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the southern electric system

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Joseph M. Farley Nuclear Plant
Response to NUREG-0737 Item II.D.1

Ladies and Gentlemen:

NUREG-0737 Item II.D.1, "Performance Testing of BWR and PWR Relief and Safety Valves," was issued by the Nuclear Regulatory Commission (NRC) to address the concern that if the pressurizer safety valves opened due to high reactor coolant system pressure, the pooled water in the loop seals upstream of the safety valves might cause a waterhammer effect that could over-stress downstream piping and supports. Southern Nuclear Operating Company (SNC) letter dated August 7, 1992, provides a summary of FNP actions taken to address the concern. The SNC letter also included a report titled "Pressurizer Safety Line Piping and Support Evaluation Under Safety Valve Discharge Loading." This report was intended to address NUREG-0737 Item II.D.1 based on inelastic piping stress analysis techniques. This report was supplemented with information provided in an SNC letter to the NRC dated October 12, 1993.

After review of the analysis, the NRC issued a letter dated March 23, 1994, that expressed several concerns associated with the methodology and conclusions. SNC and the NRC met to discuss the concerns on April 26, 1994. By letter dated May 9, 1994, the NRC issued a summary of the April 26, 1994 meeting. Consistent with discussions at the meeting, two options for final resolution of Item II.D.1 were identified in the meeting summary. The first option was to re-analyze to determine if localized stresses in the piping downstream of the safety valves can be reduced to meet faulted allowables and to verify that anchor bolts have a minimum safety factor of three. The second option was to modify the existing piping as required to withstand the postulated loading.

SNC has performed a re-analysis documented in the attached report, "Pressurizer Safety Line Piping and Support Evaluation Under Safety Valve Discharge Loading." The re-analysis was performed using traditional elastic analysis techniques and documents that predicted stresses in pressurizer safety valve

discharge piping are significantly lower than prior analyses. These stress reductions are primarily attributable to more accurate modeling of the loop seal discharge characteristics based on data from EPRI testing of safety valves. The re-analysis demonstrates that all ASME Class 1 piping and supports satisfy applicable code allowables, including a safety factor of at least 4.0 for concrete expansion bolts. The analysis also demonstrates that stresses for non-nuclear safety (NNS) piping remain below faulted code allowables under all postulated conditions and that the safety factor for all concrete expansion bolts is greater than 3.0. The marginal benefit to plant safety associated with raising NNS anchor bolt safety factors from 3.0 to 4.0 is not commensurate with the cost in terms of person rem exposure and dollars. In addition, existing FNP procedures require inspection of NNS piping subsequent to a transient resulting in safety valve lift and accompanying loop seal discharge.

Therefore, SNC requests that the NRC approve the analysis and conclusions of the enclosure, "Pressurizer Safety Line Piping and Support Evaluation Under Safety Valve Discharge Loading" as resolution of the remaining II.D.1 issues. Upon receipt of NRC approval, the analysis and conclusions of the enclosure will become the licensing basis for the NNS portion of the pressurizer discharge piping.

If there are any questions, or if additional information is needed, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

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Enclosure

cc: Mr. S. D. Ebneter
Mr. B. L. Siegel
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