

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Salem Generating Station - Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 2 7 2										PAGE (3) 1 OF 5			
TITLE (4) Charging/Safety Injection Throttling Valves - Disks Becoming Detached From Stems																							
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 NAMES Salem - Unit 2					DOCKET NUMBER(S) 0 5 0 0 0 3 1 1									
0	5	2	7	8	4	8	4	0	1	2	0	0	0	6	2	6	8	4	0 5 0 0 0				
OPERATING MODE (9) 6		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 0 0		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)									
		20.405(a)(1)(i)				50.36(e)(1)				X 50.73(a)(2)(v)				73.71(e)									
		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				X OTHER (Specify in Abstract below and in Text, NRC Form 365A)									
		20.405(a)(1)(iii)				X 50.73(a)(2)(i)				50.73(a)(2)(viii)(A)				Generic									
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)				Implications									
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)													
LICENSEE CONTACT FOR THIS LER (12)																							
NAME J. L. Rupp										TELEPHONE NUMBER 6 0 9 3 3 9 - 4 3 0 9													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																							
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs													
B	B	Q	F	C	V	R	3	4	4	Y													
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)					MONTH	DAY	YEAR						
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO													

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

Stem/disk separation problems with RTD Loop Bypass Valves (see Unit 1 LER 84-010-00 and Unit 2 LER 84-001-00) prompted a review of all systems containing valves of this particular design. Of the valves identified, twelve valves (in each Unit) used as Safety Injection System flow throttling valves were deemed to have some safety concerns, should similar failures occur. On May 27, 1984, during a refueling outage of Unit 1, radiography results revealed that the disk was becoming detached from the stem of 11SJ16 (Charging/Safety Injection to Cold Leg Throttle Valve). On May 30, 1984, similar findings were discovered with 21SJ16 and 22SJ16 (Unit 2 valves). Unit 2 was operating at the time of discovery, and the findings immediately prompted a controlled shutdown of the Unit. The valve disks were found to be partially unthreaded from the disk nut, due to missing weld material which secures the disk to the nut. Unit 2 valves (21SJ16 and 22SJ16) were replaced in kind. A Design Change Request will replace 11 through 14SJ16 (Unit 1 valves) with valves of a different design during the present refueling outage. Plans are to eventually replace all twelve throttle valves in each Unit. This report is being submitted due to the generic implications involved, and in accordance with 10CFR 50.73(a)(2)(i)(A), and 50.73(a)(2)(v).

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PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

IDENTIFICATION OF OCCURRENCE:

11SJ16 (Unit 1 valve), 21SJ16 and 22SJ16 (Unit 2 valves) - Disks Becoming Detached From Stems

Discovery Dates: 05/27/84 - (Unit 1)

05/30/84 - (Unit 2)

Report Date: 06/26/84

This report was initiated by Incident Reports 84-081 and 84-082

CONDITIONS PRIOR TO OCCURRENCE:

Unit 1 - Mode 6 - Rx Power 000 % - Unit Load 0000 MWe

Unit 2 - Mode 1 - Rx Power 100 % - Unit Load 1150 MWe

DESCRIPTION OF OCCURRENCE:

As the result of occurrences whereby the RTD Loop Bypass Valves [AB] were found to have experienced stem to disk separation (these events are documented in Unit 1 LER 84-010-00 and Unit 2 LER 84-001-00), a review of all systems was made to determine where valves of this particular design were installed, and what function these valves served. The majority of the valves reviewed were found to be used in applications such as vents and drains, which do not present any safety concerns. However, several valves were used as Safety Injection System [BQ] flow throttling valves; and, these were deemed to have some safety concerns, should similar type failures occur.

On May 27, 1984, during a refueling outage of Unit 1, 11 through 14SJ16 (Charging/Safety Injection to Cold Leg Throttle Valves), 11 through 14SJ138 (Safety Injection to Hot Leg Throttle Valves) and 11 through 14SJ143 (Safety Injection to Cold Leg Throttle Valves) were radiographed. The results revealed that the disk was becoming detached from the stem of 11SJ16. All other Unit 1 valves were satisfactory.

On May 30, 1984, radiography results of these same valves in Unit 2 revealed that the disks were also becoming detached in 21SJ16 and 22SJ16. Since Unit 2 was operating at the time, the Station Operations Review Committee immediately held a special meeting to discuss the safety significance of the finding.

