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SUBJECT: Suppl to 930709 application for amend to License NPF-21 re increase in power operation,changing power/flow maps in TS 3/4.2.6,3/4.2.7,3/4.2.8 & 3/4.4.1 & bases to reflect use of Siemens Power Corp STAIF code for stability analysis.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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September 26, 1994
GO2-94-221

Docket No. 50-397

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

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21
REQUEST FOR AMENDMENT TO THE FACILITY OPERATING LICENSE AND TECHNICAL SPECIFICATIONS TO INCREASE LICENSED POWER LEVEL FROM 3323 MWt TO 3486 MWt WITH EXTENDED LOAD LINE LIMIT AND A CHANGE IN SAFETY RELIEF VALVE SETPOINT TOLERANCE, SUPPLEMENTARY INFORMATION**

References:
1) Letter GO2-93-180, dated July 9, 1993, JV Parrish (SS) to NRC, same subject
2) Letter GO2-93-108, dated May 10, 1993, JV Parrish (SS) to NRC, "Request for Amendment to Stability and Power/Flow Sections of the Technical Specifications"
3) IE Bulletin 88-07, Supplement 1, dated December 30, 1988, "Power Oscillations in Boiling Water Reactors (BWRs)"
4) Letter dated April 14, 1994, MJ Virgilio (NRC) to RA Copeland (SPC), "Acceptance for Referencing of Siemens Power Corporation Topical Report EMF-CC-074(P): Volume 1, 'STAIF: A Computer Programs for BWR Stability Analysis in the Frequency Domain,' and Volume 2, 'STAIF: A Computer Program for BWR Stability in the Frequency Domain - Code Qualification Report"

Reference 1 submitted a request for Technical Specification changes to support an increase in power operation. Reference 2 submitted a request for Technical Specification changes for core power stability, the need for which was identified in the Cycle 9 reload analysis. Both references complied with IEB 88-07, Supplement 1 (Reference 3) to establish stability regions and exclusion areas on the power/flow map, and committed to maintain the lower boundary of the exclusion area to preserve a decay ratio of 0.9 or less. The Siemens Power Corporation (SPC) STAIF code was used in the stability analysis for both References 1 and 2.

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The STAIF code that served as a basis for References 1 and 2 had not yet been reviewed by the Staff when References 1 and 2 were submitted. The STAIF code has since been reviewed and has been found acceptable by the Staff within the limitations set forth in Reference 4. Consequently, the power/flow maps submitted by Reference 1 which were based on the pre-approved STAIF code required revision to meet the provisions of Reference 4. Further, Reference 2 which was applicable to cycle 9 and used the pre-approved STAIF code is no longer necessary and is hereby withdrawn.

This letter transmits revised power/flow maps as replacement information to the power uprate submittal (Reference 1). The revised power/flow maps meet the guidance for use of the STAIF code as set forth in Reference 4. Marked up pages of the following Technical Specifications and Bases sections are provided (see Attachment 3) to replace those initially submitted (Reference 1) in the power uprate submittal:

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 Loops
Bases sections	B 3/4.2.6, 3/4.2.7, and 3/4.2.8

The affect of power uprate on the revised power/flow maps based on the STAIF code result in stability regions and exclusion areas which are as restrictive or more restrictive in terms of absolute power level limits when compared to non-uprate conditions. This is consistent with the discussions of power uprate impact in Reference 1.

In addition to the power/flow map changes developed based on the approved STAIF code, two administrative changes proposed by Reference 2 are also requested. The first change truncates the power/flow map at 23.8% flow instead of the current 20% flow. The natural circulation flow below which operation is not possible occurs at 23.8% flow, therefore extending the curves to 20% flow has no relevance or practical application. The second administrative change revises the wording in Action Statements 3.2.7.a and 3.2.8.a from "greater than .75" to "greater than or equal to 0.75." This is consistent with the intent of the Limiting Conditions for Operation (LCO) that the decay ratio be maintained less than 0.75. Because the Action Statement currently reads "greater than .75" and the LCO directs that the decay ratio "be less than .75," the absence of action to be taken in the event that the decay ratio equals 0.75 could lead to confusion. This change eliminates any potential confusion.

REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS TO INCREASE POWER LEVEL FROM 3323 MWt TO 3486 MWt, SUPPLEMENTARY INFORMATION

With approval of the STAIF code and an update to a General Electric Standard, the references related to the Core Operating Limits Report (COLR), as listed in Technical Specifications Section 6.9.3.2 must be changed. Accordingly, a revised Section 6.9.3.2 is included in Attachment 3. These changes are also considered to be administrative in that the references have previously been approved.

A change to the Bases for 3/4.2.8, Stability Monitoring - Single Loop Operation, is also requested to discuss the appropriate action if Region B of Figure 3/4.2.8.1 is entered. Presently the Bases does not address action to be taken if Region B is entered. Because the action refers to the presently approved action of Technical Specification 3.4.1.1 this request is also considered to be administrative.

Attachment 1 provides a discussion of and justification for the changes. Attachment 2 provides No Significant Hazards evaluations of the changes, and Attachment 3 is the affected pages of the WNP-2 Technical Specifications and supporting Bases reflecting the requested changes.

As discussed in Attachment 2, the Supply System has concluded that the changes do 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 do the changes involve a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and therefore, in accordance with 10 CFR 51.22(b), an environmental assessment of the change is not required.

This supplementary information to the Reference 1 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. The State of Washington has been provided a copy of this letter per 10 CFR 50.91.

Additionally, Supply System letter G02-93-249 dated October 8, 1993, provided three replacement pages to NEDC-32141P, "Power Uprate With Extended Load Line Limit Safety Analysis for WNP-2," Class III, dated June 1993. NEDC-32141P is a proprietary document and an oversight was made in that the letter did not contain an affidavit requesting that the three replacement pages be withheld from public disclosure. Attachment 4 to this letter provides the necessary affidavit requesting that the three replacement pages be withheld from public disclosure.

REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS TO INCREASE POWER LEVEL FROM 3323 MWt TO 3486 MWt, SUPPLEMENTARY INFORMATION

Should you have any questions or desire additional information regarding this matter, please call me or P. R. Bemis, Manager, Regulatory Programs at (509) 377-4027.

Sincerely,

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

Attachments
PLP/bk

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

DISCUSSION AND JUSTIFICATION OF CHANGES

The Supply System proposes to change the power/flow maps in Technical Specifications 3/4.2.6, 3/4.2.7, 3/4.2.8, and 3/4.4.1, and Bases, as submitted in Reference 1, to reflect the use of the SPC STAIF code as approved in Reference 4 for stability analysis. Additionally, four administrative changes are requested to provide clarification to the Technical Specifications. Attachment 3 provides those replacement pages for the power/flow maps, Technical Specification pages, and Bases submitted by Reference 1 which are affected by the use of the revised STAIF code and the four administrative changes.

IEB 88-07, Supplement 1 (Reference 3) requested the establishment of stability regions on the power/flow maps. The Supply System made the requested changes and also provided a commitment to maintain the lower boundary of Region A (prohibited area) on the power/flow maps to preserve a decay ratio of 0.9 or less. The attached power/flow maps, developed using the STAIF code as approved by the staff in Reference 4, meet these commitments .

As approved by the staff, STAIF code application allows limits to be established that provide adequate margin to assure thermal hydraulic stability. As stated in section 2.4 of the Licensing Topical Report, NEDC-32141P, submitted with Reference 1:

> "The absolute values of power and flow in the portion of the power to flow map that is excluded from normal operations, to prevent a potential thermal hydraulic instability, will not change for power uprate. Therefore, WNP-2 will maintain the current level of instability protection during uprated operation."

Hence, with STAIF code limits established in accordance with Reference 4, operation under power uprate conditions will maintain the level of instability protection provided by the STAIF code application to presently authorized power conditions.

STAIF code application to the cycle 10 core load under power uprate conditions has been used to select an appropriate Region A boundary which bounds a 0.9 decay ratio. Region C was selected to bound a decay ratio of 0.75. Thus, use of the attached power/flow maps complies with IEB 88-07 Supplement 1 and provides an acceptable level of protection against thermal hydraulic instability.

