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Docket No. 50-272

Public Service Electric & Gas Company
 ATTN: Mr. F. P. Librizzi
 General Manager - Electric
 Production
 Production Department
 80 Park Place, Room 7221
 Newark, New Jersey 07101

Gentlemen:

The Commission has issued the enclosed Amendment No. 5 to Facility Operating License No. DPR-70 for the Salem Nuclear Generating Station, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application dated May 16, 1977.

The amendment to the Technical Specifications will (1) revise the special test exceptions to permit the conduct of Power Coefficient Test and Load Swing Test as part of the Initial Startup Test Program and (2) change the title of one member of the Nuclear Review Board to reflect a recent reorganization within the Company.

Copies of the Safety Evaluation and the FEDERAL REGISTER Notice are also enclosed.

Sincerely,

Original signed by

George Lear, Chief
 Operating Reactors Branch #3
 Division of Operating Reactors

Enclosures:

1. Amendment No. 5
2. Safety Evaluation
3. FEDERAL REGISTER Notice

cc w/enclosures:
 See page 2

OFFICE >	ORB #3	ORB #3 <i>DM</i>	OELD	ORB #3	R.S. <i>BA</i>	STSG <i>BA</i>
SURNAME >	CParrish <i>99</i>	DVerrelli:mj <i>sp. Smith</i>	<i>[Signature]</i>	Glear <i>62</i>	BARR <i>BA</i>	McGough <i>BA</i>
DATE >	5/25/77	5/25/77	5/26/77	5/31/77	5/24/77	5/25/77

cc:

Richard Fryling, Jr., Esquire
Assistant General Counsel
Public Service Electric & Gas Company
80 Park Place
Newark, New Jersey 07101

Troy B. Conner, Jr., Esquire
Suite 1050
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Washington, D. C. 20006

John Russo
Bureau Chief
Bureau of Radiation Protection
380 Scotts Road
Trenton, New Jersey 08628

Honorable David A. Fogg
Mayor, Lower Alloways Creek Township
Salem County, New Jersey, 08079

State House Annex
ATTN: Deputy Attorney General
State of New Jersey
36 West State Street
Trenton, New Jersey 08625

Attorney General
Department of Law & Public Safety
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

Public Service Electric & Gas Company
ATTN: Herbert J. Heller
Manager, Salem Nuclear Generating
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Hancocks Bridge, New Jersey 08038

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

U. S. Environmental Protection Agency
Region II Office
ATTN: EIS COORDINATOR
26 Federal Plaza
New York, New York 10007

Salem Free Library
112 West Broadway
Salem, New Jersey 08079



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. 5
License No. DPR-70

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 May 16, 1977, 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.

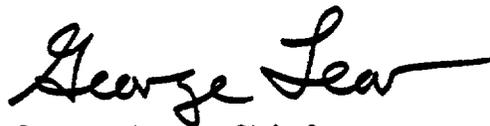
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-70 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 5, 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



George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of issuance: May 31, 1977

ATTACHMENT TO LICENSE AMENDMENT NO. 5

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Pages

3/4 2-1

3/4 10-2

3/4 10-2a (added)

6-8

3/4.2 POWER DISTRIBUTION LIMITS

AXIAL FLUX DIFFERENCE (AFD)

LIMITING CONDITION FOR OPERATION

3.2.1 The indicated AXIAL FLUX DIFFERENCE shall be maintained within a +5% target band (flux difference units) about the target flux difference.

APPLICABILITY: MODE 1 ABOVE 50% RATED THERMAL POWER*

ACTION:

- a. With the indicated AXIAL FLUX DIFFERENCE outside of the +5% target band about the target flux difference and with THERMAL POWER:
 1. Above 90% of RATED THERMAL POWER, within 15 minutes:
 - a) Either restore the indicated AFD to within the target band limits, or
 - b) Reduce THERMAL POWER to less than 90% of RATED THERMAL POWER.
 2. Between 50% and 90% of RATED THERMAL POWER:
 - a) POWER OPERATION may continue provided:
 - 1) The indicated AFD has not been outside of the +5% target band for more than 1 hour penalty deviation cumulative during the previous 24 hours, and
 - 2) The indicated AFD is within the limits shown on Figure 3.2-1. Otherwise, reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 30 minutes and reduce the Power Range Neutron Flux-High Trip Setpoints to < 55% of RATED THERMAL POWER within the next 4 hours.
 - b) Surveillance testing of the Power Range Neutron Flux Channels may be performed pursuant to Specification 4.3.1.1.1 provided the indicated AFD is maintained within the limits of Figure 3.2-1. A total of 16 hours operation may be accumulated with the AFD outside of the target band during this testing without penalty deviation.

