

QUALITY ASSURANCE PLAN

REFERENCES: (A) 10 CFR 71 Appendix E
(B) 10 CFR 49 Section 178.104

ENCLOSURE: (1) Cask Receiving Procedure
(2) Cask Loading Area Procedure
(3) Cask Loading Procedure

1.0 Scope

1.1 This Q A program will exclusively cover a one-time shipment of radioactive material (RAM) in which fissile material of about 3200 grams will be transported from the Westinghouse Nuclear Training Reactor (NTR) Facility, Zion Illinois, to the Department of Energy (DOE) Facility at Dunbarton, South Carolina.

1.2 Design and fabrication of radioactive material shipping packages shall not be conducted under this quality assurance program.

2.0 Organization

2.1.1 Structure and Authority

The final responsibility for the quality assurance program for part 71 requirements rest with the Westinghouse Electric Corporation.

The quality assurance program will be implemented under the organization shown in figure 1. The Manager of Westinghouse Nuclear Training Center is responsible for overall administration and execution of the program. This responsibility is deligated as shown in figure 1.

2.1.2 Top Management Involvement and Assessment of a Quality Assurance Program

The Manager, Nuclear Energy Systems License Administration has reviewed the Q A Program and will be advised of all matters pertaining to the program. The N.T.R. Facility Manager and License Administrator have and will continue to discuss the conduct of the Q A Program with N.R.C. Representatives during the programs utilization.

2.2 Quality Assurance Program

2.2.1 Personnel

No maintenance or repair activities are to be performed on the D.O.T.-6M metal package (container) at W.N.T.C. . Containers which are defective will not be used. Westinghouse personnel directly involved in container use will hold US NRC Senior Reactor Operator Licenses and receive additional training in container loading procedures.

2.2.2 Controlled Conditions

Written procedures will govern container receiving, container load area and container loading to insure proper inspection, preparation and loading of fuel shipping containers.

2.3 Design Control

2.3.1 Department of Transportation (DOT) certified 6M containers will be used for the fuel shipment. The design of the DOT 6M container is specified in Reference B.

The DOT 6M containers are being supplied to Westinghouse by Film Badge Fabricators, Knoxville Tennessee.

Film Badge Fabricators (FBF) has been audited by Westinghouse Electric Corporation on July 17, 1980. FBF's quality assurance program was found to be satisfactory by that audit. FBF has an N.R.C. approved quality assurance program as per 10 CFR 71, appendix E (Docket 71-0185).

2.4 Procurement Document Control

2.4.1 Packaging Procurement

FBF will supply DOT certification on all containers to be used in this shipment. Results of Westinghouse audit on FBF is on file at the NTR Facility.

2.5 Instructions, Procedures and Drawings

Instructions, procedures and drawings related to the 6M containers are specified in Reference B.

2.5.1 Preparation of Packaging for Use

Containers will be prepared in accordance with Cask Receiving Procedure, see enclosure 1.

2.5.2 Loading Contents

Containers will be loaded in accordance with Cask Loading Procedure, see enclosure 2.

2.5.3 Transfer of Package to Consignee (carrier)

Containers will be transferred to the Consignee in accordance with Cask Loading Procedure see enclosure 3.

2.6 Document Control

USNRC certificate of compliance number 5908 has been issued on the 6M containers. FBF will supply DOT certification on each container to be used. Westinghouse Electric Corporation is an authorized user of the DOT 6M container.

2.7 Control of Purchased Material, Equipment, and Services

Using certified DOT 6M containers FBF will supply certificate for each container. Westinghouse will perform an acceptance inspection on each of the DOT 6M containers.

2.8 Identification and Control of Materials, Parts and Components

Identification and Control of Materials, Parts and Components will be governed by specifications set forth in Ref. (B).

2.9 Control of Special Processes

No Special Processes will be performed on the containers.

2.10 Inspection

Quality assurance inspection will be provided by the Westinghouse Water Reactor Division's (WRD) License Administrator.

2.11 Test Control

The DOT 6M container meets all specifications of reference B. FBF will provide certification of compliance. The certificate of compliance will be maintained at the NTR Facility.

2.12 Control of Measuring and Test Equipment

All radiation measuring equipment used will be in current calibration. Calibration records will be maintained by the licensee. Other test and measuring equipment will be controlled by FBF Quality Assurance Program.

2.13 Handling Storage and Shipping

Written procedures concerning the handling and shipping of fuel will be followed. Shipment will not be made unless all test, certifications, acceptances and final inspections have been completed. Records will be maintained as per section 17 of this program. Work instructions will be provided for handling and shipping operations. The licensee shall perform the critical handling, and shipping operations.

