October 25, 2005

Mr. David A. Christian
Senior Vice President and Chief Nuclear Officer
Virginia Electric and Power Company
5000 Dominion Blvd.
Glen Allen, Virginia 23060

SUBJECT: NORTH ANNA POWER STATION, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS ON CORRECTION TO EQUATION FOR OVER-TEMPERATURE DELTA T (OTΔT) FUNCTION ALLOWABLE VALUE (TAC NOS. MC7612 AND MC7613)

Dear Mr. Christian:

The Commission has issued the enclosed Amendment Nos. 245 and 226 to Renewed Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station, Units 1 and 2, respectively. The amendments change the Technical Specifications in response to your letter dated July 14, 2005.

These amendments will correct two errors in the units of measure used to determine the OTΔT Function Allowable Value for North Anna, Units 1 and 2.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

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

Enclosures:
1. Amendment No. 245 to NPF-4
2. Amendment No. 226 to NPF-7
3. Safety Evaluation

cc w/encls: See next page

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VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 245
Renewed License No. NPF-4

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Virginia Electric and Power Company et al., (the licensee) dated July 14, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (I) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-4 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 245, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 25, 2005

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 226
Renewed License No. NPF-7

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Virginia Electric and Power Company et al., (the licensee) dated July 14, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (I) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-7 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 226, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 25, 2005

ATTACHMENT TO

LICENSE AMENDMENT NO. 245 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-4

AND

LICENSE AMENDMENT NO. 226 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-7

DOCKET NOS. 50-338 AND 50-339

Replace the following page of the Appendix "A" Technical Specification with the enclosed page as indicated. The revised page is identified by amendment number and contain vertical lines indicating the areas of change.

Remove Page	Insert Page
3.3.1-16	3.3.1-16

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 245 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-4

AND AMENDMENT NO. 226 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-338 AND 50-339

1.0 INTRODUCTION

By letter dated July 14, 2005 (Reference 1), Virginia Electric and Power Company (the licensee) submitted an amendment request for North Anna Power Station, Units 1 and 2 to revise Note 1 of Technical Specification (TS) Table 3.3.1-1, "Reactor Trip Instrumentation" to correct two errors in the units of measure of the constants in the axial power distribution ($f_1(\Delta I)$) equation. The $f_1(\Delta I)$ reset function is a part of the Overtemperature Delta T ($OT\Delta T$) reactor trip function used to adjust the ΔT setpoint to account for the axial power distribution imbalance.

2.0 REGULATORY EVALUATION

The Nuclear Regulatory Commission (NRC) staff has identified the applicable regulatory requirements that the NRC staff considered in its review of the application. These requirements are listed below.

Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, General Design Criterion (GDC)-20 requires the reactor protection system to be designed to initiate automatically the operation of appropriate systems to assure that specified acceptable fuel design limits (SAFDL) are not exceeded as a result of anticipated operational occurrences (AOO).

10 CFR 50.36 (c)(2)(ii), Criterion 3, requires a limiting condition for operation (LCO) be established for a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient. The $OT\Delta T$ reactor trip function initiates a unit shutdown, based on the measured temperature difference (ΔT) across the core, to protect against violating the SAFDL of departure from nucleate boiling ratio (DNBR) during AOOs. As such, a LCO must be established for the $OT\Delta T$ function. TS LCO 3.3.1 specifies that the reactor trip system instrumentation for each function in TS Table 3.3.1-1 shall be operable. TS Table 3.3.1-1 specifies the allowable values and trip setpoints of the reactor trip functions, including the $OT\Delta T$ function.

To ensure continued compliance with GDC-20 and 10 CFR 50.36(c)(2)(ii), Criterion 3, the NRC staff evaluation of the proposed change to the $f_1(\Delta I)$ equation is based on its effect on the allowable value of the OTΔT function.

3.0 TECHNICAL EVALUATION

The OTΔT trip function, as described in Note 1 of TS Table 3.3.1-1, is provided to ensure that the design limit DNBR is met. The OTΔT trip function uses each reactor coolant loop's ΔT as a measure of reactor power and is compared with the calculated ΔT setpoint. The ΔT setpoint is based on the ΔT across the core at 100 percent rated thermal power (RTP), and is varied and calculated with the following parameters: pressurizer pressure, reactor coolant temperature, and axial neutron flux difference (ΔI).

The ΔT reset function, $f_1(\Delta I)$, is used in the OTΔT trip function to account for imbalances in the axial power distribution as detected by the nuclear instrumentation system (NIS) upper and lower power range detectors. The reset function $f_1(\Delta I)$ is generally defined as:

$$
\begin{aligned}
f_1(\Delta I) &= m_1 (d_1 - \Delta I) && \text{when } \Delta I < d_1 \\
&= 0 && \text{when } d_1 \# \Delta I \ \# d_2 \\
&= m_2 (\Delta I - d_2) && \text{when } d_2 < \Delta I
\end{aligned}
$$

Where ΔI is the axial flux difference defined as $\Delta I = q_t - q_b$; q_t and q_b are % RTP of the neutron powers of the top half and bottom half of the core, respectively; d_1 and d_2 are the negative and positive break points of ΔI deadband in % RTP; and m_1 and m_2 are the absolute values of negative and positive slopes of the $f_1(\Delta I)$ function. If ΔI is within the design limit, or predefined deadband $[d_1,d_2]$, no adjustment for the ΔT setpoint is necessary, and the reset function $f_1(\Delta I)$ is equal to 0. If ΔI is outside of the deadband, i.e., $\Delta I < d_1$ or $\Delta I > d_2$, then the ΔT setpoint is reduced in accordance with the reset function $f_1(\Delta I)$.

