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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 26, 1980

Docket No. 50-10

Mr. D. Louis Peoples
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Peoples:

RE: SEP TOPIC XV-20 - Radiological Consequences of Fuel Damaging Accidents
(Inside and Outside Containment)
Dresden Nuclear Power Station, Unit No. 1.

Enclosed is a copy of our evaluation of Systematic Evaluation Program Topic XV-20 - Radiological Consequences of Fuel Damaging Accidents (Inside and Outside Containment). This assessment compares your facility, as described in Docket No. 50-10 with the criteria currently used by the regulatory staff for licensing new facilities. Please inform us if your as-built facility differs from the licensing basis assumed in our assessment.

We have discussed this assessment with your staff and believe the facts concerning your plant are correct. Therefore, our review of this topic is complete and this evaluation will be a basic input to the integrated safety assessment for your facility unless you identify changes needed to reflect the as-built conditions at your facility. This topic assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this topic are modified before the integrated assessment is completed.

Sincerely,
Dennis L. Ziemann
Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosure:
Completed SEP
Topic XV-20

cc w/enclosure:
See next page

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Mr. D. Louis Peoples

- 2 -

March 26, 1980

cc w/enclosure:

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DRESDEN 1XV-20 RADIOLOGICAL CONSEQUENCES OF FUEL DAMAGING
ACCIDENTS (INSIDE AND OUTSIDE CONTAINMENT)

The safety objective of this topic is to assure that the offsite doses resulting from fuel damaging accidents during fuel handling are well within the guideline value of 10 CFR Part 100.

The design basis fuel handling accident for Dresden 1 is the postulated drop of the fuel basket damaging 16 assemblies. The postulated consequences of this accident and the dropping of one assembly in the Fuel Building are given in Table XV-1. The assumptions and input parameters used in calculating the potential consequences are given in Table XV-2.

The analysis was performed following the assumptions and procedures indicated in SRP 15.7.4 and Regulatory Guide 1.25. The acceptance criteria of the SRP specify that the doses should be "appropriately within the guidelines" of 10 CFR Part 100. "Appropriately within the guidelines" has been defined by the staff as a thyroid dose less than 100 rem. This is based on the probability of these accidents relative to the probability of other accidents which are evaluated against the Part 100 exposure guidelines. Whole body doses were considered but they are not controlling due to the decay of the short-lived radioisotopes prior to the fuel handling.

On the basis of the results as given in Table XV-1, we conclude that the radiological consequences are appropriately within the guidelines of 10 CFR Part 100.

References:

1. Letter, D. Ziemann to W. G. Council, December 20, 1979, Fuel Handling Accident Inside Containment.
2. Letter, M. S. Turbak to D. L. Ziemann, Refueling Accident Analysis.

TABLE XV-1

CALCULATED DOSES FOR FUEL HANDLING ACCIDENTS

	<u>Doses, (Rem)</u>	
	<u>Thyroid</u>	<u>Whole Body</u>
Exclusion Area Boundary (EAB) 2-Hour Doses:		
Fuel Building	3	0.2
Accident Inside Containment	56	0.4

TABLE XV-2

ASSUMPTIONS USED FOR THE FUEL HANDLING ACCIDENT

Power Level	700 Mwt
Operating Time	3 years
Peaking Factor	1.5 years
Number of Fuel Assemblies Damaged Inside Containment*	16
Number of Fuel Assemblies Damaged In the Fuel Building	1
Number of Fuel Assemblies in Core	464
Shutdown Time Before Start of Refueling	24 hours
Activity Release From Pool	Regulatory Guide 1.25
Credit for Charcoal Filters	None
0-2 hr, X/Q Value, Exclusion Area Boundary (ground level release)	$1.0 \times 10^{-4} \text{sec/m}^3$

*16 assemblies may be damaged with a drop of the fuel basket.