



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 30, 2018

Dr. Andreas Enqvist, Director
University of Florida Training Reactor
P.O. Box 116400
Gainesville, FL 32611-8300

SUBJECT: UNIVERSITY OF FLORIDA – U.S. NUCLEAR REGULATORY COMMISSION
ROUTINE INSPECTION REPORT NO. 50-083/2018-201

Dear Dr. Enqvist:

From March 13-15, 2018, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at your University of Florida Training Reactor. The enclosed report presents the results of that inspection, which were discussed on March 15, 2018, with members of your staff.

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

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

A. Enqvist

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Should you have any questions concerning this inspection, please contact Mr. Johnny H. Eads at (301) 415-0136 or by electronic mail at Johnny.Eads@nrc.gov.

Sincerely,

/RA/

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

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

Enclosure:
As stated

cc: w/enclosure: See next page

University of Florida

Docket No. 50-083

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 ROUTINE INSPECTION REPORT NO. 50-083/2018-201
 DATE: AUGUST 30, 2018

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

Docket No.: 50-083

License No.: R-56

Report No.: 50-083/2018-201

Licensee: University of Florida

Facility: University of Florida Training Reactor

Location: Gainesville, Florida

Dates: March 13-15, 2018

Inspector: Johnny Eads

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

Enclosure

EXECUTIVE SUMMARY

University of Florida
University of Florida Training Reactor
NRC Inspection Report No. 50-083/2018-201

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 training reactor (UFTR) safety programs including: (1) organization and staffing; (2) operating logs and records; (3) procedures; (4) requalification training; (5) surveillance and limiting conditions for operation (LCO); (6) experiments; (7) health physics; (8) design changes; (9) committees, audits and review; (10) emergency planning; (11) maintenance logs and records; (12) fuel handling logs and records; and (13) transportation of radioactive materials procedures. The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with the U.S. Nuclear Regulatory Commission (NRC) requirements.

Organization and Staffing

- Organizational structure and staffing were consistent with technical specification (TS) requirements.

Operations Logs and Records

- Operations Logs and records were maintained in accordance with procedures and TSs.

Procedures

- The program for changing, controlling, and implementing facility procedures was acceptably maintained as required by the TSs and the applicable procedures.

Requalification Training

- Operator requalification was conducted as required by the Operator Requalification Plan

Surveillance and Limiting Conditions for Operation

- The inspector found that the surveillance program and supporting procedures met TS requirements.
- Operations met the TS LCO and surveillance requirements.

Experiments

- Experiments were reviewed and approved as required by TS.

Health Physics

- Surveys were being completed and documented as required.
- Postings met regulatory requirements.

- Personnel dosimetry was being worn and recorded doses were within the NRC's regulatory limits.
- Radiation monitoring equipment was being maintained and calibrated as required.
- The radiation protection program (RPP) satisfied regulatory requirements.
- The radiation protection training program was being administered as required.
- Environmental monitoring satisfied license and regulatory requirements.

Design Changes

- The review, evaluation, and documentation of changes to the facility satisfied NRC requirements.

Committee Audits and Reviews

- The review and audit program was being conducted acceptably by the Reactor Safety Review Subcommittee (RSRS) as stipulated in TS.

Emergency Planning

- The emergency preparedness program was conducted in accordance with the emergency plan (EP).

Maintenance Logs and Records

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

Fuel Handling Logs and Records

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

Transportation of Radioactive Materials

- The program for shipping radioactive material satisfied regulatory requirements.

REPORT DETAILS

Summary of Facility Status

The UFTR Class II 100 kilowatts Argonaut research reactor has been operated in support of experiments, reactor operator training, and periodic equipment surveillances. During the inspection, the reactor was shutdown for maintenance.

