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DISTRIBUTION

Docket
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OPA
WJones
DBrinkman
Gray

Docket Nos. 50-272
and 50-311

Mr. R. A. Uderitz,
Vice President - Nuclear
Public Service Electric and Gas Company
Post Office Box 236
Hancocks Bridge, New Jersey 08038

Dear Mr. Uderitz:

The Commission has issued the enclosed Amendment No. 52 to Facility Operating License No. DPR-70 and Amendment No. 20 to Facility Operating License No. DPR-75 for the Salem Nuclear Generating 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 October 5, 1982.

These amendments change the partial power multiplier from 0.2 to 0.3 for FAH.

Copies of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

ORIGINAL SIGNED

Donald Fischer, Project Manager
Operating Reactors Branch #1
Division of Licensing

Enclosures:

- 1. Amendment No. 52 to DPR-70
- 2. Amendment No. 20 to DPR-75
- 3. Safety Evaluation
- 4. Notice of Issuance

cc w/enclosures:
See next page

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Mr. R. A. Uderitz
Public Service Electric and Gas Company

cc: Mark J. Wetterhahn, Esquire
Conner and Wetterhahn
Suite 1050
1747 Pennsylvania Avenue, NW
Washington, D. C. 20006

Richard Fryling, Jr., Esquire
Assistant General Solicitor
Public Service Electric and Gas Company
P.O. Box 570 - Mail Code T5E
Newark, New Jersey 07101

Gene Fisher, Bureau of Chief
Bureau of Radiation Protection
380 Scotch Road
Trenton, New Jersey 08628

Mr. Henry J. Midura, General Manager -
Salem Operations
Public Service Electric and Gas Company
P. O. Box E
Hancocks Bridge, New Jersey 08038

Mr. Dale Bridenbaugh
M.H.B. Technical Associates
1723 Hamilton Avenue
San Jose, California 95125

Leif J. Norrholm, Resident Inspector
Salem Nuclear Generating Station
U. S. Nuclear Regulatory Commission
Drawer I
Hancocks Bridge, New Jersey 08038

Richard F. Endel
Deputy Attorney General
Department of Law and Public Safety
CN-112
State House Annex
Trenton, New Jersey 08625

Richard B. McGlynn, Commissioner
Department of Public Utilities
State of New Jersey
101 Commerce Street
Newark, New Jersey 07102

Mr. Edwin A. Liden, Manager
Nuclear Licensing and Regulation
Public Service Electric and Gas Co.
Post Office Box 236
Hancocks Bridge, New Jersey 08038

Regional Radiation Representative
EPA Region II
26 Federal Plaza
New York, New York 10007

Mr. R. L. Mittl, General Manager -
Nuclear Assurance and Regulation
Public Service Electric and Gas Company
Mail Code T16D - P.O. Box 570
Newark, New Jersey 07101

Regional Administrator - Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Lower Alloways Creek Township
c/o Mary O. Henderson, Clerk
Municipal Building, P.O. Box 157
Hancocks Bridge, New Jersey 08038

Mr. Alfred C. Coleman, Jr.
Mrs. Eleanor G. Coleman
35 K Drive
Pennsville, New Jersey 08070

Mr. R. A. Uderitz
Public Service Electric and Gas Company

cc: Carl Valore, Jr., Esquire
Valore, McAllister, Aron and
Westmoreland, P.A.
535 Tilton Road
Northfield, New Jersey 08225

June D. MacArtor, Esquire
Deputy Attorney General
Tatnall Building
P. O. Box 1401
Dover, Delaware 19901

Harry M. Coleman, Mayor
Lower Alloways Creek Township
Municipal Hall
Hancocks Bridge, New Jersey 08038

Mr. Charles P. Johnson
Assistant To Vice President - Nuclear
Public Service Electric and Gas Company
P. O. Box 570
80 Park Plaza - 15A
Newark, New Jersey 07101



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

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-272

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 52
License No. DPR-70

- I. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated October 5, 1982, 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.

