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Nuclear LLC

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LRN-00-0457
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United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

REQUEST FOR ADDITIONAL INFORMATION
LICENSEE CHANGE REQUEST S99-11
SALEM GENERATING STATION
UNIT NOS. 1 AND 2
DOCKET NOS. 50-272 AND 50-311

On December 29, 1999, Public Service Electric and Gas Company (PSE&G) submitted a request for amendment to Facility Operating License DPR 70 and 75, for the Salem Nuclear Generating Station, Units 1 and 2. The proposed TS changes contained therein modify the requirements stated in the Notes 1 and 2 to Table 2.2-1, Reactor Trip System Instrumentation Setpoints, in order to add a tolerance associated with the setpoint values for the derivative module time constants (the Tau values) of the Over-Power and Over-Temperature delta temperature (OTDT) units.

During a November 7, 2000, telephone conversation with R. Fretz, USNRC Project Manager for Salem, Mr. Fretz requested that PSEG Nuclear LLC provide further information regarding a Westinghouse letter PSE-96-808 (Knowles, Westinghouse to Ross, PSEG, dated 12/13/1996). Specifically, PSEG was requested to address the issue of reduction in DNBR margin, which may result from a change to the requested use of tolerances for the allowable values identified in the Westinghouse letter.

It was noted during the telephone conversation that the Westinghouse statement was understandable given that they had not performed a rigorous analysis of the use of tolerance specifically for Salem 1 and 2. At the time the letter was received, PSEG performed an evaluation of the potential change in DNBR conservatism using an explicit calculation of the lead-lag term as utilized in the OTDT trip for the limiting Rod Withdrawal at Power (RWAP) event. This evaluation determined that the potential change in DNBR was

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approximately 0.02, which is considered insignificant when compared to the conservatism built into the current analysis. The conservatism in the transient analysis model of the limiting RWAP event (trips on OTDT and results in the minimum DNBR) includes: 1) Tave and Delta-T reference values (full power values), based on Thermal Design, which are higher than the actual plant conditions at full power; 2) a K1 term in the OTDT trip function used in the accident analysis which is larger than the actual setpoint (and includes instrument and measurement uncertainties plus additional margin); 3) individual component tolerances, which make up the instrument and measurement uncertainties, that are set conservatively; and 4) transient analysis calculations of DNBR based on partial derivatives of primary parameters (pressure, power, coolant temperature, coolant flow), which results in a more conservative value of DNBR than performance of a rigorous sub-channel analysis method.

The safety analysis DNBR limit maintains over 24% generic margin to the actual DNBR design limit associated with the critical heat flux correlation and the Revised Thermal Design Procedure (Amendments 201 and 197 for Salem Unit 1 and Unit 2 respectively). Additionally, even with the conservatism noted above, the transient analysis for the limiting RWAP event results in 14% DNBR margin above the safety analysis limit.

In terms of the lead-lag setpoint tolerance, decreasing the lead term and increasing the lag term will result in a slight increase in the trip setpoint, thus will delay the trip by a small amount. However, the conservatism in the other OTDT trip parameters and DNBR calculation, along with the significant margin above the safety analysis DNBR limit, more than compensates for the impact of the potential non-conservative lead-lag time constant tolerances from the nominal values assumed in the transient analysis. Therefore, the safety analysis DNBR limit is not affected. Also, the DNBR design limit is not dependent on specific transients or the actual trip setpoints. As such, there is no reduction in generic DNBR margin associated with the allowed tolerance on the dynamic compensation terms.

This is consistent with the position stated in Westinghouse letter PSE-96-808, "it is concluded that the analyses that model nominal values for the dynamic compensation terms at Salem are sufficiently conservative and that no additional analyses need to be performed." It is also consistent with the remainder of the letter where Westinghouse describes a more conservative position regarding the direction of conservatism for those parameters making up the OTDT trip equation along with the statement, "A second utility requested reanalysis with a 5% uncertainty band assumed around each dynamic compensation term. Obviously, this resulted in a slight loss in DNBR margin."

It should be noted that the safety analysis DNBR limits noted above are based on the use of fuel assemblies containing Intermediate Flow Mixing (IFM) grids. The transition from standard non-IFM fuel to a full core of IFM fuel takes place over a

number of cycles. Mixed cores result in DNBR penalties that utilize some portion of the generic margin noted above. This penalty is reduced as the number of IFM fuel assemblies increases. The current operating cycle for Unit 1 has one region of IFMs resulting in a net DNBR margin of approximately 12%. Salem Unit 2 currently has two regions of IFM fuel with a net DNBR margin of 17%. Since the impact of the dynamic compensation terms is compensated by other excess conservatism and margin in the transient analysis, there is no impact on the currently available DNBR margin. Thus, it has been concluded that changing the Technical Specifications to utilize tolerances will have no measurable affect on DNBR.

The enclosed information has been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and PSEG has made the determination that this information does not alter the no significant hazards considerations determination of the original License Change Request.

Should you have any questions regarding the above, please contact John Nagle, Licensing, at (856) 339-3171.

Sincerely,

Mark B. Bezilla
Vice President-Operations

JCN

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STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

Mark B. Bezilla, being duly sworn according to law deposes and says:
I am Vice President - Operations for the PSEG Nuclear LLC, and as such, I find the matters set forth in the above referenced letter, concerning the Salem Generating Station, Units Nos. 1 and 2, are true to the best of my knowledge, information and belief.

Subscribed and Sworn to before me
this 21 day of NOV., 2000

Notary Public of New Jersey

SHERI L. HUSTON
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 12/08/2003

My Commission expires on