

UCLA Quality Assurance Program

Submitted in Accordance with 10.CFR.71
in Connection with UCLA Intent to Transfer
MTR Type Fuel (Irradiated) to a Carrier

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REVISION SHEET

Revision No. 0

JAMES W. HOBSON
VICE-CHANCELLOR

DATE

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Introduction

The Nuclear Energy Laboratory at UCLA possesses five equivalent bundles of irradiated, MTR-type fuel elements. In storage pits adjacent to the reactor, this particular holding consists of:

- (a) four complete bundles (assembled), each containing eleven plates;
- (b) one modified bundle of eight plates and three aluminum dummy plates;
- (c) three loose plates.

The fuel is nominally 93% enriched uranium in an aluminum matrix with a total U-235 content of approximately 700 grams. Measurements of the four complete bundles show radiation levels ranging from 1.36 to 1.74 R/hr at 1 meter. Thus, it is unlikely that a dense packed arrangement of the entire shipment would yield more than $1.8 \times 5 = 9.0$ R/hr at one meter. The Nuclear Energy Laboratory desires to transfer this fuel from their site to comply with the Upgrade Rule of 10.CFR.73.

The fuel is owned by the Department of Energy, and at their suggestion, the Nuclear Energy Laboratory initiated the effort in the summer of 1978 to transfer the fuel to the Idaho Chemical Reprocessing Plant. On August 14, 1979, the EXXON Nuclear Company, Inc. (formerly Idaho Chemical Reprocessing Plant), agreed to receive and accept the fuel.

The following organizations are involved in this transfer/shipment.

- (a) EXXON Nuclear Company, Inc. (as receiver)
- (b) Tri-State Motor Transport Co. (as carrier)
- (c) General Electric Company (as lessor of the GE-700 shipping cask and provider of relevant shipping cask data)
- (d) University of California (as originator of the shipment and lessee of the cask)
- (e) Department of Energy (as title-holder of the fuel, contributing coordination, and cost support).

The Quality Assurance Program presented here is designed for this particular shipment. No other shipments are contemplated within a time frame such that existing rules are likely to be applicable.

UCLA is a user of the GE-700 fuel transfer cask. Quality assurance

relevant to the cask and the carrier are the responsibilities of the General Electric Company and Tri-State Motor Transport respectively. It is UCLA's sole responsibility to comply with approved guidelines which deal with the use of the cask while it is within the confines of the property boundary of UCLA.

I. Organization

Figure 1 illustrates the relationship between the various working groups and the license-holder (the Board of Regents). All official communications involving licensing that originate at UCLA, are to bear the signature of Vice-Chancellor Hobson. The point of contact at UCLA is Dr. Walter Wegst, Director, Research and Occupational Safety. The Radiation Safety Officer for the program is John C. Evraets, who is responsible for the Quality Assurance Program and its implementation (10.CFR.71.12).

The Nuclear Energy Laboratory has accepted responsibility for making the shipping arrangements, and for supplying the labor necessary to transport the fuel from the reactor room to the cask. Professor Catton has delegated the responsibility for shipping arrangements to Mr. Ashbaugh, and will provide the labor and direction-as-necessary (via Mr. Ostrander) under the surveillance of Mr. Hornor, Resident Health Physicist (as deputy for the Radiation Safety Officer). During this unique operation, Mr. Evraets will assign Dr. John Kaufman (Environmental Health and Safety) to support Mr. Hornor.

The shipping arrangements, under the responsibility of Mr. Ashbaugh, will include prior notification of appropriate agencies and interests including

- (a) the Los Angeles Police Department;
- (b) the FBI;
- (c) the California Highway Patrol;
- (d) County and/or State jurisdictions along the transit path from UCLA to EXXON Nuclear, Idaho Falls, Idaho.

The UCLA Risk Management Coordinator shall be informed of these arrangements, and shall have authority (via the Purchasing Department) to approve the final arrangements.

II. Quality Assurance Program

The Radiation Safety Officer shall review and approve the Quality Assurance Program. Training for, and implementation of, the fuel transfer operation shall be performed according to written procedures. Changes and revisions

must be approved by the Laboratory Manager, and the Resident Health Physicist; with the safety of laboratory personnel, the general public, and the safeguarding of the material, as primary considerations.

The following is a list of the written procedures.

