

Public Service
Electric and Gas
Company

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JAN 24 1997

LR-N97041
LCR H96-08

United States Nuclear Regulatory Commission
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SUPPLEMENT TO REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS
IMPROVEMENT TO TECHNICAL SPECIFICATION SECTION 3.1.3.5, CONTROL
ROD SCRAM ACCUMULATORS
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSES NPF-57
DOCKET NO. 50-354

Gentlemen:

In accordance with 10CFR50.90, Public Service Electric & Gas (PSE&G) Company requests a revision to the Technical Specifications (TS) for the Hope Creek Generating Station.

The proposed revisions represent changes to Specification 3.1.5 "Control Rod Scram Accumulators." The original request (LR-N96203) is being supplemented based on discussions with Hope Creek NRC Project Manager, Mr. D. Jaffe, to ensure proper interface between the proposed change, other current Technical Specification sections and the improved BWR/4 Standard Technical Specifications, NUREG-1433, Revision 1.

The resulting information has been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and PSE&G has incorporated the new information into the previously submitted significant hazards determination. It has been concluded that the supplemental information does not invalidate the original conclusions of the evaluation. In accordance with 10CFR50.91(b)(1), a copy of this submittal has been sent to the State of New Jersey.

The basis for the requested change is provided in Attachment 1. The revised 10CFR50.92 evaluation with a determination of no significant hazards consideration is provided in Attachment 2. The marked up TS pages affected by the proposed changes are provided in Attachment 3.

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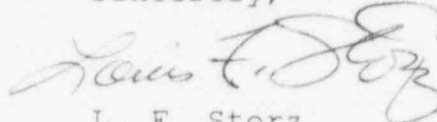
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Upon NRC approval of this proposed change, PSE&G requests that the amendment be made effective on the date of issuance, but allow an implementation period of sixty days to provide sufficient time for associated administrative activities.

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

Sincerely,



L. F. Storz
Senior Vice President -
Nuclear Operations

Attachments (3)

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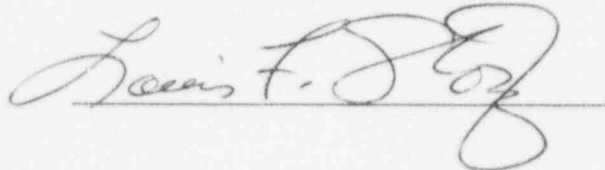
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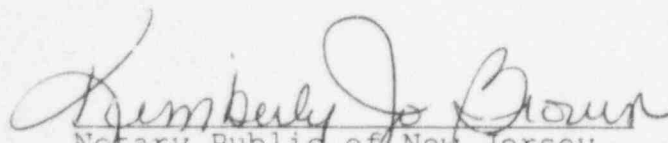
STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

L. F. Storz, being duly sworn according to law deposes and says:

I am Senior 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, Unit 1, are true to the best of my knowledge, information and belief.



Subscribed and Sworn to before me
this 24th day of January 1997


Notary Public of New Jersey

My commission expires on _____

KIMBERLY JO BROWN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires April 21, 1998

HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354
CHANGE TO TECHNICAL SPECIFICATIONS
IMPROVEMENT TO TECHNICAL SPECIFICATION SECTION 3.1.3.5
CONTROL ROD SCRAM ACCUMULATORS

BASIS FOR REQUESTED CHANGE

The basis for the proposed change is to incorporate the enhancements identified in the BWR/4 Standard Technical Specifications, NUREG-1433, Revision 1, Section 3.1.5, Control Rod Scram Accumulators, to the extent practical.

REQUESTED CHANGE AND PURPOSE

This Technical Specification change request adopts improved Standard Technical Specification Section 3.1.5, Control Rod Scram Accumulators. As indicated in Attachment 3, the proposed changes: 1) permit a separate entry into a Technical Specification action statement for each inoperable control rod; 2) provide more specific applicability for required actions in Operational Condition 1 or 2 with one inoperable control rod scram accumulator (reactor pressure of ≥ 900 psig will be specified); 3) provide more specific actions (verify charging water pressure) for two or more inoperable control rod scram accumulators and reactor pressure is ≥ 900 psig; 4) provide more specific actions when reactor pressure is < 900 psig and one or more control rod scram accumulators are inoperable (verify insertion of control rods associated with inoperable accumulators and verify that charging water header pressure is ≥ 940 psig); and 5) eliminate the requirements to perform a 18 month channel functional test of the leak detectors and the 18 month channel calibration of the pressure detectors. Less restrictive changes were reviewed under the 10 CFR 50.92, No Significant Hazards Consideration, in Attachment 2. The purpose of these changes is to conform to the improved Standard Technical Specifications, which were developed based on criteria in the Final Commission Policy Statement on Technical Specification Improvements for Nuclear Power Reactors, dated July 22, 1993 (58 FR 39132). By incorporating these changes for section 3.1.5, power plant safety and operation are enhanced.