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DESCRIPTION OF OCCURRENCE: (cont'd)

Although a review of the last Charging/Safety Injection Pump full flow test indicated satisfactory results, with indication that the disks were becoming detached, there was no guarantee that flow would be within the limits specified by Technical Specification Surveillance Requirement 4.5.2.h.2. Based on the results of that meeting, a controlled shutdown of Unit 2 was commenced at 1106 hours, May 30, 1984. In accordance with the requirements of The Code of Federal Regulations, 10CFR 50.72, the Commission was notified of the commencement of the shutdown.

APPARENT CAUSE OF OCCURRENCE:

The valve's stem/disk design consists of a stem with a disk nut, which is free to rotate about the stem. The disk is screwed onto the disk nut. To prevent the disk from separating from the disk nut, a hole on the side of the disk serves to allow for the deposit of weld metal to attach the disk to the disk nut. An inspection of the affected valves revealed that the weld material was missing from the disk hole. This allowed the disk to unthread itself from the disk nut. In the case of the Unit 1 valve (11SJ16), the disk was approximately fifty percent (50%) unthreaded from the disk nut. With the Unit 2 valves (21SJ16 and 22SJ16), the disks were slightly unthreaded from the nuts. In addition, the stellite insert (which is located between the valve stem and the valve disk) was shifted out of position on 11SJ16 and 22SJ16.

ANALYSIS OF OCCURRENCE:

Technical Specification Surveillance Requirement 4.5.2.g requires that the correct position of the SJ16 valves, the SJ138 valves and the SJ143 valves be verified within four (4) hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be operable; and, also at least once per eighteen (18) months.

Technical Specification Surveillance Requirement 4.5.2.h.2 requires that each ECCS subsystem shall be demonstrated operable by performing a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics and verifying that:

For centrifugal charging pump lines, with a single pump running, that the sum of the injection line flow rates, excluding the line with the high flow rate, is greater than or equal to 346 GPM, and that the total pump flow rate is less than or equal to 550 GPM.

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ANALYSIS OF OCCURRENCE: (cont'd)

The Surveillance Requirements for throttle valve position, as well as the flow balance testing, provide assurance that proper ECCS flows will be maintained in the event of a Loss of Coolant Accident (LOCA). Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

As previously stated, the partially unthreaded disk on 11SJ16 (Unit 1) was discovered while the Unit was in a refueling outage, and consequently posed no immediate problem. However, Unit 2 valves (21SJ16 and 22SJ16) were discovered during Unit operation. These valves, only slightly unthreaded, were still operable and would have provided flow in the event of an ECCS actuation. However, due to the inability to perform a confirmatory full flow test during power operation (which would have guaranteed the required Technical Specification flow), and because of possible further degradation, a controlled shutdown was initiated.

This report is submitted in accordance with the requirements of the Code of Federal Regulations 10CFR 50.73(a)(2)(i)(A), 10CFR 50.73(a)(2)(v) and because of the generic problems associated with these valves.

CORRECTIVE ACTION:

Unit 2 valves (21SJ16 and 22SJ16) were replaced in kind utilizing 13SJ16 and 14SJ16 (from Unit 1). A full flow test was satisfactorily performed on June 3, 1984, with flow being adjusted to the proper specification. A Design Change Request is presently being formulated to replace 11 through 14SJ16 (Unit 1 valves) with valves of a different design during the present refueling outage.

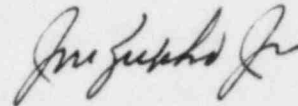
Present plans are to eventually replace all twelve throttle valves (in each Unit) with valves of a different design. Until all of the valves are replaced, to ensure valve integrity, the valves in question will be radiographed following any safety injection or manual operation.

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FAILURE DATA:

Rockwell-International
Globe Valve
1 1/2", Stainless Steel
Type 3624 F316
Mark No. FA-125



General Manager-
Salem Operations

JLR:tns

SORC Mtg 84-075



PSEG

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

Salem Generating Station

June 26, 1984

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Dear Sir:

SALEM GENERATING STATION
LICENSE NO. DPR-70
DOCKET NO. 50-272
UNIT NO. 1
LICENSEE EVENT REPORT 84-012-00

This Licensee Event Report is being submitted pursuant to the requirements of 10CFR 50.73(a)(2)(i)(A); 10CFR 50.73(a)(2)(v); and because of generic problems associated with these valves. This report is required within thirty (30) days of discovery.

Sincerely yours,

J. M. Zupko, Jr.
General Manager -
Salem Operations

JR:k11

CC: Distribution

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