



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

February 23, 2022

Mr. Daniel G. Stoddard
Senior Vice President and
Chief Nuclear Officer
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, VA 23060-6711

SUBJECT: NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2 – ISSUANCE OF
AMENDMENT NOS. 290 AND 273 TO REVISE TECHNICAL
SPECIFICATION 3.1.8, “PRIMARY GRADE WATER FLOW PATH ISOLATION
VALVES” (EPID L-2021-LLA-0082)

Dear Mr. Stoddard:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment Nos. 290 and 273 to Renewed Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station (North Anna), Unit Nos. 1 and 2, respectively. These amendments are in response to your application dated May 6, 2021.

The amendments revise the North Anna, Unit Nos. 1 and 2, technical specifications (TSs) to add a new requirement to isolate primary grade water from the reactor coolant system within 1 hour following a reactor shutdown from Mode 2. Additionally, these amendments make an editorial change to TS 5.6.5, “Core Operating Limits Report (COLR).”

A copy of the related safety evaluation is also enclosed. A Notice of Issuance will be included in the Commission’s *Federal Register* notice.

If you have any questions, please contact me at (301) 415-2481 or Ed.Miller@nrc.gov.

Sincerely,

/RA/

G. Edward Miller, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-338 and 50-339

Enclosures:

1. Amendment No. 290 to NPF-4
2. Amendment No. 273 to NPF-7
3. Safety Evaluation

cc: Listserv



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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 290
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 May 6, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 paragraph 2.C (2) of Renewed Facility Operating License No. NPF-4, as indicated in the attachment to this license amendment, and is hereby amended to read as follows:

- (2) Technical Specifications

- The Technical Specifications contained in Appendices A, as revised through Amendment No. 290, are hereby incorporated in the renewed 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 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Markley, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Operation

Attachment:
Changes to Renewed Facility
Operating License No. NPF-4
and Technical Specifications

Date of Issuance: February 23, 2022



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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 273
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 May 6, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 paragraph 2.C (2) of Renewed Facility Operating License No. NPF-7, as indicated in the attachment to this license amendment, and is hereby amended to read as follows:

- (2) Technical Specifications

- The Technical Specifications contained in Appendix A, as revised through Amendment No. 273, are hereby incorporated in the renewed 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 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Markley, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Operation

Attachment:
Changes to Renewed Facility
Operating License No. NPF-7
and Technical Specifications

Date of Issuance: February 23, 2022

ATTACHMENT TO
NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2
LICENSE AMENDMENT NO. 290
RENEWED FACILITY OPERATING LICENSE NO. NPF-4
DOCKET NO. 50-338
AND LICENSE AMENDMENT NO. 273
RENEWED FACILITY OPERATING LICENSE NO. NPF-7
DOCKET NO. 50-339

Replace the following pages of the Renewed Facility Operating Licenses with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

NPF-4, page 3
NPF-7, page 3

Insert

NPF-4, page 3
NPF-7, page 3

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3.1.8-1
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5.6-4

Insert

3.1.8-1
3.1.8-2
5.6-4

- (2) Pursuant to the Act and 10 CFR Part 70, VEPCO to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report;
 - (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, VEPCO to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
 - (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, VEPCO to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material, without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or component; and
 - (5) Pursuant to the Act and 10 CFR Parts 30 and 70, VEPCO to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I; Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level

VEPCO is authorized to operate the North Anna Power Station, Unit No. 1, at reactor core power levels not in excess of 2940 megawatts (thermal).
 - (2) Technical Specifications

Technical Specifications contained in Appendix A, as revised through Amendment No. 290 are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, VEPCO to receive possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
 - (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, VEPCO to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material, without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or component; and
 - (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, VEPCO to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This renewed license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations as set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

VEPCO is authorized to operate the facility at steady state reactor core power levels not in excess of 2940 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 273 are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following the insurance of the condition or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the renewed license supported by a favorable evaluation by the Commission:

- a. If VEPCO plans to remove or to make significant changes in the normal operation of equipment that controls the amount of radioactivity in effluents from the North Anna Power Station, the

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 Primary Grade Water Flow Path Isolation Valves

LC0 3.1.8 Each valve used to isolate primary grade water flow paths shall be secured in the closed position.

- - - - - NOTE - - - - -
 Primary grade water flow path isolation valves may be opened under administrative control for planned boron dilution or makeup activities.
 - - - - -

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. -----NOTE----- Required Action A.3 must be completed whenever Condition A is entered. ----- One or more valves not secured in closed position.	A.1 Suspend positive reactivity additions. <u>AND</u>	Immediately
	A.2 Secure valves in closed position.	15 minutes <u>OR</u>
	<u>AND</u> A.3 Perform SR 3.1.1.1.	Within 1 hour after Mode 3 entry from Mode 2 4 hours

Primary Grade Water Flow Path Isolation Valves
3.1.8

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.8.1 Verify each valve in the affected flow path that isolates primary grade water flow paths is locked, sealed, or otherwise secured in the closed position.	Within 15 minutes following a boron dilution or makeup activity

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

b. (continued)

9. DOM-NAF-2-A, "Reactor Core Thermal-Hydraulics Using the VIPRE-D Computer Code," including Appendix C, "Qualification of the Westinghouse WRB-2M CHF Correlation in the Dominion VIPRE-D Computer Code," and Appendix D, "Qualification of the ABB-NV and WLOP CHF Correlations in the Dominion VIPRE-D Computer Code."
 10. WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO" (Westinghouse Proprietary).
 11. WCAP-16996P-A, "Realistic LOCA Evaluation Methodology Applied to the Full Spectrum of Break Sizes (FULL SPECTRUM LOCA Methodology)," (Westinghouse Proprietary).
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 PAM Report

When a report is required by Condition B of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 290 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-4

AND

AMENDMENT NO. 273 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-338 AND 50-339

1.0 INTRODUCTION

By application dated May 6, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21126A314), Virginia Electric and Power Company (Dominion Energy Virginia), the licensee, submitted a license amendment request (LAR) to change the Facility Operating License Nos. NPF-4 and NPF-7 for North Anna Power Station (NAPS) Units 1 and 2. The proposed change revises the Technical Specifications (TS) limiting condition of operation (LCO) 3.1.8. Required Action A.2 Completion Time. Specifically, the proposed change would add a new requirement to isolate primary grade (PG) water from the Reactor Coolant System (RCS) following a reactor shutdown from Mode 2 to Mode 3 within 1 hour, while continuing to require isolation of PG water within 15 minutes after a planned dilution or makeup activity while the reactor is in Mode 3, 4, or 5.

2.0 REGULATORY EVALUATION

Section 182a of the Atomic Energy Act (Act) requires applicants for nuclear power plant operating licenses to include TSs as part of the license. These TSs are derived from the plant safety analyses.

In Section 50.36, "Technical specifications," of Title 10 of the *Code of Federal Regulations* (10 CFR), the NRC established its regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) LCOs; (3) surveillance requirements; (4) design features; and (5) administrative controls. The rule does not specify the particular requirements to be included in a plant's TSs.

The regulation at 10 CFR 50.36(b) requires:

Each license authorizing operation of a ...utilization facility ...will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to [10 CFR] 50.34 ["Contents of applications; technical information"]. The Commission may include such additional technical specifications as the Commission finds appropriate.

The regulation in 10 CFR 50.36(c)(2)(i) states, in part that:

Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

The NAPS TS 1.3, "Completion Times" establishes the CT convention and provides guidance for its use. Usage rules for LCOs are in TS Section 3.0, "3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY." Per LCO 3.0.2, "Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met..."

Licensees may propose revisions to the TSs. The NRC staff reviews proposed changes and will generally issue changes provided that the plant-specific review supports a finding of continued reasonable assurance of adequate protection of public health and safety because: (1) the change is editorial, administrative, or provides clarification (i.e., no requirements are materially altered), (2) the change is more restrictive than the licensee's current requirement, or (3) the change is less restrictive than the licensee's current requirement, but nonetheless still affords adequate assurance of safety when judged against current regulatory standards. The detailed application of this general framework, and additional specialized guidance, is discussed in Section 3.0 of this safety evaluation in the context of the proposed TS changes contained in the licensee's LAR.

3.0 TECHNICAL EVALUATION

3.1 Description of change

The proposed change would add a new requirement in TS 3.1.8. Required Action A.2 Completion Time to isolate PG water from the RCS within 1 hour after Mode 3 entry from Mode 2, while continuing to require isolation of PG water within 15 minutes after a dilution or makeup activity while the reactor is in Mode 3, 4, or 5.

The current TS 3.1.8. A. states:

Condition A. One or more valves not secured in closed position.

Required Action A.1 – Suspend positive reactivity additions.

Completion Time – Immediately

AND

Required Action A.2 – Secure valves in closed position.

Completion Time – 15 minutes

AND

Required Action A.3 – Perform SR 3.1.1.1.

Completion Time – 4 hours

Revised TS 3.1.8. A. would state:

Condition A. One or more valves not secured in closed position.

Required Action A.1 – Suspend positive reactivity additions.

Completion Time – Immediately

AND

Required Action A.2 – Secure valves in closed position.

Completion Time – 15 minutes **OR Within 1 hour after Mode 3 entry from Mode 2**

AND

Required Action A.3 – Perform SR 3.1.1.1.

Completion Time – 4 hours

In addition, an editorial change was made to TS 5.6.5, COLR, to accurately reflect Amendments 287/270. The specific change removes revision bars which are unrelated to Amendments 287/270.

3.2 NRC Staff Evaluation of change to TS 3.1.8

LCO 3.1.8 requires that each valve used to isolate the primary grade water flow paths to be secured in the closed position in Modes 3, 4, and 5. The requirement serves to prevent inadvertent dilution of the reactor coolant boron concentration. TS Action 3.1.8.A addresses the condition where one or more valves are not secured in the closed position. Required Action

3.8.1.A.2 currently directs that valves not meeting the LCO be secured in the closed position within 15 minutes

Section 15.2.4, "Uncontrolled Boron Dilution," of the NAPS Updated Final Safety Analysis Report (UFSAR) states that the reactivity can be added to the core by feeding PG water into the RCS via the reactor makeup portion of the chemical and volume control system. Open primary water makeup control valves create a dilution flow path to the RCS. Inadvertent dilution from this source can be readily terminated by closing the control valve. Boron dilution events are considered for all operating modes, including Refueling (Mode 6), Cold Shutdown (Mode 5), Hot Shutdown (Mode 4), Hot Standby (Mode 3), Startup (Mode 2), and Power Operation (Mode 1). The effects of postulated boron dilution incidents have been analyzed in accordance with the conservative assumptions stated in Section 15.4.6 of the SRP. The NAPS UFSAR further states that the boron dilution analysis applicable to startup conditions (reactor critical with control rods above the rod insertion limits) demonstrates that TS shutdown margin requirements are adequate to ensure that 15 minutes are available for corrective operator action between positive indication of a boron dilution in progress and complete loss of shutdown margin.

Following reactor shutdown, operators are highly focused on plant reactivity conditions. As a result, it is reasonable to expect that operators would be able to take action in a timely manner prior to any significant reactivity changes in an inadvertent dilution event following shutdown. Therefore, it is reasonable in this situation to allow a longer exposure to plant conditions where potential dilution pathways are not isolated. Given this consideration, the NRC staff finds that the 1-hour completion time following reactor shutdown from Mode 2 to Mode 3 will continue to ensure timely PG water isolation while avoiding placing an undue burden on the plant operating staff during plant shutdowns. Therefore, the NRC staff determined that revised TS 3.1.8, as modified by the proposed changes, will continue to meet the requirements of 10 CFR 50.36(c)(2)(i) because the TS will continue to require appropriate remedial action the licensee must take when the LCO is not met.

3.3 NRC Staff Evaluation of change to TS 5.6.5

The licensee proposed to correct an error in the revision bars that was introduced in amendments 287/270. Specifically, revision bars were included for lines that were not affected by that amendment. Deleting the extra revision bars is an administrative change that does not affect the requirements of the TS as approved in Amendments 287/270. This correction more accurately conveys the revision history of the page. Therefore, the NRC staff finds the change to be acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Commonwealth of Virginia official was notified of the proposed issuance of the amendments. On December 22, 2021, the state official confirmed that the Commonwealth had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR part 20 and change administrative requirements. 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, published in the *Federal Register* on July 13, 2021 (86 FR 36785) and there has been no public comment on such finding. A repeat notice was published on September 7, 2021 (86 FR 50198) and there has been no public comment on that repeat finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (c)(10). 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) there is reasonable assurance that 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.

Principal Contributors: M. Razzaque, NRR

Date: February 23, 2022

SUBJECT: NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2 – ISSUANCE OF AMENDMENT NOS. 290 AND 273 TO REVISE TECHNICAL SPECIFICATION 3.1.8, “PRIMARY GRADE WATER FLOW PATH ISOLATION VALVES” (EPID L-2021-LLA-0082) DATED FEBRUARY 23, 2022

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ADAMS Accession No.: ML21361A006

***Via SE Input**

OFFICE	NRR/DORL/LPL2-1/PM	NRR/DORL/LPL2-1/LA	NRR/DSS/SNSB/BC	NRR/DSS/STSB
NAME	GEMiller	KEntz	SKrepel*	VCusumano
DATE	1/25/2022	1/11/2022	12/21/2021	1/25/2022
OFFICE	OGC - NLO	NRR/DORL/LPL2-1/BC	NRR/DORL/LPL2-1/PM	
NAME	STurk	MMarkley	GEMiller	
DATE	2/17/2022	2/23/2022	2/23/2022	

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