



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

January 5, 1987

Docket No. 50-354

Mr. Corbin A. McNeill, Jr., Vice President - Nuclear
Public Service Electric & Gas Company
P.O. Box 236
Hancock's Bridge, New Jersey 08038

Dear Mr. McNeill:

Subject: Issuance of Amendment No. 1 to Facility Operating
License No. NPF-57 - Hope Creek Generating Station

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 1 to Facility Operating License No. NPF-57 to the Hope Creek Generating Station. This was issued as an emergency amendment in accordance with 10 CFR 50.91 (a)(5) and is in response to your letters dated December 5 and 8, 1986.

This amendment revises the Hope Creek Technical Specifications to include a Minimum Critical Power Ratio (MCPR) curve for instances when the End-of-Cycle Recirculation Pump Trip (EOC-RPT) is inoperable. The enclosed Technical Specification pages replace the corresponding pages currently in the Technical Specifications.

A copy of the related safety evaluation supporting Amendment No. 1 to Facility Operating License No. NPF-57 is enclosed. The Notice of Issuance and Final Determination of No Significant Hazards Consideration and Opportunity for Hearing will be included in the Commission's Bi-Weekly Notice.

Sincerely,

Elinor G. Adensam

Elinor G. Adensam, Director
BWR Project Directorate No. 3
Division of BWR Licensing

Enclosures:

1. Amendment No. 1 to Facility
Operating License No. NPF-57
2. Safety Evaluation

DESIGNATED ORIGINAL

cc w/enclosures:
See next page

Certified By *[Signature]*

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Public Service Electric & Gas Co.

Hope Creek Generating Station

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PUBLIC SERVICE ELECTRIC & GAS COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-354

HOPE CREEK GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 1
License No. NPF-57


1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The applications for amendment filed by the Public Service Electric & Gas Company (the licensee), dated December 5, and December 8, 1986, comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
 - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the enclosure to this license amendment; and paragraph 2.C.(2) of the Facility Operating License No. NPF-57 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 1, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PSE&G shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This amendment is effective as of December 9, 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, reading "Elinor G. Adensam".

Elinor G. Adensam, Director
BWR Project Directorate No. 3
Division of BWR Licensing

Enclosure:
Changes to the Technical
Specifications

Date of Issuance: January 5, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 1

FACILITY OPERATING LICENSE NO. NPF-57

DOCKET NO. 50-354

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain a vertical line indicating the area changed. The corresponding overleaf page is also provided to maintain document completeness.

REMOVE

3/4 2-9
3/4 2-10

3/4 3-45
3/4 3-46

INSERT

3/4 2-9
3/4 2-10

3/4 3-45
3/4 3-46 (overleaf)

POWER DISTRIBUTION LIMITS

MINIMUM CRITICAL POWER RATIO

LIMITING CONDITION FOR OPERATION

ACTION:

- a. With the end-of-cycle recirculation pump trip system inoperable per Specification 3.3.4.2, operation may continue and the provisions of Specification 3.0.4 are not applicable provided that, within 1 hour, MCPR is determined to be greater than or equal to the MCPR limit as a function of the average scram time shown in Figure 3.2.3-1, EOC-RPT inoperable curve, plus the feedwater heating capacity adjustment given in Table 3.2.3-1, times the K_f shown in Figure 3.2.3-2.
- b. With MCPR less than the applicable MCPR limit shown in Figures 3.2.3-1 and 3.2.3-2, plus the feedwater heating capacity adjustment given in Table 3.2.3-1, initiate corrective action within 15 minutes and restore MCPR to within the required limit within 2 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

