed by the licensee. 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 and the licensee indicated that corrective action would be taken if results were detected that were above these levels.

During the inspection the inspector conducted a radiation survey at the facility. Areas surveyed included the Reactor Cell (reactor bay), the Radiochemistry Lab, and the NAA Lab. The radiation levels noted by the inspector were comparable to those noted on licensee survey maps and no anomalies were noted.

(2) Postings and Notices

The inspector reviewed the postings at the entrances to various controlled areas including the Control Room, the Reactor Cell, and the NAA Lab 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 radioactive material storage areas were noted to be properly posted. No unmarked radioactive material was detected in the facility. Copies of notices to workers were posted in various locations throughout the facility, including on a bulletin board in the Control Room. The inspector noted that the copies of NRC Form-3, "Notice to Employees," posted at the facility, as required by 10 CFR Section 19.11, were the current version.

(3) Dosimetry

The licensee provided reactor staff personnel with dosimetry from a National Voluntary Laboratory Accreditation Program-accredited vendor (Landauer). The inspector noted that the licensee used Optically Stimulated Luminescent (OSL) dosimeters for staff whole body monitoring of beta and gamma radiation exposure with an additional component to measure fast/thermal neutron radiation. When needed, the licensee also used thermoluminescent dosimeter (TLD) finger rings for extremity monitoring. The dosimetry was periodically sent to the vendor for

processing. Pocket Ion Chambers were routinely provided to visitors for use during tours of the facility.

Through direct observation, the inspector determined that dosimetry was acceptably used by facility personnel. An examination of the OSL dosimeter and TLD results for the past two years showed that the occupational doses received by facility personnel were within 10 CFR Part 20 limitations.

(4) Radiation Monitoring Equipment

The calibration records of selected portable survey meters, friskers, fixed radiation detectors, and air monitoring instruments in use at the facility were reviewed. The records showed that the portable instrument calibrations were completed by UF campus Environmental Health and Safety Division personnel and fixed radiation detectors and air monitors were typically calibrated by reactor staff personnel.

The inspector confirmed that the frequencies of the calibrations completed quarterly or semiannually satisfied the requirements established in the TS Section 4.2.4 and 10 CFR 20.1501(b).

(5) Radiation Protection Training

The inspector reviewed the radiation worker (or rad worker) training given to UFTR staff members. Since the staff currently consists of reactor operators or trainees, the training was typically completed as part of qualification/ requalification program as outlined in UFTR SOP-0.8, "Control and Documentation of Operating Licensing Requalification Training and Examinations." It included initial rad worker training for those new to the facility and refresher training for qualified operators. The appropriate training was required to be completed before a person was allowed unescorted access to various restricted areas of the facility. Refresher training was being provided every two years.

The most recent rad worker refresher training for facility personnel had been completed on February 27 & 28, 2014. The inspector reviewed the training and the completed training forms and verified that the staff had completed the training as required. The training program appeared to be acceptable.

(6) Radiation Protection Program

The licensee's Radiation Protection Program was established through the UF "Radiation Control Guide", last revised in 1999, and the UFTR SOPs. The program required that all personnel, who had unescorted access to radiation areas or to work with radioactive material, receive training in radiation protection, policies, procedures, requirements, and facilities.

The ALARA Policy was outlined and established in Appendix 1 to the UF "Radiation Control Guide," as well as in the "University of Florida Training Reactor Facility As Low As Reasonably Achievable (ALARA) Program," Rev. 1, dated August 2002. The ALARA Policy provided guidance for keeping doses as low as reasonably achievable and was consistent with the guidance in 10 CFR Part 20.

The inspector verified that the licensee's radiation protection program, as well as the ALARA Program, were being reviewed annually as required by 10 CFR 20.1101(c).

(7) Effluent and Environmental Monitoring

Liquid releases were approved by the Facility Director or Reactor Supervisor and the Radiation Control Officer after analyses indicated that the releases met regulatory requirements for discharge into the sanitary sewer. It was noted that there were 1,860.8 gallons of liquid waste water released in 2012 with no detectable activity present. No releases had occurred in 2013.

The inspector also reviewed the cumulative environmental monitoring OSL dosimeter results for 2012 and 2013. The effective dose equivalent to the public was well within the regulatory limits. In addition, the inspector 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.

c. Conclusion

The inspector determined that the Radiation Protection Program being implemented by the licensee satisfied regulatory and TS requirements 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 within the NRC's regulatory limits; 4) radiation monitoring equipment was being maintained and calibrated as required; 5) the radiation protection training program was acceptable; and, 6) the effluent monitoring satisfied procedural and regulatory requirements.

