

February 27, 2002

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

SUBJECT: NRC INSPECTION REPORT NO. 50-83/2001-201

Dear Dr. Vernetson:

This letter refers to the inspection conducted on November 19-21, 2001, at the 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 Mr. Stephen Holmes at 301-415-8583.

Sincerely,

*/RA/*

Patrick M. Madden, Section Chief  
Non-Power Reactors Section  
Operating Reactor Improvements Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No. 50-83  
License No. R-130

Enclosure: NRC Inspection Report No. 50-83/2001-201  
cc w/enclosure: Please see next page

University of Florida

Docket No. 50-83

cc:

Mr. James S. Tulenko, Chairman  
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Gainesville, FL 32611

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

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

Docket No: 50-83

Report No: 50-83/2001-201

Licensee: University of Florida

Facility: University of Florida Test Reactor

Location: University of Florida, Gainesville, FL

Dates: November 19-21, 2001

Inspector: Stephen W. Holmes, Reactor Inspector

Approved by: Patrick M. Madden, Section Chief  
Non-Power Reactors Section  
Operating Reactor Improvements Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

University of Florida  
Report No: 50-83/2001-201

The primary focus of this routine, announced inspection was the on-site review of selected activities at the University of Florida Test Reactor Facility. This facility is a 100 Kilowatt Class II research reactor. The activities audited during this inspection included: organization and staffing; review and audit functions; plant operations; procedures; maintenance and surveillance; the safeguards and security program; the material control and accounting program; and training.

### Organizational and Staffing

- The operations organizational structure and functions were consistent with Technical Specification Section 6.0, Administrative Controls.

### Review and Audit Functions

- The Reactor Safety Review Subcommittee performed its duties as required by the operating license, Technical Specifications (TS), and administrative criteria. The review and audit program satisfied TS requirements.

### Plant Operations

- Reactor operations, shift turnover, and logs were acceptable.
- The control and performance of experiments were being performed in accordance with procedural requirements.
- Fuel handling activities and documentation were in accordance with procedural and Technical Specification requirements.

### Procedures

- The procedural control and implementation program satisfied Technical Specification requirements

### Maintenance and Surveillance

- The licensee's program for surveillance and limiting conditions for operation satisfied Technical Specification requirements.
- The maintenance program was being implemented as required by the licensee's procedures.
- The licensee's design change procedures were in place and were implemented as required.

### Security

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

### Material Control and Accountability

- The licensee was in compliance with the possession and use limits of the research reactor license, acceptably tracked burn-up and production of special nuclear material, and had effective control of licensed materials as required.

### Training

- The requalification program was being implemented in a satisfactory manner and its associated plan requirements were being met.

## REPORT DETAILS

### Summary of Plant Status

During the inspection the reactor was operated several days a week to support education, operator training, surveillance, service work, and experiments.

#### 1. Changes, Organization, and Staffing

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

The inspector reviewed selected aspects of:

- organization and staffing
- qualifications
- management responsibilities
- administrative controls

##### b. Observations and Findings

The operations organizational structure had not functionally changed since the last inspection (refer to NRC Inspection Report 50-83/2000-201). The operations staff was comprised of reactor operators (RO) and senior reactor operators (SRO) which includes the Reactor Director (DIR), and Reactor Manager (RM) and two or more other licensed operators. Technical Specification (TS) Section 6.2.4 specifies that the training and qualification criteria contained in the American National Standards Institute (ANSI) Standard 15.4, Standards for Selection and Training of Personnel for Research Reactors, is required to be met by University of Florida Test Reactor (UFTR) personnel. The inspector verified the education, training, and experience of the operations staff in order to confirm that the reactor staff met ANSI 15.4 requirements. Operation logs and records confirmed that shift staffing routinely met the duty and on-call personnel requirements of TS Section 6.2.3. Staffing was as reported in the Annual Report and as required by TS Section 6.2, Organization.

##### c. Conclusions

The operations organizational structure and functions were consistent with TS Section 6.0, Administrative Controls, amendment 22, dated December 3, 1997.