In the North Anna TS, the constants in the $f_1(\Delta I)$ reset function, as well as other constants in the OTΔT trip function, have been relocated to the Core Operating Limits Report (COLR). In Note 1 of TS Table 3.3.1-1, the $f_1(\Delta I)$ for the OTΔT function is defined as:

$$
\begin{aligned}
f_1(\Delta I) &= [*]\ \{[*]\% - (q_t - q_b)\} && \text{when } q_t - q_b < [*]\% \text{ RTP} \\
&\ 0\% \text{ of RTP} && \text{when } [*]\% \text{ RTP} \# q_t - q_b \#[*]\% \text{ RTP} \\
&\ [*]\{(q_t - q_b) - [*]\} && \text{when } q_t - q_b > [*]\% \text{ RTP}
\end{aligned}
$$

Where q_t and q_b are percent RTP in the upper and lower halves of the core, respectively, and $q_t + q_b$ is the total thermal power in percent RTP. The values denoted with [*] are the values of the ΔI deadband break points and slopes of the reset function, respectively, specified in the COLR.

The licensee discovered that the units of measure in the first two expressions of the $f_1(\Delta I)$ equation are in error. The "%" and "% of RTP" in the first and second expressions of the $f_1(\Delta I)$ equation, respectively, should not be included because $f_1(\Delta I)$ is a dimensionless quantity. The proposed change would delete the "%" and "% of RTP" from the equation, and the revised $f_1(\Delta I)$ for the OTΔT function in the Note 1 of TS Table 3.3.1-1 would become:

$f_1(\Delta I)$ = [*] {[*] - (q_t - q_b)} when q_t - q_b < [*]% RTP
0 when [*]% RTP # q_t - q_b #[*]% RTP
[*]{(q_t - q_b) - [*]} when q_t - q_b > [*]% RTP

The revised equation is consistent with the equation for $f_1(\Delta I)$ specified in the original North Anna TS, and the COLRs for North Anna, Units 1 and 2 (References 2 and 3). The NRC staff considers the proposed change as being an administrative error correction. The correction of the errors in the units of measure of the ΔT reset function $f_1(\Delta I)$ does not involve any change to allowable value or trip setpoint of the OTΔT trip function. Therefore, with these error corrections, the OTΔT function continues to comply with GDC-20 and 10 CFR 50.36, Criterion 3. The NRC staff concludes that the proposed change is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Virginia State official was notified of the proposed issuance of the amendment. The state official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (70 FR 48208). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. Letter from Leslie N. Hartz, VEPCO, to US Nuclear Regulatory Commission, "Virginia Electric and Power Company, North Anna Power Station Units 1 and 2, Proposed Technical Specification Changes, Correction to Equation for OTΔT Function Allowable Value," July 14, 2005, 05-420. ADAMS Accession No. ML051960435

2. Letter from C. L. Funderburk, Dominion Resources Services, Inc, to US Nuclear Regulatory Commission, "Virginia Electric and Power Company, North Anna Power Station Unit 1, Core Operating Limits Report," October 11, 2004, 04-619. ADAMS Accession No. ML042940288

3. Letter from C. L. Funderburk, Dominion Resources Services, Inc, to US Nuclear Regulatory Commission, "Virginia Electric and Power Company (Dominion), North Anna Power Station Unit 2, Core Operating Limits Report," June 2, 2004, 04-328. ADAMS Accession No. ML041560086

Principal Contributors: Y. Hsii

Date: October 25, 2005

North Anna Power Station, Units 1 & 2

cc:

Mr. C. Lee Lintecum
County Administrator
Louisa County
Post Office Box 160
Louisa, Virginia 23093

Ms. Lillian M. Cuoco, Esq.
Senior Counsel
Dominion Resources Services, Inc.
Building 475, 5th floor
Rope Ferry Road
Waterford, Connecticut 06385

Dr. W. T. Lough
Virginia State Corporation Commission
Division of Energy Regulation
Post Office Box 1197
Richmond, Virginia 23218

Old Dominion Electric Cooperative
4201 Dominion Blvd.
Glen Allen, Virginia 23060

Mr. Chris L. Funderburk, Director
Nuclear Licensing & Operations Support
Dominion Resources Services, Inc.
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, Virginia 23060-6711

Office of the Attorney General
Commonwealth of Virginia
900 East Main Street
Richmond, Virginia 23219

Senior Resident Inspector
North Anna Power Station
U. S. Nuclear Regulatory Commission
1024 Haley Drive
Mineral, Virginia 23117

Mr. Jack M. Davis
Site Vice President
North Anna Power Station
Virginia Electric and Power Company
Post Office Box 402
Mineral, Virginia 23117-0402

Dr. Robert B. Stroube, MD, MPH
State Health Commissioner
Office of the Commissioner
Virginia Department of Health
Post Office Box 2448
Richmond, Virginia 23218