



Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038-0236

Nuclear Business Unit

**FEB 07 2000**

**LR-N990532**

**LCR S99-16**

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

**REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS  
AUXILIARY FEEDWATER SYSTEM (AFWS)  
SALEM GENERATING STATION NOS. 1 AND 2  
FACILITY OPERATING LICENSES DPR-70 AND DPR-75  
DOCKET NOS. 50-272 AND 50-311**

Gentlemen:

In accordance with 10CFR50.90, Public Service Electric & Gas (PSE&G) Company hereby requests a revision to the Technical Specifications (TS) for the Salem Generating Station Unit Nos. 1 and 2. In accordance with 10CFR50.91(b)(1), a copy of this submittal has been sent to the State of New Jersey.

PSE&G is proposing to change Technical Specifications 3.7.1.2, "Plant Systems - Auxiliary Feedwater Pumps." Specifically, PSE&G proposes to replace the current surveillance requirement 4.7.1.2.b wording with that of the improved Standard Technical Specifications Westinghouse Plants, NUREG 1431 (STS). The Bases associated with this Technical Specification will be also modified to address the proposed changes.

The proposed changes have been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c) and PSE&G has concluded that this request involves no significant hazards considerations. PSE&G has also reviewed the proposed License Change Request (LCR) against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, nor increase the types and amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, PSE&G concludes that the proposed change meets the criteria delineated in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.

The power is in your hands.

A001

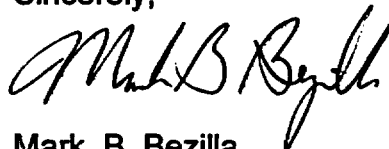
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Attachment I contains the basis for the requested change. Attachment II contains a 10CFR50.92 evaluation with a determination of no significant hazards consideration; the marked up TS pages affected by the proposed changes are provided in Attachment III.

Upon NRC approval of this proposed change, PSE&G requests that the amendment be made effective on the date of issuance, but allow an implementation period of sixty days to provide sufficient time for associated administrative activities.

Should you have any questions regarding this request, we will be pleased to discuss them with you.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark B. Bezilla". The signature is written in a cursive style with a large, stylized initial "M".

Mark. B. Bezilla  
Vice President -  
Operations

Affidavit  
Attachments (3)

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              J. J. Keenan, Esq. (N21)  
              NBU RM(N64)  
              Microfilm Copy  
              File Nos. 1.2.1 (Salem), 2.3 (LCR S99-16)

REF: LR-N990532  
LCR S99-16

STATE OF NEW JERSEY )  
  )SS.  
COUNTY OF SALEM        )

Mark B. Bezilla, being duly sworn according to law deposes and says:

I am Vice President - Operations of Public Service Electric and Gas Company, and as such, I find the matters set forth in the above referenced letter, concerning the Salem Generating Station, Units 1 and 2, are true to the best of my knowledge, information and belief.



Mark B. Bezilla

Subscribed and Sworn to before me  
this 7<sup>th</sup> day of February, 2000

Jennifer M. Turner  
Notary Public of New Jersey

My Commission expires on JENNIFER M. TURNER  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires July 25, 2000

**ATTACHMENT I**  
**LR-N990532**  
**SALEM GENERATING STATION UNIT NOS. 1 AND 2**  
**FACILITY OPERATING LICENSES DPR-70 AND DPR-75**  
**DOCKET NOS. 50-272 AND 50-311**  
**CHANGE TO TECHNICAL SPECIFICATIONS (TS)**  
**AUXILIARY FEEDWATER SYSTEM (AFWS)**

**PROPOSED TECHNICAL SPECIFICATION CHANGES**

PSE&G proposes to replace the current Salem Technical Specification surveillance requirements 4.7.1.2.b 1 and 2 with the following statements:

- "1. Verify that the developed head of each motor driven pump at the flow test point is greater than or equal to the required developed head."
- "2. Verify that the developed head of the steam driven pump at the flow test point is greater than or equal to the required developed head when the steam generator pressure is >680 psig."

**BASIS FOR THE PROPOSED CHANGE**

**BASIS**

The Standard Technical Specifications Westinghouse Plants, NUREG 1431, Rev 1 (STS) provides a clear description of the intent of this surveillance testing requirement. The STS bases state, in part the following: "...Verifying that each Auxiliary Feedwater (AFW) pump's developed head at the flow test point is greater than or equal to the required developed head ensures that the AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code. Because it is undesirable to introduce cold AFW into the steam generators while operating, the test is performed on recirculation flow. This test confirms one point on the pump design curve (head vs flow curve), and is indicative of pump performance. Inservice testing (IST) confirms pump operability, trends performance and detects incipient failures by indication of pump performance."