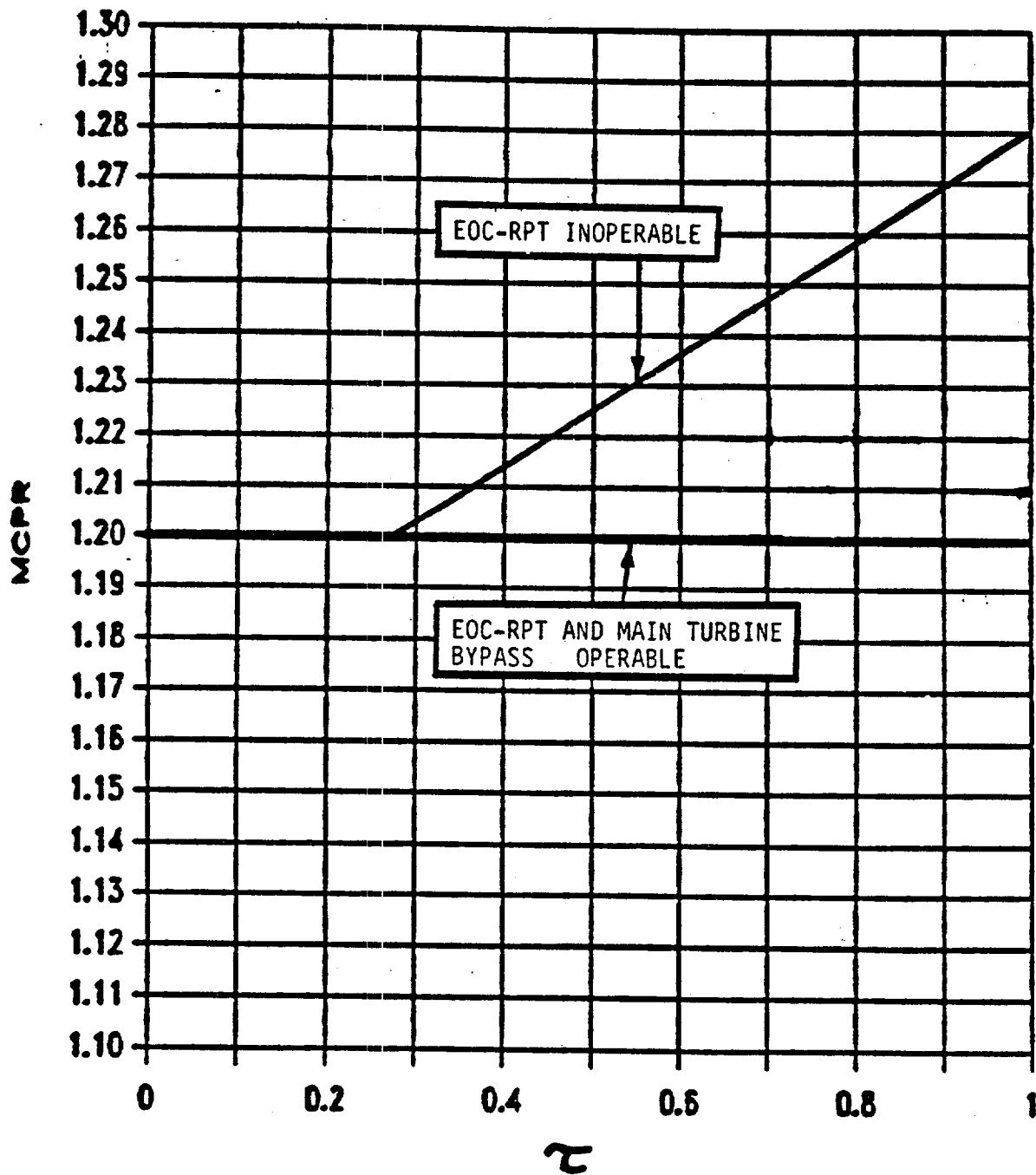
SURVEILLANCE REQUIREMENTS

4.2.3 MCPR, with:

- a. $\tau = 1.0$ prior to performance of the initial scram time measurements for the cycle in accordance with Specification 4.1.3.2, or
- b. τ as defined in Specification 3.2.3 used to determine the limit within 72 hours of the conclusion of each scram time surveillance test required by Specification 4.1.3.2,

shall be determined to be equal to or greater than the applicable MCPR limit determined from Figures 3.2.3-1 and 3.2.3-2:

- a. At least once per 24 hours,
- b. Within 12 hours after completion of a THERMAL POWER increase of at least 15% of RATED THERMAL POWER, and
- c. Initially and at least once per 12 hours when the reactor is operating with a LIMITING CONTROL ROD PATTERN for MCPR.
- d. The provisions of Specification 4.0.4 are not applicable.



MINIMUM CRITICAL POWER RATIO (MCPR)

VERSUS τ AT RATED FLOW

Figure 3.2.3-1

INSTRUMENTATION

END-OF-CYCLE RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.4.2 The end-of-cycle recirculation pump trip (EOC-RPT) system instrumentation channels shown in Table 3.3.4.2-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.4.2-2 and with the END-OF-CYCLE RECIRCULATION PUMP TRIP SYSTEM RESPONSE TIME as shown in Table 3.3.4.2-3.

APPLICABILITY: OPERATIONAL CONDITION 1, when THERMAL POWER is greater than or equal to 30% of RATED THERMAL POWER.

