

August 14, 1978

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Docket Nos. 50-280  
and 50-281

Virginia Electric & Power Company  
ATTN: Mr. W. L. Proffitt  
Senior Vice President - Power  
Post Office Box 26666  
Richmond, Virginia 23261

Gentlemen:

The Commission has issued the enclosed Amendment Nos. 43 and 42 to Facility Operating License Nos. DPR-32 and DPR-37 for the Surry Power Station Unit Nos. 1 and 2. These amendments are in response to your application dated July 26, 1978, as supplemented August 3 and 11, 1978.

These amendments specify license conditions related to service water temperature, containment temperature, containment air partial pressure, refueling water storage tank volume, and outside recirculation spray pump flow rate. Operating limits on these plant parameters were previously governed by NRC Order for Modification of License dated June 29, 1978, which is superceded by these amendments. The changes to the operating limits previously imposed for these parameters are an increase in the maximum service water temperature from 87°F to 90°F with operating parameters adjusted to compensate for the increase in maximum service water temperature. These changes are evaluated in our enclosed Safety Evaluation.

A copy of the Notice of Issuance is also enclosed.

Sincerely,

/s/

A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors

*Const*

Enclosures:

1. Amendment No.43 to DPR-32
2. Amendment No.42 to DPR-37
3. Safety Evaluation
4. Notice of Issuance

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

August 14, 1978

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A copy of the Notice of Issuance is also enclosed.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Schwencer".

A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors

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2. Amendment No. 42 to DPR-37
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cc w/enclosures:  
See next page

August 14, 1978

cc: Mr. Michael W. Maupin  
Hunton & Williams  
Post Office Box 1535  
Richmond, Virginia 23213

Swem Library  
College of William & Mary  
Williamsburg, Virginia 23185

Mr. Sherlock Holmes, Chairman  
Board of Supervisors of Surry  
County  
Surry County Courthouse, Virginia 23683

Commonwealth of Virginia  
Council on the Environment  
903 Ninth Street Office Building  
Richmond, Virginia 23219

Mr. James R. Wittine  
Commonwealth of Virginia  
State Corporation Commission  
Post Office Box 1197  
Richmond, Virginia 23209

Chief, Energy Systems  
Analyses Branch (AW-459)  
Office of Radiation Programs  
U.S. Environmental Protection Agency  
Room 645, East Tower  
401 M Street, SW  
Washington, D.C. 20460

U.S. Environmental Protection Agency  
Region III Office  
ATTN: EIS COORDINATOR  
Curtis Building - 6th Floor  
6th and Walnut Streets  
Philadelphia, Pennsylvania 19106



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

VIRGINIA ELECTRIC & POWER COMPANY

DOCKET NO. 50-280

SURRY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 43  
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 July 25, 1978, as supplemented August 3 and 11, 1978, 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. Add paragraph 3.F. as follows:

"F. The facility shall be operated within the following limits:

Maximum Service Water Temperature	90°F
Containment Temperature Allowable Range	100°F-125°F
Containment Air Partial Maximum Pressure	
1. For Service Water Temperature $\leq 87^\circ$	Air partial pressure shall be maintained in accordance with Figure 3.F.2
2. For Service Water Temperature $> 87^\circ$	Air partial pressure shall be maintained in accordance with Figure 3.F.1.
Minimum Refueling Water Storage Tank Volume	385,200 gallons
Outside Recirculation Spray Pump Flow Rate	2250 gpm

3. This license amendment supercedes the Order for Modification of license dated June 29, 1978, and is effective as of the date of its issuance.

