VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

November 16, 1994

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

Serial No.	94-581
NL&P/MAE:	R7
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
CORRECTIVE ACTIONS ASSOCIATED WITH
HIGH HEAD SAFETY INJECTION FLOW BALANCING

We wish to advise you of corrective actions that were successfully implemented on North Anna Unit 1 in response to a Severity Level IV violation involving flow balancing of the high head safety injection (HHSI) system. The corrective actions were described in our letter dated February 25,1994 (Serial No. 94-027A). The response described a detailed root cause evaluation that was being performed to determine the cause of the event. The evaluation has been completed and the corresponding corrective action plan has been developed. The effectiveness of the corrective actions completed to date demonstrates that the root causes originally identified were valid.

The root cause evaluation recommended that the temporary strap-on Controlotron flowmeters utilized in the cold leg branch line testing be discontinued and replaced with instruments that measure flow to a 0.5% or better accuracy. Permanently installed flow venturis have replaced the Controlotron flowmeters in the Unit 1 cold leg. The use of the temporary strap-on Controlotron flowmeters has been discontinued for this application. The permanently installed flow venturis have been demonstrated by an independent laboratory to be calibrated to an accuracy of better than 0.25%. This high degree of flow measurement accuracy allows for an expected loop inaccuracy of less than 1%. In addition, the independent laboratory demonstrated that the effect of the upstream fittings on the accuracy of the venturi is negligible in a pipe loop test simulating the most adverse field geometry.

Due to use of the Controlotron flowmeters in other applications, additional corrective actions were recommended by the root cause evaluation. Corrective actions which have been completed include establishing a procedure which outlines the qualification requirements of personnel that will use Controlotron flowmeters and revising the procedure which governs the use of the Controlotron flowmeters in regard to the detailed technical aspects, proper use and limitations of this technology.

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The existing Technical Specification surveillance requirements for acceptable HHSI flow balancing had been considered overly restrictive. On September 6, 1994, the NRC approved a license amendment which replaced the existing requirements with less restrictive requirements.

The Unit 1 HHSI flow balance test was conducted during the recently completed 1994 refueling outage with acceptable results. Similar modifications and testing will be conducted on Unit 2 at the next refueling outage which is currently scheduled for March 1995.

In summary, replacement of the Controlotron flowmeters on the cold leg HHSI lines with flow venturis has effectively resolved the flow measurement concerns. If you have any questions, please contact us.

Very truly yours,

RF Saunders for

James P. O'Hanlon
Senior Vice President - Nuclear

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