

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

December 22, 1989

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

Serial No. 89-485B  
NOS/TAH:jmj  
Docket Nos. 50-339  
License Nos. NPF-7

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**NORTH ANNA POWER STATION UNIT 2**  
**SAFETY SYSTEM OUTAGE MODIFICATION INSPECTION**  
**(DESIGN PHASE) REPORT 50-339/89-200**  
**SUPPLEMENTAL RESPONSE**

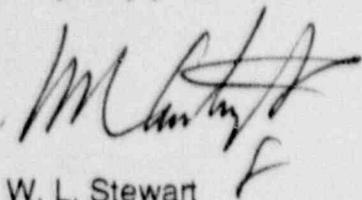
On August 25, 1989, Virginia Electric and Power Company responded to the NRC's concerns documented in SSOMI Inspection Report 50-339/89-200. We explicitly addressed the findings presented in Appendix C of the report. While our response inherently addressed many of the weaknesses identified in Section 2.0 of the report, some were not. This oversight has been discussed with the NRC Project Manager and we have prepared this amendment to correct our oversight.

We reviewed our August 25, 1989 response and found that of the thirteen identified weaknesses, only three have not been fully addressed. These are: Item 2.2.4 - Too Many Revisions to Design Change Packages, Item 2.2.5 - Engineering Work Requests - ALARA Considerations, and Item 2.2.6 - Failure to Comply With Commitment Made in Response to a Previous NRC Violation.

Our responses to these weaknesses are attached.

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

Very truly yours,



W. L. Stewart  
Senior Vice President - Nuclear

Attachment

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cc: U. S. Nuclear Regulatory Commission  
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Mr. J. L. Caldwell  
NRC Senior Resident Inspector  
North Anna Power Station

**ATTACHMENT 1**

**SUPPLEMENTAL RESPONSE TO  
SSOMI REPORT IR 50-339/89-200**

VIRGINIA ELECTRIC AND POWER COMPANY

**NORTH ANNA POWER STATION UNIT 2**  
**SAFETY SYSTEM OUTAGE MODIFICATION INSPECTION**  
**(DESIGN) REPORT 50-339/89-200**  
**WEAKNESSES IDENTIFIED IN SECTION 2**

**REPORT SECTION 2.2.4**

**NRC OBSERVATION:**

**TOO MANY REVISIONS TO DESIGN CHANGE PACKAGES**

The team observed that there appeared to be an inordinate number of revisions to many of the design changes reviewed. Although most of the changes were minor, such as dimensional changes, corrections to account for physical interferences, and changes to installation or testing procedures to correct for some unforeseen obstruction or difficulty, the number of changes seemed to indicate that there was insufficient attention to detail in the initial planning and generation of the modification packages.

**VEPCO RESPONSE TO 2.2.4:**

The number of field changes alone is not necessarily indicative of the quality of a design change. The design change process, for example, allows for the field routing and installation of conduit and small bore piping. In some instances, an advance field walk-down may not be performed because of high radiation levels during reactor operations. The design change program, however, does emphasize field walk-downs and design reviews by construction, operations, and engineering at both the 30% and 70% design completion stages, to minimize field changes and reduce costs. While minimizing field changes is highly desirable, it is not essential since a field engineering office is provided to help work out and resolve field installation problems.

Nonetheless, VEPCO recognizes that a significant percentage of field changes, for several of the Design Change Packages (DCPs) reviewed by the NRC, could have been avoided had more attention been applied in the design and review phases of the design process. To ensure staffing levels are appropriate in every aspect of our nuclear power program, VEPCO has performed a Resource Allocation Study. This has resulted in an adjustment of staffing levels which should ultimately result in an overall improvement in the quality of design changes.

The need for obtaining appropriate reviews from affected departments has been emphasized to personnel. Project team meetings are held to critique the implementation process of DCPs and to provide feedback to impacted departments on lessons learned. It is anticipated that these factors will increase personnel sensitivity to the review process as well as provide suggestions for improving the design process.

The design change program is presently under revision to develop a more direct DCP preparation and review process and a simpler DCP format. The proposed changes will provide a reduction in the time and paperwork presently required to document the modification process. This should create a better environment for performing reviews and increase the effectiveness of engineering personnel. We expect this new program to be implemented sometime in the early part of 1990.

