September 14, 2001

Dr. Aris Christou, Chairman
Department of Materials and Nuclear Engineering
The University of Maryland
College Park, MD 20742

SUBJECT: NRC ROUTINE, ANNOUNCED INSPECTION REPORT NO. 50-166/2001-201

Dear Dr. Chistou:

This refers to the inspection conducted on July 23-27, 2001, at the Maryland University Training Reactor. 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 concern or noncompliance to NRC requirements was identified. No response to this letter is required.

In accordance with 10 CFR 2.790 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/NRC/ADAMS/index.html. If you have any questions, please contact Thomas Dragoun at 610-337-5373.

Sincerely,

/RA/

Patrick M. Madden, Chief
Non-Power Reactors and Financial Section
Operational Experience and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-166/2001-201

cc w/enclosure: Please 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

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

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U. S. NUCLEAR REGULATORY COMMISSION

Docket No:	50-166
License No:	R-70
Report No:	50-166/2001-201
Licensee:	University of Maryland
Facility:	Maryland University Training Reactor
Location:	College Park, Maryland
Dates:	July 23-27, 2001
Inspector:	Thomas F. Dragoun
Approved by:	Patrick M. Madden, Chief Non-Power Reactors and Financial Section Operational Experience and Non-Power Reactors Branch Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

This routine, announced inspection included onsite review of selected aspects of the operations program, organizational structure and functions program, review and audit program, radiation protection program, environmental protection program, operator requalification program, surveillance program, procedural control program, emergency preparedness program, safeguards program, and security program since the last NRC inspection.

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

ORGANIZATIONAL STRUCTURE AND FUNCTIONS
The organizational structure and functions were consistent with Technical Specification requirements.

OPERATIONS
The operations program satisfied Technical Specification requirements.

REVIEW AND AUDIT
The review and audit program satisfied Technical Specification requirements.

RADIATION PROTECTION
The radiation protection program satisfied NRC requirements.

ENVIRONMENTAL PROTECTION
The environmental protection program satisfied NRC requirements.

OPERATOR REQUALIFICATION
Operator requalification was conducted as required by the Requalification Program.

SURVEILLANCE
The surveillance program satisfied Technical Specification requirements.

PROCEDURES
The procedural control and implementation program satisfied Technical Specification requirements.

EMERGENCY PREPAREDNESS
The emergency preparedness program was conducted in accordance with the Emergency Plan.

SAFEGUARDS
Special Nuclear Materials were acceptably controlled and inventoried.

SECURITY
The NRC-approved security program was acceptably implemented.

Report Details

Summary of Plant Status

The reactor was not operated during this inspection. Records show that it operated a few times each week during the school year. Control rod drives and position indicators were replaced. The material condition of the facility was good.

1. ORGANIZATIONAL STRUCTURE AND FUNCTIONS

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- organization and staffing
- qualifications

b. Observations and Findings

The Operations Supervisor left, the position was eliminated, and funding cut. It had been filled by a graduate student. This position was not required by the Technical Specifications (TSs). An undergraduate student was added to the staff on a semi-permanent basis funded by soft money. He has assumed most of the Operations Supervisor's duties. All staff continue to have collateral duties at the cobalt irradiator, linear accelerator, and the reactor.

There are three licensed reactor operators and five trainees. Staffing was adequate to support operations.

The organizational structure and staffing at the facility was as required by the TSs. Qualifications of the staff met TS requirements.

c. Conclusions

The organizational structure and functions were consistent with TS requirements.

2. OPERATIONS

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- operational logs and records
- staffing for operations
- selected operational, startup, or shutdown activities

b. Observations and Findings

The administrative requirements for log keeping were dispersed through the operating procedures. The various requirements were satisfied and the logs provided an indication of operational activities. The inspector noted some decline in penmanship and readability of console log entries. The licensee stated that this would be improved.

The logs and records indicated that shift staffing including on-call personnel was as required by TSs. Logs and records also showed that operational conditions and parameters were consistent with license and TS requirements. The maintenance, startup, and shutdown logs were well kept.

c. Conclusions

The operations program satisfied TS requirements.