1. Fuel Transfer Operation Checklist.
2. Materials and Equipment Checklist.
3. Radiation, Health and Safety Checklist.
4. Modified Procedure for Handling the Model 700 Shipping Container.
5. Approvals and Document Checklist.

III. Document Control

All documents related to the fuel transfer operation shall be controlled by Mr. C.E. Ashbaugh, Laboratory Security Officer. Procedural observation and checklist completion during the transfer (actual or practice) shall be performed by Dr. Kaufman, Health Physicist. All document changes must be approved in writing by the Laboratory Manager, the Laboratory Security Officer, and the Resident Health Physicist.

IV. Handling, Storage and Shipping

The fuel bundles and plates have been stored for almost 20 years. The fuel currently resides in three of the thirty storage holes which comprise the hot fuel storage area adjacent to the UCLA Argonaut Reactor. They are stored dry and are checked approximately twice each year.

Preparation of the fuel bundles for shipping will be performed under the direction of the Laboratory Manager and the surveillance of the Resident Health Physicist and will follow specific written procedures. The shipment shall not be made until all tests, certifications, acceptances and final inspections have been made. The Laboratory Manager, Health Physicists, Security Officer and Nuclear Energy Laboratory staff shall participate in a dummy fuel practice run the day before the fuel shipment. The dummy transfer will be practiced until all operations can be done smoothly. The actual transfer will proceed on the following day.

V. Inspection, Test and Operating Status

The inspection of the GE-700 cask will be performed by the Laboratory Security Officer and the Resident Health Physicist. The use of the cask will follow written procedures adapted from G.E.'s operating instructions and approved by General Electric. The current status of each step of the

operation shall be maintained by the Laboratory Security Officer and shall be recorded in a permanent log. The areas of responsibilities within UCLA for ensuring that the Quality Assurance Program is carried out according to procedures, are delineated in the organization chart listed in Appendix A.

VI. Quality Assurance Records

All records except Quality Assurance records shall be kept by the Laboratory Security Officer. All Quality Assurance records shall be kept by the Radiation Safety Officer. All records will be maintained and shall be both identifiable and retrievable. A list of these records, with storage location shall be maintained by the Reactor Supervisor and the Laboratory Security Officer. The specified retention period for the Quality Assurance records shall not exceed one year.

VII. Audits

This is a one-time operation; there is no evident need for continuous or periodic audit, and audit will be deemed complete upon:

- (a) approval of the plan;
- (b) acknowledgement of delivery by the recipient;
- (c) the lapse of one year without claim or complaint by parties to the agreement or parties otherwise impacted by the shipment.

cc: C. Ashbaugh, Security Officer, NEL/SEAS
K. Carlson, UCLA Risk Management Coordinator
I. Catton, Director, Nuclear Energy Laboratory
T. Collins, Assistant Dean (Administration), SEAS
J. Evraets, Radiation Safety Officer
J. Hornor, EH&S
N. Ostrander, NEL
W. Wegst, Director, Research and Occupational Safety

FUEL TRANSFER OPERATION CHECK LIST (6 FHU's 01 - 06)

I. Internal Fuel Transfer (Fri. June 20, 1980)

Two man operation--H.P. surveillance

1. With reactor crane, pull up fuel storage plug and set on floor.
2. Hook FHU to pulley system via bomb hook
3. Upper man pulls FHU top level to height of floor.
4. Lower man hooks FHU -- states GO!
5. FHU transferred to flooded cask basket.
6. Repeat 1 through 5 five times.

II. Transfer (Sat. June 21, 1980)

Transfer process pit block over tank/basket (TB)

1. Remove process pit block
2. Hook TB to reactor crane
3. Start up fork lift
4. Transfer TB to pallet on fork lift
5. Unhook TB from reactor crane
6. Transfer ^{am} to GE-700 cask

Extra man to work with 3 meter hook in case of tipover

7. Pop wedges in TB
8. Raise TB to cask height
9. Hook basket to Engr I electric hoist with small hook
10. Man goes to top of cask shield
11. Remove cask from tank--transfer to GE-700 cask with man on top guiding into cask
12. Unhook basket from electric hoist
13. Proceed to Step 8 of Procedure for Handling the General Electric Model 700 Shipping Container

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Radiation Health & Safety Check List

For Spent Fuel Handling

Materials

A. Personnel Dosimetry

1. Individual film badge (assigned)
2. Individual direct reading dosimeters--(gamma) (2 each)
3. Dosimeter signout sheet and record
4. Wrist badges and rings for fuel markers only