#### 2. Review and Audit Functions

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

The inspector reviewed selected aspects of:

- Reactor Safety Review Subcommittee (RSRS) minutes
- safety and audit records
- Special Power Excursion Reactor Test (SPERT) fuel shipment
- 1999 and 2000 annual audits and follow-ups

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b. Observations and Findings

The RSRS committee met eleven times during the period from December 1999 to October 2001. At least one meeting was held each quarter at intervals not to exceed four months as required by TS Section 6.2.5 (2) Meetings (a). The membership also satisfied the charter requirements in TS Section 6.2.5(2)(a), Membership. 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 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 inspector noted that the licensee took appropriate corrective actions for 1999 and 2000 calendar year audit findings. Committee records also documented that procedure changes were reviewed as required by TS Section 6.2.5(3) and licensee procedures.

The inspector reviewed the committee's oversight of the SPERT fuel shipment and associated changes to standard operating procedures A-4, D.6, O.4, and O.5. The RSRS provided guidance to the reactor operations and Health Physics (HP) staffs for the fuel shipment as required by TS Section 6.2.5(3) and the ALARA (As Low As Reasonably Achievable) program.

c. Conclusions

Audits being conducted by the RSRS were found to be in accordance with the requirements specified in TS Section 6.2.5, amendment 22, dated December 3, 1997.

### 3. **Plant Operations**

a. Inspection Scope (IP 690001)

The inspector reviewed selected aspects of:

- operational logs and records
- staffing for operations
- selected operational, startup, or shutdown activities
- experimental program requirements
- experiment approval and operations procedures
- experiment logs and records
- approved reactor experiments
- RSRS minutes
- UFTR fuel handling procedures
- fuel handling equipment and instrumentation
- fuel handling and examination records



b. Observations and Findings

(1) Reactor Operations

The inspector reviewed 125 of the daily operations logs that were recorded since December 1999. Additionally, the inspector observed a reactor startup, shutdown, and two steady state operations, a thermoluminescent device activation and a pneumatic system run. Reactor operations were carried out in accordance with written procedures as required by TS Section 6.3. Information on operational status of the facility was recorded clearly and concisely in log books and/or checklists as required by Facility Operating License No. R-56, License Condition 2.C.2 and the Operating Documents Manual (ODM). Scrams were identified in the logs and records, and were reported and resolved as required before the resumption of operations. Inspector observation of operator turnovers confirmed that oncoming staff was briefed on the status of ongoing reactor, maintenance, and HP 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) Experiments

Experiments at the UFTR are categorized as Class I through Class IV based on their potential hazard and need for review and approval. Class I experiments may be approved by the RM while Class IV experiments must be reviewed and approved by the RSRS and have specific emergency operating instructions for conducting the experiments.

No new experiments were approved since the last inspection. Review of current experiment authorizations, procedures, and related reactor log book entries plus observation of two activation runs, confirmed that experiments were installed, performed, and removed as outlined in the approved experiment authorizations.

(3) Fuel Handling

The inspector reviewed UFTR procedures for refueling and fuel movement, as well as fuel logs and records against the requirements of TS Section 3.7 and 5.8. Fuel movement, inspection, log keeping, and data recording followed procedures and met TS Section 3.7 and 5.8 requirements. Data recorded for fuel movement was clear and cross referenced in fuel and operations logs.

c. Conclusions

Based on the procedures and records reviewed and the observations made during the inspection, the inspector determined that reactor operations, shift turnover, and logs; the control and performance of experiments; and fuel handling activities and its documentation were acceptable and in accordance with procedural and TS requirements.

#### **4. Procedures**

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- administrative controls
- records for changes and temporary changes
- procedural implementation
- logs and records

b. Observations and Findings

Operational procedures were available for those tasks and items required by TS Section 6.3 and ODM Section A. The licensee controlled changes and temporary changes to procedures, and associated review and approval processes by use of administrative procedures ODM 0.1 and 0.5.

The inspector reviewed the ODM which contained the administrative and operations procedures for the facility. The inspector individually reviewed new procedures D.6 and D.7, and changes to A.1, A.2, D-6, O-4, O-5, Q-4, and Q-5. The procedures were adequate to perform reactor and other operations which they covered. The changes and the new procedures had been approved and reviewed by the RSRS committee as required.

The inspector reviewed 2000 and 2001 document control training records and interviewed the staff, and determined that the training of personnel on procedures and subsequent changes to procedures was effective. The inspector observed personnel performing startups, shutdowns, daily and weekly checks, installing and removing experiments and operating the reactor while using applicable procedures. The inspector determined that use of the procedures was acceptable.

c. Conclusions

Based on the procedures and records reviewed and observations of staff during the inspection, the inspector determined that the procedural control and implementation program was acceptably maintained as required by the licensee's ODM.

