



**PSEG**

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

**Nuclear Business Unit**

**NOV 29 1996**

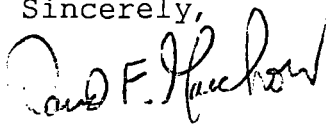
LR-N96389

U. S. Nuclear Regulatory Commission  
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Washington, DC 20555

Gentlemen:

**LER 272/96-028-00  
SALEM GENERATING STATION - UNIT 1  
FACILITY OPERATING LICENSE NO. DPR-70  
DOCKET NO. 50-272**

This Licensee Event Report entitled "Operation of the Salem Units In An Unanalyzed Condition Due To Low Component Cooling Flow" is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(i)(B).

Sincerely,  
  
David F. Garchow  
General Manager -  
Salem Operations

Attachment

SORC Mtg. 96-168

DVH

C Distribution  
LER File 3.7

9612060073 961126  
PDR ADOCK 05000272  
S PDR

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The power is in your hands.

**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) SALEM GENERATING STATION UNIT 1		DOCKET NUMBER (2) 05000272	PAGE (3) 1 OF 4
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TITLE (4)  
Operation of the Salem Units In An Unanalyzed Condition Due To Low Component Cooling Flow

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	01	96	96	- 028	- 00	11		96	Salem Unit 2	0500311
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)			
POWER LEVEL (10) 000	20.2203(a)(1)		20.2203(a)(3)(i)	X	50.73(a)(2)(ii)		50.73(a)(2)(x)			
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71			
	20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER			
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A			
	20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)					

LICENSEE CONTACT FOR THIS LER (12)

NAME Dennis V. Hassler, LER Coordinator	TELEPHONE NUMBER (Include Area Code) 609-339-1989
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 1, 1996 performance of the Component Cooling (CC) Flow Balance Procedure revealed a discrepancy for CC flow to the Residual Heat Removal Heat Exchangers (RHRHX) between temporarily installed Panametrics Ultrasonic Flow Meters (USFM) and the existing Control Room console indicators. The Control Room console indicators read about 1000 gpm higher than the USFM's for both RHRHX's. On November 8, 1996 the design of letdown temperature control valve CC71 was reported as having a non-safety related actuator along with a non-safety related control loop. The failure of this valve to close during a LOCA, in addition to a single failure that results in a limiting CC alignment during a Loss Of Coolant Accident, could result in less than required flows.

The cause for the discrepancy with the Console Indicators is improper or lack of calibration of the elbow meters during installation. The cause for the design discrepancy for valve CC71 is a lack of coordination between original system and valve design requirements and the establishment of the EOP alignments. Corrective actions include modifications to the CC71 actuator and recalibrating elbow meters. This event is reportable in accordance with 10 CFR 73(a)(2)(ii); any condition that resulted in the plant being in an unanalyzed condition.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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SALEM GENERATING STATION UNIT 1	05000272	96	028	00	2 OF 4

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor

Component Cooling Water System {CC/-}\*

\* Energy Industry Identification System (EIIS) codes and component function identifier codes appear as (SS/CCC)

CONDITIONS PRIOR TO OCCURRENCE

At the time of identification, Salem Units 1 and 2 were shutdown and defueled.

DESCRIPTION OF OCCURRENCE

On November 1, 1996 performance of the Component Cooling (CC) Flow Balance Procedure revealed a discrepancy for CC flow to the Residual Heat Removal Heat Exchangers (RHRHX's) {CC/HX} between temporarily installed Panametrics Ultrasonic Flow Meters (USFM) and the existing Control Room console indicators. The Control Room console indicators read about 1000 gpm higher than the USFM's for both RHRHX's. There is reasonable assurance that the USFM's represented the accurate CC flow.

The Control Room indicators are used to set CC flow to the RHRHX's during startup or during a CC pump surveillance test. This flow is based on the design flow for a Loss Of Coolant Accident (LOCA) of 4000 gpm. As such, if the Control Room indicators are reading about 1000 gpm high, the flow will actually be set about 1000 gpm less than the LOCA design value. In addition, the CC pump flow recorded during a pump surveillance test will be about 1000 gpm greater than actual.

Additionally, on November 8, 1996 an issue involving the design of valve CC71 {CC/TCV} was reported. Valve CC71 is the letdown temperature control valve on the outlet of the Letdown Heat Exchanger {CC/HX}, and is a branch off the CC auxiliary header. It has a non-safety related actuator along with a non-safety related control loop, since the normal letdown cooling function is a non-safety related function. The failure of this valve to close during a LOCA, in addition to a single failure that results in a limiting CC alignment during a LOCA (i.e. one pump, one CCHX, one RHRHX, all ECCS pumps and the non-isolated non-safety loads) could result in less than required flows to the safety loads along with a CC pump runout condition.

The combination of the discrepancy with Control Room Console indicators and the CC71 valve being non-safety related resulted in the plant being operated in an unanalyzed condition.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**CAUSE OF OCCURRENCE**

The cause for the discrepancy with the Control Room Console Indicators is improper or lack of calibration of the elbow meters during installation. The apparent cause for the design discrepancy for valve CC71 is a lack of coordination between original system and valve design requirements and the establishment of the EOP alignments.

**PRIOR SIMILAR OCCURRENCES**

In the past two years there were seven LERs that addressed original design as the cause. These LERs are 272/95-014-00, 272/95-029-00, 272/96-001-00, 272/96-010-00, 272/96-012-00, 272/96-018-00, and 272/96-019-00. Corrective actions for these LERs were specific to the particular issue.

**SAFETY CONSEQUENCES AND IMPLICATIONS**

There were no safety consequences associated with these issues. The implications of these issues is CC flow shortfall to the RHRHX's and the ECCS pump seals. The Control Room indicator reading 1000 gpm high combined with valve CC71 failing open results in flow to the RHRHX of approximately 2500 gpm. The impact of this flow shortfall, though, was mitigated by alignment of both Component Cooling Heat Exchangers in the Emergency Operating Procedure in place at that time. This significantly improved the total heat removal capability. The total heat removal with this condition was approximately 6 percent less than that for the analyzed condition. Since the RHRHX's are not called upon until the Recirculation Phase of a LOCA, there was no impact on peak containment temperature and pressure. The small reduction in total heat removal, then, would result in a small decrease in long term cooling rate, and thus a minimal impact on long term Containment Equipment Qualification.

The CC flow shortfall to the ECCS pump seals was found to have a minimal impact. The CC flow requirement is based on a design temperature for the pumps which is higher than the peak process fluid temperature through the seals at the initiation of Cold Leg Recirculation. In addition, the process fluid and CC supply temperatures decrease rapidly in the first hours after Recirculation is established, thus decreasing CC flow requirements. There was no impact during the Injection Phase since the process fluid comes from the Refueling Water Storage Tank which is approximately at ambient temperature.

With respect to CC pump runout, an analysis was performed which determined that the CC pumps can operate reliably in a runout condition for a long period.

The health and safety of the public were not affected by this issue.

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		96	- 028	- 00		

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTIONS

1. Recalibrate elbow meters by rescaling associated differential pressure transmitters prior to entry into Mode 4 for both Salem Units.
2. Determine if elbow meters exist elsewhere in both Salem Units prior to entry into Mode 4 and take required corrective actions, if any.
3. Valve CC71's actuator will be upgraded to safety related and a safety related control loop will be added to provide automatic closure of valve CC71 during a LOCA. This will be completed prior to entry into Mode 4 for the respective Salem Units.