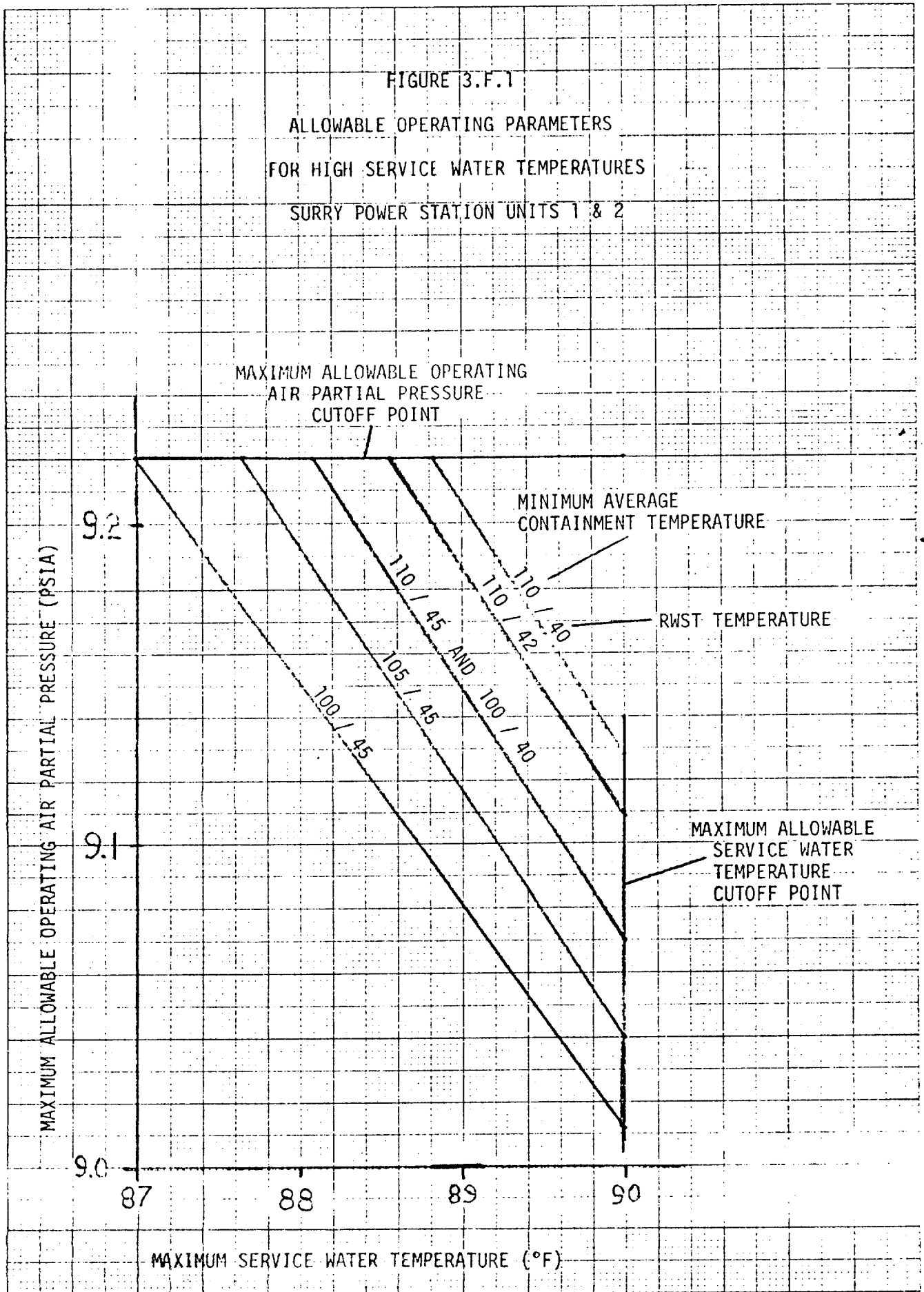
FOR THE NUCLEAR REGULATORY COMMISSION

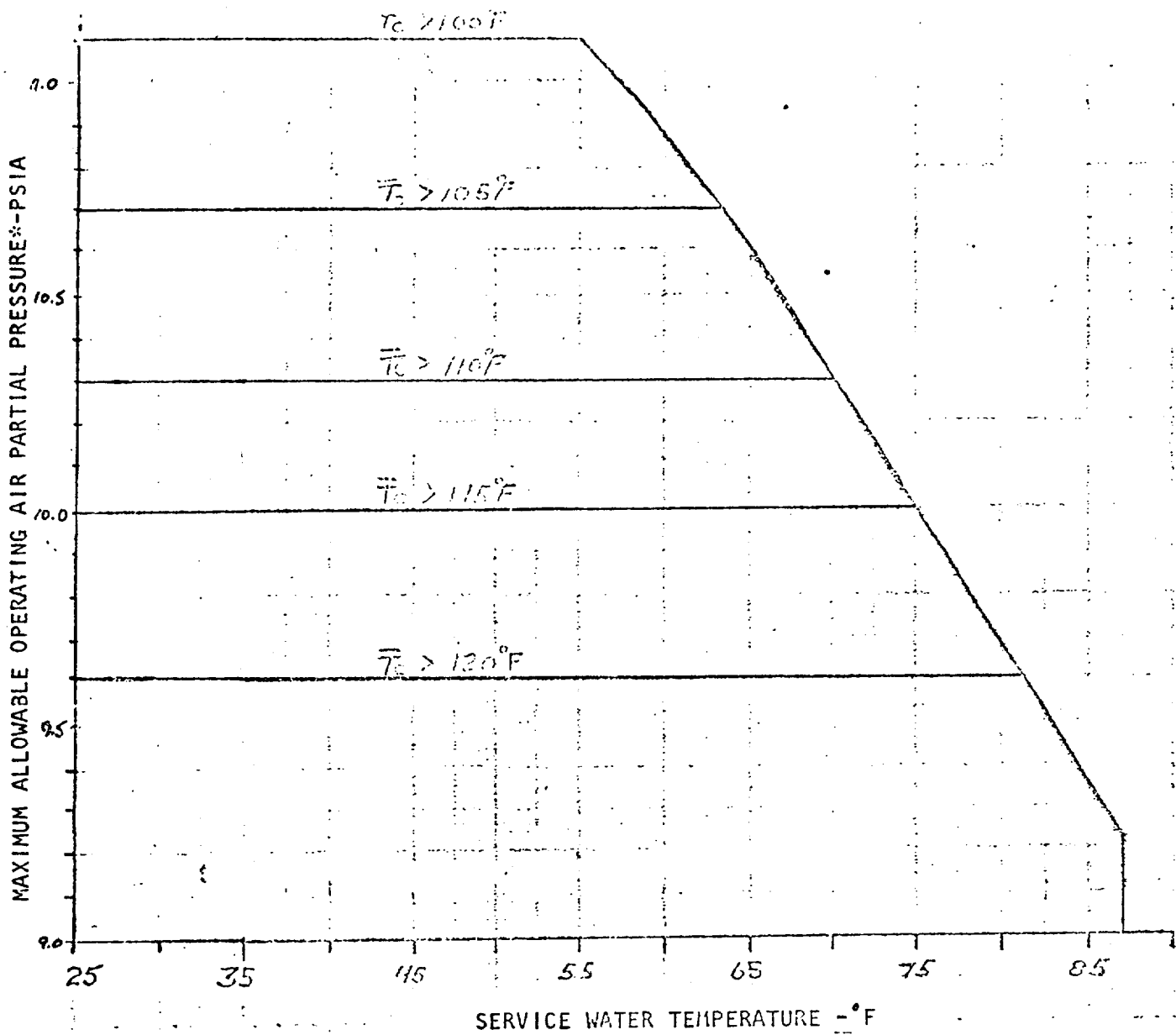
Victor Stello, Jr., Director  
Division of Operating Reactors  
Office of Nuclear Reactor Regulation

Date of Issuance: August 14, 1978

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NOTES

Maximum allowable operating air partial pressure in the containment as a function of service water temperature and refueling water storage tank temperature.

