

January 27, 1994

Docket No. 50-354

Mr. Steven E. Miltenberger
Vice President and Chief Nuclear
Officer
Public Service Electric & Gas
Company
Post Office Box 236
Hancocks Bridge, New Jersey 08038

Dear Mr. Miltenberger:

SUBJECT: SAFETY RELIEF VALVE TESTING REQUIREMENTS, HOPE CREEK GENERATING
STATION (TAC NO. M86525)

The Commission has issued the enclosed Amendment No. 64 to Facility Operating
License No. NPF-57 for the Hope Creek Generating Station. This amendment
consists of changes to the Technical Specifications (TSs) in response to your
application dated May 21, 1993, and supplemented on October 29, 1993, and
November 16, 1993.

This amendment revises Technical Specifications surveillance requirement
4.4.2.2 to apply only to the pilot stage assembly of the safety relief valves
(SRVs) and adds a new surveillance requirement which will require the main
portion of the SRVs to be set pressure tested at least once every five years.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be
included in the Commission's biweekly Federal Register notice.

You are requested to inform the NRC, in writing, when this amendment has been
implemented.

Sincerely,
/s/

James C. Stone, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 64 to License No. NPF-57
2. Safety Evaluation

cc w/enclosures:
See next page

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

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You are requested to inform the NRC, in writing, when this amendment has been implemented.

Sincerely,

A handwritten signature in cursive script that reads "James C. Stone".

James C. Stone, Senior Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

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2. Safety Evaluation

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See next page

Mr. Steven E. Miltenberger
Public Service Electric & Gas
Company

Hope Creek Generating Station

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

PUBLIC SERVICE ELECTRIC & GAS COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-354

HOPE CREEK GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 64
License No. NPF-57

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The application for amendment filed by the Public Service Electric & Gas Company (PSE&G) dated May 21, 1993, and supplemented on October 29, 1993, and November 16, 1993, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 rules and 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 attachment to this license amendment, and paragraph 2.C.(2) of 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. 64, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into the license. PSE&G shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Charles L. Miller

Charles L. Miller, Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 27, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 64

FACILITY OPERATING LICENSE NO. NPF-57

DOCKET NO. 50-354

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Remove

3/4 4-7

3/4 4-8

B 3/4 4-2a

-

Insert

3/4 4-7

3/4 4-8

B 3/4 4-2a

-

REACTOR COOLANT SYSTEM

3/4.4.2 SAFETY/RELIEF VALVES

SAFETY/RELIEF VALVES

LIMITING CONDITION FOR OPERATION

3.4.2.1 The safety valve function of at least 13 of the following reactor coolant system safety/relief valves shall be OPERABLE** with the specified code safety valve function lift settings:**

- 4 safety-relief valves @ 1108 psig $\pm 1\%$
- 5 safety-relief valves @ 1120 psig $\pm 1\%$
- 5 safety-relief valves @ 1130 psig $\pm 1\%$

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

- a. With the safety valve function of two or more of the above listed fourteen safety/relief valves inoperable, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.
- b. With one or more safety/relief valves stuck open, provided that suppression pool average water temperature is less than 110°F, close the stuck open safety relief valve(s); if unable to close the stuck open valve(s) within 2 minutes or if suppression pool average water temperature is 110°F or greater, place the reactor mode switch in the Shutdown position.
- c. With one or more of the above required safety/relief valve acoustic monitors inoperable, restore the inoperable monitors to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

*SRVs which perform as ADS function must also satisfy the OPERABILITY requirements of Specification 3.5.1, ECCS-Operating.

**The lift setting pressure shall correspond to ambient conditions of the valves at nominal operating temperatures and pressures.

#SRVs which perform a low-low set function must also satisfy the OPERABILITY requirements of Specification 3.4.2.2, Safety/Relief Valves Low-Low Set Function.

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

4.4.2.1 The acoustic monitor for each safety/relief valve shall be demonstrated OPERABLE with the setpoint verified to be $\leq 30\%$ of full open noise level** by performance of a:

- a. CHANNEL FUNCTIONAL TEST at least once per 31 days, and a
- b. CHANNEL CALIBRATION at least once per 18 months*.

4.4.2.2 At least 1/2 of the safety relief valve pilot stage assemblies shall be removed, set pressure tested and reinstalled or replaced with spares that have been previously set pressure tested and stored in accordance with manufacturer's recommendations at least once per 18 months, and they shall be rotated such that all 14 safety relief valve pilot stage assemblies are removed, set pressure tested and reinstalled or replaced with spares that have been previously set pressure tested and stored in accordance with manufacturer's recommendations at least once per 40 months.

4.4.2.3 The safety relief valve main (mechanical) stage assemblies shall be set pressure tested, reinstalled or replaced with spares that have been previously set pressure tested and stored in accordance with manufacturer's recommendations at least once every 5 years.

*The provisions of Specification 4.0.4 are not applicable provided the Surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the test.

**Initial setting shall be in accordance with the manufacturer's recommendations. Adjustment to the valve full open noise level shall be accomplished after the initial noise traces have been analyzed.

REACTOR COOLANT SYSTEM

BASES

valves is required to limit reactor pressure to within ASME III allowable values for the worst case transient.

Demonstration of the safety relief valve lift settings occurs only during shutdown. The safety relief valve pilot stage assemblies are set pressure tested in accordance with the recommendations of General Electric SIL No. 196, Supplement 14 (April 23, 1984), "Target Rock 2-Stage SRV Set-Point Drift." Set pressure tests of the safety relief valve main (mechanical) stage are conducted at least once every 5 years.

The low-low set system ensures that safety/relief valve discharges are minimized for a second opening of these valves, following any overpressure transient. This is achieved by automatically lowering the closing setpoint of two valves and lowering the opening setpoint of two valves following the initial opening. In this way, the frequency and magnitude of the containment blowdown duty cycle is substantially reduced. Sufficient redundancy is provided for the low-low set system such that failure of any one valve to open or close at its reduced setpoint does not violate the design basis.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 64 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

Public Service Electric and Gas (PSE&G) proposed changes to their Technical Specifications (TS) in a letter dated May 21, 1993, which included the following: 1) revising Technical Specification (TS) Section 4.4.2.2, Reactor Coolant System Surveillance Requirements, to apply only to the pilot stage assembly of the safety relief valves (SRVs); 2) adding a new TS, Section 4.4.2.3, which will require the main (mechanical) portion of the SRVs to be set pressure tested at least once every 5 years, and 3) making an editorial change to TS Section 3.4.2.1 in order to include the correct reference to TS Section 3.4.2.2. Additional information was provided by the licensee in a phone call with the NRC and the New Jersey Department of Environmental Protection on October 15, 1993, and a subsequent letter, dated October 29, 1993, to address questions from the phone call. The licensee's October 29, 1993, letter did not include an oath or affirmation. In a November 16, 1993 letter, the licensee retransmitted the information with an attached affidavit. The additional information did not change the initial no significant hazards consideration determination and was not outside the scope of the original Federal Register notice.

2.0 BACKGROUND

The 14 main steam SRVs at Hope Creek are Target Rock 2-stage valves. A list of the valves is provided below.

IABPSV-F013A	IABPSV-F013E	IABPSV-F013J	IABPSV-F013M
IABPSV-F013B	IABPSV-F013F	IABPSV-F013K	IABPSV-F013P
IABPSV-F013C	IABPSV-F013G	IABPSV-F013L	IABPSV-F013R
IABPSV-F013D	IABPSV-F013H		

Each SRV consists of a main stage and a pilot stage. The body of the main stage contains the main steam inlet and discharge ports. The main disc is seated in the discharge port and is attached to the main piston. The pilot stage or "topworks" is a separate component. The bonnet of the pilot stage is flanged to the main stage body over the main piston. The pilot stage functions to vent the area over the main piston when the inlet pressure reaches the setpoint pressure. Venting this volume actuates the piston and unseats the disc, thereby allowing steam to flow through the main stage discharge port.

Due to the high incidence of SRV setpoint testing failures at Hope Creek (as listed in their November 16, 1993, letter), the licensee currently replaces all SRVs with refurbished valves each refueling outage. Upward setpoint drift of Target Rock 2-stage SRVs has been a concern of all licensees who utilize this type valve. NRC Information Notice 83-82, "Failure of Safety/Relief Valves to Open at BWR - Final Report," states that an owners' group comprised of a number of utilities who use the Target Rock 2-stage valve, General Electric, and the Target Rock Company, was formed after an upward setpoint drift event at Georgia Power Company's Plant Hatch on July 3, 1982. General Electric (GE) issued Service Information Letter (SIL) 196, Supplement 14, "Target Rock 2- Stage SRV Setpoint Drift," on April 23, 1984, to address upward setpoint drift of the Target Rock 2-stage SRV. The SIL recommends that refurbishment of the pilot disc and seat be performed at least once every other refueling outage or every 3 years, whichever comes first.

3.0 EVALUATION

3.1 Revision of TS Section 4.4.2.2

Currently, TS Section 4.4.2.2 requires the licensee to remove at least one half of the main steam SRVs every 18 months. The SRVs are required to be set pressure tested and reinstalled or replaced with spares that have been set pressure tested and stored in accordance with the manufacturer's recommendations. In addition, Section 4.4.2.2 requires all SRVs to be tested every 40 months. The TS require more valves to be tested each refueling outage than the inservice testing requirements of ASME Section XI. However, the TS do not specify any sample expansion in the event of non-conformance, such as a failure of the setpoint test, as does the Code.

The licensee has proposed to modify TS Section 4.4.2.2 to state that the pilot stage, instead of the entire SRV assembly, will be tested at the frequencies specified in the TS. Testing of the main (mechanical) stage of the SRVs would be conducted in accordance with the new TS Section 4.4.2.3 proposed by the licensee (see Section 3.2 of this SE). GE SIL 196, Supplement 14, attributes upward setpoint drift, which results in the valve lifting at a pressure exceeding the setpoint lift requirements of TS Section 3.4.2.1, to the SRV pilot stage. The proposed testing frequency for the SRV pilot valves is the same as recommended in the SIL. The licensee stated in the phone call that they are performing maintenance to the SRV pilot valves recommended in the SIL.

The licensee also stated in the November 16, 1993, letter, that the pilot stage valves would be subject to the sample expansion requirements of the 1983 Edition of ASME Section XI, Paragraph IWV-3513. Adherence to this commitment may require that all pilot valves be tested during a particular refueling outage depending on the number of pilot valve setpoint failures experienced during testing.

The addition of the requirement to test the pilot stage of each SRV, in addition to the main (mechanical) stage testing, will ensure that the recommendations in the GE SIL 196, Supplement 14, will be followed in an effort to minimize upward setpoint drift. Therefore, the licensee's proposed TS change is acceptable.

3.2 Addition of TS Section 4.4.2.3

The licensee has proposed to add a new TS section which would require the SRV main (mechanical) stage to be removed, set pressure tested, and reinstalled or replaced with spares that have been previously set pressure tested and stored in accordance with the manufacturer's recommendations at least once every 5 years. Previously, the licensee was required by TS Section 4.4.2.2 to test seven of the 14 SRVs every refueling outage (see Section 3.1 of this SE). In the October 15, 1993, phone conversation, the licensee stated that the 14 main stage SRVs will be tested during one refueling outage every 5 years and spaced approximately 5 years apart.

The licensee's proposal to test the main stage of all the SRVs at least once every 5 years is similar to the ASME Code test frequency requirements. Currently, the licensee is replacing all the SRVs every refueling outage due to a high incidence of *as-found* SRV setpoints exceeding the $\pm 1\%$ setpoint lift tolerance specified in TS Section 3.4.2.1. In the November 16, 1993, letter submitted by the licensee, data from the last three refueling outages indicated that over 70% of the SRVs exceeded the $\pm 1\%$ TS limit. The licensee stated in the October 15, 1993, phone call that these failures were attributed to upward setpoint drift, which occurs in the pilot stage, and were not related to any portion of the main stage. The licensee concluded that to ensure proper set pressure, it is not necessary to test the entire SRV because the setpoint adjustment is made in the pilot stage valve without affecting the performance of the main stage of the SRV. The staff has evaluated the information submitted by the licensee and concurs with the licensee's assessment that the main stage does not contribute to the upward drift of the pilot stage setpoint.

As stated in Section 3.1 of this SE, the GE SIL states that the problem of setpoint drift is limited to the pilot valve and recommends that the licensee test and refurbish the pilot valves at least once every other refueling outage. The licensee has incorporated this testing into their TS and in the November 16, 1993, letter, committed to perform sample expansion of the pilot valves in accordance with the ASME Code if there is incidence of the pilot valve setpoint exceeding the TS tolerance. In addition, the licensee will continue to test the main stage valves every 5 years. Therefore, the licensee's proposed TS change is acceptable.

3.3 Revision of TS Section 3.4.2.1

TS Section 3.4.2.1 contains a reference to TS Section 3.2.2 which the licensee states is incorrect. The licensee has proposed to change this to correctly reference TS Section 3.4.2.2. This is an editorial change which corrects an error in the TS and is therefore acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Jersey State Official was notified of the proposed issuance of the amendment. The New Jersey Department of Environmental Protection submitted two questions to the NRC related to the license amendment application in a letter dated September 20, 1993. The two questions are stated and addressed below.

- 1: Justification is needed for the selection of the 5-year (60-month) overall testing interval for the "mechanical" portion of the valve, as compared to the current 40-month interval for the entire valve. There are no conclusions stemming from the [Boiling Water Reactor Owners Group] or the GE study excerpts quoted, suggesting that the integrity of the "mechanical" portion of the valve, or its reliable operation, can be ascertained without inspection and setpoint pressure testing for a period beyond 40 months. The statement on Page 4, Attachment 1, of the May 21, 1993, submittal that "...PSE&G believes that the mechanical stage of the SRVs has proven to be highly reliable and need not be subject to the requirements..." provides the rationale for PSE&G's LCR [license change request], but no data was provided to substantiate the above statement. The licensee will need to provide site-specific or other pertinent actual data in support of the "at least once per 5 years" selection.

During the October 15, 1993, phone call, the licensee indicated that the extension of the test interval (40 months to 60 months) of the entire valve assembly, with the pilot assembly group tests during each refueling outage, was discussed with the valve manufacturer. The assessment of the manufacturer was that the combination of the testing at the specified intervals should assure the set pressure is maintained adequately. Representatives of the New Jersey Department of Environmental Protection who participated in this phone call were satisfied with the licensee's response. In addition to the manufacturer's assessment, the ASME Code requires testing of all the SRVs at least once every 5 years (with the pilot and main assembly as a unit).

- 2: Referring to PSE&G analysis of "significant hazards consideration evaluation," on page 4, Attachment 1, of the May 21, 1993, submittal, the licensee concludes that the proposed changes will not impact safety considerations. The licensee did not address or describe the assumptions and methodology used in their analysis leading to the above conclusions.

The October 15, 1993, phone call and the licensee's November 16, 1993, letter provided additional information that addressed the state official's concerns. In a December 8, 1993 phone call, the staff contacted the state official to verify that the additional information provided by the licensee satisfied the state official's concerns. The official stated that his concerns were satisfied and he had no further questions.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. 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 (58 FR 43931). 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.

6.0 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.

Principal Contributor: J. Colaccino

Date: January 27, 1994