BACKGROUND

The Control Rod Drive Hydraulic System provides the hydraulic driving force for the insertion (under both norm. and scram conditions) and withdrawal of control rods. The control rod

drive pumps, one of which is normally running during reactor operation, the other one is normally in standby: 1) supply water to the hydraulic control units (HCUs) for insertion and withdrawal of control rods; 2) charge the scram accumulators; and 3) cool the control rod drive mechanisms. The HCU consists of controls, instrumentation and the hydraulic, electrical, and pneumatic equipment necessary to move a control rod during normal or scram operation. There is one HCU associated with each of the 185 control rods.

The control rod scram accumulators are located on the HCUs and are provided to assist the control rod scram under varying reactor conditions. The accumulators store sufficient energy to fully insert a control rod at any reactor pressure, and are necessary to meet the required scram insertion times of Technical Specification 3.1.3.2, "Control Rod Maximum Scram Insertion Times". The operating CRD pump provides water to the charging water header. The header is connected to the accumulator charging line on the HCU. The accumulator is a hydraulic cylinder with a free-floating piston. The piston separates the water used to scram the control rods from the compressed nitrogen within the accumulators which provides energy for rod scram. The accumulator is charged with approximately 1450 to 1510 psig on the water side and 1050 to 1100 psig on the nitrogen side. Charging water pressure depresses the piston, compressing the nitrogen. A check valve in each accumulator charging line prevents loss of water pressure from the accumulators for a limited time in the event supply pressure (from the operating CRD pump) is lost.

The proposed Technical Specification changes will make the Control Rod Scram Accumulators Limiting Condition for Operation (LCO), Actions and Surveillances more consistent with the improved Standard Technical Specifications. The justification for each of the changes is provided in the following paragraphs.

The first change adds a note to the Action Statement section of the Technical Specifications:

"-----NOTE-----
Separate condition entry is allowed for each control rod.
-----"

The note provides clarification of proper application of the Actions for Technical Specification compliance. This note provides direction consistent with the intent of the Standard Technical Specification actions for inoperable control rod scram accumulators. For each inoperable control rod a specified period

of time to verify compliance with certain limits is allowed and, when necessary, to fully insert and disarm the control rod. This is acceptable since the required actions for each condition provide appropriate compensatory actions for each affected accumulator. Complying with the required actions may allow for continued operation and subsequent condition entry and application of associated required actions. This change is considered an administrative change to ensure consistent compliance.

Another proposed change to the Technical Specification action statement for inoperable control rod scram accumulators provides an 8 hour allowance when a single accumulator is inoperable, but only if the reactor pressure is sufficiently high to support control rod insertion:

"With one control rod scram accumulator inoperable and reactor pressure \geq 900 psig, within 8 hours,"

Current Technical Specification action 3.1.3.5.a.1 would allow 8 hours for restoring one accumulator regardless of pressure. At reduced reactor pressures, control rods may not insert on a scram signal unless the associated accumulator is operable. Therefore, plant operation for up to 8 hours without compensatory action may not be justified.

As a result, the proposed Technical Specification action a.1 is similar to the improved Technical Specification for one inoperable accumulator provided sufficiently high reactor pressures are available. The allowed completion time of 8 hours to restore accumulator operability is reasonable, based on the assurance of the affected control rod to scram only with reactor pressure. Further, if the accumulator is not restored, the associated control rod is required to be inserted, declared inoperable and disarmed. This is a more restrictive change to the current Technical Specifications.

The proposed changes retains the statement, "Otherwise, be in at least HOT SHUTDOWN within the next 12 hours" in Technical Specification action statement a.1.

For two or more control rod scram accumulators, the current Technical Specifications verify that a control rod drive pump is operating by inserting one control rod one notch. This assures that sufficient control rod drive pressure exists to insert control rods. However, the improved Technical Specification method of determining charging water header water pressure is preferred to assure all scram accumulators are sufficiently

charged to insert all operable control rods on a scram signal; the current Technical Specifications method only assures that sufficient pressure exists to overcome reactor pressure (if reactor pressure is low, this method could be satisfied with little charging pressure). Since the change is merely exchanging one test method for another equivalent, or better, test method which meets the original intent, this change is considered administrative (although there are more and less restrictive aspects; it is less restrictive to not have to move a control rod, which may not be possible if a control rod block exists; it is more restrictive in assuring the intended charging pressure exists if operating at low reactor pressure).