4. Committees, Audits, and Reviews

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the audits and reviews stipulated in the requirements of TS Section 6.2.5 were being completed:

- Membership of the UFTR Reactor Safety Review Subcommittee
- UFTR Reactor Safety Review Subcommittee meeting minutes for the past two years

b. Observations and Findings

The inspector reviewed the RSRS meeting minutes for the past two years. The inspector verified that the RSRS met at least quarterly as required by Section 6.2.5 of the facility TS. Review of the minutes also indicated that the RSRS provided appropriate guidance and direction for reactor operations, and ensured acceptable use and oversight of the reactor.

Since the last inspection, all required audits of reactor facility activities and reviews of programs, procedures, equipment, and proposed tests or experiments had been completed and documented as required. The audits were completed by designated individuals and reviewed by the RSRS.

c. Conclusion

RSRS review and audit functions required by the TS were being completed and documented.

5. Maintenance Logs and Records

a. Inspection Scope (IP 69001)

To verify that the licensee's operational and maintenance activities have been conducted consistent with regulatory requirements, the inspector reviewed selected aspects of:

- UFTR Maintenance Log Register
- UFTR Work Assignment and Maintenance Log pages for 2012, 2013, and to date in 2014
- UFTR Annual Report for September 1, 2011, through August 31, 2012, dated February 28, 2013
- UFTR Annual Report for September 1, 2012, through August 31, 2013, dated March 14, 2014
- Select UFTR Operating Log Records for 2012, 2013, and to present 2014
- UFTR SOP-0.2, "Control of Maintenance," Rev. 5, dated September 2003, and TCN dated September 2007

b. Observations and Findings

The inspector reviewed the maintenance records related to 2012 and 2013 scheduled and unscheduled preventive and corrective maintenance activities. Routine and preventive maintenance issues were well controlled and documented in a tracking system. A review of various log pages indicated that generally maintenance activities were conducted consistent with applicable requirements and that any modifications had been properly evaluated in accordance with 10 CFR 50.59. It was noted that, during the period when the reactor has been shutdown, certain items of equipment were not repaired when

problems developed. These were noted by the licensee and will remain inoperable until the facility schedule allows for repair or replacement.

When maintenance items were completed, system operational checks were performed to ensure the affected systems were operable before returning them to service.

c. Conclusion

Maintenance activities ensured that equipment remained consistent with the Safety Analysis Report and TS requirements.

6. Transportation

a. Inspection Scope (IP 86740)

The inspector reviewed the following to verify compliance with TS Section 3.4.6 and procedural requirements for transferring licensed material:

- Records of radioactive material transfers from the reactor license to the State of Florida materials license for 2012 and to date
- Selected UFTR SOP related to handling and transporting radioactive material including D.4, D.5, and D.6, as well as the associated forms for these SOPs

b. Observations and Findings

Through records review and discussions with licensee personnel, the inspector determined that the licensee continued to transfer radioactive material produced by reactor operations to the university's "State of Florida Radioactive Materials License" (Agreement State License), License No. 356-1, expiration date March 31, 2015, for possession, shipment, or disposal. It was noted that no transfers had been completed recently.

The inspector verified that no shipments of radioactive material have been made from the UFTR under the auspices of the reactor license since the shipment of radioactive waste that was completed on January 5, 2012. However, the licensee maintained a program for shipping radioactive material in accordance with Department of Transportation and NRC regulations.

c. Conclusion

Transfer of radioactive material from the UFTR to the State of Florida (Agreement State) License was completed and documented in accordance with facility procedural requirements. The licensee maintained a program for shipping radioactive material in accordance with the regulations.

7. Exit Meeting Summary

The inspector reviewed the inspection results with members of licensee management at the conclusion of the inspection on March 20, 2014. The licensee acknowledged the items presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee personnel

M. Berglund	Operations and Maintenance Supervisor
D. Cronin	Licensing Engineer
K. Jordan	Facility Director
B. Shea	Reactor Manager

Other personnel

S. Stanford	Radiation Control Officer, Environmental Health and Safety Department, UF
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INSPECTION PROCEDURES USED

IP 69001	Class II Research and Test Reactors
IP 86740	Transportation of Nuclear Materials

ITEMS OPENED, CLOSED, AND DISCUSSED

Open

None

Closed

None

LIST OF ACRONYMS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ADAMS	NRC's Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
IP	Inspection Procedure
LCO	Limiting Condition for Operations
NAA	Neutron Activation Analysis
NRC	U. S. Nuclear Regulatory Commission
OSL	Optically Stimulated Luminescent
Rev.	Revision/Revised
RSRS	Reactor Safety Review Subcommittee
SOP	Standard Operating Procedure
SRO	Senior Reactor Operator
TCN	Temporary Change Notice
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications
UF	University of Florida
UFTR	University of Florida Training Reactor