PSEG

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

Salem Generating Station

June 30, 1989

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 89-022-00

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 within thirty (30) days of discovery.

Sincerely yours,

L. K. Miller
General Manager -
Salem Operations

MJP:pc

Distribution

IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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)

Tech. Spec. 3.1.3.2.2a Non-Compliance Due To Personnel Error & Inad. Admin. Controls

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 6	0 3	8 9	8 9	0 2 2	0 0	0 6	3 0	8 9		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)			
3	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 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 - 4 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)	X NO				

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

On 6/3/89, control rod shutdown banks "B" and "C" were withdrawn together contrary to Technical Specification (TS) 3.1.3.2.2a. Maintenance-I&C procedure 1IC-8.1.002, "Rod Position Indication Signal Module Calibration", was being used. The root cause of this event has been attributed to personnel error. Maintenance personnel did not comply with the precautionary requirements as stipulated in procedure 1IC-8.1.002. These requirements disallow the withdrawal of more than one shutdown or control bank. In addition to personnel error, the cause of this event is attributed to inadequate administrative control over the implementation of TS Amendments. Operations shift personnel were not aware of a recently incorporated Amendment (# 91) which modified TS 3.1.3.2.2 to only allow one bank to be withdrawn at a time during testing. Prior to this Amendment, no Tech. Spec. limit was placed on the number of banks withdrawn so long as a K_{eff} of 0.99 was not exceeded. Management has initiated a review of the process by which TS Amendments are promulgated. An "Information Directive" has been issued identifying recent TS Amendments, including the Amendment which modified TS 3.1.3.2.2., for review by Operations shift personnel. The SORC will review all incoming TS Amendments upon receipt. This event will be reviewed with applicable Maintenance personnel stressing the need for procedural compliance with all parts of a procedure. The I&C procedures, performed in Mode 3 which involve control rod bank withdrawal, have been reviewed and revised as applicable.

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 3.1.3.2.2a non-compliance due to personnel error and inadequate administrative controls

Event Date: 6/03/89

Report Date: 6/30/89

This report was initiated by Incident Report No. 89-328.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 3

DESCRIPTION OF OCCURRENCE:

On June 3, 1989 at 0339 and 0634 hours, control rod shutdown banks "B" and "C" {AA} were withdrawn together contrary to the requirements of Technical Specification 3.1.3.2.2a. The banks were being calibrated in support of post outage startup preparations. Maintenance-I&C procedure 1IC-8.1.002, "Rod Position Indication Signal Module Calibration", was being used. This event was discovered by outage management during a review of work in progress.

Technical Specification 3.1.3.2.2 states:

> "The group demand position indicator shall be OPERABLE for each shutdown and control rod not fully inserted. During the performance of individual full length (shutdown and control) rod testing measurement during rod position indication system calibration:
>
> a. Only one shutdown or control bank shall be withdrawn from the fully inserted position at a time, and
>
> b. K_{eff} shall be maintained less than or equal to 0.95."

APPARENT CAUSE OF OCCURRENCE:

The root cause of this event has been attributed to personnel error. Maintenance-I&C personnel did not comply with the precautionary requirements as stipulated in procedure 1IC-8.1.002 due to a lack of attention to detail. These requirements specifically disallow the withdrawal of more than one shutdown bank or control bank. The I&C personnel requested Operations to move more than one bank without recognizing the violation with the procedural precautions.

APPARENT CAUSE OF OCCURRENCE: (cont'd)

The requirement was first placed in the procedure in 1986 as a result of a Salem Unit 2 Technical Specification review.

In addition to personnel error, this event is also attributed to inadequate administrative controls over the implementation of Technical Specification Amendments. Operations shift personnel were not aware of a recently incorporated amendment (# 91) which modified Technical Specification 3.1.3.2.2 to only allow one control bank to be withdrawn at a time during testing. Prior to this amendment, no Technical Specification limit was placed on the number of banks withdrawn so long as a K_{eff} of 0.99 was not exceeded. This Amendment became effective as of the Unit startup, upon completion of the 8^{th} refueling outage.

Contributing to this event was a human factors issue. The Salem Unit 2 Technical Specification for control rod bank withdrawal is in a different location than the Salem Unit 1 Technical Specifications. Salem Unit 2's Technical Specification 3.1.3.2.2 references a Special Test Technical Specification 3.10.5 which is identical to the current requirements of Unit 1 Technical Specification 3.1.3.2.2. When the bank calibrations were initiated Operations shift personnel looked for Unit 1 Special Test Technical Specification 3.10.5; however, it did not exist. Therefore, the shift personnel assumed that the Technical Specifications had not been modified and more than one control rod bank could be withdrawn. No notification was provided to the shift personnel on the implementation of the Technical Specification Amendment prior to this event.

