UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 17, 2009

Mr. David Heacock
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2 – REQUEST FOR ADDITIONAL INFORMATION (RAI) OF REQUESTED LICENSING ACTION RE: MEASUREMENT UNCERTAINTY RECAPTURE (MUR) POWER UPRATE (TAC NOS. ME0965 AND ME0966)

Dear Mr. Heacock:

By letter dated March 26, 2009, Virginia Electric and Power Company (the licensee) submitted a license amendment request for North Anna Power Station, Unit Nos. 1 and 2. The proposed amendment request would increase each unit's rated thermal power (RTP) level from 2893 megawatts thermal (MWt) to 2940 MWt, and make technical specification changes as necessary to support operation at the proposed uprated power level; an increase in RTP of approximately 1.6 percent.

The Nuclear Regulatory Commission staff discussed the draft RAI in a conference call with your staff on June 8, 2009. Further, upon your staff's request to clarify 8 draft RAI's, the NRC provided the requested technical information over the phone. Enclosed is the final RAI. Please provide a response within 30 days of this conference call, that is, by July 8, 2009.

If you have any questions, please contact me at (301) 415-1345.

Sincerely,

John Stang, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-338 and 50-339

Enclosure:
RAI

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

REGARDING MEASUREMENT UNCERTAINTY RECAPTURE (MUR)

POWER UPRATE TO

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-338 AND 50-339

By letter dated March 26, 2009, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML090900055) Virginia Electric and Power Company (the licensee) submitted a license amendment request for North Anna Power Station, Unit Nos. 1 and 2 (NAPS 1 and 2). The proposed amendment request would increase each unit's rated thermal power (RTP) level from 2893 megawatts thermal (MWt) to 2940 MWt, and make technical specification changes as necessary to support operation at the proposed uprated power level; an increase in RTP of approximately 1.6 percent. The Nuclear Regulatory Commission (NRC) staff has reviewed the information the licensee submitted and determined that the following additional information is required to complete the evaluation.

To complete its review of the proposed modification and the TSs changes, the staff requests the licensee's response to the following:

Containment and Ventilation:

1. For the mass and energy release into containment resulting from the short-term loss-of-coolant accident (LOCA), please explain why the lower power (and hence higher subcooling) of the MUR, relative to the power assumed in the current licensing basis analyses, does not result in more mass being discharged into the sub-compartments and hence more conservative conditions than the existing analyses.

Reactor Systems:

2. Describe and provide drawings of the location where the Ultrasonic Flow Meter (UFM) will be installed in the 3 main feedwater lines between the existing feedwater venturi flow meters and the main feedwater check valves.

3. In Section I.1, (Application, Attachment 5, Page 7), the description that spool pieces are installed well downstream of the existing feedwater flow venturis is unclear. Please quantify "well downstream" and justify that the spool pieces will have no impact on venturi performance.

Enclosure

4. What are the instructions for transducer replacement?

5. In Section I.1.G, (Application, Attachment 5, Page 16), a completion time of 48 hours is proposed for operation in excess of 2893 MWt with the UFM not functional, provided that steady-state conditions persist throughout the 48-hour period. It is unclear how the "UFM not functional" is defined. Please describe the conditions that exist for a non-functional UFM.

Steam Generator Tube Integrity and Chemical Engineering:

6. Section II.3.2, "Auxiliary Equipment Design Transients" (Application, Attachment 5, Page 47), indicates that the only auxiliary equipment design transients impacted by the power uprate are those associated with the reactor coolant system hot and cold leg temperatures. It is further stated that the existing auxiliary equipment design transients are conservative and bounding for the power uprate. Please discuss whether the analysis included changes in nitrogen-16 activity that would potentially effect letdown line decay time requirements.

Instrumentation and Controls:

7. Section I.1.G, "Completion Time and Technical Basis" (Application, Attachment 5, Page 16), provides justification for the proposed 48-hours Allowed Outage Time (AOT) should the UFM be declared inoperable. The first bullet states "Alternate instrumentation accuracy due to nozzle fouling or transmitter drift will not significantly change over 48 hours." Was transmitter drift data used to support this conclusion? Please provide the calculated effect of the known transmitter drift on the power calorimetric calculation during the proposed AOT.

