



SEP 26 2002

LR-N02-0315
LCR S02-008

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Gentlemen:

**REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS
TO REFLECT NEW SETPOINTS AND ALLOWABLE VALUES FOR
STEAM GENERATOR LOW-LOW LEVEL TRIP
SALEM GENERATING STATION UNITS 1 AND 2
FACILITY OPERATING LICENSES NOS. DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311**

Pursuant to 10 CFR 50.90, PSEG Nuclear LLC (PSEG) hereby requests a revision to the Technical Specifications (TS) for Salem Generating Station Units 1 & 2. In accordance with 10CFR50.91(b)(1), a copy of this submittal has been sent to the State of New Jersey.

The proposed change would revise TS Table 2.2-1, "REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS," and Table 3.3-4, "ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS," setpoint and allowable values to change the Steam Generator low-low level trip at Salem Units 1 & 2. The change is required to account for a flow induced pressure drop inside the Steam Generator discovered during a loss of feedwater transient at Diablo Canyon.

PSEG Nuclear LLC has evaluated the proposed changes in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c) and has determined that this request involves no significant hazards considerations. An evaluation of the requested changes is provided in Attachment 1 to this letter. In addition, there is no significant increase in the amounts or types of any effluents that may be released offsite, and there is no significant increase in individual or cumulative occupational radiation exposure. Consequently, the proposed amendment satisfies the criteria of 10CFR51.22 (c)(9) for categorical exclusion from the requirement for an environmental assessment. The marked up Technical Specification pages affected by the proposed changes are provided in Attachment 2.

Pool

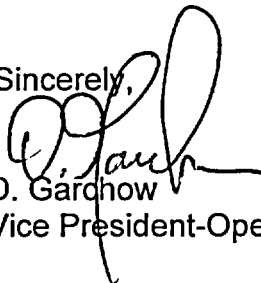
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Approval of this proposed change is being requested by March 31, 2003. Field changes were implemented on February 16, 2002.

If you have any questions or require additional information, please contact Mr. Michael Mosier at (856) 339-5434.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on SEP 26 2002

Sincerely,

D. Garchow
Vice President-Operations

Attachments (2)

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C: Mr. H. Miller, Administrator – Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. R. Fretz, Project Manager - Salem
U. S. Nuclear Regulatory Commission
Mail Stop 8B2
Washington, DC 20555

USNRC Senior Resident Inspector - Salem (X24)

Mr. K. Tosch, Manager IV
Bureau of Nuclear Engineering
PO Box 415
Trenton, New Jersey 08625

SALEM GENERATING STATION UNITS 1 AND 2
FACILITY OPERATING LICENSES NOS. DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311

EVALUATION OF REVISIONS TO THE TECHNICAL SPECIFICATIONS (TS)
TO
REFLECT NEW SETPOINTS AND ALLOWABLE VALUES FOR STEAM
GENERATOR LOW-LOW LEVEL TRIP

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REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS TO REFLECT NEW STEAM GENERATOR LOW-LOW LEVEL SETPOINTS

1. DESCRIPTION

This letter is a request to amend Facility Operating License DPR-70 and DPR-75 for Salem Generating Station Units 1 and 2. The proposed change would revise the Technical Specifications (TS) to change the low-low Steam Generator level trip setpoints at Salem Units 1 & 2. The change is required due to a flow induced pressure drop in the Steam Generator mid-deck observed during a loss of feedwater transient at Diablo Canyon, that was not considered in the previous Westinghouse analysis. This change is to account for a level measurement bias resulting from the pressure drop. This bias has the effect of providing non-conservative level readings and setpoints.

On February 16, 2002, design changes were implemented for Salem Unit 1 and 2 to raise the Steam Generator low-low level setpoint to $\geq 14\%$ with an allowable value of $\geq 13\%$. This request is to change the TS to agree with the actual settings that are more conservative than the current TS.

