VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

October 5, 1992

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

Serial No.	92-595
SPS/RCB/GDM	R7 ·
Docket Nos.	50-280
•	50-281
License Nos.	DPR-32
	DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY SURRY POWER STATION UNITS 1 AND 2 GAS VOIDS IN LOW HEAD SAFETY INJECTION PIPING

In NRC Inspection Report Nos. 50-280/92-17 and 50-281/92-17 dated September 4, 1992, you identified an Inspector Follow-up Item to evaluate our long term plans to prevent gas voids in the Low Head Safety Injection (LHSI) System. Also, you requested a written response describing our proposed long-term corrective actions within thirty days of the date of the report. This response is provided in the attachment.

The information discussed herein is consistent with our presentation and your comments provided at the counterparts meeting held at our corporate office on September 24, 1992.

Please contact us if you have any questions or require additional information.

Very truly yours,

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PDR

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W. L. Stewart Senior Vice President - Nuclear

Attachment

cc: U.S. Nuclear Regulatory Commission Region II 101 Marietta Street, N.W. Atlanta, Georgia 30323

> Mr. Morris Branch NRC Senior Resident Inspector Surry Power Station

> > 00280

PDR



ATTACHMENT CORRECTIVE ACTIONS FOR GAS VOIDS IN LOW HEAD SAFETY INJECTION PIPING

Corrective Actions

<u>Background</u>

As described in the Inspection Report 92-17, gas voids were detected in the Low Head Safety Injection (LHSI) piping for both units at Surry. Initially, several areas requiring evaluation were identified:

- Potential for the Charging/High Head Safety Injection (HHSI) Pumps to become inoperable following transfer to the recirculation mode of safety injection (SI) due to gas binding
- Potential for exceeding the LHSI piping system design pressure during LHSI pump startup transients, and
- Potential for a LHSI relief valve lifting during a pressure spike and failing to reseat following a LHSI pump start transient.

Since the possibility of gas binding of the HHSI pumps placed the plant in an unanalyzed condition, a four-hour non-emergency report was made to the NRC in accordance with 10 CFR 50.72 on July 11, 1992. After further analysis determined that the existence of the void in the piping would not have significantly degraded pump performance, this report was withdrawn on July 27, 1992.

Utilizing a fluid transient computer model of the LHSI system, estimates have been made of the probable pressure effects of gas voids at various locations in the system. The results showed that the magnitude of the pressure transients experienced is consistent with pressure transients which normally occur during startup, shutdown or realignment of systems. Although these transients involve short duration pressure spikes above the continuous design pressure for certain components in the system, they are accommodated by the overall conservatism of the code and no damage to the piping or components is expected to occur. Additionally, the potential for a LHSI system relief valve to lift and fail to reseat is considered small as recent periodic testing and operational history indicate that the relief valves, which may momentarily lift during such a pump startup transient, have reseated properly and tested satisfactorily.

Based on the above, a Justification for Continued Operation (JCO) was prepared and presented to the Station Nuclear Safety and Operating Committee (SNSOC). SNSOC approved the JCO on July 17, 1992, with the following compensatory actions specified:

- The affected piping must be periodically vented to minimize gas in the system.
- The bulk Refueling Water Storage Tank (RWST) level must be monitored for increases to trend check valve back-leakage, as this is believed to be a significant contributor to the gas accumulation in Unit 2.

Current Status

In compliance with the bases for the JCO, Operations personnel are venting the SI system at designated locations and frequencies. The quantity of gas vented is recorded and trended, and the venting frequency is adjusted as necessary based on these results. Since its initiation, the venting frequency and the quantity of gas discovered has decreased. During future periodic testing of the LHSI system, additional instrumentation will be installed to determine the effectiveness of gas venting to prevent or reduce pressure spikes in the system. Also, RWST levels have continued to be monitored as the means to detect any increase in check valve back-leakage.

Proposed Long Term Corrective Actions

Our corrective actions are focused on the elimination or reduction of gas voids to the extent that any remaining voids can be categorically assessed as of no significance. To that end the following actions will be taken to reduce voiding:

- <u>Continuation of Ongoing Corrective Actions</u>: Periodic venting of the SI systems, monitoring of RWST levels, and investigation of LHSI pump pressure spiking during normal pump surveillance testing will continue as long as gas voids are present.
- <u>Procedure Changes to Minimize Gas Voids</u>: Operating, testing, maintenance, and post-maintenance testing procedures will be reviewed and enhanced as necessary to minimize gas voids in the SI systems.

<u>Evaluation of the SI systems</u>: The SI systems will be reviewed to determine whether additional system vents should be installed, or if other actions or modifications would be beneficial.