*See Special Test Exception 3.10.2

POWER DISTRIBUTION LIMITS

LIMITING CONDITION FOR OPERATION (Continued)

- b. THERMAL POWER shall not be increased above 90% of RATED THERMAL POWER unless the indicated AFD is within the $\pm 5\%$ target band and ACTION 2.a) 1), above has been satisfied.
- c. THERMAL POWER shall not be increased above 50% of RATED THERMAL POWER unless the indicated AFD has not been outside of the $\pm 5\%$ target band for more than 1 hour penalty deviation cumulative during the previous 24 hours.

SURVEILLANCE REQUIREMENTS

4.2.1.1 The indicated AXIAL FLUX DIFFERENCE shall be determined to be within its limits during POWER OPERATION above 15% of RATED THERMAL POWER by:

- a. Monitoring the indicated AFD for each OPERABLE excore channel:
 - 1. At least once per 7 days when the AFD Monitor Alarm is OPERABLE, and
 - 2. At least once per hour for the first 24 hours after restoring the AFD Monitor Alarm to OPERABLE status.
- b. Monitoring and logging the indicated AXIAL FLUX DIFFERENCE for each OPERABLE excore channel at least once per hour for the first 24 hours and at least once per 30 minutes thereafter, when the AXIAL FLUX DIFFERENCE Monitor Alarm is inoperable. The logged values of the indicated AXIAL FLUX DIFFERENCE shall be assumed to exist during the interval preceding each logging.

4.2.1.2 The indicated AFD shall be considered outside of its $\pm 5\%$ target band when at least 2 of 4 or 2 of 3 OPERABLE excore channels are indicating the AFD to be outside the target band. Penalty deviation outside of the $\pm 5\%$ target band shall be accumulated on a time basis of:

- a. One minute penalty deviation for each one minute of POWER OPERATION outside of the target band at THERMAL POWER levels equal to or above 50% of RATED THERMAL POWER, and
- b. One-half minute penalty deviation for each one minute of POWER OPERATION outside of the target band at THERMAL POWER levels below 50% of RATED THERMAL POWER.

3/4.10 SPECIAL TEST EXCEPTIONS

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of control rod worth and shutdown margin provided:

- a. Reactivity equivalent to at least the highest estimated control rod worth is available for trip insertion from OPERABLE control rod(s), and
- b. All part length rods are withdrawn to at least the 180 step position and OPERABLE.

APPLICABILITY: MODE 2.

ACTION:

- a. With any full length control rod not fully inserted and with less than the above reactivity equivalent available for trip insertion or the part length rods not within their withdrawal limits, immediately initiate and continue boration at > 10 gpm of 20,100 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.
- b. With all full length control rods inserted and the reactor sub-critical by less than the above reactivity equivalent, immediately initiate and continue boration at > 10 gpm of 20,100 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each full length and part length rod either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each full length rod not fully inserted shall be demonstrated capable of full insertion when tripped from at least the 50% withdrawn position within 24 hours prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

4.10.1.3 The part length rods shall be demonstrated OPERABLE by moving each part length rod ≥ 10 steps within 4 hours prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

SPECIAL TEST EXCEPTIONIONS

GROUP HEIGHT, INSERTION AND POWER DISTRIBUTION LIMITS

LIMITING CONDITION FOR OPERATION

3.10.2 The group height, insertion and power distribution limits of Specifications 3.1.3.1, 3.1.3.4, 3.1.3.5, 3.1.3.6, 3.2.1, and 3.2.4 may be suspended during the performance of PHYSICS TESTS provided:

- a. The THERMAL POWER is maintained $\leq 85\%^{\#}$ of RATED THERMAL POWER, and
- b. The limits of Specifications 3.2.2 and 3.2.3 are maintained and determined at the frequencies specified in Specification 4.10.2.2 below.

APPLICABILITY: MODE 1

ACTION:

With any of the limits of Specifications 3.2.2 or 3.2.3 being exceeded while the requirements of Specifications 3.1.3.1, 3.1.3.4, 3.1.3.5, 3.1.3.6, 3.2.1 and 3.2.4 are suspended, either:

- a. Reduce THERMAL POWER sufficient to satisfy the ACTION requirements of Specifications 3.2.2 and 3.2.3, or
- b. Be in HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.10.2.1 The THERMAL POWER shall be determined to be $\leq 85\%$ of RATED THERMAL POWER at least once per hour during PHYSICS TESTS.

