August 8, 2005

Mr. David A. Christian
Sr. Vice President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, Virginia 23060-6711

SUBJECT: NORTH ANNA POWER STATION, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO INCREASE COMPLETION TIMES FOR ECCS-LHSI, AFW, QUENCH SPRAY AND CHEMICAL ADDITION SYSTEMS

Dear Mr. Christian:

By letter dated December 17, 2004, Virginia Electric and Power Company (VEPCO) submitted a proposed license amendment request to change the Technical Specifications by increasing the completion times for the Emergency Core Cooling System-Low Head Safety Injection subsystem, Auxiliary Feedwater, Quench Spray and Chemical Addition Systems from 72 hours to 7 days for North Anna Power Station, Units 1 and 2. Based on its review of the December 17, 2004, submittal, the NRC staff has determined that additional information is required to complete its review.

The NRC staff's questions are provided in the Enclosure. VEPCO is requested to provide a response to the request for additional information within 60 days of the date of this letter.

Sincerely,

/RA/

John Honcharik, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-338 and 50-339

Enclosure: As stated

cc w/encl: See next page

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DATE	8/4/05	8/4/05	8/8/05

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REQUEST FOR ADDITIONAL INFORMATION

PROPOSED LICENSE AMENDMENT REQUEST TO INCREASE THE

COMPLETION TIMES FOR THE ECCS-LHSI, AFW, QUENCH SPRAY AND CHEMICAL

ADDITIONS SYSTEMS

FOR NORTH ANNA, UNITS 1 AND 2

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NOS. 50-338 AND 50-339

By letter dated December 17, 2004, Virginia Electric and Power Company (VEPCO) submitted a proposed license amendment request to change the Technical Specifications (TS) by increasing the completion times (CTs) for the Emergency Core Cooling System-Low Head Safety Injection (ECCS-LHSI) subsystem, Auxiliary Feedwater (AFW), Quench Spray (QS) and Chemical Addition Systems (CAS) from 72 hours to 7 days for North Anna Power Station, Units 1 and 2. Attachment 1 to the letter dated December 17, 2004, provides a discussion on the proposed changes to the TS. The Nuclear Regulatory Commission (NRC) staff has the following requests for additional information.

1. Please resolve several apparent inconsistencies concerning the use of compensatory measures to manage risk during maintenance:

   a. On July 23, 2004, VEPCO was granted [ADAMS Accession No. ML042050457] an emergency one-time TS change to extend the CT of the "A" ECCS-LHSI to 7 days. The NRC staff granted this change, in part, because VEPCO had proposed six compensatory measures. In contrast, VEPCO is proposing to permanently change the ECCS-LHSI pump CT to 7 days without offering any specific compensatory measures.

   b. Attachment 1, Table 7 of the submittal dated December 17, 2004, identifies some plant configurations that should be avoided during specific maintenance activities. Yet, no specific compensatory measures are offered to manage the risk during these configurations. Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk Informed Decision Making-Technical Specifications," Section 2.3.6 provides the guidance for the use of compensatory measures. Please list and discuss each of the compensatory measures you plan to take for ECCS-LHSI TS change to reduce risk.

   c. Attachment 1, Section 5.1.2 of the submittal dated December 17, 2004, states that risk achievement worth importance measures are used to identify Tier 2 configurations. In contrast, Section 5.1.3 states that the NUMARC 93-01 risk limits are used to identify high-risk plant configurations. What specific risk metrics are used to identify high-risk plant configurations?

Enclosure

d. How does plant management decide how many compensatory measures to impose to mitigate a given high-risk plant configuration? If several types of compensatory measures are possible, how does plant management decide which one (or ones) to impose?

2. Pages 7 and 8 of Attachment 1 of the submittal dated December 17, 2004, evaluate the risk impacts of the proposed change to the ECCS-LHSI CT. The analyses differentiated between scheduled (preventative) activities and repair (unscheduled) activities. On page 8, it is stated that "Therefore, a higher failure probability is used for the operable train, which accounts for the possibility of common cause failure." Please explain this statement in detail, identifying which events in the probabilistic risk assessment (PRA) model have been modified and discussing how the "higher failure probability" was calculated. Was this approach also used during the risk evaluation of the proposed CT extensions for the QS and AFW systems? If so, provide the same information as requested above for the ECCS-LHSI system.

3. Section 5.1.3 of Attachment 1 of the submittal dated December 17, 2004, indicates that the safety monitor tool is used to monitor, analyze, and manage the systems addressed by the proposed TS change as part of the plant's Maintenance Rule program, 10 CFR 50.65(a)(4). Page 13 indicates that the safety monitor model explicitly accounts for grid loading and stability. Please explain how the safety monitor achieves this capability. Are the loss of offsite power frequency and offsite power recovery probabilities being changed as grid conditions change? What is the technical basis for changing the affected numerical values used in the PRA model? How often is the safety monitor updated to reflect current grid conditions?

