SEP 10 1973

Docket Nos. 50-237 and 50-249

Commonwealth Edison Company
ATTN: Mr. J. S. Abel
Nuclear Licensing Administrator -
Boiling Water Reactors
Post Office Box 767
Chicago, Illinois 60690

Gentlemen:

By letter dated May 31, 1973, and supplements dated July 2 and August 10, 1973, you submitted analyses and procedures for utilizing the General Electric IF-300 spent fuel shipping cask for removal of irradiated fuel presently installed in the Dresden 2 fuel storage pool. We have evaluated these analyses and procedures and, in addition, have met with your staff and consultants on July 27, 1973, and August 10, 1973, and have performed an onsite inspection of your overhead crane system on June 25, 1973.

We have concluded that the cask handling system is acceptable for the removal of the presently stored Dresden 2 spent fuel subject to the conditions listed in the attachment to this letter. The details of our review are contained in the enclosed Safety Evaluation.

Prior to use of the fuel shipping casks for removal of subsequent loads of irradiated fuel from Dresden 2 and 3, we request that you submit for our approval a report containing an evaluation of the results of the crane tests and the experience of removing the presently stored fuel. The report should also discuss the problems associated with a cask drop involving fuel with higher burnup and shorter decay time.

Sincerely,

Original Signed by
D. J. Skovholt

Donald J. Skovholt
Assistant Director for
Operating Reactors
Directorate of Licensing

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Enclosures and cc: See next page

Enclosures:
1. Conditions for Use of System
2. Safety Evaluation

cc w/enclosures:
John W. Rowe, Esquire
Isham, Lincoln & Beale
Counselors at Law
One First National Plaza
Chicago, Illinois 60670

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TWambach
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RLTedesco

for the crane aspects 506.2

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| DATE ▶ | 9/6/73 | 9/6/73 | 9/7/73 | 9/ /73 | 9/7/73 | 9/10/73 |

DRESDEN UNIT 2

CONDITIONS FOR USE OF

SPENT FUEL CASK HANDLING SYSTEM

Interim acceptance of the spent fuel cask handling system, as presented, is conditional on conforming to certain conditions, adjustments, and modifications. Use of the overhead crane handling system provided will be allowed for hoisting, transporting, positioning, and lowering of spent fuel shipping cask over the prescribed route after satisfactorily completing and demonstrating the following:

1. The 125-ton reactor building crane, which is to be used for spent fuel cask handling, is to be tested at 125 percent of rated capacity and at the 100 percent of rated capacity. The test will include hoisting, lowering, trolley and bridge travel with the test loads. The crane is to be inspected thoroughly before, after, and during the test. The hoist reeving system and the wire rope shall be inspected and recertified for the rated load. This may require replacement of the wire rope and components of the hoisting system. Refer to ANSI, B30.2.0, 1967, Chapter 2-2.

2. The braking systems for trolley and bridge travel are to be serviced and adjusted to fully comply with the crane specifications and ANSI B30.2.0, 1967, Chapters 2-1, 2-2, and 2-3.

3. The braking system for the 125-ton hoist is to be serviced, repaired as required, and adjusted to provide for the two holding brakes. The holding brakes are to be adjusted for setting on power removal. The dc dynamic braking provided by crane manufacture is to be adjusted to provide safe controlled lowering of 75 tons (the estimated weight of loaded spent fuel shipping cask with the handling devices) unassisted by the holding brakes. The integrity of each of the three braking systems is to be verified separately during the crane testing. If the dc dynamic control braking cannot be adjusted for the 75-ton load, it is to be replaced with another power type "Control Braking" system, not mechanical.

4. The velocities of the main hoist, trolley and bridge travel shall be blocked or adjusted for the 75-ton lift to the following maximum velocities:

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| Main Hoist | 5.0 feet per minute |
| Trolley Travel | 10.0 feet per minute |
| Bridge Travel | 20.0 feet per minute |

5. Portable rail stops or clamps are to be used to limit or prevent overtravel of bridge or trolley as the cask is moved over the prescribed route selected by the licensee.

6. The cask is to be lifted and transported no more than 6" above the operating floor. Two positive hook block limit switches are to be provided, one above the other, the first to stop block at 6" of cask clearance and the second to stop block should the first limit switch malfunction. The load block overtravel during hoisting shall be protected by the geared limit switch and the two positive hook block limit switches.

7. Electric controls are to be provided that will prevent the stalling torque of the main hoist motor from exceeding 200 percent of the rated horsepower (i.e., 60 HP x 200% = 120 HP total). This is to be verified during the crane test.

