February 8, 2002

Mr. David A. Christian
Senior 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 - REQUESTED CORRECTION AND CLARIFICATION TO LICENSE AMENDMENT NOS. 221 AND 202 (TAC NOS. MB2580 AND MB2581)

Dear Mr. Christian:

By letter dated May 30, 2001, you informed the staff of inconsistencies in the Safety Evaluation for License Amendment Nos. 221 and 202 dated March 9, 2000, for the North Anna Power Station, Units 1 and 2.

On May 6, 1999, Virginia Electric and Power Company (VEPCO) submitted a proposed license amendment to the staff. Your submittal requested changes to the surveillance frequency, the allowed outage time, and the action times for the reactor trip system (RTS) and engineered safety features actuation system (ESFAS) analog instrumentation channel consistent with WCAP-10271, Supplements 1 and 2, WCAP-14333P, and associated NRC staff-approved safety evaluations. RTS Functional Unit 20, "Reactor Coolant Pump Breaker Position Trip Above P-7," and ESFAS Loss of Power Functional Units 7.a, "4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)" and 7.b, "4.16Kv Emergency Bus Undervoltage (Grid Degraded Voltage)," were included in this proposed license amendment. Subsequently, the staff issued License Amendment Nos. 221 and 202 on March 9, 2000.

In your Bases change submittal dated May 30, 2001, the staff was notified that RTS Functional Unit 20, "Reactor Coolant Pump Breaker Position Trip Above P-7," and ESFAS Loss of Power Functional Units 7.a, "4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)" and 7.b, "4.16Kv Emergency Bus Undervoltage (Grid Degraded Voltage)" were not specifically evaluated in WCAP-10271, Supplements 1 and 2, and WCAP-14333. As a result, VEPCO had erroneously applied the generic risk evaluations to two analog instruments that were not addressed in the evaluation performed by Westinghouse.

The enclosed Supplemental Safety Evaluation provides a supporting basis that allows this analog instrumentation to be used as part of License Amendment Nos. 221 and 202 dated March 9, 2000.

This letter does not change our conclusion or affect any TS pages in the license amendments dated March 9, 2000. The staff has completed its evaluation of this matter; therefore, we are closing TAC Nos. MB2580 and MB2581.

Sincerely,

/RA

Stephen R. Monarque, 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

This letter does not change our conclusion or affect any TS pages in the license amendments dated March 9, 2000. The staff has completed its evaluation of this matter; therefore, we are closing TAC Nos. MB2580 and MB2581.

Sincerely,

/RA/

Stephen R. Monarque, 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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SUPPLEMENTAL SAFETY EVALUATION

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 221 AND 202 TO

FACILITY OPERATING LICENSE NOS. NPF-4 AND NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNITS 1 AND 2

1.0 INTRODUCTION

By letter dated May 30, 2001, Virginia Electric and Power Company (the licensee), proposed changes to the Bases for the current Technical Specifications (CTS) 3/4.3.1 and 3/4.3.2, "Reactor Trip System (RTS) and Engineered Safety Feature Actuation System (ESFAS) Instrumentation." These changes included a statement in the Bases section that a plant-specific risk assessment was performed to support the increased allowed outage and maintenance times and decreased surveillance frequencies for the instrumentation that was not specifically evaluated in Westinghouse WCAP-10271, "Evaluation of Surveillance Frequencies and Out-of-Service Times for the Reactor Protection Instrumentation System," Supplements 1 and 2, and WCAP-14333, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times." This plant-specific risk assessment affirms and supports the CTS allowed outage time (AOT), bypass time, and surveillance intervals approved by License Amendment Nos. 221 and 202 issued by the NRC on March 9, 2000.

This amendment established a completion time of 72 hours to place inoperable instrument channels in the bypass or trip condition, and provided 12 hours for bypass testing. In addition, 24 hours were established for logic channel maintenance. The bases for these changes were the generic risk-informed evaluations performed by Westinghouse Electric Company for the RTS and ESFAS analog instrumentation and logic channels as documented in WCAP-10271, Supplements 1 and 2, and WCAP-14333. However, as part of the North Anna proposed changes, the licensee erroneously applied the generic risk evaluation to two analog instruments that were not specifically addressed in the generic evaluation performed by Westinghouse. The two instruments are RTS Functional Unit 20, "Reactor Coolant Pump Breaker Position Trip Above P-7," and ESFAS Loss-of-Power Functional Units 7.a, "4.16 kV Emergency Bus Undervoltage (Loss of Voltage)," and 7.b, "4.16 kV Emergency Bus Undervoltage (Grid Degraded Voltage)." Until completion of the specific risk evaluation, the licensee administratively controlled the AOT, bypass times, and surveillance time intervals (STIs) to the previous licensed times consistent with Administrative Letter 98-10. A discussion of the licensee's plant-specific risk assessment was completed to support the CTS AOT, bypass times, and STIs for the two analog instruments, and has been incorporated into Bases Sections 3/4.3.1 and 3/4.3.2 for the RTS and ESFAS.

2.0 EVALUATION

A plant-specific risk assessment was completed to permit returning the AOT, surveillance interval, and maintenance time for RTS Functional Unit 20, “Reactor Coolant Pump Breaker Position Trip Above P-7," and ESFAS Loss of Power Functional Units 7.a, “4.16Kv Emergency Bus Undervoltage (Loss of Voltage),” and 7.b, “4.16Kv Emergency Bus Undervoltage (Grid Degraded Voltage)” to the approved licensing basis. The plant-specific risk evaluation assessed the change in core damage frequency (CDF) and the incremental conditional core damage probability (ICCDP) as a result of the WCAP changes for the additional functions.

The licensee developed the CDF sensitivity for these functions in the same manner as the WCAP-10271 and WCAP-14333 analyses. The emergency diesel generator (EDG) start-failure impact was estimated by fault tree modeling. The reactor coolant pump (RCP) breaker position trip is unique and was estimated by combining representative failure probabilities for each of the instrument channel components. Once the failure impacts were quantified, these numbers were converted to a CDF impact by looking at the associated CDF sensitivity from the North Anna probabilistic risk assessment (PRA) model for the same function or a higher level function.

The reactor trip function on the RCP breaker position was not included in the North Anna PRA model. However, its unavailability was estimated both above and below Permissive P-8. Both random and common cause failures were evaluated. The magnitude of the signal unavailability remains very small in every case. When these unavailabilities are integrated to estimate the overall increase in risk sensitivity, the net impact is still negligible. This latter point is made by noting that the logic trains of reactor protection are individually not risk-significant. For example, the RCP breaker position trip is only one of many diverse RTS input signals that ensure a proper reactor trip. Therefore, the impact of a loss of one of the input signals is much lower than the overall loss of function.

The EDG is modeled in the North Anna PRA so the CDF impact of the proposed changes may be quantified more accurately. Both the undervoltage and the degraded voltage contributions to the EDG start-failure probability were evaluated. The net impact of the proposed TS change is an increase in the EDG start-failure probability of approximately 0.8 percent. The increase per EDG in start-failure probability yields CDF increase of approximately 0.01% as a result of the proposed changes. These numbers account for both the extended AOTs and decreased STIs. The result of a plant-specific risk assessment for these functions related to CDF impact is negligible based on the baseline CDF (3.3E-5/yr) at North Anna.

3.0 CONCLUSION

This risk assessment demonstrates that the effect on CDF and ICCDP is negligible for the relaxations associated with these functions and the staff concludes that the licensee’s proposed change to add Functional Units 7.a, 7.b, and 20 to the TS is acceptable.

Principal Contributor: S Rhow

Date: February 8, 2002