8. Section I.1.D.3.1, "Response to NRC Criterion 3" (Application, Attachment 5, Page 12), Dominion Technical Report EE-0116 is referenced as the document that governs the combination of errors within instrument loops relative to setpoint determination. Please provide a copy of EE-0116. Has this report been previously reviewed by the NRC? If so, please provide reference to that review.

9. The steam enthalpy values presented in Item 7 of Table I-1 (Application, Attachment 5, Page 14), ER-646 / Rev. 2 and ER-637 / Rev. 3 for the NAPS 1 and 2 total thermal power uncertainty determination appear to be consistent with zero-moisture steam per ER-157P / Rev. 5. Please verify that the zero moisture steam condition is appropriate for NAPS 1 and 2.

Electrical Engineering:

10. In Section III.2.A, "Normal Operation" (Application, Attachment 5, Page 57), the licensee states that the normal operation radiation dose levels increase as a result of the MUR power uprate for the reactor vessel excore neutron detectors and the qualified life of the excore detectors may be decreased. Furthermore, the licensee concludes that the preliminary results indicate no impact on radiation dose margin or qualified life of the

excore detectors. Confirm that these calculations have been completed and that there is no impact on the radiation dose margin or qualified life of the excore detectors.

11. In Section V.1.D.ii, "Proposed New Generation Impact Analysis" (Application, Attachment 5, Page 101), the licensee states that the local generation study assessed station operation at maximum capability, and that the study identified no transmission deficiencies. Furthermore, the study indicated no decrement to system First Contingency Incremental Transfer Capability. The licensee states that in the summary section of the PJM impact studies, the maximum facility output is 945 MWe for Unit 1 and 938 MWe for Unit 2. Explain the results of this study and how the results are valid for the power uprate since Section V.1.F.i, "Main Generator" (ADAMS Accession No. ML090900055, Attachment 5, Page 102), states that the output of the generators will be 980.5 MWe for Unit 1 and 972.9 MWe for Unit 2.

12. Provide the uprated loadings of the reserve station service transformers. Also, provide the ratings and the uprated loadings of the plant main transformers, and unit station service transformers.

Mechanical and Civil Engineering:

13. In Section IV.1.A.v, "Balance-of-Plant Piping" (Application, Attachment 5, Page 74), the licensee did not specify which Balance-of-Plant Piping systems were reviewed in support of the proposed power uprate. Please provide a list of these systems.

Fire Protection:

14. In Section II.2.36, "Safe Shutdown Fire Analysis (Appendix R Report) – UFSAR 9.5.1," (Application, Attachment 5, Page 45), states that "...Operator actions in response to an Appendix R fire are not adversely impacted..." The staff requests the licensee to verify that the (1) the MUR power uprate will not require any new operator actions, and (2) any effects from additional heat in the plant environment from the increased power will not interfere with existing operator manual actions being performed at their designated time and place.

15. Some plants credit aspects of their fire protection system for other than fire protection activities, e.g., utilizing the fire water pumps and water supply as backup cooling or inventory for non-primary reactor systems. If the NAPS 1 and 2 credits its fire protection system for other than fire protection activities, please identify the specific situations and discuss to what extent, if any, the MUR power uprate affects these "non-fire-protection" aspects of the plant fire protection system. If the NAPS 1 and 2 do not take such credit, please verify this as well.

Accident Dose:

16. The discussion of the Waste Gas Decay Tank Rupture USFSAR 15.3.5 in Section II.2.19, (Application, Attachment 5, Page 36), refers to a calculation that indicates 1.6 rem at the exclusion area boundary. Although this value meets the

Part 100 limit of 25 rem whole body which was originally used for tank rupture accidents, more recent guidance limits the dose to 500 mrem whole body or 100 mrem total effective dose equivalent (TEDE). The NRC staff notes that TS Section 5.5.11, "Explosive Gas and Storage Tank Radioactivity Monitoring Program," item b, states that, "A surveillance program to ensure that the quantity of radioactivity contained in each gas storage tank is less than the amount that would result in a whole body exposure of ≥ 0.5 rem to any individual in an unrestricted area, in the event of an uncontrolled release of the tanks' contents ..." Provide additional information describing whether the Explosive Gas and Storage Tank Radioactivity Monitoring Program applies to the Waste gas Decay Tank Rupture and if so why this program is not cited as the bases for making the determination that the MUR will not change the accident evaluation.

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RAI

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ADAMS Accession No. ML091600347 **NRR-088**

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