



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

April 16, 1991

Docket No. 50-272

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: MAIN STEAM ISOLATION VALVE CLOSURE TIME EXTENSION, SALEM NUCLEAR
GENERATING STATION, UNIT NO. 1 (TAC NO. 79627)

The Commission has issued the enclosed Amendment No. 124 to Facility Operating License No. DPR-70 for the Salem Nuclear Generating Station, Unit No. 1. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated February 1, 1991 and supplemented by letters dated March 19, 1991 and April 2, 1991. The March 19, 1991 and April 2, 1991 letters provided clarifying information and did not change the initial proposed no significant hazards consideration determination.

This amendment allows the use of the eight-second main steam isolation valve (MSIV) closure time during the Salem Unit 1 tenth operating cycle. The eight-second closure time for the ninth cycle operation was approved by Amendment 112, dated July 9, 1990.

If the tests of the MSIVs, conducted during restart from the ninth refueling outage and subsequent operation, yield favorable results, these revised test procedures and acceptance criteria should be incorporated into the plant inservice testing program. This should allow Public Service Electric and Gas Company to effectively monitor the vent valve leakage and water accumulation inside the valve.

NRC FILE CENTER COPY

*CP
EKL*

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

Sincerely,

Walter R. Butler

for

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. 124 to License No. DPR-70
- 2. Safety Evaluation

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Mr. Steven E. Miltenberger

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April 16, 1991

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Sincerely,



James C. Stone, Senior Project Manager
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2. Safety Evaluation

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See next page

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

Salem Nuclear Generating Station

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

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. 124
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 February 1, 1991 and supplemented by letters dated March 19, 1991 and April 2, 1991, 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. 124, 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.

FOR THE NUCLEAR REGULATORY COMMISSION



Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects - I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 16, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 124

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Revise Appendix A as follows:

Remove Pages

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3/4 3-29

3/4 7-10

Insert Pages

3/4 3-28

3/4 3-29

3/4 7-10

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
3. <u>Pressurizer Pressure-Low</u>	
a. Safety Injection (ECCS)	≤ 27.0 ⁽¹⁾ /12.0 ⁽²⁾
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0
d. Containment Isolation - Phase "A"	≤ 18.0 ⁽²⁾
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	≤ 49.0 ⁽¹⁾ /13.0 ⁽²⁾
4. <u>Differential Pressure Between Steam Lines-High</u>	
a. Safety Injection (ECCS)	≤ 12.0 ⁽²⁾ /22.0 ⁽³⁾
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0
d. Containment Isolation - Phase "A"	≤ 17.0 ⁽²⁾ /27.0 ⁽³⁾
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	≤ 13.0 ⁽²⁾ /48.0 ⁽³⁾
5. <u>Steam Flow in Two Steam Lines - High Coincident</u> <u>with Tavq -- Low-Low</u>	
a. Safety Injection (ECCS)	≤ 15.75 ⁽²⁾ /25.75 ⁽³⁾
b. Reactor Trip (from SI)	≤ 5.75
c. Feedwater Isolation	≤ 10.75
d. Containment Isolation - Phase "A"	≤ 20.75 ⁽²⁾ /30.75 ⁽³⁾
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 61.75
g. Service Water System	≤ 15.75 ⁽²⁾ /50.75 ⁽³⁾
h. Steam Line Isolation	≤ 10.75*

* ≤13.75 until restart following the tenth refueling outage.

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
6. <u>Steam Flow in Two Steam Lines-High Coincident with Steam Line Pressure-Low</u>	
a. Safety Injection (ECCS)	≤ 12.0 ⁽²⁾ /22.0 ⁽³⁾
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0
d. Containment Isolation-Phase "A"	≤ 17.0 ⁽²⁾ /27.0 ⁽³⁾
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	≤ 14.0 ⁽²⁾ /48.0 ⁽³⁾
h. Steam Line Isolation	≤ 8.0*
7. <u>Containment Pressure--High-High</u>	
a. Containment Spray	≤ 45.0
b. Containment Isolation-Phase "B"	Not Applicable
c. Steam Line Isolation	≤ 7.0*
d. Containment Fan Cooler	≤ 40.0
8. <u>Steam Generator Water Level--High-High</u>	
a. Turbine Trip	≤ 2.5
b. Feedwater Isolation	≤ 11.0
9. <u>Steam Generator Water Level--Low-Low</u>	
a. Motor-Driven Auxiliary Feedwater Pumps(4)	≤ 60.0
b. Turbine-Driven Auxiliary Feedwater Pumps(5)	≤ 60.0

* ≤10.0 seconds until restart following the tenth refueling outage.

PLANT SYSTEMS

MAIN STEAM LINE ISOLATION VALVES

LIMITING CONDITION FOR OPERATION
=====

3.7.1.5 Each main steam line isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

MODES 1 - With one main steam line isolation valve inoperable, POWER OPERATION may continue provided the inoperable valve is either restored to OPERABLE status or closed within 4 hours;

otherwise, be in HOT SHUTDOWN within the next 12 hours.

MODES 2 - With one main steam line isolation valve inoperable,
and 3 subsequent operation in MODES 1, 2 or 3 may proceed provided;

a. The isolation valve is maintained closed.

b. The provisions of Specification 3.0.4 are not applicable.
Otherwise, be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS
=====

4.7.1.5 Each main steam line isolation valve shall be demonstrated OPERABLE by verifying full closure within 5 seconds when tested pursuant to Specification 4.0.5.

