VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

October 30, 1992

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

Serial No. 92-299A
NL&P/CGL R2
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
INTERNAL FLOODING LONG TERM MODIFICATIONS

In a May 27, 1992 letter (Serial No. 92-299), Virginia Electric and Power Company advised the NRC of the status of our activities associated with the evaluation of proposed long term modifications to address internal flooding. We indicated that we planned to have a conceptual design report prepared for these options by September 1992 for internal review and that we would advise you of our intended actions following completion of that review. The purpose of this letter is to update you relative to the conceptual design report conclusions and our intended actions to resolve the Surry internal flooding issue. As indicated in the May 27, 1992 letter, it is our intent to incorporate those long term modifications, which are both feasible and cost effective, into the Surry design to resolve the internal flooding vulnerability issue. It should be noted that this position is consistent with the NRC guidance provided in Generic Letter 88-20, which states that "...the Commission recognizes...that systematic examinations are beneficial in identifying plant-specific vulnerabilities to severe accidents that could be fixed with low cost improvements."

Attachment 1 presents a discussion of each of the proposed long term modifications and the conclusion drawn relative to its implementation. We plan to proceed with two items based on the reduction in core damage frequency (CDF) achieved and the cost of implementation. These items are installation of a watertight door at the entrance to the Mechanical Equipment Room (MER) 3 from the Emergency Switchgear Room (ESGR) and completion of the assessment of submergence qualification for MOV operators in the Circulating Water (CW) and Service Water (SW) Systems. The MER 3 watertight door installation is scheduled in 1993. The CDF for internal flooding will then be reduced to approximately 2.3E-5 per year, which is an approximate 50% reduction of the CDF reported in our internal flooding reanalysis. Submersible MOV operators are a design enhancement to improve the isolation capability of a postulated flood, but do not significantly affect the results of our flooding analysis.

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Based on engineering studies completed to date on installation of a high level intake structure isolation scheme, no reasonable cost option resulted in any significant reduction in CDF. However, it is our intention to continue to pursue high level isolation as a plant design enhancement.

Unless there is a significant change in our long term plans, we consider our response to Generic Letter 88-20 and Supplement 1 to be fully adequate and the vulnerability to internal flooding to be sufficiently reduced for both short term and long term operation. We will continue to keep you informed of our progress to enhance the design for high level intake isolation.

If you have questions or require further information, please contact us.

Very truly yours,

J. P. O'Hanlon

For W. L. Stewart
Senior Vice President - Nuclear

Attachments:
1. Discussion of Conclusions Regarding Implementation of Long Term Modifications

cc: U. S. Nuclear Regulatory Commission
Region II
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Mr. M. W. Branch
NRC Senior Resident Inspector
Surry Power Station

ATTACHMENT 1

DISCUSSION OF CONCLUSIONS REGARDING IMPLEMENTATION OF LONG TERM MODIFICATIONS

Auxiliary Building Tunnel Dike Extension

Extending the height of the Auxiliary Building tunnel dike would delay Turbine Building flood water from entering the Auxiliary Building and disabling the charging pumps and component cooling pumps. However, without additional protection for the Emergency Switchgear Room (ESGR), water would reach critical ESGR flood height sooner for a net effect of increased core damage frequency (CDF). Therefore, this modification by itself results in a CDF increase and has an estimated cost of $202,000. Thus, this modification will not be implemented.

Watertight Door at Emergency Switchgear Room

Sealing the ESGR with a watertight door would delay Turbine Building flood water from entering the ESGR and disabling safety related AC power. However, without additional protection for the Auxiliary Building, more water would be diverted to the Auxiliary Building basement, thus disabling charging and component cooling water pumps sooner for a net effect of unchanged CDF. Therefore, this modification by itself results in no CDF reduction and has an estimated cost of $218,000. Even in combination with the Auxiliary Building tunnel dike extension (discussed above), installation of a watertight door at the ESGR results in no significant CDF reduction since other penetrations at higher elevations would allow water entry. Thus, this modification will not be implemented.

Watertight Door at Mechanical Equipment Room 3

By placing a watertight door at the entrance to the Mechanical Equipment Room (MER) 3 from the ESGR, the floodwater (from a MER 3 SW pipe rupture) would be delayed from entering the ESGR. The resultant CDF reduction is 2.8E-5 with an estimated cost of $154,000. This CDF improvement represents an approximately 50% reduction in the CDF due to internal flooding reported in our internal flooding reanalysis. This modification will be implemented and installation is scheduled for completion in 1993.

