



Department of the Interior
US Geological Survey
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December 18, 2017

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

Re: Establishing a Quality Assurance Program at the U.S. Geological Survey TRIGA reactor facility (license R-113, Docket 50-274)

To Whom It May Concern:

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.

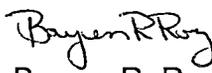
The Quality Assurance Program will be the responsibility of the Reactor Supervisor at the U.S. Geological Survey TRIGA Reactor (GSTR). The transport of all radioactive material will be done by a licensed carrier. The shipping container will be a Type B container with an approved Certificate of Compliance (CoC). The containers will usually be on loan from entities such as the Department of Energy or prime contractor.

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

This QA Program is submitted pursuant to 10 CFR Part 71 Subpart H. The QA Program (including all implementing procedures) has been approved from the Reactor Operations Committee.

If you have any questions regarding this matter, please contact me at 303-236-4726.

Sincerely,


Brycen R. Roy
Reactor Supervisor

Q004
AD2D
NRK
NMSS

Copy to:

Geoffrey Wertz, NRC Project Manager
USGS Reactor Operations Committee
GSTR Staff



USGS TRIGA REACTOR Quality Assurance Program

Number: QAP	Title: Quality Assurance Program	Revision: 0	Page: Page 1 of 10	Date: 12/18/17
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Written by:

Title: Reactor Supervisor / Signature Date

Reviewed by:

Title: Reactor Administrator / Signature Date

Approved by:

Title: Reactor Operations Committee / Signature Date

The following quality assurance program and implementing procedures are required to be reviewed biennially not to exceed 30 months.

	USGS TRIGA REACTOR Quality Assurance Program			
	Number: QAP	Title: Quality Assurance Program	Revision: 0	Page: Page 2 of 10

USGS TRIGA 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 the Reactor Supervisor at the U.S. Geological Survey TRIGA Reactor (GSTR). The transport of all radioactive material will be done by a licensed carrier. The shipping container will be a Type B container with an approved Certificate of Compliance (CoC). The containers will usually be on loan from entities such as the Department of Energy or prime contractor.

The GSTR does not design, fabricate, assemble, or test containers, and does not intend to procure any container for ownership or lease to others. The GSTR does not intend to rework, repair, maintain or modify the container. The GSTR is ultimately responsible for ensuring that the package conforms to the CoC only when acting as the consignor of a shipment of licensed material. Repair and maintenance of the package will remain the responsibility of the package owner.

This QA Program is submitted pursuant to 10 CFR Part 71 Subpart H.