1. Organization and Staffing

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

The inspector reviewed the following to verify compliance with the organization and staffing requirements in TS 6.1:

- UFTR organizational structure and staffing
- TSs for UFTR, dated March 31, 2017
- Selected UFTR Operating Log Records from January 1, 2017, to present
- UFTR 2016-2017 Annual Report for September 1, 2016, through August 31, 2017
- RSRS meeting minutes for 2017

b. Observations and Findings

Since the last inspection, the organizational structure and the responsibilities of the reactor management and staff had not changed. Review of records verified that management responsibilities were administered as required by TS and applicable procedures. The inspector discussed reactor operations and staffing with reactor management and noted the shift staffing of the licensee satisfied the requirements for TS.

c. Conclusion

- The organization structure and staffing were consistent with TS requirements.

2. Operations Logs and Records

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that reactor operations were conducted in accordance with procedures as required by TS 6.4 and that records were maintained as required by TS 6.8:

- University Training Reactor of Florida (UFTR) 2016-2017 Annual Report for September 1, 2016, through August 31, 2017
- Selected UFTR Operating Log Records from January 1, 2017, to present
- UFTR Operating Procedure A.2, "Reactor Start-Up"
- UFTR Operating Procedure A.3, "Operation at Power"

b. Observations and Findings

The inspector reviewed selected daily operations log records from January 1, 2017, to present. Reactor operations were carried out in accordance with written procedures as required by TS 6.4. Information on the operational status and maintenance of the facility was recorded in the log book.

c. Conclusion

Reactor operations were conducted in accordance with TS and procedural requirements. Logs and associated records were being maintained as required.

3. Procedures

a. Inspection Scope (IP 69001)

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

- Records of changes and temporary changes to procedures
- RSRS meeting minutes for 2017
- UFTR Operating Procedure 0.1, "Operating Document Controls," Revision 6, approval dated October 28, 2014

b. Observations and Findings

Procedures were available for the activities and items required by TS 6.4. Facility procedures were being revised as needed. The inspector verified that when modifications were made to the facility, these changes were properly captured in the daily and weekly preoperational checkouts. The changes were also controlled and approved the RSRS as required.

c. Conclusion

The inspector determined that the procedural changes, control, and implementation program were acceptably maintained as required by TS.

4. Requalification Training

a. Inspection Scope (IP 69001)

To verify that the licensee was complying with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 55, "Operators' Licenses," to implement and maintain an operator requalification program, the inspector reviewed the following:

- Operator training records from 2017 to present
- Operator written examination records from 2017 to present
- UFTR Form 0.8A, "Requalification Training Program Attendance Record"
- UFTR Biennial "Evaluation and Recertification of Licensed Operators"

- UFTR Biennial Comprehensive Examination
- Selected UFTR Operating Log Records from 2017 to present

b. Observations and Findings

The inspector reviewed the training records for the required lectures of the requalification plan. The inspector noted that the licensee had completed all the training, comprehensive written requalification exams, and operating tests as required by the NRC approved UFTR Requalification Program.

c. Conclusion

Operator requalification was being completed and being maintained up-to-date as required by the licensee's operator requalification program.

5. Surveillance and Limiting Conditions of Operation

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with TS Section 3.0:

- Maintenance and surveillance reports for the months of January 2017 to present
- TSs for UFTR dated March 31, 2017
- Selected UFTR Operating Log Records from January 1, 2017, to present

b. Observations and Findings

Through the review of operating logs and records, the inspector verified that operations were conducted in accordance with TS LCO. The inspector verified that surveillances had been completed on schedule, in accordance with licensee procedures, and in compliance with the TS.

c. Conclusion

The inspector found that the surveillance program and supporting procedures met TS requirements. Operations met the TS LCO and surveillance requirements

6. Experiments

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to assure compliance with TS 3.8 and TS 6.5:

- Experiment logs and records for the since 2016
- UFTR Annual Report for period 2016-2017
- UFTR Operating Procedure A.5, "Experiments," Revision 5, approval dated October 13, 2006.

- UFTR Form Standard Operating Procedure (SOP)-A.5A, “Request for UFTR Operation (Run Request Form)”

b. Observations and Findings

The inspector noted that two new experiments were reviewed by the RSRS, as required by the TS. The experiments were screened using the 10 CFR 50.59, “Changes, tests and experiments,” process and presented to the RSRS during the 2017 meetings. However, no new experiments have been performed.

c. Conclusion

No new experiments have been performed since the last inspection. The program for reviewing and conducting experiments satisfied TS and procedural requirements.

