

LICENSEE EVENT REPORT

CONTROL BLOCK: _____ (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 N J S G S 2 0 0 - 0 0 0 0 0 - 0 0 3 4 1 1 1 1 4 5
7 8 9 14 15 25 26 57 CAT 58

CON'T
0 1 REPORT SOURCE L 0 5 0 0 0 3 1 1 0 1 2 2 8 3 8 0 9 1 7 8 4 9
7 8 60 61 68 69 74 75 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10

0 2 On January 21, 1983, during a routine plant cooldown, both channels of the Pressurizer
0 3 Overpressurization Protection System (POPS) were declared inoperable due to leakage in
0 4 the pressurizer relief lines. Action Statement 3.4.10.3b was entered, requiring a
0 5 Reactor Coolant System (RCS) vent be established. The cooldown was continued, one POPS
0 6 channel was restored to an operable status and an RCS vent was established. The
0 7 integrity of fission product barriers was maintained. The event constituted operation
0 8 in a degraded mode in accordance with Technical Specification 6.9.1.9b.

0 9 SYSTEM CODE C J 11 CAUSE CODE B 12 CAUSE SUBCODE A 13 COMPONENT CODE V A L V E X 14 COMP. SUBCODE X 15 VALVE SUBCODE B 16
7 8 9 10 11 12 13 18 19 20

17 LER RO REPORT NUMBER 8 3 21 22 EVENT YEAR 23 SHUTDOWN METHOD Z 21 24 26 SEQUENTIAL REPORT NO. 0 0 5 27 OCCURRENCE CODE 0 3 28 29 REPORT TYPE X 30 REVISION NO. 1 32

ACTION TAKEN X 18 FUTURE ACTION Z 19 EFFECT ON PLANT Z 20 HOURS 0 0 0 0 22 ATTACHMENT SUBMITTED Y 23 NPD-4 FORM SUB. Y 24 PRIME COMP. SUPPLIER A 25 COMPONENT MANUFACTURER M 0 9 5 26
33 34 35 36 37 40 41 42 43 44 47

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS 27

1 0 Previous and subsequent problems were encountered with both the POPS valves and with
1 1 the Power Operated Relief Valves (PORV's). The PORV plugs were replaced with ones of a
1 2 different design, the PORV circuitry was modified to replace the function of the POPS
1 3 valves, and the POPS valves were removed from the system.

1 4
1 5 FACILITY STATUS D 28 % POWER 0 0 0 29 OTHER STATUS NA 30 METHOD OF DISCOVERY A 31 DISCOVERY DESCRIPTION Operability Test 32
7 8 9 10 12 13 44 45 46 80

1 6 ACTIVITY CONTENT Z 33 Z 34 NA 35 AMOUNT OF ACTIVITY NA 36 LOCATION OF RELEASE NA 36
7 8 9 10 11 44 45 80

1 7 PERSONNEL EXPOSURES NUMBER 0 0 0 37 TYPE Z 38 DESCRIPTION NA 39
7 8 9 11 12 13 80

1 8 PERSONNEL INJURIES NUMBER 0 0 0 40 DESCRIPTION NA 41
7 8 9 11 12 80

1 9 LOSS OF OR DAMAGE TO FACILITY TYPE Z 42 DESCRIPTION NA 43
7 8 9 10 80

2 0 PUBLICITY ISSUED N 44 DESCRIPTION NA 45
7 8 9 10 80

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PDR ADDCK 05000311
S PDR

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NRC USE ONLY

NAME OF PREPARER J. L. Rupp PHONE (609) 339-4309



PSEG

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

Salem Generating Station

September 17, 1984

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

Dear Sir:

LICENSE NO. DPR-75
DOCKET NO. 50-311
LICENSEE EVENT REPORT 83-005/03X-1
SUPPLEMENTAL REPORT

Pursuant to the requirements of Salem Generating Station
Unit No. 2 Technical Specifications, Section 6.9.1.9.b,
we are submitting supplemental Licensee Event Report for
Reportable Occurrence 83-005/03X-1.

