



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

Salem Generating Station

July 3, 1991

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 91-008-00

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,

A handwritten signature in black ink, appearing to read "C. A. Vondra".

C. A. Vondra
General Manager -
Salem Operations

MJP:pc

Distribution

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PDR ADCK 05000311
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The Energy People

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LICENSEE EVENT REPORT (LER)

ESTIMATE BURDEN PER RESPONSE TO COMPLY WITH 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.

FACILITY NAME (1) Salem Generating Station - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 1 1	PAGE (3) 1 OF 4
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TITLE (4)
4KV Vital Bus UV Relay Setpoints Found Below Minimum Tech. Spec. Allowable Value

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)		
06	03	91	91	008	000	07	03	91	Salem Unit 1			0 5 0 0 0 2 7 2		
												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)	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 365A)						
	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)(ix)								

LICENSEE CONTACT FOR THIS LER (12)

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

<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH: 1 DAY: 0 YEAR: 3 0 9 1
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On June 3, 1991, the 91.6% sustained undervoltage relay's minimum drop out trip setpoint voltage, for two (2) of the three (3) of the 2A 4KV Vital Bus undervoltage relays and for all three (3) 2B 4KV Vital Bus undervoltage relays, were found to be below the Technical Specification minimum allowable value of 91%. This was discovered during Technical Specification Surveillance 4.3.2.1.1 testing which requires monthly testing of undervoltage relay setpoints. Procedures (S2.MD-FT.4KV-0001(Q) (0002), "ESFAS Instrumentation Monthly Functional Test-2A (2B) 4KV Vital Bus Under Voltage") were being used to support the surveillance testing. The lowest as-found trip setpoint, of the five subject relays was 90.5%. The root cause investigation, to determine the reason for the as found setpoint variance, is continuing. Weekly testing of the installed relays is being performed under the direction of System Engineering. In addition, controlled bench tests are being performed on identical relays (i.e., spare relays purchased when the installed relays were purchased). In parallel with the on-going engineering investigation, a design change to replace the subject relays has been initiated.

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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:

The Vital Bus 91.6% undervoltage relay setpoints were found below the minimum Technical Specification allowable value

Discovery Date: 6/03/91

Report Date: 7/03/91

This report was initiated by Incident Report Nos. 91-403 and 91-404.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 100% - Unit Load 1150 MWe

DESCRIPTION OF OCCURRENCE:

On June 3, 1991, the 91.6% sustained undervoltage relays' minimum drop out trip setpoint voltage, for two (2) of the three (3) of the 2A 4KV Vital Bus undervoltage relays and for all three (3) 2B 4KV Vital Bus undervoltage relays, were found to be below the Technical Specification minimum allowable value of 91%. This was discovered during Technical Specification Surveillance 4.3.2.1.1 testing which requires monthly testing of undervoltage relay setpoints. Procedures (S2.MD-FT.4KV-0001(Q) (0002), "ESFAS Instrumentation Monthly Functional Test-2A (2B) 4KV Vital Bus Under Voltage") were being used to support the surveillance testing.

The setpoint, per Technical Specifications, is 108.9+.15 VAC (91.6%) while the allowable value is 108.16 VAC (91%). The trip setpoints, of the five subject relays, were found to be 107.52 VAC and 107.63 VAC for the 2A 4KV Vital Bus and 107.83, 107.76 and 107.78 VAC for the 2B 4KV Vital Bus. The lowest reading (107.52 VAC) equates to a setpoint of 90.5%.

The as-found condition of the Vital Bus relays potentially prevented their protective functioning. Consequently, the Nuclear Regulatory Commission was notified of this event on June 3, 1991 at 1556 hours in accordance with Code of Federal Regulations 10CFR 50.72(b)(2)(iii)(B).

APPARENT CAUSE OF OCCURRENCE:

The root cause of this event has not been determined. Investigations are continuing to determine the reason for the as found setpoint variance. Weekly testing of the installed relays is being performed under the direction of System Engineering. In addition, controlled

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APPARENT CAUSE OF OCCURRENCE: (cont'd)

bench tests are being performed on identical relays (i.e., spare relays purchased when the installed relays were purchased).

Two (2) prior events (LERs 272/91-017-00 and 311/91-005-00) address similar concerns associated with compliance with the Technical Specification limits. The root cause of these prior events dealt with personnel error and procedure inadequacy concerns; however, in light of the current information, they may have been caused by the same problem as this most recent event.

ANALYSIS OF OCCURRENCE:

The Vital Bus (1E) 70% Loss of Voltage, 91.6% Sustained Degraded Voltage, and 35% Vital Bus Undervoltage Bus Transfer relays monitor the Vital Bus voltage via 35:1 ratio potential transformers (PTs). Each Vital Bus contains one (1) 70% IAV relay three (3) 91.6% Rochester Instrument Systems model PR-2035 P1-T1-0 relays, and one (1) 35% ITE-27H relay. The 70% and 91.6% relays provide input to the Safeguard Equipment Control (SEC) Systems so the SEC can determine Vital Bus emergency loading requirements.

On June 3, 1991, the 91.6% relay's as-found trip setpoint was found to be less than the minimum Technical Specification allowable value (91%). The relays were then recalibrated to the 91.6% value specified in the applicable Surveillance Test Procedure S2.MD-FT.4KV-0001(Q) (0002). Recalibration was completed for each relay of each Vital Bus, at the time each out of specification reading was found. The two (2) Vital Bus relays (total of five relays) were recalibrated on June 3, 1991.

An engineering analysis (reference Engineering letter ELE-91-0364), considering several scenarios that could result in low voltage at the 4KV, 480V, and 230V Vital Busses, was performed to determine the impact the low as-found 91.6% relay setpoints (90%) would have had on Unit 2's Vital Bus motors and loads. In all considered scenarios, the undervoltage relays would have performed their design function and would have provided adequate protection to Vital Bus motors and loads despite their lower as-found trip setpoints.

Therefore, based on the engineering analysis, this event did not affect the health or safety of the public. However, since the Technical Specification requirement for the undervoltage relay setpoint was not met, this event is reportable to the commission in accordance with Code of Federal Regulations 10CFR 50.73(a)(2)(i)(B).

As discussed in the Apparent Cause of Occurrence section, investigation of this event is continuing. Weekly testing (and subsequent engineering analysis) is being conducted. Upon completion of the engineering analysis, a supplement to this LER will be issued documenting the investigation results and applicable corrective actions.

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CORRECTIVE ACTION:

The relay manufacturer (Rochester Instrument Systems) has been contacted as part of the on-going investigation.

In parallel with the on-going engineering investigation, a design change to replace the subject relays has been initiated.



General Manager -
Salem Operations

MJP:pc

SORC Mtg. 91-073