ANNUAL REPORT: July 1, 2006 – June 30, 2007

FOR THE

MARYLAND UNIVERSITY TRAINING REACTOR

License No. R-70

Docket No. 50-166

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I. INTRODUCTION

The University of Maryland Training Reactor (MUTR) is an open-pool type, TRIGA fueled reactor licensed for operation at 250 kW thermal power. The core is cooled by natural convection of the pool water with auxiliary cooling provided for protection of the filters and ion exchange equipment associated with reactor support piping.

The MUTR is used for academic instructions and operator training, performance of neutron and gamma irradiations, neutron activation analysis experiments, and tours and demonstrations for groups internal and external to the campus as well as for visiting nuclear power plant trainees.

REACTOR USEAGE

During the past year the MUTR operated for a total of 47 runs (Run Numbers 3823 - 3866), which are categorized below:

Operator Training/Requalification*	18 runs
Tours, Labs & Demonstrations	5 runs
Calibration, Maintenance, and Surveillance	15 runs
Operator Examinations	3 runs
Irradiations and Activations	6 runs

*Note: Some runs involved training and surveillance and may be counted in both categories.

To perform these runs the core produced 11.555 MWh (kWh meter change from 223344 kWh to 234676 kWh), with a corresponding burnup of 0.67 Grams of U-235.

III. SURVEILLANCE TESTS AND INSPECTIONS

All required surveillance tests and inspections were performed at the specified intervals. The required surveillance items for this reporting period include:

WATER SAMPLE TESTS

AIR SAMPLE TESTS

RADIATION SURVEYS

CONTROL ROD DROP TEST

RAM CALIBRATION

SNM INVENTORIES

ALARA REVIEW

In addition to the above surveillance items, the following maintenance operations were performed on the indicated dates:

7/02/06 Dri-rite replaced.
10/05/06 Dri-rite replaced
12/18/06 Dri-rite replaced.
2/11/07 Replaced primary resin.
4/10/070 Dri-rite replaced.
6/18/07 Dri-rite replaced.

Additional minor maintenance was performed such as light bulb replacement and fine-tuning of equipment was performed as necessary. Additional descriptions of some items from above can be found in Section IV.

IV. CHANGES TO FACILITY

There were no significant changes to the Facility during this reporting period.

V. ENVIRONMENTAL SURVEYS OF SURROUNDING AREAS

All continuos monitoring for this year was accomplished using fixed-mounted film badges throughout the interior of the reactor building itself. These badges recorded the following exposures:

Monitor	Location	Dose (mrem)
1	Control Room	43
2	Pool Surface	57
3	Hot Room	29
4	Prep Room	126
5	S. Wall Upper	526
6	S. Wall Lower	12
7	E. Wall Lower	*
8	Pump Room	11
9	N. Wall Lower	441
10	W. Wall Lower	36

VI. RADIOACTIVE RELEASE AND DISCHARGE TO THE ENVIRONMENT

The Reactor Storage Sump was not discharged during this reporting period.

The only release from the MUTR consists of Ar-41. For one operation, the West Beam Port was open during operation for a routine experiment, so the West Beam Port would represent one possible source of Ar-41. The reactor was operated at a maximum power level of 200 kW for 1.25 hours, which would result in a production of 0.104 Ci of Ar-41. For this Ar-41 to escape to the reactor building it would have to diffuse through the 2" diameter hole in the new beam port plugs. If it is assumed that 10% of the Ar-41 manages to diffuse before it decays, this would yield a total release of 10.4 mCi to the reactor containment area. From Section 11 of the SER for the MUTR, a 5.5 MWh operation year would result in the generation of 21.9 mCi of Ar-41 for the entire year from the reactor pool tank. For this operation year, a combined 15.9 mCi of Ar-41 was released to the reactor building. This value was used in the EPA program COMPLY. The MUTR meets the EPA level 2 compliance for airborne release of radioactive materials. A copy of the output for the EPA computer program "COMPLY" is appended with this report.

VII. ALARA REVIEW FOR FACILITY PERSONNEL AND VISTOR EXPOSURE

A review of exposure records and all facility operations were performed by facility management as part of the annual ALARA audit. For this reporting period, all badged personnel and students received doses less than ten per-cent of their annual dose limit.

The Pocket Dosimeters recorded minimal exposure for all guests and service personnel. Calibrations of these self-reading dosimeters were performed on an annual basis by the University of Maryland's Radiation Safety Office.

VIII. UNSCHEDULED SHUTDOWNS/REPORATBLE OCCURRENCES

Three unscheduled shutdowns occurred during this reporting period. The first was due to a power failure in the facility on October 20, 2006. The second and third were due to electronic noise in the period scrams channel, these took place on December 5, 2006 and March 2, 2007. Resumption of operations were approved and supervised by the Facility Director and an additional SRO.

There were no reportable occurrences during this reporting period.

IX. SPECIAL EXPERIMENTS

There were no special experiments performed during this reporting period.

X. CHANGES IN FACILITY STAFF

There were no significant changes to staffing during this reporting period.

APPENDIX A: EPA COMPLIANCE

Below is the output from the EPA program COMPLY for the Ar-41 release from the MUTR:

```
COMPLY: V1.5d.                                          9/11/07    10:21


40 CFR Part 61
National Emission Standards
for Hazardous Air Pollutants

                    REPORT ON COMPLIANCE WITH

          THE CLEAN AIR ACT LIMITS FOR RADIONUCLIDE EMISSIONS

                    FROM THE COMPLY CODE, VERSION 1.5d

                    Prepared by:

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                    Prepared for:

                    U.S. Environmental Protection Agency
                    Office of Radiation Programs
                    Washington, D.C.  20460
```

COMPLY: V1.5d. 9/11/07 10:21

2005-2006 MUTR Annual Report Ar-41 Release

SCREENING LEVEL 1

DATA ENTERED:

Effluent concentration limits used.

DATA ENTERED FOR STACK 1:

Nuclide	CONCENTRATION (curies/cu m)
AR-41	3.41E-05

DATA ENTERED FOR STACK 2:

Nuclide	CONCENTRATION (curies/cu m)
AR-41	3.41E-05

NOTES:

Input parameters outside the "normal" range:

None.

RESULTS:

You are emitting 11298.0 times the allowable amount given in the concentration table.

*** Failed at level 1.

COMPLY: V1.5d. 9/11/07 10:21

2005-2006 MUTR Annual Report Ar-41 Release

SCREENING LEVEL 2

DATA ENTERED:

RELEASE RATES FOR STACK 1.

Nuclide	Release Rate (curies/YEAR)
AR-41	3.700E-02

RELEASE RATES FOR STACK 2.

Nuclide	Release Rate (curies/YEAR)
AR-41	3.700E-02

SITE DATA FOR STACK 1.

Release height 8 meters.

Building height 11 meters.

The source and receptor are not on the same building.

Distance from the source to the receptor is 8 meters.

Building width 15 meters.

SITE DATA FOR STACK 2.

Release height 8 meters.

Building height 11 meters.

The source and receptor are not on the same building.

Distance from the source to the receptor is 8 meters.

Building width 15 meters.

Default mean wind speed used (2.0 m/sec).

COMPLY: V1.5d. 9/11/07 10:21

NOTES:

Input parameters outside the "normal" range:

None.

RESULTS:

Effective dose equivalent: 4.4E-02 mrem/yr.

*** Comply at level 2.

This facility is in COMPLIANCE.

It may or may not be EXEMPT from reporting to the EPA.

You may contact your regional EPA office for more information.

********** END OF COMPLIANCE REPORT **********