#### **5. Maintenance and Surveillance**

a. Inspection Scope (IPs 69001, 39745, 61745, and 40745)

The inspector reviewed selected aspects of:

- maintenance procedures
- equipment maintenance records
- surveillance and calibration procedures
- surveillance, calibration, and test data sheets and records
- Reactor operations, periodic checks, tests, and verifications were observed.
- facility design changes and records
- facility configuration

b. Observations and Findings

(1) Maintenance

The inspector reviewed the maintenance implementing procedure ODM O.2 and the records related to 2000 and 2001 scheduled and unscheduled preventative, corrective, and modification maintenance activities. Additionally, the inspector performed an in-depth review of maintenance activities O1-03-two pen recorder replacement, O1-06-temperature monitor replacement, and 01-15-source alarm repair.

This review indicated that routine/preventive maintenance was controlled and documented in the maintenance and/or operations log consistent with the procedural requirements of ODM O.2 and O.3. Sign-offs by the DIR, RM, SRO on duty, and the Radiation Control Officer were as required by ODM O.2 and O.3. As required by ODM Form O.2A, operational systems checks were performed to ensure system functions before returning them to service.

(2) Surveillance

A chart board was used to track surveillance checks, and inspections. The information on the board included the date last performed, date due, and surveillance description. This provided basic scheduling control over the reactor operational tests and surveillance checks.

The inspector noted that the licensee's chart board indicated that all TS required surveillances and LCO verifications for 2000 and 2001 had been performed as required by TS 4.0. The inspector performed an in-depth review of the annual power calibration and rod drop time surveillances. The inspector observed eighteen safety surveillances incorporated into the daily checkout that provide control rod scram, withdraw prevent, and interlock functions. The inspector also observed nine weekly surveillances related to the reactor vent system, building

evacuation alarm, radiological safety, and reactor water system. These reviews and observations indicated that daily and other periodic checks, tests, and verifications for TS required LCOs were completed as required. All those reviewed were within prescribed TS and procedure parameters and in agreement with the previous surveillance results.

(3) Previous TS Violation

The licensee was issued a Level IV Violation on December 22, 2000, for failure to submit their annual reports for reactor years 1997-1998, and 1998-1999 to the Commission within six (6) months following the end of each prescribed year as required by TS Section 6.6.1.

The licensee replied by letter dated January 29, 2001, admitting the violation and committing to provide the two reports by the end of February 2001. Additionally, the licensee stated that in the future a separate streamlined annual report will be generated whenever incorporating it into the UFTR combined annual report would not meet TS Section 6.6.1 requirements. The inspector found the licensee's commitment to provide the separate report was an acceptable corrective action in response to the violation. The annual reports for reactor years 1997-1998, and 1998-1999 were received by the NRC on February 5, and 22, 2001, respectively. Violation 50-083/2000-201-001, Failure to comply with TS Section 6.6.1, Operating Reports, is closed.

(4) Design Control

Facility design changes were controlled by ODM-O.3 and O.4. The inspector confirmed that questions from the RSRS's review and replies from the reactor and HP staffs were documented and incorporated into the modification packages using ODM Form O.4A.

The inspector also reviewed the 10 CFR 50.59 evaluations and corresponding design change packages for 00-05 Dump valve replacement, 01-06 two pen recorder replacement, 01-06 temperature monitor replacement, and 01-15 source alarm repair.

From these reviews, the inspector determined that the facility design change evaluations had adequate supporting documentation and information. Additionally, the inspector found that the RSRS committee's 10 CFR 50.59 reviews and approvals were focused on safety and met TS and UFTR requirements. Post installation verification testing of the systems using Form O.2A, was thorough and adequately documented on Form O.3A 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 inspector determined that 1) the licensee's surveillance program and their associated limiting conditions for operation satisfied TS requirements and 2) the licensee's maintenance and design change programs were being implemented as required.

