UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

June 26, 1989

Docket Nos. 50-338
and 50-339

Mr. W. R. Cartwright
Vice President-Nuclear
Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Dear Mr. Cartwright:

SUBJECT: NORTH ANNA POWER STATION, UNIT 2 - SAFETY SYSTEM OUTAGE MODIFICATION INSPECTION (DESIGN) - 50-339/89-200

This letter conveys the results and conclusions of the design portion of the safety system outage modification inspection (SSOMI) of the North Anna Power Station Unit 2 conducted by the NRC's Office of Nuclear Reactor Regulation. The inspection team consisted of NRC personnel and consultants. The inspection was conducted primarily at your engineering offices in Richmond, Virginia during the periods February 13-17 and February 27 - March 3, 1989 and was augmented with a 1-day site visit.

The purpose of the design portion of the SSOMI was to examine, on a sampling basis, the detailed design and engineering that were required to support modifications implemented during the outage. In addition to the design portion of the SSOMI, this office has also conducted an inspection of installation and test activities for Unit 1 during its outage. A separate report will be published detailing that phase of the SSOMI.

The report is organized to present the findings in three formats. Section 1.3 provides an overview of the team's activities and summarizes major findings by discipline. Sections 2 and 3 summarize the effectiveness of your design effort in terms of weaknesses and strengths, respectively. The items of concern identified by the team during the inspection have been classified as findings and are referenced throughout the report and presented in detail in Appendix C.

By separate correspondence dated March 17, 1989 you were advised of four findings characterized as "safety-significant matters" which needed to be addressed in an expeditious manner. Your response of March 31, 1989 resulted in a Region II confirmatory inspection during the week of April 3, 1989. Also your letters of April 13, 1989 and April 28, 1989 provided supplemental information with regard to your actions and commitments for these four findings. A current status of these four "safety-significant matters" is provided in the enclosed Executive Summary.

Of particular concern to the team were findings related to improperly sized motor operated valve actuators and improper isolation between a nonClass 1E instrument that was powered from a Class 1E bus. The motor-operated valve

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actuator issue has resulted in the resetting of torque switches as well as the need for new torque switch spring packs for certain valves in the service water system. The improper isolation has resulted in the replacement of the associated fuses with ones qualified as Class 1E. Additionally, VEPCO needs to assess the pervasiveness of improper isolation of nonClass 1E components powered from Class 1E buses at the North Anna facility.

NRR is planning to reinspect the findings addressed herein. Once your response to this inspection report is received a schedule will be established. Some of the identified items may be potential enforcement findings. Any enforcement actions will be identified by Region II in separate correspondence.

A safeguards finding is being transmitted to you under separate cover.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

You are requested to respond to this office within 60 days regarding the unresolved items in Appendix C and weaknesses in Section 2 identified in the enclosed inspection report. Should you have any questions concerning this inspection, please contact the NRR Project Manager, Leon Engle or Ron Parkhill of the NRC staff. Messrs. Engle and Parkhill can be reached at (301) 492-1484 and (301) 492-0963, respectively.

Sincerely,

Steven A. Varga, Director
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Executive Summary
2. Inspection Report
   50-339/89-200

cc w/enclosures:
See next page

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NAME	:RWParkhill:vj	:*EVImbro	:*CJHaughney	:*BKGrimes	:LBEngle	:HNBerkow
DATE	:06/ /89	:06/ /89	:06/ /89	:06/ /89	:06/22/89	:06/23/89

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June 26, 1989

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Surry Power Station

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EXECUTIVE SUMMARY

INSPECTION REPORT 50-339/89-200
NORTH ANNA POWER STATION - Unit 2

The NRC conducted the design portion of a safety system outage modification inspection (SSOMI) for North Anna Unit 2 during the weeks of February 13 and February 27, 1989. The inspection was conducted at the Virginia Electric and Power Company (VEPCO) corporate offices in Richmond, Virginia, where the associated exit meeting was held on March 3, 1989. The purpose of this design SSOMI was to review planned plant changes and ascertain if the as-modified plant remained in accordance with its licensing basis. The inspection focused on an in-depth review of sampled modifications for the disciplines of instrumentation and controls, mechanical systems, electrical power, mechanical components and civil/structural. Summarized below are the more significant findings.

