

July 1, 2010

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

SUBJECT: UNIVERSITY OF MARYLAND - NRC ROUTINE INSPECTION REPORT
NO. 50-166/2010-201 AND NOTICE OF VIOLATION

Dear Dr. Al-Sheikhly:

On May 25 to June 1, 2010, the U.S. Nuclear Regulatory Commission (NRC, the Commission) conducted an inspection at the Maryland University Training Reactor (Inspection Report No. 50-166/2010-201). The inspection included a review of activities authorized for your facility. The enclosed report documents the inspection results, which were discussed on June 1, 2010, 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, the NRC has determined that a Severity Level IV violation of NRC requirements has occurred. The violation was evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at www.nrc.gov; select **What We Do, Enforcement**, then **Enforcement Policy**. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited in the Notice because it constitutes a failure to meet a regulatory requirement that has more than minor safety significance and the licensee failed to identify the violation.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with Title 10 of the *Code of Federal Regulations*, Part 2.390 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 (Agencywide Document Access and Management System (ADAMS)). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>

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Should you have any questions concerning this inspection, please contact Patrick Isaac at (301) 415-1019 or by electronic mail at Patrick.Isaac@nrc.gov.

Sincerely,

/RA/

Thomas B. Blount, Deputy Director
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosures: 1. NRC Inspection Report No. 50-166/2010-201
2. Notice of Violation

cc: w/encls: See next page

University of Maryland

Docket No. 50-166

cc:

Director, Dept. of Natural Resources
Power Plant Siting Program
Energy & Coastal Zone Administration
Tawes State Office Building
Annapolis, MD 21401

Mr. Roland Fletcher, Director
Center for Radiological Health
Maryland Department of Environment
201 West Preston Street
7th Floor Mail Room
Baltimore, MD 21201

Mr. Vincent G. Adams
Facility Coordinator
Chemical and Nuclear Engineering Building 090
University of Maryland
College Park, MD 20742

Maureen M. Kotlas, Director
Department of Environmental Safety
3115 Chesapeake Building 338
University of Maryland
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 Patrick Isaac at (301) 415-1019 or by electronic mail at Patrick.Isaac@nrc.gov.

Sincerely,

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NAME	PIsaac	GLappert (CHawes for)	JEads (GSchoenebeck for)	TBlount
DATE	6/28/10	6/28/10	6/29/10	07/01/10

OFFICIAL RECORD COPY

NOTICE OF VIOLATION

University of Maryland
Maryland University Training Reactor

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

During an NRC inspection conducted from May 25, 2010 to June 1, 2010, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR 55.59(a) Requalification requirements stipulate that (2) Each licensee shall pass a comprehensive requalification written examination and an annual operating test.

Contrary to the above, the licensee failed to conduct the required annual operating test.

This has been determined to be a Severity Level IV violation (Supplement I)

Pursuant to the provisions of 10 CFR 2.201, the University of Maryland is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001 with a copy to the responsible inspector, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is

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necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 30th day of June 2010

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

Docket No: 50-166

License No: R-70

Report No: 50-166/2010-201

Licensee: University of Maryland

Facility: Maryland University Training Reactor

Location: College Park, Maryland

Dates: May 25 to June 1, 2010

Inspectors: Patrick J. Isaac

Approved by: Johnny H. Eads, 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. 50-166/2010-201

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 procedures, experiments, health physics, design changes, committees, audit and reviews, and transportation activities. The licensee's programs were acceptably directed toward the protection of public health and safety.

Organization and Staffing

- The reactor organization and staffing was in compliance with the requirements of the Technical Specifications.

Operations Logs and Records

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

Procedures

- Procedural control and implementation satisfied TS requirements.

Requalification Training

- Operator requalification was generally conducted as required by the Requalification Program except for the failure to conduct annual operating tests as required by 10 CFR 55.59(a)(2) and the MUTR Requalification Program. This failure has been determined to be a Severity Level IV violation.

