

Brigham Young University
Quality Assurance Program

Submitted in Accordance With 10 CFR 71.12 (b)

Licensee: Brigham Young University
License: R-109

Brigham Young University
Provo, Utah 84602
January 1986

8602190688 860121
PDR ADOCK 071*****
C PDR

Quality Assurance Program for Use of Type B()F Containers

Introduction

Attendant to the shipment of 1502 grams of uranium enriched in the isotope U-235 Brigham Young University (BYU) submits a Quality Assurance Program for the use of a number of NRC certified Type B()F containers suitable for the shipment of liquid fuel. The program under which these containers will be used is based on the following considerations:

- (1) BYU possesses approximately 30 liters of uranium fuel enriched with 1502 grams of the isotope U-235.
- (2) BYU wishes to return this fuel to the Department of Energy.
- (3) The fuel produces a radiation field of approximately 10 mrem per hour at the surface of the core of the reactor.
- (4) BYU possesses no other liquid fuel, and this Program is limited to the objective (2), the quantity indicated in (1), with the characteristics indicated in (3).
- (5) BYU does not design, fabricate, assemble, or test containers, and does not intend to procure any container for ownership or lease to others. This QA Program is limited to the leasing and use of containers to accomplish (2). BYU does not intend to rework, repair, maintain or modify the lessor's containers.

The QA Program is submitted pursuant to 10 CFR part 71, paragraphs 71.12 and subpart H. The Program outline follows Regulatory Guide 7.10 (January 1983) in those parts of Annex 2 that are applicable to leasing and use of Type B()F containers.

1. Organization

There is no formally established overall Quality Assurance organization at BYU. Figure 1 illustrates existing organizational relations within which QA is performed to the necessary extent.

The use of the B()F packaging will be performed largely by the reactor operating group and a radiation safety officer, i.e. four people, including the reactor chief. Quality Control and Quality Assurance records are created at this level, but will be retained by the Radiation Safety Officer (RSO) following the dissolution of the reactor group.

The QC and QA activities are divided between the reactor group and the RSO. The reactor chief is responsible for the QC and QA of leasing, handling, and loading of the packaging. The Radiation Safety Officer is responsible for the QC and QA of radiation activities related to protection.

The Radiation Safety Committee (RSC) plays an active role in reactor dismantlement and fuel shipment planning. RSC membership includes the Director of Campus Safety, the Assistant Dean of the College of Biology and Agriculture, a Senior Reactor Operator, and the Campus Radiation Safety Officer.

2. Quality Assurance Program

The scope of the program includes leasing, handling, loading, and delivering to a carrier for transport; NRC approved B()F containers for return of reactor fuel to the Department of Energy. The quantity of material to be shipped is fixed (30 liters of fuel solution and approximately 30 liters of rinse solution). BYU wishes to return this material to the DOE, and consequently the active portion of the program will span a period of no more than a few months.

Quality Control will be exercised primarily through the use of written procedures constructed from: (a) federal regulatory requirements; (b) lessor's instructions, procedures, and drawings; and (c) applicable portions of campus radiation protection procedures. Quality Assurance will be effected by formatting those procedures as checklists to be used by the individuals or their designates who are responsible for quality assurance. An audit plan developed by the Atomic Industrial Forum, Inc., was used as an aid to check the completeness of these check lists.

3. Design Control

The lease agreement is to include the lessor's certification that the design was accomplished under control of an NRC-approved QA Program.

4. Lease Agreement Document Control

A check list of lease documents will include: (a) the lessor's certification of item 3. above; (b) the lessor's instructions for handling and use of the container; and (c) the lessor's provision of other required or pertinent documentation such as the certificate of compliance, as-built drawings, sketches, and use manuals.

5. Instructions, Procedures, and Drawings

5.1 Preparation of Packaging for Use. The routine determinations, 10 CFR 71.87, where applicable, will be subject to check list assurance. Subparagraph (h) and 10 CFR 71.45 are to be satisfied by lessor's certification.

5.2 Repair, Rework, and Maintenance. BYU will not undertake repair, rework, or maintenance. Servicing, such as gasket replacement, shall be in accordance with lessor's specifications.

5.3 Loading. Loading shall be conducted under a plan of sufficient specificity to identify and account for quantities of fuel conforming to shipping papers and inventory change reports. Surveys of radiation fields and surface contamination of the package shall be made and recorded.

5.4 Transport of Package. Upon delivery of packages to a carrier for transport, the condition of the package as evidenced by visual inspection will be noted; the seals and labels will be recorded along with package identification by model and license registration numbers. A check list procedure will be used.

6. Document Control

Control shall be exercised over the following documents:

- (1) Document check list
- (2) Operating procedures
- (3) Inspection procedures
- (4) Loading plans
- (5) Documents provided by lessor that relate to certifications, QC and QA
- (6) Radiation survey results
- (7) Shipping papers

Procedures and check lists, and changes thereto are to be approved by either the Reactor Chief, the Radiation Safety Officer, or their respective designates.

7. Control of Purchased Material, Equipment, and Services

No special purpose materials or equipment are to be purchased for this activity. Services such as container off-loading, on-loading, and carrier transport will be procured via normal university procedures, with the Reactor Chief's approval of initiating documents.

8. Identification and Control of Materials, Parts, and Components.

Section 5.2 is applicable here.

9. Special Processes

No special processes are to be undertaken under this program.

10. Inspection Control

10.1 Receipt inspection. Inadequately identified packaging, or packaging which deviates significantly from certifications, drawings, or specifications, will not be used unless or until corrected by leasor. Containers are to be dry upon receipt, and if not dry, will be dried prior to loading.

10.2 Maintenance. Maintenance other than prescribed servicing will not be performed by BYU.

10.3 Final Inspections. Checklists will be established to ensure that:

- (1) Packages are properly assembled.
- (2) Moderators and/or neutron absorbers are present if required.
- (3) Shipping papers are properly completed.
- (4) Packages are conspicuously and durably marked as required by DOT.
- (5) Pre- and post- loading radiation surveys have been completed.
- (6) Final inspection has been completed.

Inspection is to be jointly certified by the Reactor Chief and the Radiation Safety Officer or their designated alternates.

11. Test Control.

11.1. Use of Packages. Tests permitted, recommended, or specified by leasor will be used to establish a QA check list.

11.2. Radiation survey results are to be compiled and records maintained by the Radiation Safety Officer.

12. Control of Measuring and Test Equipment.

As a leasee, BYU does not expect to use gauges, fixtures, reference standards, or other devices used to measure product (container) characteristics. Radiation survey equipment shall be maintained and calibrated in accordance with normal procedures of the BYU Radiation Safety program.

13. Handling, Storage, and Shipping.

13.1 Handling and Storage. Special handling and lifting equipment will be used in accordance with equipment specified or provided by the leasor, and according to conditions identified in a certificate of compliance as well as instructions provided by the leasor. See paragraphs 4, 5, and 6. Containers will be used promptly and returned to leasor; they will not be placed in storage.

13.2 Preparation for Release and Shipment. Measures will be instituted to ensure that:

- (1) Cavities are dry (see Paragraph 10.1)
- (2) Specified operations, inspections, and tests, are verified by check lists.
- (3) All NRC and DOT requirements are observed and the appropriate shipping papers are prepared. This will be the responsibility of the Reactor Chief.

Quality Assurance will be performed with check lists.

14. Inspection, Test, and Operating Status.

Status is to be tracked by a master check list that acknowledges check-off of individual check list completion.

15. Control of Nonconforming Materials, Parts, or Components.

Not applicable. Rework, repair, maintenance, or modification are not to be undertaken by BYU.

16. Corrective Actions.

16.1 Reporting. It is the responsibility of BYU QC/QA to report conditions detrimental to quality to the lessor.

16.2 Closeout. BYU as a lessee will deem closeout completed upon (a) correction of the condition by lessor, or (b) lessor's withdrawal of the container from service.

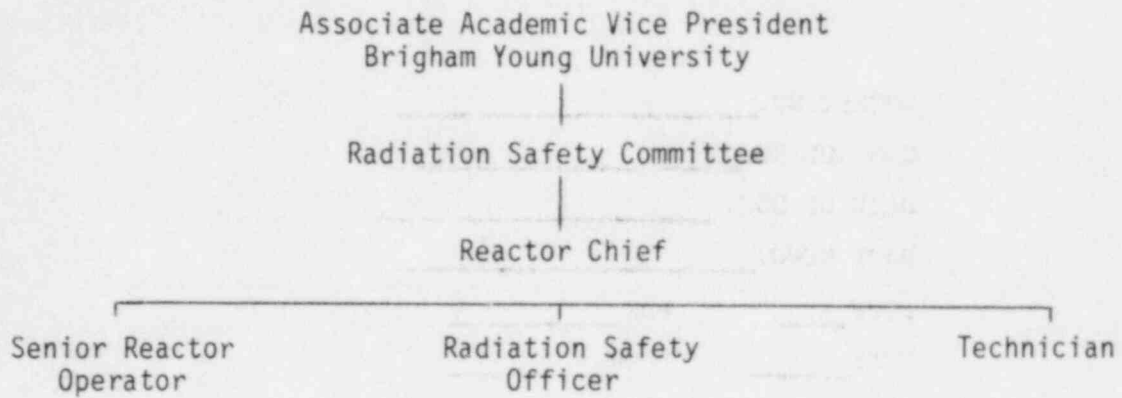
17. Quality Assurance Records.

Records showing evidence of delivery of packages to a carrier under NRC and DOT requirements shall be retained for a minimum of one year, except for SNM transfer and inventory records retained for the duration of NRC licensing authority. Records are to be retained by the Radiation Safety Office, which is also responsible for maintaining all BYU records relating to personnel exposures, radioactive material releases and shipments, and related radiation protection matters.

18. Audits.

The activity covered by this QA Program is a short-term effort. The Radiation Safety Committee shall appoint a representative to perform a closeout audit to determine the adequacy of the records generated under this program.

Figure 1. Organizational relations within which QA is performed.



DOCKET NO. 71-0575
CONTROL NO. 26 362
DATE OF DOC. 01/21/86
DATE RCVD. 01/27/86
FCUF PDR ✓
FCAF LPDR
WM I&E REF. ✓
WMUR SAFEGUARDS
FCTC ✓ OTHER

DESCRIPTION:

Concerning your
letter of 4/13/85
and their Quality
Assurance Program

01/29/86 INITIAL CEC