Rensselaer | OFFICE OF RADIATION AND NUCLEAR SAFETY

Director
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Submittal of Quality Assurance Program – Docket 71-XXXX

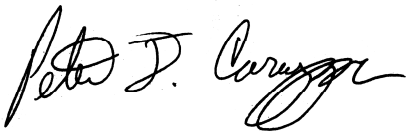
Facility Docket Numbers 50-225 and 70-7025
Facility License Number CX-22 and TAC No. L33128

Dear Director:

Rensselaer Polytechnic Institute hereby submits the Quality Assurance Program for Shipment or Receipt of Nuclear Fuel, August 2011.

Please contact me if you have any questions or require any additional information. I may be reached via email at caracp3@rpi.edu or by phone at (518)276-2212.

Sincerely,



Peter F. Caracappa, Ph.D., CHP

Rensselaer Polytechnic Institute
110 8th Street | Troy, NY 12180-3590 USA
Phone (518) 276-2212 | Fax (518) 276-4832

Rensselaer Polytechnic Institute

QUALITY ASSURANCE PROGRAM
FOR
SHIPMENT AND RECEIPT OF NUCLEAR FUEL

Docket 71-XXXX

Facility Dockets 50-225 & 70-7025
Facility License CX-22 & TAC No. L33128

August 2011

QUALITY ASSURANCE PR**OGRAM**

This QA program applies to the procurement, use, maintenance, and repair of packaging used to transport nuclear fuel.

TABLE OF CONTENTS

CHAPTER	**PAGE**
1. Scope	3
2. Responsibilities	3
3. Organization (10CFR71.103)	3
4. Design Control (10CFR71.107)	4
5. Procurement, Document Control (10CFR71.109)	5
6. Instructions, Procedures, and Drawings (10CFR71.111)	5
7. Document Control (10CFR71.113)	5
8. Control of Purchased Material, Equipment, and Services (10CFR71.115)	5
9. Identification and Control of Materials Parts and Components (10CFR71.117)	6
10. Control of Special Processes (10CFR71.119)	6
11. Inspection Control (10CFR71.121)	6
12. Test Control (10CFR71.123)	7
13. Control of Measuring and Test Equipment (10CFR71.125)	7
14. Handling, Storage, and Shipping (10CFR71.127)	7
15. Inspection, Test and Operating Status (10CFR71.129)	7
16. Control of Nonconforming Materials, Parts, or Components (10CFR71.131)	7
17. Corrective Action (10CFR71.133)	7
18. Quality Assurance Records (10CFR71.135)	8
19. Audits (10CFR71.137)	8

Quality Assurance Program

A) Introduction

This Quality Assurance Program applies to the procurement, use, maintenance, and repair of packaging used to transport fuel. It is designed to assure the safety of the general public during packaging and transportation of fuel or receipt of nuclear fuel.

B) Quality Assurance Program

1) Scope

The description of the QA program, contained within, includes a discussion of which requirements of 10 CFR, Part 71, Subpart H are applicable and how they shall be satisfied. This Rensselaer Polytechnic Institute QA program is designed specifically for the shipment and transfer of nuclear fuel between facilities under its control. Shipment and transfer of nuclear fuel is strictly limited to the conditions for the general license for transport of fissile material specified in 10 CFR 71.22. RPI does not store or maintain non type A shipping materials and packages.

The RPI Radiation Safety Officer retains the responsibility for the overall effectiveness of this QA program.

Indoctrination and training shall be included in conjunction with radiation safety training requirements for personnel performing quality related activities to ensure they are properly trained and qualified to perform these activities. Changes to these quality assurance procedures shall necessitate the retraining and requalification of all individuals involved.

2) Responsibilities

The Radiation Safety Officer (RSO) is responsible for this quality assurance program**.** The RPI Radiation and Nuclear Safety Committee (RNSC) is responsible for reviewing the facility's quality assurance policies, goals, and objectives. All RPI personnel involved with the receipt of nuclear fuel or shipment of nuclear fuel shall follow this QA program.