ACTION:

- a. With an end-of-cycle recirculation pump trip system instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.4.2-2, declare the channel inoperable until the channel is restored to OPERABLE status with the channel setpoint adjusted consistent with the Trip Setpoint value.
- b. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels per Trip System requirement for one or both trip systems, place the inoperable channel(s) in the tripped condition within one hour.
- c. With the number of OPERABLE channels two or more less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system and:
 1. If the inoperable channels consist of one turbine control valve channel and one turbine stop valve channel, place both inoperable channels in the tripped condition within one hour.
 2. If the inoperable channels include two turbine control valve channels or two turbine stop valve channels, declare the trip system inoperable.
- d. With one trip system inoperable, restore the inoperable trip system to OPERABLE status within 72 hours or take the ACTION required by Specification 3.2.3.
- e. With both trip systems inoperable, restore at least one trip system to OPERABLE status within one hour or take the ACTION required by Specification 3.2.3.

INSTRUMENTATION

SURVEILLANCE REQUIREMENTS

4.3.4.2.1 Each end-of-cycle recirculation pump trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.4.2.1-1.

4.3.4.2.2. LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

4.3.4.2.3 The END-OF-CYCLE RECIRCULATION PUMP TRIP SYSTEM RESPONSE TIME of each trip function shown in Table 3.3.4.2-3 shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least the logic of one type of channel input, turbine control valve fast closure or turbine stop valve closure, such that both types of channel inputs are tested at least once per 36 months.

4.3.4.2.4 The time interval necessary for breaker arc suppression from energization of the recirculation pump circuit breaker trip coil shall be measured at least once per 60 months.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 1 TO FACILITY OPERATING LICENSE NO. NPF-57

PUBLIC SERVICE ELECTRIC & GAS COMPANY

ATLANTIC CITY ELECTRIC COMPANY

HOPE CREEK GENERATING STATION

DOCKET NO. 50-354

1.0 INTRODUCTION

In a letter dated December 5, 1986, Public Service Electric and Gas Company (PSE&G) requested changes to the Technical Specifications for Hope Creek Generating Station. The changes would modify Specifications 3.2.3 "Minimum Critical Power Ratio" and 3.3.4.2 "End-of-Cycle Recirculation Pump Trip (EOC-RPT) System Instrumentation." The Technical Specifications currently require that reactor power be reduced to less than 30 percent if the EOC-RPT system is inoperable. The changes proposed by the licensee would: (1) add an additional operating limit MCPR curve to Specification 3.2.3 for full power operation with the EOC-RPT inoperable; and (2) modify the action statement in Specification 3.3.4.2 to clarify the conditions when the additional curve is applicable. In a letter dated December 8, 1986, the licensee upgraded this to an emergency Technical Specification change, explaining that during the Generator Load Rejection (GLR) test conducted on December 6, 1986, a test to verify the coastdown characteristics of the recirculation pump was conducted. These characteristics need to be verified because they are input assumptions for licensing basis turbine trip and GLR transient analyses. Upon analyzing test data, the licensee determined that the pump coastdown characteristics were slightly less conservative than the analysis assumptions. As a consequence, the licensee considered these alternatives: (1) reanalyze the affected transients using the coastdown characteristics actually measured in the test, and adjust the existing MCPR limits accordingly; or (2) conservatively assume no credit for the EOC-RPT function, although the coastdown characteristics are in fact only slightly degraded. The licensee chose the second option. Additional information was submitted by the licensee in a second letter dated December 8, 1986.

2.0 EVALUATION

The effect of the EOC-RPT is a negative reactivity insertion via rapid void formation which results when the tripped recirculation pumps coast down. This negative reactivity tends to offset the positive reactivity resulting from void collapse during pressurization transients. The EOC-RPT function is particularly important at the end of cycle when reactivity characteristics are least favorable. The operability of the EOC-RPT has no significant impact for non-pressurization events and does not affect LOCA analyses.

The licensee indicated that the limiting pressurization transients (load rejection without bypass and feedwater controller failure) have been re-analyzed by General Electric Company assuming no credit for the EOC-RPT. The analyses were performed using the ODYN code which has been approved by the staff. The results show that the operating limit MCPR will vary from 1.20 to 1.28 depending upon measured scram times. We have compared these results with those of other operating BWRs and found them to be similar. The licensee has also indicated that the analysis performed is specific to Hope Creek, and the assumptions used are the same as those used in the previously approved Hope Creek FSAR Chapter 15 licensing analyses. This is acceptable to the staff. The staff has reviewed the Technical Specification changes proposed by the licensee and concludes that they are acceptable because: (1) they incorporate the results of plant specific transient analyses which have been performed using an approved model; and (2) the proposed changes are consistent with modifications to technical specifications which have been previously approved by the staff.

