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ComEd

May 6, 1997
JMHLTR: 97-0053

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: Additional Information Regarding Dresden Nuclear Power Station Unit 3 Cycle 15 Confirmation of Minimum Critical Power Ratio Safety Limit Based on Revised SPC ATRIUM-9B Additive Constant Uncertainties
Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249.

During a recent U. S. Nuclear Regulatory Commission (NRC) vendor performance inspection review at Siemens Power Corporation (SPC), the NRC reviewers identified a concern related to the SPC ANFB critical power correlation uncertainties as applied to ATRIUM-9B fuel. On April 3, 1997 a meeting was conducted between representatives of the NRC, ComEd, and SPC to identify an acceptable means of resolving the concerns identified during the audit in a timely manner which will support Minimum Critical Power Ratio (MCPR) Safety Limit calculations and power operations at the ComEd Dresden and Quad Cities Stations.

The issues identified during the NRC audit are specifically with the ATRIUM-9B fuel additive constant uncertainty used as input to the NRC approved methodology for calculation of the MCPR Safety Limit. Dresden does not believe that the issue related to the MCPR Safety Limit is a restriction to reloading the Dresden Unit 3 core during the current refueling outage. This is because the MCPR is not a safety limit applicable during the refueling and shutdown conditions.

The fuel design considerations which are applicable during the refueling and shutdown conditions include neutronic design (e.g. Shutdown Margin), mechanical design of the fuel, and design basis accidents which could occur during these modes of operation. The Shutdown Margin for the next fuel cycle has been determined in accordance with

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approved methodologies (Reference 1) and is not affected by the issues related to the MCPR. The mechanical design of the new ATRIUM-9B fuel types which will makeup the core during the next fuel cycle has been reviewed and approved by the NRC Staff (Reference 2). The design basis accidents which could occur during the refueling and shutdown conditions have been re-evaluated and the results are within the acceptance criteria for these accident analyses. In summary, all fuel safety design bases associated with the refuel and shutdown conditions have been analyzed in accordance with NRC approved codes and methods.

Based on the above, ComEd does not believe that the resolution of the MCPR issue identified by the Commission affects the reload of Dresden Unit 3.

Reference 3 provided information regarding the MCPR Safety Limit. The Staff has verbally requested additional information in response to this letter. ComEd continues to believe that the MCPR additive constant uncertainty issue for Dresden Station is resolved by the conservative interim approach of doubling the increase in the additive constant uncertainty. The NRC approved process for SPC calculation of the MCPR Safety Limit has not changed (Reference 4). The ATRIUM-9B additive constant uncertainty affects only the input to the existing approved methodology, and does not result in a change to the MCPR Safety Limit calculational methodology. The cycle-specific MCPR Safety Limit for Dresden Unit 3 is calculated using an interim approach of doubling the increase in the additive constant uncertainty (References 5 and 6) and is bounded by the existing Technical Specification Limit.

NRC Generic Letter 88-16 provides direction for including only topical reports (and changes thereto) which support the development of the Core Operating Limits in Section 6 of the facility Technical Specifications. All other aspects of the SPC ATRIUM-9B fuel design are encompassed in the previously requested changes to the Dresden Station Unit 2 and 3 Technical Specifications (References 7, 8, and 9). Therefore no additional Technical Specification change is required.

The current Dresden Station Unit 3 refueling outage schedule indicates that reload of the core will occur on or about May 21, 1997.

ComEd requests your review and approval of this conservative interim approach to calculate the ATRIUM-9B fuel additive constant uncertainty and its use in determination of the MCPR Safety Limit for Dresden Unit 3 Cycle 15 before restart

from the current refueling outage. ComEd believes that this issue is appropriately resolved through the NRC's description of the calculation of the additive constant uncertainty in the staff safety evaluation report which will be issued for the Technical Specification amendment request submitted on June 20, 1996. ComEd has reviewed and accepted Reference 5 and believes that the methodology is appropriate for calculation of the additive constant uncertainty. Therefore, doubling the increase in the additive constant uncertainty is appropriately conservative for use as an input to the calculation of the MCPR Safety Limit.

Upon NRC Staff review and approval of Reference 5, Dresden Station will utilize the additive constant uncertainty in Reference 5 for ATRIUM-9B fuel (0.0195) in future calculations of the MCPR Safety Limit. The interim approach of doubling the increase in the ATRIUM-9B additive constant uncertainty for the MCPR Safety Limit calculation (Reference 6) will no longer be necessary. Therefore, the ATRIUM-9B additive constant uncertainty calculated in Reference 5 (0.0195) will be directly used to determine the MCPR Safety Limit.

Attachment A provides a summary of the Dresden Unit 3 Cycle 15 MCPR Safety Limit calculations, while Attachment B provides background material for MCPR Safety Limit calculations applicable to Dresden Unit 3 Cycle 15.

Additionally, during a telephone conversation on May 2, 1997, the NRC Staff requested information regarding the neutronic design for the Dresden Unit 3 Cycle 15 reload. This information is provided as Attachments C through G. These attachments provide core design information used in the determination of the Dresden Unit 3 Cycle 15 MCPR Safety Limit calculations. The information includes various reactor maps providing the fuel assembly loading pattern, fuel assembly design description, number of assemblies loaded, beginning of cycle assembly average exposure distributions, and end of cycle assembly average exposure distributions. Additionally included is a table that provides the minimum CPR of the SPC ATRIUM-9B fuel assemblies and the minimum CPR of the SPC 9x9-2 fuel assemblies based on the target control rod pattern information (also supplied in the attachments) used in the generation of the Dresden Unit 3 Cycle 15 MCPR Safety Limit.

Any questions related to this matter should be addressed to Frank Spangenberg at (815) 942-2920 extension 3800.

Sincerely,

J.M. Heffley
Station Manager

cc: A. Bill Beach, Regional Administrator, Region III
J.F. Stang, Project Manager, NRR (Dresden Unit 2/3)
Senior NRC Resident Inspector, Dresden
Office of Nuclear Facility Safety - IDNS

Attachments:

A. Summary Of Dresden Unit 3 Cycle 15 MCPR Safety Limit Calculations
B. Background For MCPR Safety Limit Calculation Applicable To Dresden Station
C. Dresden Unit 3 Cycle 15 - Core Loading Pattern and Number of Assemblies Loaded For MCPR Safety Limit Calculations
D. Dresden Unit 3 Cycle 15 - Beginning of Cycle Bundle Average Exposure Distributions For MCPR Safety Limit Calculations
E. Dresden Unit 3 Cycle 15 - End of Cycle Bundle Average Exposure Distributions For MCPR Safety Limit Calculations
F. Dresden Unit 3 Cycle 15 - Projected Operating Minimum Critical Power Ratio (CPR) As a Function of Cycle Exposure For MCPR Safety Limit Calculations
G. Dresden Unit 3 Cycle 15 - Target Control Rod Patterns For MCPR Safety Limit Calculations
H. References