

June 4, 2004

Mr. David A. Christian
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Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, Virginia 23060-6711

SUBJECT: NORTH ANNA POWER STATION, UNIT 2 - ISSUANCE OF AMENDMENT
RE: DELETION OF NOTE REFERRING TO DIFFERENCES BETWEEN UNIT 1
AND UNIT 2 BORON CONCENTRATIONS (TAC NO. MC1834)

Dear Mr. Christian:

The Commission has issued the enclosed Amendment No. 218 to Renewed Facility Operating License No. NPF-7 for the North Anna Power Station, Unit No 2. The amendment changes the Technical Specifications (TS) in response to your letter dated January 23, 2004.

This amendment revises TS Surveillance Requirements 3.5.1.4, 3.5.4.3, and 3.6.7.3 in order to delete a note that differentiates between the boron concentrations at North Anna, Units 1 and 2, for the safety injection accumulators, the refueling water storage tank, and the casing cooling tank.

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 Monarque, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-339

Enclosures:

1. Amendment No. 218 to NPF-7
2. Safety Evaluation

cc w/encls: See next page

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AMENDMENT RE: DELETION OF NOTE REFERRING TO DIFFERENCES BETWEEN UNIT 1
AND UNIT 2 BORON CONCENTRATIONS (TAC NO. MC1834)

Dated: June 4,2004

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VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 218
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 January 23, 2004, 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. 218, 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 by S. M. Coffin for/

John A. Nakoski, 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: June 4, 2004

ATTACHMENT TO
LICENSE AMENDMENT NO. 218 TO
RENEWED FACILITY OPERATING LICENSE NO. NPF-7
DOCKET NO. 50-339

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

Remove Pages

3.5.1-2
3.5.1-3
3.5.4-2
3.6.7-2
3.6.7-3

Insert Pages

3.5.1-2

3.5.4-2
3.6.7-2
3.6.7-3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
AMENDMENT NO. 218 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT NO. 2

DOCKET NO. 50-339

1.0 INTRODUCTION

By letter dated January 23, 2004 (Reference 1), Virginia Electric and Power Company (the licensee) requested approval of a license amendment for North Anna Power Station, Unit 2, to revise Technical Specifications (TS) Surveillance Requirements (SRs) 3.5.1.4, 3.5.4.3, and 3.6.7.3 to delete three notes that referred to differences between Unit 1 and 2 boron concentration limits. Specifically, these notes limited the boron concentrations for the safety injection accumulators, the refueling water storage tank (RWST), and the casing cooling tank (CCT) at North Anna, Unit 2, until the licensee entered Mode 4 following the fall 2002 refueling outage. The origin of these notes was a license amendment, dated March 20, 2001, for both units that allowed higher boron concentration in some plant components before North Anna, Units 1 and 2, converted to Improved TS (ITS). The implementation of these new boron concentration limits was scheduled for the following refueling outages at North Anna, Units 1 and 2. However, the ITS conversion became effective after the North Anna, Unit 1, refueling outage and before the North Anna, Unit 2, refueling outage. Therefore, the licensee added a note to the ITS SRs 3.5.1.4, 3.5.4.3, and 3.6.7.3 to specify that the boron concentration in the subject components of North Anna, Unit 2, would be different from North Anna, Unit 1, until the completion of the North Anna, Unit 2, Fall 2002 refueling outage.

2.0 REGULATORY EVALUATION

The safety-related systems associated with the North Anna, Unit 2, TS SRs 3.5.1.4, 3.5.4.3, and 3.6.7.3 are the emergency core cooling system (ECCS) and containment depressurization system.

The design bases of the ECCS are to cool the reactor core as well as to provide additional shutdown capability following initiation of the following accident conditions: (1) pipe breaks and spurious relief valve lifting in the reactor coolant system (RCS) that cause a discharge larger than that which can be made up by the normal makeup system, up to and including the instantaneous circumferential rupture of the largest pipe in the RCS; (2) rupture of a control rod drive mechanism causing a rod cluster control assembly ejection accident; (3) pipe breaks and spurious safety valve lifting in the main steam system, up to and including the instantaneous circumferential rupture of the largest pipe in the main steam system; and (4) a steam generator tube rupture.

In order to perform its intended function, the ECCS provides borated emergency cooling water to the reactor core for the entire spectrum of RCS break sizes in order to limit core temperature, maintain core integrity, and provide negative reactivity for additional shutdown capability. The ECCS automatically commences safety injection of water into the RCS on receipt of a safety injection actuation signal. During the injection mode (between a start of the loss-of-coolant accident (LOCA) and attainment of a low-level setpoint in the RWST) two charging pumps and two low-head safety injection pumps deliver chilled borated water from the RWST to the RCS. The charging pumps discharge the water through the boron injection tank, which contains a concentrated boric acid solution for chemical shutdown. In addition, three nitrogen-pressurized accumulators, which require no initiation signal, inject borated water into the RCS. When the RWST reaches a low-level setpoint, operator action is required to manually align the ECCS for the recirculation mode to provide long-term cooling for the reactor core from the containment sump. If the operator fails to manually accomplish the switchover prior to a minimum level in the RWST, automatic switchover from the injection to recirculation mode occurs. The RWST is isolated and the low-head safety injection pumps supply water from the containment sump to the RCS.

The safety injection accumulators are pressure vessels filled with borated water and pressurized with nitrogen gas. During normal operation each accumulator is isolated from the RCS by two check valves in series. Should the RCS pressure fall below the accumulator pressure, the check valves open and borated water is forced into the RCS. One accumulator is attached to each cold leg of the RCS. Mechanical operation of the swing-disk check valves is the only action required to open the injection path from the accumulators to the core via the cold leg.

The RWST is designed to hold enough borated water to fill the refueling cavity for refueling operations and to provide water for ECCS operation. The RWST is always aligned for safety injection operation to provide water for high-head safety injection, low-head safety injection, and containment depressurization.

The recirculation spray subsystem consists of two recirculation spray pumps located inside the containment and two recirculation spray pumps located outside the containment. The inside recirculation spray pumps as well as the outside recirculation spray (ORS) pumps take suction from the containment sump and discharge through the containment spray rings. In addition, the casing cooling pumps inject chilled borated water from the CCT to the suction of the ORS pumps to provide adequate net positive suction head. The chilled borated water added to the ORS pump suction decreases the recirculation spray temperature, which reduces containment depressurization time. The boron concentration limits in the CCT are similar to the boron concentration limits in the RWST.

Pursuant to 10 CFR Part 50, Appendix A, General Design Criteria (GDC) 35 (Reference 2), the ECCS must provide abundant emergency core cooling. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant at such a rate that:

- (1) fuel and clad damage that could interfere with continued effective core cooling is prevented;
- and (2) clad metal-water reaction is limited to negligible amounts.

Pursuant to 10 CFR Part 50, Appendix A, GDC 38 (Reference 3), a system to remove heat from the reactor containment shall be provided. The system safety function shall be to reduce

rapidly, consistent with the functioning of other associated systems, the containment pressure and temperature following any LOCA and maintain these parameters at acceptably low levels.

3.0 TECHNICAL EVALUATION

The licensee requested the deletion of three notes referring to differences between Unit 1 and 2 boron concentration limits. These notes, which appear on TS SRs 3.5.1.4, 3.5.4.3, and 3.6.7.3, specify different boron concentrations for North Anna, Unit 2, safety injection accumulators, RWST, and CCT respectively. By letter dated January 23, 2004, the licensee requested deletion of the following notes.

TS SR 3.5.1.4:

“For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the accumulator boron concentration acceptance criteria shall be ≥ 2200 ppm and ≤ 2400 ppm.”

TS SR 3.5.4.3:

“For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the RWST boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm.”

TS SR 3.6.7.3:

“For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the [CCT] boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm.”

By letter dated June 22, 2000 (Reference 4), the licensee requested a license amendment to increase the boron concentration limits in the safety injection accumulators, RWST, and CCT for North Anna, Units 1 and 2. The proposed increase in boron concentration was requested in order to increase the initial core reactivity necessary to reduce the coastdown time at the end of the cycle. The reason for modifying the coastdown time was to maximize electrical generation and increase operational flexibility at the end of the cycle. This is part of the licensee's planning philosophy to stagger outages in order to avoid load management, and logistical and economic disadvantages associated with concurrent outages.

In Reference 4, the licensee provided an evaluation that describes the impact of the proposed change on LOCA, non-LOCA Updated Final Safety Analysis Report Chapter 15 transients, and miscellaneous safety considerations. By letter dated March 20, 2001 (Reference 5), the Nuclear Regulatory Commission (NRC) staff approved this proposed amendment. As such, the licensee implemented the approved license amendment following the Unit 1 and Unit 2 Fall 2001 and Fall 2002 refueling outages, respectively.

Prior to the approval of higher boron concentration limits in both units, the licensee also requested to adopt the ITS (Reference 6) for North Anna, Units 1 and 2. Subsequently, by letter dated April 5, 2002 (Reference 7), the NRC staff approved the licensee's request to convert to ITS and, as such, the licensee implemented the higher boron concentration limits

described in the ITS. Since the ITS conversion and the approval for higher boron concentration limits were implemented prior to the North Anna, Unit 2, Fall 2002 refueling outage, the licensee added a note to TS SRs 3.5.1.4, 3.5.4.3, and 3.6.7.3 specifying that the boron concentration limits for boron injection accumulators, RWST, and CCT, respectively, would be different from the North Anna, Unit 1, boron concentration limits until the first entry in MODE 4 for North Anna, Unit 2. Once North Anna, Unit 2, had completed its first entry in MODE 4 following the Fall 2002 refueling outage, the higher boron concentration limits would then be applicable to North Anna, Unit 2. In its current amendment request, the licensee stated that higher boron concentration limits have been implemented in both North Anna Power Station units, and these notes are no longer applicable.

The NRC staff has reviewed the proposed license amendment and the associated background information. The NRC staff concludes that the notes contained in TS SRs 3.5.1.4, 3.5.4.3, and 3.6.7.3 are no longer applicable since the technical and regulatory bases for the new applicable boron concentration limits have been previously approved by the NRC. The NRC staff finds that the proposed amendment demonstrates that the licensee would continue to comply with GDCs 35 and 38. Operation of North Anna, Units 1 and 2, with the proposed boron concentration limits is within the acceptable margin to mitigate the consequences of the postulated accidents. Therefore, the NRC staff finds the proposed deletion of the TS notes acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Virginia State official was notified on April 7, 2004 of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. The NRC 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 previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (69 FR 16624). 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.

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. License Amendment Request (LAR 03-586), "*Deletion of Note Referring to Differences between Unit 1 and 2 Boron Concentrations*," January 23, 2004, ADAMS Accession No. ML040340494.
2. Code of Federal Regulations, Title 10, "*Energy*," Part 50, Appendix A, "*General Design Criteria for Nuclear Power Plants*," Criterion 35, "*Emergency core cooling*."
3. Code of Federal Regulations, Title 10, "*Energy*," Part 50, Appendix A, "*General Design Criteria for Nuclear Power Plants*," Criterion 38, "*Containment heat removal*."
4. Licensee Amendment Request (LAR 00-305), "*Increased Boron Concentrations*," June 22, 2000, ADAMS Accession No. ML003728735.
5. Letter to David A. Christian, Senior Vice President of Dominion, "*Issuance of Amendments Re: Technical Specifications Changes to Increase Boron Concentration Limits*," March 20, 2001, ADAMS Accession No. ML0108003101.
6. Licensee Amendment Request (LAR 00-606), "*Improved Technical Specifications*," December 11, 2000, ADAMS Accession No. ML003780732.
7. Letter to David A. Christian, Senior Vice President of Dominion, "*Issuance of Amendments Re: Conversion to Improved Technical Specifications*," April 5, 2002, ADAMS Accession No. ML021200265.

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Date: June 4, 2004

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Units 1 and 2

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