The proposed Technical Specifications will now state that, with two or more control rod scram accumulators inoperable and reactor pressure ≥ 900 psig, adequate pressure must be supplied to the charging water header.

"With two or more control rod scram accumulators inoperable and reactor pressure ≥ 900 psig,

a) Within 20 minutes of discovery of this condition concurrent with charging water pressure < 940 psig, restore charging water header pressure to ≥ 940 psig otherwise place the mode switch in the shutdown position**, and

b) Within one hour insert the associated control rods, declare the associated control rods inoperable and disarm the associated control valves either electrically or hydraulically by closing the drive water and exhaust water isolation valves."

With inadequate charging water pressure, all of the accumulators could become inoperable, resulting in a degradation of scram performance. Therefore, within 20 minutes from discovery of charging water header pressure < 940 psig concurrent with two or more accumulators inoperable and reactor pressure ≥ 900 psig, adequate charging water header pressure must be restored. As stated in the improved Technical Specifications the allowed completion time of 20 minutes is reasonable, to place a CRD pump into service and restore the charging header pressure. This completion time is based on the ability of the reactor pressure alone to fully insert all control rods. The associated control rods must also be inserted, declared inoperable, and disarmed within one hour. As stated in the improved Technical Specification, allowed completion time of one hour is reasonable

considering the low probability of a DBA or transient occurring during the time that the accumulator is inoperable.

With one or more control rod scram accumulators inoperable and the reactor pressure < 900 psig, the proposed Technical Specifications will state that the pressure supplied to the charging water header must be adequate to ensure that accumulators remain charged.

"With one or more control rod scram accumulators inoperable and reactor pressure < 900 psig,

a) Immediately upon discovery of charging water header pressure < 940 psig, verify all control rods associated with inoperable accumulators are fully inserted otherwise place the mode switch in the shutdown position**, and

b) Within one hour insert the associated control rod(s), declare the associated control rod(s) inoperable and disarm the associated control valves either electrically or hydraulically by closing the drive water and exhaust water isolation valves."

With the reactor pressure < 900 psig, the function of the accumulators in providing the scram force becomes much more important since the scram function could become degraded during a depressurization event or at low reactor pressures. Therefore, immediately upon discovery of charging water pressure < 940 psig, concurrent with one or more inoperable control rod scram accumulators, and reactor pressure < 900 psig, all control rods associated with inoperable accumulators must be verified to be fully inserted. The associated control rod(s) must also be inserted, declared inoperable, and disarmed within one hour. As stated in the improved Technical Specification allowed completion time of one hour is reasonable considering the low probability of a DBA or transient occurring during the time that the accumulator is inoperable.

The proposed changes also state that the reactor mode switch must be immediately placed in the shutdown position if either required action and associated completion time associated with loss of the CRD charging pump cannot be met. This ensures that all insertable control rods are inserted and that the reactor is in a condition that does not require the active function (i.e. scram) of the control rods. This required action is modified by a note stating that the action is not applicable provided all control rods associated with the inoperable scram accumulators are fully

inserted, since the safety function of the control rod(s) has been performed.

The proposed Technical Specifications will also be revised to state that, during OPCON 5 with an accumulator associated with a withdrawn control rod inoperable, the control rod is required to be inserted.

"In OPERATIONAL CONDITION 5*:

1. With one or more withdrawn control rods inoperable, upon discovery immediately initiate action to fully insert inoperable withdrawn control rods."

Once the control rod is fully inserted, the accumulator is no longer required to be operable (as indicated in a footnote in the current Technical Specifications) and the entry conditions for the required actions are no longer applicable, thus no additional actions are required (this is consistent with LCO 3.0.2). Therefore, the action to disarm the associated directional control valves is proposed for deletion.

Multiple control rods withdrawn with the vessel head removed (OPCON 5) while fuel remains in its cell is only accomplished in accordance with Technical Specification section 3.10.3. In the event multiple withdrawn control rods have inoperable accumulators and no CRD pump operating, the actions of LCO 3.10.3 will direct the immediate scram. Actions for single or multiple withdrawn control rods with inoperable accumulators, and CRD pump operating, will be addressed by the LCO 3.9.1, 3.9.3, and 3.9.10.1. The result is operation and actions consistent with current Technical Specification requirements.