Sincerely yours,

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

JR:k11

CC: Distribution

Report Number: 83-005/03X-1
Occurrence Date: 01/22/83
Report Date: 09/17/84
Facility: Salem Generating Station Unit 2
Public Service Electric & Gas Company
Hancock's Bridge, New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

Reactor Coolant System - Pressurizer Overpressure Protection System - Inoperable.

This report was initiated by Incident Report 83-020.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 4 - Rx Power 0 % - Unit Load 0 MWe.

DESCRIPTION OF OCCURRENCE:

On January 21, 1983, during a planned shutdown for refueling of Salem Unit 2, a cooldown of the Reactor Coolant System (RCS) was initiated. Due to leakage problems with Power Operated Relief Valves (PORVs) 2PR1 and 2PR2, Block Valves 2PR6 and 2PR7 had been closed since prior to unit startup in October, 1981 (See LER 81-59/03X-1). Isolation of the relief lines had rendered Pressurizer Overpressurization Protection System (POPS) Valves 2PR47 and 2PR48 inoperable.

In accordance with established procedure, the POPS would first be demonstrated operable then would be placed in operation when RCS temperature reached 312°F. A bubble would be maintained, and following degasification and further cooldown to 180°F, a cleanup of the RCS would be conducted utilizing Reactor Coolant Pumps and hydrogen peroxide addition. After completion of the cleanup, the pressurizer would be cooled down, the RCS taken solid and a vent established.

Attempts to demonstrate the operability of the POPS valves failed due to excessive leakage in the pressurizer relief lines. In view of the recurrent problems with the relief valves, and the resultant questionable status of the POPS, the cooldown was continued to place the plant in a vented, safe condition.

At 1130 hours, January 22, 1983, when the RCS temperature reached 312°F, Action Statement 3.4.10.3.b was entered. The pressurizer relief line valves were cycled and reseated in attempts to reduce leakage and restore at least one POPS channel to an operable status. The attempts failed, however, and at 1930 hours, January 22, 1983, Action Statement 3.0.3 came into effect.

The cooldown was continued in orderly fashion, until 0423 hours, January 23, when the leakage on Valve 2PR47 was reduced to an acceptable level.

DESCRIPTION OF OCCURRENCE: (cont'd)

The valve was declared operable, and with only one POPS channel inoperable, Action Statement 3.4.10.3.a applied. The cooldown was subsequently completed, and at 1242 hours, January 24, 1983, an RCS vent was established. A bubble in the pressurizer was maintained until one POPS valve was operable, and no RCS pressure transients were involved. The integrity of multiple fission product barriers was maintained throughout the occurrence.

APPARENT CAUSE OF OCCURRENCE:

POPS Valves 2PR47 and 2PR48 had been reworked due to excessive leakage during initial fueling of the unit in 1980 (See LER 80-005/03L). Similar leakage problems with various PORVs and POPS valves had occurred during shutdown operation in 1981 (see LERs 81-017/03X-1 and 81-043/03X-2).

As noted, in October 1981, during the startup, the pressurizer relief lines had been isolated to stop leakage from the PORVs. Unit 2 was then operated at power until the 1983 refueling shutdown, when the problems with the POPS valves were re-encountered. Further investigation of the problems during that first refueling revealed that the valves were sticking due to insufficient internal clearances. The clearances were increased in accordance with Design Change Request 2EC-1599 and the POPS was satisfactorily tested. In addition, acting on recommendations of the manufacturer and the EPRI, the PORV plugs were replaced with ones manufactured of stellite faced 316 stainless steel. Similar type plugs had been previously installed in Salem Unit 1 valves; the valves have since performed satisfactorily. The plant was returned to power operation on July 29, 1983.

