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SUBJECT: Submits response to GL 93-04, "Rod Control Sys Failure & Withdrawal of Rod Control Cluster Assemblies."

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United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
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SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
GENERIC LETTER 93-04, 90 DAY RESPONSE

Gentlemen:

Pursuant to the requirements of 10 CFR 50.54 (f), the NRC issued Generic Letter 93-04, "Rod Control System Failure and Withdrawal of Rod Control Cluster Assemblies," on June 21, 1993 addressed to all licensees with the Westinghouse Rod Control System (except Haddam Neck) for action and to all other licensees for information.

The Generic Letter required that, within 45 days from the date of the generic letter, each addressee provide an assessment of whether or not the licensing basis for each facility is still satisfied with regard to the requirements for system response to a single failure in the Rod Control System (GDC 25 or equivalent). If the assessment (Required Response 1.(a)) indicates that the licensing basis is not satisfied, then the licensee must describe compensatory short-term actions consistent with the guidelines contained in the generic letter, and within 90 days, provide a plan and schedule for long-term resolution (Required Response 1.(b) and 2). Subsequent correspondence between the Westinghouse Owners Group and the NRC resulted in schedular relief for Required Response 1.(a) (NRC Letter to Mr. Roger Newton dated July 26, 1993).

Carolina Power & Light Company (CP&L) letter to NRC dated August 4, 1993 (HNP-93-830) provided CP&L's 45 day response to the Generic Letter as it applies to the Shearon Harris Nuclear Power Plant (SHNPP). The response summarized the compensatory actions taken by CP&L in response to the Salem rod control system failure event (the second part of Required Response 1.(b)). It also provided a summary of the results of the generic safety analysis program conducted by the Westinghouse Owners Group and its applicability to SHNPP.

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CP&L hereby submits its 90-day response to the Generic Letter as it applies to SHNPP. The attached response concludes that the licensing basis is satisfied for GDC 25 (Required Response 1.(a)) and also provides additional information for long-term clarification of this issue. The safety assessment that was provided in the 45 day response confirmed that there is no safety significance for any asymmetric RCCA withdrawal by using three-dimensional safety analysis.

Questions regarding this matter may be referred to Mr. R. W. Prunty at (919) 546-7318.

Yours very truly,

W. R. Robinson

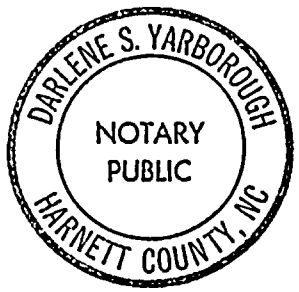
LSR:smh
Attachment

c: Mr. S. D. Ebneter
Mr. N. B. Le
Mr. J. E. Tedrow

W. R. Robinson, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.

Darlene S. Yarborough
Notary (Seal)

My commission expires: 2/5/95



RESPONSE TO NRC GENERIC LETTER 93-04

Assessment of Licensing Basis Compliance

The purpose of this response is (1) to provide an assessment of whether or not the licensing basis for Shearon Harris Nuclear Power Plant (SHNPP) is still satisfied with regard to the requirements for system response to a single failure in the rod control system, and (2) to provide supporting discussion for this assessment in light of the information generated as a result of the Salem event (Required Response 1.(a)).

The Westinghouse Owners Group (WOG) has undertaken the following initiatives to support the response to NRC Generic Letter 93-04: conducting Rod Control System testing in the Salem training center, examining the existing Rod Control System Failure Modes and Effects Analysis (FMEA), analyzing the worst-case asymmetric RCCA withdrawal combinations with three-dimensional analytical methods, and performing an equipment survey of Westinghouse plants to determine the frequency and significance of control system circuit card failures.

After this extensive investigation, the WOG has concluded that GDC 25 continues to be met, but also recognizes that there are questions as to the interpretation of not only the intent of GDC 25 but also the appropriate definition of the specified acceptable fuel design limit as well.

Based on previous communications, the NRC has conservatively interpreted the GDC 25 fuel design limit to be the DNB design basis. The WOG believes that this is a conservative definition if applied to all events. The equipment survey conducted by the WOG demonstrated that the failure rate of card failures that could result in the movement of less than a whole group is on the order of 4 E-8 /critical reactor hours. This would indicate that the likelihood of a Salem-type event is extremely remote. With this in mind, the WOG would propose that a Condition III (or IV) specified acceptable fuel design limit would be applicable.

Based on the WOG's understanding of GDC 25, the purpose of this criterion is to ensure that the appropriate limits (commensurate with the probability of occurrence) are not violated for a "worst-case" stand-alone single failure. The test program conducted at the Salem training center demonstrated that all the rods within a given group would receive the same signals. The corrupted current orders generated by the logic cabinet failures at Salem were transmitted identically to all 8 RCCAs in Shutdown Bank A. The fact that only one RCCA withdrew in the plant was due to a second unrelated effect. Had all the rods in SBA responded, as predicted in the existing FMEA, all the rods would have withdrawn uniformly and have been enveloped by the existing FSAR accident analyses.

In addition, existing rod motion surveillance requirements would detect the type of rod motion failure observed at Salem. Thus, the requirement that one single failure not result in a specified acceptable fuel design limit being exceeded, in this case the DNB design basis, would remain satisfied.

Assessment of the Safety Significance of Potential Asymmetric Rod Motion in the Rod Control System

Westinghouse has also performed a safety analysis using three-dimensional safety analysis techniques to assist the WOG in its determination of the safety significance of an uncontrolled asymmetric rod withdrawal. WCAP-13803, Revision 1 documented the safety analysis program and concluded that the generic analysis and their plant-specific application demonstrate that DNB does not occur for a worst-case asymmetric rod withdrawal for all affected Westinghouse plants. As such, the analysis program concluded that there is no safety significance for affected Westinghouse plants for a Salem-type rod withdrawal.

CP&L letter dated August 4, 1993 (HNP-93-830) provided CP&L's 45 day response to the Generic Letter as it applies to SHNPP. The response provided a summary of the results of the generic safety analysis program conducted by the Westinghouse Owners Group and its applicability to SHNPP.

Long-term Enhancements

While the assessment indicates that the licensing basis is currently satisfied, the WOG believes that there are measures that can be taken by utilities to make compliance with GDC 25 more clear. Those recommended measures include a combination of Rod Control System logic cabinet changes (current order timing adjustments) and an additional plant surveillance. CP&L's 45 day response explained how the additional recommended testing is already performed at SHNPP each refueling outage prior to startup in Engineering Periodic Test Procedure EPT-060, "Control Rod Mechanism Timing Test."

CP&L will modify the Rod Control System current order timing to prevent any uncontrolled asymmetric rod withdrawal in the event of the failure identified at Salem. If corrupted current orders are present, none of the rods will move (with a high degree of certainty) once the current order timing adjustments are made.

CP&L will provide a schedule for implementation of the proposed long-term action at SHNPP after the successful demonstration of the timing adjustments at an operating plant and receipt of the official technical bulletin from Westinghouse. The basis for allowing this time period is that existing rod motion surveillance tests provide assurance that the failures scenarios of an uncontrolled asymmetric rod withdrawal will be detected and the analysis program performed and documented in WCAP-13803, Revision 1, concluded that there was no safety significance for affected Westinghouse plants for a Salem-type rod withdrawal.