

June 29, 2006

Mr. David A. Christian
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Innsbrook Technical Center
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Glen Allen, VA 23060-6701

SUBJECT: SURRY POWER STATION, UNIT NOS. 1 AND 2 - ISSUANCE OF
AMENDMENTS TO REINSTATE PREVIOUS REACTOR COOLANT SYSTEM
PRESSURE AND TEMPERATURE LIMITS (TAC NOS. MD1236 AND MD1237)

Dear Mr. Christian:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 248 to Renewed Facility Operating License No. DPR-32 and Amendment No. 247 to Renewed Facility Operating License No. DPR-37 for the Surry Power Station, Unit Nos. 1 and 2, respectively. The amendments change the Technical Specifications (TS) in response to your application dated April 20, 2006, as supplemented by letter dated May 15, 2006.

These amendments reinstate the reactor coolant pressure and temperature limits, low-temperature overpressure protection system (LTOPS) setpoint values, and LTOPS enable temperatures that were in place prior to the approval of License Amendments 245 and 244.

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
Plant Licensing Branch II-1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-280 and 50-281

Enclosures:

1. Amendment No. 248 to DPR-32
2. Amendment No. 247 to DPR-37
3. Safety Evaluation

cc w/encls: See next page

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NRR-058

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VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-280

SURRY POWER STATION, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 248
Renewed License No. DPR-32

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Virginia Electric and Power Company (the licensee) dated April 20, 2006, as supplemented by letter dated May 15, 2006, 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 3.B of Renewed Facility Operating License No. DPR-32 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 248, 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.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. DPR-32
and the Technical Specifications

Date of Issuance: June 29, 2006

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-281

SURRY POWER STATION, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 247

Renewed License No. DPR-37

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Virginia Electric and Power Company (the licensee) dated April 20, 2006, as supplemented by letter dated May 15, 2006, 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 3.B of Renewed Facility Operating License No. DPR-37 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 247, 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.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. DPR-37
and the Technical Specifications

Date of Issuance: June 29, 2006

ATTACHMENT TO
LICENSE AMENDMENT NO. 248 TO
RENEWED FACILITY OPERATING LICENSE NO. DPR-32
LICENSE AMENDMENT NO. 247 TO
RENEWED FACILITY OPERATING LICENSE NO. DPR-37
DOCKET NOS. 50-280 AND 50-281

Replace the following pages of the License and the Appendix A Technical Specifications (TSs) with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

License Pages

License No. DPR-32, page 3
License No. DPR-37, page 3

TS Pages

3.1-9
3.1-10
3.1-11
3.1-23a
Figure 3.1-1
Figure 3.1-2

Insert

License Pages

License No. DPR-32, page 3
License No. DPR-37, page 3

TS Pages

3.1-9
3.1-10
3.1-11
3.1-23a
Figure 3.1-1
Figure 3.1-2

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 248 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-32

AND

AMENDMENT NO. 247 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-280 AND 50-281

1.0 INTRODUCTION

By application dated April 20, 2006 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML061110056), as supplemented by letter dated May 15, 2006 (ADAMS Accession No. ML061350295), Virginia Electric and Power Company (the licensee) requested changes to the Technical Specifications (TSs) for the Surry Power Station, Unit Nos. 1 and 2 (Surry 1 and 2). The supplement dated May 15, 2006, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on April 28, 2006 (71 FR 25249).

By letter dated December 17, 2004 (ADAMS Accession No. ML050190317), the licensee requested changes to the TSs for Surry 1 and 2 to revise the reactor coolant system (RCS) pressure/temperature (P/T) operating limits, the low temperature overpressure protection system (LTOPS) setpoint, and the LTOPS enable temperature (T_{enable}) basis for cumulative core burnups up to 47.6 effective full power years (EFPY) and 48.1 EFPY (corresponding to the period of the renewed licenses). This TS change corresponded to the period of the renewed licenses for Surry 1 and 2. On January 3, 2006, the Nuclear Regulatory Commission (NRC) staff approved of the proposed TSs as License Amendments 245 and 244 for Surry 1 and 2, respectively (ADAMS Accession No. ML060040243). However, subsequent to the issuance of these license amendments, the licensee discovered an error in the technical basis that supported the proposed TSs change and was relied upon by the NRC staff in its safety evaluation. Specifically, the revised RCS P/T limit curves did not consider the most limiting material property data at the 3/4 thickness (3/4-T) reactor vessel thickness location. As such, by letter dated April 20, 2006, as supplemented by letter dated May 15, 2006, the licensee requested to withdraw License Amendments 245 and 244 and reinstate the RCS P/T operating limits, the LTOPS setpoint, and LTOPS T_{enable} basis that were in place prior to the approval of License Amendments 245 and 244 for Surry 1 and 2, respectively, on January 3, 2006.

