March 1, 2017

ATTN: Document Control Desk
Office of Nuclear Material Safety and Safeguards
Division of Spent Fuel Management
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: Quality Assurance Program for the Maryland University Training Reactor, License R-70

To Whom It May Concern

The Maryland University Training Reactor (MUTR) is aware of the requirement to have a quality assurance program approved by the Nuclear Regulatory Commission satisfying the requirements of 10 CFR 71, Subpart H prior to the use of the package. Please find this program attached. If you should have any questions or need more information, please contact Amber Johnson at ajohns37@umd.edu or 301-405-7756

Sincerely,

Timothy W Koeth

Dr. Timothy W. Koeth
Director, Nuclear Reactor and Radiation Facilities
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Quality Assurance Program

A. JAMES CLARK
SCHOOL OF ENGINEERING

Maryland University Training Reactor

QUALITY ASSURANCE PROGRAM

1 INTRODUCTION

The Quality Assurance Program submitted here is to assist in the handling of shipments of TRIGA® type reactor fuel, and other radioactive material. Specifically, the program will cover activities related to the shipping of approved packages containing radioactive material.

The Quality Assurance Program will be the responsibility of Amber Johnson at the Maryland University Training Reactor (MUTR). The transport of all radioactive material will be done by a licensed carrier. The shipping container will be Type B containers with an approved Certificate of Compliance (CoC). The containers will usually be on lease or loan from entities such as the Department of Energy or prime contractor.

The MUTR does not design, fabricate, assemble, or test containers, and does not intend to procure any container for ownership or lease to others. The MUTR does not intend to rework, repair, maintain or modify the container.

The QA Program is submitted pursuant to 10 CFR Part 71.

2 ORGANIZATION

Figure 1 shows the organization chart for the operation of the reactor facility. The Quality Assurance Program will be performed within the Operating Organization. The Reactor Safety Committee will review and approve all written procedures. The Reactor Operation personnel and the Health Physics personnel will have primary responsibility for monitoring all packaging, shipping and receiving activities.

