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SUBJECT: Application for amend to license NPF-21,requesting mod of minimum critical power ratio safety limits by 970615.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM
P.O. Box 968 • Richland, Washington 99352-0968

May 20, 1997
GO2-97-102

Docket No. 50-397

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: **WNP-2 OPERATING LICENSE NPF-21**
EXIGENT REQUEST FOR AMENDMENT
MINIMUM CRITICAL POWER RATIO SAFETY LIMITS

References:

1) ANFB Critical Power Correlation Uncertainty for Limited Data Sets, ANF-1125(P), Supplement 1, Appendix D, Siemens Power Corporation - Nuclear Division, Submitted on April 18, 1997.

2) ANFB Critical Power Correlation, ANF-1125(P)(A) with Supplements 1 and 2, Advanced Nuclear Fuels Corporation, April 1990.

3) Letter KVW:97:115 dated May 20, 1997, KV Walters (Siemens) to RA Volpalensky (Supply System), Revised MCPR Safety Limits for WNP-2 Cycle 11.

4) Letter KVW:97:077 dated April 8, 1997, KV Walters (Siemens) to RA Vopalensky (Supply System), ANFB Additive Constant Uncertainties for the SPC 9x9-9X Fuel Design.

5) Letter HDC:97:033 dated April 18, 1997, HD Curet (Siemens) to US NRC Document Control Desk, Interim Use of Increased ANFB Additive Constant Uncertainty.

In accordance with the Code of Federal Regulations, Title 10, Parts 50.59, 50.90, and 2.101, the Supply System hereby submits a request for amendment, under exigent circumstances, to the WNP-2 Operating License. Specifically, the Supply System is requesting modification of the minimum critical power ratio safety limits by June 15, 1997.

A001 1/1

The proposed change would modify the Technical Specifications for minimum critical power ratio (MCPR) in Section 2.1.1.2 by specifying new safety limits for the operation of Siemens Power Corporation (SPC) ATRIUM-9X fuel of 1.13 for two loop operation and 1.14 for single loop operation (Reference 3). This fuel is coresident with Asea Brown Boveri (ABB) fuel at WNP-2. The ABB fuel MCPR safety limit is unchanged.

SPC recently notified the Supply System (Reference 4) and other users of the ATRIUM-9 fuel design that a change was necessary in the previously approved method used by SPC to determine the additive constant uncertainty (Reference 2). This amendment request is necessary because the change has resulted in revised MCPR safety limits for WNP-2 (Reference 3). The requested change will set conservative interim safety limits for the ATRIUM-9X fuel to allow continued power operation at WNP-2 (Reference 5). An interim value has been requested because the revised methodology submitted by SPC (Reference 1) has not yet been approved by the NRC. Following NRC approval, another license amendment is anticipated to revise the interim MCPR safety limits.

Approval of the proposed amendment on an exigent basis is warranted due to the short time between when SPC provided the Supply System with plant specific information needed to make this request (May 20, 1997; Reference 3) and when WNP-2 Cycle 13 is scheduled to start (June 15, 1997). This short time interval will not allow for the normal 30 day period for public comment. This condition was unavoidable and not created by the failure to make a timely application for a Technical Specification amendment. Without approval of this exigent amendment, WNP-2 will be unable to resume power operation.

Additional information has been attached to this letter to complete the Supply System's amendment request. Attachment 1 provides a detailed description of the proposed changes. Attachment 2 summarizes the proposed changes and provides the marked up pages of the Technical Specifications. Attachment 3 describes an evaluation of the proposed changes in accordance with 10CFR50.92(c) and concludes that it does not result in a significant hazards consideration. Attachment 4 provides the Environmental Assessment Applicability Review and notes that the proposed change meets the eligibility criteria for a categorical exclusion as set forth in 10CFR51.22(c)(9). Therefore, in accordance with 10CFR51.22(b), an environmental assessment of the change is not required. Attachment 5 submits the typed Technical Specification pages as they would be revised by this amendent request.

