

MAR 27 1975

Docket Nos. 50-280
50-281

Virginia Electric & Power Company
ATTN: Mr. Stanley Ragone
Senior Vice President
Post Office Box 26666
Richmond, Virginia 23261

Gentlemen:

The Commission has issued the enclosed Amendments No. 5 to Facility Licenses No. DPR-32 and DPR-37 for the Surry Power Station, Units 1 and 2. The amendments include Change No. 20 to your Technical Specifications for each license and are in response to your request dated February 25, 1975.

The amendments revise the provisions in the Technical Specifications for the fuel residence time for Unit 1, Cycles 1 and 2 from 15,500 to 26,000 EFPH and Unit 2, Cycle 1 core from 10,000 to 17,000 EFPH.

Copies of the related Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely,

Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Reactor Licensing

Enclosures:

1. Amendment No. 5 to DPR-32
2. Amendment No. 5 to DPR-37
3. Safety Evaluation
4. Federal Register Notice

cc w/enclosures:
See next page

bcc: JRBuchanan
TBAbernathy

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cc w/enclosures:

Michael W. Maupin, Esquire
Hunton, Williams, Gay & Gibson
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Mr. Sherlock Holmes
Chairman
Board of Supervisors of Surry County
Surry County Courthouse
Surry, Virginia 23683

cc w/enclosures & incoming:
Ms. Susan T. Wilburn
Commonwealth of Virginia
Council on the Environment
Eighth Street Office Building
Richmond, Virginia 23219

Mr. Robert Blanco
Environmental Protection Agency
Curtis Building
6th and Walnut Street
Philadelphia, Pennsylvania 19106

VIRGINIA ELECTRIC & POWER COMPANY

DOCKET NO. 50-280

SURRY POWER STATION UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5
License No. DPR-32

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Virginia Electric & Power Company (the licensee) dated February 25, 1975, 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; and
 - 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.
2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 3.B of Facility License No. DPR-32 is hereby amended to read as follows:

OFFICE >						
SURNAME >						
DATE >						

"3.B Technical Specifications

The Technical Specifications contained in Appendix A, as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 20."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by,
A. Giambusso

A. Giambusso, Director
Division of Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Change No. 20 to the
Technical Specifications

Date of Issuance: MAR 27 1975

OFFICE >						
SURNAME >						
DATE >						

ATTACHMENT TO LICENSE AMENDMENT NO. 5
CHANGE NO. 20 TO THE TECHNICAL SPECIFICATIONS
FACILITY OPERATING LICENSE NO. DPR-32
DOCKET NO. 50-280

Revise Appendix A as follows:

Remove pages 2.1-2 and 2.1-6 and insert revised pages 2.1-2 and 2.1-6.

4. The reactor thermal power level shall not exceed 118% of rated power.
- B. The safety limit is exceeded if the combination of Reactor Coolant System average temperature and thermal power level is at any time above the appropriate pressure line in TS Figures 2.1-1A, 2.1-1B, 2.1-2A, 2.1-2B, 2.1-3A, or 2.1-3B; or the core thermal power exceeds 118% of rated power.
- C. The fuel residence time shall be limited to 26,000 effective full power hours (EFPH) for Cycles 1 and 2 of Unit 1 and to 17,000 EFPH for Cycle 1 of Unit 2 provided the Unit 2 primary system pressure is reduced to 2000 psia by 3500 EFPH.

Basis

To maintain the integrity of the fuel cladding and prevent fission product release, it is necessary to prevent overheating of the cladding under all operating conditions. This is accomplished by operating within the nucleate boiling regime of heat transfer, wherein the heat transfer coefficient is very large and the clad surface temperature is only a few degrees Fahrenheit above the reactor coolant saturation temperature. The upper boundary of the nucleate boiling regime is termed Departure From Nucleate Boiling (DNB) and at this point there is a sharp reduction of the heat transfer coefficient, which would result in high clad temperatures and the possibility of clad failure. DNB is not, however, an observable parameter during reactor operation. Therefore, the observable parameters; thermal power, reactor coolant temperature and pressure have been related to DNB through the W-3 correlation. The W-3 DNB correlation has been developed to predict the DNB flux and the location of DNB for axially

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to this limiting criterion. Additional peaking factors to account for local peaking due to fuel rod axial gaps and reduction in fuel pellet stack length have been included in the calculation of this limit.

The fuel residence time is limited to 26,000 EFPH for Cycles 1 and 2 of Unit 1 and to 17,000 EFPH for Cycle 1 of Unit 2 to assure no fuel clad flattening will occur in the cores without prior review by the Regulatory Staff.

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References

- (1) FSAR Section 3.4
- (2) FSAR Section 3.3
- (3) FSAR Section 14.2

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

VIRGINIA ELECTRIC & POWER COMPANY

DOCKET NO. 50-281

SURRY POWER STATION UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5
License No. DPR-37

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Virginia Electric & Power Company (the licensee) dated February 25, 1975, 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; and
 - 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.
2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 3.B of Facility License No. DPR-37 is hereby amended to read as follows:



"3.B Technical Specifications

The Technical Specifications contained in Appendix A, as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 20."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Giambusso

A. Giambusso, Director
Division of Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Change No. 20 to the
Technical Specifications

Date of Issuance: MAR 27 1975

ATTACHMENT TO LICENSE AMENDMENT NO. 5

CHANGE NO. 20 TO THE TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR-37

DOCKET NO. 50-281

Revise Appendix A as follows:

Remove pages 2.1-2 and 2.1-6 and insert revised pages 2.1-2 and 2.1-6.

to this limiting criterion. Additional peaking factors to account for local peaking due to fuel rod axial gaps and reduction in fuel pellet stack length have been included in the calculation of this limit.

The fuel residence time is limited to 26,000 EFPH for Cycles 1 and 2 of Unit 1 and to 17,000 EFPH for Cycle 1 of Unit 2 to assure no fuel clad flattening will occur in the cores without prior review by the Regulatory Staff.

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References

- (1) FSAR Section 3.4
- (2) FSAR Section 3.3
- (3) FSAR Section 14.2

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4. The reactor thermal power level shall not exceed 118% of rated power.
- B. The safety limit is exceeded if the combination of Reactor Coolant System average temperature and thermal power level is at any time above the appropriate pressure line in TS Figures 2.1-1A, 2.1-1B, 2.1-2A, 2.1-2B, 2.1-3A, or 2.1-3B; or the core thermal power exceeds 118% of rated power.
- C. The fuel residence time shall be limited to 26,000 effective full power hours (EFPH) for Cycles 1 and 2 of Unit 1 and to 17,000 EFPH for Cycle 1 of Unit 2 provided the Unit 2 primary system pressure is reduced to 2000 psia by 3500 EFPH.

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Basis

To maintain the integrity of the fuel cladding and prevent fission product release, it is necessary to prevent overheating of the cladding under all operating conditions. This is accomplished by operating within the nucleate boiling regime of heat transfer, wherein the heat transfer coefficient is very large and the clad surface temperature is only a few degrees Fahrenheit above the reactor coolant saturation temperature. The upper boundary of the nucleate boiling regime is termed Departure From Nucleate Boiling (DNB) and at this point there is a sharp reduction of the heat transfer coefficient, which would result in high clad temperatures and the possibility of clad failure. DNB is not, however, an observable parameter during reactor operation. Therefore, the observable parameters; thermal power, reactor coolant temperature and pressure have been related to DNB through the W-3 correlation. The W-3 DNB correlation has been developed to predict the DNB flux and the location of DNB for axially

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENTS NO. 5 TO LICENSES NO. DPR-32 AND DPR-37

CHANGE NO. 20 TO TECHNICAL SPECIFICATIONS

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-280 AND 50-281

Introduction

By letter dated February 25, 1975, Virginia Electric and Power Company requested changes to the Technical Specifications appended to Facility Operating licenses DPR-32 and DPR-37 for the Surry Power Station Units 1 and 2. The purpose of the request is to revise the Technical Specifications to increase the fuel residence time for Unit 1, Cycles 1 and 2 from 15,500 to 26,000 effective full power hours (EFPH) and Unit 2, Cycle 1 from 10,000 to 17,000 EFPH .

Discussion

The licensee made a similar request dated October 17, 1974, in connection with the Unit 1, Cycle 2 reload. We had not at that time completed our review of the calculational model submitted by the licensee to support his clad collapse calculations, and accordingly, we restricted fuel residence times to values smaller than requested by the licensee. We have now approved the calculational model (WCAP-8377) for general use and the safety evaluation below makes use of the calculational model and observed clad flattening data of WCAP-8377.

Evaluation

The present restrictions on fuel residence times for Units 1 and 2 were based on calculational methods (BUCKLE code) that have been shown to be conservative. WCAP-8377 is a more refined calculational method for predicting clad collapse times that is based on a fuller understanding of the comparison with observed clad flattening data for pressurized rods of the type used in Surry Units 1 and 2.



We find that the use of WCAP-8377 is appropriate for establishing fuel residence times for Surry Units 1 and 2 and agree that a limit of 26,000 EFPH for Cycles 1 and 2 of Unit 1 and 17,000 EFPH for Cycle 1 of Unit 2 is acceptable. This relaxation of a limiting condition for operation is adequately compensated for by the use of the improved, and verified, WCAP-8377 calculational method. Our confidence in the validity of these new limits is comparable to our confidence in establishing the initial limits. Accordingly, the level of safety of plant operation is not degraded by this change.

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

Date: **MAR 27 1975**

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-280 AND 50-281

VIRGINIA ELECTRIC & POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY
OPERATING LICENSES

Notice is hereby given that the U.S. Nuclear Regulatory Commission (the Commission) has issued Amendments No. 5 to Facility Operating Licenses No. DPR-32 and DPR-37 issued to Virginia Electric & Power Company (licensee) which revised Technical Specifications for operation of the Surry Power Station, Units 1 and 2, located in Surry County, Virginia. The amendments are effective as of the date of issuance.

The amendments revise the provisions in the Technical Specifications for the fuel residence time for Unit 1, Cycles 1 and 2 from 15,500 to 26,000 EFPH and Unit 2, Cycle 1 core from 10,000 to 17,000 EFPH, pursuant to licensee's application for amendment dated October 17, 1974, supplemented by his application dated February 25, 1975.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. A prenotice was issued on November 20, 1974, (39 FR 40810) for the licensee's request of October 17, 1974. No request for a

hearing or petition for leave to intervene was filed following notice of the proposed action.

For further details with respect to this action, see (1) the application for amendment dated October 17, 1974, as supplemented February 25, 1975, (2) Amendments No. 5 to Licenses No. DPR-32 and DPR-37, with Changes No. 20 and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. and at the Swem Library, College of William & Mary, Williamsburg, Virginia 23185.

A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Reactor Licensing.

Dated at Bethesda, Maryland, this **MAR 27 1975**

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:
Robert A. Purple

Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Reactor Licensing