

March 29, 2017

Dr. Timothy W. Koeth, Director
University of Maryland
Radiation Facilities and Nuclear Reactor
Chemical and Nuclear Engineering
Building 090
College Park, MD 20742-2115

SUBJECT: UNIVERSITY OF MARYLAND – NUCLEAR REGULATORY COMMISSION
ROUTINE INSPECTION REPORT NO. 50-166/2017-201

Dear Dr. Koeth:

From February 7-9, 2017, the U.S. Nuclear Regulatory Commission (NRC or the Commission) conducted an inspection at the Maryland University Training Reactor. The inspection included a review of activities authorized for your facility. The enclosed report documents the inspection results, which were discussed on February 9, 2017, with members of your staff.

This inspection was an examination of 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. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. 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 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).

T. Koeth

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Should you have any questions concerning this inspection, please contact Mr. Johnny 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 Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosure:
As stated

cc: See next page

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ROUTINE INSPECTION REPORT NO. 50-166/2017-201 DATED
MARCH 29, 2017

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University of Maryland

Docket No. 50-166

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

Docket No. 50-166

License No. R-70

Report No. 50-166/2017-201

Licensee: University of Maryland

Facility: Maryland University Training Reactor

Location: College Park, Maryland

Dates: February 7-9, 2017

Inspector: Johnny H. Eads

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

EXECUTIVE SUMMARY

University of Maryland
Maryland University Training Reactor Facility
NRC Inspection Report No. 50-166/2017-201

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, (6) experiments, (7) design changes, and (8) committees, audit and reviews. 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

- Reactor organization and staffing were in compliance with the requirements of the technical specifications (TSs).

Operations Logs and Records

- Operational activities were found to be consistent with applicable TS and procedural requirements.

Procedures

- Procedural control and implementation satisfied TS requirements.

Requalification Training

- Operator requalification was conducted as required by the requalification program.

Surveillance and Limiting Conditions for Operation

- The licensee's program for completing surveillance inspections and limiting conditions for operation verifications satisfied TS and licensee administrative controls.

Experiments

- Conduct and control of experiments met the requirements of regulations and the licensee's TS.

Design Changes

- Changes at the facility were acceptably reviewed in accordance with Title 10 of the *Code of Federal Regulations* Section 50.59, Changes, tests, and experiments," and applicable licensee administrative controls.

Committees, Audits and Reviews

- Review and oversight functions of the Reactor Safety Committee met TS requirements.

REPORT DETAILS

Summary of Facility Status

The Maryland University Training Reactor (MUTR or the licensee's), 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, the reactor was maintained in a shutdown condition for maintenance and repair activities.

1. Organization and Staffing

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

The inspector reviewed the following to verify compliance with the staffing requirements in technical specification (TS) 6.1, "Organization":

- MUTR organization diagram
- U.S. Nuclear Regulatory Commission (NRC)-issued senior reactor operator (SRO) and reactor operator (RO) licenses
- Reactor Console Logbook, July 5, 2016 to present

b. Observations and Findings

Through interviews with the licensee's representatives, the inspector compared the management structure at the facility to requirements in the TS. It was noted that there were three SROs and one RO licensed at the MUTR.

The MUTR staff's qualifications satisfied the training and experience requirements stipulated in the TS. The operations log confirmed that shift staffing met the minimum requirements for duty personnel.

The campus Radiation Safety Office staff, which provides oversight for multiple university licenses and activities conducted under the reactor license, occupies a building remote from the reactor building. However, the radiation protection staff is well integrated into the activities at the reactor and is providing significant value to ongoing reactor operations and maintenance activities.

c. Conclusion

The reactor organization and staffing were in compliance with the requirements of the TS.

2. Operation Logs and Records

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that selected records were maintained as required by TS 6.2, "Review and Audit," TS 6.7, "Reports," and TS 6.8, "Records":

- Annual Report for the MUTR for the period July 1, 2015, to June 30, 2016
- Daily startup checklists (from Operating Procedure (OP)-101) for the past year
- OP-101, "Reactor Startup Checkout," Revision 13, dated November 12, 2011
- Reactor Console Logbook, July 5, 2016 to present

b. Observations and Findings

Reactor operations were carried out following written procedures and TS requirements. A review of the logs and records indicated that TS operational limits had not been exceeded.

c. Conclusion

Operational activities were found to be 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 6.4, "Operating Procedures," were being met concerning written procedures:

- OP-101, "Reactor Startup Checkout," Revision 13, dated November 12, 2011
- Reactor Console Logbook, July 5, 2016 to present

b. Observations and Findings

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

c. Conclusion

Procedural control and implementation satisfied TS requirements.