This request for an exigent amendment has been reviewed and approved by the WNP-2 Plant Operations Committee and the Supply System Corporate Nuclear Safety Review Board. In accordance with 10CFR50.91, the State of Washington has been provided a copy of this letter.

Should you have any questions or desire additional information regarding this matter, please contact me or D.A. Swank at (509) 377-4563.

Respectfully,

P.R. Bemis
Vice President Nuclear Operations
Mail Drop PE23

Attachments:

1. Description of the Proposed Change
2. Revised Technical Specifications
3. Evaluation of Significant Hazards Considerations
4. Environmental Assessment Applicability Review
5. Revised Technical Specification Pages

cc: EW Merschoff - NRC RIV
KE Perkins, Jr. - NRC RIV, Walnut Creek Field Office
TG Colburn - NRR
NRC Sr. Resident Inspector - 927N
DL Williams - BPA/399
CR Wallis - EFSEC
PD Robinson - Winston & Strawn

STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: Request for Amendment to TS
MCPR Safety Limits

I, P. R. BEMIS, being duly sworn, subscribe to and say that I am the Vice President, Nuclear Operations for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief the statements made in it are true.

DATE 5/20/97, 1997

P. R. Bemis
Vice President, Nuclear Operations

On this date personally appeared before me P. R. BEMIS, to me known to be the individual who executed the foregoing instrument, and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

GIVEN under my hand and seal this 20 day of May 1997.

Notary Public in and for the
STATE OF WASHINGTON

Residing at Kennewick, WA

My Commission Expires 4/28/98

Attachment 1
Description of the Proposed Changes

1. Summary of the Proposed Changes

The MCPR safety limit increase on ATRIUM-9X fuel is due to a new additive constant uncertainty calculated and conservatively applied by SPC to the ATRIUM-9X fuel. This new ATRIUM-9X additive constant uncertainty is necessary because SPC has determined that the original data base (82 points) used to determine the ATRIUM-9X additive constant uncertainty should be expanded to include a wider range of test conditions (Reference 4). In response to this need for additional data points, SPC compiled a larger set of data for the recalculation of the additive constant uncertainty. Data sets from fuel designs which, like ATRIUM-9X, have full length rods, 9x9 design, and inner water channels were included in the statistical analysis to provide a data pool of 527 points at different pressures and flows. The revised methodology for treating the uncertainties has been submitted to the NRC for approval (Reference 1).

Until the new SPC methodology is approved by the NRC (Reference 1), an interim approach will be used that provides additional conservatism in the calculation of the MCPR safety limit consistent with Reference 5. Reference 5 established a conservative additive constant uncertainty using the difference calculated between the additive constant uncertainties for the ATRIUM-9B before and after the data set was expanded from 125 to 527 points. This difference was then conservatively doubled and added to the original additive constant uncertainty (based on the 125 point data set) to establish a new interim value. This interim value can be applied to the ATRIUM-9X fuel because the expanded data set covers both the ATRIUM-9B and ATRIUM-9X fuel designs.

This new conservative interim additive constant uncertainty was then used by SPC in conjunction with their original NRC approved methodology (Reference 2) to determine the appropriate MCPR safety limit for the ATRIUM-9X fuel in WNP-2 Cycle 11 (the ATRIUM-9X design was the lead fuel in that cycle). Accordingly, the new interim MCPR safety limits for the ATRIUM-9X fuel have been determined by SPC to be 1.13 for two loop operation and 1.14 for single loop operation (Reference 3). A license amendment is being requested because these values are greater than the existing MCPR safety limits (Technical Specifications Section 2.1.1.2) and a revision is therefore necessary to incorporate a fuel specific limit. The list of analytical methods (Technical Specifications 5.6.5) used to determine the core operating limits has also been changed to incorporate the methodology used to establish the interim value for the additive constant uncertainty (Reference 5).