\*Set point value in containment vacuum system instrumentation

$\bar{T}_c$  = Average containment temperature

Refueling Water Storage Tank Temperature  $\leq 45^\circ\text{F}$

FIG 3.F.2

MAXIMUM ALLOWABLE OPERATING AIR PARTIAL PRESSURE



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. 42  
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 July 25, 1978, as supplemented August 3 and 11, 1978, 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. Add paragraph 3.F. as follows:

"F. The facility shall be operated within the following limits:

Maximum Service Water Temperature	90°F
Containment Temperature Allowable Range	100°F-125°F
Containment Air Partial Maximum Pressure	
1. For Service Water Temperature $\leq 87^\circ$	Air partial pressure shall be maintained in accordance with Figure 3.F.2
2. For Service Water Temperature $> 87^\circ$	Air partial pressure shall be maintained in accordance with Figure 3.F.1.
Minimum Refueling Water Storage Tank Volume	385,200 gallons
Outside Recirculation Spray Pump Flow Rate	2250 gpm

3. This license amendment supercedes the Order for Modification of license dated June 29, 1978, and is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

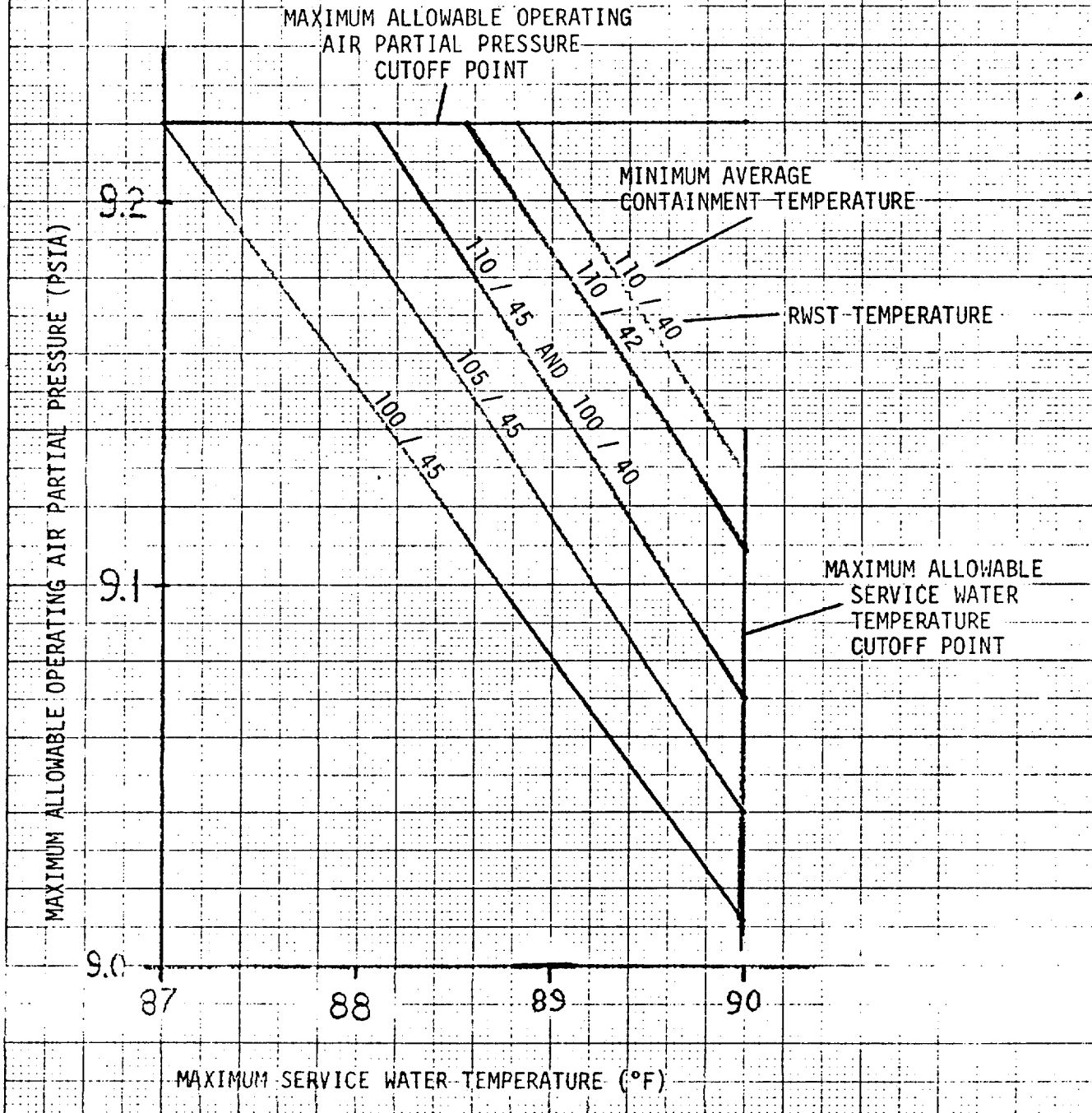
Victor Stello, Jr., Director  
Division of Operating Reactors  
Office of Nuclear Reactor Regulation

