

Public Service  
Electric and Gas  
Company

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Vice President, Nuclear Operations

NOV 16 1993

NLR-N93161

Revision to LCR 92-10

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

Gentlemen:

REVISION TO LICENSE AMENDMENT APPLICATION  
INSTRUMENTATION REQUIREMENTS FOR SINGLE LOOP OPERATIONS  
FACILITY OPERATING LICENSE NPF-57  
HOPE CREEK GENERATING STATION  
DOCKET NO. 50-354

This letter submits a revision to the application for amendment to Appendix A of Facility Operating License NPF-57 for the Hope Creek Generating Station filed in NLR-N92187, dated February 2, 1993 (LCR 92-10). Specifically, the changes to the Bases for Specification 3.0.2 are being retracted, and a new Specification 3.0.5 and its associated Bases are being proposed. The original changes and the revised changes both have the same intent and achieve the same objective; however, the revised changes proposed in this letter are consistent with the method utilized in the new Standard Technical Specifications (NUREG-1433).

Attachment 1 includes a revised description of and justification for the proposed changes. The revision does not impact our conclusion that the proposed changes do not involve a significant hazards consideration, nor does it affect our basis for drawing this conclusion. Revised marked up Technical Specification pages which reflect the proposed changes are included in Attachment 2. Attachment 3 provides a summary of the differences between our revised amendment application and our original amendment application.

In accordance with the requirements of 10 CFR 50.91(b)(1), a copy of this submittal has been sent to the State of New Jersey as indicated below. Upon NRC approval, PSE&G requests that the license amendment be made effective as of the date issuance but that a sixty day implementation period be provided in order to allow sufficient time to complete associated administrative activities.

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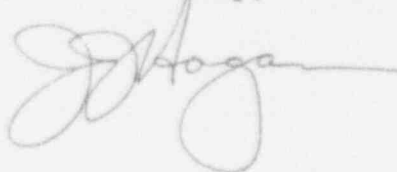
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NLR-N93161

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Should you have any questions or comments on this submittal,  
please do not hesitate to contact us.

Sincerely,



Affidavit  
Attachments (3)

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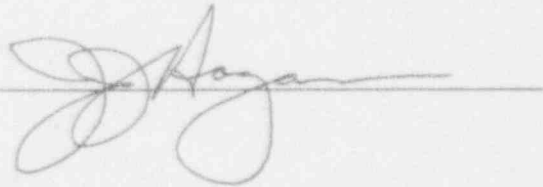
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Revision to LCR 92-10


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

J. J. Hagan, being duly sworn according to law deposes and says:

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



Subscribed and Sworn to before me  
this 16th day of November, 1993

  
Notary Public of New Jersey

My Commission expires on \_\_\_\_\_  
KIMBERLY JO BROWN  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires April 21, 1998

ATTACHMENT 1  
PROPOSED CHANGES TO THE TECHNICAL SPECIFICATIONS

REVISION TO LICENSE AMENDMENT APPLICATION  
INSTRUMENTATION REQUIREMENTS FOR SINGLE LOOP OPERATIONS  
HOPE CREEK GENERATING STATION  
FACILITY OPERATING LICENSE NPF-57  
DOCKET NO. 50-354

NLR-N93161  
REVISION TO LCR 92-10

I. DESCRIPTION OF THE PROPOSED CHANGES

A. Single Loop Operations

Revise Specification 3.4.1.1, "RECIRCULATION SYSTEM - RECIRCULATION LOOPS", to delete existing Action "a.1.e" and incorporate the affected requirements into new Actions "a.2", "a.3", and "a.4" as modified below:

Action "a.2" will pertain to the Average Power Range Monitor (APRM) scram setpoints and require the applicable setpoints to be reduced to those applicable for single recirculation loop operation within four hours of entering single loop operations. If the setpoints associated with one trip system are not reduced within four hours, the affected trip system must be placed in the tripped condition and, within the following 6 hours, the remaining setpoints must be reduced.

Action "a.3" will pertain to the Average Power Range Monitor (APRM) rod block setpoints and require the applicable setpoints to be reduced to those applicable for single recirculation loop operation within four hours of entering single loop operations. If the setpoints associated with one trip function are not reduced within four hours, at least one of the affected channels must be placed in the tripped condition and, within the following 6 hours, the remaining setpoints must be reduced.

Action "a.4" will pertain to the Rod Block Monitor (RBM) trip setpoints and require the applicable setpoints to be reduced to those applicable for single recirculation loop operation within four hours of entering single loop operations. If the setpoints associated with one trip function are not reduced within four hours, at least one affected channel must be placed in the tripped condition and, within the following 6 hours, the remaining setpoints must be reduced.