3.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards considerations if operation of the facility in accordance with the amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

The action proposed by the licensee does not involve a significant increase in the probability or consequences of an accident previously evaluated. The licensee has reevaluated the limiting over-pressurization transients in the Hope Creek Final Safety Analysis Report (FSAR) Chapter 15 for their impact on the Operating Limit MCPR. These analyses indicated that for ODYN option A, the Operating Limit MCPR should be increased to account for the EOC-RPT being inoperable. For ODYN Option B, the analysis indicated that the limiting over-pressurization transients were bounded by non-over pressurization transients. The increase in the Operating Limit MCPR (OLMCPR) assures that for all analyzed transients, the Safety Limit MCPR will not be violated. The licensee has evaluated the FSAR Chapter 15 over-pressurization analyses assuming an inoperable EOC-RPT, and concludes that for all cases, the increased OLMCPR assures that the Safety Limit MCPR is not violated. The probability and consequences of an accident previously evaluated remain unchanged due to the bounding of all previously analyzed transients by the new analysis.

The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated. FSAR Chapter 15

contains transient analyses for various design - basis transients. Of particular importance to the proposed Technical Specification change are those transients resulting in over-pressurization of the reactor, all of which assume an operable EOC-RPT. In its amendment application, the licensee has verified that when the analyses are performed assuming an inoperable End-of-Cycle Recirculation Pump Trip (EOC-RPT), the analyses bound the analyses contained in the FSAR. With the increased OLMCPR requested by the licensee, no transients, with or without EOC-RPT, will violate the Safety Limit MCPR. The new OLMCPR is being inserted into the Technical Specifications to assure no new accidents are possible.

The proposed change does not involve a significant reduction in the margin of safety. The analysis provided by the licensee recalculates the change in critical power ratios resulting from the two limiting overpressurization transients for Hope Creek. The calculated critical power ratio changes, along with the MCPR analysis contained in the Final Safety Analysis Report, result in an OLMCPR for the EOC-RPT operable and inoperable conditions. The margin of safety is unchanged because the benefit removed by the inoperability of the EOC-RPT is replaced by an equivalent increase in OLMCPR. Operation within these limits will assure that the margin of safety for the first cycle Safety Limit MCPR is maintained.

4.0 FINDINGS OF AN EMERGENCY WARRANTING AN AMENDMENT WITHOUT NOTICE

On December 7, 1986, during evaluation of recirculation pump trip data obtained from the full power Generator Load Rejection Test conducted on December 6, 1986, the licensee discovered that the pump flow coastdown did not satisfy a Level 1 test criterion. While the results of the recirculation pump test were only marginally above the acceptance criterion for successful coastdown flow and the affected transient analyses are only limiting at the End-of-Cycle, the absence of a docketed analysis which bounds the actual measured coastdown flow during a design basis transient places the plant in an unanalyzed condition. This situation was not anticipated by the licensee. The licensee states that, to avoid an unnecessary delay in plant startup and an unnecessary delay in the conclusion of the power ascension test program, immediate approval of the amendment request is required.

Without the requested Technical Specification change, the facility can operate at power levels up to 30 percent (see Technical Specification 3.3.2.3). However, operation above this power level would be prohibited. In effect, the Facility would be administratively derated to 30 percent power until such time that the proposed Technical Specification could be noticed under the 30 day notification procedure. Therefore, the staff concludes that failure to act promptly would result in a derating; and a valid emergency exists.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, policy, and procedures, the state of New Jersey, Department of Environmental Protection, Bureau of Nuclear Engineering, was consulted prior to issuing this amendment; and the state of New Jersey had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation and use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The staff has determined that this amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The staff has also determined that this amendment involves no significant hazards consideration. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

7.0 CONCLUSION

The staff has concluded, based on the considerations discussed above that: (1) the amendment does not (a) significantly increase the probability or consequences of an accident previously evaluated, (b) create the possibility of a new or different kind of accident from any previously evaluated or (c) significantly reduce a safety margin and, therefore, the amendment does not involve a significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendment will not be inimical to the common defense and the security or to the health and safety of the public.

Principal Contributors: D. Wagner, Project Manager, PD-3 DPL
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Dated: January 5, 1987

AMENDMENT NO. 1 TO FACILITY OPERATING LICENSE NO. NPF-57
HOPE CREEK GENERATING STATION

DISTRIBUTION:

Docket No. 50-354

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