8. The main 125-ton hoist hook is to be measured, magnetic particle inspected, and NDE tested prior to and after the 125 percent rated load test. Trammel points located on the hook throat opening are to be measured before and after the 125 percent rated load test. The hook is to be replaced if measurements indicate permanent deformation or yielding. The hook is to successfully pass the inspection and testing.

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UNITED STATES ATOMIC ENERGY COMMISSION

SAFETY EVALUATION BY THE DIRECTORATE OF LICENSING

COMMONWEALTH EDISON COMPANY

DRESDEN UNIT 2

SPENT FUEL CASK HANDLING SYSTEM

## Introduction

By letter dated May 31, 1973, and supplements dated July 2 and August 10, 1973, Commonwealth Edison Company (CE) submitted analyses and procedures for utilizing the General Electric IF-300 spent fuel shipping cask for removal of irradiated fuel presently installed in the Dresden 2 fuel storage pool. We have evaluated these analyses and procedures and, in addition, have met with the CE staff and consultants on July 27, 1973, and August 10, 1973. In addition, representatives of Licensing and Regulatory Operations performed an onsite inspection of the overhead crane system on June 25, 1973. We have concluded that the cask handling system is acceptable for the removal of the presently stored Dresden 2 spent fuel subject to conditions listed in the attachment to our concurrently issued letter to CE.

The presently stored fuel has had less burnup and more decay time prior to removal than would normally be expected. As a result, the fission product inventory, the decay heat, and potential hazard associated with malfunctions are less than would be expected for removal of subsequent loads. We have deferred evaluation of use of the cask for removal of subsequent loads pending an evaluation of experience with the removal of the presently stored fuel and pending an evaluation of the potential for additional problems associated with fuel with higher burnup and shorter decay time.

Hazards associated with fuel handling and storage were previously evaluated by CE and the AEC during the reviews for the construction permit and operating license (Reference Section 3.6.4 of AEC Safety Evaluation dated October 17, 1969). However, because recent reviews of other reactors indicated a need for supplementary cask handling controls, a new review of the Dresden cask handling was initiated.

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Evaluation

The fuel removal includes a sequence of operations. The shipping cask is brought into the secondary containment on a railroad car and is connected to a traveling overhead 125-ton crane. The crane is used to lift the cask from the car and raise it about 90 feet through a hatchway to the refueling floor. At the refueling floor level, the cask is moved laterally and then lowered into a decontamination pit for cleaning. It is then raised and moved laterally to the spent fuel storage pool and lowered into the pool. The cask is opened and fuel is loaded into the cask. After loading the cask is closed, raised to the refueling floor, moved laterally to a decontamination pit where it is lowered for cleaning. The cask is then raised, moved laterally to the hatchway and lowered to the railroad car. Because of the limited capacity of the cask, this operation is repeated a number of times over a period of several months to remove the large number of stored fuel assemblies.

The hazards considerations involve damage to safety related equipment and damage to irradiated fuel resulting from a cask drop. Damage to safety related equipment could occur at several locations along the path of travel if the cask dropped through the floor. Analyses submitted by CE show that, except for the hatchway location, penetration through the floor resulting from a cask drop can be prevented by limiting the height of lift over the floor and pools and by restricting the path of travel over the refueling floor. As a result of AEC review, CE will be required to limit the height of lift to six inches over the refueling floor by means of administrative controls and added limit switches. CE will also be required to restrict the path of travel by administrative controls and by use of portable rail stops or clamps.

The potential for penetration of the ground floor from a cask drop over the hatchway or for damage to fuel from a cask drop onto fuel racks cannot be prevented by restricting height of lift. To assure that the probability of crane failure is acceptably low for removal of the present fuel load, we are requiring modifications and tests of the overhead crane. These requirements are listed in the conditions attached to our letter to CE. If it were assumed that the cask did drop from a high elevation in the hatchway, the cask might penetrate the floor and, if it fell in certain locations, the torus section of the primary containment would be penetrated. This occurrence would

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create an operational rather than a safety problem; the reactor would have to be shut down until repairs were made to assure containment integrity. If the cask fell and toppled into fuel storage racks, fuel could be damaged. However, because of the pool of water above the fuel and the standby gas treatment system to remove fission products coupled with the existence of a relatively low fission product inventory in the fuel, it is unlikely that significant releases of radioactivity would occur from the building even if some fuel elements were damaged.

On the basis of the above, we have concluded that the cask handling system is acceptable for the removal of the presently stored Dresden 2 spent fuel subject to the conditions, modifications, and adjustments of the 125-ton overhead crane described in the attachment to our concurrently issued letter to CE.

Richard D. Silver
Operating Reactors Branch #2
Directorate of Licensing

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Directorate of Licensing

Date: SEP 10 1973

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