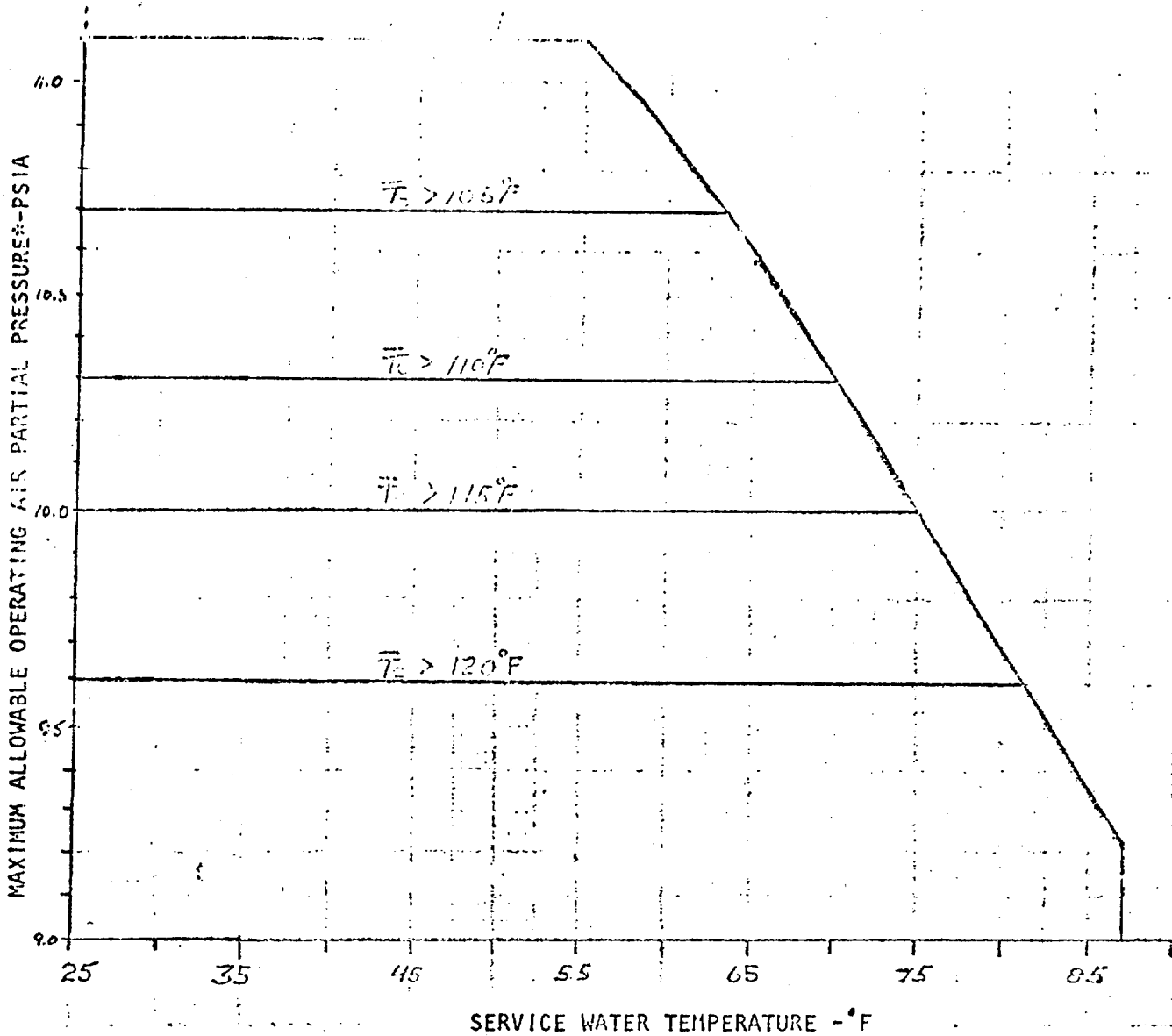
Date of Issuance: August 14, 1978

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FIGURE 3.F.1  
ALLOWABLE OPERATING PARAMETERS  
FOR HIGH SERVICE WATER TEMPERATURES  
SURRY POWER STATION UNITS 1 & 2





NOTES

Maximum allowable operating air partial pressure in the containment as a function of service water temperature and refueling water storage tank temperature.

\*Set point value in containment vacuum system instrumentation

$\bar{T}_c$  = Average containment temperature

Refueling Water Storage Tank Temperature  $\leq 45^\circ\text{F}$

FIG 3.F.2

MAXIMUM ALLOWABLE OPERATING



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATON

SUPPORTING AMENDMENT NOS. 43 AND 42 TO

FACILITY OPERATING LICENSE NOS. DPR-32 AND 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 July 25, 1978, as supplemented August 3 and 11, 1978, Virginia Electric and Power Company (the licensee) requested amendments to the Facility Operating Licenses for Surry Units 1 and 2. This change would increase the maximum allowable service water temperature from 87°F to 90°F with operating parameters adjusted to compensate for the increase.

Discussion

By Order for Modification of License dated August 24, 1977, the Commission authorized the installation of flow-limiting orifices in the discharge of the outside recirculation spray (ORS) pumps and imposed limitations on certain operating parameters for the Surry Power Station, Units 1 and 2. These limitations were designed to assure adequate minimum flow for the containment recirculation spray pumps during the design basis loss-of-coolant accident (LOCA) conditions. One of these limitations was a minimum flow rate of 2000 gpm for each of the ORS pumps at a maximum service water temperature of 85°F. The service water cools, through heat exchangers, the recirculating containment spray water. The limit on maximum service water temperature was intended to assure that the containment would depressurize within the time limit as presented in the FSAR and that the depressurization rate did not result in an inadequate net positive suction head (NPSH) for the low head safety injection (LHSI) and containment recirculation spray pumps.

In a subsequent Order dated June 29, 1978, the Commission authorized the operating limit on the service water temperature be changed from 85°F to 87°F. In order that the time limit for containment depressurization presented in the FSAR was maintained and that the depressurization rate

did not result in an inadequate NPSH for LHSI and containment recirculation spray pumps, this Order also authorized the limit on ORS flow be changed from 2000 gpm to 2250 gpm, the maximum containment air partial pressure be changed from 9.3 psia to 9.2 psia and that the minimum volume of water in the refueling water storage tank be changed from 352,000 gallons to 385,200 gallons.

By letter dated July 25, 1978, the licensee requested that the operating limit on the service water temperature be changed from 87°F to 90°F and the limiting conditions imposed for the containment initial air partial pressures be changed in accordance with the conditions shown in the attached Figures 3.F.1 and 3.F.2. The other limits remain unchanged from those established by the Order dated June 29, 1978. The following conditions are being incorporated as a license amendment:

Maximum Service Water Temperature	90°F
Containment Temperature Allowable Range	100°F-125°F
Containment Air Partial Maximum Pressure	
1. For Service Water Temperature <u>≤</u> 87°F	Air partial pressure shall be maintained in accordance with Figure 3.F.2
2. For Service Water Temperature >87°F	Air partial pressure shall be maintained in accordance with Figure 3.F.1.
Minimum Refueling Water Storage Tank Volume	385,200 gallons
Outside Recirculation Spray Pump Flow Rate	2250 gpm

### Evaluation

We have reviewed these proposed operating limits and their bases and we have discussed the bases for these limits with representatives of the licensee and representatives of Stone and Webster Engineering Company (Stone and Webster) who performed the containment pressure analyses and derived these limits.