The current Salem Technical Specification surveillance testing specifies one point on the curve. The acceptance criterion is based on requiring a minimum acceptable discharge pressure, while in the recirculation mode. However without also providing for a specific recirculation flow, the surveillance requirement does not provide for an accurate characterization of pump performance (one point on the curve). The test could be satisfactorily completed by varying the recirculation flow between 0 gpm and any amount of flow that can be accommodated by the recirculation line to obtain the proper discharge pressure. Although, this practice is not the manner in which the test is performed, this interpretation complies with the Technical Specification surveillance requirement.

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The proposed change, as described above, will eliminate the potentially non-conservative acceptance values included in the Salem Technical Specification surveillance requirements, while providing consistency with the wording of the STS. The proposed change will better enable the detection of degraded pump performance, thus ensuring compliance with the intent of the surveillance requirement to detect pump degradation.

Justification

The NRC identified and questioned this potentially non-conservative surveillance during a Safety System Design and Performance Capability inspection of the auxiliary feedwater system during July 1999. In the initial development of minimum flows as required by the Updated Final Safety Analysis Report (UFSAR) Chapter 15 safety analyses, the design pump curve (head vs. flow) as provided by the manufacturer was used in the flow calculation model without explicitly accounting for pump degradation. However, the initial model added extra conservatism and generic margins than would normally be required in a network model to predict minimum flows. The purpose of including the conservatism was to ensure that the minimum auxiliary feedwater (AFW) flows used in the UFSAR Chapter 15 analyses would bound any worst case AFW flow condition that could be expected during accident conditions.

PSE&G re-calculated an acceptable level of pump degradation utilizing actual pump flow measurements. The re-analysis indicated that the measured pump degradation with respect to the design pump curve is well within the acceptable limits dictated by the design basis calculations. However, it is inconsistent with the Technical Specifications surveillance requirement values. Therefore, PSE&G concluded that changes to the acceptance criteria contained in the Salem Unit Nos. 1 and 2 Technical Specifications surveillance requirement for the Auxiliary Feedwater System are necessary. The proposed changes incorporate the language of the STS into the Salem TS, and will control the minimum acceptance criteria in a design document such as a design calculation. Controlling the minimum acceptance criteria (e.g., discharge pressure and minimum flow or differential pressure) in a design calculation will provide greater flexibility for PSE&G.

The proposed change will ensure that pump degradation, which could adversely impact the accident analyses, will be detected prior to exceeding the minimum value assumed in the accident analysis.

**ATTACHMENT I  
LR-N990532  
SALEM GENERATING STATION UNIT NOS. 1 AND 2  
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CHANGE TO TECHNICAL SPECIFICATIONS (TS)  
AUXILIARY FEEDWATER SYSTEM (AFWS)**

Summary

The proposed Technical Specifications surveillance testing and change to the Bases will have no adverse effect on plant operation or accident mitigation equipment. Therefore, there will be no adverse impact on public health and safety.



**ATTACHMENT II**  
**LR-N990532**  
**SALEM GENERATING STATION UNIT NOS. 1 AND 2**  
**FACILITY OPERATING LICENSES DPR-70 AND DPR-75**  
**DOCKET NOS. 50-272 AND 50-311**  
**CHANGE TO TECHNICAL SPECIFICATIONS (TS)**  
**AUXILIARY FEEDWATER SYSTEM (AFWS)**

**10CFR50.92 EVALUATION**

Public Service Electric & Gas (PSE&G) has concluded that the proposed changes to the Salem Generating Station Unit Nos. 1 and 2 TS do not involve a significant hazards consideration. In support of this determination, an evaluation of each of the three standards set forth in 10CFR50.92 is provided below.

**SIGNIFICANT HAZARDS CONSIDERATION**

**Proposed technical specification changes**

The current Salem Technical Specification surveillance requirement 4.7.1.2.b 1 and 2 are replaced with the following statements:

- "1. Verify that the developed head of each motor driven pump at the flow test point is greater than or equal to the required developed head."
- "2. Verify that the developed head of the steam driven pump at the flow test point is greater than or equal to the required developed head when the steam generator pressure is >680 psig."

