

December 19, 2000

Mr. Harold W. Keiser  
Chief Nuclear Officer & President  
PSEG Nuclear LLC - X04  
Post Office Box 236  
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2, ISSUANCE OF  
AMENDMENT RE: REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINT  
TOLERANCES (TAC NOS. MA7933 AND MA7934)

Dear Mr. Keiser:

The Commission has issued the enclosed Amendment Nos. 239 and 220 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 (TSs) in response to your application dated December 29, 1999, as supplemented on November 21, 2000.

These amendments revise requirements stated in Notes 1 and 2 to Table 2.2-1, "Reactor Trip System Setpoints," by clarifying the requirements for certain setpoint value tolerances.

In addition, on August 21, 2000, the licenses for Salem, to the extent held by PSE&G, were transferred to PSEG Nuclear Limited Liability Company (PSEG Nuclear). In a letter dated September 6, 2000, PSEG Nuclear stated that it has assumed responsibility, as of the date of the transfer, for the active items on the Salem dockets previously submitted by PSE&G, including the subject amendment requests.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

*/RA/*

Robert J. Fretz, Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-272 and 50-311

Enclosures: 1. Amendment No. 239 to  
License No. DPR-70  
2. Amendment No. 220 to  
License No. DPR-75  
3. Safety Evaluation

cc w/encls: See next page

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3. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION

PUBLIC	EAdensam	OGC	EMarinos	GMeyer, RGN-I
PDI-2 Reading	JClifford	TClark	FAkstulewicz	GHill(4)
ACRS	RFretz	WBeckner	IAhmed	CLiang

ACCESSION NUMBER: ML003774447 TEMPLATE: NRR-058 \* SE input provided. No major changes made.

OFFICE	PDI-2/PM	PDI-2/LA	EEIB/SC*	SRXB/SC*	OGC	PDI-2/SC
NAME	RFretz	TLClark	EMarinos	FAkstulewicz		JClifford
DATE	12/07/00	12/07/00	12/05/00	12/01/00	12/13/00	12/19/00

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PSEG NUCLEAR LLC  
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.239  
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 PSEG Nuclear LLC, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated December 29, 1999, as supplemented on November 21, 2000, 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. 239 , 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.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: December 19, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 239

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Replace the following pages of the Appendix A, Technical Specifications, with the attached revised pages as indicated. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

2-7

2-9

Insert Pages

2-7

2-9

PSEG NUCLEAR LLC  
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. 220  
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 PSEG Nuclear LLC, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated December 29, 1999, as supplemented on November 21, 2000, 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. 220 , 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.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: December 19, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 220

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Replace the following pages of the Appendix A, Technical Specifications, with the attached revised pages as indicated. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

2-7

2-9

Insert Pages

2-7

2-9



SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 239 AND 220 TO FACILITY OPERATING  
LICENSE NOS. DPR-70 AND DPR-75  
PSEG NUCLEAR LLC  
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 December 29, 1999, as supplemented on November 21, 2000, the Public Service Electric & Gas Company (PSE&G) submitted a request for changes to the Salem Nuclear Generating Station, Unit Nos. 1 and 2 (Salem), Technical Specifications (TSs). The requested changes would modify the requirements stated in Notes 1 and 2 to Table 2.2-1, "Reactor Trip System Instrumentation Setpoints," in order to add a tolerance associated with the setpoint values for the derivative module time constants (the Tau values) of the Over-Power, and the Over-Temperature delta temperature units. The November 21, 2000, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

On August 21, 2000, the licenses for Salem, to the extent held by PSE&G, were transferred to PSEG Nuclear Limited Liability Company (PSEG Nuclear/licensee). In a letter dated September 6, 2000, PSEG Nuclear stated that it has assumed responsibility, as of the date of the transfer, for the active items on the Salem dockets previously submitted by PSE&G, including this amendment request.

## 2.0 BACKGROUND

The over-power delta temperature (OTDT) and over-pressure delta temperature (OPDT) reactor trip functions provide primary protection against departure from nucleate boiling (DNB) and fuel centerline melting during postulated transients in Westinghouse reactors. The instrumentation trip setpoints for these trip functions are calculated using the equation which includes dynamic terms to compensate for the inherent instrumentation delays and piping lags between the reactor core and the loop temperature sensors. This dynamic compensation term (time constant) is called "lead-lag" for OTDT and "rate lag" for OPDT instrumentation setpoints. The current TS time constants for OTDT and OPDT trip setpoints are nominal values with no

inequalities ( $\leq$  or  $\geq$ ), and are the same time constants assumed in the safety analyses. However, the OTDT and OPDT hardware at Salem (lead-lag and rate lag controllers) does not allow the operator to set the instrument at the TS setpoint values. The hardware for the time constants is adjustable in increments such that any setpoint can be obtained within  $\pm 10\%$  of a desired value. Thus, the OTDT and OPDT instrumentation time constant settings at the plant have historically been set as close as possible to the required values and within  $\pm 10\%$ .

### 3.0 EVALUATION

The current Salem TS OTDT and OPDT reactor trip instrumentation time constants were based on NUREG 0452, "Standard Technical Specifications-Westinghouse Pressurized Water Reactors, July 1979," and Westinghouse Topical Report WCAP-8745-P-A, "Design Bases for the Thermal Overpower Delta T and Thermal Overtemperature Delta T Trip Functions." Both documents utilized "nominal values" for time constants to determine the instrumentation setpoints for OTDT and OPDT reactor trip, consistent with the Westinghouse analyses in support of Salem licensing. The following are the current TS values of OTDT and OPDT instrumentation setpoint time constants.