B. Power Ascension Program Data

Revise the following specifications to change the value of delta-w for single loop operation from "To be determined at a later date" to 9%:

- Specification 2.2.1, "REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS", Table 2.2.1-1
- Specification 3.2.2, "APRM SETPOINTS"

Revise the following specifications to change the value of minimum thermal power corresponding to conditions in which no temperature stratification occurs from  $\leq 30\%$  to  $\leq 38\%$  and delete the associated footnote (the 50% value for recirculation flow in the operating loop has been established as the correct final value):

- Specification 3.4.1.1, "RECIRCULATION SYSTEM - RECIRCULATION LOOPS", Action "a.1.g" and Surveillance 4.4.1.1.2
- Bases Section 3/4.4.1, "RECIRCULATION SYSTEM"

Revise the following specifications to change the value of core flow with both Recirculation Pumps at minimum speed from 39% to 40% and delete the associated footnote:

- Specification 3.4.1.1, "RECIRCULATION SYSTEM - RECIRCULATION LOOPS", Actions "c" and "d" and Surveillance 4.4.1.1.1.

#### C. Specification 3.0.5

Add Limiting Condition for Operation (LCO) 3.0.5 of NUREG-1433 to the Hope Creek TSS. The new LCO 3.0.5 would state the following:

"Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY."

Incorporate Bases for LCO 3.0.5 which are similar to the NUREG-1433 Bases. The new Bases would state the following:

"Specification 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The sole purpose of this Specification is to provide an exception to LCO 3.0.2 (e.g., to not comply with the applicable Required Action(s)) to allow the performance of testing required to restore and demonstrate:

- a. The OPERABILITY of the equipment being returned to service;  
or
- b. The OPERABILITY of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the testing required to restore and demonstrate the OPERABILITY of the equipment. This Specification does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Actions and must be reopened to perform the testing required to restore and demonstrate OPERABILITY.

An example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of testing required to restore OPERABILITY on another channel in the other trip system. A similar example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to permit the logic to function and indicate the appropriate response during the performance of testing required to restore and demonstrate OPERABILITY on another channel in the same trip system."

LOO 3.0.5 is applicable to all Technical Specifications; however, the intent of LOO 3.0.5 is not to supercede more specific guidance contained within any individual specification.

## II. REASON FOR THE PROPOSED CHANGES

### A. Single Loop Operations

Specification 3.4.1.1, Action "a.1.e" currently requires the APRM Scram and Rob Block setpoints and RPM setpoints be reduced to those applicable for single loop operations within four hours of entering single loop operations. Due to the amount of time required to actually perform these actions and complete the associated surveillance testing, this time limit becomes overly restrictive when single loop operations is entered due to an unanticipated trip of a Recirculation Pump. The changes that are proposed in this submittal provide conservative alternative actions that would provide additional time to reduce the subject setpoints and perform associated surveillance tests.

### B. Power Ascension Program Data

The values presently provided in Technical Specifications for delta-w for single loop operation, minimum thermal power corresponding to conditions in which no temperature stratification occurs, and core flow with both Recirculation Pumps at minimum speed are initial values that were established prior to startup testing. Final values have now been determined and this amendment request therefore seeks to incorporate those values.

### C. Specification 3.0.5

PSE&G believes that it is not the intent of LOO 3.0.2 that conformance to the action requirements for equipment removed from service or declared inoperable preclude the performance of surveillance testing to demonstrate the operability of that or other equipment. Therefore, the new LOO 3.0.5 and its associated Bases are being proposed.



### III. JUSTIFICATION FOR THE PROPOSED CHANGES

#### A. Single Loop Operations

Specification 3.4.1.1, Action "a.1.e" currently requires the APRM Scram and Rod Block setpoints and RBM setpoints to be reduced to those applicable for single loop operations within four hours of entering single loop operations. The affected setpoints are associated with the flow-biased simulated thermal power upscale functions of the subject instrumentation. After the setpoints are reduced, associated surveillance tests must be completed to verify operability of the instruments with the reduced setpoints in order to comply with this action statement.

Due to the amount of time required to actually perform these actions and complete the associated surveillance testing, the four hour time limit becomes overly restrictive when single loop operations is entered due to an unanticipated trip of a recirculation pump. If these actions cannot be completed within four hours, Specification 3.4.1.1, Action 3 requires the plant to be placed in at least hot shutdown within the next twelve hours. The changes that are proposed in this submittal would provide a conservative alternate course of action that would provide additional time to reduce the subject setpoints and perform associated surveillance tests.