In accordance with 10CFR50.92, Public Service Electric and Gas (PSE&G) has reviewed the proposed changes and has concluded that they do not involve a significant hazards consideration. The basis for this conclusion is that the three criteria of 10CFR50.92(c) are not compromised. The proposed changes do not involve a significant hazards consideration because the changes would not:

- 1. Involve a significant increase in the probability or consequences of an accident previously evaluated.**

The proposed changes to the Technical Specification surveillance requirements for the auxiliary feedwater pumps surveillance testing are consistent with the latest auxiliary feedwater flow hydraulic model and accident analyses. The revised minimum acceptance criteria will ensure that pump degradation, which could adversely impact the accident analyses, will be detected. The pumps will continue to operate in the same manner as assumed in the analyses to mitigate the design basis accidents.

Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

**ATTACHMENT II**  
**LR-N990532**  
**SALEM GENERATING STATION UNIT NOS. 1 AND 2**  
**FACILITY OPERATING LICENSES DPR-70 AND DPR-75**  
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- 2. Create the possibility of a new or different kind of accident from any accident previously evaluated.**

The proposed changes to the Technical Specification surveillance requirements for the auxiliary feedwater pumps surveillance testing are consistent with the latest auxiliary feedwater flow hydraulic model and accident analyses. The proposed changes to the Technical Specification surveillance requirements and associated Bases will not affect the way the pumps are operated during normal plant operations, or how the pumps will operate after an accident.

Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

- 3. Involve a significant reduction in a margin of safety.**

The proposed changes to the Technical Specification surveillance requirements for the auxiliary feedwater pumps surveillance testing are consistent with the latest auxiliary feedwater flow hydraulic model and accident analyses. The proposed changes to the Technical Specification surveillance requirements eliminate a potential non-conservative acceptance value and establish appropriate restrictions to ensure pump operability. The proposed change to the Technical Specifications Bases better describes the design function of the auxiliary feedwater system.

Therefore, there will be no significant reduction in the margin of safety as defined in the Bases for the Technical Specifications affected by these proposed changes.

**ATTACHMENT III  
LR-N990532  
SALEM GENERATING STATION UNIT NOS. 1 AND 2  
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DOCKET NOS. 50-272 AND 50-311  
CHANGE TO TECHNICAL SPECIFICATIONS (TS)  
AUXILIARY FEEDWATER SYSTEM (AFWS)**

**TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES**

The following TS for Facility Operating License No. DPR-70 are affected by this change request:

<u>Technical Specification</u>	<u>Page</u>
4.7.1.2.b	3/4 7-6
B 3/4.7.1.2	b 3/4 7-2

The following TS for Facility Operating License No. DPR-75 are affected by this change request:

<u>Technical Specification</u>	<u>Page</u>
4.7.1.2.b	3/4 7-6
B 3/4.7.1.2	b 3/4 7-2

Inserts A and B attached.

**ATTACHMENT III  
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CHANGE TO TECHNICAL SPECIFICATIONS (TS)  
AUXILIARY FEEDWATER SYSTEM (AFWS)**

**INSERT A**

1. Verify that the developed head of each motor driven pump at the flow test point is greater than or equal to the required developed head.
2. Verify that the developed head of the steam driven pump at the flow test point is greater than or equal to the required developed head when the steam generator pressure is >680 psig.

**INSERT B**

Verifying that each Auxiliary Feedwater (AFW) pump's developed head at the flow test point is greater than or equal to the required minimum developed head ensures that the AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code. Because it is undesirable to introduce cold AFW into the steam generators while operating, the test is performed on recirculation flow. This test confirms one point on the pump design curve (head vs flow curve), and is indicative of pump performance. Inservice testing confirms pump operability, trends performance and detects incipient failures by indication of pump performance.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 92 days on a STAGGERED TEST BASIS by:

- INSERT A** →
1. Verifying that each motor-driven pump develops a discharge pressure of greater than or equal to 1275 psig on recirculation flow.
  2. Verifying that the steam turbine-driven pump develops a discharge pressure of greater than or equal to 1500 psig on recirculation flow when the secondary steam generator supply pressure is greater than 680 psig. The provisions of Specification 4.0.4 are not applicable provided the surveillance is performed within 24 hours after secondary side pressure is greater than 680 psig.

c. At least once per 18 months by:

1. Verifying that each auxiliary feedwater automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.
2. Verifying that each auxiliary feedwater pump starts automatically on an actual or simulated actuation signal.

The provisions of Specification 4.0.4 are not applicable to the turbine driven auxiliary feedwater pump, provided the surveillance is performed within 24 hours after the secondary steam generator pressure is greater than 680 psig.