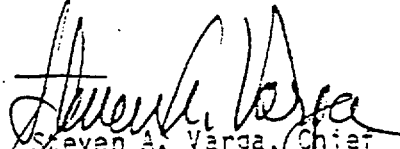
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-70 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 52, 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.

FOR THE NUCLEAR REGULATORY COMMISSION


Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 5, 1983

ATTACHMENT TO LICENSE AMENDMENT NO. 52

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Revise Appendix A as follows:

Remove Pages

3/4 2-9

B 2-2

2-2

Insert Pages

3/4 2-9

B 2-2

2-2

POWER DISTRIBUTION LIMITS

NUCLEAR ENTHALPY HOT CHANNEL FACTOR - $F_{\Delta H}^N$

LIMITING CONDITION FOR OPERATION

3.2.3 $F_{\Delta H}^N$ shall be limited by the following relationship:

$$F_{\Delta H}^N \leq 1.55 [1.0 + 0.3 (1-P)] [1-RBP (BU)]$$

where: $P = \frac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}$, and

RBP(BU)= Rod Bow Penalty as a function of region average burnup as shown in Figure 3.2-3, where a region is defined as those assemblies with the same loading date (reloads) or enrichment (first core).

APPLICABILITY: MODE 1

ACTION:

With $F_{\Delta H}^N$ exceeding its limit:

- a. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 2 hours and reduce the Power Range Neutron Flux-High Trip Setpoints to \leq 55% of RATED THERMAL POWER within the next 4 hours,
- b. Demonstrate thru in-core mapping that $F_{\Delta H}^N$ is within its limit within 24 hours after exceeding the limit or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 2 hours, and
- c. Identify and correct the cause of the out of limit condition prior to increasing THERMAL POWER above the reduced limit required by a. or b. above; subsequent POWER OPERATION may proceed provided that $F_{\Delta H}^N$ is demonstrated through in-core mapping to be within its limit at a nominal 50% of RATED THERMAL POWER prior to exceeding this THERMAL POWER, at a nominal 75% of RATED THERMAL POWER prior to exceeding this THERMAL power and within 24 hours after attaining 95% or greater RATED THERMAL POWER.

SAFETY LIMITS

BASES

The curves are based on an enthalpy hot channel factor, $F_{\Delta H}^N$, of 1.55 and a reference cosine with a peak of 1.55 for axial power shape. An allowance is included for an increase in $F_{\Delta H}^N$ at reduced power based on the expression:

