UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 89 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

By letter dated March 31, 1994, and supplemented by letters dated August 29, and October 16, 1995, the Public Service Electric & Gas Company (the licensee) submitted a request for changes to the Hope Creek Generating Station (HCGS), Technical Specifications (TSs). The proposed change to Technical Specification (TS) 3.5.1, "ECCS - Operating," and associated Bases, would establish a new allowed out-of-service time. Action c.2 for TS 3.5.1 allows any one Low Pressure Coolant Injection subsystem, or one Core Spray subsystem, to be inoperable in addition to an inoperable High Pressure Coolant Injection system, for 72 hours. The supplemental letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

The HCGS has an Emergency Core Cooling System (ECCS) consisting of (1) one 100% capacity High Pressure Coolant Injection (HPCI) system, (2) four 100% capacity Low Pressure Coolant Injection (LPCI) subsystems, (3) two 100% capacity Core Spray (CS) subsystems, and (4) an Automatic Depressurization System. At the present time, TS 3.5.1 does not address allowable out-of-service (AOT) times for combinations of LPCI and CS subsystems and the HPCI. The licensee has proposed using the guidance of TS 3.5.1 of the NRC Staff's BWR4 Standard Technical Specifications as presented in NUREG-1433, "General Electric Company (GE) Standard Technical Specifications (STS) for Boiling Reactor 4 (BWR4 STS) Revision 0," September 28, 1992, to address AOTs for the HPCI and LPCI/CS subsystems. The licensee has proposed the following:

> "With the HPCI System inoperable and either one LPCI subsystem or one CSS subsystem inoperable, restore the HPCI System to operable status within 72 hours or restore the LPCI Subsystem/CSS Subsystem to operable status within 72 hours. Otherwise, be in HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to $\leq$ 200 psig in the next 24 hours."

The purpose of HPCI, LPCI and CS is to provide reactor core cooling to cope with a range of pipe breaks that result in a loss-of-coolant accident (LOCA). These components, together with the ADS, make up the Emergency Core Cooling System (ECCS). The ECCS is designed to provide adequate core cooling even in

the event that some of the ECCS components are inoperable. The TS recognizes that some ECCS components may become inoperable and that reactor operation may continue for a specified period of time (the AOT). These AOTs are determined by the relative importance to safety of the various ECCS components (the more important to safety, the shorter the AOT). The AOT presented in TS 3.5.1 of the NRC's STS represents an acceptable AOT considering the relative importance of HPCI, LPCI and CS components and the number of such components in the model reflected in the STS Bases.

The NRC Staff reviewed the design of the HCGS ECCS system in order to determine if it is comparable to the ECCS design which forms the Bases for the BWR4 STS. Based upon our review we found that the BWR4 and HCGS CS systems are comparable in that each contains two 100%-capacity subsystems with one pump per subsystem. The HCGS LPCI, however, contains greater redundancy in that there are four 100%-capacity subsystems (each with one pump) compared to the BWR4 LPCI which has two 100%-capacity subsystems (each with two pumps). Accordingly, the HCGS LPCI has greater remaining capacity, when compared to the BWR4, for inoperability of a LPCI subsystem.

By letter dated August 29, 1995, the licensee provided the following information with regard to Core Damage Frequency (CDF):

- The baseline average CDF at the HCGS is 1.28×10^{-5}/year. If the HPCI system is inoperable for 72 hours, the conditional core damage probability (CCDP) incurred is 8.1×10^{-7}.

- If the HPCI system and the A or B Low Pressure Coolant Injection (LPCI) subsystem are simultaneously inoperable, the CCDP incurred is 9.0×10^{-7}. If the HPCI system is inoperable coincident with an inoperable C or D LPCI subsystem, the CCDP incurred is 8.2×10^{-7}. If the HPCI system is inoperable coincident with any inoperable Core Spray subsystem, the CCDP incurred is 8.1×10^{-7}. Therefore, the worst case is a coincidental outage of the HPCI system and the A or B LPCI subsystem.

- For the worst case, if the proposed Technical Specification configuration were entered, the increase in CCDP would be 9×10^{-8} ($9.0 \times 10^{-7} - 8.1 \times 10^{-7} = 9 \times 10^{-8}$)

Thus, the increase in risk is negligible.

In conclusion, the NRC Staff finds that HCGS and the BWR4 have comparable ECCS redundancy with HCGS having an advantage with regard to LPCI redundancy. In addition, the proposed HPCI and LPCI/CS AOT results in an acceptably low contribution to CDF. Accordingly, the proposed change to HCGS TS 3.5.1 is acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Jersey State Official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the 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 Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (59 FR 29631). Accordingly, the 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 the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: November 30, 1995