Surveillance and Limiting Conditions for Operation

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

Experiments

- Conduct and control of experiments met the requirements of regulations and the MUTR Technical Specifications.

Design Changes

- No new changes subject to 10 CFR 50.59 reporting were performed since the previous inspection.

Committees, Audits and Reviews

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

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, continues to be operated in support of academic classes, educational demonstrations, operator training, surveillance, and experiments. During the inspection, the inspector observed the reactor being operated for an ongoing experiment.

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 Specifications (TS) Section 6.1 Organization:

- MUTR organization diagram
- NRC-issued Senior Reactor Operator (SRO) and Reactor Operator (RO) licenses
- Reactor Console Logbook, April 9, 2009, to present

b. Observations and Findings

Through interviews with licensee's representatives, the inspector compared the management structure at the facility to requirements in the TS. The reactor staffing had not changed from the previous inspection except that two student reactor operators had left and three new students are in training for license examinations in the near future. Current licensed staff consisted of the Facility Director and the Operations Manager, both of whom maintain SRO licenses and two students who maintain RO licenses.

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.

Currently 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. Although activities conducted under the reactor license continued to receive adequate radiation safety support, through interviews with licensee's representatives, the inspector found that the Radiation Safety staff can sometimes be out of touch with daily reactor operations. The inspector discussed, with the Assistant Director of Environment Health and Safety and the Facility director, the benefits of relocating a health physicist from the Radiation Safety Office to the reactor building.

c. Conclusion

The reactor organization and staffing was in compliance with the requirements of the TSs.

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 Sections: 6.3, Review and Audit, 6.6, Reports, and 6.7, Records:

- Annual Report for the MUTR for the dates July 1, 2008, to June 30, 2009
- Annual Reports for the MUTR for the years 2002 to 2008
- File of Daily Startup Checklists (from Operating Procedure (OP)-101) for the past year
- MUTR OP-100, Control and Maintenance Procedures, Rev. 12, March 27, 2000
- OP-101, Reactor Startup Checkout, Rev. 12, March 27, 2000
- Emergency Procedure-403, Response to reportable Occurrences, March 27, 2000
- Reactor Console Logbook from April 30, 2009, 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.

Through a review of the Annual Report for the Maryland University Training Reactor for the period of July 1, 2008, to June 30, 2009, the inspector identified a number of similarities in the data provided in the report and data from the previous annual report. The "Environmental Surveys of Surrounding Areas" and the "Radioactive Release and Discharge to the Environment" were identical from the 2008 and the 2009 annual reports. When confronted with these discrepancies, the licensee stated that it was probably due to an oversight and the licensee committed to submit a corrected annual report.

The inspector informed the licensee that this failure to provide accurate information, due to a clerical error, to the NRC as required by the TSs constitutes a violation (VIO) of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC Enforcement Policy. On June 2, 2010, the licensee submitted an amended Annual Report for the University of Maryland Training Reactor for the period from July 1, 2008, to June 30, 2009 (Agencywide Documents Access and Management System, Accession No. ML101550271).

c. Conclusions

Operational activities were found to be generally 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 6.3 were being met concerning written procedures:

- Surveillance Procedure (SP)-204 Control Rod Calibration by the Positive Asymptotic Period Method, Rev. 12, March 27, 2000
- Alarm Procedures-500, Reactor Scrams and Unscheduled Shutdowns, March 27, 2000
- Emergency Procedure (EP)-400, Reactor Building Evacuation, March 27, 2000
- EP-402, Primary Coolant System Leaks, March 27, 2000
- EP-403, Response to Reportable Occurrences, March 27, 2000
- EP-404, Release of Radioactivity, March 27, 2000
- Operating Procedure 103, Reactor Startup, Rev 12 (March 27, 2000)
- Operating Procedure 104, Reactor Operations, Rev 12 (March 27, 2000)

b. Observations and Findings

The inspector reviewed a random selection of written procedures and verified they addressed activities delineated in TS Section 6.3. The procedures were approved by the Radiation Safety Committee (RSC), and were of acceptable clarity and detail.

c. Conclusions

Procedural control and implementation satisfied TS requirements.