North Anna will also be establishing a program for reviewing field changes for selected DCPs, including some from the last outage, and determining the reasons that changes were required. We expect this program, which is scheduled to be implemented by the end of the year, to help us identify areas where actions can be taken to further enhance the quality of design changes.

### REPORT SECTION 2.2.5

#### **NRC OBSERVATION:**

##### ENGINEERING WORK REQUESTS - ALARA CONSIDERATIONS

The engineering work request procedure required the originator of a modification to consider the ALARA aspects of installation. The procedure did not require consideration of the ALARA aspects of the modification itself; that is, how operation of the plant with the modification completed might increase the radiological exposure of plant personnel.

#### **VEPCO RESPONSE TO 2.2.5:**

Station Administrative Procedure ADM 3.7 was revised prior to April 1989 to require consideration of whether the installed modification will increase radiation exposure to personnel and equipment.

### REPORT SECTION 2.2.6

#### **NRC OBSERVATION:**

##### FAILURE TO COMPLY WITH COMMITMENTS MADE TO A PREVIOUS NRC VIOLATION

Violation 87-32-03 in NRC Inspection Report 50-338/87-32 and 50-339/87-32 cited VEPSCO for failing to address effects such as leakage currents in total loop instrument accuracy calculations. In its response dated May 19, 1989\*, VEPSCO committed to revise the associated engineering standards by August 31, 1989\* to

preclude further problems. During this inspection the team reviewed the Design Change 87-29-2 associated with the installation of a charging flow differential pressure detector. The team reviewed the associated calculation for determining the instrument loop accuracy, which was performed 5 months after the engineering standard was revised (i.e., February 10, 1989) and identified that it did not consider current leakage in a postulated harsh environment due to degradation of the cable insulation system. This is an example of improper commitment implementation in that the programmatic controls were in place but the design process result was unsatisfactory. After VEPCO became aware of this concern, the calculation was corrected with no detrimental effect. However, VEPCO is requested to review other previous changes to the facility which may have affected instrumentation loops located in a harsh environment.

\*Note: These dates should be May 19, 1988 and August 31, 1988 respectively.

#### **VEPCO RESPONSE TO 2.2.6:**

Violation D in NRC Inspection Report 50-336&339/87-32 found:

"...the performance characteristics of electrical equipment important to safety were not adequately addressed in the licensee's equipment qualification files." The following example was noted by the inspection team: "The Rockbestos cable (Firewall III and Pyrotrol III) files did not specifically address the effects of leakage currents and the acceptability of such for North Anna..."

The VEPCO commitment to correct the violation was twofold. First, the EQ Program standard would be revised by August 31, 1988. It was revised by the commitment date. Second, the Qualification Documentation Review (QDR) packages would be upgraded to include performance characteristics by December 31, 1989. This effort is still underway.

As stated in the above NRC finding, the charging flow instrument loop accuracy calculation which was performed in February, 1989 (5 months after the EQ standard was revised) did not consider "current leakage in a postulated harsh environment due to degradation of the cable insulation system". This was cited by the NRC SSOMI team as "an example of improper commitment implementation in that the programmatic controls were in place, but the design process results was unsatisfactory."

The referenced EQ standard revision requires that "performance characteristics" be addressed in the QDRs. However, the EQ standard does not detail how they are to be applied in the instrument loop accuracy calculations.

VEPCO recognized the need for an Instrumentation and Control (I&C) standard to provide a detailed methodology for performing loop calculations which included the applicable performance characteristics. We developed a standard for this and it was approved in April 1989, after the charging flow instrument loop accuracy

calculation was performed. This new I&C standard, in concert with the revision to the EQ standard, will provide adequate assurance that the weakness identified during the inspection have been resolved.

As stated in the NRC's SSOMI report, "the calculation was corrected with no detrimental effect". In otherwords, in this instance, the impact of leakage currents was found to be insignificant.

VEPCO is performing instrument loop accuracy calculations, in accordance with the new I&C standard, to support our commitment to upgrade QDRs to address performance characteristics by December 31, 1989.