3) Organization (10 CFR 71.103)

The facility organization chart is included in Fig. 1. Any or all of the personnel on the staff may perform functions under this QA program as designated by the RPI Radiation Safety Officer or other higher-level management. The Radiation Safety Officer shall ensure that measures are established to provide adequate control over any designated quality-related activities. Individuals performing QA functions have the responsibility and authority to stop unsatisfactory work or use of nonconforming materials and have

direct access to the Radiation Safety Officer or higher-level management to ensure accomplishment of quality-related activities.

The duties and qualifications required for the Radiation Safety Officer, who retains overall authority and responsibility for the QA program, and other principal personnel performing quality related functions shall be established and documented in the QA files.

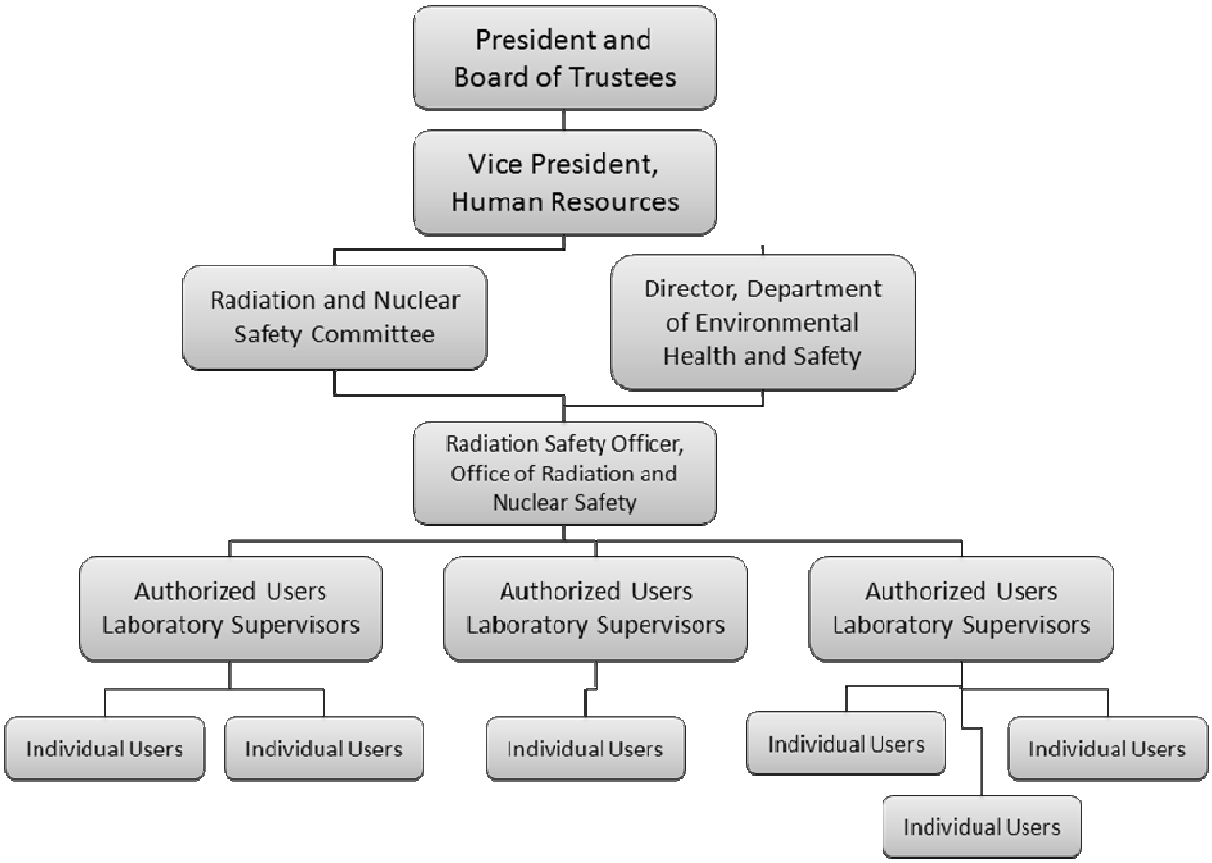


Fig. 1. Organizational Chart

4) Design Control (10 CFR 71.107)

Transfer of fuel under this program is limited to Type A containers under the conditions specified in 10 CFR 71.22. The RSO will review the design requirements in 49 CFR 173.410 and 173.412, and document that the specifications of each paragraph are either met, not met, or not applicable. The adequacy of design of any packages used for this purpose is verified by performance of the tests specified in 49 CFR 173.465. Any design change will be reviewed by the RSO and subject to a repeat of the compliance tests.

