

May 24, 1988

Docket Nos. 50-280  
and 50-281

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Mr. D. S. Cruden  
Vice President - Nuclear  
Virginia Electric and Power Company  
Post Office Box 26666  
Richmond, Virginia 23261

Dear Mr. Cruden:

SUBJECT: SURRY UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: CONTAINMENT  
LEAKAGE RATES (TAC NOS. 67399 AND 67400)

The Commission has issued the enclosed Amendment No. 120 to Facility Operating License No. DPR-32 and Amendment No. 120 to Facility Operating License No. DPR-37 for the Surry Power Station, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications in response to your application transmitted by letter dated March 1, 1988, as clarified by letter dated April 8, 1988.

These amendments modify Section 4.4, "Containment Test" of the Surry Units 1 and 2 Technical Specifications to reflect the use of the Mass Point method for calculating containment leakage rates, which is described in ANSI/ANS 56.8-1987, "Containment System Leakage Testing Requirements." Also, the Bases section is changed to reflect the use of the ANSI/ANS 56.8-1987 Standard.

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,

Original signed by

Chandu P. Patel, Project Manager  
Project Directorate II-2  
Division of Reactor Projects-I/II  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 120 to DPR-32
2. Amendment No. 120 to DPR-37
3. Safety Evaluation

cc w/enclosures:  
See next page

LA:PDII-2  
DM:Patel  
05/14/88

*CP*  
PM:PDII-2  
CPatel:bd  
05/14/88

D:PDII-2  
HBertlow  
05/26/88

*[Signature]*  
J Craig  
05/13/88

OGC-WF  
S H Low  
05/20/88

No legal objection  
subject to neces-  
sary addition to  
SE p. 3. See  
my notation.

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PDR ADDCK 05000280  
PDR

Mr. D. S. Cruden  
Virginia Electric and Power Company

Surry Power Station

cc:

Mr. Michael W. Maupin  
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Resident Inspector  
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Mr. Sherlock Holmes, Chairman  
Board of Supervisors of Surry County  
Surry County Courthouse  
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Virginia Corporation Commission  
Division of Energy Regulation  
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Regional Administrator, Region II  
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101 Marietta Street N.W., Suite 2900  
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James B. Kenley, M.D., Commissioner  
Department of Health  
109 Governor Street  
Richmond, Virginia 23219



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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-280

SURRY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 120  
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 March 1, 1988, as clarified by letter dated April 8, 1988, 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 Facility Operating License No. DPR-32 is hereby amended to read as follows:

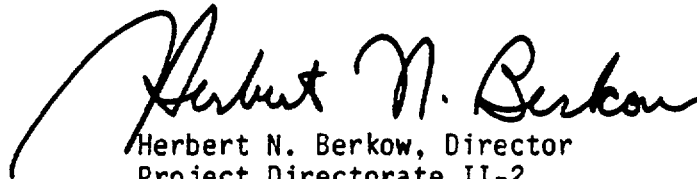
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(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 120, 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 the date of its issuance and shall be implemented within 30 days from the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects-I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: May 24, 1988



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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-281

SURRY POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 120  
License No. DPR-37

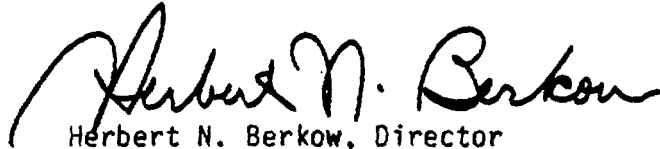
1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Virginia Electric and Power Company (the licensee) dated March 1, 1988, as clarified by letter dated April 8, 1988, complies with the standards and requirements of the Atomic Energy Act of 1954, 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 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. 120, 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 the date of its issuance and shall be implemented within 30 days from date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects-I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: May 24, 1988

### Basis

The leaktightness testing of all liner welds was performed during construction by welding a structural steel test channel over each weld seam and performing soap bubble and halogen leak tests.

The containment is designed for a maximum pressure of 45 psig. The containment is maintained at a subatmospheric air partial pressure which varies between 9 psia and 11 psia depending upon the cooldown capability of the Engineered Safeguards and is not expected to rise above 39.2 psig for any postulated loss-of-coolant accident.

All loss-of-coolant accident evaluations have been based on an integrated containment leakage rate not to exceed 0.1% of containment volume per 24 hr.

The above specification satisfies the conditions of 10 CFR 50.54(O) which stated that primary reactor containments shall meet the containment leakage test requirements set forth in Appendix J. Due to the increased accuracy of the mass-point method for containment integrated leakage testing an exemption to 10 CFR 50 Appendix J has been granted. The mass-point method referenced in ANSI N56.8-1987 can be used in lieu of the methods described in ANSI 45.2-1972.

