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EA-04-005

September 15, 2004

Virginia Electric and Power Company  
ATTN: Mr. David A. Christian  
Senior Vice President and  
Chief Nuclear Officer  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060

**SUBJECT: FINAL SIGNIFICANCE DETERMINATION FOR WHITE FINDINGS AND  
NOTICE OF VIOLATION (NRC INSPECTION REPORT NO. 05000280/2004008  
AND 05000281/2004008 SURRY POWER STATION)**

Dear Mr. Christian:

The purpose of this letter is to provide you with the Nuclear Regulatory Commission's (NRC's) final significance determination for a finding regarding Surry fire response procedures that were not effective in ensuring a safe shutdown of Unit 1 during a postulated severe fire in Emergency Switchgear and Relay Room (ESGR) Number (No.) 1. Specifically, these procedures may not preclude an extended loss of reactor coolant pump (RCP) seal injection flow, resulting in an RCP seal loss of coolant accident. As a result, in the event of such a severe fire, there would not be reasonable assurance the facility would be able to maintain pressurizer level within the indicating range, as required by 10 CFR 50, Appendix R. The finding was documented in NRC Inspection Report 05000280/2003008 and 05000281/2003008, issued on February 2, 2004 (ML040490131), and was assessed using the significance determination process as a preliminary White issue (i.e., an issue of low to moderate safety significance, which may require additional NRC inspection). The cover letter to the inspection report informed Virginia Electric and Power Company (VEPCO) of the NRC's preliminary conclusion, provided VEPCO an opportunity to request a regulatory conference on this matter, and forwarded the details of the NRC's preliminary estimate of the change in core damage frequency (CDF) for this finding.

At VEPCO's request, an open regulatory conference was conducted on April 1, 2004, to discuss VEPCO's position on this issue. A letter summarizing this meeting dated April 21, 2004 (ML041180603), included the list of attendees at the regulatory conference and copies of the materials presented by VEPCO and the NRC at the conference.

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During the conference, VEPCO presented its fire strategy and an overview of the ESGR and local fire protection features. VEPCO also presented an assessment of portions of the NRC's Phase 3 analysis, the results of VEPCO's analysis of the increase in CDF due to the performance deficiency, a discussion on the applicability of the Unit 1 ESGR finding to the Unit 2 ESGR, and a summary of corrective actions that have been initiated. VEPCO's estimate of the increase in CDF was approximately one order of magnitude lower than the NRC's preliminary estimate. This lower estimate was due, in part, to the identification of plant specific features, which VEPCO contended were not appropriately reflected in the NRC's Phase 3 SDP analysis. These included the generic probability of non-suppression; generic severity factors and non-suppression probabilities for ESGR welding fires; and generic reactor coolant pump seal leakage probabilities. At the conclusion of the conference, the NRC requested that VEPCO provide additional information related to the design and testing of Surry's RCP floating ring seals, the frequency of welding and the probability of a welding fire in the ESGR, and the fire suppression capability of the Halon system for a fire in the ESGR. VEPCO forwarded this information to the NRC by letter dated May 7, 2004. Based on the above information, VEPCO concluded that the finding was of very low safety significance for both units. VEPCO did not contest the violation.

After considering the information developed during the inspection, the information VEPCO provided at the conference, and the additional information submitted by VEPCO subsequent to the conference, the NRC has concluded that the final inspection finding is appropriately characterized as White for Unit 1 in the mitigating systems cornerstone. As discussed in the final phase 3 analysis (Enclosure 2), we concluded that the information VEPCO provided on the ESGR welding activities and the Halon system did not warrant a change in the generic values used in our initial analysis. Based on the information VEPCO provided for the RCP floating ring seal, the probability of initial seal failure following the loss of forced cooling was reduced in the appropriate phase 3 analysis event tree. However, this reduction was offset by an increase in the severity factor for electrical cabinet fires. This severity factor was revised, using plant-specific information and the most current methodology (see Reference 17 of Enclosure 2, which was revised in July 2004), in the final phase 3 analysis. As a result, the final CDF was determined to be essentially unchanged.

Additionally, we evaluated the information provided by VEPCO on the applicability of this finding to the Unit 2 ESGR. Based on the critical cables in Unit 2 being located in the fifth cable tray above the 2J electrical cabinet, the additional elapsed time for cable damage was determined and the probability of non-suppression was recalculated to account for fire brigade response. The dominant accident sequence was analyzed using these adjusted values and a CDF of greater than  $1E-6$ /year was determined (Enclosure 3). As a result, the NRC has concluded that the final inspection finding is applicable to Unit 2 and is appropriately characterized as White in the mitigating systems cornerstone.

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You have 10 business days from the date of this letter to appeal the staff's determination of significance for the identified White finding. Such appeals will be considered to have merit only if they meet the criteria given in NRC Inspection Manual Chapter 0609, Attachment 2.

