February 12, 1986

Docket No. 50-339

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Mr. W. L. Stewart
Vice President - Nuclear Operations
Virginia Electric and Power Company
Post Office Box 26666
Richmond, Virginia 23261

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 61 to Facility Operating License No. NPF-7 for the North Anna Power Station, Unit No. 2 (NA-2).

The amendment revises the Technical Specification (TS) Surveillance Requirement 4.1.1.4b for the end-of-cycle Moderator Temperature Coefficient (MTC) by suspending further MTC measurements once an equilibrium boron concentration of 20 parts per million (ppm) or less is reached for the current NA-2 fuel cycle No. 4.

The amendment was approved on an emergency basis by L. Rubenstein, Director, PWR Project Directorate No. 2, Division of PWR Licensing-A, at a meeting with VEPCO in Bethesda, Maryland on January 21, 1986. In addition, the NRC Region II staff was notified on January 21, 1986 of the NRC approval of the NA-2 TS change on an emergency basis.

A copy of the Safety Evaluation is enclosed. A Notice of Issuance of Amendment to License and Final Determination of No Significant Hazards Consideration and Opportunity for Hearing will be included in the Commission's next bi-weekly notice in the Federal Register.

Sincerely,

/S/

Leon B. Engle, Project Manager
Operating Reactors Branch #3
Division of Licensing

Enclosures:
1. Amendment No. 61 to NPF-7
2. Safety Evaluation

cc w/enclosures:
See next page

PBD-8	PAD-2	PAD-2	OELD
PMKretutzer	LEngle	LRubenstein	No legal objection, but concurrence based on changes noted on SER in pencil and red ink also memo
2/6/86	2/6/86	2/6/86	2/10/86

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North Anna Power Station

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

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 61
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 January 20, 1986, 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 Facility Operating License No. NPF-7 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 61 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective January 21, 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

L.S. Rubenstein

Lester S. Rubenstein, Director
PWR Project Directorate #2
Division of PWR Licensing-A

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 12, 1986

ATTACHMENT TO LICENSE AMENDMENT NO. 61

TO FACILITY OPERATING LICENSE NO. NPF-7

DOCKET NO. 50-339

Replace page 3/4 1-6 of the Appendix "A" Technical Specifications with the enclosed page 3/4 1-6. The revised area is identified by amendment number and contains a vertical line indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

Page

3/4 1-6

MODERATOR TEMPERATURE COEFFICIENT

LIMITING CONDITION FOR OPERATION

3.1.1.4 The moderator temperature coefficient (MTC) shall be:

a. For the all rods withdrawn, beginning of core life condition
$\leq 0.6 \times 10^{-4}$ $\Delta k/k/°F$ below 70 percent RATED THERMAL POWER

$\leq 0.0 \times 10^{-4}$ $\Delta k/k/°F$ at or above 70 percent RATED THERMAL POWER

b. Less negative than -4.0×10^{-4} delta $k/k/°F$ for the all rods withdrawn, end of core life at RATED THERMAL POWER.

APPLICABILITY: Specification 3.1.1.4.a - MODES 1 and 2* only#.
Specification 3.1.1.4.b - MODES 1, 2 and 3 only#.

ACTION:

a. With the MTC more positive than the limit of 3.1.1.4.a above, operations in MODES 1 and 2 may proveed provided:

1. Control rod withdrawal limits are established and maintained sufficient to restore the MTC to less positive than 0 delta $k/k/°F$ within 24 hours or be in HOT STANDBY within the next 6 hours. These withdrawal limits shall be in addition to the insertion limits of Specification 3.1.3.6.

2. The control rods are maintained within the withdrawal limits established above until subsequent measurement verifies that the MTC has been restored to within its limit for the all rods withdrawn condition.

3. Prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 10 days, describing the value of the measured MTC, the interim control rod withdrawal limits and the predicted average core burnup necessary for restoring the positive MTC to within its limit for the all rods withdrawn condition.

b. With the MTC more negative than the limit of 3.1.1.4.b above, be in HOT SHUTDOWN within 12 hours.