For any other type of shipment, design activities shall not be performed by this facility and the criterion of 10 CFR Part 71.107 is not applicable. Assurance that the design of packaging used was accomplished under control of a NRC approved QA program is

required. This shall be accomplished by requiring the supplier of packaging to submit documented proof of package design under a NRC approved QA plan. Documented proof shall be kept on file.

5) Procurement Document Control (10 CFR 71.109)

RPI, if procuring completed packaging, shall require manufacturers of packaging to supply appropriate certifications verifying that the designated (model and serial number) packaging meets the design and testing requirements for Type A packaging, or was manufactured under an approved NRC QA program if applicable. Other pertinent documentation (as built drawings, photographs, sketches, use and maintenance manuals, etc.) are to be furnished by the manufacturer with the packaging. The RSO shall determine all pertinent documentation required. If safety related replacement parts are required to be procured for the packaging, the RSO shall designate QA personnel to ensure that appropriate technical and QA requirements are included in purchase orders and that the purchase orders are placed with suppliers which have been previously qualified to supply the parts required.

6) Instructions, Procedures, and Drawings (10 CFR 71.111)

Prior to using fuel packaging materials, the RSO shall ascertain that the package and its contents satisfies the applicable requirements of 10 CFR 71 and of the licensee. The RSO or higher-level management shall approve placing the package in use.

The RSO shall prescribe activities affecting quality by documented instructions or procedures of a type appropriate to the circumstances and shall require that these instructions or procedures be followed.

7) Document Control (10 CFR 71.113)

Each of the shipping and packaging documents under control of the QA program for radioactive material packages shall be identified in the QA files. Due to the infrequent shipments of nuclear fuel to or from RPI, all applicable QA documents shall be reviewed by appropriate personnel prior to shipping or receiving nuclear fuel. The Radiation and Nuclear Safety Committee shall review and approve changes to this program.

The RSO shall exercise control over the following transportation/shipping documents:
i) Operating Procedures
ii) Inspection and test procedures
iii) Loading and unloading procedures
iv) Packaging and transport procedures

8) Control of Purchased Material, Equipment, and Services (10 CFR 71.115)

Designated QA personnel shall take the necessary measures to assure that purchased material, equipment, and services, whether purchased directly or through contractors and

subcontractors, conform to the procurement requirements. Documentary evidence that the package conforms to the procurement specifications shall be supplied with the package. This documentary evidence shall be retained and shall be sufficient to identify the specific requirements met by the purchased material or equipment.

9) Identification and Control of Materials, Parts, and Components (10 CFR 71.117)

To prevent the use of incorrect or defective materials, parts, and components, identification and control measures shall be established. The identification of the item must be maintained by a serial number directly traceable to that item.

10) Control of Special Processes (10 CFR 71.119)

Special processes are not normally performed by the users of packaging. However, if packaging requires major repairs necessitating the use of these processes, RPI shall not accept the package and shall require the vendor to perform the necessary maintenance or repair. RPI shall maintain a copy of the vendors repair/maintenance QA paperwork.

11) Internal Inspection (10 CFR 71.121)

Visual inspections by designated QA personnel shall be performed upon receipt of packaging to ensure compliance with procurement documentation. The criteria for acceptance for items inspected under this QA policy and the action taken if an item is found to be in non-compliance shall be determined in accordance with written procedures. Visual inspections should include an inspection of the following, if applicable:

i) Surface conditions
ii) Weld and structural integrity
iii) Condition of flange or sealing faces
iv) Gaskets and seals
v) Gauges, rupture disks, valves, pressure relief devices
vi) Condition of tie-down members
vii) Labeling and marking
viii) Leak tightness of the packaging

Final inspections shall be performed with a checklist conforming to the conditions specified for shipment under 49 CFR 173, and verify as a minimum that the following items are complied with:

(1) Packages are properly assembled
(2) All required seals are in place
(3) Shipping papers are properly completed
(4) Packages are conspicuously and durably marked as required by DOT regulations.
(5) Individual designated by the owner or user of the package has given authorization for shipment of the package.

