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SUBJECT: Responds to NRC Bulletin 90-002, "Loss of Thermal Margin
 Caused By Channel Box Bow," which responds to questions on
 Cycle 10 Operation.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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May 20, 1994
GO2-94-123

Docket No. 50-397

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

Subject: **WNP-2, OPERATING LICENSE NPF-21
RESPONSE TO NRC BULLETIN 90-02: "LOSS OF THERMAL MARGIN
CAUSED BY CHANNEL BOX BOW," RESPONSE TO QUESTIONS ON
CYCLE 10 OPERATION**

- References:
1. NRC Bulletin 90-02, dated March 20, 1990, "Loss of Thermal Margin Caused by Channel Box Bow"
 2. Letter GO2-94-074, dated March 29, 1994, JV Parrish (SS) to USNRC, "Response to NRC Bulletin 90-02: 'Loss of Thermal Margin Caused by Channel Box Bow,' Effect on Cycle 10 Operation"

INTRODUCTION

NRC Bulletin (NRCB) 90-02 (Reference 1) requested that licensees reusing channel boxes verify that current Minimum Critical Power Ratio (MCPR) Technical Specification operating and safety limits are met. All affected licensees were also requested to advise the NRC of the number and location of reused channel boxes and to describe the methods and associated data base used to account for the effects of channel box bow during reuse of channel boxes to ensure conformance with the CPR limits. Several letters have been exchanged between the NRC and the Supply System regarding this matter. The most recent correspondence (Reference 2) updated the Supply System response to NRCB 90-02 for WNP-2 Cycle 10.

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**Response to NRC Bulletin 90-02: "Loss of Thermal Margin
Caused by Channel Box Bow", Response to Questions on Cycle 10 Operation**

On Tuesday, April 26, 1994, a telephone call was held between NRC and Supply System personnel to discuss Reference 2. The NRC requested some additional information. The Supply System response is provided below.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

NRC Request 1

Provide information regarding the effect of channel box bow on the MCPR Safety Limit for the Cycle 10 design.

Supply System Response

As indicated in Reference 2, page 3, the effect of channel box bow is addressed in the Siemens Power Corporation (SPC) methodology for determining the MCPR Safety Limit. The Cycle 10 MCPR Safety Limit is 1.07 for two recirculation loop operation and 1.08 for single loop operation. The Cycle 10 MCPR Safety Limit, unchanged from Cycle 9, is consistent with WNP-2 Technical Specification 2.1.2. The effects of channel bow increase the Cycle 10 MCPR Safety Limit by about 0.02.

NRC Request 2

Provide an estimate of the maximum expected distortion for the reused channels in Cycle 10.

Supply System Response

As discussed in Reference 2, page 5, the reused channels with the largest estimated exposure at the end of Cycle (EOC) 10 are channels 71848 and 61550. The EOC-10 maximum distortion for these channels is predicted to be less than 105 mils. However, as discussed on page 4 of Reference 2, some reused channels in Cycle 10 will experience a second cycle of irradiation on the core edge. This practice has been implemented for Cycle 10 to help minimize the number of fuel shuffles during the refueling outage. Twenty reused channels will reside in the same core edge locations for a second cycle. Sixteen of the twenty reused channels meet the acceptance criteria for reuse. The four channels (listed in Reference 2, page 4) do not meet the acceptance criterion for distortion towards the in-core instrumentation. However, the Supply System has concluded that reuse of the four channels is acceptable because there is no in-core instrumentation adjacent to them. The four channels meet the Supply System requirement that reused channels not interfere with in-core instrumentation. The maximum EOC 10 distortion for the 20 channels, is predicted to be less than 113 mils, on channel 61972. Of all the reused channels in the Cycle 10 core, channel 61972 is predicted to have the largest distortion at EOC 10.

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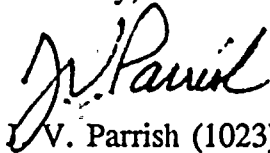
Response to NRC Bulletin 90-02: "Loss of Thermal Margin
Caused by Channel Box Bow", Response to Questions on Cycle 10 Operation

CONCLUSION

In summary, the effects of channel bow increase the Cycle 10 MCPR Safety Limit by about 0.02, and the maximum reused channel distortion is predicted to be less than 113 mils. As stated in Reference 2, the Supply System will continue to use its channel bow methodology to assure that reused channels will not interfere with control blades or in-core instrumentation. NRC approved methods for accounting for channel bow effects in the MCPR Safety Limit will also continue to be used.

Should you have any questions or desire additional information regarding this matter, please contact me or H. E. Kook at (509) 377-4278.

Sincerely,



J. V. Parrish (1023)
Assistant Managing Director for Operations

JDF

cc: LJ Callan - NRC RIV
JW Clifford - NRC
KE Perkins, Jr. - NRC RIV, Walnut Creek Field Office
NRC Sr. Resident Inspector - 927N
NS Reynolds - Winston & Strawn
DL Williams - BPA/399

STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: Response to NRC Bulletin 90-02


I. J. V. PARRISH, being duly sworn, subscribe to and say that I am the Assistant Managing Director, 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 20 May, 1994


J. V. Parrish, Assistant Managing Director
Operations

On this date personally appeared before me J. V. PARRISH, 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 20th day of May, 1994.


Notary Public in and for the
STATE OF WASHINGTON

Residing at Kennecott WA

My Commission Expires 7/22/98