4.10.2.2 The Surveillance Requirements of Specifications 4.2.2 and 4.2.3 shall be performed at the following frequencies during PHYSICS TESTS:

- a. Specification 4.2.2 - At least once per 12 hours.
- b. Specification 4.2.3 - At least once per 12 hours.

[#]See page 3/4 10-2a.

SPECIAL TEST EXCEPTIONS

SURVEILLANCE REQUIREMENTS (Continued)

A THERMAL POWER limit of 100% of RATED THERMAL POWER is permissible during the Power Coefficient Test and the Load Swing Test performed as part of the Initial Startup Test Program, provided the following conditions are met:

1. The target axial offset at full power shall be less negative or equal to -16%.
2. The ΔI value during the tests shall not be more negative than -23% at 90% power and -25% at 80% power.
3. Before initiation of the tests, Bank D control group shall be positioned as far out of the core as possible, consistent with minimum differential rod worth requirements, no lower than 190 steps.
4. The limits of Specification 3.1.3.5 shall not be violated.
5. Each of the above tests (Power Coefficient Test and Load Swing Test) shall be performed in ≤ 2 hours and these tests shall be completed prior to exceeding a core average fuel burnup of 3000 MWD/MTU.

ADMINISTRATIVE CONTROLS

- i. Review of the Plant Security Plan and implementing procedures and shall submit recommended changes to the Chairman of the Nuclear Review Board.
- j. Review of the Emergency Plan and implementing procedures and shall submit recommended changes to the Chairman of the Nuclear Review Board.

AUTHORITY

6.5.1.7 The Station Operations Review Committee shall:

- a. Recommend to the Station Manager written approval or disapproval of items considered under 6.5.1.6(a) through (d) above.
- b. Render determinations in writing with regard to whether or not each item considered under 6.5.1.6(a) through (e) above constitutes an unreviewed safety question.
- c. Provide written notification within 24 hours to the General Manager-Electric Production and the Nuclear Review Board of disagreement between the SORC and the Station Manager; however, the Station Manager shall have responsibility for resolution of such disagreements pursuant to 6.1.1 above.

RECORDS

6.5.1.8 The Station Operations Review Committee shall maintain written minutes of each meeting and copies shall be provided to the General Manager-Electric Production and Chairman of the Nuclear Review Board.

6.5.2 NUCLEAR REVIEW BOARD (NRB)

FUNCTION

6.5.2.1 The Nuclear Review Board shall function to provide independent review and audit of designated activities in the areas of:

- a. nuclear power plant operations
- b. nuclear engineering

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ADMINISTRATIVE CONTROLS

- c. chemistry and radiochemistry
- d. metallurgy
- e. instrumentation and control
- f. radiological safety
- g. mechanical and electrical engineering
- h. quality assurance practices

COMPOSITION

6.5.2.2 The NRB shall be composed of the:

Chairman:	General Manager-Electric Production
Vice Chairman:	General Manager-Construction
Member:	General Manager-Licensing and Environment
Member:	Manager-Nuclear Operations
Member:	Assistant to General Manager-Fuel Supply
Member:	Manager-Quality Assurance
Member:	Project Manager-Hope Creek
Member:	Manager-Salem Generating Station

ALTERNATES

6.5.2.3 All alternate members shall be appointed in writing by the NRB Chairman to serve on a temporary basis; however, no more than two alternates shall participate as voting members in NRB activities at any one time.

CONSULTANTS

6.5.2.4 Consultants shall be utilized as determined by the NRB Chairman to provide expert advice to the NRB.

MEETING FREQUENCY

6.5.2.5 The NRB shall meet at least once per calendar quarter during the initial year of facility operation following fuel loading and at least once per six months thereafter.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 5 TO FACILITY OPERATING LICENSE DPR-70

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

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

DOCKET NO. 50-272

INTRODUCTION

By letter dated May 16, 1977, Public Service Electric and Gas Company (PSE&G) proposed changes to the Technical Specifications appended to Operating License No. DPR-70 for the Salem Nuclear Generating Station Unit No. 1. The proposed changes would:

- a) Revise the special test exceptions to permit the conduct of Power Coefficient Test and Load Swing Test at thermal power levels up to and including 100% of rated thermal power as part of the Initial Startup Test Program, and,
- b) Change the title of one member of the Nuclear Review Board to reflect a recent reorganization within the Company.

