**PSEG Nuclear LLC**
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PSEG
*Nuclear LLC*

LRN-00-0317
LCR S99-13

SEP 2 6 2000

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

Gentlemen:

**REQUEST FOR AMENDMENT**
**REACTOR COOLANT SYSTEM – SAFETY VALVES**
**PLANT SYSTEMS – TURBINE CYCLE – SAFETY VALVES**
**SALEM GENERATING STATION**
**UNIT NOS. 1 AND 2**
**DOCKET NOS. 50-272 AND 50-311**

In accordance with the requirements of 10CFR50.90, PSEG Nuclear LLC hereby transmits a request for amendment to Facility Operating Licenses DPR-70 and DPR-75 for Salem Generating Station Unit Nos. 1 and 2 respectively. Pursuant to the requirements of 10CFR50.91(b)(1), a copy of this request for amendment has been sent to the State of New Jersey.

The proposed change will amend Technical Specification 3/4.4.2.1 (Salem 1) / 3/4.4.2 (Salem 2), Reactor Coolant Systems – Safety Valves – Shutdown and 3/4.4.2.2(Salem 1) / 3/4.4.3 (Salem 2), Reactor Coolant Systems – Safety Valves – Operating, and their associated bases to increase the as-found set point tolerance for the Pressurizer Safety Valves (PSV) from 1% to 3%.

The proposed change will also amend Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its associated bases, to increase the as-found set point tolerance for the Main Steam Safety Valves (MSSV) from 1% to 3%.

The proposed change will also amend Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its associated basis, to require a reduction in power based upon the number of inoperable MSSVs, vice a reduction in the Power Range Neutron Flux High trip setpoint as is currently required. This change is consistent with

A001

NUREG-1431, Standard Technical Specifications - Westinghouse Plants, Revision 1, dated April 1995.

Finally, the proposed change will amend Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its Bases, to remove requirements and references related to plant operation with three Reactor Coolant System loops.

The proposed changes have been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and it has been determined that this request does not involve a significant hazards consideration.

A description of the requested amendment, the reason for the changes, and the justification for the changes are provided as Attachment 1. The basis for the no significant hazards consideration determination is provided in Attachment 2. The Technical Specification pages affected by the proposed changes are provided in Attachment 3.

PSEG Nuclear has reviewed the proposed License Amendment 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. The postulated post accident doses do not increase as a result of operations under the benefit of this request. Based on the foregoing, PSE&G has determined that this request meets the criteria of 10 CFR 51.22(c)(9) and 10 CFR 51.22(c)(10) for a categorical exclusion from the requirements for an Environmental Impact Statement (see Attachment 4).

Amendments allowing an as-found setpoint tolerance of 3% for Pressurizer Safety Valves were approved for Virginia Power Company's North Anna Units No. 1 and 2 (Docket Nos. 50-338 and 50-339, dated April 1, 1996), and Southern Nuclear Operating Company's Vogtle Electric Generating Plant, Units No. 1 and 2 (Docket Nos. 50-424 and 50-425, dated August 26, 1997). Amendments allowing an as-found setpoint tolerance of 3% for Main Steam Safety Valves were approved for Commonwealth Edison Company's Byron Units No. 1 and 2 and Braidwood Units No. 1 and 2 (Docket Nos. 50-454, 50-455, 50-456, and 50-457, dated April 29, 1996), and Southern Nuclear Operating Company's Joseph M. Farley Nuclear Plant, Units No. 1 and 2 (Docket Nos. 50-348 and 50-364, dated March 1, 1995). Amendments allowing an as-found setpoint tolerance of 3% for Pressurizer Safety Valves and Main Steam Safety Valves were approved for Northern States Power Company's Prairie Island Units No. 1 and 2 (Docket Nos. 50-282, and 50-306 dated May 21, 1996), and Tennessee Valley Authority's Sequoyah Nuclear Plant, Units No. 1 and 2 (Docket Nos. 50-327 and 50-328, dated September 29, 1997).

PSEG Nuclear requests a 60-day implementation period following amendment approval.

Should you have any questions regarding this request, please contact Brooke Knieriem, Licensing, at (856) 339-1782.

Sincerely,

D. F. Garchow
Vice President – Technical Support

/rbk
Affidavit
Attachments (4)

c Mr. H. J. Miller, Administrator - Region I
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LRN-00-0317
LCR S99-13

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

D. F. Garchow, being duly sworn according to law deposes and says:

I am Vice President – Technical Support, PSEG Nuclear LLC, and as such, I find the matters set forth in the above referenced letter, concerning the Salem Generating Station, Units Nos. 1 and 2, are true to the best of my knowledge, information and belief.

Subscribed and Sworn to before me
this 26 day of September, 2000

Nancy A. Dixey
Notary Public of New Jersey

My Commission expires on October 22, 2001

NANCY A. DIXEY
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires Oct. 22, 2001

## I. DESCRIPTION OF THE PROPOSED CHANGES

The proposed changes will amend the Salem Unit 1 and Salem Unit 2 Technical Specifications as follows:

a. Technical Specifications 3/4.4.2.1 (Salem 1) / 3/4.4.2 (Salem 2), Reactor Coolant Systems – Safety Valves – Shutdown and 3/4.4.2.2(Salem 1) / 3/4.4.3 (Salem 2), Reactor Coolant Systems – Safety Valves – Operating, and their Bases will be amended to specify an as-found set point tolerance for the Pressurizer Safety Valves of ±3% (vice the ±1% currently specified). The change will further require that the Pressurizer Safety Valve lift pressure setting be restored to ±1% of the setpoint following testing.

b. Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its Bases will be amended to specify an as-found set point tolerance for the Main Steam Safety Valves of ±3% (vice the ±1% currently specified). The change will further require that the Main Steam Safety Valve lift pressure setting be restored to ±1% of the setpoint following testing.

c. Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its Bases will be amended to establish limits for maximum allowable thermal power based upon the number of inoperable MSSVs, in lieu of the current requirement to reduce the Power Range Neutron Flux High trip setpoint.

d. Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its Bases will be amended to remove requirements and references related to operation with three Reactor Coolant System loops.

