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RECIP.NAME RECIPIENT AFFILIATION
BUTLER,W.R. Project Directorate I-2

SUBJECT: Transmits Powerplex response data comparisons to support approval of util application topical rept PL-NF-90-001, "Application of Reactor Analysis Methods for BWR Design & Analysis for Aug 1990."

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OCT 17 1991

Director of Nuclear Reactor Regulation
Attention: Dr. W. R. Butler, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSING METHODS : SUPPORTING INFORMATION **Docket Nos. 50-387**
PLA-3663 FILES R41-2/A7-8C **and 50-388**

References: 1. *"Application of Reactor Analysis Methods for BWR Design and Analysis", PL-NF-90-001, August 1990.*

2. *"Qualification of Transient Analysis Methods for BWR Design and Analysis", PL-NF-89-005, December 1989.*

3. *PLA-3641, H.W. Keiser to W.R. Butler, "Licensing Methods : Plan for U1C7", dated August 29, 1991.*

Dear Dr. Butler:

To support the NRC's approval of PP&L's Applications Topical Report (Reference 1), we are transmitting data comparisons which PP&L discussed in a meeting with NRC and BNL representatives on October 4, 1991 at the NRC's White Flint office. This data was used to demonstrate that the current Siemens Nuclear Power Corporation (SNP) core monitoring system uncertainties are conservative for monitoring the core with PP&L generated input in the Susquehanna POWERPLEX® core monitoring system. After discussion with the NRC staff and the reviewer, however, PP&L has agreed to use the more conservative SNP uncertainties, rather than the PP&L generated uncertainties.

Please note that the data comparisons which are included in Attachment 1 are considered proprietary by SNP. As required by 10CFR2.790(b) an affidavit to support withholding this information from public disclosure is contained in Attachment 2. The proprietary portion of Attachment 1 will not be included in the approved version of the PP&L Applications Topical Report.

A001 1/1

As conveyed to Messrs. John Emmett and Andrew Dyszel, the transmittal of the enclosed material closes the last remaining issue identified during the review of PP&L's Applications Topical Report. Further, it is our understanding that the NRC will proceed with issuance of Safety Evaluation Reports for PP&L's Applications Topical Report (Reference 1) and Transient Analysis Topical Report (Reference 2). PP&L, in turn, is proceeding with the performance of the Unit 1 Cycle 7 reload analyses using the approach agreed to by PP&L and NRC (as described in Reference 3 and herein).

In closing, PP&L would like to compliment the NRC and BNL representatives for their prompt response and cooperation in resolving this last remaining issue. Any questions on this submittal should be directed to Mr. R. Sgarro at (215) 774-7916.

Very truly yours,

H. W. Keiser

Attachments

cc: NRC Document Control Desk (original)
NRC Region I
Mr. G. S. Barber, NRC Sr. Resident Inspector - SSES
Mr. J. J. Raleigh, NRC Project Manager - OWFN
Mr. L. I. Kopp, NRR/SRXB - OWFN

ATTACHMENT 1

POWERPLEX® TIP RESPONSE COMPARISONS TO SUPPORT APPROVAL OF PP&L'S APPLICATIONS TOPICAL REPORT (PL-NF-90-001)

The Susquehanna data comparisons calculated by PP&L that are shown in this attachment support the conclusions that: 1) the POWERPLEX® core monitoring system with PP&L generated CPM-2 input yields more accurate results than the POWERPLEX® core monitoring system with SNP generated XFYRE input, and 2) the currently approved SNP power distribution uncertainties are conservative for Susquehanna when PP&L develops the input to the POWERPLEX® core monitoring system. PP&L's core monitoring system, POWERPLEX®, was developed by SNP and uses XTGBWR as the core simulation code and measured LPRM data to modify the XTGBWR calculated "base" power distribution to obtain a "measured" power distribution (i.e., UPDATE).

The POWERPLEX® nodal TIP RMS data presented in the following figures is an indication of how accurate the 3-D TIP response (i.e., power shape) is calculated by the core monitoring system prior to UPDATE. All the nodal TIP RMS values in the attached figures were calculated by PP&L from the "base" data. In all but a few cases, the nodal TIP RMS for POWERPLEX® with CPM-2 input is less than that of POWERPLEX® with XFYRE input. These results indicate that, for Susquehanna, POWERPLEX® with CPM-2 input is more accurate in calculating the power shape than POWERPLEX® with XFYRE input. This conclusion corroborates the PP&L uncertainty calculations presented in Reference 1-2. However, after discussions with the staff, PP&L has agreed to use the currently approved SNP set of power distribution uncertainties from Reference 1-3. Based on the above data comparisons, the SNP power distribution uncertainties are conservative for monitoring the core with CPM-2 input in the Susquehanna POWERPLEX® core monitoring system. Therefore, the SNP uncertainties from Reference 1-3 will be used in the Safety Limit MCPR calculations in lieu of PP&L's proposed uncertainties.

Please note that the PP&L results based on XFYRE are considered proprietary by Siemens Nuclear Power Corporation (SNP) and will not be included in the approved version of the PP&L Applications Topical Report.

References: 1-1 **"Application of Reactor Analysis Methods for BWR Design and Analysis", PL-NF-90-001, August 1990.**

1-2 **PLA-3578, H.W. Keiser to W.R. Butler, "Final Response to RAI on PL-NF-90-001", dated June 4, 1991.**

1-3 **"Exxon Nuclear Methodology for Boiling Water Reactors - Neutronic Methods for Design and Analysis", XN-NF-80-19 (P)(A), Volume 1 and XN-NF-80-19 (P)(A), Volume 1, Supplements 1 & 2, March 1983.**