



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

June 10, 2021

Ms. Amber Johnson, Director  
Nuclear Reactor and Radiation Facilities  
University of Maryland  
Department of Materials Science  
and Engineering  
4418 Stadium Drive, Room 1104  
College Park, MD 20742-2115

SUBJECT: UNIVERSITY OF MARYLAND – NUCLEAR REGULATORY COMMISSION  
ROUTINE INSPECTION REPORT NO. 05000166/2021201

Dear Ms. Johnson:

From March 22-24, 2021 the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the Maryland University Training Reactor. The enclosed report presents the results of that inspection, which were discussed on March 24, 2021, with you and 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 selected 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 the 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).

If you have any questions concerning this inspection, please contact Phil O'Bryan at 301-415-0266, or by electronic mail at [Phil.O'Bryan@nrc.gov](mailto:Phil.O'Bryan@nrc.gov).

Sincerely,

Travis L. Tate, Chief  
Non-Power Production and Utilization Facility  
Oversight Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Docket No. 50-166  
License No. R-70

Enclosure:  
As stated

cc: See next page

University of Maryland

Docket No. 50-166

cc:

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Test, Research and Training  
Reactor Newsletter  
Attention: Ms. Amber Johnson  
Dept of Materials Science and Engineering  
University of Maryland  
4418 Stadium Drive  
College Park, MD 20742-2115

SUBJECT: UNIVERSITY OF MARYLAND – NUCLEAR REGULATORY COMMISSION  
ROUTINE INSPECTION REPORT NO. 05000166/2021201  
DATED: June 10, 2021

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

Docket No. 50-166

License No. R-70

Report No. 05000166/2021201

Licensee: University of Maryland

Facility: Maryland University Training Reactor

Location: College Park, Maryland

Dates: March 22-24, 2021

Inspector: Phil O'Bryan

Accompanied by: Andrew Waugh

Approved by: Travis L Tate, Chief  
Non-Power Production and Utilization  
Facility Oversight Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Enclosure

## EXECUTIVE SUMMARY

### University of Maryland Maryland University Training Reactor Facility Inspection Report No. 05000166/2021201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the University of Maryland (the licensee's) Class II research reactor facility safety programs including: (1) organization and staffing; (2) operations logs and records; (3) procedures; (4) requalification training; (5) surveillance and limiting conditions for operation (LCO); (6) experiments; (7) design changes; (8) committees, audits and reviews; (9) maintenance logs and records; and (10) fuel handling logs and records. The U.S. Nuclear Regulatory Commission (NRC) staff determined that the licensee's program was acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements.

#### Organization and staffing

- The inspector found that organizational structure and staffing were consistent with technical specification (TS) requirements.

#### Operations Logs and Records

- The inspector found that operations logs and records were maintained in accordance with procedures and TSs.

#### Procedures

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

#### Requalification Training

- The inspector found that licensed operator requalification was conducted as required by the Operator Requalification Plan.

#### Surveillance and Limiting Conditions for Operation (LCO)

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

#### Experiments

- The inspector found that experiments were reviewed and approved as required by TS.

#### Design Changes

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

#### Committee Audits and Reviews

- The inspector found that the review and audit program was conducted in accordance with TS requirements.

#### Maintenance Logs and Records

- The inspector found that 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.

## REPORT DETAILS

### Summary of Facility Status

The Maryland University Training Reactor (MUTR), licensed to operate at a maximum steady-state thermal power of 250 kilowatts, continued to be operated in support of academic classes, educational demonstrations, operator training, surveillance, and experiments. During the inspection, inspectors observed a reactor startup and reactor operation.

#### 1. Organization and Staffing

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

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of TS Section 6.1 were met:

- staff qualifications
- management responsibilities
- staffing requirements for the safe operation of the facility
- MUTR organizational structure and staffing

##### b. Observations and Findings

The inspector found that the MUTR organization was consistent with that specified in the TS. The organizational structure and the responsibilities of the reactor staff had not changed since the last inspection.

The inspector reviewed the minimum shift staffing requirements for reactor operations and determined that the MUTR continued to meet the TS requirements.

##### c. Conclusion

The inspector found that the licensee complies with TS organizational and staffing requirements for operation of the reactor facility.

#### 2. Operation Logs and Records

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

Inspectors observed the completion of a reactor startup checklist and reviewed the following to ensure that records were maintained as required by TSs 6.2, 6.7, and 6.8:

- annual report for the MUTR for 2019 and 2020
- daily startup checklists for 2019 and 2020
- OP-101, "Reactor Startup Checkout"
- reactor console logbooks for 2019 through March 22, 2021



b. Observations and Findings

The inspector found that reactor operations were carried out following written procedures and TS requirements, and that logs and records were maintained.

c. Conclusion

The inspector found that operational activities were consistent with applicable TS and procedural requirements.

**3. Procedures**

a. Inspection Scope (IP 69001)

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

- OP-101, "Reactor Startup Checkout"
- OTUP-1, "New Core Loading and Startup Procedure"
- OYUP-2, "New Fission Chamber and Wide Range Channel Installation"
- OP-105, "Experiments"

b. Observations and Findings

The inspector reviewed a selection of written procedures and verified they addressed activities delineated in TS 6.4. The inspector found that the procedures were approved by the Reactor Safety Committee (RSC) and were of acceptable clarity and detail.

c. Conclusion

The inspector found that procedural control and implementation satisfied TS requirements.