In accordance with the proposed changes, the requirement to reduce the subject setpoints within four hours of entering single loop operations would still exist. However, provisions would be added such that, with the setpoints of a single trip system/function associated with each of the three instrumentation groups (i.e., APRM Scram and Rod Block and RBM) not reduced within four hours, that trip system/function would be placed in the tripped condition. The setpoints of that instrumentation would then be required to be reduced to the applicable values within the following six hours.

In accordance with the proposed actions, upon unanticipated entry into single loop operations, attempts would be made to reduce the setpoints of all specified instrumentation within four hours. As a minimum, the setpoints of at least one trip system/function associated with each of the three instrumentation groups (i.e., APRM Scram and Rod Block and RBM) would be reduced and surveillance tests completed. The remaining trip system/function(s) would be placed in the tripped condition. They would remain in the tripped condition except as required to be taken out of the tripped condition during performance of the associated surveillance tests.

By conservatively requiring the setpoints of at least one trip system/function per instrumentation group to be reduced to those applicable for single loop operations and the other trip system/function to be placed in the tripped condition, there is assurance that a scram and/or rod block would be initiated by the APRMs and/or RBM if the reduced setpoints are reached. This condition could exist for up to six hours at which time the remaining setpoints would be required to be reduced.

These proposed changes would provide a more reasonable amount of time to take the required actions than the current action requirements while presenting no negative impact on plant safety.

B. Power Ascension Program Data

Delta-w for single loop operation

The method used to calculate delta-w, in general, corresponds with the guidelines provided in General Electric document 24A1715, Single Recirculation Pump Operation (PNO-A22-4370-0007(1)) and is outlined below:

1. Develop the two loop relationships for Core Flow versus Core Plate differential pressure and Core Flow versus percent of Rated Recirculation Drive Flow.
  - a. Collect data during two loop operation.
  - b. Calculate second order regression-fits for Core Flow as a function of Core Plate differential pressure and percent of Rated Recirculation Drive Flow.
  - c. Determine the value of Rated Recirculation Drive Flow.
2. Collect Single Loop Operation data for Core Power, Recirculation Drive Flow and Core Plate differential pressure. This is done over a range of Recirculation Pump speed up to the maximum allowed by Technical Specifications (90% rated).
3. Convert Single Loop Operations Core Plate differential pressure to Core Flow using the two loop relationships determined in step 1. (Core Flow versus Core Plate differential pressure is independent of two loop or single loop operation).
4. Convert Recirculation Drive Flows to percent of Rated using the value determined in step 1.
5. Compare Core Flow in Single Loop Operation to Core Flow in Two Loop Operation for the same percent Recirculation Drive Flow.
6. Calculate delta-w by determining the maximum difference between the two drive flow rates (two loop and single loop drive flows) for the same Core Flow.

The results of the calculations outlined above are as follows:



<u>Cycle</u>	Loop A in service <u>Delta-w</u>	Loop B in service <u>Delta-w</u>
1	8.56%	7.82%
2	8.45%	8.50%
3	8.30%	8.70%

Based upon the above results, PSE&G is hereby proposing to incorporate a conservative value of 9% for delta-w.

Minimum thermal power corresponding to conditions in which no temperature stratification occurs

The core power and flow values corresponding to conditions in which no temperature stratification occurs were determined during power ascension testing. Rather than determining actual minimum power and flow values, the test verified that for certain set conditions, no temperature stratification occurred. The conditions of the test were as follows:

<u>Test Date</u>	Reactor Power <u>(% Rated)</u>	Active Loop Flow <u>(% Rated)</u>
11/01/86	37	no active loop
	38	no steady-state SLO data
11/01/86	53	90 (Loop A)
11/08/86	38	no active loop

All test conditions showed no temperature stratification occurred. Insofar as single loop data is available only for relatively high flow conditions, PSE&G is conservatively proposing to retain the value of 50% core flow and incorporate the value of 38% thermal power. A test to determine the actual minimum values would necessitate single loop operations for approximately 16 hours. PSE&G does not feel that this is necessary since the conservative values that are being proposed will have insignificant operational impacts.

