PSEG

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

Salem Generating Station

February 9, 1993

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 93-001-00

This Licensee Event Report is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR 50.73(a)(2)(i)(B). This report is required to be issued within thirty (30) days of event discovery.

Sincerely yours,

C. A Vondra
General Manager -
Salem Operations

MJP:pc

Distribution

170044

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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Salem Generating Station - Unit 1	0 5 0 0 0 2 7 2	1 OF 0 4

TITLE (4)

Inoperability of Analog Rod Position Indication for Maintenance Troubleshooting.

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	DOCKET NUMBER(S)
										0 5 0 0 0
0 1	1 1	9 3	9 3	0 0 1	0 0	0 2	0 9	9 3		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
1	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 1 0 0	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
M.J. Pollack - LER Coordinator	6 0 9 3 3 9 - 2 0 2 2

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)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	NO				

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

On 1/11/93, from 1038 to 1039 hours and from 1041 to 1043 hours, Technical Specification (T/S) 3.0.3 was entered for action beyond T/S 3.1.3.2.1, due to removing the main and auxiliary 115-volt alternating current power supply fuses to the 13-volt direct current power supply for the Analog Rod Position Indication (ARPI) system. Fuse removal eliminated the possibility of electrically shorting the ARPI signal conditioning module of control rod 2D4 and damaging the 13-volt dc power supply during troubleshooting of erratic 2D4 indication. Nuclear Shift Supervisor (NSS) approval was obtained prior to removing the fuses and he was advised of the consequences of removing the fuses. In each case, the fuses were reinstalled, a channel check showed the ARPI system operable, and T/S 3.0.3 was exited. Upon a Reactor trip, I&C technicians, performing the troubleshooting, could have reinstalled the fuses restoring the ARPI. The 2D4 ARPI erratic indication resulted from failure of the 2D4 ARPI connector at the Reactor vessel head. Pipe flange leakage, immediately upstream of the Reactor head vent manual isolation valve, corroded the connector wire. The leakage was stopped through a temporary modification and the connector was repaired, restoring proper indication for 2D4. During the next unit refueling, a design change will be installed to relocate the involved flange to eliminate a potential leak path that could affect ARPI connections.

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as {xx}

IDENTIFICATION OF OCCURRENCE:

Technical Specification (T/S) 3.0.3 entries; Inoperability of Analog Rod Position Indication (ARPI) for Maintenance Troubleshooting

Event Date: 1/11/93

Report Date: 2/9/93

This report was initiated by Incident Report No. 93-022.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 100% - Unit Load 1155 MWe

DESCRIPTION OF OCCURRENCE:

On January 11, 1993, T/S 3.0.3 was intentionally entered twice (from 1038 to 1039 hours and from 1041 to 1043 hours). These events occurred due to removal of the main and auxiliary 115-volt alternating current power supply fuses (total of two) to the 13-volt direct current negative and positive power supply for the ARPI system {AA}. The fuses were removed to support troubleshooting the ARPI of control rod 2D4 to determine the cause of erratic position indication problems.

Fuse removal eliminated the possibility of electrically shorting the 2D4 ARPI signal conditioning module and damaging the 13-volt dc power supply during the 2D4 ARPI troubleshooting. This required removal and reinsertion of the 2D4 module. Nuclear Shift Supervisor (NSS) approval was obtained prior to removing the fuses. The Maintenance Department Supervisor advised the NSS of the consequences of removing the fuses for ARPI (see Analysis of Occurrence section). Troubleshooting was performed using procedure SC.IC-GP.ZZ-0006(Q), "CONTROLS EQUIPMENT - TROUBLESHOOTING".

T/S 3.1.3.2.1 addresses the operability requirement of the "Reactivity Control System's" {AA} position indicating systems. The indicators are determined operable by verifying the rod position indication system agrees within twelve (12) steps of the group demand counters. Actions required, if more than one ARPI per bank is inoperable, exceed the Limiting Condition For Operation and associated ACTION requirements of T/S 3.1.3.2.1. As such, the required actions associated with T/S 3.0.3 apply.

DESCRIPTION OF OCCURRENCE: (cont'd)

T/S 3.0.3 states:

"When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, 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:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least 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 failure to meet the Limiting Condition of Operation.

Exceptions to these requirements are stated in the individual specifications."

This event is reportable per Code of Federal Regulations 10CFR 50.73(a)(2)(i)(B).

APPARENT CAUSE OF OCCURRENCE:

The root cause of this event is equipment failure. The T/S 3.0.3 entries were necessary to support investigation of 2D4 erratic indication. On January 14, 1993, it was determined the 2D4 ARPI erratic indication resulted from failure of the 2D4 ARPI connector at the Reactor vessel head. Boric acid from pipe flange leakage, immediately upstream of the Reactor head vent manual isolation valve, 1RC900 {AB}, corroded the connector wire.

ANALYSIS OF OCCURRENCE:

Operability of the ARPIs is required to determine control rod positions. This ensures compliance with control rod alignment and insertion limits assumed in the accident analyses.

Upon any known or suspected complete/partial loss of ARPI, in accordance with procedure S1.OP-AB.ROD-0004(Q), "ROD POSITION INDICATION FAILURE", the Control Operator will notify Reactor Engineering, to ensure shutdown margin is maintained, and the Maintenance Controls Department, to investigate and correct the cause of the problem. Reactor Operators utilize alternate monitoring systems; i.e. Nuclear Instrumentation, Reactor Power Range channels, Intermediate and Source Range channels to confirm a Reactor trip coincident with unavailability of the ARPI.

Removing the subject fuses de-energized ARPI and resulted in no control rod position indication at:

1) The Control Room control rod console;
2) The plant process P250 computer; and
3) The Safety Parameter Display System computer

However, fuse removal did not affect operability of control rod overhead annunciators (OHAs) and RP3 "Rod Bottom" indication.

When the 2D4 ARPI signal conditioning module was removed, in addition to the lost indications as described above, the 2D4 "Rod Bottom" OHA indicator light lit, as expected. The "Rod Bottom" OHA indicator lights for the remaining control rods remained operable.

Had a Reactor trip occurred while the fuses were removed, Maintenance I&C technicians performing the 2D4 troubleshooting, could have reinstalled the fuses restoring the ARPI. This would not have hindered the Control Operators' response to a trip. Therefore, the health or safety of the public was not affected by this event.

CORRECTIVE ACTION:

In each case, the fuses were reinstalled, a channel check was performed which showed the ARPI operable, and T/S 3.0.3 was exited.

The flange leak, affecting the 2D4 ARPI connector, was stopped through installation of a leak repair clamp in accordance with a temporary modification. Periodic monitoring of the clamp will be performed.

During the next unit refueling outage, a design change will be installed to relocate the flange. The new location will eliminate a potential leak path that could affect ARPI connections. A similar design change will be installed on Salem Unit 2, during its next refueling outage.

The 2D4 ARPI connector was repaired restoring proper indication for the control rod.

General Manager -
Salem Operations

MJPJ:pc

SORC Mtg. 93-013