**6. Security**

a. Inspection Scope (IP 81401)

The inspector reviewed selected aspects of:

- the Physical Protection Plan
- security systems, equipment and instrumentations
- interviews with Campus Police Officers staff
- security audits
- viewed an emergency evacuation drill
- observed security alarm check

b. Observations and Findings

The Physical Protection Plan (PPP) dated September 28, 2001, revision 14, was the latest revision approved by the NRC. The inspector toured the facility and confirmed that the physical protection systems (barriers and alarms), equipment, and instrumentation were in place as required by the PPP. The inspector confirmed that the security checks, tests, verifications, and periodic audits were performed and tracked as required by the PPP and observed that facility access controls were being implemented as required by the PPP and licensee procedures ODM F-1 through F-8. The inspector also verified that response rosters were current and posted as required by the PPP and licensee procedures.

The inspector contacted the Campus Police Department. This Department provided periodic patrols and initial response to events at the facility. The inspector interviewed three campus police officers and one supervisor and determined that they were knowledgeable of the reactor facility and their response responsibilities.

c. Conclusions

Based on the observations made and the interviews conducted, the inspector found the physical protection features of the UFTR facility, the equipment, and the associated response procedures satisfied PPP.

**7. Material Control and Accountability**

a. Inspection Scope (IPs 85102 and 81431)

The inspector reviewed selected aspects of:

- Special Nuclear Material (SNM) accountability program
- SNM inventory and locations
- accountability records and reports
- accountability records and reports

b. Observations and Findings

The inspector reviewed the accountability records, the semiannual inventory of material, and verified the accountability of 50% of the SNM not in the reactor core. In accordance with licensee procedure ODM 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 by the inspector to be acceptable and properly documented. The inspector found that the material control and accountability forms (DOE/NRC Forms 741 and 742) were prepared and transmitted as required and the fuel inventory and movement records were cross referenced and matched the notations made in the operations logbooks.

c. Conclusions

Based on the inspector's review of the UFTR safeguards program, the inspector determined that the possession and use of SNM was limited to the locations and purposes authorized by the facility's operating license.

## 8. Training

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- the requalification program
- operators licenses
- operator training records
- operator physical examination records
- operator examination records
- operator active duty status

b. Observations and Findings

The inspector reviewed the operator requalification plan and performed a review of three operator requalification records.

Licensee tracking records showed that all currently licensed operators were successfully completing the emergency procedure and abnormal events training, reactivity manipulations, and participating in the ongoing training as required by

the plan and licensee procedure ODM O.8. The inspector's review of 2000 and 2001 requalification training records and the June 2001 biennial exam confirmed that licensed operators attended lectures on the appropriate subject material and that annual operator performance and biennial comprehensive requalification exams have been given as required by the plan. The inspector confirmed that 1) the past test questions covered the subject matter specified by the program and demonstrated technical depth; 2) required quarterly operation hours for ROs and SROs, were being tracked; 3) biennial medical exams had been performed and certified as required by 10 CFR Part 55 Subpart C; and 4) training was provided to the reactor operators on maintenance operations and 10 CFR 50.59 design changes and evaluations.

c. Conclusions

Based on the observations and findings made, the inspector found that the requalification program was being implemented in a satisfactory manner and the plan requirements were being met.

**9. Exit Meeting Summary**

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on November 21, 2001. 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

C.Hartsock	Reactor Trainee
* J.Wolf	Reactor Manager
* W.Vernetson	Reactor Director
A.Vierbicky	Senior Reactor Operator

\* Attended Exit Meeting

## INSPECTION PROCEDURE (IP) USED

IP 69001	Class II Non-power Reactors
IP 85102	Material Control and Accounting
IP 81401	Plans, Procedures, and Reviews
IP 81431	Fixed Site Physical Protection of Special Nuclear Material of Low Strategic Significance

## ITEMS OPENED, CLOSED, AND DISCUSSED

Opened None

Closed VIO 50-083/2000-201-001, Failure to comply with TS 6.6.1 Operating Reports.

Discussed None

## PARTIAL LIST OF ACRONYMS USED

ANSI	American National Standards Institute
ALARA	As Low As Reasonably Achievable
DIR	Reactor Director
E-Plan	Emergency Plan
HP	Health Physics
LCO	Limiting Conditions for Operation
NRC	Nuclear Regulatory Commission
ODM	Operating Documents Manual
RO	Reactor Operator
RSRS	Reactor Safety Review Subcommittee
RSO	Radiation Safety Officer
PPP	Physical Protection Program
RM	Reactor Manager
SNM	Special Nuclear Material
SPERT	Special Power Excursion Reactor Test
SRO	Senior Reactor Operators
TS	Technical Specifications
UFTR	University of Florida Test Reactor