Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

Regulatory Docket File

July 23, 1975

DOCKETED USNRC JUL 25 1975 MAIL SECTION DOCKET CLERK DL

RECEIVED JUL 25 1975 U.S. Atomic Energy Commission Regulatory Mail Section

Mr. Dennis L. Ziemann
Operating Reactors - Branch 2
Division of Reactor Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Dresden Station Unit 2
Inverted Control Rod Tubes
Proposed Amendment to Facility Operating
License No. DPR-19, NRC Dkt. No. 50-237

Dear Mr. Ziemann:

As indicated in a letter to Mr. D. J. Skovholt dated October 11, 1973, concerning this subject, the control blades at Dresden Unit 2 were checked for inverted tubes during the Fall 1974 refueling outage. The attached report, entitled "Control Rod Blade Inspection and Evaluation", summarizes the checks performed and the results. On the basis of the results and evaluations discussed in the attached report, all special requirements and testing discussed in letters to Mr. D. J. Skovholt dated October 11 and 31, 1973 relative to inverted control blade tubes have been discontinued for Dresden Unit 3.

Your approval is requested to discontinue at Dresden Unit 2 the three (3) actions required in the letter from Mr. D. J. Skovholt dated April 1, 1974. As discussed on page 4-2 of the attached report, the effects of the remaining inverted control rod tubes are negligible relative to 1) rod drop accidents, 2) pressurization transients, and 3) accuracy of predicted shutdown margins. The requirements of the April 1, 1974 letter will be met until approval to discontinue is received.

Commonwealth Edison Company requests in accordance with 10 CFR 50.59 an amendment to Facility Operating License DPR-19, Appendix A, Technical Specifications. The purpose of the amendment is to incorporate in the reactivity control bases an instruction to include consideration of all inverted control rod tubes when determining shutdown margin (include in the value of R). The proposed amendment is indicated on the attached revised page 61 of the Dresden Station Unit 2 Technical Specifications.

Three (3) signed originals and 37 copies of this report are submitted for your review.

SUBSCRIBED and SWORN to
before me this 23rd day
of July 1975.

Nancy M. Hollingsworth
Notary Public

Very truly yours,

Byron Lee Jr.

Byron Lee, Jr.
Vice-President

7900

Bases:

A. Reactivity Limitations

1. Reactivity margin – core loading

The core reactivity limitation is a restriction to be applied principally to the design of new fuel which may be loaded in the core or into a particular refueling pattern. Satisfaction of the limitation can only be demonstrated at the time of loading and must be such that it will apply to the entire subsequent fuel cycle. The generalized form is that the reactivity of the core loading will be limited so the core can be made subcritical by at least R + 0.25%Δk in the most reactive condition during the operating cycle, with the strongest control rod fully withdrawn and all others fully inserted. The value of R in %Δk is the amount by which the core reactivity, at any time in the operating cycle, is calculated to be greater than at the time of the check; i.e., the initial loading. R must be a positive quantity or zero. A core which contains temporary control or other burnable neutron absorbers may have a reactivity characteristic which increases with core lifetime, goes through a maximum and then decreases thereafter. See Figure 3.3.2 of the SAR for such a curve.

The value of R is the difference between the calculated core reactivity at the beginning of the operating cycle and the calculated value of core reactivity any time later in the cycle where it would be greater than at the beginning. **The value of R shall include the potential shutdown margin loss assuming full B_4C settling in all inverted poison tubes present in the core. A new value of R must be determined for each new fuel cycle.**

The 0.25%Δk in the expression R + 0.25%Δk is provided as a finite, demonstrable, subcriticality margin. This margin is demonstrated by full withdrawal of the strongest rod and partial withdrawal of an adjacent rod to a position calculated to inset at least R + 0.25%Δk in reactivity. Observation of sub-criticality in this condition assures sub-criticality with not only the strongest rod fully withdrawn but at least a R + 0.25%Δk margin beyond this.

2. Reactivity margin – inoperable control rods

Specification 3.3.A.2 requires that a rod be taken out of service if it cannot be moved with drive pressure. If the rod is fully inserted and then disarmed electrically*, it is in a safe position of maximum contribution to shutdown reactivity. If it is disarmed electrically in a non-fully inserted position, that position shall be consistent with the shutdown reactivity limitation stated in Specification 3.3.A.1. This assures that the core can be shutdown at all times with the remaining control rods assuming the strongest operable control rod does not insert. An allowable pattern for control rods valved out of service, which shall meet this Specification, will be available to the operator. The number of rods permitted to be inoperable could be many more than the eight allowed by the Specification, particularly late in the operation cycle; however, the occurrence of more than eight could be

*To disarm the drive electrically, four amphenol type plug connectors are removed from the drive insert and withdrawal solenoids rendering the drive immovable. This procedure is equivalent to valving out the drive and is preferred, as drive water cools and minimizes crud accumulation in the drive.