February 11, 2014

Dr. Timothy W. Koeth, Director
The University of Maryland
Radiation Facilities and Nuclear Reactor
Department of Materials Science and Engineering
2309D Chemical and Nuclear Engineering Building
Building 090, Stadium Drive
College Park, MD 20742-2115

SUBJECT: UNIVERSITY OF MARYLAND – NRC ROUTINE INSPECTION REPORT NO. 50-166/2014-202

Dear Dr. Koeth:

From January 14–16, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed a routine inspection at your Maryland University Training Reactor facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

The inspection examined activities conducted under your license as they relate to the conduct of operations, 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 safety concerns or non-compliances with NRC requirements 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, and 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).

Should you have any questions concerning this inspection, please contact Johnny H. Eads at 301-415-0136.

Sincerely,

/RA/

Gregory T. Bowman, 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

University of Maryland Docket No. 50-166

cc:

Director, Dept. of Natural Resources
Power Plant Siting Program
Energy & Coastal Zone Administration
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Mr. Roland G. Fletcher, Program Manager IV
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1800 Washington Blvd., Suite 750
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Mr. Vincent G. Adams
Facility Coordinator
Chemical and Nuclear Engineering Building 090
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College Park, MD 20742

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Radiation Safety Officer
Department of Environmental Safety
3115 Chesapeake Building 338
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College Park, MD 20742

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

Should you have any questions concerning this inspection, please contact Johnny H. Eads at 301-415-0136.

Sincerely,

/RA/

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

Docket No:	50-166
License No:	R-70
Report No:	50-166/2014-202
Licensee:	The University of Maryland
Facility:	Maryland University Training Reactor
Location:	College Park, MD
Dates:	January 14–16, 2014
Inspector:	Johnny H. Eads
Accompanied by:	Jason Lising, Project Manager Margaret Watford, Project Manager
Approved by:	Gregory T. Bowman, Chief Research and Test Reactors Oversight Branch Division of Policy and Rulemaking Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

The University of Maryland
Maryland University Training Reactor
NRC Inspection Report No. 50-166/2014-202

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the University of Maryland's (the licensee's) Class II research reactor facility safety programs including: (1) organization and staffing, (2) health physics, (3) emergency planning, (4) maintenance logs and records, (5) fuel handling logs and records, and (6) transportation. The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with U.S. Nuclear Regulatory Commission requirements.

Organization and Staffing

- The operations organizational structure and responsibilities were consistent with Technical Specification requirements.

- Shift staffing met the minimum requirements for current operations.

Health Physics

- The inspector verified that the licensee's radiation protection program was effective in minimizing radiation doses to individuals through training, notices to workers, radiation monitoring and surveys, and calibrated equipment.

Emergency Planning

- The emergency preparedness program was conducted in accordance with the Emergency Plan and implementing procedures.

Maintenance Logs and Records

- Maintenance was performed and logs and records maintained consistent with Technical Specification and licensee procedure requirements.

Fuel Handling Logs and Records

- Fuel handling and inspection activities were being completed and documented in accordance with the requirements specified in the Technical Specification and facility procedures.

Transportation

- Radioactive material shipments were made according to procedures and regulatory requirements.

REPORT DETAILS

Summary of Facility Status

The Maryland University Training Reactor (MUTR or the licensee) operates the 250 kilowatt reactor in support of graduate and undergraduate research, laboratory instruction, and a variety of radiation services. During the inspection, the reactor was not operated.

1. Organization and Staffing

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

The inspectors reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of Section 6.1 of Technical Specifications (TS) were being met:

- Staff qualifications
- Management responsibilities
- Staffing requirements for the safe operation of the facility
- Maryland University Training Reactor (MUTR) organizational structure and staffing

b. Observations and Findings

The licensee's organizational structure and staffing had not functionally changed since the last inspection. However, one key staff member has changed since the last inspection. Specifically, a new Reactor Director was appointed. The new Reactor Director met all TS and procedural qualification requirements. Currently, there are three senior reactor operators and two reactor operators licensed at the MUTR. There were no other changes made to the organizational and reporting hierarchy.

The campus health physics staff provided support to the reactor staff as requested and performed specific audits, inspections, and surveys of the reactor. The campus health physics staff also had the responsibility for the university's broad scope State byproduct license. The coordination of radiation protection activities between the health physics staff and the reactor staff was acceptable. The reactor operations staff satisfied the training and experience requirements stipulated in the TS.

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

c. Conclusions

The licensee was in compliance with organizational and staffing requirements for operation of the reactor facility.

2. Health Physics

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20 requirements:

- Radiation Safety Procedure 1, "Instrument Calibration," dated June 2001
- Radiation Safety Manual, dated 2001
- Radiation Safety Procedure (draft), "ALARA Program," not dated
- Report on Reactor Air and Water, Samples and Analysis, and Reactor Compartment Area Monitoring, Sample/Monitoring, various 2012–2013
- Environmental Dosimeter Data for 2012 and 2013
- Annual Operating Report, 2012

b. Observations and Findings

The inspector toured the facility, finding practices regarding the use of dosimetry, radiation monitoring equipment, placement of radiological signs and postings, use of protective clothing, and the handling and storing of radioactive material or contaminated equipment to be in accordance with regulations and the licensee's written Radiation Protection Program. A review of calibration records and a cross check of radiation/contamination surveys indicated that radiation monitoring equipment was being calibrated as required by procedure. The inspector performed a spot check of selected radiation monitoring equipment and did not identify any instances where out-of-calibration radiation monitoring equipment had been used during surveys.