3. REVIEW AND AUDIT

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- reactor safety committee membership and meetings
- audit records
- responses to safety reviews and audits
- review and audit personnel qualifications

b. Observations and Findings

Records showed that the reactor safety committee membership, meeting frequency, and agenda satisfied the TS requirements. The biennial outside audit required by TS 6.2.4 was conducted by a previously licensed reactor operator. The audit scope included those areas outlined in the TSs. No weaknesses were reported by the audit.

c. Conclusions

The review and audit program satisfied TS requirements.

4. RADIATION PROTECTION

a. Scope (69001)

The inspector reviewed selected aspects of:

- organization and staffing
- the Radiation Protection Program

- radiological signs and posting
- routine surveys and monitoring
- dosimetry records
- maintenance and calibration of radiation monitoring equipment
- radiation worker training
- As Low As Reasonably Achievable (ALARA) program

b. Observations and Findings

The radiation protection organization remained as described in the TSs. Several years ago, the functions of Director, Environmental Safety Department, and Radiation Safety Officer (RSO), which were held by the same person, were made separate functions. The RSO continued as the voting member of the campus Radiation Safety Committee and the Reactor Safety Committee. The RSO retired and was replaced with an experienced person. The HP technician assigned to support the reactor program had not changed since the last inspection.

The HP program was documented in the Radiation Safety Manual as required by 10 CFR 20.1101. It was unchanged since 1994. Implementing procedures were clear and detailed. The RSO stated that HP procedures are incorporated by reference into the broad scope byproduct license issued by the state of Maryland. Any changes must be approved by the campus safety committee and sent to the State. The inspector noted that there was no policy describing the process to change the procedures. Changes may be required after the annual review specified in 10 CFR 20.1101. The RSO stated that the need for a procedure change policy would be reviewed.

No routine surveys were conducted. Continuous monitoring with fix mounted dosimeters demonstrated that worst case doses were below NRC limits.

Radiation area postings and radioactive material labeling were as required by 10 CFR Part 20 Subpart J. The inspector conducted an independent survey of selected areas and verified the postings.

Personnel dosimetry was provided by an accredited vendor. Dosimeters are processed at two-month intervals. Records indicated that doses were well below NRC limits.

Radiation survey equipment was maintained and calibrated by a local vendor. The HP technician maintained a detailed computer database that provided the status of all equipment. Survey meters were calibrated annually. A supply of meters was on hand. However, the first two meters the inspector attempted to use to conduct a survey were defective. The attached stickers indicated that the meters were recently calibrated. The RSO stated that these meters would be sent to the manufacturer for repair and calibration instead of the local vendor.

New analytical laboratory equipment was installed in the reactor facility including a high-efficiency, high-purity germanium detector and operating software. This significantly improved the licensee's ability to measure low levels of radioactivity.

Training for radiation workers was available via an Internet website. After testing on this material, workers receive additional job specific training, the Training Manual, and reference materials. Training content satisfied the requirements in 10 CFR 19.12.

The inspector noted that the ALARA program policy statement was issued by a department chairman. ALARA policies normally are promulgated at a higher level to be applicable across the campus. The RSO stated that the ALARA policy would be reviewed.

c. Conclusions

The radiation protection program satisfied NRC requirements.

5. ENVIRONMENTAL PROTECTION

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- the environmental monitoring program
- annual reports
- gaseous effluents

b. Observations and Findings

The environmental monitoring program consists of a series of dosimeters mounted at the outside perimeter of the reactor facility. Data from these locations showed that doses to the public were well below the limits specified in 10 CFR 20.1301. COMPLY computer calculations demonstrated that the constraint on airborne effluent in 10 CFR 20.1101(d) was satisfied.

c. Conclusions

The environmental protection program satisfied NRC requirements.

6. OPERATOR REQUALIFICATION

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- the Requalification Program
- operator licenses
- operator training records
- operator physical examination records
- operator examination records
- operator active duty status

b. Observations and Findings

The Requalification Program was revised in December 1999. Operator licenses were current. Records showed that operator training was consistent with the Requalification Program requirements. Physical examinations of the operators were conducted as required. Records showed that written and operating examinations of the operators were acceptably implemented. Logs showed that operators maintained active duty status as required.

c. Conclusions

Operator requalification was conducted as required by the Requalification Program.

7. SURVEILLANCE

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- surveillance and calibration procedures
- surveillance, calibration and test data sheets and records

b. Observations and Findings

Surveillance, test and limiting condition for operation verifications and calibrations were completed on schedule and in accordance with licensee procedures. The HP group completes certain surveillances. All the recorded results were within the TSs and procedurally prescribed parameters. The records and logs reviewed were complete and were being maintained as required. Measurement of control rod drop times was due.

c. Conclusions

The surveillance program satisfied TS requirements.