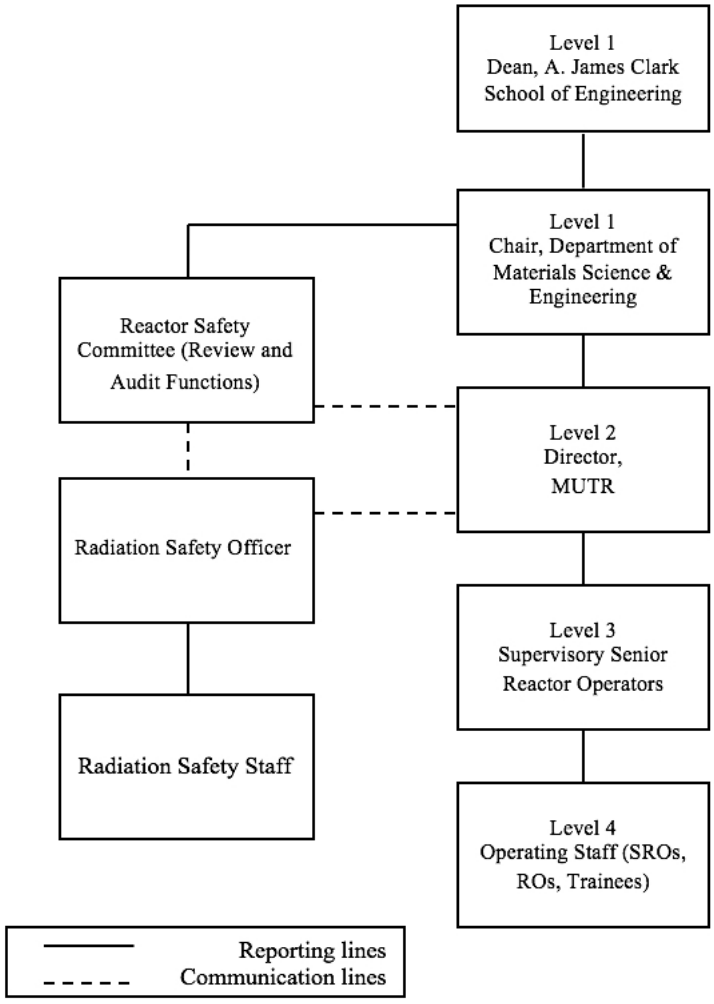

Figure 1

3 QUALITY ASSURANCE PROGRAM

The scope of this program includes receiving, handling, loading, delivering to a carrier for transport an approved package for the transport of TRIGA fuel or other radioactive material. Specifically, the shipments at MUTR will include unloading a package, shipping an empty package, and shipping a loaded package. Quality assurance will be exercised primarily through the use of written procedures constructed from regulatory requirements, applicable portions of the University of Maryland Radiation Safety Procedures, specific procedures developed by the

manufacturer of the package, and other procedures developed during review of packaging and transportation planning. Quality Assurance will be affected by formatting these procedures as check-lists (or equivalent) to be used by the individuals or their designates who are responsible for quality assurance.

4 PACKAGE DESIGN CONTROL

Design activities related to packages will not to be performed by the University.

5 PROCUREMENT DOCUMENT CONTROL

Procurement activities related to packages will not be performed by the MUTR. The proper procurement document control shall be the responsibility of the supplier of the designated package.

6 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Activities important to safety will be ensured by following all manufacturer's instructions, procedures, and limitations as they relate to the safe use of the packages.

7 DOCUMENT CONTROL

Control shall be exercised over the documents that are used in this shipping activity. The documents include a master document check-list, inspection procedures, loading and unloading procedures, package certification documents, radiation survey records, and shipping papers. All procedures and check-lists and changes will be approved by the MUTR Director, Reactor Manager, and Reactor Safety Committee.

8 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

No materials or equipment are to be purchased for this activity. Any required services such as container off-loading and carrier transport will be procured via normal University procedures.

9 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

No materials, part or components are to be identified or controlled for this activity. Replacement parts will be obtained from the manufacturer or certificate holder.

10 CONTROL OF SPECIAL PROCESSES

No special processes are to be undertaken for this activity.

11 INTERNAL INSPECTION

The following inspection activities will be implemented for each packaged procured for shipping purposes:

11.1 Receiving Inspections

Checklists will be established to ensure receipt inspections are performed to verify:

1. Proper package assembly
2. External dose rates are congruent with those listed on the radioactive shipping paperwork
3. Shipping papers are properly completed
4. Packages are conspicuously and durably marked in compliance with USDOT regulations
5. Measures are established to ensure that the consignee is present to accept receipt of the package

11.2 Shipping Inspections

Checklists will be established to ensure inspections are performed to verify:

1. Proper package assembly
2. Moderators and neutron absorbers are present (if applicable)
3. Valves are set to specification and to prevent tampering
4. Shipping papers are properly completed and signed by an authorized individual
5. Packages are conspicuously and durably marked in compliance with USDOT regulations

11.3 Maintenance Inspections

These inspections will not be performed under this activity unless specifically designated by the package standard operating procedures.

11.4 Inspection Documentation

Inspection records will be maintained to document performance of inspection activities

12 TEST CONTROL

12.1 Procedures

Measures will be established to ensure that applicable tests, surveys, or other measurements be performed according to manufacturer's instructions. Properly calibrated equipment will be used and methods for documenting tests will be established.

12.2 Acceptance Tests

Measures will be established to ensure that acceptance tests (as applicable) are performed prior to offering a package for transport. Tests may include structural integrity, leak tightness, component performance, and shielding and thermal integrity.

12.3 Results

Measures will be established to ensure that test results are documented, evaluated, and maintained as QA records. The MUTR Reactor Manager or Director will determine acceptability of the records.

13 CONTROL OF MEASURING AND TEST EQUIPMENT

13.1 Calibration Control

Gauges, reference standards, etc. are not expected to be used for this activity. Radiation measuring equipment will be used for this operation. This equipment will be the property of the Maryland University's Radiation Safety Office. Calibration records for this equipment will be maintained by the Radiation Safety Office as per their standard operating procedures.

