PRIORITY 1

(ACCELERATED RIDS PROCESSING)

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9509070188 DOC.DATE: 95/08/28 NOTARIZED: NO DOCKET #
FACIL:50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
AUTH.NAME AUTHOR AFFILIATION
PARRISH,J.V. Washington Public Power Supply System
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Documents util understanding of conditions specified in NRC SER for TR WPPSS-FTS-131, "Applications TR for BWR Design & Analysis,"

DISTRIBUTION CODE: A001D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 6
TITLE: OR Submittal: General Distribution

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD4-2 LA	1	1	PD4-2 PD	1	1
	CLIFFORD,J	1	1			
INTERNAL:	ACRS	6	6	FILE CENTER 01	1	1
	NRR/DE/EMCB	1	1	NRR/DRCH/HICB	1	1
	NRR/DSSA/SPLB	1	1	NRR/DSSA/SRXB	1	1
	NUDOCS-ABSTRACT	1	1	OGC/HDS3	1	0
EXTERNAL:	NOAC	1	1	NRC PDR	1	1

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM OWFN 5D8 (415-2083) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 18 ENCL 17

PRIORITY 1 DOCUMENT

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352-0968 • (509) 372-5000

August 28, 1995
GO2-95-169

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 CLARIFICATION REGARDING THE SAFETY EVALUATION FOR TOPICAL REPORT WPPSS-FTS-131, "APPLICATIONS TOPICAL REPORT FOR BWR DESIGN AND ANALYSIS" (TAC NO. M81723)**

References:

1) Letter dated October 12, 1994, from James Clifford (NRC) to J.V. Parrish (SS), "Approval of Topical Report FTS-131, 'Applications Topical Report for BWR Design and Analysis,' for the Washington Public Power Supply System Nuclear Project No. 2 (TAC No. M81723)"

2) Letter, G02-93-021, dated January 27,1993, from G.C. Sorensen (SS) to NRC, "Nuclear Plant No. 2, Operating License NPF-21, Notification of Request for NRC Review of Topical Report WPPSS-FTS-131, Rev. 1, 'Applications Topical Report for BWR Design and Analysis'"

3) Letter, G02-91-134, dated July 15, 1991, from G.C. Sorensen (SS) to NRC, "Nuclear Plant No. 2, Operating License NPF-21, Response to Request for Additional Information Regarding Topical Report WPPSS FTS-129, 'BWR Transient Analysis Model'" (TAC No. 77048)

Reference 1 provides a Safety Evaluation Report (SER) for the Supply System Topical Report WPPSS-FTS-131 "Applications Topical Report for BWR Design and Analysis," (Reference 2) for use in licensing applications, subject to the conditions specified in the SER.

This letter documents the Supply System's understanding of certain of these conditions and provides a foundation for further clarification. Based on the results of the open meeting held on June 20, 1995, the clarifications provided below may require staff review and approval prior to implementation.

A001

- WATER LEVEL CALCULATIONS

  SER Statement:

  "The algorithm was not qualified for use in any transients in which a large variation (more than 10%) in the mixture level is expected... If any of the transient assumptions, input or models are changed in the future, the licensee must demonstrate to the NRC prior to its use that the model yields conservative results."

  The Supply System's interpretation of "large variation (more than 10%) in the mixture level" is "large variation (more than 10% or approximately 56") in the mixture level as measured from the Vessel Zero." In regard to the statement "If any of the transient assumptions, input or models are changed...", the Supply System does not intend to change the transient assumptions or models without prior approval from the NRC. However, the Supply System will make changes in input associated with changes in core composition from cycle to cycle, such as core flow area, hydraulic diameter, spacer loss coefficients and changes associated with plant characteristics. These changes will be evaluated to ensure the transient assumptions and models are not adversely effected.

- FUEL PELLET-CLADDING GAP CONDUCTANCE

  Technical Evaluation Statement:

  "The fuel-cladding gap conductance will be computed by the vendor using an NRC approved methodology".

  Supply System Topical Report WPPSS-FTS-131, Section 5.3.3.3, statement:

  "Fuel-pellet gap conductance calculated by the vendor's approved methods is used in RETRAN-02 and VIPRE-01".

  The RODEX2 code is an NRC-approved code for BWR fuel reload analysis. The code will be used by Supply System engineers to calculate the gap conductances using the same methodology as Siemens Power Corporation (SPC). The Supply System calculated gap conductances have resulted in good agreements in thermal limits as described below.

To further confirm the capability of the Supply System reload methodology, additional benchmarking has been performed since the submittal of the Applications Topical Report (Reference 2) and are provided for information. Attachment 1 compares the thermal limits in terms of ΔCPRs predicted by RETRAN/VIPRE using the Supply System methodology as approved in Reference 1 and those from the fuel vendor SPC for the limiting transients of Load Rejection without Bypass (LRNB) and Feedwater Controller Failure (FWCF). It should be noted that for Cycles 10 and 11, the most limiting transient analyzed by SPC is Turbine Trip without Bypass (TTNB) versus LRNB as predicted by the Reference 1 methodology. The reason that TTNB becomes limiting for SPC analyses is because they revised the turbine control valve operation model from full arc to partial arc to reflect current operating practice. This is an acceptable approach. However, the Supply System has kept the slightly more conservative input of full arc operation. The LRNB and TTNB transients yield about the same ΔCPR.

The Cycle 8 results were reported in the Applications Topical Report.

The cases selected for comparison are based on the availability of the SPC data. As seen from Attachment 1, for the limiting fuel type (9x9-9X), the Supply System results are in excellent agreement with the vendor's results for the limiting transient at full power LRNB/TTNB through all four cycles. The differences in the third digit in ΔCPR between Supply System and vendor results can not be seen in the tables because of rounding-up to two digits by both methods. For the limiting transient at off-rated power levels (FWCF), the Supply System results are consistently conservative relative to those of the vendor.

It should be pointed out that the Cycle 8 core consists of 564 SPC 8x8 fuel assemblies, 188 SPC 9x9-9X fuel assemblies, and 12 Lead Fuel Assemblies (LFA). The 8x8 assemblies were discharged and 9x9-9X fuel loaded in succeeding cycles. The current cycle (Cycle 11) consists of 136 SPC 8x8 fuel assemblies, 624 SPC 9x9-9X fuel assemblies, and 4 LFAs.

A 5% power uprate was also implemented at the start of Cycle 11. The additional benchmarks confirm the capability of the Supply System's methodology in simulating the changes in core compositions from cycle to cycle and additional changes associated with power uprate, such as increased steam flow, higher dome pressure and higher feedwater temperature.

Should you have any questions or desire additional information regarding this matter, please call me or contact Dale Atkinson at (509) 377-4302.

Sincerely,

for J.V. Parrish (Mail Drop 1023)
Vice President, Nuclear Operations

SHB:slc

Attachment

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

ATTACHMENT 1

COMPARISON OF SUPPLY SYSTEM/VENDOR TRANSIENT ANALYSIS RESULTS IN ΔCPR

CYCLE 9

Transient Type	%Power/ %Flow	Scram Time+	RPT++	8x8 Fuel		9x9-9X Fuel	
				SS***	SPC●	SS	SPC
LRNB*	104/106	TSSS	Yes	0.28	0.27	0.26	0.26
FWCF**	47/106	TSSS	Yes	0.43	0.39	0.44	0.39
FWCF	104/106	TSSS	Yes	0.24	0.22	0.22	0.21

Note: SPC data is from SPC Report EMF-93-047 "WNP-2 Cycle 9 Plant Transient Analysis", Siemens Power Corporation, May 1993

* Load Rejection Without Bypass
** Feedwater Controller Failure
\+ Technical Specification Scram Speed
++ Recirculation Pump Trip
*** SS - Supply System,
● SPC - Siemens Power Corporation

COMPARISON OF SUPPLY SYSTEM/VENDOR TRANSIENT ANALYSIS RESULTS IN ΔCPR

CYCLE 10

Transient Type	%Power/ %Flow	Scram Time	RPT	8x8 Fuel		9x9-9X Fuel	
				SS	SPC	SS	SPC
LRNB/TTNB*	104/106	TSSS	Yes	0.23	0.25+	0.22	0.22+
FWCF	47/106	TSSS	Yes	0.36	0.34++	0.38	0.34++

* Turbine Trip Without Bypass

\+ Data is from SPC Report EMF-94-095 "WNP-2 Cycle 10 Plant Transient Analysis", Siemens Power Corporation, June 1994. It is noted that the ΔCPRs in the report are 0.01 higher than quoted here. This 0.01 adder is not included here because it is not part of the code calculated ΔCPR. It was added by SPC to allow for flexibility in End-of-Cycle (EOC) axial power distribution achieved during actual operation.

++ Data from SPC "WNP-2 Cycle 10 Design Review 1"

COMPARISON OF SUPPLY SYSTEM/VENDOR TRANSIENT ANALYSIS RESULTS IN ΔCPR

CYCLE 11

Transient Type	%Power/ %Flow	Scram Time	RPT	8x8 Fuel		9x9-9X Fuel	
				SS	SPC	SS	SPC
LRNB/TTNB	104/106	TSSS	Yes	0.22	0.23*	0.21	0.21*
FWCF	45/106	TSSS	Yes	0.36	0.32**	0.37	0.31**

* Data is from SPC Report EMF-95-006 "WNP-2 Cycle 11 Plant Transient Analysis", Siemens Power Corporation, March 1995. It is noted that the ΔCPRs in the SPC report are 0.01 higher than quoted here. This 0.01 adder is not included here because it is not part of the code calculated ΔCPR. It was added by SPC to allow for flexibilty in EOC axial power distribution achieved during actual operation.

** Data from SPC "WNP-2 Cycle 11 Design Review No. 1"