A number of calculations were performed by Stone and Webster to determine the pressure response of the containment atmosphere to the effects of LOCA using the LOCTIC program and using techniques which we previously reviewed and approved. We had previously corroborated the validity of calculation performed using a service water temperature of 87°F.<sup>1/</sup> Stone and Webster has examined the results of the pressure response analyses and selected parametric limits on the pertinent variables that would prevent the containment pressure from exceeding atmospheric pressure after the refueling water storage tank had been emptied, thus preventing any leakage from the containment building greater than that which had been previously analyzed.

Based on our review of the results of the Stone and Webster analyses, we determined that there would be little or no effect on the peak pressure in the containment building as a result of the proposed changes. In addition to reviewing the information provided by the licensee, we have performed our own analyses using the data delineated in references 1, 2 and 3. The results of our analyses indicate that the peak containment pressure will not exceed the design pressure of 45 psig and that there will be adequate available NPSH for the pumps at the proposed conditions of 90°F.

Based on the review of the data submitted by the licensee, we find that the licensee's proposed change is acceptable. In the event that the data (e.g., mass and energy release rates, heat transfer coefficients) that is to be submitted for the permanent resolution of the NPSH issue varies significantly from the data contained in the references 1, 2 and 3, we will reexamine this matter to assure the adequacy of the available NPSH. However, we do not expect that this additional information will change our conclusions. We therefore conclude that operation of the Surry Power Station within the new limits described herein would

<sup>1/</sup> This was done in connection with our June 29, 1978 Order.

ensure that in the event of a LOCA, (1) the containment design pressure would not be exceeded, (2) the recirculation spray pumps would have adequate NPSH and (3) the leakage from containment would not exceed that which was previously analyzed. Since this increase in service water temperature will be offset by changes in the containment air partial pressure and since these calculations were performed using previously reviewed and approved techniques, we have further concluded that no significant hazards consideration is involved.

#### Environmental Consideration

We have determined that these amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

#### Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) 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.

Date: August 14, 1978

## References

1. VEPCO Response to NRC Order of August 24, 1977, dated September 13, 1977
2. Supplemental Information to VEPCO Response to NRC Order of August 24, 1977, dated September 30, 1977.
3. Internal Memorandum to K. R. Goller, "Request for Additional Information RE: Surry Power Station, Units 1 and 2 (TAC-7170)", dated January 27, 1978.



UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NOS. 50-280 AND 50-281VIRGINIA ELECTRIC AND POWER COMPANYNOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY  
OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment Nos. 43 and 42 to Facility Operating License Nos. DPR-32 and DPR-37, issued to Virginia Electric and Power Company (the licensee), which adds license conditions related to operation of the Surry Power Station, Unit Nos. 1 and 2 (the facilities) located in Surry County, Virginia. The amendments are effective as of the date of issuance.

These amendments specify license conditions related to service water temperature, containment temperature, containment air partial pressure, refueling water storage tank volume, and outside recirculation spray pump flow rate. Operating limits on these plant parameters were previously governed by NRC Order for Modification of License dated June 29, 1978, which is superceded by these amendments. The changes to the operating limits previously imposed for these parameters are an increase in the maximum service water temperature from 87°F to 90°F with operating parameters adjusted to compensate for the increase in maximum service water temperature. These changes are evaluated in our Safety Evaluation.

The application for the amendments 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

- 2 -

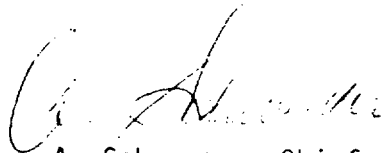
appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated July 25, 1978, as supplemented August 3 and 11, 1978, (2) Amendment Nos. 43 and 42 to License Nos. DPR-32 and DPR-37, 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 and Mary, Williamsburg, Virginia. 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 Operating Reactors.

Dated at Bethesda, Maryland, this 14th day of August 1978.

FOR THE NUCLEAR REGULATORY COMMISSION



A. Schwencer, Chief  
Operating Reactors Branch #1  
Division of Operating Reactors