Additionally, a calibrated torque wrench will be used for cask closure. This torque wrench will be calibrated with traceable standards, and the calibration records will be maintained by the MUTR Reactor Manager.

13.2 Out of Calibration Equipment

Equipment that is out of calibration will not be used.

14 HANDLING, STORAGE, AND SHIPPING CONTROL

14.1 Preservation

Measures will be established to ensure that cleaning, handling, storage, and shipping are accomplished in accordance with the package design requirements to prevent damage or deterioration by environmental conditions. Provisions for use of special equipment such as cranes or lifting devices will adequately identify and protect package components. Conditions identified in the CoC will be adhered to when loading or unloading packaging.

14.2 Preparation, Release and Delivery to Purchaser

Measures will be established to ensure that the following requirements are completed prior to shipping:

1. Cavities have been adequately dried

2. All conditions have been completed prior to offering for transport
3. All USNRC and USDOT requirements have been satisfied prior to offering for transport
4. All shipping papers have been completed and reviewed for accuracy and completeness

15 INSPECTION, TEST, AND OPERATING STATUS

A master check-list will be established to track the status of inspections, test, and operating conditions.

16 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

This section does not apply to this activity.

17 CORRECTIVE ACTION

17.1 Reporting

Causes of conditions that are detrimental to quality will be promptly identified and reported to the MUTR Reactor Manager. Measures will be established to identify any corrective action from suppliers are obtained and that corrective actions were implemented and effective.

18 QUALITY ASSURANCE RECORDS

18.1 General

QA records will be generated for each activity that is performed during the receipt, unloading, opening and closing, loading, preparation of shipping papers, and adherence to conditions specified by the manufacturer. The records will demonstrate delivery to a carrier and have evidence to show that USNRC and USDOT requirements have been satisfied.

Inspection and test records will identify: the test or observation performed, show that the tests or inspections were complete, record test or survey data, identify any conditions that are detrimental to quality, names of individuals performing the tests or inspections, and whether the results were acceptable.

18.2 Generating Records

Measures will be established to generate and store records. Paper copies of records generated will be stored in secure files. Additionally, documents will be scanned in a pdf format for electronic storage.

18.3 Indexing and Classification Records

Records generated for these activities will be designated as non-permanent and will be retained for a period of at least 3 years.

18.4 Receipt, Retrieval, and Disposition of Records

The records generated by these activities will be maintained by the MUTR Reactor Manager. Procedures are in place for storage of records that relate to transportation and health physics activities that relate to the use of licensed material at the University.

18.5 Storage, Preservation, and Safekeeping

Measures will be established to maintain records for the required period. Measures to be established include:

1. Prevention of damage from fire, flood, or other environmental damage
2. Record will be filed in folders in steel storage cabinets
3. Electronic records will be stored on a server which is backed up daily in a remote location
4. Unauthorized personnel will not have access to records
5. Electronic information is accessible to authorized users with password only access
6. Data will be electronically stored as read only pdf files
7. Damaged records will be promptly replaced

19 AUDITS

19.1 Elements of an Audit Program

Due to the small number of uses of any package an audit will be conducted after each use of a package. An auditor will be appointed by the Reactor Safety Committee or the Radiation Safety Officer. The conditions of Regulatory Guide 7.10 Section 18.1 will be met in establishing an audit program.

19.2 Scheduling of Audits

An audit will be performed after each shipment to ensure that elements of the program are in place and that appropriate documentation was generated and maintained.

19.3 Team Selection

Due to the small scope of this activity an independent individual will be chosen that has an understanding of the program and the requirements for compliance.

19.4 Various Audit Actions

The auditor will meet prior to the audit to discuss scope and objectives and after the audit to discuss findings, clarify facts, and to ensure all appropriate information has been gathered. A report will be generated to identify deficiencies and a response is required to address deficiencies. The auditor will ensure that a schedule for resolving the items identified is presented and that corrective action is implemented.