4. **Requalification Training**

a. Inspection Scope (IP 69001)

To verify that the licensee was complying with the requirements of the operator requalification program, the inspector reviewed selected aspects of:

- Requalification/training program for the MUTR and associated program checklists, dated August 13, 2012
- The effective dates of current operator licenses
- Operator medical examination records for the past year
- Current requalification cycle graded written examination
- Requalification training topic lesson plans
- Operator training records

b. Observations and Findings

There were three active NRC-licensed SROs and three ROs on staff at the facility. A review of the logs and records showed that training was being conducted in accordance with the licensee's NRC-approved requalification and training program. Attendance at required training sessions was well documented. Records documenting performance of required reactor manipulations were easily retrievable.

c. Conclusion

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 3.0, "Limiting Conditions for Operation," and to determine if the periodic surveillance tests on safety systems were performed as stipulated in TS Section 4.0, "Surveillance Requirements":

- File of daily startup checklists (from OP-101) for the past year
- Reactor Console Logbook, July 5, 2016 to present

b. Observations and Findings

The inspector noted that daily, monthly, quarterly, and annual checks, tests, and/or calibrations for TS-required surveillance were completed as required. The limiting condition for operation (LCO) verifications were completed on schedule and in accordance with licensee procedures. 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. The

procedures for each of the surveillances provided clear and concise direction and control of reactor operational tests and surveillances.

c. Conclusions

The licensee's program for completing surveillance inspections and LCO verifications satisfied TS and licensee administrative controls.

6. Experiments

a. Inspection Scope (IP 69001)

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

- Reactor Console Logbook, July 5, 2016 to present
- Annual Report, July 1, 2015, to June 30, 2016
- Reactor Safety Committee Minutes for Meeting of August 1, 2016
- Reactor Safety Committee Minutes for Meeting of December 14, 2016

b. Observations and Findings

No new experiments have been initiated, reviewed, and approved since the previous inspection at the facility. The inspector verified that the experiment review and approval was in accordance with TS limits and procedural requirements.

c. Conclusion

Conduct and control of experiments met the requirements of regulations and the licensee's TS.

7. Design Changes

a. Inspection Scope (IP 69001)

In order to verify that any modifications to the facility were consistent with 10 CFR 50.59, the inspector reviewed selected aspects of:

- Reactor Console Logbook, July 5, 2016 to present
- Annual Report, July 1, 2015, to June 30, 2016
- Reactor Safety Committee Minutes for Meeting of August 1, 2016
- Reactor Safety Committee Meeting Agenda for December 14, 2016

b. Observations and Findings

Through review of applicable records and interviews with licensee personnel, the inspector determined that since the previous inspection there were no changes made which required prior NRC approval pursuant to 10 CFR 50.59. The inspector verified that administrative controls were in place that required the appropriate review and approval of facility changes prior to implementation.

c. Conclusion

Changes at the facility were acceptably reviewed in accordance with 10 CFR 50.59 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 stipulated in TS 6.2 were being completed by the RSC:

- Reactor Console Logbook, July 5, 2016 to present
- Annual Report, July 1, 2015, to June 30, 2016

b. Observations and Findings

The licensee's safety oversight was performed by its RSC. The RSC membership met the requirements of TS 6.2.1.1, "RSC Charter and Rules." The inspector verified that 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, "RSC Audit Function," was conducted and that the audit reports were reviewed by the RSC.

c. Conclusion

Review and oversight functions of the RSC appear to meet TS requirements.

9. Exit Interview

The inspection scope and results were summarized on February 9, 2017, with members of licensee management. The inspector described the areas inspected and discussed the inspection findings. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

A Johnson	Associate Director
T. Koeth	Director, Radiation Facilities and Nuclear Reactor
J. Osheroff	Assistant Director

INSPECTION PROCEDURES USED

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

OPENED:

None

CLOSED:

None

PARTIAL LIST OF ACRONYMS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
IP	Inspection Procedure
LCO	Limiting Condition for Operation
MUTR	Maryland University Training Reactor
NRC	U.S. Nuclear Regulatory Commission
OP	Operating Procedure
RO	Reactor Operator
RSC	Reactor Safety Committee
SRO	Senior Reactor Operator
TS	Technical Specification