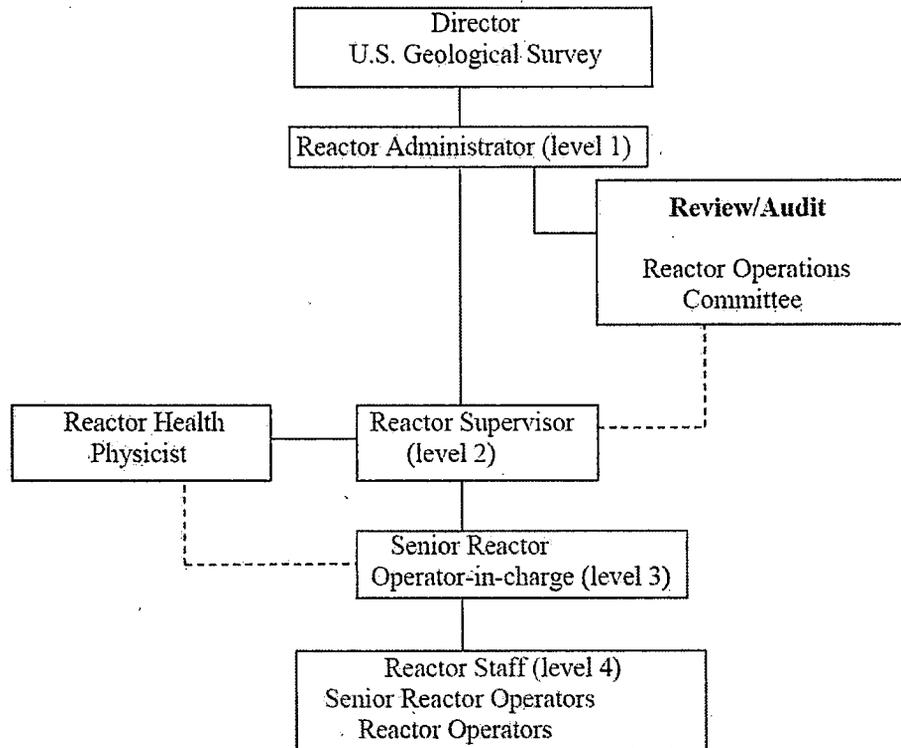
2 ORGANIZATION

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 Operations 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.



USGS TRIGA REACTOR Quality Assurance Program

Number:	Title:	Revision:	Page:	Date:
QAP	Quality Assurance Program	0	Page 3 of 10	12/18/17



Line of Responsibility —————
Line of Communication - - - - -

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 GSTR will include unloading a package from a truck, shipping an empty package on a truck, and receiving a loaded package. Quality assurance will be exercised primarily through written procedures constructed from regulatory requirements, applicable portions of the GSTR Radiation Protection Program, specific procedures developed by the manufacturer of the package (e.g. package operating procedures specified in the package Safety Analysis Report), and other procedures developed during review of packaging and transportation planning. Quality Assurance will be effected by formatting these procedures as check-lists (or equivalent) to be used by the individuals or their designates who are responsible for quality assurance.

The following procedures are numbered and named according to the corresponding section of 10CFR71 Subpart H to which they are written to address. Missing numbers are intentional and are

	USGS TRIGA REACTOR Quality Assurance Program			
	Number: QAP	Title: Quality Assurance Program	Revision: 0	Page: Page 4 of 10

reflective of the numbering in 10CFR71 Subpart H. Procedures have only been developed for those sections applicable to the intended use of the package at the GSTR.

7 PACKAGE DESIGN CONTROL

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

9 PROCUREMENT DOCUMENT CONTROL

No procurement documents are expected to be generated during this use of the package other than the procurement documents for the package itself. Procurement of the package is usually conducted via contract between the package user and the package owner.

Specific terms of use of the package will be stipulated in the contract or by memorandum between GSTR and the package owner for use of the package. These contract terms will, at a minimum:

- Specify the scope of work intended for the package
- Require the package owner to demonstrate that the package conforms to the specifications contained within the Certificate of Compliance (i.e. by providing a valid and signed Certificate of Compliance, and a copy of the most recent package certification inspection).
- Require the package owner to provide a copy of their Quality Assurance Program approval letter to ensure that the quality control of the package owner is acceptable.

The contract or memorandum containing the terms of package use must be reviewed and signed by an authorized representative of the GSTR. This contract will be retained by the GSTR as a quality assurance document.

Any replacement parts will be procured by the package owner under their quality assurance program. The package owner is responsible for furnishing the GSTR with copies of the reviewed and approved procurement documents for the replacement parts. These procurement documents will be retained by the GSTR as well as the package owner.

11 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. Additionally Quality Procedure 9 will be utilized to ensure quality control.

13 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

		<h1 style="margin: 0;">USGS TRIGA REACTOR</h1> <h2 style="margin: 0;">Quality Assurance Program</h2>		
Number:	Title:	Revision:	Page:	Date:
QAP	Quality Assurance Program	0	Page 5 of 10	12/18/17

procedures, check-lists and changes will be approved by the GSTR Administrator, Reactor Supervisor, and Reactor Operations Committee.

15 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

No equipment or services will be purchased that are applicable to this use of the package, other than procurement and use of the package itself.

In order to ensure that the package itself conforms to the procurement requirements specified in section 9 of this plan, the package will be inspected upon receipt according to section 21 of this plan with respect to the procurement requirements established in section 9.

Control over services applicable to the use of the packages (e.g. loading, unloading, opening, and closing the package) will be exercised via the contract scope of work, and will, in all respects, be performed in accordance with the operating procedures specified in the package SAR. Additionally, loading and shipping services must conform to the limits and specifications of the package CoC.

