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SUBJECT: Application for amend to License NPF-21,revising TS to address core power stability,in ref to IE Bulletin 88-007, Suppl 1.Vendor proprietary ltr dtd 930402 summarizing stability licensing calculations encl.Subj ltr withheld.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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May 10, 1993
G02-93-108

Docket No. 50-397

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Gentlemen:

Subject: **NUCLEAR PLANT NO. 2**
OPERATING LICENSE NPF-21, REQUEST FOR AMENDMENT TO STABILITY AND POWER/FLOW SECTIONS OF THE TECHNICAL SPECIFICATIONS

References:
1) IE Bulletin 88-07, Supplement 1, "Power Oscillations in Boiling Water Reactors (BWRs)," dated December 30, 1988.
2) Letter, G02-89-051, GC Sorensen (SS) to NRC, "Request for Amendment to Technical Specifications 3/4.2.6 and 3/2.4.7 in Support of the Supply System Response to IEB 88-07, Supplement 1," dated March 31, 1989.
3) Letter, G02-89-397, GC Sorensen (SS) to NRC, same subject, dated June 1, 1989.
4) Letter, RAC:92:145, RA Copeland (SPC) to LE Phillips (NRC), "SPC Stability Evaluations," dated December 2, 1992.

In accordance with the Code of Federal Regulations, Title 10 Parts 50.90 and 2.101, the Supply System is requesting a change to several sections of the Technical Specifications and Bases that address core power stability. The need to change the power flow map was identified during the performance of the Cycle 9 analyses and the calculation of stability decay ratios using the Siemens Power Corporation (SPC) stability codes. The changes will preserve a decay ratio of 0.9 or less as the lower boundary of the prohibited area on the power flow map, Region A. In addition to the changes to the size and shape of the stability regions, the revised power flow map reflects a change in the slope of the rod lines. Changes are being requested for the following Technical Specifications and Bases sections:

3/4.2.6	Power/Flow Instability
3/4.2.7	Stability Monitoring - Two Loop Operation
3/4.2.8	Stability Monitoring - Single Loop Operation
3/4.4.1	Recirculation System

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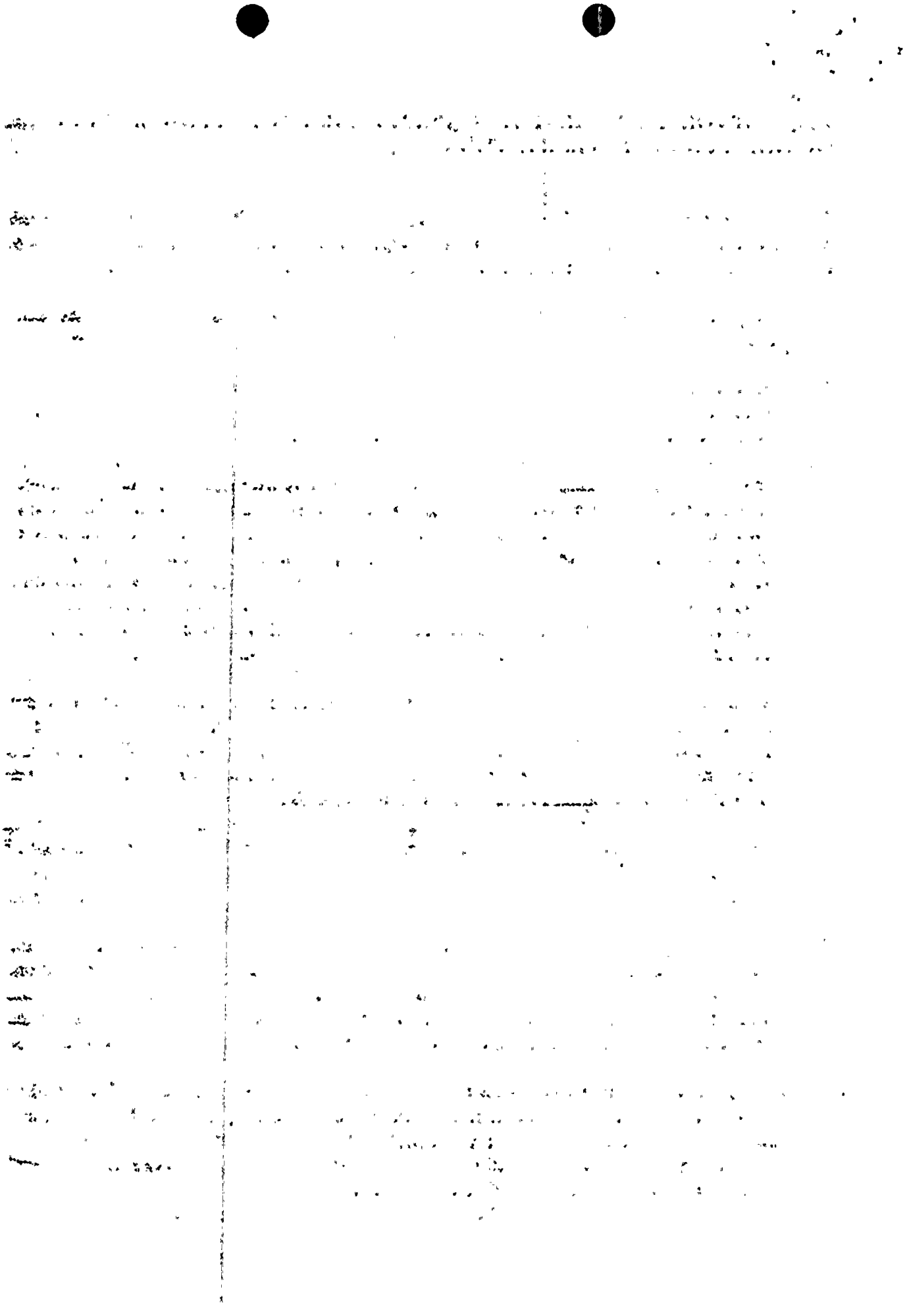
Since the location and slope of the rod lines on the power flow map change as the fuel exposure changes and new fuel types are installed, the rod lines are periodically revised. The 100% rod line is defined as the line on the power flow map that results from decreasing the core flow from the 100% power/100% flow point without control rod adjustments. The void coefficient for the 9x9-9X fuel, first inserted into the core at Cycle 7, is less negative than for 8x8-2 fuel. This causes a smaller reactivity decrease as flow decreases, thereby decreasing the slope of the rod lines. The original and the revised rod lines are shown on a power flow map in Figure 1. As can be seen, the new rod lines have a decreased slope and are therefore higher than the existing lines. These revised rod lines will be used in the Technical Specifications.

