

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 20, 1993

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Serial No. 93-396A
NL&P/CGL R1
Docket Nos. 50-338
50-339
50-280
50-281
License Nos. NPF-4
NPF-7
DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
SURRY POWER STATION UNITS 1 AND 2
90-DAY RESPONSE TO GENERIC LETTER 93-04
ROD CONTROL SYSTEM FAILURE AND WITHDRAWAL
OF CONTROL ROD ASSEMBLIES, 10CFR50.54(f)

On June 21, 1993, the NRC issued Generic Letter 93-04, entitled "Rod Control System Failure and Withdrawal of Rod Control Cluster Assemblies, 10CFR50.54(f)." The generic letter notifies addressees about a potential single failure vulnerability within the Westinghouse solid state rod control system that could cause an inadvertent withdrawal of control rods in a sequence resulting in a power distribution not considered in the design basis analyses. The generic letter also requires that affected addressees provide the NRC with information describing their plant-specific findings related to this issue and actions taken.

Specifically, Generic Letter 93-04 requires that, within 45 days from the date of the generic letter, affected addressees 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) (Required Response 1(a)). If the assessment in Required Response 1(a) indicates that the licensing basis is not satisfied, then the licensee must provide an assessment of the impact of potential single failures in the rod control system on the licensing basis of the facility (Required Response 1(b), part one), describe compensatory short-term actions (Required Response 1(b), part two), and within 90 days provide a plan and schedule for long-term resolution (Required Response 2).

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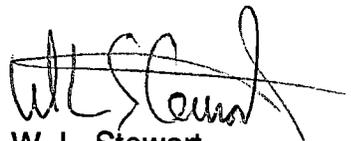
Subsequent correspondence between the Westinghouse Owners Group and the NRC resulted in schedular relief to 90 days for Required Responses 1(a) and 1(b), part one (July 26, 1993 NRC letter to Mr. Roger Newton of the Westinghouse Owners Group).

Virginia Electric and Power Company provided the 45-day response to Generic Letter 93-04 for the North Anna and Surry Power Stations by an August 5, 1993 letter (Serial No. 93-396). That response summarized the compensatory actions taken by Virginia Electric and Power Company in response to the Salem rod control system failure event (Required Response 1(b), part two). It also provided a summary of the results of the generic safety analysis program conducted by the Westinghouse Owners Group and its applicability to North Anna and Surry. In that letter we stated that we concur with the WOG conclusion that the design DNBR limits are met with margin for the entire spectrum of asymmetric rod withdrawal events analyzed for North Anna and Surry. The safety assessment, provided in that letter, confirmed by using three-dimensional safety analysis that there is no safety significance for any asymmetric RCCA withdrawal.

The attachment provides the 90-day response to Generic Letter 93-04 for North Anna and Surry. The attached response concludes that the licensing basis (GDC 25) continues to be satisfied for North Anna and Surry (Required Response 1(a)) and discusses measures recommended by the Westinghouse Owners Group for long-term enhancements related to this issue.

If you have questions regarding this information or require additional information, please contact us.

Very truly yours,



W. L. Stewart
Senior Vice President - Nuclear

Attachment - 90-Day Response to Generic Letter 93-04 for North Anna and Surry Power Stations - Rod Control System Failure and Withdrawal of Rod Control Cluster Assemblies, 10CFR50.54(f)

cc: U. S. Nuclear Regulatory Commission
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ATTACHMENT

90-DAY RESPONSE TO GENERIC LETTER 93-04 FOR NORTH ANNA AND SURRY POWER STATIONS - ROD CONTROL SYSTEM FAILURE AND WITHDRAWAL OF ROD CONTROL CLUSTER ASSEMBLIES, 10CFR50.54(f)

Assessment of Licensing Basis Compliance

The purpose of this response is to provide an assessment of whether or not the licensing basis for North Anna and Surry is still satisfied with regard to the requirements for system response to a single failure in the rod control system and to provide supporting discussion for this assessment in light of the information generated as a result of the Salem event (Generic Letter 93-04 Required Response 1(a)).

Virginia Electric and Power Company is participating in the Westinghouse Owners Group (WOG) initiatives addressing this issue. The WOG has undertaken the following initiatives to support the response to NRC Generic Letter 93-04:

- examining the existing rod control system Failure Modes and Effects Analysis (FMEA),
- conducting rod control system testing in the Salem training center,
- performing an equipment survey of Westinghouse plants to determine the frequency and significance of control system circuit card failures, and
- analyzing the worst case asymmetric RCCA withdrawal combinations with three-dimensional analytical methods.

After this extensive investigation, the WOG has concluded that GDC 25 continues to be met.

- The FMEA examination and the test program conducted at the Salem training center demonstrated that all the rods within a given group receive the same signal.
- The FMEA examination and subsequent analysis determined that a Salem-type event challenges the DNBR design basis using the currently NRC-approved methodology. However, as discussed in later in this letter, a safety analysis performed by Westinghouse using using three-dimensional safety analysis techniques concluded that the generic analysis and its plant-specific application demonstrate that DNB does not occur for a worst-case asymmetric rod withdrawal for affected Westinghouse plants.

- The equipment survey conducted by the WOG demonstrated that the rate of card failures that could result in a Salem-type event indicates that the likelihood of such an event is extremely remote.
- Existing rod motion surveillance requirements will detect the type of rod motion failure observed at Salem.
- The WOG recognizes that the intent of GDC 25 is subject to some interpretation with respect to the definition of the specified acceptable fuel design limit. The purpose of GDC 25 is to ensure that the appropriate limits (commensurate with the probability of occurrence) are not violated for a single failure. This is the WOG's understanding of the intent of GDC 25. 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 an overly conservative interpretation if applied to a Salem-type event. As noted above, the equipment survey conducted by the WOG demonstrated that the rate of card failures that could result in a Salem-type event indicates that the likelihood of such an event is extremely remote. Consistent with this remote frequency, the WOG proposes that a Condition III specified acceptable fuel design limit would be applicable to a Salem-type event. Therefore, the GDC 25 requirement that the specified acceptable fuel design limits are not exceeded for a single failure remains satisfied.

Assessment of the Safety Significance to 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, entitled "Generic Assessment of Asymmetric Rod Cluster Control Assembly Withdrawal," documented the safety analysis program and concluded that the generic analysis and its plant-specific application demonstrate that DNB does not occur for a worst-case asymmetric rod withdrawal for 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.

A summary of the results of the generic safety analysis program conducted by the WOG and its applicability to North Anna and Surry were provided by our August 5, 1993 letter (Serial No. 93-396), which was our 45 day response to Generic Letter 93-04. In that letter we stated that we concur with the WOG conclusion that the design DNBR limits are met with margin for the entire spectrum of asymmetric rod withdrawal events analyzed for North Anna and Surry. The safety assessment, provided in that letter, confirmed by using three-dimensional safety analysis that there is no safety significance for any asymmetric RCCA withdrawal.

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 enhance the reliability of the rod control system. The recommended modifications include either:

- a new current order surveillance and current order timing changes, or
- a new current order surveillance and plant-specific FSAR safety analysis analyzing asymmetric rod withdrawal.

Virginia Electric and Power Company is awaiting additional information from the WOG regarding these modifications. Upon receipt of the additional information, we will evaluate the recommended modifications for implementation at North Anna and Surry.