7. Health Physics

a. Inspection Scope (Inspection Procedures (IP) 69001)

The inspector reviewed the following to verify compliance with 10 CFR Part 19, “Notices, Instructions and Reports to Workers: Inspection and Investigations,” 10 CFR Part 20, “Standards for Protection against Radiation,” and the applicable TS requirements:

- Radiological signs and posting in various areas of the facility
- Area and personnel dosimetry results for 2017 and 2018 to date
- Facility and equipment during tours
- Radiation protection training records
- Maintenance and calibration of radiation monitoring equipment, including the water radioactivity monitor, area radiation monitor, and the continuous air monitor

b. Observations and Findings

The university’s as low as reasonably achievable (ALARA) program provides guidance for keeping doses ALARA and is consistent with the guidance in 10 CFR Part 20. The program also requires reviews of the radiation safety procedures, the occupational radiation exposure, and the radiation level surveys. These were being completed by the Radiation Safety Officer, as required.

The inspector reviewed the weekly area and storage contamination surveys completed in the restricted and unrestricted areas by the facility personnel. Additional surveys were completed as part of the restarting of the reactor after extended shutdown and to adjust shielding. 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.

The inspector reviewed the postings at the entrances to various controlled areas. The postings were acceptable and indicated the radiation and contamination

hazards present. The inspector noted that the copies of NRC Form-3, "Notice to Employees," were posted at the facility, as required by 10 CFR 19.11, "Posting of notices to workers," and were the current version.

The licensee provided facility personnel with dosimetry from a National Voluntary Laboratory Accreditation Program-accredited vendor (Landauer). The monthly dosimetry records show doses were well below regulatory limits.

Pocket Ion Chambers were distributed to visitors for use during tours of the facility.

The inspector reviewed calibration records of selected portable survey meters, friskers, fixed radiation detectors, and air monitoring instruments in use at the facility. The records showed they were calibrated within the required frequency.

One liquid releases were performed in 2017. The release was approved as required after analyses indicated that the releases met regulatory requirements for discharge into the sanitary sewer. Argon-41 releases were also well below effluent concentration limits.

c. Conclusion

The inspector determined that: (1) surveys were being completed and documented as required, (2) postings met regulatory requirements, (3) personnel dosimetry was being worn and recorded doses were within the NRC's regulatory limits, (4) radiation monitoring equipment was being maintained and calibrated as required, (5) the RPP satisfied regulatory requirements, (6) the radiation protection training program was being administered as required, and (7) environmental monitoring satisfied license and regulatory requirements.

8. Design Changes

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to assure that changes, tests, and experiments were being reviewed as required by 10 CFR 50.59:

- RSRS meeting minutes for 2017 to present
- UFTR Annual Report for period 2016-2017
- UFTR Operating Procedure 0.4, "10 CFR 50.59 Screening and Evaluation," Revision 3, approval dated October 21, 2011
 - UFTR Form SOP-0.4A, "10 CFR 50.59 Applicability"
 - UFTR Form SOP-0.4B, "10 CFR 50.59 Screening"
 - UFTR Form SOP-0.4C, "10 CFR 50.59 Evaluation"
 - 50.59 forms from 2017 to present

b. Observations and Findings

The inspector reviewed the 10 CFR 50.59 evaluations and corresponding design change packages that were reviewed and approved by the RSRS and

determined that they were focused on safety and met TS and UFTR procedure requirements.

c. Conclusion

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

9. Committees, Audits and Review

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the audits and reviews stipulated in TS Section 6.2 were being completed:

- Membership of the UFTR RSRS
- UFTR RSRS meeting minutes for the past 2 years
- UFTR Annual Report for period 2016-2017

b. Observations and Findings

The inspector reviewed the RSRS meeting minutes for the past 2 years. The inspector verified that the RSRS met at least annually as required by Section 6.2.2 of the facility TS.

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's review and audit program was being conducted acceptably as required by the TS.