ANALYSIS OF OCCURRENCE:

The operability of two POPS valves, or an RCS vent opening of greater than 3.14 square inches, ensures that the RCS will be protected from pressure transients which could exceed the limits of 10 CFR 50 Appendix G when one or more RCS cold legs are less than or equal to 312°F. Either POPS has adequate relieving capability to protect the RCS from overpressurization resulting from postulated events, including starting an idle reactor coolant pump or a safety injection pump with a solid RCS.

Action Statement 3.4.10.3b requires:

With both POPS inoperable, depressurize and vent the RCS through a 3.14 square inch vent(s) within 8 hours.

As noted, due to plant conditions, the RCS vent could not be established within 8 hours as required, and Action Statement 3.0.3 applied.

ANALYSIS OF OCCURRENCE: (cont'd)

Action Statement 3.0.3 requires:

When a limiting condition for operation is not met except as provided in the associated action statements, within one hour action shall be initiated to place the unit in a mode in which the specification does not apply, by placing it, as applicable, in at least hot standby within the next 6 hours, hot shutdown within the following 6 hours, and cold shutdown within the subsequent 24 hours. Where corrective measures are completed that permit operation under the action requirements, the action may be taken in accordance with the specified time limits as measured from the time of the failure to meet the limiting condition for operation.

As mentioned, a plant cooldown was already in progress, and thus action was being taken to establish the required RCS vent within 24 hours, in compliance with the limiting condition for operation. With the restoration of one POPS channel to an operable status, Action Statement 3.4.10.3a came into effect requiring:

With one POPS inoperable, restore the inoperable POPS to operable status within 7 days or depressurize and vent the RCS through a 3.14 square inch vent(s) within the next 8 hours.

The POPS is designed to protect the integrity of the RCS Pressure Boundary, one of the multiple fission product boundaries required by 10 CFR 50 (others include the containment and cladding). As noted, the integrity of all fission product boundaries was maintained. For this reason, and since one operable channel was obtained and the vent was established within the intervals specified, no undue risk to the health and safety of the public was involved. The event constituted operation in a degraded mode permitted by a limiting condition for operation, and is reportable in accordance with Technical Specification 6.9.1.9b.

CORRECTIVE ACTION:

As stated, one POPS valve was returned to an operable status at 0423 hours, January 23, 1983, in compliance with Limiting Condition for Operation 3.0.3. The required RCS vent was subsequently established at 1242 hours, January 24, 1983, and Action Statement 3.4.10.3a was terminated.

Due to a possible incompatibility between the 8 hour time interval required by Action Statement 3.4.10.3b and proceeding safely to establish the RCS vent, a review of the Technical Specifications was performed to identify appropriate changes. License Change Request 83-10 was accordingly initiated to extend the time allowed to establish a vent path to 24 hours.

CORRECTIVE ACTION: (cont'd)

Due to the history of recurrent problems with the system, an engineering review of the POPS problems was performed. Based on the results of the review, a recommendation was made to redesign the PORV (2PR1 and 2PR2) control circuitry to allow these valves to function as POPS valves (similar to the control scheme in Unit 1). Design Change Request 2SC-1245 was issued in September, 1983, to implement the change. The modifications were completed in early 1984; and 2PR47 and 2PR48 were scheduled for removal during the next outage of sufficient duration.

On July 25, 1984, a subsequent problem was encountered with 2PR47 lifting and failing to reseal. The incident (documented in LER 84-018-00) resulted in a reactor trip and safety injection. Due to that occurrence, both 2PR47 and 2PR48 were removed from the system.

FAILURE DATA:

POPS Valves

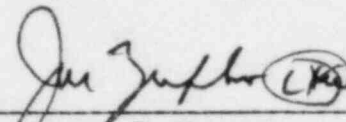
Marotta Scientific Controls
Relief Valve
Model MV-225C

PORV Valves

Copes-Vulcan, Inc.
Relief Valve
Type D-100-160

Prepared By J. L. Rupp

SORC Meeting No. 84-123



General Manager-
Salem Operations