In response to IEB 88-07, Supplement 1 (Reference 1), References 2 and 3 requested changes to the Technical Specifications to establish stability regions on the power flow map required to comply with the bulletin. The commitment was also made to maintain the lower boundary of Region A to preserve a decay ratio of 0.9 or less. The requirements and commitments discussed in References 1 and 2 respectively, required that the regional exclusion zones be evaluated on a cycle specific basis to assure applicability. Based on the knowledge gained as a result of the WNP-2 instability event, SPC has concluded that the cycle stability analyses performed should be augmented by using both the COTRAN and STAIF stability computer codes. As discussed in Reference 4, SPC committed to the NRC that the more conservative of the two results will be used. In performing Cycle 9 analyses, both COTRAN and STAIF were used. The results of the SPC analyses are provided as an attachment to this letter. SPC considers the information contained in the letter of U. Fresk to R.A. Vopalensky, dated April 2, 1993, SPCWP-93-046, to be proprietary. In accordance with the requirements of 10 CFR 2.790(b), an affidavit is enclosed to support withholding this letter from public disclosure.

Both the COTRAN and STAIF codes calculated decay ratios greater than 0.9 below the revised 100% rod line. Therefore, Region A is being expanded to conform to the commitments made. Currently, Region A lies above the 100% rod line for core flows from natural circulation up to 45% flow. The revised Region A lies above the line between a point at 36% power and 23.8% flow and a point at 50.3% power and 35% core flow. Between 35% and 45% core flow, the Region A lower boundary is the 91% rod line. The 91% rod line as the lower boundary is more conservative than the 0.9 decay ratio calculated by SPC using STAIF or COTRAN. If a line of constant decay ratio equal 0.9 were plotted on the power flow map, it would intersect the 91% rod line at 32.3% core flow. The deflection at 35% core flow was selected to provide margin to the actual calculated intersection of 32.3% core flow. Region C is the region between the 75% rod line and the Region A lower boundary. The 75% rod line was selected to establish a boundary based on a calculated decay ratio of 0.75 (Reference Figures 3.2.6-1, 3.2.7-1, and 3.2.8-1).

The existing power flow maps in the Technical Specifications extend down to 20% core flow. Since operation is not possible below the natural circulation flow line, which is at 23.8% core flow the revised power flow maps start at the natural circulation line (23.8% flow).



One negative aspect of increasing the size of Region A is that additional scram challenges may be experienced in the event of certain plant transients (i.e., recirculation pump trips or flow runback). This is within the design basis of the plant and does not present an unacceptable risk.

The Supply System has reviewed this amendment request per 10 CFR 50.92 and has determined that it does not represent a significant hazard because it does not:

1) Involve a significant increase in the probability or consequences of an accident previously evaluated because the change to the boundary of Region A maintains a decay ratio of 0.9 or less as recommended in IEB 88-07 and as committed to in References 2 and 3. As decay ratios approach 1.0 the potential for core instability increases. Calculations using the STAIF stability code indicated the possibility of decay ratios greater than 0.9 outside of the current Region A. The proposed change, by preserving decay ratios below 0.9, will reduce the probability of core power oscillations by requiring an immediate manual scram over a larger portion of the power/flow operating domain. Preserving the decay ratio below 0.9 cannot increase the consequences of an accident previously evaluated. Rod lines on the power flow map are not a factor in initial assumptions of accidents or transient analyses and thus do not involve a significant increase in the probability or consequences of an accident.

2) Create the possibility of a new or different kind of accident from any accident previously evaluated. Since a scram is required if Region A is entered, the revised Region A assures that power oscillations will not occur from flow runback events or recirculation pump trips and does not create the possibility of a new or different kind of accident. This change maintains plant operation within existing safety analysis, therefore, because operation will be within existing bounds, there is no possibility of a new or different kind of accident. Rod lines on the power flow map are not a factor in initial assumptions of accidents or transient analyses and therefore revisions to them do not increase the possibility of a new or different kind of accident from any accident previously evaluated.

3) Involve a significant reduction in a margin of safety because the change in size and shape of Region A has been proposed to maintain decay ratios below 0.9, preserving the existing margin of safety. Therefore, there is no reduction in margin due to this change. Rod lines on the power flow map are not a factor in initial assumptions of accidents or transient analyses and therefore do not involve a reduction in a margin of safety.

Additionally, editorial changes to Technical Specification sections 3.2.7.a and 3.2.8.a are being made to change the words "greater than 0.75" to "greater than or equal to 0.75." This is considered an editorial change because the intent of each LCO, that the decay ratio must be less than 0.75, is clear. The absence of action to be taken in the event that the decay ratio equaled 0.75 can lead to confusion. The Supply System has reviewed this change and has determined that it does not represent a significant hazard.

The restrictions on the power flow map and the operating domain of WNP-2 should be in place upon completion of the R8 Spring refueling outage in June. The changes are more conservative than current Technical Specifications requirements, they will be implemented and administratively controlled through procedures to support start up in June. The Supply System will implement the changes in accordance with 10 CFR 50.59.

As discussed above, the Supply System concludes that this change does not involve a significant hazards consideration, nor is there a potential for a significant change in the types or significant increase in the amount of any effluents that may be released offsite, nor does the change involve a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and therefore, per 10 CFR 51.22(b), an environmental assessment of these changes is not required.

This Technical Specification change request has been reviewed and approved by the WNP-2 Plant Operations Committee and the Supply System Corporate Nuclear Safety Review Board. In accordance with 10 CFR 50.91, the State of Washington has been provided a copy of this letter.

Sincerely,

J. V. Parrish (Mail Drop 1023)
Assistant Managing Director, Operations

Attachments: 1) Figure 1
2) SPC letter
3) marked up Tech Spec pages.
4) SPC Affidavit

cc: JB Martin - NRC RV
NS Reynolds - Winston & Strawn
DL Williams - BPA/399
NRC Site Inspector - 901A
JW Clifford - NRC
W Bishop - EFSEC

STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: Request for Amend to Stability and Power/Flow Sections of the Technical Specifications

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.

Attached to this submittal is a copy of the following letter which is considered by its respective owner to contain proprietary information:

- Summary of Stability Licensing Calculations in Support of WNP-2 Cycle 9.

Also attached is an affidavit executed by R. A. Copeland, Product Licensing Manager, Siemens Power Corporation, dated April 20, 1993, which provides the basis on which it is claimed that the subject report should be withheld from public disclosure under the provisions of 10 CFR 2.790.

The Washington Public Power Supply System treats the subject letter as proprietary information on the basis of statements by its owner. In submitting this information to the NRC in support of the "WNP-2 Request for Amendment to Stability and Power/Flow Sections of the Technical Specifications," the Supply System requests that the subject report be withheld from public disclosure in accordance with 10 CFR 2.790.

DATE 10 May, 1993

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 10 day of May 1993.

Notary Public in and for the
STATE OF WASHINGTON

Residing at Kennewick, Washington

My Commission Expires April 28, 1994