Proper loading of the cask will be demonstrated via inspections in accordance with section 21 of this plan, and adherence to the operating procedures specified in the package SAR.

17 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

No materials, part or components are intended to be identified or controlled for this activity. The package should arrive at the GSTR in a "ready to use" configuration, fully assembled.

In the event that a package component is damaged during transit to the GSTR, spare or replacement parts will be obtained from the package owner.

The quality control documents required by the package owner's Quality Assurance Program for any spare or replacement parts should be furnished to the GSTR and reviewed by the Reactor Supervisor prior to those parts being used in a shipment from the GSTR.

Copies of the quality control documents associated with spare or replacement parts should be furnished to the GSTR by the package owner, and will be retained by the GSTR along with a complete summary of all parts that were replaced during the contracted package use.

19 CONTROL OF SPECIAL PROCESSES

No special processes are to be undertaken for this activity.

		<h1 style="margin: 0;">USGS TRIGA REACTOR</h1> <h2 style="margin: 0;">Quality Assurance Program</h2>		
Number: QAP	Title: Quality Assurance Program	Revision: 0	Page: Page 6 of 10	Date: 12/18/17

21 INTERNAL INSPECTION

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

21.1 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

21.2 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

21.3 Maintenance Inspections

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

21.4 Inspection Documentation

Inspection records will be maintained to document performance of inspection activities

23 TEST CONTROL

23.1 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.



USGS TRIGA REACTOR Quality Assurance Program

Number: QAP	Title: Quality Assurance Program	Revision: 0	Page: Page 7 of 10	Date: 12/18/17
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23.2 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.

23.3 Results

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

25 CONTROL OF MEASURING AND TEST EQUIPMENT

25.1 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 GSTR. Calibration records for this equipment will be maintained by the GSTR as per their existing 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 GSTR Reactor Supervisor.

25.2 Out of Calibration Equipment

Equipment that is out of calibration will not be used.

27 HANDLING, STORAGE, AND SHIPPING CONTROL

27.1 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.

27.2 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



USGS TRIGA REACTOR Quality Assurance Program

Number:	Title:	Revision:	Page:	Date:
QAP	Quality Assurance Program	0	Page 8 of 10	12/18/17

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

29 INSPECTION, TEST, AND OPERATING STATUS

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

31 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

Shipping and receiving inspections will be conducted according to section 21 of this plan.

These inspections will include identification of parts that are unable to meet the specifications listed in the package CoC, and package SAR. Any part that is damaged or unable to perform its intended function as specified in the package CoC or SAR shall be identified in the inspection report and removed from service.

Nonconforming parts must be clearly labeled and removed from the work area to prevent their inadvertent use. Replacement parts must be obtained from the package owner. Control over the replacement parts must be exercised in accordance with section 17 of this plan.

Additionally, an assessment must be made on whether or not the replacement part has impacted the validity of the CoC, or if the package must be recertified by the package owner. A copy of this assessment, and the new package certification (if necessary) must be retained by the GSTR.

33 CORRECTIVE ACTION

33.1 Reporting

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

35 QUALITY ASSURANCE RECORDS

35.1 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

		<h1 style="margin: 0;">USGS TRIGA REACTOR</h1> <h2 style="margin: 0;">Quality Assurance Program</h2>		
Number:	Title:	Revision:	Page:	Date:
QAP	Quality Assurance Program	0	Page 9 of 10	12/18/17

to quality, names of individuals performing the tests or inspections, and whether the results were acceptable.

35.2 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.

35.3 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.

35.4 Receipt, Retrieval, and Disposition of Records

The records generated by these activities will be maintained by the GSTR Reactor Supervisor. 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 Facility.

35.5 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. Records 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

37 AUDITS

37.1 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 Operations Committee or the Reactor Supervisor. The conditions of Regulatory Guide 7.10 Section 18.1 will be met in establishing an audit program.

37.2 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.



USGS TRIGA REACTOR Quality Assurance Program

Number:	Title:	Revision:	Page:	Date:
QAP	Quality Assurance Program	0	Page 10 of 10	12/18/17

37.3 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.

37.4 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.