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*With K_{eff} greater than or equal to 1.0

#See Special Test Exception 3.10.3

SURVEILLANCE REQUIREMENTS

4.1.1.4 The MTC shall be determined to be within its limits during each fuel cycle as follows:

a. The MTC shall be measured and compared to the BOL Limit of Specification 3.1.1.4.a. above, prior to initial operation above 5% of RATED THERMAL POWER, after each fuel loading.

b. The MTC shall be measured at any THERMAL POWER and compared to -3.1×10^{-4} delta $k/k/^{o}F$ (all rods withdrawn, RATED THERMAL POWER condition) within 7 EFPD after reaching an equilibrium boron concentration of 300 ppm. In the event this comparison indicated the MTC is more negative than -3.1×10^{-4} delta $k/k/^{o}F$, the MTC shall be remeasured, and compared to the EOL MTC limit of specification 3.1.1.4.b., at least once per 14 EFPD during the remainder of the fuel cycle.(1)

(1) For fuel cycle 4 only, further measurements may be suspended once an equilibrium boron concentration (all rods withdrawn, RATED THERMAL POWER condition) of 20 ppm or less is reached.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 61 TO

FACILITY OPERATING LICENSE NO. NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

NORTH ANNA POWER STATION, UNIT NO. 2

DOCKET NO. 50-339

INTRODUCTION:

By letter dated January 20, 1986 (Serial No. 86-047), the Virginia Electric and Power Company (the licensee) requested an emergency Technical Specification (TS) change for the North Anna Power Station, Unit No. 2. On January 21, 1986, a meeting was held in Bethesda, Maryland between the licensee and the NRC staff to discuss the proposed NA-2 TS change. Specifically, the requested change would suspend TS surveillance requirement 4.1.1.4.b for the end-of-cycle Moderator Temperature Coefficient (MTC) by suspending further MTC measurements once an equilibrium boron concentration of 20 parts per million (ppm) or less is reached for the current NA-2 fuel cycle No. 4. The requested change is necessary because there is no practical way to perform the required measurement at very low boron concentrations. Failure to act on the proposed change by January 23, 1986, would have resulted in a plant shutdown due to the inability to perform a suitable measurement of the MTC in accordance with the NA-2 TS surveillance requirement 4.1.1.4.b.

BACKGROUND:

Relief from the surveillance requirement is necessary because no practical means exists to perform the required measurement at very low boron concentrations. The standard "boron dilution method" of measurement is not possible at very low boron concentrations because dilution operations take an extended amount of time which makes MTC measurements highly unreliable due to the many possible fluctuations in system conditions that may take place during the measurement. Alternate measurement techniques such as control rod insertion are not considered feasible because of the large uncertainty associated with using a reactivity computer for at-power measurements. Consequently, there would be little confidence in the measured value.

The current fuel cycle for NA-2 will end on March 15, 1986, which is earlier than the originally planned April 15, 1986 refueling outage. The need for this requested amendment was not recognized in time to permit a normal NRC review and public notice period. The series of MTC measurements required by TS 4.1.1.4.b has not been required at North Anna during previous fuel cycles,

because the end-of-cycle MTC measurement at 300 ppm had always resulted in a value which was satisfactory with respect to the Technical Specifications limit. Further, reactor physics calculations for this fuel cycle indicated that MTC would be satisfactory at 300 ppm, and there was no expectation of additional testing being required below 300 ppm. Consequently, the problems associated with measuring MTC at very low boron concentrations were not anticipated.

The 300 ppm MTC measurement for NA-2, Cycle 4 was taken on October 30, 1985 and MTC was found to be more negative than the -3.1×10^{-4} $\Delta k/k/°F$ limit. Station management immediately requested Engineering to evaluate the possibility of changing the TS limits to provide greater operating margin for current and future cycles. At the same time, the licensee reviewed the MTC test method in order to recommend appropriate methods and procedures for testing at very low boron concentrations.