4. Requalification Training

a. Inspection Scope (IP 69001-02.04)

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

- Reactor Operator Requalification Program for the Maryland University Training Reactor, June 1, 1993
- MUTR Exam, undated
- The effective dates of current operator licenses
- Operator medical examination records for the past two years
- Current requalification cycle graded written examination in individual folder for one operator
- Requalification Training Topic Lesson Plans
- Operator training records

b. Observations and Findings

There were two NRC licensed SROs and two 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 training sessions was documented and the inspector did not find any cases where there was not perfect attendance.

The inspectors reviewed the medical file for one NRC-licensed SRO, which indicated that the operator had received a medical examination biennially as required. The file for the second SRO was not available and the licensee was unable to prove that this SRO had received the required medical examination. The licensee was informed that the failure to provide documentation of the biennially required medical examination per 10 CFR 55.53, Conditions of Licenses, is being treated as an Unresolved Item¹ (URI) pending documentation of the required medical examination. This issue will be reviewed during a future inspection (URI 50-166/2010-201-01).

10 CFR 55.59(a)(2) Requalification requirements stipulate that each licensee shall pass a comprehensive requalification written examination and an annual operating test. In addition, the MUTR Reactor Operator Requalification Program, Section V, "Evaluation", states that an oral (operating) test will be administered annually to each licensed operator. In order to verify compliance with the above requirements, the inspector reviewed the training records for the licensed operators and interviewed selected reactor staff. Contrary to the above requirements, records indicating the completion of the annual operating test were not available and the licensee confirmed that they were not being administered. The licensee was informed that failure to conduct the annual oral (operating) test was an apparent violation of 10 CFR 55.59 and the MUTR Requalification Plan (VIO 50-166/2010-201-01).

c. Conclusions

Operator requalification was generally conducted as required by the Requalification Program except for the failure to conduct annual operating test as required by 10 CFR 55.59(a)(2) and the MUTR Requalification Program. This failure has been determined to be a Severity Level IV VIO.

5. Surveillance and Limiting Conditions for Operation

a. Inspection Scope (IP 69001-02.05)

The inspectors reviewed the following to verify compliance with TS Section 3.0, Limiting Conditions for Operation (LCO), and to determine if the periodic surveillance

¹An Unresolved Item is a matter about which more information is required to determine whether the issue in question is an acceptable item, a deviation, a nonconformance, or a VIO.

tests on safety systems were performed as stipulated in TS Section 4.0, Surveillance Requirements:

- Control Rod Poison Section Inspection sheet, dated July 30, 2008
- Reactor Power Calibration, dated April 4, 2010
- Area Radiation Monitor Calibration Worksheet, dated July 24, 2009
- Control Rod Calibration and Shutdown Margin Calculation, dated March 12, 2008
- Control Rod Calibration and Shutdown Margin Calculation, dated July 17, 2007
- Control Rod Drop Time Data Sheet, dated May 14, 2009
- Control Rod Drop Time Data Sheet, dated July 22, 2008
- Surveillance Procedure (SP)-201, Control Rod Poison Section Inspection, Rev. 12, March 27, 2000
- SP-202, Thermal Power Calibration Procedure, Rev. 12, March 27, 2000
- SP-203, Control Rod Drop Time, March 27, 2000
- SP-204, Control Rod Calibration by the Positive Asymptotic Period Method, Rev. 12, March 27, 2000
- SP-206, Pool Water Conductivity Determination, March 27, 2000
- File of Daily Startup Checklists (from OP-101) for the past year

b. Observations and Findings

The inspector noted that, in general, daily, monthly, quarterly, and annual checks, tests, and/or calibrations for TS-required surveillance were completed as required. The 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 confirmations generally satisfied TS and licensee administrative controls.