**4. Requalification Training**

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the MUTR requalification program:

- requalification/training program for the MUTR and associated program checklists
- the effective dates of current operator licenses
- operator medical examination records
- current requalification cycle graded written examination
- requalification training topic lesson plans
- operator training records

b. Observations and Findings

The inspector found that training was conducted in accordance with the licensee's NRC-approved requalification and training program and was documented, and that requalification records were maintained appropriately.

c. Conclusion

The inspector found that operator requalification was conducted as required by the requalification program.

**5. Surveillance and Limiting Conditions for Operation**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with TS Section 3, and to determine if surveillance tests were performed as required by TS Section 4:

- daily startup checklists (from OP-101)
- shutdown checklists
- discharge surveys
- annual, quarterly, and monthly surveillance records
- annual reports for 2019 and 2020

b. Observations and Findings

(1) Observations

The inspector found that surveillance tests were completed as required and LCO verifications were completed on schedule and in accordance with licensee procedures.

(2) Unresolved Item 2019-201-01

NRC Inspection report 50-166/2019-201 documented URI 50-166/2019-01, which found that the facility operating procedure and TS 3.5.1 were inconsistent in specifying the radiation scram setpoint. Inspectors found that this inconsistency has been resolved and this URI is closed.

c. Conclusion

The inspector found that the licensee's program for completing surveillance inspections and LCO verifications satisfied TS.

## 6. Experiments

### a. Inspection Scope (IP 69001)

To verify compliance with licensee's procedures; TS Section 3.6, TS Section 6.5, and Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59, "Changes, tests and experiments," the inspector reviewed selected aspects of:

- annual reports for 2019 and 2020
- RSC minutes for May 28, 2019, September 12, 2019, June 4, 2020, and October 10, 2020
- OP-105, "Experiments"
- XP602, Attachment 1, "Limitations on Experiments"

### b. Observations and Findings

The inspector verified found that the experiment review and approval was in accordance with TS limits and procedural requirements, and that irradiated material was controlled appropriately.

### c. Conclusion

The inspector found that conduct and control of experiments met the requirements of TS and licensee procedures.

## 7. Design Changes

### a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- annual reports for 2019 and 2020
- RSC minutes for May 28, 2019, September 12, 2019, June 4, 2020, and October 10, 2020
- MUTR repair and maintenance logbook
- MUTR 10 CFR 50.59 logbook
- MP300, Attachment 1 "10 CFR 50.59 Screening"
- facility change for replacement of the MUTR wide range channel with a new Thermo-Fisher Gamma Metrics TR-10 instrument and fission chamber
- MUTR Safety Analysis Report
- facility change for replacement of the pool level sensor

### b. Observations and Findings

The inspector found that facility changes were administratively controlled, and changes were reviewed and approved prior to implementation.

c. Conclusion

The inspector found that changes at the facility were reviewed in accordance with NRC regulations and applicable licensee administrative controls.

**8. Committees, Audits and Reviews**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the audits and reviews required by in TS 6.2 were completed by the RSC:

- annual reports for 2019 and 2020
- RSC audits performed and assigned for 2019 and 2020
- RSC minutes for May 28, 2019, September 12, 2019, June 4, 2020, and October 10, 2020

b. Observations and Findings

The inspector found that licensee's safety oversight was performed by its RSC, the RSC membership met the requirements of TS 6.2.1.1, and the RSC composition, meeting quorums, and meeting frequency were all in accordance with TS 6.2.1.1.

The inspector also verified that the audit function required in TS 6.2.1.3 was conducted and that the audit reports were reviewed by the RSC.

c. Conclusion

The inspector found that the review and oversight functions of the RSC met TS requirements.

**9. Maintenance Logs and Records**

a. Inspection Scope (IP 69001)

The inspector reviewed the following selected maintenance log and records to verify compliance with the requirements of TS:

- reactor console logbooks
- MUTR repair and maintenance logbook
- annual reports for 2019 and 2020

b. Observations and Findings

The inspector reviewed the maintenance records related to scheduled and unscheduled preventive and corrective maintenance activities that had occurred during the inspection period. The inspector verified that all maintenance was conducted in accordance with the requirements of TS and administrative procedures.

c. Conclusion

The inspector found that maintenance was performed in accordance with TS and licensee procedure requirements.

**10. Fuel Handling Logs and Records**

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify that requirements of the TS and administrative procedures were met:

- annual reports for 2019 and 2020
- OTUP-1, "New Core Loading and Startup Procedure"

b. Observation and Findings

The inspector found that the only fuel handling operations at the facility were new fuel moves into the reactor pool in preparation for fuel element assembly. The inspector found that these activities were controlled in accordance with the TS and administrative procedural requirements.

c. Conclusion

The inspector found that fuel handling activities were completed and documented as required by the TS and facility procedures.

**11. Exit Meeting**

The inspection scope and results were summarized on March 24, 2021, with Ms. Amber Johnson and members of the NUTR staff. The inspector described the areas inspected and discussed the inspection findings.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee

L. Gilde	Operations Manager
A. Johnson	Director

## **INSPECTION PROCEDURES USED**

IP 69001	Class II Non-Power Reactors
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## **ITEMS OPENED, CLOSED**

### OPENED:

None

### CLOSED:

URI 2019-201-1	Bridge Monitor Alert and Scram Setpoint
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