B. Area radiation

1. 2 each Victoreen 470A Panoramic Ion chambers
2. 2 each Eberline E510 GM Survey meters

C. Criticality on loading into water shield

1. Cadmium strips in tank--3 each before fueling
2. Eberline PNR-4 Neutron-REM Counter near shield during loading
3. Criticality Calculations holding less than 1/2 bundles necessary for criticality

D. Contamination (contingent)

1. Wipe materials for outside of GE shipping cask and fittings
2. EWGM counters to count wipes before work begins. Minimum sensitivity $\sim 10^{-5}$ μCi
3. C-clothing, gloves, shoes, hoods, masks available if required by wipe test

J.W. Hornor
J.W. Hornor
6/18/80

I. To go with shipment

- _____ 1) Part C of Fuel Receipt Criteria (4 copies)
- _____ 2) NRC form 741 (4 copies--1, 2, 3, 7)
- _____ 3) Bill of Lading
- _____ 4) Shipper's Certification for Radioactive Materials
- _____ 5) Certification of Compliance #5942 Revision 2
- _____ 6) Quality Assurance Program Approval

Procedure for Handling the General Electric Model 700 Shipping Container

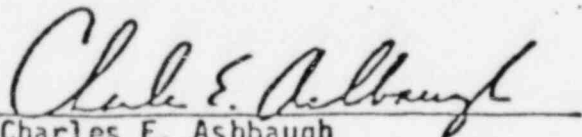
This cask is to be used in the dry mode. The loading operation shall be performed while cask is on the truck.

1. Untie the tie down cables connecting the cask protective jacket to the truck. (Have TRI-State perform this operation if possible).
2. Remove the eight each 2" bolts securing the protective jacket to the cask base.
3. Sling jacket and lift it off from the cask and set on ground next to truck. Note: its weight is approximately 8,000# and observe the jacket position so that it can be put back on the truck in the same orientation for which it was removed.
4. Remove the steel spacer from the cask lid lifting eye. Note: its weight is approximately 250#.
5. Unbolt and remove valve guard and set on truck bed. Note: this step may be optional depending if the lid bolts can be removed without this operation.
6. Remove the plug from the fill line valve at the side of the cask. Open fill line valve to equalize air pressure. (Do not crack open PRV on top of cask.)
7. Remove the eight each 3/4 - 10 lid bolts and lift lid to top of truck bed. Note: Possible contamination on bottom of lid, so make sure lid sits on tar paper laid on truck bed. Observe the 1/4" thick gasket inside the metal retaining ring. Make sure retaining ring and gasket are in place.

Load fuel following the "Fuel Transfer Operation Check List." After loading commence with the following:

8. Check gasket and ring position and place lid back on cask. Secure the eight each 3/4 - 10 lid bolts. Attach a tamper seal to lid.
9. Close fill line valve and install plug.
10. Install valve guard and bolt in place if step 5 was performed.
11. Install steel spacer on cask lid.
12. Install protective jacket at the same orientation it was removed.
13. Install eight each 2" bolts securing jacket to the base.

14. Remove tar paper etc, and perform a series of wipes to ensure no removable contamination.
15. Install all signs, placards and seals required.
16. Have TRI-State perform tie down if possible.



Charles E. Ashbaugh

6/19/80

Materials and Equipment Checklist

June 20 June 21

- | | | | |
|-----|-----|-----|--|
| ___ | ___ | 1. | 3 inch open end wrench |
| ___ | ___ | 2. | 3/8 inch chain with 2 hooks, 12' long |
| ___ | ___ | 3. | 1-1/8 inch combination wrench |
| ___ | ___ | 4. | 12 inch crescent wrench |
| ___ | ___ | 5. | 14 inch pipe wrench |
| ___ | ___ | 6. | 1/2 ton electric chain hoist |
| ___ | 1 | 7. | 5 ton manual bridge crane |
| ___ | ___ | 8. | 2 ton fork lift |
| ___ | ___ | 9. | crane basket |
| ___ | ___ | 10. | 1/2 inch cold-rolled steel hook--1 meter long |
| ___ | ___ | 11. | 3/4 inch cold-rolled steel, 3 meter long handling tool |
| ___ | ___ | 12. | MTR type irradi fuel (6 FHU's). |

Charles E. Ashbaugh

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6/19/80