6. Experiments

a. Inspection Scope (IP 69001)

To verify compliance with licensee's procedures, TS Section 3.5, Limitations on Experiments, TS 6.4, Experiment Review and Approval, and 10 CFR 50.59, the inspector reviewed selected aspects of:

- Reactor Console Logbook, April 2009 to present
- Annual Report, July 1, 2008, to June 30, 2009
- Reactor Safety Committee Minutes for Meeting of September 15, 2009

- Reactor Safety Committee Minutes for Meeting of September 16, 2008
- Proposal to Irradiate and Remove the Thermal column Access plug for Determination of Activation of New Materials and Dose Rates for Sample Removal, dated February 18, 2009
- Proposal for Gamma Dose Rate Mapping and Neutron Spectrum Unfolding Within the Thermal Column Environmental Control Access Plug, dated February 18, 2009

b. Observations and Findings

No new experiments had been initiated, reviewed, or approved since the previous inspection at the facility. The inspector witnessed the removal of a routine experiment from the rabbit tube. Health physics technicians were present and provided proper coverage. The inspector verified that the experiment was in accordance with TS limits and procedural requirements.

c. Conclusions

Conduct and control of experiments met the requirements of regulations and the MUTR Technical Specifications.

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, April 2009 to present
- Annual Report, July 1, 2007, to June 30, 2008
- Annual Report, July 1, 2008, to June 30, 2009

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 constituted a change reportable 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. Conclusions

No new changes subject to 10 CFR 50.59 reporting were performed since the previous inspection.

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 Section 6.2 were being completed by the RSC:

- Annual E-Drill/External Audit Results, S. Petras (Constellation Nuclear Services) to M. Al-Sheikhly (UMD), July 28, 2009
- Annual E-Drill/External Audit Results, S. Petras (Constellation Nuclear Services) to M. Al-Sheikhly (UMD), July 2, 2008
- Reactor Safety Committee Minutes for Meeting of September 15, 2009
- Reactor Safety Committee Minutes for Meeting of September 16, 2008
- Annual Report, July 1, 2008, to June 30, 2009

b. Observations and Findings

The licensee's safety oversight was performed by its RSC. The RSC membership met the requirements of TS 6.2.2. The inspector verified that the RSC composition, meeting quorums, and meeting frequency were all in accordance with TS Section 6.2.2, RCS Charter and Rules. The inspector also verified that the audit function required in TS Section 6.2.4, RSC Audit Function, was conducted and that the audit reports were reviewed by the RSC.

c. Conclusions

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

9. Exit Interview

The inspection scope and results were summarized on June 1, 2010, with members of licensee management. The inspectors described the areas inspected and discussed the inspection findings. The licensee acknowledged the findings presented and no dissenting comments were received.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

V. Adams	Facility Coordinator and Senior Reactor Operator
M. Al-Sheikhly	Director, Radiation Facilities and Nuclear Reactor
M. Dorman	Assistant Director of Environmental Safety
B. Zidek	Health Physicist

INSPECTION PROCEDURES USED

IP 69001 Class II Non-Power Reactors

ITEMS OPENED, CLOSED

OPENED:

URI 50-166/2010-201-01	Failure to provide documentation of the biennially required medical examination per 10 CFR 55.53
VIO 50-166/2010-201-01	A Severity Level IV VIO for the failure to conduct the annual operating test as required by 10 CFR 55.59 and the MUTR Requalification Plan

CLOSED:

None

PARTIAL LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
EP	Emergency Procedure
FC	Facility Coordinator
FD	Facility Director
IP	Inspection Procedure
MUTR	Maryland University Training Reactor
NRC	Nuclear Regulatory Commission
OP	Operating Procedure
RO	Reactor Operator
RSC	Reactor Safety Committee
RSO	Radiation Safety Officer
SP	Surveillance Procedure
SRO	Senior Reactor Operator
TS	Technical Specifications
UMD	University of Maryland
URI	Unresolved Item
VIO	Violation