

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

October 16, 1998

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Serial No. 98-569  
NL&OS/ETSR0  
Docket Nos. 50-338  
50-339  
License Nos. NPF-4  
NPF-7

Gentlemen:

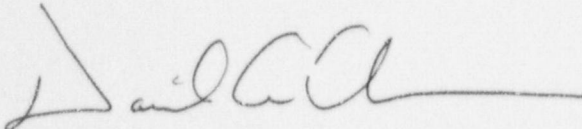
**VIRGINIA ELECTRIC AND POWER COMPANY**  
**NORTH ANNA POWER STATION UNITS 1 AND 2**  
**PROPOSED TECHNICAL SPECIFICATIONS CHANGE**  
**REVISED LOOP STOP VALVE OPERATION**  
**REQUEST FOR ADDITIONAL INFORMATION**

On November 6, 1996, Virginia Electric and Power Company (Serial No. 96-532) requested amendments, in the form of changes to the Technical Specifications, to Facility Operating License Numbers NPF-4 and NPF-7 for North Anna Power Station Units 1 and 2, respectively. The proposed changes will modify the requirements for isolated loop startup to permit filling of a drained isolated loop via backfill from the Reactor Coolant System through partially opened loop stop valves.

In subsequent telephone conference calls with the NRC Staff, the implementation and basis of the proposed Technical Specifications change have been discussed. The relevant information discussed during those phone conversations is documented in the attachment to this letter.

Should you have any questions or require additional information, please contact us.

Very truly yours,



James P. O'Hanlon  
Senior Vice President - Nuclear

Attachment

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Commitments made in this letter:

1. None

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cc: United States Nuclear Regulatory Commission  
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**Response to Request for Additional Information**  
**Revised Loop Stop Valve Operation**  
**North Anna Power Station, Units 1 and 2 (TAC Nos. M97187 and M97188)**

NRC Concern:

Proposed TS 3.4.1.6 requires 450 ft<sup>3</sup> of water in the pressurizer when filling the loop from the RCS volume. Discuss the safety-related level instruments that will be used during a loop backfill evolution. What is the instrument uncertainty associated with pressurizer level measurement and was it included in the determination of the 450 ft<sup>3</sup> limit? In addition, what are the effects of temperature/pressure on the level measurement.

Virginia Power Response:

During the backfill evolution, Virginia Power intends to use safety-related instrumentation to verify the Technical Specifications required volume of water in the pressurizer (450 ft<sup>3</sup>) prior to and during reactor coolant loop backfill evolutions. These instruments have a Channel Statistical Allowance (loop error) calculated for each instrument channel. The instruments are calibrated on an eighteen-month basis consistent with Technical Specifications requirements.

Virginia Power quantified the conservatism associated with assuming that all three loops were unisolated simultaneously when the proposed 450 ft<sup>3</sup> specification was developed. This conservatism was calculated as follows:

For the loops not under a vacuum:

1. The volume on the steam generator side of the loop stop valves below mid-loop was calculated. This volume was multiplied by two to obtain the volume that would drain into the two loops assuming those two sets of loop stop valves are opened simultaneously. This volume is identified as  $V_{In-Loops}$ .
2. The RCS loop piping water volume on the reactor vessel side of the loop stop valves above mid-loop elevation was calculated. The volume was again multiplied by two to account for two loops. This volume is available for filling drained loop volumes in the two loops and is identified as  $V_{Out-Loops}$ .
3. The difference in these two volumes is the additional RCS volume that is needed to fill these two loops to the mid-loop elevation.

The additional volume or margin was calculated to be 340.4 ft<sup>3</sup>. Since the Specification bases prohibit opening more than one loop at a time, this represents margin or conservatism in the volume requirements.

The safety-related level instrument channels for pressurizer level channels (loops) have a hot calibrated level indication error of 7.94% full span, which corresponds to about 106 ft<sup>3</sup>. This error is dominated by the high-line-pressure error component of the transmitter (approximately 5.7%).

Conservatively, the volume associated with instrument indication error of 7.94% is approximately 106 ft<sup>3</sup> (full span). This error is equal to approximately 30% of the additional margin (340.4 ft<sup>3</sup>) provided in the pressurizer to ensure decay heat removal is not affected.

Eliminating the high-line-pressure error component from the total error at cold conditions (when the loop fill evolution will be performed) yields an error of approximately 3.5%. This equates to about 47 ft<sup>3</sup> or approximately 14% of the additional margin (340.4 ft<sup>3</sup>) provided in the pressurizer to ensure decay heat removal is not affected.

Therefore, the instrument error is adequately accounted for in the 340 ft<sup>3</sup> of additional volume or margin.

In addition, a non-safety related level channel that has been specifically calibrated for cold conditions in the pressurizer will be available to monitored pressurizer level during the backfill evolutions. Although a specific Channel Statistical Allowance has not been performed for this instrument loop, the typical indication errors for instrument loops of this type are on the order of 3.5% level span, which corresponds to a pressurizer water volume of about 40 cubic feet.