



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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-281

SURRY POWER STATION, UNIT NO. 2

SUBSEQUENT RENEWED FACILITY OPERATING LICENSE

Subsequent Renewed License No. DPR-37

The Nuclear Regulatory Commission (the Commission) having previously made the findings set forth in Renewed License No. DPR-37 issued March 20, 2003, has now found that:

- a. The application for Subsequent Renewed Facility Operating License No. DPR-37 filed by Virginia Electric and Power Company (the licensee), complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the rules and regulations of the Commission as set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;
- b. Actions have been identified and have been or will be taken with respect to (1) managing the effects of aging during the subsequent period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21(a)(1), and (2) time-limited aging analyses that have been identified to require review under 10 CFR 54.21(c), such that there is reasonable assurance that the activities authorized by this subsequent renewed facility operating license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3, for Surry Power Station, Unit No. 2, and that any changes made to the plant's current licensing basis in order to comply with 10 CFR 54.29(a) are in accord with the Act and the Commission's regulations;
- c. The facility will operate in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission;
- d. There is reasonable assurance: (i) that the activities authorized by the subsequent renewed operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;
- e. The Virginia Electric and Power Company (the licensee) is technically and financially qualified to engage in the activities authorized by the subsequent renewed operating license in accordance with the rules and regulations of the Commission;

- f. The applicable provisions of 10 CFR Part 140 have been satisfied; and
- g. The issuance of this subsequent renewed license will not be inimical to the common defense and security or to the health and safety of the public.

On the basis of the foregoing findings regarding this facility, Renewed Facility Operating License No. DPR-37, issued March 20, 2003, is superseded by Subsequent Renewed Facility Operating License No. DPR-37, which is hereby issued to the licensee to read as follows:

- 1. This subsequent renewed license applies to the Surry Power Station, Unit No. 2, a pressurized, light water moderated and cooled reactor, and associated steam generators and electric generating equipment (the facility). The facility is located on the licensee's 840-acre site on a point of land called Gravel Neck on the James River, approximately 14 miles northwest of Newport News and 25 miles northwest of Norfolk, Virginia, and is described in the licensee's Updated Final Safety Analysis Report.
- 2. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the licensee:
 - A. Pursuant to Section 104b of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess, use, and operate the facility at the designated location in Surry County, Virginia, in accordance with the procedures and limitations set forth in this subsequent renewed license;
 - B. Pursuant to the Act and 10 CFR Parts 40 and 70, to receive, possess, and use at any time, source and 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;
 - C. Pursuant to the Act and 10 CFR Parts 30, 40, and 70, 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;
 - D. Pursuant to the Act and 10 CFR Parts, 30, 40, and 70, 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 components; and
 - E. Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such by product and special nuclear materials as may be produced by the operation of the facility.

3. This subsequent renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

- A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power Levels not in excess of 2587 megawatts (thermal).

- B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 303 are hereby incorporated in this subsequent renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

- C. Reports

The licensee shall make certain reports in accordance with the requirements of the Technical Specifications.

- D. Records

The licensee shall keep facility operating records in accordance with the Requirements of the Technical Specifications.

- E. Deleted by Amendment 54

- F. Deleted by Amendment 59 and Amendment 65

- G. Deleted by Amendment 227

- H. Deleted by Amendment 227

I. Fire Protection

The licensee shall implement and maintain in effect the provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report and as approved in the SER dated September 19, 1979 (and Supplements dated May 29, 1980, October 9, 1980, December 18, 1980, February 13, 1981, December 4, 1981, April 27, 1982, November 18, 1982, January 17, 1984, February 25, 1988, and July 23, 1992), and the Safety Evaluation issued December 16, 1998, for Technical Specification Amendment No. 217 subject to the following provision:

The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

J. Physical Protection

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "Millstone, North Anna and Surry Power Stations' Security Plan, Training, and Qualification Plan, Safeguards Contingency Plan, and Independent Spent Fuel Storage Installation Security Program" with revisions submitted through May 15, 2006.

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved Kewaunee, Millstone, North Anna, and Surry Power Stations Cyber Security Plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The CSP was approved by License Amendment No, 276, as supplemented by a change approved by License Amendment No. 286.

K. Deleted by Amendment 227

L. Deleted by Amendment 227

M. Deleted by Amendment 227

N. Deleted by Amendment 203

O. Deleted by Amendment 227

P. Updated Final Safety Analysis Report

- (1) The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on July 25, 2002, October 1, 2002, November 4, 2002, and December 2, 2002 describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than January 29, 2013, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.
- (2) The Updated Final Safety Analysis Report supplement as revised on July 25, 2002, October 1, 2002, November 4, 2002, and December 2, 2002, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following the issuance of this renewed license. Until that update is complete, the licensee may make changes to the programs described in such supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.
- (3) VEPCO is authorized to revise the Updated Final Safety Analysis Report (UFSAR) to allow implementation of an Alternative GOTHIC Containment Analysis Methodology as set forth in the licensee's application dated October 22, 2007, and as supplemented on November 2, 2007 and November 9, 2007.