## II. REASON FOR THE CHANGE

### A. Pressurizer Safety Valve and Main Steam Safety Valve Setpoint Tolerance

The requested license amendment will change the specified as-found Pressurizer Safety Valve and Main Steam Safety Valve setpoint tolerance from ± 1% to ± 3% of the lift setting. Following testing, the lift settings for these valves will be restored to within ± 1% of the lift setpoint to allow for setpoint drift during subsequent operation. Historically, the lift setting for these valves has drifted outside of the ±1% Technical Specification required tolerance during plant operation. Because this condition is not detectable until the valves are tested during plant shutdown, the Limiting Condition for Operation ACTION time for inoperable Pressurizer or Main Steam Safety Valves could be exceeded. As a result, Salem would be required to submit a Licensee Event Report to document this Technical Specification prohibited condition. The proposed change will

provide a more appropriate tolerance for the Pressurizer Safety Valve and Main Steam Safety Valve setpoints that will continue to ensure that these valves are capable of carrying out their design function, while reducing the regulatory reporting burden.

**B. Required Action for Inoperable Main Steam Safety Valves**

The requested amendment will change the required technical specification ACTION for inoperable Main Steam Safety Valves. Currently, Technical Specification 3/4.7.1, allows continued operation with one or more Main Steam Safety Valves inoperable in Modes 1, 2, and 3, provided that the Power Range Neutron Flux High trip setpoint is reduced within four hours in accordance with the values listed in Table 3.7-1 of the specification. The extent of the setpoint reduction is based upon the number of inoperable Main Steam Safety Valves.

Based upon the analyses performed to support the ± 3% setpoint tolerance, the values currently provided in Table 3.7-1 would no longer be adequate to provide overpressure protection (with the ± 3% setpoint tolerance invoked) for the limiting event. The proposed change will provide limits that support the ± 3% setpoint tolerance. In addition, the proposed change will permit continued operation based upon limits imposed on maximum reactor thermal power, that are based upon the number of inoperable Main Steam Safety Valves, vice a reduction in the Power Range Neutron Flux High trip setpoint. This approach will reduce the burden on personnel to adjust the Power Range Neutron Flux High trip setpoint within a short period of time and would eliminate the potential for personnel error during the adjustment that could result in a plant trip. This change is consistent with NUREG 1431, Revision 1, Standard Technical Specifications, Westinghouse Plants.

**C. Removal of References to Three Reactor Coolant Loop Operation from Technical Specification 3/4.7.1.1, Turbine Cycle, Safety Valves**

Three-loop operation was removed from the Salem Technical Specifications as part of the Margin Recovery Program in Technical Specification Amendments 201 and 197 (Technical Specification 2.1, Table 2.2-1, Bases 2.2.1, Technical Specification 3/4.1.3.5). As such, removal of actions associated with three-loop operation covered under TS 3.7.1.1, along with removal of Table 3.7-2 is appropriate.

## III. JUSTIFICATION FOR CHANGES

### A. Pressurizer Safety Valve and Main Steam Safety Valve Setpoint Tolerance

The Reactor Coolant System for each Salem unit is provided overpressure protection by three Pressurizer Safety Valves that are connected to the top of the pressurizer. The Pressurizer Safety Valves are totally enclosed pop-type spring loaded, self-activated valves that are designed to prevent primary system pressure from exceeding 110% of its design pressure. The Pressurizer Safety Valves provide protection against pressure surges beyond the pressure limiting capacity of pressurizer spray and the pressurizer Power Operated Relief Valves. The Pressurizer Safety Valves discharge to the Pressurizer Relief Tank.

The Main Steam System located on the secondary side of each Steam Generator, is protected against overpressure by twenty Main Steam Safety Valves, five per each Steam Generator. The Main Steam Safety Valves also protect against overpressurization of the reactor coolant pressure boundary by providing a heat sink for removal of energy from the Reactor Coolant System if the preferred heat sink is not available. The Main Steam Safety Valves are spring-loaded, self-actuating safety valves and are located upstream of the Main Steam Isolation Valves. The Main Steam Safety Valves discharge to atmosphere.

The proposed changes will revise the Salem Unit 1 and Unit 2 Technical Specifications to specify a setpoint tolerance of ± 3% for the Pressurizer Safety Valves, and for the Main Steam Safety Valves, for operability consideration and as the acceptance criteria for ASME Section XI testing. The ± 3% setpoint tolerance will apply to as-found valve setpoints only. The proposed changes will require that the Pressurizer Safety Valve and Main Steam Safety Valve setpoints be restored to within ± 1% of the setpoint following testing.

The analyses performed to support this request include the following:

1. Analyses associated with the Salem Margin Recovery Program (Westinghouse letter 93PSE-G-0080, dated September 1, 1993) (Salem License Change Request 94-41, Amendments 201 and 197, TAC M95383 and TAC M95384).

2. Analyses performed to support the Salem Unit 1 Steam Generator replacement project (Westinghouse letter PSE-99-045, dated September 2,1999).

3. Analyses to address issues identified under NSAL 98-007, "Analysis Modeling of Pressurizer Heaters"(Westinghouse letter PSE-00-012, dated April 4, 2000).

The impact of the relaxed setpoint tolerance for the Pressurizer Safety Valves and the Main Steam Safety Valves on the response to plant transients is summarized below:

**1. Pressurizer Safety Valves**

The Pressurizer Safety Valves are provided to protect the integrity of the Reactor Coolant System against pressure surges that are beyond the pressure limiting capacity of the pressurizer spray and relief valves. The lift pressure of the Pressurizer Safety Valves is set at 2485 psig, to ensure that primary system pressure does not exceed the system SAFETY LIMIT of 2735 psig, which corresponds to 110% of Reactor Coolant System design pressure. The following events require actuation of the Pressurizer Safety Valves to ensure that primary system pressure limits are not exceeded:

- Loss of Electrical Load and/or Turbine Trip
- Single Reactor Coolant Pump Locked Rotor

For the Loss of Electrical Load and/or Turbine Trip, the plant design basis analyzes two cases. The most limiting case is used to demonstrate the adequacy of the relief capability of the Pressurizer Safety Valves and the Main Steam Safety Valves. This analysis does not take credit for pressurizer spray, pressurizer Power Operated Relief Valves, or the steam dumps. Separate analyses were performed to reflect the steam generator configuration of each Salem unit. These analyses demonstrated acceptable results using the proposed ± 3% lift setpoint tolerance for both the Pressurizer Safety Valves and the Main Steam Safety Valves.