## PLANT SYSTEMS

### BASES

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- U - maximum number of inoperable safety valves per operating steam line
- 109 - Power Range Neutron Flux-High Trip Setpoint for 4 loop operation
- 76 - Maximum percent of RATED THERMAL POWER permissible by P-8 Setpoint for 3 loop operation
- X - Total relieving capacity of all safety valves per steam line in lbs/hour
- Y - Maximum relieving capacity of any one safety valve in lbs/hour

### 3/4.7.1.2 AUXILIARY FEEDWATER SYSTEM

The OPERABILITY of the auxiliary feedwater system ensures that the Reactor Coolant System can be cooled down to less than 350°F from normal operating conditions in the event of a total loss of offsite power.

Each electric driven auxiliary feedwater pump is capable of delivering a total feedwater flow of 440 gpm at a pressure of 1150 psig to the entrance of the steam generators. The steam driven auxiliary feedwater pump is capable of delivering a total feedwater flow of 880 gpm at a pressure of 1150 psig to the entrance of the steam generators. This capacity is sufficient to ensure that adequate feedwater flow is available to remove decay heat and reduce the Reactor Coolant System temperature to less than 350°F when the Residual Heat Removal System may be placed into operation.

The flow path to each steam generator is ensured by maintaining all manual maintenance valves locked open. A spool piece consisting of a length of pipe may be used as an equivalent to a locked open manual valve. The manual valves in the flow path are: 2AF1, 21AF3, 22AF3, 23AF3, 21AF10, 22AF10, 23AF10, 24AF10, 21AF20, 22AF20, 23AF20, 24AF20, 21AF22, 22AF22, 23AF22, 24AF22, 21AF86, 22AF86, 23AF86, and 24AF86.

### 3/4.7.1.3 AUXILIARY FEED STORAGE TANK

The OPERABILITY of the auxiliary feed storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for 8 hours with steam discharge to the atmosphere concurrent with total loss of offsite power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (continued)

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b. At least once per 92 days on a STAGGERED TEST BASIS by:

1. Verifying that each motor-driven pump develops a discharge pressure of greater than or equal to 1275 psig on recirculation flow.
2. Verifying that the steam turbine-driven pump develops a discharge pressure of greater than or equal to 1500 psig on recirculation flow when the secondary steam generator pressure is greater than 680 psig. The provisions of Specification 4.0.4 are not applicable provided the surveillance is performed within 24 hours after secondary side pressure is greater than 680 psig.

INSERT A

c. At least once per 18 months by:

1. Verifying that each auxiliary feedwater automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.
2. Verifying that each auxiliary feedwater pump starts automatically on an actual or simulated actuation signal.

The provisions of Specification 4.0.4 are not applicable to the turbine driven auxiliary feedwater pump provided the surveillance is performed within 24 hours after the secondary steam generator pressure is greater than 680 psig.

## PLANT SYSTEMS

### BASES

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- U - maximum number of inoperable safety valves per operating steam line
- 109 - Power Range Neutron Flux-High Trip Setpoint for 4 loop operation
- 76 - Maximum percent of RATED THERMAL POWER permissible by P-8 Setpoint for 3 loop operation.
- X - Total relieving capacity of all safety valves per steam line in lbs/hour
- Y - Maximum relieving capacity of any one safety valve in lbs/hour

### 3/4.7.1.2 AUXILIARY FEEDWATER SYSTEM

The OPERABILITY of the auxiliary feedwater system ensures that the Reactor Coolant System can be cooled down to less than 350°F from normal operating conditions in the event of a total loss of off-site power.

Each electric driven auxiliary feedwater pump is capable of delivering a total feedwater flow of 440 gpm at a pressure of 1150 psig to the entrance of the steam generators. The steam driven auxiliary feedwater pump is capable of delivering a total feedwater flow of 880 gpm at a pressure of 1150 psig to the entrance of the steam generators. This capacity is sufficient to ensure that adequate feedwater flow is available to remove decay heat and reduce the Reactor Coolant System temperature to less than 350°F when the Residual Heat Removal System may be placed into operation.

The flow path to each steam generator is ensured by maintaining all manual maintenance valves locked open. A spool piece consisting of a length of pipe may be used as an equivalent to a locked open manual valve. The manual valves in the flow path are: 1AF1, 11AF3, 12AF3, 13AF3, 11AF10, 12AF10, 13AF10, 14AF10, 11AF20, 12AF20, 13AF20, 14AF20, 11AF22, 12AF22, 13AF22, 14AF22, 11AF86, 12AF86, 13AF86, and 14AF86.

### 3/4.7.1.3 AUXILIARY FEED STORAGE TANK

The OPERABILITY of the auxiliary feed storage tank with the minimum water volume ensures that sufficient water is available to maintain the RCS at HOT STANDBY conditions for 8 hours with steam discharge to the atmosphere concurrent with total loss of off-site power. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.