Q. Mitigation Strategy

Develop and maintain strategies for addressing large fires and explosions and that include the following key areas:

- (1) Fire fighting response strategy with the following elements:
 - a. Pre-defined coordinated fire response strategy and guidance
 - b. Assessment of mutual aid fire fighting assets
 - c. Designated staging areas for equipment and materials
 - d. Command and control
 - e. Training of response personnel
- (2) Operations to mitigate fuel damage considering the following:
 - a. Protection and use of personnel assets
 - b. Communications
 - c. Minimizing fire spread
 - d. Procedures for implementing integrated fire response strategy
 - e. Identification of readily-available pre-staged equipment
 - f. Training on integrated fire response strategy
 - g. Spent fuel pool mitigation measures

(3) Actions to minimize release to include consideration of:

- a. Water spray scrubbing
- b. Dose to onsite responders

- R. As discussed in the footnote to Technical Specifications 3.23.C.2.a.1 and 3.23.C.2.b.1, the use of temporary 45-day and 14-day allowed outage time extensions to permit replacement of the Main Control Room and Emergency Switchgear Room Air Conditioning System chilled water piping shall be in accordance with the basis, risk evaluation, equipment unavailability restrictions, and compensatory actions provided in the licensee's submittal dated February 26, 2007 (Serial No. 07-0109) and in the associated supplemental transmittals, as approved by the NRC Safety Evaluation.
- S. Upon implementation of Amendment No. 260 adopting TSTF-448, Revision 3, the determination of Main Control Room/Emergency Switchgear Room (MCR/ESGR) envelope unfiltered air inleakage as required by TS SR 4.18 in accordance with TS 6.4.R.3.a, the assessment of MCR/ESGR envelope habitability as required by Specification 6.4.R.3.b, and the measurement of MCR/ESGR envelope pressure as required by Specification 6.4.R.4, shall be considered met. Following implementation:
- (1) The first performance of SR 4.18, in accordance with Specification 6.4.R.3.a, shall be within the specified frequency of 6 years plus the 18-month allowance of SR 4.0.2, as measured from January 18, 2004, the date of the most recent successful tracer gas test, as stated in the April 22, 2004 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.
 - (2) The first performance of the periodic assessment of MCR/ESGR envelope habitability, Specification 6.4.R.3.b, shall be within 3 years, plus the 9-month allowance of SR 4.0.2, as measured from January 18, 2004, the date of the most recent successful tracer gas test, as stated in April 22, 2004 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.
 - (3) The first performance of the periodic measurement of MCR/ESGR envelope pressure, Specification 6.4.R.4, shall be within 18 months, plus the 138 days allowed by SR 4.0.2, as measured from January 19, 2007, the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.

T.

COMMITMENT	SCHEDULED COMPLETION DATE
1. VEPCO will perform the final acceptance of Surry 2 uncertainty analysis to ensure the results are bounded by the statements contained in the LAR (Attachment 5, Section I.1.D.4.1).	Prior to operating above 2546 MWt (98.4% RP).
2. Technical Requirements Manual (TRM) will be revised to include UFM administrative controls (Attachment 1 Section 3.0).	Prior to operating above 2546 MWt (98.4% RP).
3. Revise procedures, programs, and documents for the new UFM (including transducer replacement) (Attachment 5, Sections I.1, I.1.D.1, I.1.H, VII.1, VII.2.A, and VII.4).	Prior to operating above 2546 MWt (98.4% RP).
4. Appropriate personnel will receive training on the UFM and affected procedures (Attachment 5, Sections I.1.D.1.1, VII.2.A, VII.2.D, and VII.3)	Prior to operating above 2546 MWt (98.4% RP).
5. The FAC CHECWORKS SFA models will be updated to reflect the MUR PU conditions (Attachment 5, Section IV.1.E.iii).	Prior to operating above 2546 MWt (98.4% RP).
6. Simulator changes and validation will be completed (Attachment 4, Section VII.2.C).	Prior to operating above 2546 MWt (98.4% RP).
7. Revise existing plant operating procedures related to temporary operation above full steady-state licenses power levels (Attachment 5, Section VII.4).	Prior to operating above 2546 MWt (98.4% RP).
8. Process UFSAR changes in accordance with 10 CFR 50.59 (Attachment 1, Section 3.0).	In accordance with 10 CFR 50.71(e).

T. (Continued)

COMMITMENT	SCHEDULED COMPLETION DATE
9. UFM commissioning and calibration will be completed (Attachment 5, Section I.1.D.2.1).	Prior to operating above 2546 MWt (98.4% RP).
10. Confirm flow normalization factors (Attachment 5, Section I.1.G).	Prior to operating above 2546 MWt (98.4% RP).
11. Rescaling and calibration of main turbine first stage pressure input to AMSAC (Attachment 5, Sections II.2.28, VII.2.B, VIII.2, and VIII.3).	Prior to operating above 2546 MWt (98.4% RP).
12. Determine EQ service life for excore detectors (Attachment 5, Sections III.2.A and V.1.C).	Prior to operating above 2546 MWt (98.4% RP).
13. The excore neutron detectors are scheduled to be replaced (Attachment 5, Section V.1.C).	Unit 1: fall 2010 Refueling Outage. Unit 2: spring 2011 Refueling Outage.
14. Revise EOP setpoints (Attachment 5, Section VII.2.A).	Prior to operating above 2546 MWt (98.4% RP).
15. The UFM feedwater flow and temperature data will be compared to the feedwater flow venturis output and the feedwater RTD output (Attachment 5, Section I.1.D.2.1).	Prior to operating above 2546 MWt (98.4% RP).