Turbine Building Sump Pump Power Supply Relocation and Motor Protection

Currently the power to the Turbine Building sump pumps is supplied from MCCs located on the basement elevation. These MCCs could be shorted at a water level of 8 inches on the basement floor. The pump motors could be shorted at a water level of 16 inches on the basement floor. Relocation of the sump pump power supplies and protection of the sump pump motors would allow sump pump operation to a higher water level.

In letters dated November 26, 1991 (Serial No. 91-134D) and May 27, 1992 (Serial No. 92-299), we indicated that we planned to relocate the power source for the Turbine Building sump pumps by December 31, 1993. This commitment was based on the reduction in CDF due to improved sump pump reliability identified in the Surry IPE Report. Specifically, the CDF reduction associated with Case 4 in the Surry IPE Report assumed 1) relocation of the power supplies and protection of the sump pump motors and 2) seven of nine sump pumps operable based on an improved reliability program. The primary reason for relocation of the sump pump power supplies and protection of the sump pump motors was to ensure that the sump pumps would continue to run in the event of a flood that was within the sump pumps' capacity. Upon further evaluation, we have determined that the drainage piping to the sumps is adequate to transfer the required capacity and, therefore, water is not expected to build up to the required level in this case. Also, grating has been installed over the sumps replacing solid steel plates to further ensure that water does not build up on the floor in the area of the sump pumps. Relocation of the sump pump power supplies and protection of the sump pump motors is, therefore, not necessary to ensure sump pump reliability in the case of a flood within the sump pumps' capacity.

We have, therefore, reevaluated the contribution to CDF reduction associated with relocation of the sump pump power supplies and protection of the sump pump motors. The results of this evaluation indicate that the contribution is negligible based on the assumed distribution of flood rates and intake canal isolation time. The estimated cost of relocation of sump pump power supplies and protection of sump pump motors is $736,000. Therefore, we have determined that this modification is not justified based on the CDF reduction not being commensurate with the associated cost. As a result, we are withdrawing our previous commitment to perform this modification. It should be noted, however, that the modifications and procedural changes associated with the other assumed enhancement in Case 4 in the Surry IPE Report (i.e., improved sump pump reliability) have already been implemented. These modifications and procedural changes provide the reduction in CDF identified for Case 4 in the Surry IPE Report. Hence, the conclusions in Chapter 6 of the IPE Report are not affected by the withdrawal of this previous commitment.

Assessment of Qualification of Submersible CW/SW MOV Operators

Having submergence qualified motor operators on CW/SW MOVs would better ensure the ability to initiate or isolate flow to various components, such as the recirculation spray heat exchangers, bearing cooling heat exchangers, component cooling heat exchangers, and condenser waterboxes. Therefore, this submergence qualification would enhance the ability to isolate a flood source and would provide flexibility during a flooding event.

In our November 26, 1991 letter (Serial No. 91-134D), we indicated that an assessment of installation of submersible CW/SW MOV operators is scheduled for completion by December 31, 1992. The ongoing assessment is actually considering qualification of the existing MOV operators for submergence rather than installation of new MOV operators. If this assessment shows that qualification of these MOV operators for submergence is physically feasible, necessary upgrades to the MOV operators will be performed to provide additional reliability during a flooding event.

Modification for High Level Isolation

Various manual options, including intake bay gates, breastwall gates, roller seal plates, intake pipe gates, and intake pipe butterfly valves, were considered for high level isolation within 30 minutes to one hour. The resultant CDF reduction for these options with such isolation times is bounded at 8.0E-6 with associated implementation costs up to $7,605,000.

Our evaluation of isolation schemes recognized that design modifications that would accomplish high level intake isolation within minutes (i.e., fast acting valves with automatic actuation) would, in fact, result in a greater CDF reduction. However, such schemes were dismissed due to the operational concerns (i.e., higher potential for spurious reactor trips) and new accident contributors (i.e., spurious isolation of SW supply to safety sytems during accidents) presented by automatically actuated features. In addition, the cost of such schemes would be significantly greater than that noted above.

However, we are continuing our engineering studies of a high level isolation scheme to provide a permanent manual design feature with the ability to stop intake flow at the high level intake structure.