In the case of the single reactor coolant pump locked rotor, pressurizer spray and the pressurizer Power Operated Relief Valves would normally be expected to lower the peak pressure that would be experienced. However, for conservatism, the analysis of this event does not credit the pressure reduction effect of either pressurizer spray or the pressurizer Power Operated Relief Valves. The analysis assumes an initial pressurizer pressure of 2300 psia, and that the Pressurizer Safety Valves initially open at 2575 psia and achieve rated flow at 2650 psia. The proposed +3% lift setpoint tolerance would result in a lift pressure of 2575 psia, which is the lift pressure that is assumed for this event.

In addition to the above events, for a spurious activation of the Safety Injection System at power, the Salem UFSAR credits operator action to unblock a

pressurizer Power Operated Relief Valve prior to the water solid pressurizer reaching the Pressurizer Safety Valve lift setpoint. The analyses that determined the time at which the safety valve would reach its pressure setpoint covered the –3% tolerance. Since this would conservatively result in the earliest opening time, there was no need to consider the positive side of the tolerance.

In the lower plant operating modes, a single Pressurizer Safety Valve is required to be operable. However, no accidents are analyzed in lower modes that require Pressurizer Safety Valves for mitigation. For operation with the Reactor Coolant System below 312 °F, the Pressurizer Overpressure Protection System is activated. This system utilizes the pressurizer Power Operated Relief Valves, and does not credit actuation of the Pressurizer Safety Valves

An evaluation was performed to assess the thermal hydraulic effects that would result from an increase in the setpoint tolerance of the Pressurizer Safety Valves from ±1% to ±3%. This evaluation concluded that the proposed setpoint increase is acceptable with respect to the thermal hydraulic forces on the Pressurizer Safety Valve downstream piping and components. (PSEG Engineering Evaluation 322203-1)

Additionally, a review was conducted of motor operated valves in the Salem Motor Operated Valve Program (NRC Generic Letter 89-10) to assess the effect of the ±3% Pressurizer Safety Valve setpoint tolerance on analyses performed for valve operation under maximum differential pressure. The differential pressure used in these analyses is valve dependent and corresponds to the system pressure that the valve experiences under the conditions specified by the program. This review concluded that the increased setpoint tolerance would not affect the ability of any valves in the program to perform as required.

**2. Main Steam Safety Valves**

The Main Steam Safety Valves are provided to protect the integrity of the Main Steam System by limiting Main Steam pressure to 110% of its design pressure (1085 psig). The Main Steam Safety Valves also provide protection against over pressure in the Reactor Coolant System by providing a heat sink for removal of energy from the Reactor Coolant System if the preferred heat sink is not available. The following events require actuation of the Main Steam Safety Valves to ensure that primary and/or secondary system pressure limits are not exceeded:

- Loss of Electrical Load and/or Turbine Trip
- Steam Generator Tube Rupture
- Loss of AC Power to Station Auxiliaries
- Loss of Normal Feed Water

As mentioned above, for the Loss of Electrical Load and/or Turbine Trip event, the most limiting case demonstrates the adequacy of the relief capability of the Pressurizer Safety Valves and the Main Steam Safety Valves. This analysis does not take credit for pressurizer spray, pressurizer Power Operated Relief Valves, or the steam dumps. Separate analyses were performed to reflect the steam generator configuration of each Salem unit. These analyses demonstrated acceptable results using the proposed ± 3% lift setpoint tolerance for both the Pressurizer Safety Valves and the Main Steam Safety Valves.

For a Steam Generator Tube Rupture, the Main Steam Safety Valves are credited with providing overpressure protection in the case in which the tube rupture occurs coincident with a Loss of Offsite Power or a failure of the condenser steam dump system. This would result in a steam discharge to atmosphere through the Main Steam Safety Valves or the steam generator Atmospheric Relief Valves. Calculations of offsite doses associated with the environmental consequences of a steam generator tube rupture assume a loss of offsite power and require steam releases directly to atmosphere through the Main Steam Safety Valves during the plant cooldown following the event. The dose rates are based on the assumed Reactor Coolant System activity level, primary to secondary leakage, and the duration of the steaming. The current design basis dose calculations were analyzed by Westinghouse as a part of the Salem Margin Recovery Program. These calculations yield acceptable results with the ±3% tolerance range of the Main Steam Safety Valve lift pressure setpoint.

For a Loss of AC Power to Station Auxiliaries, and a Loss of Normal Feed Water, analyses were performed that assume that the steam generator Atmospheric Relief Valves and the condenser dump valves are unavailable. Pressure relief is achieved through the Main Steam Safety Valves. The analyses demonstrated acceptable results using the proposed ± 3% lift setpoint tolerance for the Main Steam Safety Valves.

Increasing the Main Steam Safety Valve lift setting tolerance may result in increased secondary side backpressure for the Auxiliary Feedwater System. Analyses were performed that demonstrate that with degraded Auxiliary Feedwater Pump performance, and with secondary side backpressure corresponding to 103% of the lowest Main Steam Safety Valve setpoint, the Auxiliary Feedwater System would provide the necessary flow required to mitigate those events where normal feedwater is not available, a Loss of Normal Feedwater and a Loss of Offsite Power to Station Auxiliaries.

A review was conducted of motor operated valves in the Salem NRC Generic Letter 89-10, Motor Operated Valve Program, to assess the effect of the ±3% Main Steam Safety Valve setpoint tolerance on analyses performed for valve operation under maximum differential pressure. The differential pressure used in

these analyses is valve dependent and corresponds to the system pressure that the valve experiences under the conditions specified by the program. This review concluded that the increased setpoint tolerance would not affect the ability of any valves in the program to perform as required.

**B. Operation With Inoperable Main Steam Safety Valves**

The loss of Electrical Load and/or Turbine Trip is the most limiting event with regard to Main Steam Safety Valve design requirements. A series of cases was analyzed for this event that considered up to three inoperable Main Steam Safety Valves per steam generator. These cases included the +3% setpoint tolerance for Pressurizer Safety Valves and Main Steam Safety Valves. The results of these cases provide the maximum thermal power level from which this event could be initiated without exceeding primary and secondary design pressure limits. The results are summarized in the following table:

| Salem Unit | No. of inoperable MSSVs per steam generator | Initial Power Level* (% RTP) | Peak Primary Pressure (psia) [Design limit = 2748.5 psia] | Peak Secondary Pressure (psia) [Design limit = 1208.5 psia] |
|---|---|---|---|---|
| 1 | 0 | 102 | 2659.5 | 1192.7 |
| | 1 | 89 | 2498.4 | 1194.6 |
| | 2 | 60 | 2418.8 | 1204.2 |
| | 3 | 40 | 2408.0 | 1184.8 |
| 2 | 0 | 102 | 2662.1 | 1192.1 |
| | 1 | 89 | 2501.7 | 1194.3 |
| | 2 | 60 | 2375.9 | 1197.2 |
| | 3 | 40 | 2357.8 | 1194.7 |

* Note: the power levels indicated are those specifically input into the transient analyses. Actual reactor thermal power will be set at a reduced level to account for calorimetric uncertainty and other allowances for operating margin as deemed necessary.

Continued operation with inoperable MSSVs is acceptable provided reactor thermal power is reduced as proposed above. Since the power range trip does not provide direct benefit in mitigating a loss of electrical load transient, it is more appropriate, and simpler, to limit thermal power as a function of the number of inoperable safety valves on any or all steam generators. This will permit operation at a higher power since it will eliminate the need to allow margin to a reduced power range trip. This approach will also reduce personnel burden as well as the potential for an inadvertent reactor trip associated with the adjustment of Nuclear Instrumentation trip setpoints within

a restricted time window. This approach is consistent with the analysis (and PSE&G's approach to addressing NSAL 94-01, Operation at Reduced Power Level with Inoperable MSSVs), and more closely resembles the Standard Technical Specifications.

**C. Removal of References to Three Reactor Coolant Loop Operation from Technical Specification 3/4.7.1.1, Turbine Cycle, Safety Valves**

Three-loop operation was removed from the Salem Technical Specifications as part of the Margin Recovery Program in Technical Specification Amendments 201 and 197 (Technical Specification 2.1, Table 2.2-1, Bases 2.2.1, Technical Specification 3/4.1.3.5). As such, removal of actions associated with three-loop operation covered under TS 3.7.1.1, along with removal of Table 3.7-2 is appropriate.

## DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

The requested amendments will:

a. Amend Technical Specifications 3/4.4.2.1 (Salem 1) / 3/4.4.2 (Salem 2), Reactor Coolant Systems – Safety Valves – Shutdown and 3/4.4.2.2(Salem 1) / 3/4.4.3 (Salem 2), Reactor Coolant Systems – Safety Valves – Operating, and their Bases will be amended to specify an as-found set point tolerance for the Pressurizer Safety Valves of ±3% (vice the ±1% currently specified).

b. Amend Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its Bases to specify an as-found set point tolerance for the Main Steam Safety Valves of 3% (vice the 1% currently specified).

c. Amend Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its Bases to establish limits for maximum allowable thermal power based upon the number of inoperable MSSVs, vice a reduction of the Power Range Neutron Flux High trip setpoint as is currently required.

d. Amend Technical Specification 3/4.7.1, Plant Systems – Turbine Cycle – Safety Valves, and its Bases to remove requirements and references related to operation with three Reactor Coolant System loops.

Pursuant to 10CFR50.92, PSEG Nuclear reviewed the proposed amendment to determine whether our request involves a significant hazards consideration. PSEG Nuclear has determined that operation of Salem Generating Station, Unit Nos. 1 and 2, in accordance with the proposed changes:

1. ***The proposed changes do not involve a significant increase in the probability or consequences of any accident previously evaluated.***

   Changing the pressurizer and main steam safety relief valve lift setpoint tolerance from ± 1% to ± 3% does not significantly increase the probability of any accident previously evaluated. The only events initiated by the opening of these safety valves are the accidental depressurization of the Reactor Coolant System and accidental depressurization of the Main Steam System. These events are a result of an inadvertent lifting of these valves and do not depend on the safety valve lift setpoint or tolerance. Therefore, the likelihood that either of these events will occur has not been increased.

   Analyses have been performed that demonstrate that increasing the Pressurizer Safety Valve and Main Steam Safety valve lift setpoint tolerance to ±3 % would result in acceptable primary and secondary side

pressure responses. The limiting overpressurization transients (Loss of External Electrical Load and/or Turbine Trip, and Single Reactor Coolant Pump Locked Rotor) stay well within the acceptance criteria of 110% of the design pressure.

For operation with inoperable main steam safety valves, changing the required action from a reduction of the power range high neutron flux trip setpoint to a reduction of the allowable reactor power level will not increase the consequences of any accident. With inoperable Main Steam Safety Valves, the Loss of External Electrical Load and/or Turbine Trip event becomes limiting in terms of secondary side pressurization. The high flux trip does not provide any mitigation for this event. Other events limiting at power, that require the power range trip for mitigation, assume a safety analysis trip setpoint of 118% (based on a nominal trip setpoint of 109%) regardless of the initial power level. Therefore, the proposed change does not impact any of the accident analysis assumptions.

The current Salem licensing basis for the Spurious Activation of the Safety Injection System credits operator action to unblock a pressurizer Power Operated Relief Valve prior to the water solid pressurizer reaching the safety valve lift setpoint. The analyses that determined the time at which the safety valve would reach its pressure setpoint covered the –3% tolerance. Since this would conservatively result in the earliest opening time, there was no need to consider the positive side of the tolerance. The results of the analyses indicate that the allowable operator action time is sufficient, such that water relief occurs through the Power Operated Relief Valves and not through the Pressurizer Safety Valves. As such the consequences of this event have not changed as a result of the proposed change.

Increasing the Main Steam Safety Valve lift setting tolerance may result in increased secondary side backpressure for the Auxiliary Feedwater Pumps. However, analyses have demonstrated that with the elevated backpressures that could result from increasing the Main Steam Safety Valve setpoint upper tolerance to +3%, the Auxiliary Feedwater Pumps would still provide the necessary flow required to mitigate events in which normal feedwater is not available, a Loss of Normal Feedwater and a Loss of Offsite Power to Station Auxiliaries.

In terms of radiological consequences, the current design and licensing basis analyses that include steaming through the Main Steam Safety Valves bound the proposed lift setpoint tolerance change.

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

2. ***The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.***

The proposal will result in a change in the allowed Pressurizer Safety Valve and Main Steam Safety Valve lift setpoint tolerance range. No physical changes to these valves or to their nominal lift setpoint is required. These valves are assumed to malfunction only as the initiator for the accidental depressurization of the Reactor Coolant System or Main Steam System. An increased lift setpoint tolerance range does not change the assumption of these depressurization events nor create a new type of event.

Requiring a reduction in reactor thermal power in the event of inoperable Main Steam Safety Valves is consistent with the analysis methodology. Initiation of any Salem UFSAR analyzed event at a power level less than full power is bounded by those events analyzed at full power, or specifically analyzed at the limiting power level, and does not constitute a new or different kind of accident. Also, no changes are being made to the power range high flux trip setpoint that will make it inconsistent with any analytical assumption.

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 changes do not involve a significant reduction in the margin of safety.***

Analyses performed demonstrate that the proposed increase in the Pressurizer Safety Valve and Main Steam Safety Valve lift pressure setpoint tolerance from ±1% to ±3% will provide acceptable primary and secondary side pressure responses to the anticipated operational occurrences and design basis accidents. The limiting overpressurization transients, Loss of External Electrical Load and/or Turbine Trip, and Single Reactor Coolant Pump Locked Rotor, stay well within the acceptance criteria of 110% of the design pressure.

For operation with inoperable Main Steam Safety Valves, requiring a reduction in reactor thermal power is consistent with the accident analysis. The current requirement to reduce the power range high neutron flux trip setpoint provides no additional margin of safety since this trip does not provide any mitigation for the limiting secondary system pressurization

event, Loss of External Electrical Load and/or Turbine Trip with inoperable Main Steam Safety Valves.

The current licensing basis for the Spurious Activation of the Safety Injection System credits operator action to unblock a pressurizer Power Operated Relief Valve prior to the water solid pressurizer reaching the Pressurizer Safety Valve lift setpoint. As the Pressurizer Safety Valves are not designed for water relief, failure to unblock a Power Operated Relief Valve before reaching the Pressurizer Safety Valve lift setpoint would result in water relief and likely failure of the Pressurizer Safety Valve to reseat. This condition would escalate the Spurious Activation of the Safety Injection System (Condition II event) into a small break Loss Of Coolant Accident (Condition III event). The analyses that determined the time at which primary system pressure would reach the Pressurizer Safety Valve setpoint bound the –3% tolerance. The results of the analyses indicate that the allowable operator action time is sufficient, such that water relief occurs through the Power Operated Relief Valves and not through the Pressurizer Safety Valves. Since the Pressurizer Safety Valve would not fail due to water relief, there is no reduction in the margin of safety for this event.

Increasing the Main Steam Safety Valve lift setting tolerance may result in increased secondary side backpressure for the Auxiliary Feedwater System. However, analyses have demonstrated that under degraded Auxiliary Feedwater Pump performance, and with secondary side backpressure corresponding to 103% of the lowest Main Steam Safety Valve setpoint, the Auxiliary Feedwater System can provide the necessary flow required to mitigate those events where normal feedwater is not available, a Loss of Normal Feedwater and a Loss of Offsite Power to Station Auxiliaries.

Therefore the proposed changes to the Technical Specifications do not involve a significant reduction in a margin of safety.

## V. CONCLUSIONS

Based on the above, PSEG Nuclear has determined that the proposed changes do not involve a significant hazards consideration.

TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES

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

| Technical Specification | Page |
|---|---|
| 3/4.4.2 | 3/4 4-4 |
| | 3/4 4-4a |
| BASES 3/4.4.2 | B 3/4 4-1a |
| 3/4.7.1 | 3/4 7-1 |
| | 3/4 7-2 |
| | 3/4 7-3 |
| | 3/4 7-4 |
| BASES 3/4.7.1 | B 3/4 7-1 |
| | B 3/4 7-2 |

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

| Technical Specification | Page |
|---|---|
| 3/4.4.2 | 3/4 4-5 |
| 3/4.4.3 | 3/4 4-6 |
| BASES 3/4.4.2 and 3/4.4.3 | B 3/4 4-2 |
| 3/4.7.1 | 3/4 7-1 |
| | 3/4 7-2 |
| | 3/4 7-3 |
| | 3/4 7-4 |
| BASES 3/4.7.1 | B 3/4 7-1 |
| | B 3/4 7-2 |

## INSERTS AND MARKED UP PAGES

### INSERTS FOR LCR 99-13

**Insert A**

*** Following testing the lift setting shall be reset to within ±1%.

**Insert B**

** Following testing the lift setting shall be reset to within ±1%.

**Insert C**

Surveillance testing allows a ±3% lift setpoint tolerance. However, to allow for drift during subsequent operation, the valves must be reset to within ±1% of the lift setpoint following testing.

**Insert D**

reduce power to less than or equal to the applicable percent of RATED THERMAL POWER per Table 3.7-1

**Insert E**

Verify each required MSSV lift setpoint per Table 4.7-1.

**Insert F**

Verify each required MSSV lift setpoint per Table 3.7-4.

**Insert G**

* The values do not provide any allowance for calorimetric error.

**Insert H**

* Following testing the lift setting shall be reset to within ±1%.

**Insert I**

The MSSVs also provide protection against overpressurization of the Reactor Coolant Pressure Boundary by providing a heat sink for the removal of energy from the Reactor Coolant System if the preferred heat sink is not available.

**Insert J**

STARTUP and/or POWER OPERATION is allowable with inoperable safety valves within the limitations of the ACTION requirements on the basis of the reduction in secondary steam flow associated with the required reduction of RATED THERMAL POWER. The acceptable power level (in percent RATED THERMAL POWER) for operation with inoperable safety valves was determined by performing explicit transient analysis.

The events that challenge the relief capacity of the safety valves are those resulting in decreased heat removal capability. In this category of events, a loss of external electrical load and/or turbine trip is the limiting anticipated operational occurrence. A series of cases was analyzed for this transient covering up to three inoperable safety valves on each steam generator. The results of these cases were used to determine a maximum thermal power level from which the event could be initiated without exceeding the primary and secondary side design pressure limits. Thus, the maximum allowed power level as a function of the number of inoperable MSSVs on any steam generator is presented in Table 3.7-1. Note that the power level values presented on this table are the direct inputs into the transient analysis cases and do not include any allowance for calorimetric error. Actual power level reductions must include calorimetric uncertainty and other allowances for operating margin as deemed necessary.

The transient analysis assumes that the MSSVs will start to open at the lift setpoint with 3% allowance for setpoint tolerance. In addition, the analysis accounts for accumulation by including a 5 psi ramp for the valve to reach its fully open position. Inoperable MSSVs are assumed to be those with the lowest lift setting. Surveillance testing as covered in Table 4.7-1 allows a ±3% lift setpoint tolerance. However, to allow for drift during subsequent operation, the valves must be reset to within ±1% of the lift setpoint following testing.

**Insert K**

STARTUP and/or POWER OPERATION is allowable with inoperable safety valves within the limitations of the ACTION requirements on the basis of the reduction in secondary steam flow associated with the required reduction of RATED THERMAL POWER. The acceptable power level (in percent RATED THERMAL POWER) for operation with inoperable safety valves was determined by performing explicit transient analysis.

The events that challenge the relief capacity of the safety valves are those resulting in decreased heat removal capability. In this category of events, a loss of external electrical load and/or turbine trip is the limiting anticipated operational occurrence. A series of cases was analyzed for this transient covering up to three inoperable safety valves on each steam generator. The results of these cases were used to determine a maximum thermal power level from which the event could be initiated without exceeding the primary and secondary side design pressure limits. Thus, the maximum allowed

power level as a function of the number of inoperable MSSVs on any steam generator is presented in Table 3.7-1. Note that the power level values presented on this table are the direct inputs into the transient analysis cases and do not include any allowance for calorimetric error. Actual power level reductions must include calorimetric uncertainty and other allowances for operating margin as deemed necessary.

The transient analysis assumes that the MSSVs will start to open at the lift setpoint with 3% allowance for setpoint tolerance. In addition, the analysis accounts for accumulation by including a 5 psi ramp for the valve to reach its fully open position. Inoperable MSSVs are assumed to be those with the lowest lift setting. Surveillance testing as covered in Table 3.7-4 allows a ±3% lift setpoint tolerance. However, to allow for drift during subsequent operation, the valves must be reset to within ±1% of the lift setpoint following testing.

## 3/4.4.2 SAFETY VALVES

### SAFETY VALVES - SHUTDOWN

### LIMITING CONDITION FOR OPERATION

3.4.2.1 A minimum of one pressurizer code safety valve shall be OPERABLE* with a lift setting of 2485 psig ± ~~1~~%.** ***

3

APPLICABILITY: Mode 4 and 5

ACTION:

With no pressurizer code safety valve OPERABLE, immediately suspend all operations involving positive reactivity changes and place an OPERABLE RHR loop into operation in the shutdown cooling mode.

### SURVEILLANCE REQUIREMENTS

4.4.2.1 No additional Surveillance Requirements other than those required by Specification 4.0.5.

* While in Mode 5, an equivalent size vent pathway may be used provided that the vent pathway is not isolated or sealed.

** The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

Insert A

## 3/4.4 REACTOR COOLANT SYSTEM

## 3/4.4.2 SAFETY VALVES

### SAFETY VALVES - OPERATING

LIMITING CONDITION FOR OPERATION

3.4.2.2 All pressurizer code safety valve shall be OPERABLE with a lift setting of 2485 psig ± 1%.* 3 1**

APPLICABILITY: MODES 1, 2 and 3.

ACTION:
With one pressurizer code safety valve inoperable, either restore the inoperable valve to OPERABLE status within 15 minutes, or be in HOT SHUTDOWN within 12 hours.

SURVEILLANCE REQUIREMENTS

4.4.2.2 No additional Surveillance Requirements other than those required by Specification 4.0.5

* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

Insert B

## 3/4.4.2 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2735 psig. Each safety valve is designed to relieve 420,000 pounds per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety valves are OPERABLE, an operating RHR loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization. In addition, the Overpressure Protection System provides a diverse means of protection against RCS overpressurization at low temperature. While in Mode 5 the safety valve requirement may be met by establishing a vent path of equivalent relieving capacity when no code safety valves are OPERABLE.

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its safety limit of 2735 psig. The combined relief capacity of all of these valves is greater than the maximum surge rate resulting from a complete loss of load assuming no reactor trip until the first Reactor Protective System trip setpoint is reached (i.e., no credit is taken for a direct reactor trip on the loss of load) and also assuming no operation of the power operated relief valves or steam dump valves.

Demonstration of the safety valves lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Code.

## 3/4.4.3 RELIEF VALVES

Insert C

The OPERABILITY of the PORVs and block valves is determined on the basis of their being capable of performing the following functions:

A. Manual control of PORVs to control reactor coolant system pressure. This is a function that is used for the steam generator tube rupture accident and for plant shutdown.

B. Automatic control of PORVs to control reactor coolant system pressure. This is a function that reduces challenges to the code safety valves for overpressurization events, including an inadvertent actuation of the Safety Injection System.

C. Maintaining the integrity of the reactor coolant pressure boundary. This is a function that is related to controlling identified leakage and ensuring the ability to detect unidentified reactor coolant pressure boundary leakage.

3/4.7 PLANT SYSTEMS

3/4.7.1 TURBINE CYCLE

SAFETY VALVES

LIMITING CONDITION FOR OPERATION

(MSSVs)

3.7.1.1 All main steam line code safety valves associated with each steam generator shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

~~a.~~ With ~~4 reactor coolant loops and associated steam generators in operation and with~~ one or more main steam line code safety valves inoperable, operation in MODES 1, 2 and 3 may proceed provided, that within 4 hours, either the inoperable valve is restored to OPERABLE status ~~or the Power Range Neutron Flux High trip setpoint is reduced per Table 3.7-1~~; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Insert D

~~b. With 3 reactor coolant loops and associated steam generators in operation and with one or more main steam line code safety valves associated with an operating loop inoperable, operation in MODES 1, 2 and 3 may proceed provided, that within 4 hours, either the inoperable valve is restored to OPERABLE status or the Power Range Neutron Flux High trip setpoint is reduced per Table 3.7-2; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

SURVEILLANCE REQUIREMENTS

4.7.1.1 No additional Surveillance Requirements other than those required by Specification 4.0.5.

Insert E

TABLE 3.7-1

MAXIMUM ALLOWABLE Thermal POWER ~~RANGE NEUTRON FLUX HIGH SETPOINT~~ WITH INOPERABLE STEAM LINE SAFETY VALVES ~~DURING 4 LOOP OPERATION~~

| Maximum Number of Inoperable Safety Valves on Any ~~Operating~~ Steam Generator | Maximum Allowable Power ~~Range Neutron Flux High Setpoint~~ (Percent of RATED THERMAL POWER) * |
|---|---|
| 1 | ~~87~~ 89 |
| 2 | ~~64~~ 60 |
| 3 | ~~42~~ 40 |

Insert G

~~TABLE 3.7-2~~

~~MAXIMUM ALLOWABLE POWER RANGE NEUTRON FLUX HIGH SETPOINT WITH INOPERABLE STEAM LINE SAFETY VALVES DURING 3 LOOP OPERATION~~

| ~~Maximum Number of Inoperable Safety Valves on Any Operating Steam Generator*~~ | ~~Maximum Allowable Power Range Neutron Flux High Setpoint (Percent of RATED THERMAL POWER)~~ |
|---|---|
| ~~1~~ | ~~60~~ |
| ~~2~~ | ~~44~~ |
| ~~3~~ | ~~29~~ |

~~* At least two safety valves shall be OPERABLE on the non-operating steam generator.~~

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## TABLE 4.7-1

## STEAM LINE SAFETY VALVES PER LOOP 3

| VALVE NUMBER | | | | | LIFT SETTING (± ~~1%~~) * | ORIFICE SIZE (sq. inches) |
|---|---|---|---|---|---|---|
| | Loop A | Loop B | Loop C | Loop D | | |
| a. | 11MS11 | 12MS11 | 13MS11 | 14MS11 | 1125 psig | 16.0 |
| b. | 11MS12 | 12MS12 | 13MS12 | 14MS12 | 1120 psig | 16.0 |
| c. | 11MS13 | 12MS13 | 13MS13 | 14MS13 | 1110 psig | 16.0 |
| d. | 11MS14 | 12MS14 | 13MS14 | 14MS14 | 1100 psig | 16.0 |
| e. | 11MS15 | 12MS15 | 13MS15 | 14MS15 | 1070 psig | 16.0 |

Insert H

## 3/4.7.1 TURBINE CYCLE

### 3/4.7.1.1 SAFETY VALVES

Insert I

The OPERABILITY of the main steam line code safety valves ensures that the secondary system pressure will be limited to within 110% of its design pressure of 1085 psig during the most severe anticipated system operational transient. The maximum relieving capacity is associated with a turbine trip from 100% RATED THERMAL POWER coincident with an assumed loss of condenser heat sink (i.e., no steam bypass to the condenser).

The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition. The total relieving capacity for all valves on all of the steam lines is 16,655,268 lbs/hr which is 115 percent of the total secondary steam flow of 14,459,360 lbs/hr at 100% RATED THERMAL POWER. A minimum of 2 OPERABLE safety valves per OPERABLE steam generator ensures that sufficient relieving capacity is available for the allowable THERMAL POWER restriction in Table 3.7-2.

Replace with Insert J

STARTUP and/or POWER OPERATION is allowable with safety valves inoperable within the limitations of the ACTION requirements on the basis of the reduction in secondary system steam flow and THERMAL POWER required by the reduced reactor trip settings of the Power Range Neutron Flux channels. The reactor trip setpoint reductions are derived on the following bases:

For 4 loop operation

$$SP = \frac{(X) - (Y)(V)}{X} \times (109)$$

For 3 loop operation

$$SP = \frac{(X) - (Y)(U)}{X} \times (76)$$

Where:

SP = reduced reactor trip setpoint in percent of RATED THERMAL POWER

V = maximum number of inoperable safety valves per steam line

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

DELETE

## 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.

## 3/4.4.2 SAFETY VALVES

### SAFETY VALVES - SHUTDOWN

### LIMITING CONDITION FOR OPERATION

3.4.2 A minimum of one pressurizer code safety valve shall be OPERABLE* with a lift setting of 2485 psig ± ~~1~~3%.** ***

APPLICABILITY: Mode 4 and 5

ACTION:

With no pressurizer code safety valve OPERABLE, immediately suspend all operations involving positive reactivity changes and place an OPERABLE RHR loop into operation in the shutdown cooling mode.

### SURVEILLANCE REQUIREMENTS

4.4.2.1 No additional Surveillance Requirements other than those required by Specification 4.0.5.

* While in Mode 5, an equivalent size vent pathway may be used provided that the vent pathway is not isolated or sealed.

** The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

Insert A

## 3/4.4.3 SAFETY VALVES - OPERATING

### LIMITING CONDITION FOR OPERATION

3.4.3 All pressurizer code safety valves shall be OPERABLE with a lift setting of 2485 psig ± ~~1%~~.* 3 **

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

With one pressurizer code safety valve inoperable, either restore the inoperable valve to OPERABLE status within 15 minutes or be in HOT SHUTDOWN within 12 hours.

### SURVEILLANCE REQUIREMENTS

4.4.3 No additional Surveillance Requirements other than those required by Specification 4.0.5.

*The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

Insert B

## 3/4.4.2 and 3/4.4.3 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2735 psig. Each safety valve is designed to relieve 420,000 pounds per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety valves are OPERABLE, an operating RHR loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization. In addition, the Overpressure Protection System provides a diverse means of protection against RCS overpressurization at low temperature. While in Mode 5 the safety valve requirement may be met by establishing a vent path of equivalent relieving capacity when no code safety valves are OPERABLE.

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its safety limit of 2735 psig. The combined relief capacity of all of these valves is greater than the maximum surge rate resulting from a complete loss of load assuming no reactor trip until the first Reactor Protective System trip setpoint is reached (i.e., no credit is taken for a direct reactor trip on the loss of load) and also assuming no operation of the power operated relief valves or steam dump valves.

Demonstration of the safety valves lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Code.

## 3/4.4.4 PRESSURIZER

Insert C

The limit on the maximum water volume in the pressurizer assures that the parameter is maintained within the normal steady-state envelope of operation assumed in the SAR. The limit is consistent with the initial SAR assumptions. The 12 hour periodic surveillance is sufficient to ensure that the parameter is restored to within its limit following expected transient operation. The maximum water volume also ensures that a steam bubble is formed and thus the RCS is not a hydraulically solid system. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability of the plant to control RCS pressure and establish natural circulation.

## 3/4.4.5 RELIEF VALVES

The OPERABILITY of the PORVs and block valves is determined on the basis of their being capable of performing the following functions:

A. Manual control of PORVs to control reactor coolant system pressure. This is a function that is used for the steam generator tube rupture accident and for plant shutdown.

3/4.7 PLANT SYSTEMS

3/4.7.1 TURBINE CYCLE

SAFETY VALVES

LIMITING CONDITION FOR OPERATION

(MSSVs)

3.7.1.1 All main steam line code safety valves associated with each steam generator shall be OPERABLE with lift settings as specified in Table 3.7-4.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With ~~4 reactor coolant loops and associated steam generators in operation and with~~ one or more main steam line code safety valves inoperable, operation in MODES 1, 2 and 3 may proceed provided, that within 4 hours, either the inoperable valve is restored to OPERABLE status or ~~the Power Range Neutron Flux High trip setpoint is reduced per Table 3.7-1~~; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Insert D

~~b. With 3 reactor coolant loops and associated steam generators in operation and with one or more main steam line code safety valves associated with an operating loop inoperable, operation in MODES 1, 2 and 3 may proceed provided, that within 4 hours, either the inoperable valve is restored to OPERABLE status or the Power Range Neutron Flux High trip setpoint is reduced per Table 3.7-2; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

SURVEILLANCE REQUIREMENTS

4.7.1.1 No additional Surveillance Requirements other than those required by Specification 4.0.5.

Insert F

Thermal

**TABLE 3.7-1**

**MAXIMUM ALLOWABLE POWER ~~RANGE NEUTRON FLUX HIGH SETPOINT~~ WITH INOPERABLE STEAM LINE SAFETY VALVES ~~DURING 4 LOOP OPERATION~~**

| Maximum Number of Inoperable Safety Valves on Any ~~Operating~~ Steam Generator | Maximum Allowable Power ~~Range Neutron Flux High Setpoint~~ (Percent of RATED THERMAL POWER) * |
|---|---|
| 1 | ~~87~~ 89 |
| 2 | ~~64~~ 60 |
| 3 | ~~42~~ 40 |

Insert G

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~~TABLE 3.7-2~~

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~~Pending Commission Approval of Three-Loop Operation~~

## TABLE 3.7-4

## STEAM LINE SAFETY VALVES PER LOOP

| VALVE NUMBER | | | | | LIFT SETTING (± ~~1%~~) 3 * | ORIFICE SIZE (sq. inches) |
|---|---|---|---|---|---|---|
| | Loop A | Loop B | Loop C | Loop D | | |
| a. | 21MS11 | 22MS11 | 23MS11 | 24MS11 | 1125 psig | 16.0 |
| b. | 21MS12 | 22MS12 | 23MS12 | 24MS12 | 1120 psig | 16.0 |
| c. | 21MS13 | 22MS13 | 23MS13 | 24MS13 | 1110 psig | 16.0 |
| d. | 21MS14 | 22MS14 | 23MS14 | 24MS14 | 1100 psig | 16.0 |
| e. | 21MS15 | 22MS15 | 23MS15 | 24MS15 | 1070 psig | 16.0 |

Insert H

## 3/4.7.1 TURBINE CYCLE

### 3/4.7.1.1 SAFETY VALVES

Insert I

The OPERABILITY of the main steam line code safety valves ensures that the secondary system pressure will be limited to within 110% of its design pressure of 1085 psig during the most severe anticipated system operational transient. The maximum relieving capacity is associated with a turbine trip from 100% RATED THERMAL POWER coincident with an assumed loss of condenser heat sink (i.e., no steam bypass to the condenser).

The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition. The total relieving capacity for all valves on all of the steam lines is 16,655,268 lbs/hr which is 115% of the total secondary steam flow of 14,459,360 lbs/hr at 100% RATED THERMAL POWER. A minimum of 2 OPERABLE safety valves per OPERABLE steam generator ensures that sufficient relieving capacity is available for the allowable THERMAL POWER restriction in Table 3.7-2.

Replace with Insert K

STARTUP and/or POWER OPERATION is allowable with safety valves inoperable within the limitations of the ACTION requirements on the basis of the reduction in secondary system steam flow and THERMAL POWER required by the reduced reactor trip settings of the Power Range Neutron Flux channels. The reactor trip setpoint reductions are derived on the following bases:

For 4 loop operation

$$SP = \frac{(X) - (Y)(V)}{X} \times (109)$$

For 3 loop operation

$$SP = \frac{(X) - (Y)(U)}{X} \times (76)$$

Where:

SP = reduced reactor trip setpoint in percent of RATED THERMAL POWER

V = maximum number of inoperable safety valves per steam line

U - maximum number of inoperable safety valves per operating steam line

109 - Power Range Neutron Flux-High Trip Setpoint for 4 loop operation

Delete

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.

## ENVIRONMENTAL IMPACT ASSESSMENT

PSEG Nuclear LLC has reviewed the proposed License Amendment 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 upon the foregoing, PSEG Nuclear LLC concludes that the proposed change meets the criteria delineated in 10 CFR 51.22(c)(9) and 10 CFR 51.22(c)(10) for a categorical exclusion from the requirements for an Environmental Impact Statement.