In a letter from Mr. G. C. Lainas to Mr. W. R. Cartwright dated March 17, 1989, the NRC identified four findings characterized as safety significant and requested VEPCO to respond within 15 days. VEPCO responded in a letter dated March 31, 1989 and Region II performed an inspection the week of April 3, 1989 to evaluate the response. This inspection will be summarized in a future inspection report covering an assessment of the corrective actions to the findings in this report. In letters dated April 13, 1989 and April 29, 1989, VEPCO provided supplemental information for the safety significant findings. A brief summary of these issues is provided below addressing the commitments and actions required.

(1) VEPCO-designed and procured service water valve operators were identified to be undersized based on the worst-case differential pressure. VEPCO reanalyzed the sizing criteria and concluded that two spray array valves had to have their torque switch settings readjusted and the bypass spray valves had to have their torque switch spring packs replaced. Until the spring packs can be replaced, VEPCO committed to implementing administrative controls when operating in Modes 1 through 4 to ensure proper system response under design-basis accidents. Also, VEPCO had been requested (at the Region II exit meeting on April 7, 1989 and during a discussion with the NRR project manager) to provide additional assurance that similar problems were not pervasive at North Anna by reviewing the design basis of other VEPCO designed and procured safety-related motor-operated valves (MOVs). VEPCO's response of April 28, 1989 indicated that their review of MOVs replaced or modified confirmed that the associated design pressure and torque requirements were adequate (See Appendix C Finding IC-1).

(2) The inspection team identified unjustified assumptions and omissions in setpoint calculations. VEPCO was requested to sample 10 setpoint calculations to verify that these identified errors had no adverse impact on the safety system setting limits and report any reductions in safety margin.

Additionally, VEPCO was requested to issue guidance for performing setpoint calculations. VEPCO's letter dated March 31, 1989 committed to these aforementioned requests. In a letter dated April 28, 1989, VEPCO stated that the calculational review was complete and where safety limits were established the margin of safety was confirmed (See Appendix C Finding IC-2).

(3) The inspection team identified improper isolation between nonClass 1E pressure transmitters for the service water system and a Class 1E vital power source. Consideration of VEPCO's March 31, 1989 response in addition to discussions within the NRC and review of VEPCO's response dated April 28, 1989 has resulted in the following commitments and issues (See Appendix C Finding IC-3):

(a) VEPCO committed to replace the subject isolation devices with Class 1E fuses prior to restart.

(b) VEPCO committed to review all modifications installed during this outage for similar isolation errors and make the appropriate changes prior to restart.

(c) VEPCO committed to review all modifications implemented after April 1987 by November 1, 1989 and the NRC understands that any associated change would be made prior to the end of the next refueling outage. Procedure changes and personnel training would be completed by September 15, 1989, to preclude future occurrence of similar isolation issues.

(d) The NRC staff disagrees with VEPCO's position for modifications made prior to April 1987. The staff position is that all similar applications of improper isolation at the North Anna facility need to be identified and corrected prior to the end of the next refueling outage. VEPCO has verbally requested a meeting with the staff to discuss this matter.

(4) The inspection team noted that the design change packages did not specify the testing required to demonstrate functionality of the system and affected components following the change. Additionally, in regard to the anticipated transient without scram (ATWS) modification, the team found that one periodic test procedure (i.e., two tests) was being performed before the installation of the modification. As a consequence VEPCO was requested to explicitly identify the functional test requirements in the design change packages and engineering work requests to be installed this outage, to ensure that all necessary testing would be performed (See Appendix C Finding IC-8).

The following is a brief summary of other significant items addressed in the enclosed inspection report.

(1) A potentially vital system did not have two protective barriers as required by 10 CFR 73.55. (See Finding MS-1 which was transmitted under separate cover letter.)

(2) A change was made to a pipe support baseplate to enlarge the holes, without proper design justification. (See Appendix C Finding MC-1.)

(3) A quality control inspection report had an inadequate design evaluation and inadequate safety evaluation in that neither recognized the inappropriateness of losing one battery channel due to interaction with non-seismic hardware. (See Appendix C Finding EP-2.)

(4) VEPCO did not comply with its commitment in regard to a previous violation concerning the omission of leakage current effects in instrument loop accuracy calculations. (See Appendix C Finding IC-7.)