4. Attachment 1, Section 5.1.4 of the submittal dated December 17, 2004, states that the risk assessment of external events has not been updated since completion of the individual plant examination of external events (IPEEE). However, significant modifications (as identified in Attachment 1, Enclosure 2) have been made to the PRA since completion of the individual plant examination. Therefore, the conclusions of the IPEEE may no longer constitute an adequate technical basis for deciding whether or not a proposed plant maintenance configuration has acceptable risk. Assess the impact on the IPEEE conclusions concerning fire risk from each of the PRA modifications identified in Attachment 1, Enclosure 2.

5. Identify the risk-significant fire scenarios during scheduled (preventative) maintenance and repair (unscheduled) activities on the ECCS-LHSI system, the QS system, and the AFW system.

6. The fire-induced vulnerability evaluation (FIVE) methodology identifies risk-significant fire scenarios by performing a series of successive screening steps to the baseline internal events PRA. Justify the use of qualitative assessments, based on extrapolating the results of the FIVE methodology, to identify the risk-significant fire scenarios of a proposed plant maintenance configuration (i.e., when specific equipment is planned to be out of service).

7. When was the industry peer review of the PRA conducted? Do the facts and observations presented in Attachment 1, Enclosure 1 reflect all of the findings of this

review having a significance level of A or B, or only the set of unresolved findings judged to be applicable to the proposed TS change? Please state what progress has been made in resolving the complete set of peer review facts and observations (including those having a significance level of A, B, C, or D), and describe the plan to reach complete resolution of them.

8. Concerning Attachment 1, Enclosure 1, please amplify the "Impact on Application" discussion about Peer Review Fact and Observation SY-14, which implies that the PRA model does not address the risk due to internal flooding scenarios. In contrast, Attachment 1, Enclosure 2, Item 3 indicates that internal floods were added to the living PRA. Do the PRA and safety monitor models address internal floods?

9. Describe the process used to evaluate the risk of emergent conditions. Specifically, describe the following:

   a. Who performs and reviews the risk evaluation?

   b. How long does it take to perform and review the risk evaluation?

   c. Describe how the impact of external events (e.g., fires) is addressed when evaluating the risk of emergent conditions.

10. Describe any reviews, benchmarking, or other approaches used to ensure the technical adequacy of the safety monitor.

11. Attachment 1, Section 5.2 of this license amendment provides the list of Defense-in-Depth Assessment elements. This section does not discuss how you meet these requirements for defense-in-depth for the ECCS-LHSI, QS and AFW system TS changes.

    RG 1.177, Section 2.2.1 discusses the defense-in-depth guidance for risk-informed TS change. Please provide detailed discussion regarding each element of defense-in-depth, how you meet these requirements for ECCS-LHSI with the increase in completion times from 72 hours to 7 days.

12. Attachment 1, Section 5.1 stated the following:

    "The Chemical Addition System is not modeled in the North Anna PRA model due to its limited ability to impact the magnitude of a radioactive release from the Containment in severe accidents and the limited corrosion damage which might occur to equipment over the first 24 hours from a non-alkaline pH. In severe accidents, the iodine release is so large that the Chemical Addition System is assumed incapable of scavenging a significant portion of the iodine. Also, as long as the Containment integrity is maintained in a severe accident, studies have shown that the radioactive release from the Containment cannot cause a large early release as defined in Regulatory Guide 1.174. If the Containment fails in a severe accident, [then] there is insufficient NaOH available in the Chemical Addition System to impact the consequences of the large iodine release."

The licenses is requested to respond to the following questions related to the text above:

a. The role of the CAS is to maintain sump water pH at or above 7 by the addition of NaOH. When this is performed, most of the radioactive iodine will stay dissolved in the sump water and is prevented from leaking to the outside. Why is the CAS system incapable of maintaining dissolved ("scavenged") iodine in the sump water?

b. What quantifies a "relatively small" radioactive iodine release?

c. Since NaOH is normally added to the sump water by the chemistry addition system to keep most of the iodine dissolved, the amount of iodine released to the outside should be, therefore, only a function of the condition of the containment. Obviously the amount of iodine released to the outside will be higher for a failed containment. Therefore, why is the amount of NaOH insufficient to impact the consequences of the large iodine release?

13. The licensee should provide justification for the proposed completion time for the CAS, including how the proposed CT takes into account the ability of the spray system to remove iodine at a reduced capability and the low probability of the worst case Design Basis Accident occurring during this period.

14. Attachment 1, Table 7 lists Tier 2 considerations for when one AFW pump is out-of-service (inoperable). Insert 4 is a TS Bases addition listing these considerations/constraints. The licensee is requested to provide a discussion/justification of these constraints.

North Anna Power Station, Units 1 & 2

cc:

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