

Public Service
Electric and Gas
Company

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Vice President - Nuclear Operations

FEB 05 1993

NLR-N93001
LCR 92-14

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

Gentlemen:

REQUEST FOR AMENDMENT
REACTOR TRIP SYSTEM INSTRUMENTATION
SALEM GENERATING STATION
UNIT NOS. 1 AND 2
FACILITY OPERATING LICENSE NOS. DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311

In accordance with the requirements of 10CFR50.90, Public Service Electric and Gas Company (PSE&G) hereby transmits a request for amendment of Facility Operating Licenses DPR-70 and DPR-75 for Salem Generating Station, Unit Nos. 1 and 2, respectively. In accordance with 10CFR50.91 (b) (1) requirements, a copy of this request has been sent to the State of New Jersey.

The proposed amendment modifies Technical Specifications 2.2 Limiting Safety System Settings and 3/4.1.1 Reactor Trip System Instrumentation. The proposed change deletes the Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level Reactor Trip. The proposed changes would be incorporated after installation of the digital feedwater control system including the median signal selector.

Westinghouse WCAP-13502, Advanced Digital Feedwater Control System for Public Service Electric & Gas Co. Salem Units 1 and 2, Enclosure 1 to this submittal, contains information proprietary to Westinghouse Electric Corporation. The WCAP is supported by an affidavit (Enclosure 3) signed by Westinghouse. The affidavit sets forth the basis on which the information may be withheld from public disclosure. Westinghouse WCAP-13503, Advanced Digital Feedwater Control System for Public Service Electric & Gas Co. Salem Units 1 and 2, Non-Proprietary, is included as Enclosure 2.

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Change: NCC PDR 1 Ltr. Encl. INP

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This proposed change has previously been approved by the NRC for implementation at three other nuclear power generating stations, specifically, Rochester Gas & Electric Corporation's Ginna Nuclear Station, Northern States Power Company's Prairie Island Nuclear Station, and Pacific Gas & Electric Company's Diablo Canyon Nuclear Station.

Attachment 1 includes a description, justification, and significant hazards analysis for the proposed change. Attachment 2 contains the current Technical Specification pages revised with pen and ink changes.

PSE&G is requesting that implementation of this amendment be prior to entry into Mode 2 from the eleventh refueling outage for Salem Unit 1, currently scheduled for the Fall of 1993, and prior to entry into Mode 2 from the eighth refueling outage for Salem Unit 2, currently scheduled for the Spring of 1994.

Should there be any questions with regard to this submittal, please do not hesitate to contact us.

Sincerely,



Affidavit
Attachments (2)
Enclosures (3)

C Mr. J. C. Stone
Licensing Project Manager

Mr. T. Johnson
Senior Resident Inspector

Mr. T. Martin, Administrator
Region I

Mr. Kent Tosch, Chief
New Jersey Department of Environmental Protection
Division of Environmental Quality
Bureau of Nuclear Engineering
CN 415
Trenton, NJ 08625

Attachment 1

NLR-N93001

LCR-92-14

REACTOR TRIP SYSTEM INSTRUMENTATION

STEAM/FEEDWATER FLOW MISMATCH AND LOW STEAM GENERATOR WATER LEVEL

I. Description of Change

- a. Technical Specification Table 2.2-1, Reactor Trip System Instrumentation Setpoints

Delete Functional Unit 14 - Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level.

- b. Bases 2.2.1

Delete Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level.

- c. Table 3.3-1, Reactor Trip System Instrumentation
Table 3.3-2, Reactor Trip System Instrumentation Response Times
Table 4.3-1, Reactor Trip System Instrumentation Surveillance Requirements

Delete Functional Unit 15 - Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level.

II. Justification for Change

The Analog Steam Generator Feedwater Control System is being replaced with a Digital Feedwater Control System. The digital control system makes use of three steam generator narrow range level signals as opposed to the analog system which uses only one signal. The three narrow range steam generator level signals are processed by a computer and the computer selects the median signal value of the narrow range level signals. The median signal is then used as the input to the control algorithms of the digital control system. The software that does this processing is referred to as the "Median Signal Selector". The median signal selector is described in more detail in Enclosures 1 and 2 (WCAP-13502 and WCAP-13503).

The purpose of the low feedwater flow reactor trip (steam/feedwater flow mismatch and low steam generator water level) is to satisfy the control and protection interaction criteria of IEEE-279-1971, paragraph 4.7.3. The digital feedwater control system (via the Median Signal Selector software) processes and uses three narrow range level signals versus one narrow range level signal used in the analog control system. In the analog system where one level signal is used by the control system, it is possible that this signal could fail high causing the control system to close the feedwater control valve, thus requiring protection system actuation when the level reaches the low-low level setpoint. By using three narrow range steam generator level signals vs. one, there are no single random failures of the level signal which will cause a control system malfunction which would require protective action due to the control system malfunction. Therefore, the requirements of IEEE-279-1971 are satisfied without the steam/feedwater flow mismatch reactor trip.

IEEE Standard 379, Standard Application of the Single Failure Criterion to Nuclear Power Generating Station Class 1E Systems, requires the single failure analysis of Class 1E systems shall be preconditioned by the failures that the non-Class 1E systems may cause. The Median Signal Selector is specifically designed to prevent a failed instrument channel from causing a control system action which will initiate a plant transient that may require protective action. Due to the design, fault tolerance, configuration certification and periodic testing of the Median Signal Selector, a failed level sensor (high) coincident with a failure of the Median Signal Selector to select the proper channel is not considered to be a credible occurrence. Therefore, implementation of the Median Signal Selector meets the requirements of IEEE Standard 379.

Salem UFSAR Chapter 15 Safety Analysis uses low-low steam generator level as the reactor trip assumed for loss of heat sink events. No credit is taken in the Chapter 15 Safety Analysis for the steam/feedwater flow mismatch reactor trip.

No limiting conditions of operation are required if the computer performing the median signal selector algorithm should become inoperable, because failure of the computer would not preclude protective action on low-low steam generator level. The failure would be annunciated to the operator and feedwater control would be switched to the backup computer. Failure of the backup computer would be required before the system is transferred to manual.

Also, in the event that two or more channels of steam generator narrow range level have failed, the steam generator water level control of the associated steam generator would switch to manual control. This switch to manual control would also be annunciated to the operator.

Software of the median signal selector is verified prior to use and administrative procedures control any software modifications.

III. Significant Hazards Consideration

In accordance with 10CFR50.92, PSE&G has reviewed the proposed changes and concluded the proposed changes do not involve a significant hazards consideration because the changes would not:

1. Involve a significant increase in the probability or consequences of an accident previously analyzed.

The proposed change removes the steam/feedwater flow mismatch reactor trip. No credit is taken in the accident analysis for this reactor trip. Low-low steam generator is the reactor trip assumed in the accident analysis for loss of heat sink events. Installation of digital feedwater with a median signal selector ensures that there is no single failure that could cause an accident. Failure of the Median Signal Selector to select the proper channel coincident with failure of a level detector is not a credible occurrence. Therefore, this change would not increase the probability or consequences of a previously analyzed accident.

2. Create the possibility of a new or different kind of accident.

The proposed change removes the steam/feedwater flow mismatch reactor trip. Installation of digital feedwater with a median signal selector ensures that there is no single failure that could cause an accident. No credit is taken in the accident analysis for this reactor trip. Therefore, this change would not create the possibility of a new or different kind of accident.

3. Involve a significant reduction in a margin of safety.

The proposed change removes the steam/feedwater flow mismatch reactor trip. No credit is taken in the accident analysis for this reactor trip. Low-low steam generator level is the reactor trip assumed in the accident analysis. Therefore, this change would not involve a significant reduction in a margin of safety.

IV. Conclusions

Based on the information presented above, in WCAP-13502 and in WCAP-13503, PSE&G has concluded there is no significant hazards consideration.

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

S. LaBruna, being duly sworn according to law deposes and says:

I am 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 Salem Generating Station, Unit Nos. 1 and 2, are true to the best of my knowledge, information and belief.

S. LaBruna

Subscribed and Sworn to before me
this 5th day of February, 1993

Kimberly A. Hill

Notary Public of New Jersey

KIMBERLY A. HILL
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires March 9, 1997

My Commission expires on _____

