PSE&G

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

Salem Generating Station

January 24, 1990

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

Dear Sir:

SALEM GENERATING STATION
LICENSE NO. DPR-75
DOCKET NO. 50-311
UNIT NO. 2
LICENSEE EVENT REPORT 89-027-00

This Licensee Event Report is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR 50.73(a)(2)(iv). 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 2	0 5 0 0 0 3 1 1	1 OF 0 3

TITLE (4)

#22 S/G Blowdown Auto. Isolation Due To Failure of the 2R19B Rad. Mon. Sys. Channel

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
1 2	3 1	8 9	8 9	0 2 7	0 0	0 1	2 4	9 0		0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		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)	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	
B	I L	D E T	V 1 1 5	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)

On December 31, 1989 at 1830 hours, the No. 22 Steam Generator (S/G) blowdown [WI] Radiation Monitoring System (RMS) channel, 2R19B, failed. The channel failure caused isolation of No. 22 S/G Blowdown. The channel was declared inoperable and Technical Specification 3.3.3.8 Table 3.3-12 Action 27 was entered. The root cause of the 2R19B channel failure has been attributed to design/equipment concerns. An electrical spike on the channel microprocessor's input caused the microprocessor to malfunction. The 2R19B RMS channel microprocessor RAM was cleared and the appropriate setpoints reentered. A channel calibration was then successfully completed and the channel was declared operable on January 2, 1990 at 1400 hours and Technical Specification Table 3.3-12 Action 27 was exited. As indicated in LER 311/89-025-00, Engineering has investigated the concerns with the power supply to the Unit 2 RMS channels. It is anticipated that several system design modifications will eliminate the spurious ESF actuation signals. One of these design modifications is the installation of an uninterruptable power supply (UPS). The plans for completion of these modifications are included in the current PSE&G Living Engineering Plan for the RMS system.

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

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

IDENTIFICATION OF OCCURRENCE:

No. 22 Steam Generator Blowdown automatic isolation due to failure of the 2R19B Radiation Monitoring System channel

Event Date: 12/31/89

Report Date: 1/24/90

This report was initiated by Incident Report No. 89-804.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 100% - Unit Load 1170 MWe

DESCRIPTION OF OCCURRENCE:

On December 31, 1989 at 1830 hours, the No. 22 Steam Generator (S/G) blowdown {WI} Radiation Monitoring System (RMS) {IL} channel, 2R19B, failed. The channel failure caused isolation of No. 22 S/G Blowdown. The channel was declared inoperable and Technical Specification 3.3.3.8 Table 3.3-12 Action 27 was entered. It states:

> "With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are analyzed for gross radioactivity (beta or gamma) at a limit of detection of at least 10^{-7} microcuries/gram:
>
> a. At least once per 8 hours when the specific activity of the secondary coolant is greater than 0.01 microcuries/gram DOSE EQUIVALENT I-131.
>
> B. At least once per 24 hours when the specific activity of the secondary coolant is less than or equal to 0.01 microcuries/gram DOSE EQUIVALENT I-131."

S/G Blowdown Isolation is considered an Engineered Safety Feature. Subsequently, on December 31, 1989 at 2028 hours, the Nuclear Regulatory Commission was notified of the automatic actuation of SGBI in accordance with Code of Federal Regulations 10CFR 50.72(b)(2)(ii).

APPARENT CAUSE OF OCCURRENCE:

The root cause of the 2R19B channel failure has been attributed to design/equipment concerns. An electrical spike on the channel microprocessor's input caused the microprocessor to malfunction.

APPARENT CAUSE OF OCCURRENCE:

Subsequently, the channel microprocessor locked on a false "high" activity value resulting in the alarm actuation. Prior LERs, involving Containment Ventilation Isolation ESF actuation (e.g., 311/89-002-00) have indicated that the Victoreen design is susceptible to voltage spikes. The 2R19B detector is a Victoreen 843-32 NaI Gamma Scintillator.

ANALYSIS OF OCCURRENCE:

The 2R19 RMS channels monitor S/G blowdown water from the individual S/Gs for radioactivity. An alarm of this channel may indicate a significant primary to secondary leak. The alarm setpoint is set at a release rate which is less than the limits set by the Technical Specifications and the Updated Final Safety Analysis Report. Upon receipt of a channel alarm indication, the SGBI valve (GB4), for the respective S/G, will automatically close, resulting in SGBI. During this event the No. 22 SGBI GB4 valve closed as designed.

The 2R15 Condenser Air Ejector radiation monitor is used as the corroborating channel for the 2R19 radiation monitors. However, an alarm from this channel would not identify the specific S/G where a primary to secondary leak has occurred.

A review of this event has shown that the 2R19C alarm was not actuated due to high radiation levels in the No. 22 S/G blowdown line. Therefore, the health and safety of the public was not affected by this event. However, since SGBI is considered an ESF system, this event is reportable in accordance with Code of Federal Regulations 10CFR 50.73(a)(2)(iv).

CORRECTIVE ACTION:

The 2R19B RMS channel microprocessor RAM was cleared and the appropriate setpoints reentered. A channel calibration was then successfully completed and the channel was declared operable on January 2, 1990 at 1400 hours and Technical Specification Table 3.3-12 Action 27 was exited.

As indicated in LER 311/89-025-00, Engineering has investigated the concerns with the power supply to the Unit 2 RMS channels. It is anticipated that several system design modifications will eliminate the spurious ESF actuation signals. One of these design modifications is the installation of an uninterruptable power supply (UPS). The plans for completion of these modifications are included in the current PSE&G Living Engineering Plan for the RMS system.

J. K. Mulla

General Manager -
Salem Operations

MJP:pc
SORC Mtg. 90-007