December 13, 2004

Dr. Mohamad Al-Sheikhly, Director
Radiation Facilities
2309A Chemical and Nuclear Engineering Building
The University of Maryland
College Park, MD 20742-2115

SUBJECT: NRC ROUTINE, ANNOUNCED INSPECTION REPORT NO. 50-166/2004-201

Dear Dr. Al-Sheikhly:

This letter refers to the inspection conducted on July 26-30, 2004 at the Maryland University Training Reactor. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. 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 safety concerns or noncompliance with NRC requirements were identified. No response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," 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 (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact Thomas Dragoun at 610-337-5373.

Sincerely,

/RA/

Patrick M. Madden, Section Chief
Research and Test Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-166/2004-201
cc w/enclosure: See next page

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
Associate Director-Reactor Facility
Department of Materials and
Nuclear Engineering
University of Maryland
College Park, MD 20742

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

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

Docket No:	50-166
License No:	R-70
Report No:	50-166/2004-201
Licensee:	University of Maryland
Facility:	Maryland University Training Reactor
Location:	College Park, Maryland
Dates:	July 26-30, 2004
Inspector:	Thomas F. Dragoun
Approved by:	Patrick M. Madden, Section Chief Research and Test Reactors Section New, Research and Test Reactors Program Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Maryland University Training Reactor
Report No.: 50-166/2004-201

This routine, announced inspection included onsite review of selected aspects of organization and staffing, procedures, operator requalification program, surveillance and limiting conditions for operations, and health physics program since the last NRC inspection.

The inspection determined that the licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with NRC requirements.

Organization and Staffing

- The licensee’s organization and shift manning for reactor operations were consistent with the Technical Specifications.

Procedures

- Written procedures were approved and implemented as required by the Technical Specifications.

Operator Requalification

- Operator requalification was conducted as required by the Requalification Program.

Surveillance and Limiting Conditions for Operations

- The surveillance program satisfied Technical Specification requirements.

Health Physics

- The radiation protection program satisfied NRC requirements.

REPORT DETAILS

Summary of Plant Status

During the inspection the reactor was not operated.

1. Organization and Staffing

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

The inspector reviewed the following to verify compliance with the staffing requirements in TS 6.1 "Organization":

- organization and staffing
- qualifications
- management responsibilities
- administrative controls
- completed reactor startup checkout forms for 2004

b. Observations and Findings

The organizational structure had not changed since the last inspection. The chairman of the Materials and Nuclear Engineering Department was new. Both the department chair and the reactor director are guest researchers at the NIST research reactor. The familiarity with research projects has enabled the staff to obtain research grants for the University of Maryland reactor.

The licensed staff consisted of two Senior Reactor Operators (SRO), one Reactor Operator (RO), and one trainee. The reactor console record indicated that the Technical Specification (TS) 6.1.3 staffing requirements during reactor operations was satisfied. The name of the second person required by TS 6.1.3(2) to be present for reactor operations was recorded in the log book as required by procedure OP101 - Reactor Startup Checkout.

c. Conclusion

The licensee's organization and shift manning for reactor operations were consistent with the Technical Specifications (TS).

2. 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:

- Procedure OP 101 "Reactor Startup Checkout"
- Procedure OP 102 "Reactor Shutdown Checkout"
- Procedure OP 103 "Reactor Startup"

- Procedure OP 104 "Reactor Operations"
- Procedure SP 201 "Control Rod Poison Section Inspection"
- Procedure SP 202 "Reactor Power Calibration"
- Procedure SP 203 "Control Rod Drop Time"
- Procedure SP 204 "Control Rod Calibration by the Positive Asymptotic Period Method"
- Procedure SP 205 "Area Radiation Monitor Calibration"
- Procedure MP 301 "Dismantling and Reassembling Fuel Bundle"
- Procedure MP 302 "Flux Controller Calibration"
- Procedure MP 303 "Fuel Movement"
- Procedure MP 304 "Control Rod Drive and Control Rod Removal"

b. Observations and Findings

The inspector determined that written procedures were available for the activities delineated in TS 6.3 and were approved by the Reactor Safety Committee. With the exception of procedure MP 304, the bulk of the procedures were designated as Revision 12 dated March 27, 2000. The clarity and detail in the procedures was satisfactory. The licensee stated that procedures do not require verbatim compliance and the reactor operators are authorized to change the sequence of steps as required for safe operation of the reactor.

c. Conclusions

Written procedures were approved and implemented as required by the Technical Specifications.

