



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

November 8, 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 – U.S. NUCLEAR REGULATORY COMMISSION
ROUTINE INSPECTION REPORT NO. 05000166/2021202

Dear Ms. Johnson:

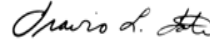
From October 5-7, 2021, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Maryland University Training Reactor (MUTR). The enclosed report documents the inspection results which were discussed on October 7, 2021, with you and members of the MUTR staff.

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 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.

Sincerely,

A handwritten signature in dark ink, appearing to read "Travis L. Tate".

Signed by Tate, Travis
on 11/08/21

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:

Director, Maryland Department
of Natural Resources
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Annapolis, MD 21401

Roland Fletcher, Manager
Radiological Health Program
Maryland Department of the Environment
1800 Washington Blvd., Suite 750
Baltimore, MD 21230

Alan Jacobson, Manager Radiation Safety
University of Maryland
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4716 Pontiac Street, Seneca Building
College Park, MD 20742

Dr. Ji-Cheng Zhao, Chair
University of Maryland
Department of Materials Science
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University of Maryland
4418 Stadium Drive
College Park, MD 20742-2115

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

SUBJECT: UNIVERSITY OF MARYLAND – U.S. NUCLEAR REGULATORY COMMISSION
ROUTINE INSPECTION REPORT NO. 05000166/2021202 DATED:
NOVEMBER 8, 2021

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NAME	PO'Bryan	NParker	TTate
DATE	10/14 /2021	10/14/2021	11/8/2021

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

Docket No.: 50-166

License No.: R-70

Report No.: 05000166/2021202

Licensee: University of Maryland

Facility: Maryland University Training Reactor

Location: College Park, Maryland

Dates: October 5-7, 2021

Inspector: Phil O'Bryan

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
Inspection Report No. 05000166/2021202

The primary focus of this routine announced inspection was the onsite review of selected aspects of the University of Maryland Training Reactor (MUTR, the licensee) safety program including: (1) procedures; (2) experiments; (3) health physics; (4) emergency planning; (5) fuel handling logs and records; and (6) transportation activities. The U.S. Nuclear Regulatory Commission (NRC) staff determined that the licensee's program complied with NRC requirements.

Procedures

- The program for changing, controlling, and implementing facility procedures satisfied technical specification (TS) and administrative procedural requirements.

Experiments

- The program for reviewing, authorizing, and conducting experiments satisfied TS and procedural requirements.

Health Physics

- Surveys, postings, training, and personnel dose monitoring met regulatory requirements.
- Radiation monitoring equipment was maintained and calibrated as required by TSs.
- The radiation protection and the as low as reasonably achievable programs satisfied regulatory requirements.
- Environmental monitoring satisfied license and regulatory requirements.

Emergency Planning

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

Fuel Handling Logs and Records

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

Transportation Activities

- The program for transportation of radioactive material (RAM) satisfied U.S. Department of Transportation and the NRC regulations.

REPORT DETAILS

Summary of Facility Status

The MUTR operated in support of academic classes, educational demonstrations, operator training, surveillance, and experiments. During the inspection, the inspector observed a reactor startup and reactor operation.

1. Procedures

a. Inspection Scope (IP 69001)

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

- Operating Procedure (OP) 101-2, "Initial Reactor Startup Checkout"
- reactor console logbook
- Maintenance Procedure (MP) 301, "Fuel Bundle Assembly and Disassembly"
- MP 303, "Fuel Movement"
- OP 105, "Installation of Experiments"
- Emergency Procedure (EP) 400, "Emergency Response Guide"
- EP 404, "Radiation Emergencies"

b. Observations and Findings

The inspector verified that written procedures addressed activities listed in TS 6.4. The inspector also found that procedures were approved by the Reactor Safety Committee.

c. Conclusion

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

2. Experiments

a. Inspection Scope (IP 69001)

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

- Annual Operating Reports for 2019 and 2020
- OP 105, "Installation of Experiments"
- MUTR approved experiments list

b. Observations and Findings

The inspector verified that experiment conduct was in accordance with TS limits and procedural requirements.

c. Conclusion

The inspector determined that conduct and control of experiments met the requirements of procedures, regulations and the licensee's TS.