The Supply System believes that this conservative approach for calculating the interim MCPR safety limit will continue to ensure design basis fuel protection while Reference 1 is under NRC staff review. Using NRC approved methodology, ABB has utilized these interim values as the basis for the Cycle 13 safety limit for the coresident ATRIUM-9X fuel.

After NRC approval of Reference 1, another license amendment is anticipated to change (lower) the ATRIUM-9X MCPR safety limit to a value supported by the new NRC approved methodology (based on the revised data base).

2. Detailed Description of the Proposed Safety Limit Changes

WNP-2 will be using Siemens Power Corporation (SPC) ATRIUM-9X fuel assemblies in Cycle 13 operation. SPC has determined that the need exists to increase the size of the data base for determining the additive constant uncertainty for SPC's ATRIUM-9X fuel designs with an internal water channel (Reference 4). SPC has calculated a new additive constant uncertainty for the ATRIUM-9X fuel by including additional experimental data from critical power tests for other fuel designs which share many of the same design features as the ATRIUM-9X design. The information was selected to address the full operating range of the fuel. Reference 1 details the statistical analysis performed on the data.

SPC increased its ATRIUM-9X and ATRIUM-9B critical power test data base from 82 and 125 data points, respectively, to 527 data points that cover a much wider range of pressures, mass fluxes and axial power shapes. The Experimental Critical Power Ratio (ECPR) and the standard deviation of the ECPR for each of the 527 data points were statistically examined by an Analysis of Variance. The results of the Analysis of Variance for each of the pressures are a mean ECPR, a standard deviation of ECPR, degrees of freedom, and equivalent sample size (Reference 1).

The overall uncertainty for CPR is statistically calculated using the standard deviation of the pooled data and the variance between the means associated with the axial power shapes. An upper 95% confidence limit standard deviation is calculated based on Chi-Square for the calculated degrees of freedom. The overall standard deviation in ECPR is converted to an additive constant uncertainty (ACU). The conversion is derived from the ratios of the ANFB correlation standard deviation to the additive constant standard deviation for the ATRIUM-9X data. This calculation is explained in detail in Reference 1 and summarized below:

Overall Standard Deviation = 0.0388 (Reference 1)

ECPR to ACU Ratio = 1.99 (Reference 1)

ACU for ATRIUM-9X (data set of 527 points) = 0.0388 ÷ 1.99 = 0.0195

For additional conservatism, this calculated additive constant uncertainty is not directly applied to the MCPR safety limit calculation. Rather, a conservative additive constant uncertainty is used to calculate a new ATRIUM-9X MCPR safety limit for WNP-2 Cycle 11.

Utilizing the ATRIUM-9B design as the basis, the difference is calculated between the additive constant uncertainties after and prior to the data set being expanded to include 527 points. This difference is then conservatively doubled. The doubled difference in the additive constant uncertainties is then added to the additive constant uncertainty prior to the expansion of the data set (based on 125 data points). This calculation is summarized below:

Additive Constant Uncertainty for ATRIUM-9B (data set of 125 points) = 0.010

Additive Constant Uncertainty for ATRIUM-9B (data set of 527 points) = 0.0195

Calculation of the interim Additive Constant Uncertainty for the ATRIUM-9B =

$$(0.010 + 2(0.0195-0.010)) = 0.029$$

The resulting conservative additive constant uncertainty of 0.029 for ATRIUM-9B is then applied to the ATRIUM-9X fuel and is used to calculate the new interim MCPR safety limits of 1.13 (two loop operation) and 1.14 (single loop operation) for ATRIUM-9X fuel for WNP-2 Cycle 11 (Reference 3). Using NRC approved ABB methodology, these MCPR safety limit values will apply for future cycles for the ATRIUM-9X fuel.

After NRC approval of Reference 1, an additional license amendment is anticipated to change (lower) the MCPR safety limit for the ATRIUM-9X fuel based on the application of the newly approved methodology.