Quality Assurance Program
for Shipment of Unirradiated Research
Reactor Fuel, 10 CFR Part 71 QA Program

1. Organization

The final responsibility for the Quality Assurance (QA) Program for Part 71 Requirements rests with The Pennsylvania State University (PSU). Design and fabrication shall not be conducted under this QA program. This QA program is established to ensure compliance with 10 CFR 71 for the transportation of seven (7) unused aluminum clad uranium-aluminum alloy fuel elements from the Penn State Breazeale Reactor (PSBR) to a secure facility to be designated by the U.S. Department of Energy. The seven elements contain a total of less than 700 grams of U-235. These fuel elements are currently possessed by the PSBR under NRC license number R-2. The program is of limited duration and is designed for the disposition of a non-replenishable existing inventory of these unused reactor fuel elements. The QA program is implemented using the organization shown in Fig. 1.

The University Health Physics Office is responsible for overall administration of the program, training and certification, document control and auditing.

The Director of the PSBR is responsible for handling, storing, shipping, inspection, test and operating status, and recordkeeping.

2. Quality Assurance Program

The Director of the PSBR establishes and implements this QA Program. Training, prior to loading and shipping, for all QA functions is made

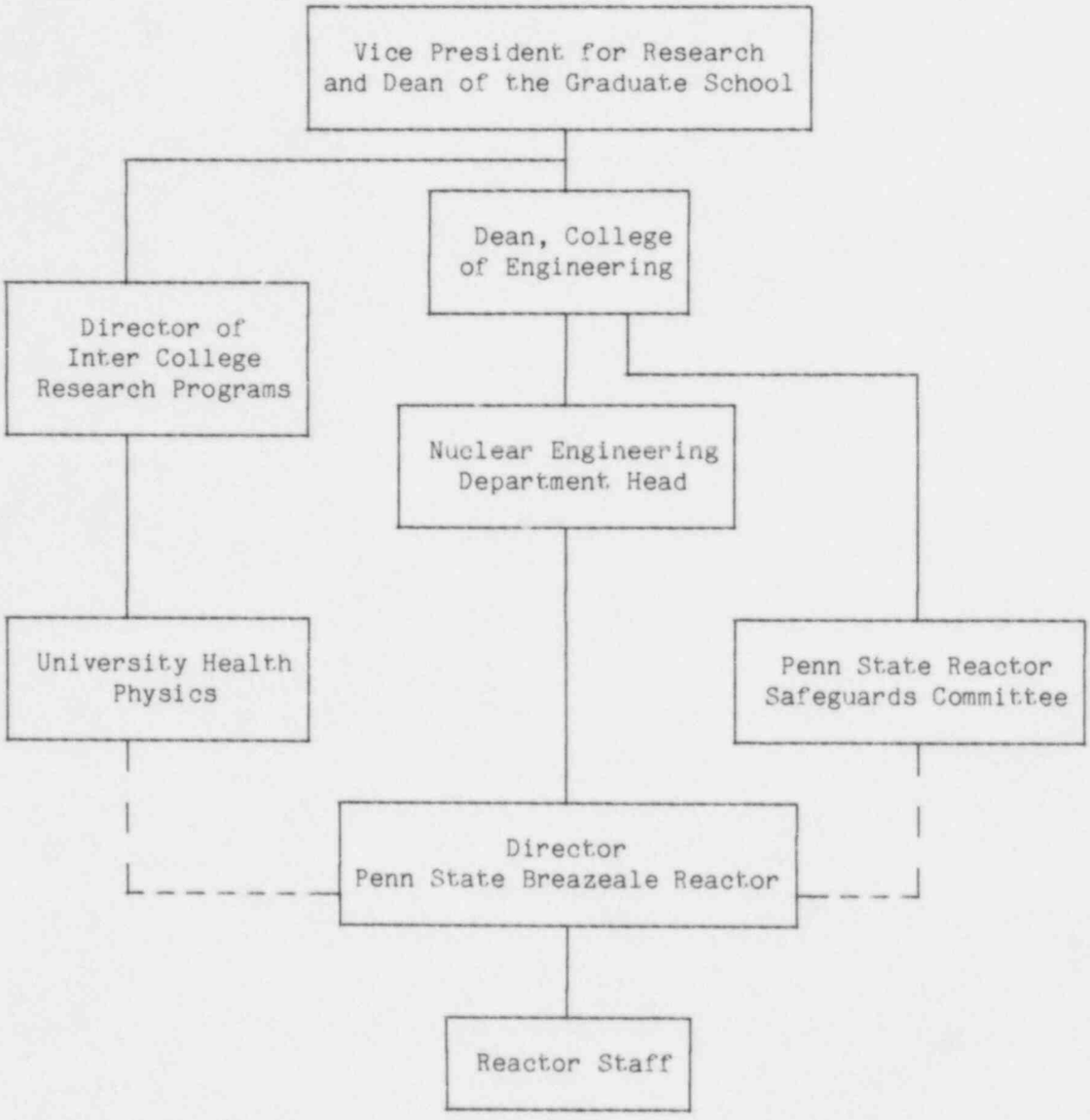

Figure 1. Organization Chart for The Pennsylvania State University Breazeale Reactor.

according to written procedures with PSBR management approval. The QA Program will ensure that all defined quality control procedures, engineering procedures, and specific provisions of the package design approval are satisfied. The QA Program will emphasize control of the characteristics of the package which are critical to safety. Accidental criticality is not a safety problem because the total U-235 is less than 700 gms.

The PSU Health Physicist shall assure that all radioactive material shipping packages are designed and manufactured to meet the existing transportation regulations. This requirement will be satisfied by checking the package against the NRC Certificate of Compliance and the associated references.

3. Document Control

Documents related to specific packages and shipments are to be retained by the PSU Health Physics Office. This shall include radiation surveys, cargo manifests, notes concerning labeling and sealing, Form 741, and all other information related to the control and accountability of the radioactive materials.

Documents and notes relating to security provisions will be retained by the PSBR management.

4. Handling and Loading

The radioactive material is enriched uranium alloyed with aluminum and encapsulated by aluminum cladding in the form of 7 MTR type fuel elements. Two of these elements are control elements with fuel plates missing to provide space for control rods. The other five are partial

elements. The maximum U-235 in any one element is less than 134 gms. Written instructions will be provided for proper placement of each fuel element in the inner container and for proper blocking to maintain each element in proper placement with respect to the cadmium liner.

5. Inspection

Prior to use, the shipping container will be opened to determine operability of closures, to visually inspect the integrity of the structure, and to provide access for interior swipes.

6. Quality Assurance Records

Written procedures, checklists, equipment lists, drawings and radiological survey data will be retained by the Health Physics Office.

7. Audits

After the shipment is completed an audit will be performed in accordance with written checklists.

DOCKET NO. 71-9134

CONTROL NO. 26065

DATE OF DOC. 11/08/85

DATE RCVD. 11/20/85

FCUF _____ PDR ✓

FCAF _____ LPDR _____

WM _____ I&E REF. ✓

WMUR _____ SAFEGUARDS _____

FCTC ✓ OTHER _____

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