The NRC also determined that a violation occurred involving the requirements of 10 CFR 50.48 and 10 CFR 50, Appendix R, Section III.L. Specifically, the alternative shutdown capability and response procedures specified for a fire in ESGR No. 1 or in ESGR No. 2 may not preclude an extended loss of reactor coolant pump seal injection flow and may initiate a reactor coolant pump seal loss of coolant accident which could result in pressurizer level failing to be maintained within the indicating range. Accordingly, a Notice of Violation is included as Enclosure 1 to this letter. In accordance with the NRC Enforcement Policy, NUREG-1600, the Notice of Violation is considered escalated enforcement action because it is associated with a White finding.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved is adequately addressed on the docket in the information provided by VEPCO at the conference. Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

Based on Inspection Manual Chapter 0305 guidance, the performance consideration start date for this finding is the first quarter of 2004 (i.e., when the preliminary significance determination was made known, via Inspection Reports 05000280/2003008 and 05000281/2003008). For the Mitigating Systems Cornerstone during the first quarter of 2004, both Units 1 and 2 are in the Degraded Cornerstone Column of the NRC Action Matrix because of this White Finding and a White Performance Indicator, Safety System Unavailability - Emergency AC Power. In accordance with the NRC Action Matrix, we will conduct a Supplemental Inspection using Inspection Procedure 95002. We will notify you of the date of this inspection by separate correspondence.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response (should you choose to provide one) will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. However, the NRC is continuing to review the appropriate classification of the Summary of Phase 2 SDP Risk Analysis and Phase 3 SDP Analysis (Enclosures 2 and 3) within our records management program, considering changes in our practices following the events of September 11, 2001. Using our interim guidance, the attached analyses have been marked as Proprietary Information or Sensitive Information in accordance with Section 2.390(d) of Title 10 of the Code of Federal Regulations. Please control the document accordingly (i.e., treat the document as if you had determined that it

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contained trade secrets and commercial or financial information that you considered privileged or confidential). We will inform you if the classification of these documents changes as a result of our ongoing assessment. To the extent possible, any response should not include any personal privacy, proprietary, classified, or safeguards information so that it can be made available to the Public without redaction. The NRC also includes significant enforcement actions on its Web site at [www.nrc.gov](http://www.nrc.gov); select **What We Do, Enforcement**, then **Significant Enforcement Actions**.

Should you have any questions regarding this letter, please contact Charles Ogle, Chief, Engineering Branch 1, 404-562-4605.

Sincerely,

*/RA/*

William D. Travers  
Regional Administrator

Docket Nos.: 50-280, 50-281  
License Nos.: DPR-32, DPR-37

Enclosures: 1. Notice of Violation  
2. Surry Unit 1 Final Phase 3 SDP Analysis  
3. Surry Unit 2 Final Phase 3 SDP Analysis

cc w/encls: (see page 5)

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cc w/encls:

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Distribution w/encls:

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**NOTICE OF VIOLATION**

Virginia Electric and Power Company  
Surry Power Station  
Units 1 and 2

Docket No.: 50-280, 50-281  
License No.: DPR-32, DPR-37  
EA-04-005

During an NRC inspection completed on January 7, 2004, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions," (Enforcement Policy), the violation is listed below:

10 CFR 50.48 states, in part, "Each operating nuclear power plant must have a fire protection program that satisfies Criterion 3 of Appendix A to this part." Surry Unit 1 Operating License DPR-32, and Surry Unit 2 Operating License DPR-37 Condition 3.I, specifies, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report (UFSAR) and as approved in the SER dated September 19, 1979, and subsequent supplements.

UFSAR Section 9.10.1 specifies that the facility meets 10 CFR 50, Appendix R, Sections III.G and III.L. Section III.G.3 states that alternative shutdown capability should be provided where the protection of systems whose function is required for hot shutdown, does not satisfy the requirements of III.G.2. Section III.L of Appendix R specifies the requirements to be met by alternative shutdown methods. Section III.L.2.b states, in part, that "The reactor coolant makeup function shall be capable of maintaining the reactor coolant level . . . within the level indication in the pressurizer in PWRs." Section III.L.3 specifies that "procedures shall be in effect to implement this capability."

Contrary to the above, on or about February 13, 2003, the alternative shutdown capability and response procedures specified for a fire in Emergency Switchgear Room Number 1 or 2 were not effective and did not meet this requirement. Specifically, the licensee's procedures would not preclude an extended loss of reactor coolant pump seal injection flow or a reactor coolant pump seal loss of coolant accident under certain fire scenarios, which could result in pressurizer level failing to be maintained within the indicating range.

This violation is associated with White Significance Determination Process findings for Units 1 and 2.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance was achieved is already adequately addressed on the docket in the information provided by VEPCO at the conference. However, you are required to submit a written

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Enclosure 1

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statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation - EA-04-005," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to the Regional Administrator, Region RII, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 15<sup>th</sup> day of September 2004

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