### References

- |                      |   |
|----------------------|---|
| FSAR Section 5.4     | Design Evaluation of Containment Tests and Inspections of Containment |
| FSAR Section 7.5.1   | Design Bases of Engineered Safeguards Instrumentation                 |
| FSAR Section 14.5    | Loss of Coolant Accident  |
| 10 CFR 50 Appendix J | "Reactor Containment Leakage Testing for Water Cooled Power Reactors" |



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 120 TO FACILITY OPERATING LICENSE NO. DPR-32  
AND AMENDMENT NO. 120 TO 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

INTRODUCTION

By letter dated March 1, 1988, as clarified by letter dated April 8, 1988, the licensee requested an exemption from 10 CFR Part 50, Appendix J, Paragraph III-A.3, which requires that all Containment Integrated Leakage Rate Tests (CILRTs) be performed in accordance with the American National Standard ANSI-N45.4-1972, "Leakage Rate Testing of Containment Structures for Nuclear Reactors." ANSI-N45.4-1972 requires that leakage rate calculations be performed using either the Total Time method or the Point-to-Point method. The licensee's requested exemption would allow use of the Mass Point method to calculate the containment leakage rates. The Mass-Point method is described in a more recent standard, ANSI/ANS-56.8-1987, "Containment System Leakage Testing Requirements." Also, in order to maintain consistency between the Technical Specifications (TSs) and the requested exemption, the licensee has proposed to revise Section 4.4, "Containment Test" of the Surry Units 1 and 2 Technical Specifications. This evaluation addresses the licensee's request for the changes in the TSs. The exemption was previously granted by letter dated May 9, 1988.

By letter dated April 8, 1988, the licensee provided clarifying information on the amendment request in response to the staff's request. This letter did not alter, in any way, the staff's initial determination of no significant hazards considerations as published in the Federal Register.

EVALUATION

The current TSs for the Surry Units limit the licensee to use the methods recommended by ANSI-N45.4-1972 for containment leakage rate testing. However, advances in leakage rate testing technology have provided improved test methods, including a newer method of evaluating the test data, which is called the Mass Point method. The Mass Point method was incorporated in a newer ANSI/ANS-56.8-1987 standard. Therefore, the licensee has requested to revise the TSs for the Surry Units which will allow the use of the Mass Point method for calculating containment leakage rates.

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It has been recognized by the professional community that the Mass Point method is superior to the Point-to-Point and Total Time methods which are referenced in ANSI-N45.4-1972 and endorsed by the present regulations. The Mass Point method calculates the air mass at a series of points in time, and plots it against time. A linear regression line is plotted through the mass-time points using a least square fit. The slope of this line is divided by the intercept of this line, and the result is multiplied by an appropriate constant to obtain the calculated leakage rate.

The superiority of the Mass Point method becomes apparent when it is compared with the two other methods. In the Total Time method, a series of leakage rates are calculated on the basis of containment air mass differences between an initial data point and each individual data point thereafter, and an average of these leakage rates is then determined. If, for any reason, the initial data point is not accurate (e.g., instrument error, lack of temperature equilibrium, ingassing, or outgassing), the results of the test will be affected. In the Point-to-Point method, the leakage rates are based on the mass difference between each pair of consecutive data points, and these leakage rates are then averaged to yield a single leakage rate estimate. Mathematically, this can be shown to be the difference between the air mass at the beginning of the test and the air mass at the end of the test, expressed as a percentage of the containment air mass. It follows from the above that the Point-to-Point method ignores any mass reading taken during the test and thus the leakage rate is calculated on the basis of the difference in mass between two measurements taken at the beginning and at the end of the test, which are 24 hours apart.

On February 29, 1988 (53 FR 5985), the staff published a proposed amendment to Appendix J which would explicitly permit the use of the Mass Point method, subject to certain conditions that have been accepted by the staff since approximately 1976, as well as to permit the use of the prior methods referenced in ANSI-N45.4-1972.

In addition to the method of calculation, consideration of the length of the test should also be included in the overall program. In accordance with Section 7.6 of ANSI-N45.4-1972, a test duration of less than 24 hours is only allowed if approved by the NRC staff, and the only currently approved methodology for such a test is contained in Bechtel Topical Report BN-TOP-1, Revision 1, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants," dated November 1, 1972. This approach only allows use of the Total Time method. Therefore, the staff requires a minimum test duration of 24 hours when the Mass Point method is used. By letter dated April 8, 1988, the licensee confirmed that a minimum test duration of 24 hours will be utilized when the Mass Point method is used. In addition, the licensee clarified that the latest revision of ANSI/ANS-56.8 (1987 revision) will be used for determining containment leakage rates.

Based on the above evaluation, the staff has determined that the Mass Point method is an acceptable method for calculation of containment leak rates, when used with a test duration of at least 24 hours. Therefore, the staff finds the proposed changes to the TS acceptable.

The staff has consulted with the State of Virginia concerning this action and there were no comments.

### ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of the facilities components located within the restricted areas as defined in 10 CFR Part 20. The staff has determined that these 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 these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, these 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 these amendments.

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

Dated: May 24, 1988

Principal Contributor:

C. Patel