VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

August 5, 1988

D. S. CRUDEN
VICE PRESIDENT-NUCLEAR

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 87-385A
NL/DJV:jmj
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
PROPOSED TECHNICAL SPECIFICATIONS CHANGE
INCREASED CONTAINMENT TEMPERATURE LIMIT

Virginia Electric and Power Company letter dated March 2, 1988 requested amendments to the operating licenses for North Anna Power Station Units 1 and 2 to support operation of the units with containment average air temperatures up to 120°F. The purpose of this letter is to provide additional information regarding the environmental qualification of electrical equipment and the analysis of the inadvertent operation of the quench spray system as requested by the NRC Project Manager in a conference call on July 20, 1988.

Environmental Qualification of Electrical Equipment

In order to maintain the environmental qualification of electrical equipment, our letter of March 2, 1988 committed to develop appropriate periodic test procedures to monitor containment average air temperature, and to use this information to adjust equipment service lifetimes and maintenance schedules, as appropriate. These procedures, which are currently in place, entail an evaluation of daily containment average air temperature data for comparison against an annual operating time versus containment average air temperature standard. This evaluation will be performed at least annually. The annual operating time versus containment average air temperature standard is provided in Attachment 1 to this letter. This standard was derived using the Arrhenius methodology to determine the equivalent thermal age degradation associated with operation at different temperatures above and below 105°F. This calculation was performed for the worst case material in safety-related electrical equipment in the North Anna containments. Our past operating experience has shown this operating time versus temperature standard to be conservative relative to actual operation. However, even if the standard is exceeded by a small amount during a year, the effects on service lifetimes and maintenance schedules would be small and easily managed within existing preventive maintenance and outage schedules.

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Inadvertent Operation of Quench Spray System

An analysis of the inadvertent operation of the Quench Spray System was performed as part of the analysis to support the requested amendment. The analysis method and acceptance criteria are described in Section 6.2.6.3 of the North Anna UFSAR. The supporting calculations for the current containment average air temperature limit of 105°F are presented on UFSAR Table 6.2-75. This table is reconstructed in Attachment 2 to this letter to compare the current UFSAR analysis (Case 1) to the effect of increasing the allowable containment average air temperature to 120°F (Cases 2 and 3). Case 2 assumes the same conservative initial air partial pressure of 8.6 psia as Case 1. Case 3 assumes an initial air partial pressure of 8.9 psia which corresponds to the proposed Technical Specification limit of 9.0 psia minus an appropriate allowance for instrument uncertainty. The results of the analysis show that there is adequate margin to the containment lower pressure limit of 5.5 psia in the event of an inadvertent quench spray actuation.

Very truly yours,

D. S. Cruden

cc: U. S. Nuclear Regulatory Commission
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Mr. J. L. Caldwell
NRC Senior Resident Inspector
North Anna Power Station

Commissioner
Department of Health
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ATTACHMENT 1

Annual Operating Time
Versus
Containment Average Air Temperature
Standard*

Daily Peak Average Temperature Range (°F)	Number of Days
$115 < T \leq 120$	5
$112 < T \leq 115$	5
$107 < T \leq 112$	5
$103 < T \leq 107$	6
$100 < T \leq 103$	36
$95 < T \leq 100$	158
$T \leq 95$	150

*This standard equates to an Equivalent Arrhenius Temperature 105°F for a period of 365 days.

ATTACHMENT 2

CONTAINMENT PRESSURE ANALYSIS FOR INADVERTENT
OPERATION OF QUENCH SPRAY SYSTEM

Initial Containment Conditions	Case 1	Case 2	Case 3
Minimum air partial pressure (psia)	8.6	8.6	8.9
Maximum bulk air temperature (°F)	105	120	120
Final Containment Conditions			
Air partial pressure (psia)	7.6	7.4	7.7
Water vapor pressure (psia)	0.12	0.12	0.12
Containment temperature (°F)	40	40	40
Minimum total pressure (psia)	7.7	7.5	7.8

Case 1 - Current UFSAR analysis

Case 2 - Proposed containment average air temperature of 120°F and conservative initial air partial pressure of 8.6 psia.

Case 3 - Proposed containment average air temperature of 120°F and initial air partial pressure of 8.9 psia corresponding to proposed Technical Specification limit of 9.0 psia minus 0.1 psia for instrument uncertainty.