Also in accordance with improved standard Technical Specifications, the proposed changes delete the 18 month Channel Functional tests and Channel Calibrations for the leak detectors and pressure detectors. The proposed surveillance requirements check the accumulator pressure every 7 days to ensure adequate accumulator pressure exists to provide sufficient scram force. As the primary indicator of accumulator operability is the accumulator pressure, a minimum accumulator pressure is specified, below which the capability of the accumulator to perform its intended function becomes degraded and the accumulator is considered inoperable. Declaring the accumulator inoperable when the minimum pressure is not maintained ensures that significant degradation in scram times does not occur. The 7 day frequency has been shown to be acceptable through operating

experience and takes into account indications available in the control room.

Further, the scram accumulator leak detectors, pressure detectors, and associated alarm do not relate directly to accumulator functional requirements. In general, indication-only or test equipment are not required to support operability of a system or component. Control of the availability of and necessary compensatory activities if not available, for indicators, monitoring instruments, alarms, and the test equipment are addressed by plant procedures. Therefore, the channel functional test for the control rod accumulator leak detectors, and the channel calibration of the pressure detectors alarm setpoint surveillances are proposed for removal from the Technical Specifications.

JUSTIFICATION OF REQUESTED CHANGES

As noted above, this change seeks to adopt the industry experience gained and incorporated in the improved Standard Technical Specifications. Specifically, section 3.1.3.5, Control Rod Scram Accumulators, is being upgraded to reflect these enhancements. The changes are consistent with the improved Standard Technical Specifications with four exceptions. First, the concept of 'slow' rods is not being adopted at this time. Secondly, the formatting of the current Technical Specification is retained as not to obfuscate the human factoring (by having two formats within one set of Technical Specifications) for the Operations staff. Thirdly, the statement concerning the provisions of section 3.0.4 not being applicable will not be deleted, since this proposed change does not alter Technical Specification 3.0.4 to match the improved Technical Specifications. Lastly, requirements for the insertion, declaration of inoperability, and disarming of the control rods will be retained in the accumulator section of Technical Specifications.

CONCLUSION

The proposed changes enhance power plant safety and operation. Further, the changes are consistent with the improved Standard Technical Specifications.

HOPE CREEK GENERATING STATION
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CHANGE TO TECHNICAL SPECIFICATIONS
IMPROVEMENT TO TECHNICAL SPECIFICATION SECTION 3.1.3.5, CONTROL
ROD SCRAM ACCUMULATORS

10CFR50.92 EVALUATION

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

Enhance Technical Specification Section 3.1.3.5, Control Rod Scram Accumulators, by incorporating improved Standard Technical Specification changes, with the exception of the concept of 'slow' rod designation (non-incorporation of such is conservative), retaining the current formatting (for consistency with existing Technical Specifications), retaining the statements concerning Technical Specification section 3.0.4 applicability (non-incorporation of such is conservative), and the requirements to insert, declare inoperable, and disarm the control rods will be maintained in the accumulator section of the Technical Specification.

BASIS

1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated. The change incorporates the appropriate content of the improved BWR/4 Standard Technical Specifications, NUREG-1433, for Control Rod Scram Accumulators. Further, the change reconciles the interface with the current Technical Specifications by retention of material, for example the insertion, declaration of inoperability and disarming of the CRD, to clarify the expected operator response.

The proposed Technical Specification and required Action completion times are consistent with or more conservative than those approved for use in the improved Technical Specifications for inoperable control rod scram accumulators. In addition, the proposed surveillance

- requirements for the control rod scram accumulators are sufficient to adequately demonstrate operability as stated in the Bases for the improved Technical Specifications. Further, the proposed changes enhance the current Hope Creek Technical Specifications by reflecting improved techniques collectively learned by the industry. Therefore, the proposed changes do not significantly increase the risk or consequences of any accidents previously evaluated.
2. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated. Neither the mechanism for initiating or completing a scram is modified by this proposed change. There are no physical changes to plant equipment proposed in the application. The proposed change does not create a means by which the scram function could be impeded or prevented. The proposed change is functionally equivalent to the current Technical Specifications, but provides additional operational flexibility to diagnose and resolve equipment issues that do not impact operability of the control rods before taking proscriptive actions which result in significant plant transients (i.e. full power scram).
 3. The proposed change does not involve a significant reduction in a margin of safety. The operability of the accumulators and the scram function of the control rod drive system protects the Safety Limit Minimum Critical Power Ratio as well as the 1% cladding plastic strain fuel design limit. The proposed change does not reduce a margin of safety as defined in the Bases of the Technical Specification since the proposed change does not affect the maximum allowable scram times for control rods, nor does it change the maximum allowable number or minimum separation of inoperable control rods. The proposed change does not modify any instrument setpoints or functions. The proposed change will either maintain the present margins of safety or increase them, by reducing the need for unnecessary challenges to the reactor protection system and resulting plant shutdowns, while still maintaining the capability to complete a reactor scram.

CONCLUSION

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