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

Regulatory Docket File

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

Subject: Dresden Station Unit 3
Reload No. 3 Licensing Submittal
Supplement D
NRC Docket No. 50-249

Dear Mr. Ziemann:

The attached subject supplement provides responses to questions from members of your staff concerning the subject reload.

One signed original and 39 copies are submitted for your review.

Very truly yours,

J. S. Abel
Nuclear Licensing Administrator
Boiling Water Reactors

Attachment

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DRESDEN STATION UNIT 3

RELOAD NO. 3 LICENSING SUBMITTAL

SUPPLEMENT D

Question 1

Your letters of April 4, May 5 and May 7, 1975 contained numerous statements that the analyses submitted for Quad Cities Unit 2 Reload No. 1 are applicable to Dresden Unit 3 Reload No. 3. Since Dresden 3 and Quad Cities 2 have different core loadings and different burnup histories, it is not clear why the input parameters for transient and accident analyses should be identical. Please explain why you consider the Quad Cities 2 analyses to be applicable to Dresden 3.

RESPONSE

The values of the input parameters for the abnormal operational transients analyzed were determined specifically for both Dresden Unit 3 Reload No. 3 and Quad Cities Unit 2 Reload No. 1. From these two (2) sets of input parameter values, a single conservatively representative set of input parameter values was selected and used in the transient analyses reported in the Quad Cities Unit 2 Reload No. 1 Licensing Submittal. The input parameter values used in these transient analyses, which are conservatively representative for Quad Cities Unit 2 Reload No. 1 and Dresden Unit 3 Reload No. 3, are listed in "Quad Cities Unit 2 Reload No. 1 Licensing Submittal Supplement A," response to question No. 4. As described above, this list of values was developed by selecting conservatively representative values from the specific Dresden Unit 3 Reload No. 3 and Quad Cities Unit 2 Reload No. 1 value. For example:

Parameter	D-3 Reload 3 Specific	QC-2 Reload 1 Specific Value	Value Used in Trans. Analyses
Operating Power Level (MW+)	2527	2511	2527
Void Coefficient (¢/% avg. voids)	-8.50	-8.77	-8.77

Question 2

Response 5 in your letter of May, 1975 indicated that the R-factor used to calculate the required MCPR safety limit is the same as for Quad Cities 2. Since Dresden 3 will contain type 80262 fuel not contained in Quad Cities 2, justify the use of the same R-factor.

RESPONSE:

The R factor is affected by the enrichment to the extent that the enrichment distribution effects the local power distribution. The difference in local power distribution between the 8D250 fuel and the 8D262 fuel is negligible by design. Therefore, there is essentially no change in R factor between the two bundles.

The derivation of MCPR is not affected by the R factor as described in the GETAB Topical Report.

Only the Quad Cities Unit 2 Reload No. 1 transient analyses are being applied to Dresden 3 Reload No. 3. The transient analysis is based on a point core model to calculate the system response during an abnormal operational transient. The enrichment does not directly enter these calculations. The specific fuel type enters in the heat transfer calculation to determine the operating MCPR based on the worst case core transient conditions. The determination of MCPR is dependent primarily on the fuel bundle geometry, i.e., 7 x 7 or 8 x 8. Other fuel properties such as bundle average enrichment have at most a negligible effect on the calculated MCPR value. Thus, the Quad Cities Unit 2 Reload No. 1 transient analysis is not affected by the 2.62 enriched fuel and is applicable to Dresden Unit 3 Reload No. 3.

Question 3

Please verify our understanding that the rod withdrawal patterns to be used will be the General Electric (GE) calculated patterns discussed in your letter of May 21, 1975.

RESPONSE:

The Dresden Unit 3 Reload No. 3 fuel cycle 4 control rod withdrawal sequences for groups 1 through 4 developed by General Electric Company will be used. NRC review of the Commonwealth Edison Company methods for developing control rod withdrawal sequences will be pursued separately from this reload licensing activity.

Question 4

Provide and compare the expected actual void coefficients for Quad Cities Unit 2 and Dresden Unit 3.

RESPONSE:

The actual dynamic void coefficients excluding the 1.25 design conversatism factor and percent voids for Quad Cities 2 Reload No. 1 and Dresden 3 Reload No. 3 are listed below.

	Dynamic Void Coefficient, ¢/$	Average Voids $
Quad Cities 2 Reload No. 1	-7.01	36.2
Dresden 3 Reload No. 3	-6.80	34.45

With the 1.25 design conservatism factor, the actual dynamic void coefficient for Dresden 3 Reload No. 3 as calculated for the specific core condition is - 8.50¢/% avg. voids. The dynamic void coefficient used in the Quad Cities 2 Reload No. 1 transient analysis is -8.767 ¢/% Avg. Voids. The use of a more negative void coefficient in the transient analysis is conservative, therefore, from this standpoint the Quad Cities 2 Reload No. 1 transient analysis is conservatively applicable to Dresden 3 Reload No. 3.

Question 5

Since the technical specifications should be based on the submittal safety analysis, please clarify the discrepancy between the initial MCPR presented in NEDO-20694 and the operating limit MCPR's in the technical specifications proposed by your April 4, 1974 letter.

RESPONSE:

Operating MCPR values are determined by the change in MCPR (ΔMCPR) due to the change in heat transfer parameters (i.e., heat flux) during an abnormal operational transient. Therefore, the applicable MCPR values are based on the applicable transient analyses. Since the Quad Cities Unit 2 Reload No. 1 transient analysis is being applied to Dresden 3 Reload No. 3 then all conditions and limits based on this transient analysis must also be applied. The correct MCPR values for Dresden 3 Reload No. 3 under these conditions are:

7 x 7 - 1.29
8 x 8 - 1.35

The MCPR values given in the Dresden 3 Reload No. 3 License Submittal (NEDO-20694) were based on a different transient analysis. This transient analysis supported a change in safety/relief valve configuration. The valve change cannot be made during this reload; therefore, the plant configuration will remain the same and similar to Quad Cities Unit 2.

Question 6

Explain the reason for the difference in the scram reactivity curves presented for Dresden 3 (Figures 6-4 and 6-5 of NEDO-20694) and the curves presented for Quad Cities 2, Reload No. 1

RESPONSE:

The scram reactivity curves shown in Figures 6-4 and 6-5 of NEDO-20694 are unique to the rod drop accident. These curves are calculated for the specific core conditions at that point in the plant operation when the occurrence of a rod drop is the most critical (i.e., low power, just critical rod pattern, etc.). In this regard Quad Cities 2 and Dresden 3 are different and, therefore, each has a different rod drop accident analysis with a different scram reactivity curve. These figures should be labeled "for Rod Drop Accident Only." These scram reactivity curves are not the same one used in the analysis of abnormal operational transients. The transient analysis scram reactivity curves are calculated for end of cycle full power core conditions with the control rods in the all out position.