

# University of Maryland

Department of Chemical and Nuclear Engineering  
COLLEGE PARK, MARYLAND 20742

July 23, 1979

Dr. Karl R. Goller  
Assistant Director for Reactor Operations  
Nuclear Regulatory Commission  
Washington, D.C. 20555

Docket No. 55-2962  
Facility License: No. R-70

Dear Dr. Goller:

In accordance with the requirements set forth in our Technical Specifications for the Maryland University TRIGA reactor, this annual report is submitted. This report covers the period from June 30, 1978 thru June 30, 1979.

## A. Summary of Operating Experience

During this period the Maryland University training reactor (MUTR) has continued to provide service to the University and the state in such areas as reactor technology, operator training, neutron activation and education in power conversion.

A no credit program in reactor operation was initiated at the request of the nuclear engineering students. The group meets each Saturday morning, on a voluntary basis, and conducts a seminar type meeting that includes reactor theory and operation under the supervision of the reactor director. As a result of this program, two students have received Operator's Licenses and four students have received Senior Operator's Licenses. Participation is not limited to Nuclear Engineering students; several electrical and mechanical students attend.

It is gratifying to observe an increase of student interest in experimental programs as opposed to computer oriented research. Special problems in neutron flux mapping and neutron radiography have been performed during the last year. Other students are using activation analysis to determine trace quantities of elements in gasoline, paper and plant leaves.



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Several changes were made to the reactor console to facilitate reactor operation, none of these involved the safety channels. They are: 1) Indicator lights to reveal pool water level, 2) Indicator lights to show if beam and thru tube shielding plugs are in place, 3) Conductivity meter for instant read out of pool water purity, 4) A kilowatt-hour meter.

#### B. Reactor Operations

During the period 30 June 1978 thru 30 June 1979 the reactor was operated 341 times and produced a total of 15 megawatt hours of energy. This reflects a greater than 100 percent increase in operation over the previous reporting period.

#### C. Equipment Surveillance and Tests

Fuel rod inspection was performed on 27 October, 1978. Eight four rod fuel clusters were removed from the assembly rack and visually inspected. No signs of corrosion or unusual surface defects were observed.

Control rod drop time was measured. The results are given below:

<u>Rod Identification</u>	<u>Drop Time Sec.</u>
Shim I	0.55
Shim II	0.54
Reg. Rod	0.56

The worth of each rod was determined by the asymptotic period method. The results are shown below:

<u>Rod Identification</u>	<u>Rod Worth, \$</u>
Shim I	2.38
Shim II	2.38
Reg. Rod	2.30

All area monitors are calibrated on a monthly basis or when operations indicate the need they were performed satisfactorily.

D. Emergency Shut-downs and Scrams

No emergency shut-down or scram occurred during this operating period.

E. Major Maintenance Items

No reportable maintenance was required for this period; however, several improvements were made to the equipment. They are:

a) A pool water height level indicator was installed with readouts on the console and in the Department office.

b) Indicator lights were installed in the console to show if the thru tube and beam port plugs were in or out or being by passed.

c) The conductivity of the pool water can now be measured by the operator at the console without going to the water room.

d) Rod drop time measurements can now be made at the console where previously portable equipment was used on the reactor bridge.

F. A summary of the nature and amount of radioactive effluents released or discharged to the environment and of radioactive waste shipped off site for disposal.

G. Radiation Exposure

In the time period of June 30, 1978 thru June 30, 1979, over 600 people visited the reactor facility. They represented almost all the high schools from the Washington, Virginia and Maryland area.

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In all cases the amount of radiation received was negligible. In fact, the facility has maintained a perfect radiological safety record. Floor and area wipes have been routinely carried out with the results that any contamination was far below the maximum permissible level.

H. Changes to the Facility on Procedures, Tests,  
and Experiments.

No changes were made during this period of this report.

Sincerely,

*Ralph L. Belcher*

Ralph L. Belcher  
Nuclear Reactor Director

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