$$F_{\Delta H}^N = 1.55 [1 + 0.3 (1-P)]$$

where P is the fraction of RATED THERMAL POWER

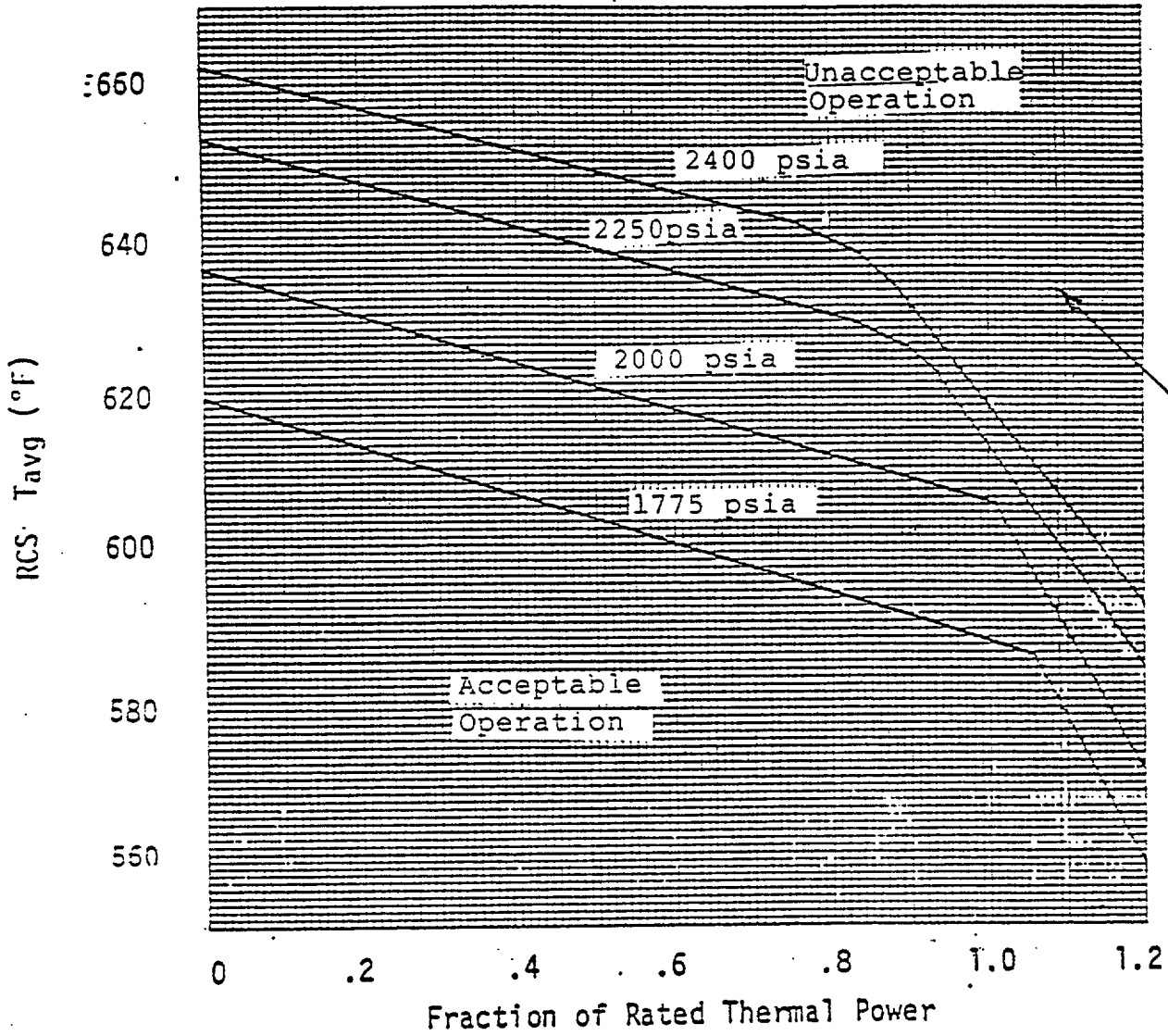
These limiting heat flux conditions are higher than those calculated for the range of all control rods fully withdrawn to the maximum allowable control rod insertion assuming the axial power imbalance is within the limits of the $f_1 (\Delta I)$ function of the Overtemperature trip. When the axial power imbalance is not within the tolerance, the axial power imbalance effect on the Overtemperature ΔT trips will reduce the setpoints to provide protection consistent with core safety limits.

2.1.2 REACTOR COOLANT SYSTEM PRESSURE

The restriction of this Safety Limit protects the integrity of the Reactor Coolant System from overpressurization and thereby prevents the release of radionuclides contained in the reactor coolant from reaching the containment atmosphere.

The reactor pressure vessel and pressurizer are designed to Section III of the ASME Code for Nuclear Power Plant which permits a maximum transient pressure of 110% (2735 psig) of design pressure. The Reactor Coolant System piping and fittings are designed to ANSI B 31.1 1955 Edition while the valves are designed to ANSI B 16.5, MSS-SP-66-1964, or ASME Section III-1968, which permit maximum transient pressures of up to 120% (2985 psig) of component design pressure. The Safety Limit of 2735 psig is therefore consistent with the design criteria and associated code requirements.

The entire Reactor Coolant System is hydrotested at 3107 psig, 125% of design pressure, to demonstrate integrity prior to initial operation.



Thermal Power Limited to a Maximum of 109% of Rated Thermal Power by the Power Range Neutron Flux High Trip

FIGURE 2.1-1 REACTOR CORE SAFETY LIMIT - FOUR LOOPS IN OPERATION



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

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-311

SALEM NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 20
License No. DPR-75

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated October 5, 1982, 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 2.C.(2) of Facility Operating License No. DPR-75 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 20, 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.