12) Test Control (10 CFR 71.123)

Tests for Type A packages are performed under the conditions specified in 49 CFR 173.465. RPI will document the completion of each test, and maintain the records of these tests for no less than one year after the final shipment.

13) Control of Measuring and Test Equipment (10 CFR 71.125)

All instruments or other measuring and testing devices used in activities affecting quality shall be properly controlled, calibrated (if necessary), and adjusted at specific times to maintain accuracy within necessary limits. Calibration procedures for health physics related equipment is controlled under the RPI radiation safety program under the conditions of New York State Department of Health Radioactive Materials License 1035. Inspection and test equipment shall be tagged or labeled to indicate the date of the next planned calibration. All calibration test data shall be maintained with facility records or be readily traceable.

14) Handling, Storage and Shipping (10 CFR 71.127)

Measures shall be taken to control the handling and shipping of materials and equipment to be used in packaging of nuclear fuel. RPI shall designate checklists for shipping and receiving of radioactive material packages in compliance with 49 CFR 173 and the conditions of New York State Department of Health Radioactive Materials License 1035.

15) Inspection, Test and Operating Status (10 CFR 71.129)

The RSO shall verify that the status of all packaging materials used for fuel shipment prior to shipment. Verification may include visual verification of markings, such as stamps, tags, or labels, on the packaging material providing compliance information and/or dates or by verifying QA inspection, test, and operating status paperwork for fuel shipping materials

16) Control of Nonconforming Materials Parts or Components (10 CFR 71.131)

Shipping materials which do not comply with the requirements of the RPI QA program for fuel shipment shall be rejected for use.

17) Corrective Action (10 CFR 71.133)

Conditions that are adverse to quality, such as deficiencies, deviations, defective material and equipment nonconformances shall be promptly identified and not used by RPI. Non-compliant items shall be returned to the vendor and shall not be used until the vendor proves compliance with applicable regulations, or otherwise disposed of or permanently prevented from use. Items of non-compliance shall be reported to the RSO or other appropriate levels of management.

18) Quality Assurance Records (10 CFR 71.135)

Sufficient written records shall be maintained to furnish evidence of activities affecting quality.

The records shall include the following:

i) Design records
ii) Inspections by RPI staff
iii) Monitoring of work performance
iv) Qualifications of personnel
v) Delivery of package to a carrier (including proof that applicable NRC and DOT requirements have been satisfied.

All shipments of radioactive material must be reviewed and approved by Health Physics personnel. Shipping records for radioactive material shall be kept by the RSO. Records that are to be retained for the lifetime of the packaging should include appropriate design and production-related records, which are generated throughout manufacturing and furnished with packaging; records demonstrating evidence of operational capability and records verifying repair, rework, and replacement that are used as a baseline for maintenance. QA records shall be adequately stored to prevent loss or deterioration and marked so as to be readily identifiable and retrievable.

Inspection and test records shall include (as required):
i) Identity of the inspector or data recorder
ii) Completion of DOT/49 QA Checklist for Fissile Radioactive Material Shipments.
iii) Completion of Radioactive Material Shipment QA Checklist
iv) Acceptance criteria
v) Results
vi) Actions taken in connection with any deficiencies noted

19) Audits (10 CFR 71.137)

Due to the infrequency of fuel shipments to or from RPI, audits of this QA program shall be performed prior to fuel shipments. These audits shall be performed to verify compliance with all aspects of the QA program for radioactive packaging covered under this program and to determine the effectiveness of the program. The audit shall be performed by qualified personnel not having direct responsibility in the areas being audited. Audit results shall be documented and reviewed by management having responsibility in the area audited. Follow-up action, including re-audit of deficient areas, shall be taken where indicated.

End