BACKGROUND

The currently NRC-approved Standard Technical Specifications for Westinghouse Pressurized Water Reactors provides for special test exceptions for control rod group height and insertion and also reactor power distribution limits in order to perform certain physics tests to verify the fundamental nuclear characteristics of the reactor core and related instrumentation. Included in these special exceptions is the temporary suspension of the normal operating specification on axial flux difference (AFD) while operating at ≤85% of rated thermal power.

The Startup Physics Test Program for Salem Unit No. 1 includes the performance of a power coefficient measurement and a load swing test up to 100% of rated thermal power. During the conduct of these physics tests it is anticipated that the AFD will exceed the normal, routine operating limit of +5% about the target flux difference. No special test exception for physics tests between 85% and 100% of rated thermal power is now included in the Salem Technical Specifications; therefore, the conduct of these two tests is not possible. Accordingly, PSE&G proposes to revise the special test exceptions for AFD to enable them to conduct the power coefficient and load swing tests.

In order to ensure that the limits on F_0 and $F_{\Delta H}$ (Heat Flux and Nuclear Enthalpy Hot Channel Factors) are not exceeded during the tests, specific limits on AFD are proposed with additional limits on Control Rod insertion that are more restrictive than those currently authorized for physics tests.

EVALUATION

Axial Flux Difference (AFD)

The limits on AFD are included as normal operating limits to assure that the F_0 upper bound envelope of 2.32 times the normalized axial peaking factor is not exceeded (1) during routine operations or (2) in the event of xenon redistribution following power changes. Although it is intended that the reactor be operated routinely with the AFD within the $\pm 5\%$ target band about the target flux difference, it is permissible to operate outside these limits especially during initial startup physics tests at which time core burnup is at a minimum, provided that compensatory measures are taken to assure that the limits on F_0 are not exceeded. In this specific case the compensatory measures proposed by the licensee are:

1. The target axial offset at full power shall be less negative or equal to -16% .
2. The ΔI value during the tests shall not be more negative than -23% at 90% power and -25% at 80% power.
3. Before initiation of the tests, Bank D control group shall be positioned as far out of the core as possible, consistent with minimum differential rod worth requirements, no lower than 190 steps.
4. The limits of specification 3.1.3.5 (Control Rod bank insertion limits) shall not be violated.
5. Each test (power coefficient and load swing) is to be performed in two hours or less.

The licensee and the reactor vendor (Westinghouse) conclude and the NRC staff agrees that for purpose of conduct of the power coefficient and load swing tests on Salem Unit No. 1, operation outside the $\pm 5\%$ AFD limit will not exceed the F_0 limits in view of the limited burnup on this reactor, provided the compensatory measures detailed in 1 through 5 above are implemented.

During the course of the review, the NRC staff proposed and the licensee agreed that since the degree of conservatism in the compensatory measures is burnup dependent, the proposed tests should be completed prior to exceeding a core average burnup of 3000 MWD/MTU. Accordingly, the NRC staff finds

that the revised technical specifications as proposed by the licensee and amended by the NRC staff are acceptable for the initial startup physics testing, do not create a significant hazards consideration and would not endanger the health and safety of the public.

Nuclear Review Board Membership

The licensee's proposal to retitle one member of the Nuclear Review Board from General Manager - Projects to General Manager - Licensing and Environmental does not alter the qualifications, membership, or functions of the Board and is therefore acceptable.

Environmental Considerations

We have determined that the amendment does 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 amendment involves 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 this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change 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.

Dated: May 31, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-272

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

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 5 to Facility Operating License No. DPR-70, 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 the operating license for Salem Nuclear Generating Station, Unit No. 1 (the facility) located in Salem County, New Jersey. The amendment is effective as of its date of issuance.

The amendment consists of changes to the Technical Specifications which will (1) revise the special test exceptions to permit the conduct of Power Coefficient Test and Load Swing Test as part of the Initial Startup Test Program and (2) change the title of one member of the Nuclear Review Board to reflect a recent reorganization within the Company.

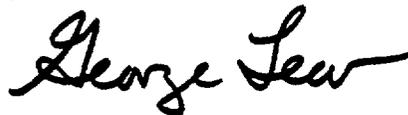
The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment 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 this amendment.

For further details with respect to this action, see (1) the application for amendment dated May 16, 1977, (2) Amendment No. 5 to License No. DPR-70 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 Operating Reactors.

Dated at Bethesda, Maryland, this 31st day of May, 1977.

FOR THE NUCLEAR REGULATORY COMMISSION



George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors