PSEG

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

Nuclear Business Unit

AUG 26 1999

LR-N990357
LCR H99-08

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

Gentlemen:

REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS
CHANGES TO CONDENSATE STORAGE TANK LOW LEVEL SETPOINT
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354

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

Implementation of the proposed changes contained in this submittal will raise the condensate storage tank (CST) low level setpoints and the corresponding allowable values associated with transfer of the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) pump suctions from the CST to the suppression pool. The new setpoints are more conservative than the current TS values. This change will result in TS values that are consistent with the setpoints that were recently implemented as plant design changes in accordance with the provisions of 10CFR50.59.

The proposed changes have been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and a determination has been made that this request involves no significant hazards considerations. The basis for the requested change is provided in Attachment 1 to this letter. A 10CFR50.92 evaluation, with a determination of no significant hazards consideration, is provided in Attachment 2. The marked up Technical Specification pages affected by the proposed changes are provided in Attachment 3.

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, please contact Mr. C. E. Manges, Jr. at 609-339-3234.

Sincerely,

Mark B. Bezilla
Vice President - Operations

Affidavit
Attachments (3)

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

Mr. R. Ennis
Licensing Project Manager - Hope Creek
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop 8B1
11555 Rockville Pike
Rockville, MD 20852

Mr. D. Orr (Acting)
USNRC Senior Resident Inspector - HC (X24)

Mr. K. Tosch, Manager IV
Bureau of Nuclear Engineering
P. O. Box 415
Trenton, NJ 08625

REF: LR-N990357
LCR H99-08

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 Hope Creek Generating Station, Unit 1, are true to the best of my knowledge, information and belief.

Subscribed and Sworn to before me
this 26th day of August, 1999

Jennifer M. Turner
Notary Public of New Jersey

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

My Commission expires on

ATTACHMENT 1
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354
REVISIONS TO THE TECHNICAL SPECIFICATIONS (TS)

BASIS FOR REQUESTED CHANGE:

Public Service Electric and Gas Company (PSE&G), under Facility Operating License No. NPF-57 for the Hope Creek Generating Station, requests that the TS contained in Appendix A to the Operating License be amended as proposed herein to raise the condensate storage tank (CST) low level setpoints and the corresponding allowable values in TS Tables 3.3.3-2 and 3.3.5-2. The subject setpoints and allowable values are associated with transfer of the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) pump suctions from the CST to the suppression pool and are being changed in order to maintain consistency with the setpoint changes that were recently implemented in accordance with the provisions of 10CFR50.59. The new setpoints preclude vortexing and restore full qualification to the associated transfer instrumentation. The changes to the TS are more conservative than the current TS and result in TS setpoints that are consistent with the plant setpoints established in accordance with 10CFR50.59. The proposed changes to the TS are indicated on the marked-up TS pages contained in Attachment 3 of this submittal.

REQUESTED CHANGE, PURPOSE AND BACKGROUND:

REQUESTED CHANGE

The proposed change will raise the CST low level setpoints and the corresponding allowable values in TS Tables 3.3.3-2 and 3.3.5-2. The setpoints will be raised from 22,558 gallons (99' 8") to 67,675 gallons (103' 10"), and the allowable values will be raised from 19,174 gallons (99' 5") to 64,291 gallons (103' 7").

PURPOSE

NRC Information Notice 98-40 identified a number of design deficiencies affecting ECCS pump net positive suction head (NPSH). Evaluation of this issue at Hope Creek determined that the CST low-level transfer setpoint (i.e., the level at which the HPCI and RCIC pump suction supply valves automatically transfer from the CST to the suppression pool) did not appropriately account for vortex formation. Specifically, PSE&G determined that vortexing could occur before the suction would transfer and that a potential for air entrainment into the HPCI or RCIC pump suctions existed. The ability of the pumps to perform their specified function under these conditions was based on engineering judgement, and consequently, the equipment could not be considered to be fully qualified in accordance with Generic Letter 91-18. PSE&G addressed the vortexing concerns and restored full qualification to the instrumentation by implementing plant modifications that raised the setpoints to a value above the point of vortex formation. The changes to the TS setpoints proposed in this submittal ensure consistency with the plant setpoints.

BACKGROUND

As described in UFSAR Section 9.2.6, the condensate storage and transfer (CS&T) system provides the normal source of water for the HPCI and RCIC pumps for safe shutdown functions and emergency core cooling system (ECCS) actuation. Redundant transmitters and level switches are provided to automatically transfer the HPCI and RCIC pump suctions from the CST to the suppression pool. The CST also supplies condensate to various other systems during normal plant operation or refueling, including control rod drive pumps, condensate transfer pumps, refueling water pumps, and hotwell makeup. The CST is non-safety related and non-seismic, and failure of the CST does not compromise any safety-related system or component and does not prevent safe shutdown of the plant.

As described in UFSAR Sections 5.4.6 and 7.4.1, RCIC is required to achieve and maintain a safe shutdown of the plant. The system is designed to ensure sufficient water inventory is maintained in the reactor vessel for continuity of core cooling under the following conditions:

- Vessel is isolated and maintained in Hot Standby condition
- Loss of normal feedwater flow with the reactor vessel isolated
- Loss of normal feedwater during a complete plant shutdown prior to actuation of RHR shutdown cooling mode

In addition, RCIC is required for safe shutdown during station blackout scenarios and for remote shutdown from outside the control room.

As described in UFSAR Sections 6.3.1.2.1 and 6.3.2.2.1, HPCI maintains reactor vessel inventory and ensures adequate core cooling after a small break that does not rapidly depressurize the reactor vessel. Operation of HPCI permits the plant to be safely shut down and limits peak fuel clad temperatures until depressurization to the low pressure coolant injection or core spray initiation point. TS Bases Sections 3/4.5.1 and 3/4.5.2 state that no credit is taken in the safety analysis for the CST water. HPCI also serves as a backup to RCIC for the safe shutdown function by maintaining reactor vessel inventory following a reactor isolation and a coincident failure of RCIC.

Hope Creek UFSAR Sections 5.4.6.2.2.2, 6.3.2.2.1, 7.4.1.4.5.2, and 9.2.6.2 require maintaining a 135,000-gallon reserve volume in the CST for exclusive use by HPCI and RCIC. Section 9.2.6 of the Hope Creek SER (NUREG-1048) identifies a minimum storage capacity of 135,000 gallons of CST storage capacity as being reserved for RCIC and HPCI.

As noted in UFSAR Section 7.4.1.4.5.2, during a reactor shutdown from outside the main control room, suction transfer is not automatic and must be initiated manually. During a remote shutdown, the 135,000 gallon reserve is available to provide more than three hours of RCIC operation at the design flowrate of 600 gpm in order to cool the reactor from operating temperature to the initiation point of RHR shutdown cooling at 100°F/hr.

Section 1.15.1 of the UFSAR describes the ability to cope with a station blackout (SBO) event and the basis for compliance with 10CFR50.63. The Hope Creek SBO analysis requires a four-hour coping period. The plant's ability to cope for that duration and safely recover is due in part to providing adequate condensate inventory for decay heat removal. Reactor coolant inventory control and decay heat removal are accomplished by operation of RCIC and HPCI to achieve a maximum cooldown rate of 100°F/hr, with an assumed CST inventory of 135,000 gallons. The SBO procedure notes that HPCI and RCIC take suction from the CST or suppression pool; however, the procedure also cautions that the suppression pool should only be used if CST water is unavailable and sufficient NPSH is available, or as directed by the emergency operating procedures.

As described in TS 3/4.5.2, during Operational Condition 4 or 5 with the suppression pool water level below the TS limits or drained, the Core Spray System (CSS) can utilize the CST volume for a suction source. When relying on the CST under such conditions, the CST must have a minimum available volume of 135,000 gallons.

JUSTIFICATION OF REQUESTED CHANGES:

The proposed setpoints and allowable values are conservative with respect to the existing TS values. The proposed changes will result in TS setpoints that are consistent with the plant setpoints that were implemented under 10CFR50.59. The changes to the plant setpoints restored full qualification to the transfer instrumentation following the identification of concerns regarding vortexing of the associated pumps.

Raising the transfer setpoints impacted the established methods of maintaining the 135,000-gallon reserve volumes in the CST. Prior to the setpoint change, a standpipe inside the CST physically limited tank level at the required point. By raising the low-level setpoint, the standpipe is no longer able to maintain the required reserve volume. As an alternative, a control room low level alarm and operator action are being relied upon to maintain a minimum operational level above 203,000 gallons (i.e., the tank volume required to ensure that 135,000 gallons are reserved for HPCI and RCIC). The subject low level alarm actuates at 266,000 gallons and therefore provides sufficient advanced indication of decreasing level. A procedure change crediting the CST low level alarm function and subsequent operator actions to maintain a sufficient reserve volume was implemented. The procedure requires that operators preemptively transfer HPCI and RCIC suction to the safety related suppression pool supply if the CST level decreases below 203,000 gallons during plant operation with no actuation of RCIC or HPCI.

The CST is non-safety related and non-seismic, and failure of the CST does not compromise any safety-related system or component and does not prevent safe shutdown of the plant. Manual actions are already assumed during remote shutdown and SBO scenarios as well as during use of the CSS in Operational Conditions 4 and 5 with the suppression pool level below limits or drained.

The substitution of manual action in lieu of automatic actions has been evaluated in accordance with the criteria in NRC Information Notice 97-78. The proposed manual action does not protect a Safety Limit. Other guidance questions are satisfied as discussed below.

1. Specific Operator Actions Required: Required operator actions involve responding to an alarm, monitoring CST level from the main control room, and manually initiating HPCI and RCIC suction transfer to the suppression pool from the control room. An operator would also be dispatched to the local CST control panel to investigate the trouble alarm; however, this action would not be required to ensure timely actions to align HPCI and RCIC to a safe configuration.

2. Potentially Harsh or Inhospitable Environmental Conditions Expected: There are no harsh environmental conditions since the required actions occur from the control room.

3. Discussion of Ingress/Egress Paths Taken to Accomplish Functions: No ingress/egress path is involved since the required actions occur from the control room.

4. Procedural Guidance for Required Actions: The alarm response procedures have been revised to direct operator actions in the event of a decrease in CST level.

5. Operator Training Necessary to Carry Out Actions Including Operator Qualifications Required: No special training is required since the activities are normal actions routinely performed by plant operators.

6. Additional Support Personnel and/or Equipment Required to Carry Out Actions: No additional support personnel or equipment are required beyond the indicators and controls available in the control room. However, if leakage were not readily apparent, an operator would also be dispatched to the local CST control panel.

7. Information Required to Determine if Operator Action is Required Including Qualified Instrumentation Used to Diagnose the Situation and Verify that Action Has Been Taken: The CST trouble alarm provides initial control room indication of decreasing CST level. A level recorder that is also located in the main control provides subsequent monitoring. These instruments are non-1E qualified. The qualification of the instrumentation is considered to be acceptable for the intended purpose since the instruments would be relied upon to maintain acceptable CST conditions during normal plant operation prior to occurrence of any design basis event.

8. Ability to Recover from Credible Errors in Performing the Actions and Expected Time Required to Make the Recovery: Operators would have greater than three hours to take required actions given the 63,000 gallons between alarm receipt (266,000 gallons) and suction transfer (203,000 gallons). Operators would be monitoring CST level following receipt of an alarm and would have ample time to identify any errors in performance and take remedial measures should an error occur.

9. Consideration of Risk Significance of Actions: The proposed operator actions have low risk significance. Although the CST volume is a UFSAR requirement, the volume is not considered to be safety related since the suppression pool and automatic suction line transfer to that source are ultimately relied upon. The CST is non-safety related and non-seismic, and failure of the CST does not compromise any safety-related system or component and does not prevent safe shutdown of the plant.

ENVIRONMENTAL IMPACT:

The proposed TS changes were reviewed against the criteria of 10CFR51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, a significant increase in the amounts of effluents that may be released offsite, or a significant increase in the individual or cumulative occupational radiation exposures. Based on the foregoing, PSE&G concludes that the proposed TS changes meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.

ATTACHMENT 2
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354
SIGNIFICANT HAZARDS EVALUATION

10CFR50.92 EVALUATION

Public Service Electric & Gas (PSE&G) has concluded that the proposed changes to the Hope Creek Generating Station (HC) Technical Specifications (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.

REQUESTED CHANGE

The proposed change will raise the condensate storage tank (CST) low level setpoints and the corresponding allowable values in TS Tables 3.3.3-2 and 3.3.5-2. The setpoints will be raised from 22,558 gallons to 67,675 gallons, and the allowable values will be raised from 19,174 gallons to 64,291 gallons. The proposed setpoints and allowable values are conservative with respect to the existing TS values. The proposed changes will make the TS setpoints consistent with the plant setpoints that were implemented under 10CFR50.59. The changes to the plant setpoints restored full qualification to the transfer instrumentation following identification of concerns regarding vortexing of the associated pumps. The setpoint change also affects the method of maintaining the 135,000-gallon reserve volume in the CST for the HPCI and RCIC systems.

BASIS

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

The systems affected by the proposed change provide accident mitigation functions. Neither the proposed increase in level setpoint nor the reliance on operator action to maintain the required 135,000 gallon reserve volume in the condensate storage tank (CST) can affect initiation of a design basis accident.

Raising the CST low level setpoint to account for potential vortexing in the HPCI and RCIC suction flowpaths provides assurance that the functions of these systems can be properly carried out. There will no longer be a possibility of air entrainment into the RCIC and HPCI pumps suction at low levels in the CST. Initiation of RCIC or HPCI flow is unaffected by this modification. Execution of the suction line transfer to the suppression pool remains an entirely automatic function, utilizing the same safety related instrument signals as previously.

Reliance on level alarms and operator action to maintain the 135,000-gallon minimum reserve water volume in the CST, in lieu of internal standpipes, cannot increase the consequences of an accident. This is an operational condition that establishes initial conditions prior to an accident occurring. Operators would have sufficient time to respond to a CST level decrease under non-accident conditions. Manually transferring HPCI and RCIC suction to the safety related suppression pool should CST level decline below 203,000 gallons (the 135,000 gallons required inventory, plus 68,000 gallons unusable) ensures HPCI and RCIC remain fully capable of performing their design basis functions.

All parameters pertaining to the accident analysis, including pump initiation time, flowrate, volume and duration of flow delivered to the reactor vessel remain satisfied following implementation of this proposed change. Therefore, no accident scenario evaluated in the SAR will be affected, and the radiological consequences of accidents previously evaluated in the SAR are not increased.

These changes, therefore, do not modify or add any initiating parameters that would significantly increase the probability or consequences of any previously analyzed accident.

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

Implementation of these proposed changes cannot create the possibility of a different type of accident from any previously considered. First, the affected systems only perform mitigation functions, so postulated failures of any of these systems would not initiate a design basis accident. The function credited in the safety analysis is automatic transfer of the HPCI and RCIC suction lines from the CST to the suppression pool. This automatic transfer will still occur as required, with the only difference being execution earlier at a higher CST water level.

Any considerations associated with maintaining the required minimum CST water level, including reliance on an alarm and operator action in lieu of a passive design feature, cannot lead to an accident of a different type since the CST itself is explicitly excluded from consideration in the accident analysis. Although the preference is to provide shutdown cooling with the reactor grade water of the CST, failure to do so will neither impact the ability to achieve shutdown cooling nor create a new type of accident.

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 change does not involve a significant reduction in a margin of safety.*

The margin of safety of the affected TS is maintained. RCIC is provided to assure adequate core cooling in the event of reactor isolation from its primary heat sink and concurrent loss of feedwater flow to the reactor vessel without requiring actuation of ECCS equipment. This function will be accomplished. HPCI provides a backup to RCIC for safe shutdown and the ECCS function of ensuring the reactor core is adequately cooled to limit fuel clad temperature during a small break loss of coolant accident. The safety analysis does not credit CST water. Since the automatic transfer to the suppression pool is assured with the same high quality and reliability as before, the ECCS function is not affected. Should CST level decline below the required minimum volume, operators would align HPCI and RCIC suction to the suppression pool. System design functions, including containment isolation, continue to be maintained in this alignment.

The CST also provides a source of water for shutdown during station blackout (SBO) scenarios. The proposed changes do not affect the ability to recover from a SBO scenario.

Core spray is provided to assure that the core is adequately cooled following a LOCA and provides core cooling capacity for all break sizes. Core spray is a primary cooling source after the reactor vessel is depressurized and a source for flooding in case of accidental draining. In Operational Conditions 4 or 5, the CST is relied upon as the cooling water source if the suppression pool is drained below its minimum level. Operator actions in response to a CST alarm ensure sufficient condensate inventory is available to accomplish this function.

ECCS instrumentation (HPCI) is provided to initiate actions to mitigate the consequences of accidents that are beyond the ability of the operator to control. RCIC instrumentation is provided to initiate actions to assure adequate core cooling in the event of reactor isolation from its primary heat sink and the loss of feedwater flow to the reactor vessel. The HPCI and RCIC level instruments continue to provide their automatic function thereby preserving the design requirements of these systems. Remote shutdown instrumentation and controls ensure that sufficient capability is available to permit shutdown and maintenance of Hot Shutdown of the unit from locations outside the control room in the event control room habitability is lost. RCIC continues to satisfy this function.

All design basis requirements of HPCI, RCIC, core spray and the CST continue to be satisfied to ensure safe shutdown and mitigate a LOCA. Required water volumes remain available for core cooling, as is the automatic transfer to the safety related suppression pool source.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

CONCLUSION

Based on the above, PSE&G has determined that the proposed changes do not involve a significant hazards consideration.