On December 16, 1985, the licensee completed work on a proposed TS change request to relax the end-of-cycle MTC limits. At this time the licensee completed its work on the MTC test procedures, and it became evident that a suitable MTC measurement would be very difficult, if not impossible, once the end of full power core design life was reached. Licensee management and safety reviews of the proposed changes to end-of-cycle MTC limits were completed and a request for a license amendment was submitted on January 3, 1986 (Serial No. 85-873). Discussions were initiated with the NRC regarding the difficulties with performing the MTC measurement and the licensee's understanding that MTC measurements completed to date provided convincing evidence that Limiting Conditions for Operation had been and would continue to be met during the remainder of NA-2 Cycle 4. On January 17, 1986, the licensee was informed by the NRC that the NA-2 TS required MTC measurements until the end of the 4th fuel cycle (i.e., shutdown for refueling), and that the licensee would need to apply to the NRC for emergency TS relief. On January 20, 1986, the licensee applied by letter for emergency relief and on January 21, 1986, the licensee met with the NRC to discuss the requested emergency relief. Emergency relief was granted to the licensee on January 21, 1986 in order that a plant shutdown would not be necessitated for the end of cycle MTC measurement required on January 23, 1986.

EVALUATION:

The current NA-2 TS requires measurements of the MTC within 7 Effective Full Power Days (EFPD) after reaching an equilibrium boron concentration of 300 ppm and comparison of the measured value with -3.1×10^{-4} $\Delta k/k/°F$. The specification further states, "In the event this comparison indicated the MTC is more negative than -3.1×10^{-4} $\Delta k/k/°F$, the MTC shall be remeasured, and compared to the EOL MTC limit of specification 3.1.1.4.b," (which is -4.0×10^{-4} $\Delta k/k/°F$) at least once per 14 EFPD during the remainder of the fuel cycle." As stated above, the 300 ppm MTC measurement for NA-2, Cycle 4 was performed on October 30, 1985 and found to be more negative than the -3.1×10^{-4} $\Delta k/k/°F$ limit.

MTC measurements have been made at the specified time intervals for the last 2½ months. These measurements have continued to yield MTC values less negative than the -4.0×10^{-4} $\Delta k/k/°F$ limit. The "best-fit" line of measured MTC vs boron predicts an extrapolated MTC value of -3.8×10^{-4} $\Delta k/k/°F$ at 0 ppm boron. During the power coastdown to the licensed burnup limit, the MTC is calculated to change by no more than $0.09\ 10^{-4}$ $\Delta k/k/°F$. Therefore, based on the MTC measurements taken to date for NA-2 Cycle 4, it is expected that the end of cycle MTC is also above the limit.

Based on the fact that the measurements and the calculations for NA-2 Cycle 4 predict end of cycle MTC values within the technical specification limit of -4×10^{-4} $\Delta k/k/°F$, we find the proposed change to suspend future measurements once an equilibrium boron concentration (all rods withdrawn, RATED THERMAL POWER condition) of 20 ppm or less is reached to be acceptable.

FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION:

The Commission's regulations in 10 CFR 50.92(c) state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the amendment would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) Involve a significant reduction in a margin of safety.

The licensee's requested change dated January 20, 1986 (Serial No. 86-047) does not involve a significant hazards consideration as defined in 10 CFR 50.92. Specifically,

1. The probability of occurrence or the consequences of any accidents or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased. The MTC measurements taken to date provide adequate assurance that the TS limit of -4.0×10^{-4} $\Delta k/k/°F$ will not be exceeded during cycle 4. Further, reactor physics calculations also indicate that end-of-cycle MTC will remain above the limit. Thus, the current safety analyses remains bounding.

2. The possibility for an accident or malfunction of equipment of a different type than previously evaluated in the safety analyses report is not created. The proposed change does not involve any alterations to the physical plant or procedures which would introduce any new or unique operational modes or accident precursors.

3. The margin of safety as defined in the basis for any TS is not reduced by the proposed change. Since the end-of-cycle MTC limit is not changed and the current safety analyses remains bounding, the margin of safety is not reduced.

The staff agrees with this assessment. Thus, the proposed change as discussed above meets the three standards of 10 CFR 50.92(c), and therefore the staff determines the change for suspending further MTC measurements for NA-2, Cycle No. 4 involves no significant hazards considerations.

STATE CONSULTATION

The State of Virginia was consulted on this matter and had no comments on the determination.

ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves 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 made a final no significant hazards consideration finding with respect to this amendment. Accordingly, the amendment meets 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 amendment.

CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

ACKNOWLEDGEMENT

This Safety Evaluation was prepared by M. Chatterton, M. Dunenfeld and L. Engle.

Date: February 12, 1986