PSE&G

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038-0236

Nuclear Business Unit

AUG 05 1996

LR-N96230

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

Gentlemen:

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
GENERIC LETTER 95-07 - "PRESSURE LOCKING AND THERMAL BINDING OF SAFETY RELATED POWER OPERATED GATE VALVES"
SALEM GENERATING STATION UNITS 1 AND 2
FACILITY OPERATING LICENSES DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311

This letter provides the response of Public Service Electric and Gas Company (PSE&G) to the request from the NRC for additional information concerning PSE&G's response to Generic Letter 95-07.

Should you have any questions or comments on this transmittal, please contact us.

Sincerely,

for/DRP

D. R. Powell
Manager -
Licensing and Regulation

Attachment

A056 1/1

C Mr. Hubert J. Miller, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. L. Olshan, Licensing Project Manager - Salem
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mail Stop 14E21
Rockville, MD 20852

Mr. C. Marschall (X24)
USNRC Senior Resident Inspector

Mr. K. Tosch, Manager IV
Bureau of Nuclear Engineering
33 Arctic Parkway
CN 415
Trenton, NJ 08625

LR-N96230

ATTACHMENT
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
GENERIC LETTER 95-07
SALEM GENERATING STATION
UNITS 1 AND 2
DOCKET NOS. 50-272 AND 50-311
FACILITY OPERATING LICENSES DPR-70 AND DPR-75

I. INTRODUCTION

On February 13, 1996, Public Service Electric and Gas Company (PSE&G) submitted its response to Generic Letter (GL) 95-07 in letter LR-96035. The NRC subsequently requested additional information regarding PSE&G's response in a letter dated July 1, 1996. This attachment provides PSE&G's response to the NRC's request for additional information.

II. RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

The following provides a verbatim quotation of each NRC question along with the associated PSE&G response.

QUESTION 1

> Regarding valve RH-26, Residual Heat Removal (RHR) to reactor coolant system (RCS) hot legs, the licensee's submittal does not identify these valves as potentially susceptible to pressure locking. However, these valves may be pressurized from the RCS and appear to be susceptible to pressure locking during design basis depressurization. Please address this potential susceptibility to pressure locking.

RESPONSE 1

> The RH-26 valves, RHR to RCS hot legs are not currently within the population of valves considered to have a safety-related or important to safety function to open. These valves are de-energized in the closed position, with the power locked out for all operating and emergency modes. Revision 10 to Salem's Emergency Operating Procedure, LOCA 4, has recently been revised to reflect this configuration. Therefore, these valves were screened out of consideration for the subject concerns.

QUESTION 2

Regarding valve PR-6, -7, Power Operated Relief Valve Block Valves, Attachment 2, of the licensee's submittal states that these valves are not susceptible to pressure locking due to a screening which identified no heatup or pressure-trapping scenarios. However, the NRC staff believes that these valves may be potentially susceptible to pressure locking during certain design basis depressurization scenarios, such as a steam generator tube rupture. Please address the potential susceptibility of these valves to depressurization induced pressure locking.

RESPONSE 2

With regard to PR6 and PR7, Power Operated Relief Valves (PORV) Block Valves, our screening criteria did not include these valves for further analysis for potential susceptibility to pressure locking. These valves do not pass through the General Conditions Screens since they are not exposed to heatup or pressure-trapping scenarios. These valves are normally steam filled and remain in an open position. If closed after exposure to normal operating conditions, 2235 psig steam at 625°F, due to PORV leakage and followed by a depressurization of the upstream piping, the volume of steam trapped within the bonnet cavity will be subject to depressurization due to thermodynamic cooling. This cavity pressure will reach equilibrium with the existing upstream pressure. Therefore, it is not believed that a pressure trapping scenario has an adverse effect on the PORV Block Valve to operate when required.

QUESTION 3

In Attachment 1 to GL 95-07, the NRC staff requested that licensees include consideration of the potential for gate valves to undergo pressure locking or thermal binding during surveillance testing. During workshops on GL 95-07 in each Region, the NRC staff stated that, if closing a safety-related power-operated gate valve for test or surveillance defeats the capability of the safety system or train, the licensee should perform one of the following within the scope of GL 95-07:

1. Verify that the valve is not susceptible to pressure locking or thermal binding while closed,
2. Follow plant technical specifications for the train/ system while the valve is closed,
3. Demonstrate that the actuator has sufficient capability to overcome these phenomena, or
4. Make appropriate hardware and/or procedural modifications to prevent pressure locking and thermal binding.

The staff stated that normally open, safety-related power-operated gate valves which are closed for test or surveillance but must return to the open position should be evaluated within the scope of GL 95-07. Please discuss if valves which meet this criterion were included in your review, and how potential pressure locking or thermal binding concerns were addressed.

RESPONSE 3

The valves which meet the criterion in Question 3 were not included in PSE&G's review. Currently, both Salem Units are in an extended outage. Prior to Salem Unit 2 reaching Mode 4, the recommendation from the GL 95-07 workshops will be implemented.

QUESTION 4

Through review of operational experience feedback, the staff is aware of instances where licensees have completed design or procedural modifications to preclude pressure locking or thermal binding which may have an adverse impact on plant safety due to incomplete or incorrect evaluation of the potential effects on these modifications. Please describe evaluation and training for plant personnel that have been conducted for each design or procedural modification completed to address potential pressure locking or thermal binding concerns.

RESPONSE 4

All design modifications performed to preclude pressure locking entailed the installation of a 1/8" diameter weep-hole on the high pressure side of the gate valve flex-wedge. This method for providing a pressure release path was selected based on industry experience, its technical merits and its simplicity. For all cases, the hole was placed in the normally higher pressure side of the valve disc in accordance with a design provided by the valve manufacturer. The valve manufacturer's design reports were reconciled in consideration of the design changes.

Valve specific evaluations were performed with respect to valve and system function and impact of potential for in-leakage to the reactor or the related system from the isolated system and the ability of make-up systems to bound this loss during normal plant operation and system surveillance testing as applicable. In-leakage volumes were conservatively determined based on the weep-hole being the limiting flow orifice with no pressure drop across the upstream seating surfaces. No adverse impacts on plant safety were identified for any of the plant operating conditions or with regard to other programs such as 10CFR50 Appendix J or Appendix R, Station Blackout, Equipment Qualification, Seismic Qualification, or Inservice Testing. These reviews had been documented in the design analysis section and in the 10CFR50.59 Safety Evaluation developed for each valve design change. No unreviewed safety question was identified and no change to the Updated Final Safety Analysis Report (UFSAR) or Technical Specifications were determined to be required.

Certain surveillance procedure changes were implemented to resolve potential pressure locking concerns for four Salem valves (11, 12, 21, & 22CS2). No procedure changes were

implemented for thermal binding concerns. Reference design documents and appropriate procedures have been revised to reflect the design changes for configuration control and valve maintenance purposes.

At the time the valve disc weep-holes were installed, the valve internals were evaluated for maintenance and required maintenance performed. This was limited to the dressing of relative sliding surfaces and corners of the disc, disc guides and seats to effect performance improvements consistent with recommendations from the EPRI Motor Operated Valve Performance Prediction Program.

No specific training has been conducted for licensed operators regarding the nature of the modifications installed, which valves were affected, and the potential leakage effects due to the modifications to address potential pressure locking concerns. Operations Department personnel were involved with evaluations of the modifications at the time of their development.