2.14 Inspection, and Operating Status

Inspection, and operating status of the DOT 6M containers will be indicated and controlled by written procedures, in accordance with enclosure (1). Status will be indicated by tag and by log entry. Nonconforming containers will not be used for shipment. The licensee shall verify that required inspections and test have been performed.

2.15 Nonconforming Materials Parts or Components

Containers found to be in non-compliance will not be utilized to ship radioactive material.

2.16 Corrective Action

Non-conforming containers will be returned to Film Badge Fabricators, Knoxville, Tennessee.

2.17 Quality Assurance Records

Quality assurance records pertaining to this shipment will be maintained at the NTR Facility for a period of five years. The responsibility for record maintenance is assigned to the Radiation Safety Coordinator, NTR Facility.

2.18 Audits

The NES License Administrator will perform audits of this quality assurance plan. Since this is a one time shipment of SNM, the audit will be conducted in conjunction with the fuel shipment.

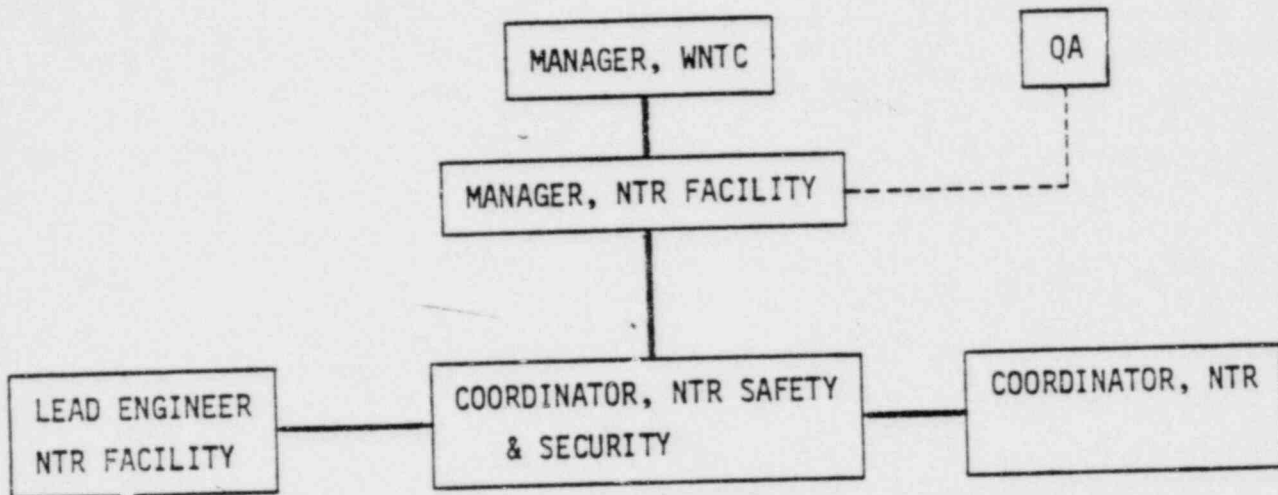


Figure 1

Cask Receiving Procedure

Cask Receiving Procedure

The following procedure will be used upon receipt of one or more fuel transfer casks at the W.N.T.R.

Date _____ Time _____ of cask(s) arrival at W.N.T.C.

1. Radiation survey of cask

- a. Contact _____ mr/hr.
- b. 3 feet from cask _____ mr/hr.
- c. highest reading smear _____ $\mu\text{ci}/100 \text{ cm}^2$
(3 external) (3 internal)

2. Documents

- a. D.O.T. certificate on cask _____
- b. Inventory agrees with bill of lading _____
- c. Shipping documents in order _____

3. Cask markings condition: & condition:

- a. Radioactive fissile nos _____
- b. Serial numbers _____
- c. Manufacture _____
- d. Gross weight marked _____
- e. Westinghouse Electric Corp. _____
- f. Date of mfg. and gauge of material _____
- g. Type of cask, DOT spec. # _____
- h. any evidence of damage _____
- i. means of sealing sat _____
- j. Gasket provided _____
- k. Container Acceptable For Use: Signed _____ Date _____
- l. Welds and Structure Intact _____
- m. Closure Locking Device functional _____

4. Vehicle Inspection

- a. Radiation reading:
I cab of truck _____ mr/hr
II six feet from truck _____ mr/hr
- b. tires _____
- c. flares or reflectors _____
- d. Placards _____

Cask Loading Area Procedure follows this procedure.