2.0 REGULATORY EVALUATION

In issuing an amendment to an operating license, the NRC staff states when the amendment is effective and, if necessary, when the amendment must be implemented. The implementation dates for Surry 1 and 2 are given in Enclosures 1 and 2 of the amendments and are part of the operating licenses for both of these units. Therefore, a change to the implementation date is a change to the operating license for either Surry 1 or 2. Although there are no regulatory requirements on the implementation date specified in an amendment, the licensee is required by the operating license to fully implement the amendment by the date specified (i.e., by a date no later than that specified) or be in violation of its operating license.

The NRC staff evaluated the acceptability of the licensee's proposed changes based on the following guidance:

Regulatory Guide (RG) 1.190, March 2001, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," describes methods and assumptions acceptable to the NRC staff for determining the RPV neutron fluence.

3.0 TECHNICAL EVALUATION

3.1 Licensee's proposed Changes

By letter dated April 20, 2006, the licensee proposed to replace TS Figures 3.1-1 and 3.1-2 and the cumulative core burnup limits that were previously approved by the NRC staff in License Amendments 245 and 244 with TS Figures 3.1-1 and 3.1-2 that were previously approved by the NRC staff in License Amendments 207 and 207, dated December 28, 1995 (ADAMS Accession No. ML012710054). In addition, the licensee requested to revise the EFPYs from 47.6 and 48.1, which were previously approved by the NRC staff in License Amendments 245 and 244, to 28.8 and 29.4 for Surry 1 and 2, respectively. The NRC staff had previously approved of 28.8 EFPY and 29.4 EFPY in License Amendments 207 and 207. The licensee also proposed associated TS Basis changes to facilitate a return to the previous TS Basis text that had been approved before License Amendments 245 and 244.

The licensee proposed to revise TS 3.1.G.1.c(4) to change the Power Operated Relief Valve (PORV) setting from a value of 395 psig., which was previously approved by the NRC staff in License Amendments 245 and 244, to a value of 390 psig., which was previously approved by the NRC staff in License Amendments 207 and 207 at Surry 1 and 2, respectively.

Because the operating limits and setpoints approved in License Amendments 245 and 244 were not implemented, the licensee has continued to operate using the limits and setpoints that were approved by the NRC staff prior to the issuance of License Amendments 245 and 244.

3.2 Neutron Fluence

During the review of the licensee's submittal dated April 20, 2006, the NRC staff noted the licensee's analysis, as described in License Amendments 207 and 207, dated December 28, 1995, utilized a methodology for determining neutron fluence that has since been replaced by RG 1.190. Specifically, License Amendments 207 and 207 did not apply the latest neutron cross-section library of the Evaluated Nuclear Data file (ENDF/B-VI). RG 1.190 provides an updated ENDF/B-VI cross-section data that has been demonstrated to provide a more accurate determination of the flux attenuation through iron. In addition, the licensee was requested to confirm that the RCS P/T operating limits curves and LTOPS setpoint remained conservative with respect to the more recently performed analyses, described in Topical Report

BAW-2241PA, Revision 1, "Fluence and Uncertainty Methodologies." Subsequently, on May 15, 2006, the licensee provided a supplemental response to the NRC staff that addressed these questions.

3.2.1 Methodology

At the time the NRC staff approved of License Amendments 207 and 207, the licensee used a reactor fluence analysis that had been performed by Westinghouse and utilized the ENDF/B-IV cross section library. At the time these amendments were issued on December 28, 1995, RG 1.190 had not been issued and ENDF/B-VI was not the latest neutron cross section library.

Subsequently, in its letter dated, May 15, 2006, the licensee recalculated the Surry vessel fluence for both units. These calculations were performed by AREVA (Framatome) using the NRC staff approved methodology described in Topical Report BAW-2241P. The NRC staff's approval of the AREVA methodology does include one limitation that is relevant to the proposed license amendment for Surry, and that is the adequacy of the benchmarking. The licensee, in its letter dated May 15, 2006, satisfied the limitation by indicating that the data base used for the code benchmarking included surveillance capsule data from Surry. In addition, the licensee's methodology followed the guidance in RG 1.190 by using the cross sections derived from the ENDF/B-VI file. Therefore, the NRC staff finds the licensee's methodology acceptable.

3.2.2 Fluence Values

The RCS P/T operating limits and LTOPS setpoints originally approved in License Amendments 207 and 207 were based on a limiting 1/4-T nil-ductility transition reference temperature (RT_{NDT}) of 228.4 °F, and a limiting 3/4-T RT_{NDT} of 189.5 °F. The licensee first developed the RCS P/T operating limits and LTOPS setpoints, then determined that the RT_{NDT} values bounded all reactor vessel beltline materials at the end of the 40-year license fluences. These fluences corresponded to 28.8 EFPY and 29.4 EFPY for Surry 1 and 2, respectively.

By letter dated May 16, 2006, the licensee recalculated the reactor vessel neutron fluence for the license extension application. At the reactor vessel neutron fluence projections corresponding to 32 EFPYs, the licensee identified the intermediate to lower shell circumferential weld (SA-1585/72445) to be the limiting element for both units. The recalculated 1/4-T location is 2.282×10^{19} n/cm² (from 2.45×10^{19} n/cm²) and at 3/4-T is $.849 \times 10^{19}$ n/cm² (from $.938 \times 10^{19}$ n/cm²). The corresponding RT_{NDT} values for the SA-1585, at 1/4-T is 224.3°F and at 3/4-T is 188.9°F. The licensee performed this calculation for 32 EFPYs while the estimated EFPY values for Surry 1 and 2 are 28.8 and 29.4, respectively. The value of 32 EFPYs is considered to be a more conservative value than the 40-year operating period. The NRC staff concludes that these values justify the licensee's analysis that the existing P/T operating limit curves and the LTOP setpoints are conservative. As such, the NRC staff finds the licensee's proposed changes acceptable.

3.3 PORV Lift Setpoints

The licensee has proposed to change the PORV lift setting from a value of 395 psig., which was previously approved by the NRC staff in License Amendments 245 and 244, to a value of 390 psig. The NRC staff previously approved 390 psig. in License Amendments 207 and 207 at Surry 1 and 2. The licensee's proposal to reinstate the PORV lift setpoints does not affect any technical or safety aspects of plant operation at Surry 1 and 2. Because the setpoints approved in License Amendments 245 and 244 have not been implemented, the licensee has continued to operate, during this period, using the 390 psig setpoints. Therefore, there is no

safety issue involved with the continued use of this value, and the NRC staff finds this value acceptable.

3.4 Bases Change

In License Amendments 245 and 244, the NRC staff approved of the licensee's request to use the stress intensity factor K_{1c} that was obtained from Section XI to the American Society for Mechanical Engineers, *Boiler and Pressure Vessel Code* (ASME Code). By letter dated April 20, 2006, the licensee proposed to reinstate the K_{IR} stress intensity factor defined in Appendix G to the ASME Code. Because License Amendments 245 and 244 were not implemented, the licensee has continued to use the K_{IR} stress intensity factor. The K_{IR} stress intensity factor was originally approved by the NRC staff in License Amendments 147 and 143, dated October 24, 1990 (ADAMS Accession No. 9011010236), for Surry 1 and 2, respectively. Since 1990, there have been no safety issues associated with the use of the K_{IR} stress intensity factor. As such, the NRC staff finds the licensee's proposal acceptable.

3.3 Conclusion

The NRC staff has reviewed the submitted information regarding the reinstatement request by the licensee, for the P/T operating limit curves, LTOPS setpoints, K_{IR} stress intensity factor, and PORV lift setpoints, and finds that the licensee's proposed changes are acceptable. This finding is based on the licensee's calculational method that adhered to the guidance in RG 1.190.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Virginia State official was notified of the proposed issuance of the amendments. The State official had no comment.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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, and there has been no public comment on such finding (71 FR 25249). Accordingly, the amendments meet 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 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) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. Letter from B. Buckley, NRC, to J. P. O'Hanlon, Virginia Electric and Power Company, "Surry Units 1 and 2 - Issuance of Amendments Re: Surry, Units 1 and 2, Reactor Vessel Heatup and Cooldown Curves (TAC Nos. M92537 AND M92538)," dated December 28, 1995.
2. Letter from L. N. Hartz, Virginia Electric and Power Company to NRC "Virginia Electric and Power Company Surry Power Stations Units 1 and 2 Proposed Technical Specification Change Request for Reactor Coolant System Pressure/Temperature Limits, LTOP Setpoint, and LTOP Enable Temperature with Exemption Request for Alternate Material Properties Basis per 10 CFR 50.609(b)," dated December 17, 2004.
3. Letter from S. Monarque, NRC, to D. Christian, Virginia Electric and Power Company, "Surry Power Station, Units 1 and 2 - Issuance of Amendments on Reactor Coolant System Pressure and Temperature Limits (TAC Nos. MC5509 and MC5510)," dated January 3, 2006.
4. Letter from E. S. Grecheck, Virginia Electric and Power Company, to NRC, "Surry Power Station Units 1 and 2, Proposed Technical Specifications Change Request for Reinstatement of Previous Reactor Coolant System Pressure/Temperature Limits, LTOPS Setpoint, and LTOPS Enable Temperature Basis," dated April 20, 2006.
5. Letter from E. S. Grecheck, Virginia Electric and Power Company, to NRC, "Surry Power Station Units 1 and 2, Proposed Technical Specifications Change Request for Reactor Coolant System Pressure/Temperature Limits, LTOPS Setpoint, and LTOPS Enable Temperature Basis Response to Request for Additional Information," dated May 15, 2006.
6. Framatome Topical Report BAW-2241PA, Revision 1, "Fluence and Uncertainty Methodologies" by Framatome ANP, December 1999.
7. Regulatory Guide (RG) 1.190, March 2001, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence."
8. Letter from B. Buckley, NRC, to W. L. Stewart, Virginia Electric and Power Company, "Surry Units 1 and 2 - Issuance of Amendments RE: Heatup and Cooldown Curves (TAC Nos. 67386, 67387, 71555, and 71556)," dated October 24, 1990.

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Date: June 29, 2006

Surry Power Station, Units 1 & 2

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