10. Emergency Planning

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with the "Emergency Plan University of Florida Training Reactor," dated August 31, 2014:

- Emergency Plan Audit for 2017
- Memorandum of Understanding (MOU) with Alachua County Emergency Management
- MOU with Emergency Medical Services (EMSs)
- Emergency Supplies and Equipment Cabinet
- Emergency Procedures

- Emergency drills for 2017
- Training records for licensee staff and support personnel

b. Observations and Findings

The inspector reviewed the EP in use at the reactor and verified that it was reviewed biennially as required. The inspector also reviewed the UFTR emergency procedures and surveillances.

The inspector reviewed the MOU between the UFTR and Alachua County Emergency Management. They assist with fire, EMS, ambulance, and law enforcement. The inspector also reviewed the MOU with the EMSs, which encompasses University of Florida College of Medicine and Shands Teaching Hospital. Both MOUs stipulated that they would be available during an emergency and provide support for the facility.

Emergency call lists had been revised and updated as needed and were available in the control room and in the emergency cabinet. The inspector also verified that emergency equipment, including decontamination material, was available and was being inventoried.

The EP was distributed to all responding support organizations and the call list was updated semiannually.

Through records review and interviews with licensee personnel and support organizations, the inspectors determined that they generally were knowledgeable of the proper actions to take in case of an emergency. Training for staff, hospital personnel was generally being conducted, with an annual comprehensive drill involving support organization personnel. These activities had been documented and reviewed acceptably.

c. Conclusion

The emergency preparedness program was being conducted in accordance with the EP.

11. 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
- UFTR Annual Report for period 2016-2017
- Selected UFTR Operating Log Records from January 2017, to present
- UFTR SOP-0.2, "Control of Maintenance," Revision 5, dated September 2003

b. Observations and Findings

The inspector reviewed the maintenance records for scheduled and unscheduled preventive and corrective maintenance activities since last inspection. The maintenance records indicated that routine and preventive maintenance were well controlled and documented. When maintenance items were completed, system operational checks were performed to ensure that affected systems were operable before returning them to service.

c. Conclusion

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

12. Fuel Handling Logs and Records

a. Inspection Scope (IP 69001)

To ensure that the licensee was following the requirements specified in TS 3.9.2 and TS 5.3, the inspector reviewed selected aspects of the following:

- Fuel handling and training records
- UFTR Operating Procedure C.1 to C.7

b. Observations and Findings

The inspector determined that the licensee was maintaining the required records of the various fuel movements that had been completed and verified that the movements were conducted and recorded in compliance with procedure. The inspector determined that the procedures and the controls specified for these operations were acceptable.

c. Conclusion

Fuel handling was completed and documented as required by TS and facility procedures.

13. Transportation of Radioactive Materials

a. Inspection Scope (IP 86740)

To verify compliance with regulatory and procedural requirements for transferring or shipping licensed radioactive material, the inspector reviewed the following:

- "Policy for Transfer of Radioactive Materials Between the UFTR R-56 License and the University of Florida 356-1 State License," June 17, 2002

b. Observations and Findings

Through records review and discussions with licensee personnel, the inspector determined that no shipments of radioactive material had occurred since the last

inspection. Any activated samples or swipes, water and air samples are transferred from the reactor license to the state license following the requirements described in the transfer policy.

c. Conclusion

No radioactive material shipments had been made under the auspices of the reactor license during the past year.

14. Exit Interview

The inspection scope and results were summarized on March 17, 2018, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. The licensee acknowledged the findings presented and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection

PARTIAL LIST OF PERSONS CONTACTED

Licensee

B. Shea Reactor Manager

INSPECTION PROCEDURES USED

IP 69001 Class II Non-Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened:

None

Closed:

None

Discussed:

None

LIST OF ACRONYMS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ALARA	As Low As Reasonably Achievable
EP	Emergency Plan
EMS	Emergency medical services
IP	Inspection Procedure
LCO	Limiting Conditions for Operation
MOU	Memorandum of Understanding
NRC	U.S. Nuclear Regulatory Commission
RPP	Radiation Protection Program
RSRS	Reactor Safety Review Subcommittee
SOP	Standard Operating Procedure
TS	Technical Specification
UFTR	University of Florida Training Reactor