Cask Loading Area
Procedure

Procedure: Cask Loading Area

1. A suitable sized area near door 7 of the N.T.R. facility will be roped off during the fuel loading.
2. Fence Gate number 10 will be closed and locked during any fuel movement. If vehicle size prevents locking gate number 10 then an authorized individual (A.I.) will be posted near the gate. The A.I. will ensure that only personnel needed for the fuel transfer enter the area.
3. The west parking lot north gate of the W.N.T.C. will be closed and locked during the fuel loading.
4. The loading area will be surveyed for radiation hourly during the loading procedure. The results of these survey will be recorded. See attachment no. 1.
5. All personnel working in the fuel loading area will wear dosimeters and TLD badges. The fuel handlers will additionally wear: shoe covers, labcoats or coverall, rubber gloves, and safety glasses.
6. Dosimeter reading of the fuel handlers shall be read hourly and recorded. See attachment no. 2.
7. Upon completion of fuel loading the N.T.R. yard area will be returned to normal. The west side of W.N.T.C parking lot will be returned to normal service.

Cask Loading Procedure follows this procedure.

Attachment no. 1 : Cask Loading Area

Radiation Survey of Cask Loading Area

Date _____ Surveyor _____

Instrument used model _____ Serial # _____

Time	Radiation readings mr/hr			
	areas *			
	1	2	3	4

* See attached survey map.

Attachment no. 2 : Cask Loading Area

Fuel handlers: Dosimeter readings

Date _____

Name	Hour since work started; cumulative dose mr/							
	1	2	3	4	5	6	7	8

Reviewed by: _____ Date _____
Radiation Safety Coordinator

Cask Loading Area
Procedure

Cask Loading Procedure

Prerequisite

All personnel involved in the cask loading procedure must have had a training period prior to the start of cask loading procedure. The training period will cover:

- a. Radiation hazards involved and radiation protection procedures to observe.
- b. Proper fuel handling methods and precautions.
- c. Practice fuel loading using a dummy fuel element.

Cask Loading Procedure

All cask to be loaded must have completed the cask receiving inspection satisfactorily prior to being loaded. Cask loading area must be set up. Permission to remove fuel from the NTR area by the NTR manager obtained.

1. All casks to be loaded are to have their covers inner and outer removed prior to start of loading operations.
2. Radiation levels and dose measurements shall be made. A determination shall be made as to the number of fuel elements one person may handle without exceeding his exposure limits. The limits given in the N.T.R. operations manual shall govern. Personnel handling fuel shall have dosimeter reading recorded hourly. See attachment no. 2.4 "Cask Loading Area" procedure.
3. Fuel elements shall be loaded as follows:

Only one element shall be moved at a time.

- a. Using short fuel handling tool an element shall be removed from the N.T.R. fuel storage area.
- b. The element shall be manually carried to the awaiting cask. The element will then be manually placed into the 2R container inside the cask.
- c. The serial number of the element and of the cask it was placed into shall be recorded.
- d. A suitable spacer shall be placed on top of the fuel element. The 2R cover will then be installed and secured. The 6M cover and gasket shall be ¹ installed and secured. The cask shall then be sealed.
- e. A radiation reading at contact and 3 feet from the cask shall be taken and recorded. Three smears shall be taken on the external surface of the cask. The activity of the smears shall be recorded. See attachment no. 1.

¹ The proper spacer shall be determined during the practice loading with the dummy element.

4. The loaded cask will then be picked up by fork-lift and placed into the awaiting trailer.

The remaining cask shall be loaded one at a time as per 3a - 3e & 4 above.

5. After the last cask is loaded into the trailer radiation reading will be taken and recorded:

a. at trailer outer surface _____mr/hr

b. at 6 feet from trailer all sides _____mr/hr

c. In the tractor cab _____mr/hr

6. Each cask shall be inspected to ensure:

a. Proper labeling

b. Proper sealing

c. Proper marking

d. no evidence of damage

7. The trailer will then be closed and sealed. The number of the seal shall be recorded.

Attachment no. 1, "Cask Loading Procedure"

Fuel element serial number _____

Cask serial number _____

Radiation reading at 3 feet _____ MR/HR

Radiation reading at contact outer surface of container _____ mr/hr

Smear readings:

1. _____ $\mu\text{ci}/100 \text{ cm}^2$

2. _____ $\mu\text{ci}/100 \text{ cm}^2$

3. _____ $\mu\text{ci}/100 \text{ cm}^2$

Cask seal integrity verified _____

Surveyed by _____ Date _____