The inspector reviewed dosimetry records for the various operators at the MUTR. The Radiation Safety Officer maintained all records in accordance with TS requirements. The inspector noted that the dose limits for individual radiation workers at the MUTR were the same as the 10 CFR Part 20 limits (e.g., 5 Rem Whole Body). During the dosimetry review it was noted that individual radiation worker doses were minimal compared to this limit and no individual exceeded the dose limits since the last U.S. Nuclear Regulatory Commission (NRC) inspection.

A copy of the current NRC Form 3, "Notice to Radiation Workers," was posted at various locations throughout the reactor facility as required by 10 CFR Part 19.

The inspector reviewed current emission records, environmental monitoring (including dosimetry and tritium release records), and the annual report for 2012.

In addition, the inspector interviewed personnel and reviewed facility records related to a previously opened Unresolved Item (URI) 50-166/2011-202-1. The URI concerned two neutron detectors used at the facility whose readings differed by a factor of ten, and the adequacy of the facility's posting of a high radiation

area. Based on the review, the inspector determined that the two neutron detectors were properly calibrated, that the differences observed were the result of different detector designs, and that the instruments were functioning as expected. In addition, the inspector determined that facility surveys and postings were properly conducted and met regulatory requirements. Accordingly, this URI is considered closed.

c. Conclusions

The inspector verified that the licensee's radiation protection program was effective in minimizing radiation doses to individuals through training, notices to workers, radiation monitoring and surveys, and calibrated equipment.

3. Emergency Planning

a. Inspection Scope (IP 69001)

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

- Emergency Preparedness Plan (EPP) for the MUTR, Revision 12, dated December 4, 1999

b. Observation and Findings

The inspector reviewed the EPP and determined that it had 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 required materials and inventory were being maintained as required.

The inspector met with members of the offsite emergency response organizations. Interviews were conducted with the University of Maryland Fire Marshall and the Prince George's County Fire/Emergency Medical Services Department. Based on these interviews, offsite emergency response organizations appeared to be well trained and equipped to respond to emergencies at the facility if they were to occur.

The emergency plan requires periodic drills to support training of emergency response personnel. The inspectors reviewed documentation related to annual exercises for 2012 and 2013. Based on a review of these records, the requirements of the emergency plan continue to be met for training of personnel and conduct of drills.

c. Conclusions

The emergency preparedness program was conducted in accordance with the Emergency Plan and implementing procedures.

4. Maintenance Logs and Records

a. Inspection Scope (IP 69001)

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

- Reactor Console Logbook from 2013 to present

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.

Routine and preventive maintenance was controlled and documented in the appropriate logs. These documents indicated that all maintenance activities were in accordance with the requirements in licensee administrative controls. The inspector verified that all maintenance was conducted in accordance with the requirements of TS, and system operational checks were performed before returning them to service.

c. Conclusions

Maintenance was performed and logs and records maintained consistent with TS and licensee procedure requirements.

5. Fuel Handling Logs and Records

a. Inspection Scope (IP 69001)

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

- Annual Report for the MUTR, 2012

b. Observation and Findings

The inspector interviewed staff and determined that the only fuel handling operations which occurred since the last inspection were related to fuel removal in support of maintenance on the reactor control rods. These activities appeared to be well planned and controlled in accordance with TS and administrative procedural requirements.

c. Conclusions

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

6. Transportation

a. Inspection Scope (IP 86740)

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

- Radiation Safety Manual, dated 2001
- Annual Operating Report, 2012

b. Observations and Findings

The licensee stated that they generally transfer radioactive material from the reactor license to the broad scope campus license for use by experimenters on campus or for processing as waste along with other campus radioactive waste. As a result, shipments under the reactor license are unusual and infrequent.

c. Conclusions

Radioactive material shipments were made according to procedures and regulatory requirements.

7. Exit Interview

The inspection scope and results were summarized on January 16, 2014, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. The licensee acknowledged the results of the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

V. Adams	Facility Coordinator and Senior Reactor Operator
M. Dorman	Radiation Safety Officer
T. Koeth	Director, Nuclear Reactor

Other Personnel

C. Black	Prince George's County Fire/Emergency Medical Services Department
A. Sactor	University of Maryland Fire Marshall

INSPECTION PROCEDURES USED

IP 69001	Class II Research and Test Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

URI 50-166/2011-202-1	Follow-up on high radiation area surveys and posting

Discussed

None

PARTIAL LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
10 CFR	Title 10 of the *Code of Federal Regulations*
EPP	Emergency Preparedness Plan
IP	Inspection Procedure
MUTR	Maryland University Training Reactor
NRC	U. S. Nuclear Regulatory Commission
TS	Technical Specifications
URI	Unresolved Item