* 8 seconds until restart following the tenth refueling outage.



UNITED STATES
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WASHINGTON, D.C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 124 TO FACILITY OPERATING LICENSE NO. DPR-70
PUBLIC SERVICE ELECTRIC & GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY
SALEM NUCLEAR GENERATING STATION, UNIT NO. 1
DOCKET NO. 50-272

1.0 INTRODUCTION

By letter dated February 1, 1991, as supplemented by letters dated March 19, 1991 and April 2, 1991, the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) submitted a request for changes to the Salem Nuclear Generating Station, Unit No. 1, Technical Specifications (TS). The requested changes would allow the use of the eight-second main steam isolation valve (MSIV) closure time during the Salem Unit 1 tenth operating cycle. The eight-second closure time for the MSIV was previously approved for the ninth cycle of operation by Amendment 112, dated July 9, 1990. The March 19, 1991 and April 2, 1991 letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

By a letter dated April 4, 1990, (Reference 1) Public Service Electric and Gas Company (PSE&G) requested a change to the Technical Specification (TS) for Salem on an emergency basis. The requested change would increase the allowable main steam isolation valve (MSIV) closure time from five seconds to eight seconds. The letter provided a detailed description of the proposed changes, along with information to support the determination of no significant hazards consideration. Based on a preliminary review, the staff granted a temporary waiver of compliance by a letter dated April 5, 1990, (Reference 2).

In support of its emergency request to increase MSIV closure time for the ninth operating cycle, PSE&G initiated a study to determine the cause of slow MSIV closure time, and concluded that water accumulation was the sole reason for slow closure time experienced at the Salem generating station. Test data at Salem and other utilities with similar MSIVs appear to support the licensee's conclusion that condensate accumulation in the MSIV and vent path is the single probable cause of the slow closure and that without other mechanical failures, the closure time of affected MSIVs is expected to be less than eight seconds.

Based on that conclusion the staff granted, by a letter dated July 9, 1990, (Reference 3) the emergency TS change for Salem Unit No. 1's ninth operating cycle but noted that the licensee needs to pursue a permanent solution including analytical evaluations of the parameters affecting MSIV closure time, as well as appropriate corrective action.

In response to the staff's comment on pursuing a permanent solution, PSE&G has developed a calculational method to estimate the condensate formation rate and water drainage rate, which are expected to be the two most important factors affecting MSIV's closure times. The methodology confirms the hypothesis that increasing the drainage rate while reducing the condensate formation rate would improve the MSIV closure time. Based on the calculation results, an MSIV modification was proposed to increase the pressure equalization orifice diameter from 1.6 mm to approximately 11 mm. The licensee implemented the modification during the ninth refueling outage which began February 12, 1991.

Although it is the licensee's intention that the proposed MSIV modification will restore the closure time to less than five seconds, it can not be confirmed by tests during the ninth refueling outage because meaningful tests can only be conducted during power operation. Without test results, it would be premature for the licensee as well as the NRC staff to conclude that the original MSIV closure time design margin has been restored, nor can a new, revised TS closure time limit be set. As a result, by a letter dated February 1, 1991, (Reference 4) supplemented by a letter dated March 19, 1991, (Reference 5) the licensee requested an extension of the emergency TS change for the tenth operating cycle, during which time certain tests will be performed to confirm the adequacy of MSIV modifications. As indicated in the letter dated March 19, 1991, several post-modification tests will be performed in Modes 1 and 2 during the tenth operating cycle.

The staff has reviewed the proposed MSIV modifications and corrective actions, committed to by the licensee during the ninth refueling outage, and concurs in the licensee's conclusion that MSIV closure time will be improved over that of the last operating cycle, i.e., less than eight seconds. Based on the proposed MSIV modifications and corrective actions to improve MSIV closure time, the fact that meaningful tests can only be done during Modes 1 and 2 following the restart from the ninth refueling outage and since the Salem licensing basis safety analyses, which we have reviewed and found acceptable, used a 10 second stroke time and a 12 second ESF response time for steam line isolation with acceptable results, the staff finds the proposed extension of the eight-second closure time for the MSIVs through the tenth operating cycle to be acceptable. However, the staff expects a final solution to the MSIV closure time to be in place prior to restart from the tenth refueling outage.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes 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 amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding. Accordingly, the amendment meets 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 amendment.

5.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: J. Huang

Date: April 16, 1991

6.0 REFERENCES

1. Letter from S. E. Miltenberger to NRC, "Increase of Allowable MSIV Closure Time, Request for Emergency License Amendment", dated April 4, 1990.
2. Letter from B. A. Boger, NRC, "Temporary Waiver of Compliance Relating to Main Steam Isolation Valve Closure Time", dated April 5, 1990.
3. Letter from B. A. Boger, NRC, "Emergency Technical Specification Change, Main Steam Isolation Valve Closure Time, Salem Nuclear Generating Station, Unit No. 1," July 9, 1990. (Amendment No. 112)
4. Letter from S. E. Miltenberger to NRC, "MSIV Closure Time Extension Request for License Amendment", dated February 1, 1991.
5. Letter from S. LaBruna to NRC, "Supplemental Information to MSIV Closure Time Extension Request", dated March 19, 1991.