August 22, 1994

Docket Nos. 50-272/311

Mr. Steven E. Miltenberger
Vice President and Chief Nuclear
Officer
Public Service Electric & Gas
Company
Post Office Box 236
Hancocks Bridge, New Jersey 08038

Dear Mr. Miltenberger:

SUBJECT: ALLOWED USE OF VANTAGE+ FUEL, SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2 (TAC NOS. M88957 AND M88958)

The Commission has issued the enclosed Amendment Nos. 154 and 135 to Facility Operating License Nos. DPR-70 and DPR-75 for the Salem Nuclear Generating Station, Unit Nos. 1 and 2. These amendments consist of changes to the Technical Specifications (TS) in response to your application dated March 4, 1994 and supplemented on June 14, 1994, and by phone on July 22, 1994.

These amendments modify Section 5.3.1 of the TS to allow the use of Westinghouse Vantage+ fuel with ZIRLO cladding. The previous TS required the fuel cladding to be Zircaloy-4, which is used in the Westinghouse Standard and Vantage 5H fuel designs.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice. Please notify the NRC, in writing, when these amendments have been implemented.

Sincerely,
/S/
James C. Stone, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 154 to License No. DPR-70
2. Amendment No. 135 to License No. DPR-75
3. Safety Evaluation

cc w/enclosures:
See next page

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Docket File	MO'Brien(2)	CGrimes, 11E21
NRC & Local PDRs	JStone/SDembek	TCollins
PDI-2 Reading	OGC	ACRS(10)
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JCalvo	GHill(4), P1-22	OC/LFDCB
MThadani	EWenzinger, RGN-I	JWhite, RGN-I

*Previously Concurred

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OFC	:PDI-2/LA	:PDI-2/PM	:PDI-2/PM	:SRXB/BC*	:OGC*	:PDI-2/D	:
NAME	:MO'Brien	:SDembek:rb	:JStone	:TCollins	:MYoung	:MThadani	:
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 22, 1994

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Vice President and Chief Nuclear
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These amendments modify Section 5.3.1 of the TS to allow the use of Westinghouse Vantage+ fuel with ZIRLO cladding. The previous TS required the fuel cladding to be Zircaloy-4, which is used in the Westinghouse Standard and Vantage 5H fuel designs.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice. Please notify the NRC, in writing, when these amendments have been implemented.

Sincerely,

James C. Stone

James C. Stone, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
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cc w/enclosures:
See next page

Mr. Steven E. Miltenberger
Public Service Electric & Gas Company

Salem Nuclear Generating Station,
Units 1 and 2

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

PUBLIC SERVICE ELECTRIC & 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. 154
License No. DPR-70

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:

   A. The application for amendment filed by the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated March 4, 1994, and supplemented on June 14, 1994, and by phone July 22, 1994, 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 set forth in 10 CFR Chapter I;

   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 and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 154 , 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 its date of issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Mohan C. Thadani, Acting Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 22, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 154

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Revise Appendix A as follows:

Remove Page	Insert Page
5-4	5-4

DESIGN PRESSURE AND TEMPERATURE

5.2.2 The reactor containment building is designed and shall be maintained for a maximum internal pressure of 47 psig and an air temperature of 271°F.

5.3 REACTOR CORE

FUEL ASSEMBLIES

5.3.1 The reactor shall contain at least 193 fuel assemblies. Each assembly shall consist of a matrix of zircaloy or ZIRLO clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain 53 full length and no part length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80 percent silver, 15 percent indium and 5 percent cadmium. All control rods shall be clad with stainless steel tubing.

5.4 REACTOR COOLANT SYSTEM

DESIGN FEATURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained:

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

PUBLIC SERVICE ELECTRIC & 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. 135
License No. DPR-75

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:

   A. The application for amendment filed by the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated March 4, 1994, and supplemented on June 14, 1994, and by phone July 22, 1994, 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 set forth in 10 CFR Chapter I;

   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 and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 135 , 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 its date of issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Mohan C. Thadani, Acting Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 22, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 135

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Revise Appendix A as follows:

Remove Page	Insert Page
5-4	5-4

DESIGN PRESSURE AND TEMPERATURE

5.2.2 The reactor containment building is designed and shall be maintained for a maximum internal pressure of 47 psig and an air temperature of 271°F.

5.3 REACTOR CORE

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5.3.1 The reactor shall contain at least 193 fuel assemblies. Each assembly shall consist of a matrix of zircaloy or ZIRLO clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain 53 full length and no part length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80 percent silver, 15 percent indium and 5 percent cadmium. All control rods shall be clad with stainless steel tubing.

5.4 REACTOR COOLANT SYSTEM

DESIGN FEATURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained:

a. In accordance with the code requirement specified in Section 4.1 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 680°F.

VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is 12,811 ± 100 cubic feet at a nominal T_{avg} of 581.0°F.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 154 AND 135 TO FACILITY OPERATING

LICENSE NOS. DPR-70 AND DPR-75

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

1.0 INTRODUCTION

By letter dated March 4, 1994, as supplemented by letter dated June 14, 1994, the Public Service Electric & Gas Company (the licensee) submitted a request for changes to the Salem Nuclear Generating Station (SNGS), Unit Nos. 1 and 2, Technical Specifications (TS). The changes modify Section 5.3.1 of the TS to allow the use of Westinghouse Electric Corporation's (Westinghouse) Vantage+ fuel with ZIRLO cladding. The previous TS required the fuel cladding to be Zircaloy-4, which is used in the Westinghouse Standard and Vantage 5H fuel designs. The licensee's June 14, 1994 letter, and phone call July 22, 1994, provided additional information that did not alter the staff's original no significant hazards consideration determination.

The licensee's original submittal also requested a revision to TS Section 5.6.1. However, this revision was contingent on the staff not approving the licensee's April 28, 1993 amendment request prior to issuing this amendment. By a May 4, 1994 letter, the staff issued Amendments 151 (SNGS, Unit 1) and 131 (SNGS, Unit 2), which granted the licensee's April 28, 1993 amendment request. Therefore, this safety evaluation will have no further discussion of the proposed revision to TS Section 5.6.1, and TS Page 5-5 will not be modified.

2.0 BACKGROUND

The NRC issued Generic Letter (GL) 90-02 on January 29, 1990, to implement a line-item improvement to plant TS by providing alternate requirements for fuel assemblies in the design features section of the TS. The GL states that, on a plant-specific basis, "the staff has approved changes to these requirements that provide flexibility for improved fuel performance by permitting timely removal of fuel rods that are found to be leaking during a refueling outage or

are determined to be probable sources of future leakage." The NRC issued Supplement 1 to GL 90-02 on July 31, 1992, to clarify the limitations on the application of NRC-approved analytical methods related to fuel assembly reconstitution. Supplement 1 also withdrew and replaced the model TS recommended in the initial GL 90-02 to be consistent with realistic reconstitution configurations. The model TS change in GL 90-02, Supplement 1, is also reflected in NUREG-1431, Revision 0 (September 1992), which is the standard TS for plants of Westinghouse design.

Separately, a March 30, 1993, letter from A. C. Thadani, NRC, to S. R. Tritch, Westinghouse, approved the use of Westinghouse topical report WCAP-13060, "Westinghouse Fuel Assembly Reconstitution Evaluation Methodology," as a basis for fuel assembly reconstitution. The staff's approval is only applicable for those reconstituted assemblies with mixing vane grid design. Westinghouse reconstituted assemblies without mixing vane grid design will require a separate review. In addition, the approval is contingent upon analytical confirmation that the exact configuration and associated core power distribution of proposed reconstituted assemblies does not introduce a change in radial gradients in the flow and enthalpy distribution that could invalidate the applicability of the critical heat flux correlation used for departure from nucleate boiling predictions.

3.0 EVALUATION

The licensee's proposed change to TS 5.3.1 is a line item change and is essentially consistent with the guidance contained in GL 90-02, Supplement 1 (with one minor exception discussed below), and with NUREG-1431, Revision 0. In a telephone call on July 22, 1994, the licensee agreed to clarify its request by replacing the words "zirconium alloy" with the words "zircaloy or ZIRLO." This clarification is within the scope of the action noticed in the Federal Register on March 30, 1994, and does not alter the staff's initial determination of no significant hazards determination.

This clarification is necessary because 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light water nuclear power reactors," specifies "zircaloy or ZIRLO" cladding material in the core. ZIRLO is the trade name for a specific zirconium alloy and was incorporated into the NRC's regulations on August 31, 1992. The licensee's amendment request used the words "zirconium alloy" to describe the cladding material. The NRC staff's position is that the design description of fuel rods in TS 5.3.1 should state "zircaloy or ZIRLO" instead of "zirconium alloy" to be consistent with 10 CFR 50.46.

With the clarification discussed above and incorporated into the proposed TS revision, the staff finds that the licensee's request complies with the guidance provided in GL 90-02, Supplement 1 and is therefore acceptable. The use of NRC-approved methodology will limit the substitutions of zirconium alloy filler rods and will ensure that the filler rods are compatible with other fuel rods.

Regarding the use of Vantage+ fuel, in letters from A. C. Thadani, NRC, to S. R. Tritch, Westinghouse, dated July 1, 1991, and October 9, 1991, the staff previously approved the ZIRLO fuel design discussed in Westinghouse topical report WCAP-12610, "VANTAGE+ Fuel Assembly Reference Core Report." However, the licensee's original letter did not explicitly state that the generic analyses referenced by the licensee applied at SNGS. In a May 19, 1994, telephone call, the staff asked the licensee to demonstrate that the generic analyses applied to SNGS. In it's June 14, 1994 letter, the licensee provided the applicability statements that the staff requested. Specifically, the licensee stated that the same approved code methodologies used by Westinghouse for the reference plant are also applicable at SNGS. Therefore, the licensee's proposal to use Vantage+ fuel is acceptable and will ensure that plant operation meets applicable safety criteria.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Jersey State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the 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 the amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 14896). Accordingly, the 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 the amendments.

6.0 CONCLUSION

The Commission has 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Dembek

Date: August 22, 1994