8. PROCEDURES

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- administrative controls
- logs and records

b. Observations and Findings

Most of the procedures had been revised and updated since 1999 as part of the relicensing efforts. Administrative controls of changes and temporary changes to procedures, and associated review and approval processes were as required. Procedures had consistent format and detailed content. Training of personnel on procedures and changes was acceptable. The inspector noted that the procedures did not include references, such as related TSs or regulations. The licensee stated that the need for references would be reviewed.

c. Conclusions

The procedural control and implementation program satisfied TS requirements.

9. EMERGENCY PREPAREDNESS

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- status of previously identified items
- the Emergency Plan
- implementing procedures
- training
- offsite support
- emergency drills and exercises

b. Observations and Findings

During the last inspection, the inspector noted that efforts to update the Emergency Plan (E-Plan) had been stalled for several years, off-site support agreements had not been updated for 17 years, and communications weaknesses identified during a drill remained uncorrected.

On January 5, 2000, the licensee transmitted an updated E-Plan to the NRC. Section 10.2 of the revised plan assigned full responsibility for updates and offsite support agreements to the Reactor Director and the Reactor Safety Committee. This was previously assigned to the Department of Environmental Safety. Support agreements with the Prince George's County Fire/EMS Department and the Adventist Hospital were current. The support hospital was changed from Walter Reed Hospital. Problems with communications equipment was remedied by switching vendors who provided this equipment. The licensee actions associated with Inspector Follow-up Item 50-166/99-201-01 were comprehensive and this item is closed.

Facilities, supplies, instrumentation and equipment were being maintained, controlled and inventoried as required in the E-Plan. The inspector verified the contents of one emergency supply kit. Emergency drills had been conducted as required by the E-Plan. Critiques were held following the drills to discuss the strengths and weaknesses identified during the exercise and to develop possible

solutions to any problems identified. No additional changes to the E-Plan were needed. Emergency preparedness and response training was being completed as required.

c. Conclusions

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

10. SAFEGUARDS

a. Scope (IP 85102)

The inspector reviewed selected aspects of:

- nuclear material inventory and locations
- accountability records

b. Observations and Findings

Records indicated that all nuclear material was accurately accounted for. All Material Balance Reports (DOE/NRC Forms-742 and 742c) submitted by the licensee since the last inspection satisfied the requirements specified in 10 CFR 70.53.

All SNM was stored and used in designated areas.

Physical inventories were conducted annually as required by 10 CFR 70.51(d).

c. Conclusions

Special Nuclear Materials were acceptably controlled and inventoried.

11. SECURITY

a. Scope (IP 81431)

The inspector reviewed:

- records
- key control
- detection aids
- physical barriers

b. Observations and Findings

The reactor staff periodically tests the security system as required. The inspector conducted an independent test of the intrusion detection and alarm system.

Results were acceptable. Facility keys were controlled as required. All lock cores and keys were changed in May 1999.

The licensee's physical protection program was found to conform to NRC requirements and the licensee's implementing procedures.

c. Conclusions

The NRC-approved security program was acceptably implemented.

12. EXIT MEETING SUMMARY

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on July 27, 2001. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee
V. Adams, Senior Reactor Operator
M. Al-Sheikhly, Director, Radiation Facilities
A. Christou, Chairman, Department of Materials and Nuclear Engineering
J. Emmer, Reactor Operator

NRC Foreign Assignee
N. Badinas, Philippine Nuclear Research Institute, Department of Science and Technology

INSPECTION PROCEDURES USED

IP 69001	CLASS II NON-POWER REACTORS
IP 81431	FIXED SITE PHYSICAL PROTECTION OF SNM OF LOW STRATEGIC SIGNIFICANCE
IP 85102	MATERIAL CONTROL AND ACCOUNTING

ITEMS OPENED, CLOSED, AND DISCUSSED

OPENED:
None

CLOSED:
50-166/99-201-01 (IFI) Resolve timeliness issues regarding the Emergency Plan

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
E-Plan	Emergency Plan
HP	Health Physics
NRC	Nuclear Regulatory Commission
RSO	Radiation Safety Office
SNM	Special nuclear material
TS	Technical Specifications