3. Health Physics

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," and 10 CFR Part 20, "Standards for Protection Against Radiation," the inspector reviewed selected aspects of the following:

- 2019 and 2020 personnel dosimetry data
- 2019 and 2020 radiological surveys
- 2019 and 2020 calibration records
- radiation safety manual
- environmental dosimeter data for 2019 and 2020
- Annual Operating Reports, 2019 and 2020
- corrective action reports #8 and #9, "Bridge Radiation Area Monitor Miscalibration"

b. Observations and Findings

The inspector found that periodic contamination and radiation surveys were completed in accordance with radiation protection procedures, and that survey results were documented. The inspector reviewed the calibration records of the radiation monitoring equipment and found all were calibrated as required by procedure and TS. The inspector observed that dosimetry use was in accordance with facility procedures and dose limits to workers and the public were within 10 CFR Part 20 limits.

The inspector found that a copy of the current NRC Form 3, "Notice to Employees," was posted at various locations throughout the reactor facility, as required by 10 CFR Part 19.

The inspector reviewed the environmental monitoring records for the fixed dosimeters located throughout the facility and the campus and found that radiation doses were monitored and reviewed as required by procedures. The inspector also found that MUTR staff received radiation protection training in accordance with MUTR procedures and regulatory requirements

c. Conclusion

The inspector determined that: (1) surveys were completed and documented to permit evaluation of the radiation hazards present, (2) postings and notices met regulatory requirements, (3) personnel dose records indicated that doses to facility personnel were within regulatory limits, (4) radiation survey and monitoring equipment was maintained and calibrated, (5) the radiation safety training program was acceptable, and (6) the radiation protection program satisfied regulatory requirements.

4. Emergency Planning

a. Inspection Scope (IP 69001)

The inspector reviewed the implementation of selected portions of the emergency preparedness program including:

- emergency preparedness plan (EPP) for the MUTR
- 2019 and 2020 tabletop exercise reports
- Emergency Procedure (EP) 400, "Emergency Response Guide"
- EP 404, "Radiation Emergencies"
- Standard Procedure 211, "Emergency Box Inventory List"

b. Observation and Findings

The inspector found that the EPP was not changed since the last inspection. The inspector toured the MUTR and found the emergency preparedness equipment and capabilities to be as described in the EPP and implementing procedures.

The emergency plan requires that emergency supplies be maintained and that an inventory list of these supplies be maintained and verified on a routine basis. The inspector verified that the materials and inventory were maintained as required by the EPP.

The EPP requires periodic drills to support training of emergency response personnel. The inspector found that the documentation related to annual exercises for 2019 and 2020 demonstrated that the requirements of the EPP were met for training of personnel and conduct of drills.

c. Conclusion

The inspector determined that the emergency preparedness program was conducted in accordance with the EPP and implementing procedures.

5. 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 Operating Reports for 2019 and 2020
- MP 301, "Fuel Bundle Assembly and Disassembly"
- MP 303, "Fuel Movement"
- reactor console logbook
- OTUP-1, "New Core Loading and Startup Procedure"

b. Observation and Findings

The inspector found that that fuel handling operations performed in support of maintenance and core configuration changes were controlled in accordance with the TS and administrative procedural requirements.

c. Conclusion

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

6. Transportation Activities

a. Inspection Scope (IP 86740)

To verify that the licensee complied with the applicable requirements, the inspector reviewed the following:

- Annual Operating Reports for 2019 and 2020
- RAM shipping papers and related records

b. Observations and Findings

The inspector found that the licensee transfers RAM from the reactor license to the broad scope campus license. The inspector found that one radioactive shipment off campus was made for RAM generated at the MUTR, and that shipping papers for this shipment indicated that it was performed in accordance with regulatory requirements.

c. Conclusion

The inspector determined that the RAM shipment was made in accordance with procedures and regulatory requirements.

7. Exit Meeting

The inspection scope and results were summarized on October 7, 2021, with Ms. Amber Johnson, members of the MUTR staff, and the Radiation Safety Officer, Mr. Alan Jacobson. The inspector described the areas inspected and discussed the inspection findings.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

L. Gilde	Reactor Manager
S. Hand	Senior Health Physicist
A. Jacobson	Radiation Safety Officer
A. Johnson	Reactor Director
R. Muldoon	Health Physicist

INSPECTION PROCEDURES USED

IP 69001	Class II Non-Power Reactors
IP 86740	Inspection of Transportation Activities

ITEMS OPENED, CLOSED

OPENED:

None

CLOSED:

None