OTDT-Lead (T1)	= 30 seconds
OTDT-LAG (T2)	= 4 seconds
OPDT-Rate Lag (T3)	= 10 seconds

The proposed change is to add a  $\pm 10\%$  tolerance to each of the three time constants that is within the adjustable increment band design of the Lead-Lag and Rate Lag controllers. The licensee stated that the instrumentation cannot be calibrated to exact values without the use of a tolerance and the change will eliminate a situation in which a verbatim compliance of the specification is not possible. As such, the proposed change provides a 10% uncertainty band around the nominal value of the time constants which has a potential non-conservatism. Westinghouse provided an analysis of Salem's proposed 10% uncertainty band in a letter from W. Frank Knowles (Westinghouse) to Tom Ross (PSE&G), dated December 13, 1996, "Overtemperature  $\Delta T$  and Overpower  $\Delta T$  Lead/Lag." The letter also indicated that, at another utility, a 5% uncertainty band around the time constants resulted in a "slight loss" of DNB ratio (DNBR) margin.

The DNB design basis is that, during normal operations, operational transients and faults of moderate frequency, the probability that DNB will not occur on the limiting fuel rod(s) is at least 95% at a 95% confidence level. If DNB is precluded, adequate heat transfer is assured between the fuel cladding and the reactor coolant, and damage due to inadequate cooling is prevented.

Therefore, in response to U.S. Nuclear Regulatory Commission (NRC) staff concerns regarding the potential reduction of DNBR margin from the 10% uncertainty band in the proposed time constants, the licensee stated in its letter dated November 21, 2000, that PSEG Nuclear has performed an evaluation of potential change in DNBR conservatism margin using an explicit calculation of the lead-lag term as utilized in the OTDT trip for the limiting Rod Withdrawal at Power (RWAP) event. This evaluation determined that the potential change in DNBR due to a 10% uncertainty band in the proposed time constants was approximately 0.02, which is insignificant when compared to the conservatism built into the current analysis. The licensee did not address the effects to DNB margin from a 10% uncertainty in the time constant

associated with OPDT; however, the licensee further stated that the OPDT trip function was insignificant and thus not modeled in the safety analysis at Salem. The NRC staff has reviewed the licensee's submittal. In addition to other conservatism built into the assumptions used in the safety analysis, there is sufficient DNBR margin between the transient minimum DNBR for the most limiting RWAP event and the DNBR design limit defined in Updated Final Safety Analysis Report (UFSAR), Table 4.4-1. Based on this data, the NRC staff finds that a reduction of 0.02 in DNBR margin due to the 10% uncertainty in the time constant will result in the limiting transient DNBR (see UFSAR Figure 15.2-8) to be greater than 1.50, which is well above the current DNBR design limit of 1.25.

Therefore, based on its review, the NRC staff concludes that the reactor core thermal-hydraulic design will continue to meet the requirements of General Design Criterion 10, of Appendix A to 10 CFR Part 50, and that licensee has provided sufficient justification to support the proposed TS changes with 10% uncertainty band around the time constant setpoints. The staff has concluded that the proposed TS changes will not significantly impact the plant DNBR margin, and are, therefore, acceptable.

#### 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 (65 FR 4289). 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 Contributors: I. Ahmed  
C. Liang

Date: December 19, 2000

PSEG Nuclear LLC

Salem Nuclear Generating Station,  
Unit Nos. 1 and 2

cc:

Mr. Elbert C. Simpson  
Senior Vice President &  
Chief Administrative Officer  
PSEG Nuclear - N19  
P.O. Box 236  
Hancocks Bridge, NJ 08038

Mr. Mark B. Bezilla  
Vice President - Technical Support  
PSEG Nuclear - X10  
P.O. Box 236  
Hancocks Bridge, NJ 08038

Mr. David F. Garchow  
Vice President - Operations  
PSEG Nuclear - X10  
P.O. Box 236  
Hancocks Bridge, NJ 08038

Mr. Gabor Salamon  
Manager - Licensing  
PSEG Nuclear - N21  
P.O. Box 236  
Hancocks Bridge, NJ 08038

Jeffrie J. Keenan, Esquire  
PSEG Nuclear - N21  
P.O. Box 236  
Hancocks Bridge, NJ 08038

Mr. Carter Kresge  
External Operations - Nuclear  
Conectiv  
P.O. Box 6066  
Newark, DE 19714-6066

Ms. R. A. Kankus  
Joint Owner Affairs  
PECO Energy Company  
Nuclear Group Headquarters KSA1-E  
200 Exelon Way  
Kennett Square, PA 19348

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

Dr. Jill Lipoti, Asst. Director  
Radiation Protection Programs  
NJ Department of Environmental  
Protection and Energy  
CN 415  
Trenton, NJ 08625-0415

Richard Hartung  
Electric Service Evaluation  
Board of Regulatory Commissioners  
2 Gateway Center, Tenth Floor  
Newark, NJ 07102

Assistant Consumer Advocate  
Office of Consumer Advocate  
1425 Strawberry Square  
Harrisburg, PA 17120

Public Service Commission of Maryland  
Engineering Division  
Chief Engineer  
6 St. Paul Centre  
Baltimore, MD 21202-6806

Maryland Office of People's Counsel  
6 St. Paul Street, 21st Floor  
Suite 2102  
Baltimore, MD 21202

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Senior Resident Inspector  
Salem Nuclear Generating Station  
U.S. Nuclear Regulatory Commission  
Drawer 0509  
Hancocks Bridge, NJ 08038