T. (Continued)

COMMITMENT	SCHEDULED COMPLETION DATE
<p>16. For the applicable UFSAR Chapter 14 events, Surry 2 will re-analyze the transient consistent with VEPCO's NRC-approved reload design methodology in VEP-FRD-42, Rev. 2.1-A.</p> <p>If NRC review is deemed necessary pursuant to the requirements of 10 CFR 50.59, the accident analyses will be submitted to the NRC for review prior to operation at the uprate power level. These commitments apply to the following Surry 2 UFSAR Chapter 14 DNBR analyses that were analyzed at 2546 MWt consistent with the Statistical DNBR Evaluation Methodology in VEP-NE-2-A:</p> <ul style="list-style-type: none"> • Section 14.2.7 - Excessive Heat Removal due to Feedwater System Malfunctions (Full Power Feedwater Temperature Reduction case only); • Section 14.2.8 - Excessive Load Increase Incident; • Section 14.2.9 - Loss of Reactor Coolant Flow; and • Section 14.2.10 - Loss of External Electrical Load 	<p>Prior to operating above 2546 MWt (98.4% RP).</p>

U. Deleted by Amendment 289

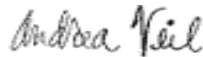
V. The licensee is approved to implement 10 CFR 50.69 using the processes for categorization of Risk-Informed Safety Class (RISC)-1, RISC-2, RISC-3, and RISC-4 structures, systems, and components (SSCs) using: Probabilistic Risk Assessment (PRA) model to evaluate risk associated with internal events, including internal flooding; the Appendix R program to evaluate fire risk; a modified version of the Electric Power Research Institute (EPRI) 3002012988, "Alternative Approaches for Addressing Seismic Risk in 10 CFR 50.69 Risk-Informed Categorization," Tier 1 approach to assess seismic risk; the shutdown safety assessment process to assess shutdown risk; the Arkansas Nuclear One, Unit 2 (ANO-2) passive categorization method to assess passive component risk for Class 2 and Class 3 SSCs and their associated supports; and a screening of other external hazards updated using the external hazard screening significance process identified in ASME/ANS PRA Standard RA-Sa-2009; as specified in License Amendment No. 301 dated December 8, 2020.

Prior NRC approval, under 10 CFR 50.90, is required for a change to the categorization process specified above (e.g., change from an Appendix R program fire risk evaluation to a fire probabilistic risk assessment approach).

W. Subsequent Renewed License Conditions

- (1) The information in the Updated Final Safety Analysis Report (UFSAR) supplement submitted pursuant to 10 CFR 54.21(d), as revised during the subsequent license renewal application review process, and Virginia Electric and Power Company commitments as listed in Appendix A of the "Safety Evaluation Report Related to the Subsequent License Renewal of Surry Power Station, Units 1 and 2," dated March 2020, are collectively the "Subsequent License Renewal UFSAR Supplement." This Supplement is henceforth part of the UFSAR, which will be updated in accordance with 10 CFR 50.71(e). As such, Virginia Electric and Power Company may make changes to the programs, activities, and commitments described in the Subsequent License Renewal UFSAR Supplement, provided Virginia Electric and Power Company evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59, "Changes, Tests, and Experiments," and otherwise complies with the requirements in that section.
- (2) The Subsequent License Renewal UFSAR Supplement, as defined in subsequent renewed license condition (W)(1) above, describes programs to be implemented and activities to be completed prior to the subsequent period of extended operation, which is the period following the January 29, 2033, expiration of the initial renewed license.
 - a. Virginia Electric and Power Company shall implement those new programs and enhancements to existing programs no later than 6 months before the subsequent period of extended operation.
 - b. Virginia Electric and Power Company shall complete those activities by the 6-month date prior to the subsequent period of extended operation or by the end of the last refueling outage before the subsequent period of extended operation, whichever occurs later.
 - c. Virginia Electric and Power Company shall notify the NRC in writing within 30 days after having accomplished item (2)a above and include the status of those activities that have been or remain to be completed in item (2)b above.
4. This subsequent renewed license is effective as of the date of issuance and shall expire at midnight on January 29, 2053.

FOR THE UNITED STATES NUCLEAR
REGULATORY COMMISSION



Signed by Veil, Andrea
on 05/04/21

Andrea Veil, Director
Office of Nuclear Reactor Regulation

Enclosure:

Appendix A - Technical Specifications for Surry Power Station, Units 1 and 2

Date of Issuance: May 4, 2021