FOR THE NUCLEAR REGULATORY COMMISSION


Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 5, 1983

ATTACHMENT TO LICENSE AMENDMENT NO. 20

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Revise Appendix A as follows:

Remove Pages

3/4 2-9

3/4 2-11

B 2-1

2-2

Insert Pages

3/4 2-9

3/4 2-11

B 2-1

2-2

POWER DISTRIBUTION LIMITS

3/4.2.3 RCS FLOW RATE AND R

LIMITING CONDITION FOR OPERATION

3.2.3 The combination of indicated Reactor Coolant System (RCS) total flow rate and R_1 , R_2 shall be maintained within the region of allowable operation shown on Figure 3.2-3 for 4 loop operation.

Where:

$$a. \quad R_1 = \frac{F_{\Delta H}^N}{1.49 [1.0 + 0.3 (1.0 - P)]}$$

$$b. \quad R_2 = \frac{R_1}{[1 - RBP(BU)]}$$

$$c. \quad P = \frac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}, \text{ and}$$

d. $F_{\Delta H}^N$ = Measured values of $F_{\Delta H}^N$ obtained by using the movable incore detectors to obtain a power distribution map. The measured values of $F_{\Delta H}^N$ shall be used to calculate R since Figure 3.2-3 includes measurement uncertainties of 3.5% for flow and 4% for incore measurement of $F_{\Delta H}^N$.

e. RBP (BU) = Rod Bow Penalty as a function of region average burnup as shown in Figure 3.2-4, where a region is defined as those assemblies with the same loading date (reloads) or enrichment (first core).

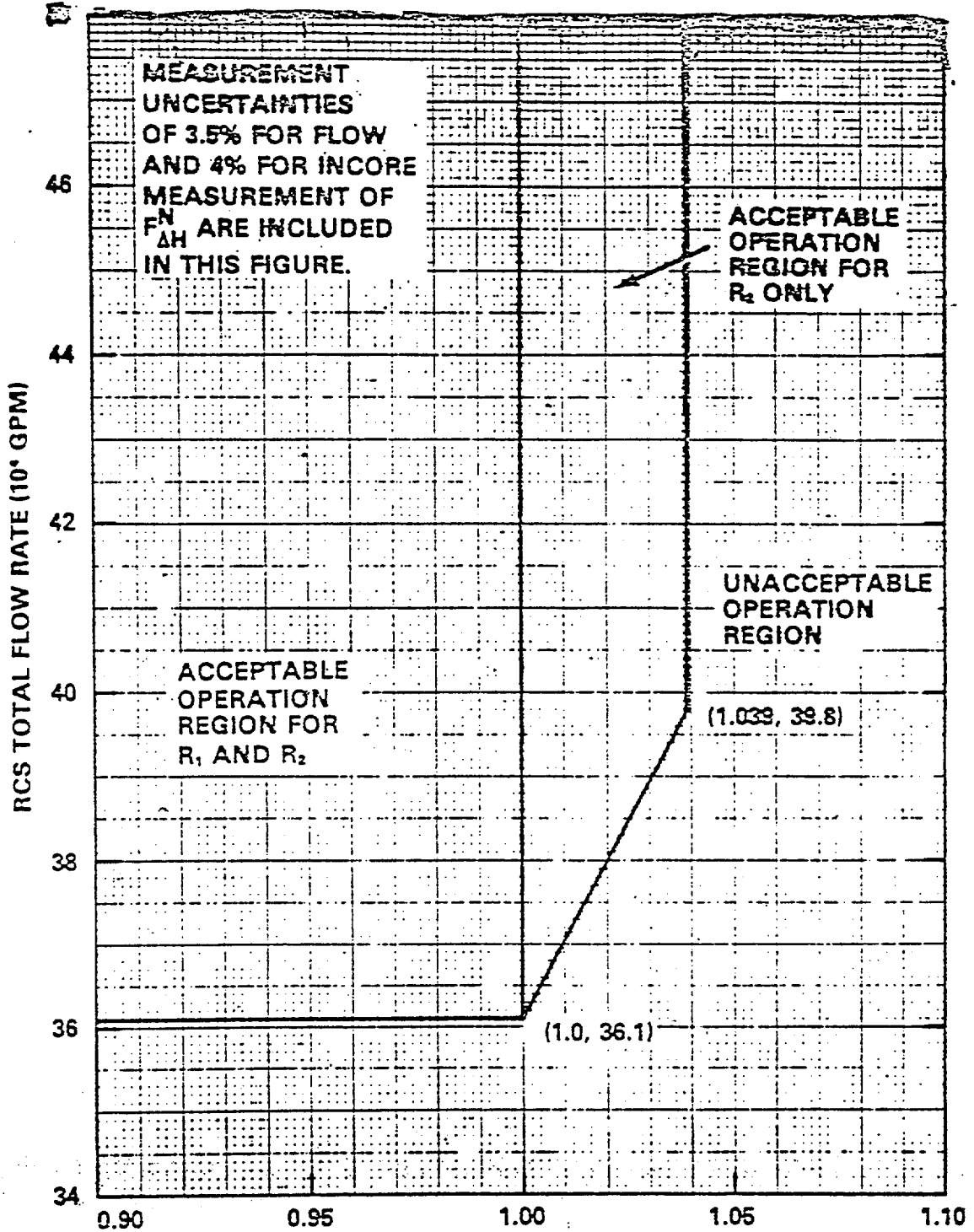
APPLICABILITY: MODE 1.

ACTION:

With the combination of RCS total flow rate and R_1 , R_2 outside the region of acceptable operation shown on Figure 3.2-3:

a. Within 2 hours:

1. Either restore the combination of RCS total flow rate and R_1 , R_2 to within the above limits, or
2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER and reduce the Power Range Neutron Flux - High trip setpoint to less than or equal to 55% of RATED THERMAL POWER within the next 4 hours.



$$R_1 = \frac{F_{\Delta H}^N}{1.49} [1.0 + 0.3(1.0 - P)]$$

$$R_2 = R_1 / [1 - RBP(BU)]$$

Figure 3.2-3
RCS TOTAL FLOWRATE VERSUS R - FOUR LOOPS
IN OPERATION

2.1 SAFETY LIMITS

BASES

2.1.1 REACTOR CORE

The restrictions of this safety limit prevent overheating of the fuel and possible cladding perforation which would result in the release of fission products to the reactor coolant. Overheating of the fuel cladding is prevented by restricting fuel operation to within the nucleate boiling regime where the heat transfer coefficient is large and the cladding surface temperature is slightly above the coolant saturation temperature.

Operation above the upper boundary of the nucleate boiling regime could result in excessive cladding temperatures because of the onset of departure from nucleate boiling (DNB) and the resultant sharp reduction in heat transfer coefficient. DNB is not a directly measurable parameter during operation and therefore THERMAL POWER and 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 uniform and non-uniform heat flux distributions. The local DNB heat flux ratio, DNBR, defined as the ratio of the heat flux that would cause DNB at a particular core location to the local heat flux, is indicative of the margin to DNB.

The minimum value of the DNBR during steady state operation, normal operational transients, and anticipated transients is limited to 1.30. This value corresponds to a 95 percent probability at a 95 percent confidence level that DNB will not occur and is chosen as an appropriate margin to DNB for all operating conditions.

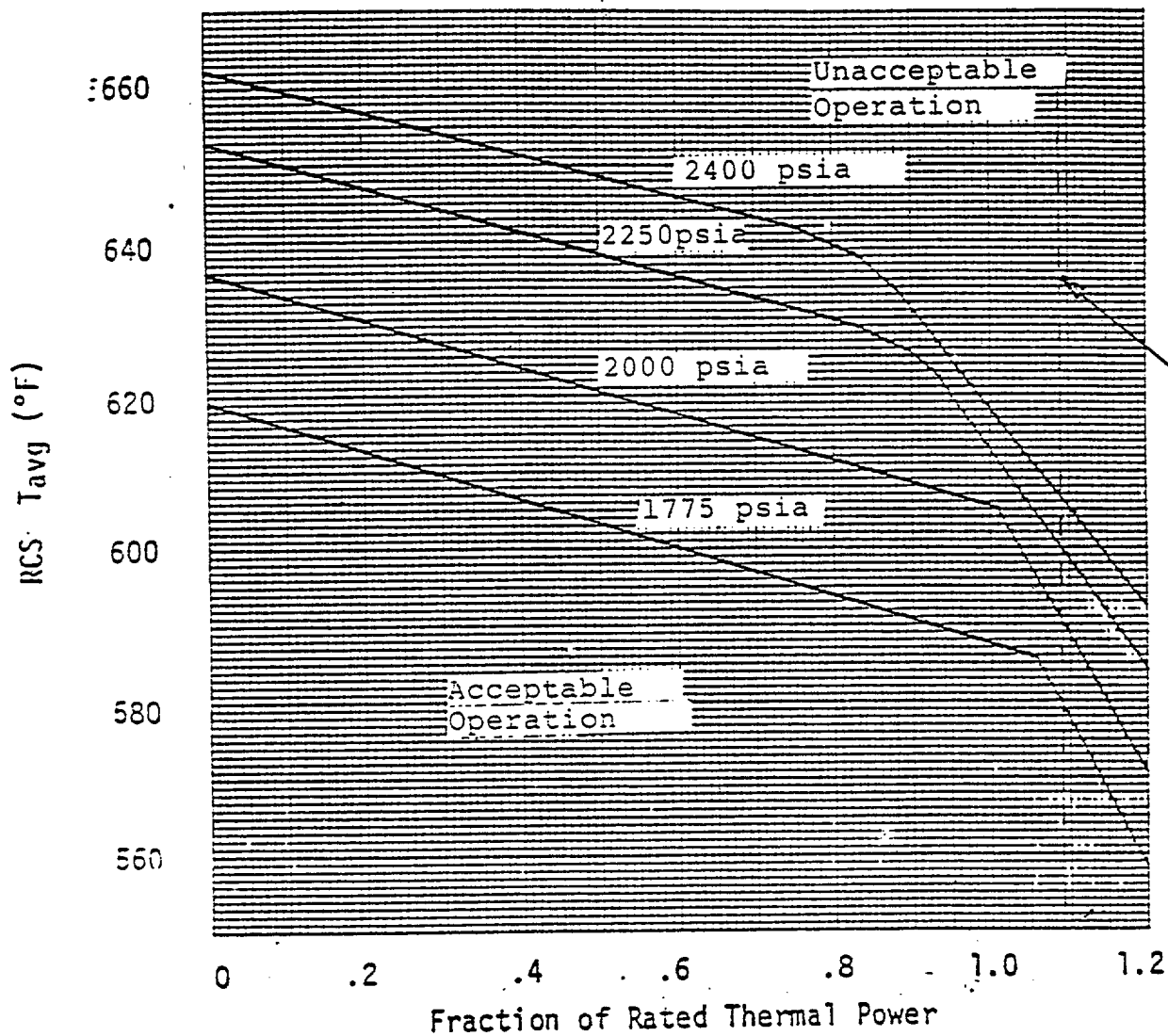
The curves of Figures 2.1-1 and 2.1-2 show the loci of points of THERMAL POWER, Reactor Coolant System pressure and average temperature for which the minimum DNBR is no less than 1.30, or the average enthalpy at the vessel exit is equal to the enthalpy of saturated liquid.