DISCUSSION AND JUSTIFICATION OF CHANGES (continued)

The requested administrative changes are: 1) replacement of the phrase "greater than .75" with "greater than or equal to 0.75" in Action statements 3.2.7.a and 3.2.8.a; 2) truncation of the power/flow maps at 23.8%; 3) an update to the COLR reference list, Section 6.9.3.2; and 4) an addition to the Bases of Technical Specification 3/4.2.8, Stability Monitoring Single Loop Operation, to discuss appropriate action, as required by Technical Specification 3/4.4.1.1, upon entry into Region B. The changes provide clarification and do not have a technical or operational impact.

The added phrase "or equal to" directs the operator to maintain a decay ratio less than 0.75 at all times as stipulated in the Limiting Condition for Operation. Presently, the Technical Specifications do not provide direction for the condition of the decay ratio being equal to 0.75. As a result, implementation of this change will result in a more conservative and concise Action Statement.

The 23.8% flow condition is the natural circulation flow line below which operation is not possible (see section 4.4.3.3.1 of the WNP-2 Final Safety Analysis Report). Consequently, the current 20% flow line does not provide useable information to the operator and could be misleading. Additionally, with truncation of the power/flow maps at 23.8% flow, the power corresponding to the lowest limit of Figure 3.6.2-1 that defines the region of Applicability for Technical Specification 3/4.2.6 is changed from 39% to 35.3% power. Truncation of the power/flow maps at 23.8% flow will provide clarity and consistency with the design basis.

The changes to the COLR reference list, Section 6.9.3.2, updates the reference to the latest approved revision of the "General Electric Standard Application for Reactor Fuel," and adds a reference for the approved STAIF code. Because these references have been previously approved by the staff, addition of these references to the list of COLR references has no technical impact.

The sentence added to the Bases of Technical Specification 3/4.2.8 discusses the appropriate actions if Region B is entered. It has no technical or operational impact and provides guidance to assure that the presently approved Technical Specifications will be complied with.

NO SIGNIFICANT HAZARDS EVALUATION

The Supply System has evaluated the application of the STAIF code to the power uprate submittal and determined that the change does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1) Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

Although not a WNP-2 Final Safety Analysis Report Chapter 15 accident, the accident of concern is a core thermal hydraulic instability event. The Technical Specifications establish a Region A exclusion area boundary that ensures that a decay ratio of 0.9 or less is maintained during normal plant operation. As decay ratios approach 0.9 the potential for core instability increases. The STAIF code as previously approved by the staff has been used to establish the proposed changes to the WNP-2 power/flow maps. The proposed changes preserve the exclusion boundary for Region A at decay ratios of 0.9 or less during normal operation. Because STAIF is a more rigorous code and its use results in more conservative decay ratios at specific power/flow values than the presently used COTRAN code, the application observes the same requirements as the Technical Specifications to enforce a decay ratio of 0.9 or less during normal plant operation. The application of the STAIF code, therefore, does not represent a significant increase in the probability of a thermal hydraulic core instability event.

The power/flow maps are used to ensure operation is within the bounds of initial conditions assumed in the WNP-2 Design Bases Accident analysis. Given the occurrence of an accident, operation within the bounds of the power/flow maps assures that conditions are maintained from which an accident can be mitigated by operator action and/or plant equipment. Changes to the power/flow maps, by approved methodologies, do not represent a significant change in the consequences of a previously evaluated accident.

For the above reasons, operation of the facility in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of previously evaluated accidents.

NO SIGNIFICANT HAZARDS EVALUATION (continued)

2) Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed amendment maintains the present requirements that operation be restricted to power/flow conditions having a decay ratio of 0.9 or less. This preserves operation within existing safety analysis. The amendment does not change the physical plant or the modes of operation defined in the WNP-2 License. The change does not involve the addition or modification of equipment nor does it alter the design or operation of plant systems. Therefore, operation of the facility in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3) Does the change involve a significant reduction in a margin of safety?

The margin of safety established by the Technical Specifications being amended is based on maintaining a decay ratio of 0.9 or less during normal plant operation. As provided by the Bases for Technical Specification 3/4.2.6, operation in the area conservative to both the 100% rod line and a line defining a calculated decay ratio of 0.9 has been accepted as providing an adequate level of assurance that the probability of a core thermal hydraulic instability event is acceptably low. As decay ratios increase toward 0.9, the probability of an instability event increases. The revised figures show that areas of allowed operation will be below the 100% rod line. Consequently, the margin of safety is established by ensuring that the decay ratio is 0.9 or less. Operation within the bounds of the proposed amendment, based on the application of the STAIF code, results in conservative power/flow values and provides assurance that the decay ratio will be 0.9 or less. Therefore, operation of the facility in accordance with the proposed amendment will not involve a significant reduction in a margin of safety.

The Supply System considers the following changes to be administrative and having no technical impact: 1) replacement of the phrase "greater than .75" with "greater than or equal to 0.75" in Action Statements 3.2.7.a and 3.2.8.a; 2) truncating the power/flow maps at 23.8% flow; 3) the update of the COLR reference list, and 4) adding a sentence in the Bases for Technical Specification 3/4.2.8 providing direction in response to entering Region B. However, because they do represent changes to the WNP-2 Technical Specifications, the following discussion is provided to support the determination that they do not represent significant hazards considerations.

NO SIGNIFICANT HAZARDS EVALUATION (continued)

1) Do the changes involve a significant increase in the probability or consequences of an accident previously evaluated?

The changes provide clarification of existing requirements. Truncating the curves at 23.8% flow instead of the present 20% flow removes information that has no practical use and could be misleading. Replacing "greater than .75" with "greater than or equal to 0.75" is consistent with the Limiting Conditions for Operation statements for Technical Specifications 3.2.7 and 3.2.8 which require that the decay ratio be less than 0.75%. Without the added phrase "or equal to" confusion could result regarding appropriate action if the decay ratio was determined to be exactly 0.75%. The update to the COLR reference list clarifies which references are appropriate. Without the changes to the reference list, an incorrect reference could be used. The added sentence to the Bases of 3/4.2.8 provides clarification and refers to the appropriate action requirements of Technical Specification 3/4.4.1.1 if Region B is entered while in single loop operation. It does not represent a change to the present Technical Specifications.

The changes are administrative changes that have no impact on the methods of plant operation. The changes do not result in any hardware or operating procedure changes, nor will they allow operation of the plant in a mode or condition that could contribute to the initiation of any analyzed event. Hence, the changes will not increase the probability of a previously evaluated accident. Because they do not involve any equipment modifications or operating mode changes, the consequences of an accident occurring with these changes is the same as the consequences of an accident occurring without these changes.

Incorporation of the changes in the WNP-2 Technical Specifications will not alter the probability of a previously evaluated accident or increase the consequences of an accident.

2) Do the changes create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes neither introduce a new mode of plant operation nor require physical modification of the plant. Hence, the possibility of a new or different kind of accident from any previously evaluated accidents is not created by this change.

3) Do the changes involve a significant reduction in a margin of safety?

These changes are administrative changes that provide clarification of existing requirements and have no impact on the operation or physical configuration of the plant. They remove extraneous information and enforce existing plant requirements.

The margin of safety provided by the Limiting Conditions for Operation of Specifications 3.2.7 and 3.2.8, by limiting the decay ratio to less than 0.75%, is enforced by ensuring that the action statement is entered when the decay ratio equals 0.75. Presently, there is no guidance provided for this condition.

Truncating the power/flow maps at 23.8% flow removes information that has no use because operation below the natural circulation line (23.8%) is not possible. Removal of this information is a clarification.

Correcting the COLR reference list assures that accurate references will be used in support of the COLR. As such, it assures that the margin of safety provided by the COLR is not affected by application of an incorrect reference.

The sentence added to the Bases of Technical Specification 3/4.2.8 provides guidance to assure presently approved Technical Specifications will be complied with. Hence, the margin of safety created by the affected Technical Specifications is not impacted.

These changes do not significantly impact the margin of safety created by the affected Specifications. These changes clarify and improve the accuracy and understanding of the Technical Specifications. Because they do not have a technical or operational impact and contribute towards improving the specifications, the margin of safety created by the affected specifications is not significantly affected by these changes.