



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

June 20, 1986

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Subject: Dresden Station Unit 3  
Additional Information Regarding  
Cycle 10 Transient Analyses  
NRC Docket No. 50-249

Dear Mr. Denton:

During a telecon on June 17, 1986, your staff indicated that their review of the methodology used for the Dresden 3 Cycle 10 Transient Analyses was not yet complete. They indicated that more detailed information regarding the COTRANSA hot channel model described in Appendix A to the D3C10 Transient Analysis Report (XN-NF-85-62) would be required to allow completion of their review. Due to the current scheduled startup date for Unit 3, it is unlikely that this review can be completed prior to startup. Therefore, this transmittal provides additional information regarding the D3C10 Transient Analysis for use by your staff in evaluating the proposed MCPR operating limits for Dresden 3 Cycle 10.

The attachment to this letter, prepared by Exxon Nuclear, describes the differences in the hot channel model used for D3C10 compared to previous Dresden reload analyses. Results of a sensitivity study are provided to quantify the affect of the revised model on the MCPR operating limits for Cycle 10. This information is provided for use in assessing the adequacy of the operating limits previously proposed by Commonwealth Edison or for modifying those limits as deemed necessary by your staff until the review of the hot channel model is completed.

8606270224 860620  
PDR ADOCK 05000249  
P PDR

A001  
/

Mr. H.R. Denton \*

- 2 -

June 20, 1986

If you have any further questions regarding this transmittal, please contact this office.

One signed original and ten (10) copies of this letter and the attachment are provided for your use.

Very truly yours,



J. R. Wojnarowski  
Nuclear Licensing Administrator

lm

Attachment

cc: R. Gilbert - NRR  
NRC Resident Inspector - Dresden  
M. C. Parker - IDNS

1795K

ATTACHMENT

MODIFICATION OF DRESDEN UNIT 3 CYCLE 10 MCPR LIMITS

In a telephone conversation between CECO-ENC-NRC on June 17, 1986, M. W. Hodges of the NRC stated that the NRC had just become aware of the updated ENC delta CPR methodology, and he did not consider that there was sufficient documentation or time to review the updated methodology prior to Cycle 10 startup. Further, the NRC requested that a CPR adder be justified which would reconcile the currently proposed Dresden 3 Cycle 10 MCPR operating limits to the previously accepted XN-NF-79-71(P) Rev. 2 HUXY-RODEX2-XCOBRA delta CPR methodology.

The NRC reviewed methodology of XN-NF-79-71(P) Rev. 2 uses the steady state hydraulics of XCOBRA for the delta CPR calculation. This is conservative for power excursion transients since the transient enthalpy rise in the hot channel coolant at each time step is ignored using these steady state assumptions.

The hot channel model described in the Dresden 3 Cycle 10 Plant Transient Analysis Report (XN-NF-85-62) updated the delta CPR calculation of XN-NF-79-71(P) Rev. 2 in three ways to achieve automation and be more mechanistic:

- It combined the models of the HUXY and XCOBRA into one calculation.
- It uses a response surface to represent the XCOBRA core average/hot channel flow split calculation.
- It incorporates transient hydraulics based on the hydraulic solution of the COTRANSA core model.

A sensitivity analysis was performed to establish the difference in delta CPR results between the hot channel model of XN-NF-85-62 and the method described in XN-NF-79-71(P) Rev. 2. The event used for this sensitivity analysis was a Load Rejection Without Bypass (LRWB). Selection of this event was based on previous Dresden analyses which had shown the LRWB to be the limiting transient. Because the sensitivity analyses were performed prior to the final production runs, these preliminary input parameters used were slightly different from those used in the licensing basis calculations. The sensitivity analyses used entirely consistent inputs for both methods, therefore the change in delta CPR identified by this study is applicable to the final licensing basis calculations. The results showed that the more conservative method of XN-NF-79-71(P) Rev. 2 yields a higher delta CPR of .030 for 8x8 fuel and .055 for 9x9 fuel.

The MCPR operating limits documented in XN-NF-85-62 are 1.29 for ENC 8x8 fuel and 1.33 for 9x9 fuel. Based on the following, it would be conservative to increase temporarily those MCPR operating limits by .04 for 8x8 fuel and .06 for 9x9 fuel while the staff completes their review of the updated methodology or analyses are submitted based on XCOBRA-T (XN-NF-105) which is currently under review by the NRC:

- These values are conservative relative to the sensitivity study of a higher delta CPR of 0.030 for 8x8 fuel and 0.055 for 9x9 fuel.
- The XN-NF-79-71(P) Rev. 2 method is mechanistically known to yield conservative results because of the steady state hydraulic assumption.
- The more mechanistic hot channel model of XN-NF-85-62 demonstrates the conservatism of the XN-NF-79-71(P) Rev. 2 method.

Based on the above, the adjusted operating limits for Dresden 3 Cycle 10 would be conservative and would continue to assure that at least 99% of the fuel rods in the core would not be expected to experience boiling transition during normal operation or anticipated operational occurrences. The conservatisms applied obviate the need to perform additional analyses for Dresden 3 Cycle 10.

With the application of this adder, the MCPR operating limits for Cycle 10 would be raised to 1.33 for both GE and ENC 8x8 fuel and 1.39 for 9x9 fuel until staff review of the updated model is complete or analyses are submitted based on XCOBRA-T which is currently under NRC review.

For future delta CPR calculations, Exxon Nuclear will either provide additional documentation of the updated delta CPR methodology or perform the delta CPR calculations using XCOBRA-T, a methodology currently under review by the NRC.