Core flow with both Recirculation Pumps at minimum speed

Specification 3.4.1.1, Action "d", requires that with total core flow less than this value and thermal power greater than the limit specified in Figure 3.4.1.1-1 (this figure corresponds to the 80% Rod Pattern line), actions are initiated to reduce thermal power below the limit specified in Figure 3.4.1.1-1 or increase core flow to greater than 45% rated. These actions are similar to those specified in NRC Bulletin 88-07, Supplement 1, "Power Oscillations in Boiling Water Reactors" which states the core flow value to be 40%. PSE&G is proposing to incorporate the conservative value of 40% in order to retain consistency with the requirements of Bulletin 88-07 rather than incorporate an additional value that would represent core flow with both Recirculation Pumps at minimum speed.

C. Specification 3.0.5

PSE&G believes that adopting the proposed LOO 3.0.5 and the associated Bases maintains compliance with the intent of LOO 3.0.2.

IV. SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

PSE&G has, pursuant to 10 CFR 50.92, reviewed the proposed amendment to determine whether our request involves a significant hazards consideration. We have determined that operation of the Hope Creek Generating Station in accordance with the proposed changes:

1. Will not involve a significant increase in the probability or consequences of an accident previously evaluated.

A. Single Loop Operations

Appendix 15C of the Hope Creek UFSAR contains the single loop analysis that was completed for PSE&G by General Electric. Section 15.C.3.2 evaluates a rod withdrawal error event while in single loop operations and states:

"The rod withdrawal error at rated power is given in the FSAR. These analyses are performed to demonstrate, even if the operator ignores all instrument indications and the alarm which could occur during the course of the transient, the rod block system will stop rod withdrawal at a minimum critical power ratio (MCPR) which is higher than the fuel cladding integrity safety limit. Modification of the rod block equation (below) and lower power assures the MCPR safety limit is not violated."

Relative to the APRMs, Section 15.C.3.2 concludes:

"The APRM trip settings are flow biased in the same manner as the rod block monitor trip settings. Therefore, the APRM rod block and scram settings are subject to the same procedural changes as the rod block monitor trip settings discussed above."

The changes proposed in this submittal would require an APRM and/or RRM channel to be placed in the tripped condition if its setpoints have not been reduced within four hours of entering single loop operations. This would ensure that if thermal power reached the setpoint of the channel that has been reduced, the trip function would occur at the setpoint applicable to single loop operation. Based on these conservative actions, it is concluded that the proposed changes will not involve a significant increase in the probability or consequences of an accident previously evaluated.

B. Power Ascension Program Data

The proposed changes incorporate plant values which have been conservatively determined from power ascension tests as discussed in Section III.B of this submittal. In two cases, the proposed values are more limiting than those presently contained in the affected specifications and in the third case, the value has not been specified until now. Therefore, the proposed changes will not involve a significant increase in the probability or consequences of an accident previously evaluated.

C. Specification 3.0.5

The proposed changes merely clarify the intent of Specification 3.0.2 and are therefore viewed as administrative in nature.

2. Will not create the possibility of a new or different kind of accident from any accident previously evaluated.

A. Single Loop Operations

The constraints imposed by the proposed changes will ensure that, while in single loop operations, the subject trip functions will still occur at the setpoints applicable to single loop operations under the same time limits as the present specification (i.e., within four hours of entering single loop operations). Additionally, the proposed changes will not involve any physical changes to the plant.

B. Power Ascension Program Data

The proposed changes will not involve any physical changes to the plant and have been conservatively determined as discussed in Section III.B of this submittal.

C. Specification 3.0.5

The proposed changes merely clarify the intent of Specification 3.0.2 and are therefore viewed as administrative in nature.

3. Will not involve a significant reduction in a margin of safety.

A. Single Loop Operations

The proposed changes will provide a more reasonable period of time to reduce the setpoints of the  $\dot{M}_{\text{low}}$  and RBM by requiring conservative actions to be taken. These actions will ensure that the applicable trip functions will still occur at the setpoints applicable to single loop operations within the same time period as currently specified (i.e., four hours). These changes, therefore, will not involve a reduction in a margin of safety.

B. Power Ascension Program Data

Insofar as each of the proposed core values that would be incorporated by this submittal were conservatively determined as described in Section III.B of this submittal, it can be concluded that there will be no reduction in margin of safety.

C. Specification 3.0.5

The proposed changes merely clarify the intent of Specification 3.0.2 and are therefore viewed as administrative in nature.

V. CONCLUSION

Based on the preceding discussion, PSE&G has concluded that the proposed change to the Technical Specifications does not involve a significant hazards consideration insofar as the change: (i) does not involve a significant increase in the probability or consequences of an accident previously evaluated, (ii) does not create the possibility of a new or different kind of accident from any accident previously evaluated, and (iii) does not involve a significant reduction in a margin of safety.