2. PROPOSED CHANGE

The proposed change would revise TS Table 2.2-1, "REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS," and Table 3.3-4, "ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS," setpoint and allowable values to change the Steam Generator low-low level trip at Salem Units 1 & 2. The setpoint will be changed from $\geq 9.0\%$ to $\geq 14.0\%$ and the allowable value changed from $\geq 8.0\%$ to $\geq 13.0\%$. The proposed changes to the Technical Specifications are included in Attachment 2 of this submittal.

3. BACKGROUND

Diablo Canyon Power Plant reported that the narrow-range steam generator water level instrumentation did not respond as expected to initiate an automatic reactor trip and emergency feedwater actuation on low-low water level in the steam generator during a plant trip of Unit 2 on February 9, 2002. The U.S. Nuclear Regulatory Commission issued an information notice 2002-10 to alert addressees to the potential for nonconservative setpoints for steam generator water level. Diablo Canyon reported that Westinghouse attributes this water level discrepancy to previously unaccounted for differential pressure created by steam flow past the mid-deck plate in the moisture separator section of the steam generator. Westinghouse further indicated that this differential pressure phenomenon would cause the steam generator

narrow-range to read higher than the actual water level when the reactor is operating at a power level greater than 60 percent for Diablo Canyon. Thus, all steam generator water level instrumentation could be nonconservative during certain transients because of this differential pressure phenomenon. Diablo Canyon has since recalibrated the low-low water level setpoints for the steam generator with the additional margin to account for this newly identified error. This event is noteworthy because a Westinghouse SG error source was not accounted for and adversely affected the SG level low-low uncertainty calculation (reference 2).

On February 15, 2002, PSEG received information from Westinghouse indicating the steam generator low-low level setpoint for reactor trip and initiation of Auxiliary Feedwater (AFW) was potentially non-conservative (Reference 7.1). The information provided by Westinghouse described a Steam Generator "Mid-deck" pressure loss, which is developed as a function of steam flow rate. This Mid-deck delta-P was not considered in the existing Salem 1 and 2 instrument uncertainty calculations. The delta-P is a bias in the non-conservative direction, thus impacting the existing steam generator low-low level setpoints. Mid-deck delta-P information was provided by Westinghouse for both the Model "F" (Salem Unit 1) and the Model "51" Steam Generators (Salem Unit 2), specifying the Mid-deck Plate pressure loss as a function of steam flow rate.

The steam generator low-low level trip prevents loss of secondary side heat transfer capability. The low-low level trip must be operable in Modes 1 and 2. This signal is used as a primary protection signal for the design basis loss of normal feedwater, loss of offsite power and feedwater line break safety analysis. At the time of the Westinghouse notification, the low-low steam generator level setpoint was set at $\geq 9\%$, with an allowable value of $\geq 8\%$, for Salem Unit 1 and 2.

On February 16, 2002, design changes were implemented for Salem Unit 1 and 2 to raise the Steam Generator low-low level Setpoint to $\geq 14\%$ with an allowable value of $\geq 13\%$.

4. TECHNICAL ANALYSIS

The Steam Generator water level low-low setpoint initiates a reactor trip and actuation of the AFW system. This signal is used as a primary protection signal for the design basis loss of normal feedwater, loss of offsite power and feedwater line break safety analysis. The safety analyses assume reactor trip and AFW actuation occurs at 0.0% Narrow Range Span (NRS) (i.e., analytical limit).

For Salem Unit 1 the total calculated channel uncertainty for the low-low level channel is + 12.233%. Because the low-low level signal protects against

conditions involving decreasing steam generator level, the positive uncertainty value (+12.233%) is subtracted from the setpoint to determine whether there is adequate margin relative to the analytical limit. The proposed setpoint of $\geq 14\%$ and allowable value of $\geq 13\%$ would ensure the analytical limit of 0.0% NRS is met with excess margin.

Similarly for Salem Unit 2 the total calculated channel uncertainty for the low-low level channel is +10.339%. Because the low-low level signal protects against conditions involving decreasing steam generator level, the positive uncertainty value (+10.339%) is subtracted from the setpoint to determine whether there is adequate margin relative to the analytical limit. The proposed setpoint of $\geq 14\%$ and allowable value of $\geq 13\%$ would ensure the analytical limit of 0.0% NRS is met with excess margin.

5. REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

PSEG Nuclear LLC has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10CFR50.92, "Issuance of amendment," as discussed below:

1. The proposed amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change to Tables 2.2-1 and 3.3-4 changes both the allowable trip setpoint and allowable value for the Steam Generator Water Level-Low-Low from $\geq 9.0\%$ to $\geq 14.0\%$ and from $\geq 8.0\%$ to $\geq 13\%$ respectively. The Steam Generator Water Level Low-Low trip provides core protection by preventing operation with the steam generator water level below the minimum volume required for adequate heat removal capacity. The signal is used as a primary protection signal for the design basis loss of normal feedwater, loss of offsite power and feedwater line break safety analysis. The specified setpoint provides allowance that there will be sufficient water inventory in the steam generators at the time of trip to allow for starting delays of the auxiliary feedwater system. The change in the setpoint and allowable value allows the trip to function as originally designed accounting for the differential pressure created by steam flow past the mid-deck plate in the moisture separator section of the steam generator.

Therefore, the proposed changes will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes to the Steam Generator Water Level-Low-Low trip setpoint and allowable values allow the trip to function as originally designed. They do not alter the plant configuration in any way, and do not replace or modify existing plant equipment, or affect any plant operations. No additional failure mechanisms are introduced as a result of the changes to the setpoints and allowable values.

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

3. The proposed amendment would not involve a significant reduction in the margin of safety.

The proposed changes to the allowable trip setpoint and allowable value for the Steam Generator Water Level-Low-Low trip maintains core protection by preventing operation with the steam generator water level below the minimum volume required for adequate heat removal capacity.

Therefore, it is concluded that the proposed changes to the steam generator low low level trip setpoint and allowable value do not involve a significant reduction in a margin of safety.

5.2 Applicable Regulatory Requirements/Criteria

PSEG has determined that the proposed changes to the TS do not affect any regulatory requirements previously addressed with respect to the licensing basis of the units.

In conclusion, based on the considerations discussed above, (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.

6. ENVIRONMENTAL IMPACT EVALUATION

PSEG has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment

does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7. REFERENCES

- 7.1. OE13281 Diablo Canyon Manual Reactor Trip in response to Main Feedwater Regulating Valve Failure.
- 7.2. Westinghouse letter NSAL-02-3, Rev.1, dated March 13, 2002, Steam Generator Mid-deck Plate Pressure Loss Issue.

**SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2
FACILITY OPERATING LICENSES DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311
REVISIONS TO THE TECHNICAL SPECIFICATIONS**

TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES

The following Technical Specifications for Facility Operating License DPR-70 are affected by this change request:

<u>Technical Specification</u>	<u>Page</u>
Table 2.2-1	2-6
Table 3.3-4	3-26

The following Technical Specifications for Facility Operating License DPR-75 are affected by this change request:

<u>Technical Specification</u>	<u>Page</u>
Table 2.2-1	2-6
Table 3.3-4	3-27

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**SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2
FACILITY OPERATING LICENSES DPR-70 AND DPR-75
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<u>Technical Specification</u>	<u>Page</u>
Table 2.2-1	2-6
Table 3.3-4	3-27

TABLE 2.2-1 (Continued)

TRIP SETPOINTS

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT

TRIP SETPOINT

ALLOWABLE VALUES

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
13. Steam Generator Water Level--Low-Low	\geq 9.0% ^{14.0%} of narrow range instrument span--each steam generator	\geq 9.0% ^{13.0%} of narrow range instrument span--each steam generator
14. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	\leq 40% of full steam flow at RATED THERMAL POWER coincident with steam generator water level \geq 10.0% of narrow range instrument span--each steam generator	\leq 42.5% of full steam flow at RATED THERMAL POWER coincident with steam generator water level \geq 9.0% of narrow range instrument span--each steam generator
15. Undervoltage-Reactor Coolant Pumps	\geq 2900 volts--each bus	\geq 2850 volts--each bus
16. Underfrequency-Reactor Coolant Pumps	\geq 56.5 Hz - each bus	\geq 56.4 Hz - each bus
17. Turbine Trip		
A. Low Trip System Pressure	\geq 45 psig	\geq 45 psig
B. Turbine Stop Valve Closure	\leq 15% off full open	\leq 15% off full open
18. Safety Injection Input from ESF	Not Applicable	Not Applicable
19. Reactor Coolant Pump Breaker Position Trip	Not Applicable	Not Applicable

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TABLE 3.3-4 (continued)
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
5. TURBINE TRIP AND FEEDWATER ISOLATION		
A. Steam Generator Water Level -- High-High	≤ 67% of narrow range instrument span each steam generator	≤ 68% of narrow range instrument span each steam generator
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	Not Applicable	Not Applicable
7. UNDERVOLTAGE, VITAL BUS		
a. Loss of Voltage	≥ 70% of bus voltage	≥ 65% of bus voltage
b. Sustained Degraded Voltage	≥ 94.6% of bus voltage for ≤ 13 seconds	≥ 94% of bus voltage for ≤ 15 seconds
8. AUXILIARY FEEDWATER		
a. Automatic Actuation Logic	Not Applicable	Not Applicable
b. NOT USED		
c. Steam Generator Water Level-- Low-Low	≥ ^{14.0} 8.43 of narrow range instrument span each steam generator	≥ ^{13.0} 8.43 of narrow range instrument span each steam generator
d. Undervoltage - RCP	≥ 70% RCP bus voltage	≥ 65% RCP bus voltage
e. S.I.	See 1 above (All S.I. setpoints)	
f. Trip of Main Feedwater Pumps	Not Applicable	Not Applicable
g. Station Blackout	See 6 and 7 above (SEC and Undervoltage, Vital Bus)	



TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
13. Steam Generator Water Level--Low-Low	9.0% 14.0% ≥ 9.0% of narrow range instrument span-each steam generator	8.0% 13.0% ≥ 8.0% of narrow range instrument span-each steam generator
14. Deleted		
15. Undervoltage-Reactor Coolant Pumps	≥ 2900 volts-each bus	≥ 2850 volts-each bus
16. Underfrequency-Reactor Coolant Pumps	≥ 56.5 Hz - each bus	≥ 56.4 Hz - each bus
17. Turbine Trip		
A. Low Trip System Pressure	≥ 45 psig	≥ 45 psig
B. Turbine Stop Valve Closure	≤ 15% off full open	≤ 15% off full open
18. Safety Injection Input from ESF	Not Applicable	Not Applicable
19. Reactor Coolant Pump Breaker Position Trip	Not Applicable	Not Applicable



TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
7. UNDERVOLTAGE, VITAL BUS		
a. Loss of Voltage	≥ 70% of bus voltage	≥ 65% of bus voltage
b. Sustained Degraded Voltage	≥ 94.6% of bus voltage for ≤13 seconds	≥ 94% of bus voltage for ≤ 15 seconds
8. AUXILIARY FEEDWATER		
a. Automatic Actuation Logic	Not Applicable	Not Applicable
b. NOT USED		
c. Steam Generator Water Level-- Low-Low	14.0 ≥ 9.8% of narrow range instrument span each steam generator	13.0 ≥ 9.8% of narrow range instrument span each steam generator
d. Undervoltage - RCP	≥ 70% RCP bus voltage	≥ 65% RCP bus voltage
e. S.I.	See 1 above (all S.I. setpoints)	
f. Trip of Main Feedwater Pump	Not Applicable	Not Applicable
g. Station Blackout	See 6 and 7 above (SEC and Undervoltage, Vital Bus)	
9. SEMIAUTOMATIC TRANSFER TO RECIRCULATION		
a. RWST Low Level	15.25 ft. above Instrument taps	15.25 ± 1 ft. above instrument taps
b. Automatic Actuation Logic	Not Applicable	Not Applicable