The curves are based on an enthalpy hot channel factor, $F_{\Delta H}^N$, of 1.55 and a reference cosine with a peak of 1.55 for axial power shape. An allowance is included for an increase in $F_{\Delta H}^N$ at reduced power based on the expression:

$$F_{\Delta H}^N = 1.55 [1 + 0.3(1-P)]$$

where P is the fraction of RATED THERMAL POWER

These limiting heat flux conditions are higher than those calculated for the range of all control rods fully withdrawn to the maximum allowable control rod insertion assuming the axial power imbalance is within the limits of the $f_1(\Delta I)$ function of the Overtemperature trip. When the axial power



Thermal Power Limited to a Maximum of 109% of Rated Thermal Power by the Power Range Neutron Flux High Trip

FIGURE 2.1-1 REACTOR CORE SAFETY LIMIT - FOUR LOOPS IN OPERATION



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 52 TO FACILITY OPERATING LICENSE NO. DPR-70
AND AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE NO. DPR-75

PUBLIC SERVICE ELECTRIC AND GAS COMPANY,
PHILADELPHIA ELECTRIC COMPANY,
DELMARVA POWER AND LIGHT COMPANY, AND
ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

Introduction

In a letter dated October 5, 1982 Public Service Electric and Gas Company requested change in the partial power multiplier (from 0.2 to 0.3) for $F_{\Delta H}^N$. Since that time additional information was submitted in a letter dated November 18, 1982.

Discussion

Historically, increasing the allowable $F_{\Delta H}^N$ with decreasing power has been permitted by all previously approved Westinghouse designs. The increase is permitted by the DNB protection setpoints and allows for radial power distribution changes with rod insertion to the insertion limit. The change to a larger partial power multiplier is requested for Salem Units 1 & 2 to allow optimization of the core loading pattern by minimizing restrictions on $F_{\Delta H}^N$ at low power. This change will also minimize the probability of making rod insertion limit changes to satisfy peaking factor criteria at low power with the control rod banks at the insertion limit.

As a result of the multiplier change the core limits at 2250 and 2400 psia are slightly more limiting than previously. A new set of core limits which apply to both Salem Units was submitted. Current reactor core safety limit set-points bound core limits obtained using the increased $F_{\Delta H}^N$ at reduced power so no setpoint changes were necessary. Current $f(\Delta I)$ function bounds the new axial offset limits; therefore, no changes were required to the $F(\Delta I)$ Technical Specification. Since there were no changes to the overpower and overtemperature ΔT setpoints, no accident reanalysis was required.

Summary

We have approved the 0.3 partial power multiplier for WCAP-9500 and other plants. Public Service's request for the Salem Units 1 & 2 changes is similar. Based on our review we find the change acceptable.

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P PDR

Environmental Consideration

We have determined that the 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 amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: May 5, 1983

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NOS. 50-272 AND 50-311PUBLIC SERVICE ELECTRIC AND GAS COMPANY,
PHILADELPHIA ELECTRIC COMPANY,
DELMARVA POWER AND LIGHT COMPANY, AND
ATLANTIC CITY ELECTRIC COMPANYNOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY
OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 52 to Facility Operating License No. DPR-70 and Amendment No. 20 to Facility Operating License No. DPR-75, issued to Public Service Electric and Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees), which revised Technical Specifications for operation of the Salem Nuclear Generating Station, Unit Nos. 1 and 2 (the facilities) located in Salem County, New Jersey. The amendments are effective as of the date of issuance.

The amendments change the partial power multiplier from 0.2 to 0.3 for $F_{\Delta H}^N$.

The application for these 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 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.

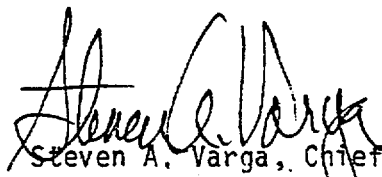
The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance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

- 2 -

For further details with respect to this action, see (1) the application for amendments dated October 5, 1982, (2) Amendment Nos. 52 and 20 to License Nos. DPR-70 and DPR-75, 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, N.W., Washington, D.C. and at the Salem Free Public Library, 112 West Broadway, Salem, New Jersey. 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 Licensing.

Dated at Bethesda, Maryland, this 5th day of May, 1983.

FOR THE NUCLEAR REGULATORY COMMISSION


Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing