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Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Dresden Station Units 2 and 3
Proposed Amendment to Facility Operating
Licenses DPR-19 and DPR-25
NRC Dockets 50-237 and 50-249

Dear Mr. Rusche:

In accordance with 10 CFR 50.59, Commonwealth Edison requests an amendment to facility operating licenses DPR-19 and DPR-25, Appendix A, Technical Specifications. The purpose of the proposed amendment is to modify the limiting conditions of operations for the Rod Worth Minimizer (RWM) to allow bypassing the RWM for low power physics test to demonstrate shutdown margins. The proposed amendment is indicated on the attached revised Technical Specification page 57 for DPR-19 and DPR-25.

The safety evaluation for the proposed amendment is attached, and both the amendment and safety evaluation have received Onsite and Offsite review and approval.

This amendment must be approved prior to startup of Dresden Unit 2 following the current refueling outage; because as presently written, the Technical Specifications 3.3.B.3(b) and 3.3.A.1 can not both be met. Specification 3.3.A.1 requires shutdown margin demonstration before startup which involves partial withdrawal of rods with a total worth more than 1.3% Δk, and specification 3.3.B.3 requires operation of the RWM below 10% reactor power to limit rod withdrawal sequences so that the maximum worth will be 1.3% Δk. The present schedule for beginning shutdown margin testing in accordance with specification 3.3.A.1 is April 23, 1975. Your approval of this proposed amendment is requested prior to this date.

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

SUBSCRIBED and SWORN to
before me this 14th day
of April, 1975.

Nancy M. Hollingsworth
Notary Public

Very truly yours,

R L Bolger
R. L. Bolger
Assistant Vice-President

4247

3.3 LIMITING CONDITION FOR OPERATION	4.3 SURVEILLANCE REQUIREMENTS

3\. (a) Control rod withdrawal sequences shall be established so that maximum reactivity that could be added by dropout of any increment of any one control blade would not make the core more than 0.013 delta K supercritical.

(b) Whenever the reactor is in the startup or run mode below 10% rated thermal power, the Rod Worth Minimizer shall be operable. A second operator or qualified technical person may be used as a substitute for an inoperable Rod Worth Minimizer which fails after withdrawal of at least 12 control rods to the fully withdrawn position. The Rod Worth Minimizer may also be bypassed for low power physics testing to demonstrate the shutdown margin requirements of specification 3.3.A.1 if a nuclear engineer is present and verifies the step-by-step rod movements of the test procedure.

3\. (a) To consider the rod worth minimizer operable, the following steps must be performed:

(i) The control rod withdrawal sequence for the rod worth minimizer computer shall be verified as correct.

(ii) The rod worth minimizer computer on-line diagnostic test shall be successfully completed.

(iii) Proper annunciation of the select error of at least one out-of-sequence control rod in each fully inserted group shall be verified.

(iv) The rod block function of the rod worth minimizer shall be verified by attempting to withdraw an out-of-sequence control rod beyond the block point.

(b) If the rod worth minimizer is inoperable while the reactor is in the startup or run mode below 10% rated thermal power second independent operator or engineer is being used, he shall verify that all rod positions are correct prior to commencing withdrawal of each rod group.

SAFETY EVALUATION

The Control Rod Drop Accident as previously analyzed in the FSAR and later reanalysed in Topical Report NEDO 10527, its supplements, and Special Report No.9 is the most severe when occurring from the hot standby condition. Since shutdown margin testing is performed only in the cold condition to avoid zenon and temperature corrections, a less severe transient would result from the drop of a rod in the worth range analyzed ($\sim$2.5% Δk). Although rod worths in normal startup sequences are less than 1.3% Δk, less distributed, local rod configurations such as those employed in adjacent rod criticals may result in significantly higher rod worths.

The discussion of control rod worth in sect. 3.3.4.4 of the FSAR describes "control rod patterns that shape the power distribution and also achieve minimum worth. The opposite extreme is to withdraw a clump of rods in the center of the core. Analysis indicates that criticality would be approached with withdrawal of 2 adjacent control rods at cold conditions and approximately 5 adjacent control rods at the hot standby condition. Distributed control rod patterns will be used."

The original intent of the FSAR was obviously concerned with operating rod sequences used during normal startup procedures as opposed to higher worth configurations used during special physics tests. At that time the necessity of special physics tests such as adjacent rod critical checks of shutdown margin, was evidently not foreseen; at least not on a regular basis subsequent to initial startup testing.

Since then, specific problems, such as the postulated control blade slumping due to inverted tubes and the higher than anticipated Cycle 1 reactivity peak due to gadolinia burnout inaccuracies, have required the added benchmarks which such techniques provide at various core exposures. Additionally the adjacent rod critical configuration quantifies the stuck rod margin for operation when performed periodically during each operating cycle.

Although Technical Specification 3.3.A.1 (SDM verification prior to each post-refueling startup) could technically be satisfied by subcritical checks of a pre-calculated rod configuration, little real value data would be obtained compared to the critical technique. The critical tests allow determination of the actual critical configuration, measurement of positive and negative periods, and a less complex calculation of the actual shutdown margin due to the simplified geometry.

The disadvantages of working with higher than normal rod worths have been minimized by employing additional procedural precautions. These precautions: a.) minimize notch worths. b.) prohibit the withdrawal of any increment which could make the core more than 1.3% Δk supercritical unless coupling can be verified either by an overtravel check or nuclear instrument response, and c.) effectively eliminate the possibility of operator error.

The notch worths are minimized by utilizing a "pumping" type of rod movement which cycles the 1st rod as the 2nd rod is notched out. By reinserting the 1st rod to the position of the 2nd rod before taking each additional notch, then returning to the lower notch worths of the 1st rod, a more gradual approach to criticality is achieved with slower, easily manageable periods. If three rods are required for criticality the 2nd rod is cycled as the 3rd rod is withdrawn, for the same reason.

Verification of coupling integrity of the rods to be used must be performed prior to SDM tests. The overtravel check is again performed each time a rod reaches position 48 in the test procedure. Rod following is continuously monitored during the test procedure by recording the count rate. Withdrawal increments which exhibit no change in count rate will be limited to those increments which are insufficient to cause criticality based on pre-calculated k_{eff} data supplied by G.E. Core Management Engineering. This procedural limitation will assure with a wide margin that no increment of withdrawal could make the core more than 1.3% supercritical in the unlikely event that an uncoupling and drop out occurred between overtravel checks during the test itself.

Finally the potential for operator error is effectively eliminated by requiring independent backup verification of each step in the test procedure. This is accomplished by requiring a nuclear engineer in addition to the operator to assure conformance with the test procedure.