3. Operator Requalification

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with the requirements in 10 CFR 55 and the Training and Requalification Program for the Maryland University Training Reactor (MUTR):

- operator active license status
- operator physical examination records
- reactivity manipulation records
- written examination results
- MUTR Run Time Log for the years 2002, 2003, and 2004

b. Observations and Findings

There are three licensed operators and all licenses were current. The year 2004 is the second year of the biennial cycle. The requirement for a procedures review, physical examination, written examination, reactivity manipulations, and operational evaluation were completed in a manner consistent with the Requalification Program requirements.

c. Conclusions

Operator requalification was conducted as required by the Requalification Program.

4. Surveillance

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the surveillance and calibration requirements specified in TS Section 4.0 were met:

- Procedure SP 205 - 2 "Area Radiation Monitor Calibration" Revision 12 dated March 27, 2000. Data for February 16, 2004, February 1, 2003 and January 17, 2002
- Procedure SP 203 - 1 "Control Rod Drop Time" Revision 12, dated March 27, 2000. Data for July 21, 2004, June 27, 2003 and June 14, 2002
- Procedure SP 204 "Control Rod Calibration by the Positive Asymptotic Period Method" Revision 12, dated March 27, 2000. Data for May 13, 2003 and May 17, 2002
- Procedure SP 202-1 "Reactor Power Calibration" Revision 12, dated March 27, 2000. Data for July 21, 2004, March 17, 2003 and March 12, 2002

b. Observations and Findings

Within the scope of this limited review, the inspector determined that surveillance and calibrations were completed on schedule and in accordance with licensee procedures, checklists, or equipment manufacturers recommendations. All results were within the acceptable range specified in the TS.

c. Conclusions

The surveillance program satisfied Technical Specification requirements.

5. Health Physics

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Part 19.12 "Instruction to Workers",10 CFR Part 20 "Standards for Protection Against Radiation", TS Sections 3.3 "Primary Coolant Condition", and 6.1 "Organization":

- organization and staffing
- Radiation Safety Manual - University of Maryland dated February 3, 1994
- calibration records for the vent stack and effluent monitors for 2004
- monthly reactor room air and liquid effluent grab samples. Data for January to July 2004
- radiological signs and posting
- monthly surveys and monitoring
- bi-monthly dosimetry records for staff and students for 2003

- records for reactor room dose monitoring bi-monthly data for 2003
- maintenance and calibration of radiation monitoring equipment
- content of radiation worker computer based training
- As Low As Reasonably Achievable (ALARA) program dated October 18, 1993
- Annual reviews of the radiation protection program dated December 9, 2003 and December 16, 2002

b. Observations and Findings

The radiation protection organization remained as described in TS Figure 6-1 . The HP program was documented in the Radiation Safety Manual as required by 10 CFR 20.1101. It was unchanged since 1994. Any changes must be approved by the campus safety committee and sent to the State of Maryland for review. Communication and coordination between the reactor operations staff and the health physics staff were informal but effective. As utilization of the reactor continues to increase, the licensee stated that the cooperation between reactor operations and HP staff may be formalized at a future time.

No routine dose rate surveys were conducted in the reactor room. Continuous monitoring with fix mount dosimeters distributed in the reactor room demonstrated that worst case doses were below NRC limits. Grab samples of reactor pool water and air samples are taken monthly as required by the TS. The results from January 2004 to date indicated no elevated levels of radioactive material.

Radiation area postings and radioactive material labeling were as required by 10 CFR 20 Subpart J.

Personnel dosimetry was provided by a NAVLAP accredited vendor (Global Dosimetry). Dosimeters are processed at 2 month intervals. Records indicated that staff and student doses were well below the NRC limits.

Basic training for radiation workers was available via an Internet website. After testing on this material, workers receive additional job specific training from the RSO and Principal Investigator. Training content satisfied the requirements in 10 CFR 19.12 and included the Regulatory Guide 8.13 information regarding the restricted dose limit for a fetus.

c. Conclusions

The radiation protection program satisfied NRC requirements.

6. Exit Meeting

The inspector presented the inspection results to licensee management at the conclusion of the inspection on July 30, 2004. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

V. Adams, Senior Reactor Operator
M. Al-Sheikhly, Director, Radiation Facilities
S. Hands, Radiation Safety Officer

INSPECTION PROCEDURES USED

IP 69001	CLASS II NON-POWER REACTORS

ITEMS OPENED, CLOSED, AND DISCUSSED

OPENED:
None

CLOSED:
None

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
HP	Health Physics
IP	Inspection Procedure
LCO	Limiting Condition for Operation
MUTR	Maryland University Training Reactor
NAVLAP	National Voluntary Accreditation Program
NRC	Nuclear Regulatory Commission
RSO	Radiation Safety Officer
SNM	Special nuclear material
TS	Technical Specifications