Salem Unit 2 Technical Specification 3.10.5 states:

> "The limitations of Technical Specification 3.1.3.2.2 may be suspended during the performance of individual full length (shutdown or control) rod testing measurement during rod position indication system calibration provided:
>
> a. Only one shutdown or control bank is withdrawn from the fully inserted position at a time, and
>
> b. Either,
>
> 1. The rod position indicator is operable during the withdrawal of the rods, or
>
> 2. K_{eff} is maintained less than or equal to 0.95."

ANALYSIS OF OCCURRENCE:

The safety concerns associated with the withdrawal of more than one bank of control rods include core power distribution, shutdown margin limitations, inadvertent criticality and the impact of an additional uncontrolled bank withdrawal.

ANALYSIS OF OCCURRENCE: (cont'd)

As stated above, core power distribution concerns were reviewed. Independent Rod Position Indication (IRPI) calibration is performed in Mode 3 (Hot Standby). In Mode 3 the reactor is maintained subcritical. The heat produced in Mode 3 is principally due to operation of the Reactor Coolant Pumps and decay heat. Since the heat produced is independent of existing neutron flux distribution the power distribution will remain essentially unchanged as the banks are withdrawn; although, the neutron flux distribution will change due to subcritical multiplication.

The shutdown margin which existed prior to rod bank withdrawal remained unchanged throughout this event. The rod banks withdrawn during the IRPI calibration remained available for immediate insertion into the reactor core upon demand from reactor protection. Operations in Mode 3 require $\geq$ 1.6% delta K over K shutdown margin be maintained. The shutdown margin available during the event was 10.2% delta K over K.

The potential for inadvertent criticality was determined to not be credible. Throughout the event, K_{eff} was maintained at less than 0.95 due to high Reactor Coolant System {AB} Boron concentrations. Calculation of shutdown margin and K_{eff} during IRPI calibrations assume that the most "worthy" 2 bank combination is withdrawn. This calculation is performed to ensure the reactor remains subcritical if one rod bank is withdrawn and a second bank is withdrawn inadvertently as was done in this event.

The impact of an additional uncontrolled bank withdrawal was reviewed. Calculations show that the reactor would remain subcritical with the most worthy 2 rod banks withdrawn and the inadvertent withdrawal of the third most worthy rod bank. This was due to the existing 2308 ppm RCS boron concentration (prior to initial criticality it is limited to greater than 2000 ppm).

In conclusion, no adverse impact to the fuel or RCS components occurred due to this event. Inadvertent criticality was avoided under actual or postulated conditions due to the high RCS boron concentrations. Therefore this event did not affect the health or safety of the public; however, it is reportable in accordance with Code of Federal Regulations 10CFR 50.73(a)(2)(i)(B).

CORRECTIVE ACTION:

As a result of this event, station management has initiated a review of the process by which Technical Specification Amendments are promulgated. This review include's the assurance of appropriate delineation of responsibilities, appropriate direction for procedural changes, and the providing of necessary information/training of affected station personnel. The results of this review will be incorporated in Administrative Procedure AP-12, "Technical Specification Surveillance Program".

CORRECTIVE ACTION: (cont'd)

An "Information Directive" (number 89-030 dated June 13, 1989) has been issued for review by Operations shift personnel. It identifies recently approved Technical Specification Amendments including the Amendment which modified Technical Specification 3.1.3.2.2.

Due to the lack of timeliness between initiation and receipt of the Technical Specification Amendment addressed by this event, the Station Operations Review Committee (SORC) will review all incoming Technical Specification Amendments upon receipt by Salem Station. This review will ensure heightened awareness of Amendments in order to provide the appropriate timely training and procedural modifications as required. This requirement will be added to the applicable Administrative Procedure(s).

This event will be reviewed with applicable Maintenance Department personnel stressing the need for procedural compliance with all parts of a procedure.

The I&C procedures, performed in Mode 3 which involve control rod bank withdrawal, have been reviewed. Procedures (for both Salem Units) IC-8.1.002 and IC-5.2.001, "Rod Drop Time Measurement Hot Full Flow", have been modified to include a precautionary note just before the step in the procedures specifying rod bank withdrawal.

General Manager -
Salem Operations

MJP:pc

SORC Mtg. 89-069