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

Salem Generating Station

March 21, 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 90-011-00

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

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PDR ADDCK 05000311
S PDC

The Energy People

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Salem Generating Station - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 1 1 1 OF 0 4					PAGE 15				
TITLE (4) Containment Ventilation Isolation Signal (ESP) Due To An Equipment Failure																			
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	3	0	1	9	0	9	0	0	1	1	0	0	3	2	1	9	0	Salem Unit 1	0 5 0 0 0 2 7 2
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																			
OPERATING MODE (9)		1		20.402(b)		20.406(e)		X		80.73(a)(2)(iv)		73.71(b)							
POWER LEVEL (10)		1 0 0		20.408(a)(1)(i)		80.38(a)(1)				80.73(a)(2)(v)		73.71(e)							
				20.408(a)(1)(ii)		80.38(a)(2)				80.73(a)(2)(vi)		OTHER (Specify in Abstract below and in Text, NRC Form 305A)							
				20.408(a)(1)(iii)		80.73(a)(2)(i)				80.73(a)(2)(vii)(A)									
				20.408(a)(1)(iv)		80.73(a)(2)(ii)				80.73(a)(2)(vii)(B)									
				20.408(a)(1)(v)		80.73(a)(2)(iii)				80.73(a)(2)(ix)									
LICENSEE CONTACT FOR THIS LER (12)																			
NAME M. J. Pollack - LER Coordinator										TELEPHONE NUMBER 6 0 9 3 3 9 - 1 2 0 2 2									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																			
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC									
B	I/L	I/E/L	E/O 7 1 0	Y															
SUPPLEMENTAL REPORT EXPECTED (14)																			
YES (If yes, complete EXPECTED SUBMISSION DATE)										X		NO		EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR	
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																			
<p>On 3/1/90, at 0919 hours, the Radiation Monitoring System (RMS) 2R45A-D RMS channels (high and medium range Plant Vent noble gas RMS monitors) spiked high. Subsequently, by design, the Plant Vent Radioactive Noble Gas Monitor, 2R41C, channel deenergized and failed low resulting in a Containment Purge/Pressure-Vacuum Relief System (CP/P-VRS) isolation signal and a closure signal for the 2WG41 valve (Waste Gas Decay Tank Vent Control Valve). At the time of the event, the 2R45A-D channels 2CT-2B Eberline printer was being worked on by Maintenance-I&C. Technical Specification Action Statements 3.3.3.1.b26 and 3.3.3.9.b31 (for the 2R45 channel and 2R41C channel inoperability) were entered at the time of the event. They were subsequently exited, at 0926 hours on 3/1/90, after the 2R45 channels were reset and the 2R41C was reenergized with its associated APD pump flow verified. The root cause of the CP/P-VRS actuation has been attributed to an equipment failure. Investigation revealed a frayed AC power lead to the printer. This lead shares a common AC power supply with the +5V and +12V power supplies which power various relays including those used for the 2R45B/2R41 interlock logic circuitry. Any movement of the printer would cause electrical transients in the system cycling the system which cause deenergization of the 2R41 detectors and the 2R41 APD pump. The interlock function control circuitry is located in the same cabinet as the control circuitry for the 2CT-2B printer. The frayed wire was repaired. To prevent recurrence of this event, the quarterly functional surveillance requirements have been modified to include inspection of the wire which power the printer and CPU drawer.</p>																			

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Salem Generating Station	DOCKET NUMBER	LER NUMBER	PAGE
Unit 2	5000311	90-011-00	2 of 4

PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as [xx]

IDENTIFICATION OF OCCURRENCE:

Containment Purge/Pressure-Vacuum Relief Isolation Due To An Equipment Failure

Event Date: 3/01/90

Report Date: 3/21/90

This report was initiated by Incident Report No. 90-056.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 100% Unit Load 1160 MWe

DESCRIPTION OF OCCURRENCE:

On March 1, 1990, at 0919 hours, the Radiation Monitoring System (RMS) [IL] 2R45A-D RMS channels (high and medium range Plant Vent noble gas RMS monitors) spiked high. Subsequently, by design, the Plant Vent Radioactive Noble Gas Monitor, 2R41C, channel deenergized and failed low resulting in a Containment Purge/Pressure-Vacuum Relief System (CP/P-VRS) [BF] isolation signal and a closure signal for the 2WG41 valve (Waste Gas Decay Tank Vent Control Valve). At the time of the event, the 2R45A-D channels 2CT-2B Eberline printer was being worked on by Maintenance-I&C.

Technical Specification Action Statements 3.3.3.1.b26 (for the 2R45 channel inoperability) and 3.3.3.9.b31 (for the 2R41C channel inoperability) were entered at the time of the event. They were subsequently exited, at 0926 hours on March 1, 1990, after the 2R45 channels were reset and the 2R41C was reenergized with its associated APD pump flow verified.

The CP/P-VRS isolation signal is considered an Engineered Safety Feature (ESF). Subsequently, within four (4) hours of the 2R41C channel failure and subsequent CP/P-VRS signal, the Nuclear Regulatory Commission was notified of the automatic actuation of CP/P-VRS as required by Code of Federal Regulations 10CFR 50.72(b)(2)(ii).

APPARENT CAUSE OF OCCURRENCE:

The root cause of the CP/P-VRS actuation has been attributed to an equipment failure. Investigation revealed a frayed AC power lead to

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Salem Generating Station	DOCKET NUMBER	LER NUMBER	PAGE
Unit 2	5000311	90-011-00	3 of 4

APPARENT CAUSE OF OCCURRENCE: (cont'd)

the printer. This lead shares a common AC power supply with the +5V and +12V power supplies which power various relays including those used for the 2R45B/2R41 interlock logic circuitry. It was demonstrated that any movement of the printer would cause electrical transients in the system cycling the relays which cause deenergization of the 2R41A, 2R41B and 2R41C detectors and the 2R41 APD pump.

The 2R45A-D channels have an interlock function with the 2R41 channel. Upon detection of high activity in the plant vent by the 2R45B channel (medium range detector), the 2R41 channels and the 2R41 APD pump de-energize. This protects the 2R41 channel detectors and circuitry from being permanently damaged by high activity. The protective function control circuitry is located in the same cabinet as the control circuitry for the 2CT-2B printer.

ANALYSIS OF OCCURRENCE:

Isolation of the CP/P-VRS is part of the design Engineered Safety Features (ESFs). It mitigates the release of excessive quantities of radioactive material to the environment after a design base accident.

The 2R41C channel monitors the plant vent effluent releases for radioactive noble gas via representative sampling. The ESF actuation feature of CP/P-VRS isolation, associated with this channel, is of conservative design. It is redundant to the 2R12A channel. In addition to its ESF function, the channel will cause the isolation of the 2WG41 valve (Waste Gas Decay Tank Vent Control Valve). During the 2R41C CP/P-VRS isolation signal events, the 2R12A monitor remained operable.

At the time of this event, neither Containment Purge, Containment Pressure/Vacuum Relief or Waste Gas Decay Tank release was in progress. The associated valves with these functions were in the closed position.

The inadvertent actuation of the CP/P-VRS isolation signal was caused by an equipment failure, not the result of high activity. Therefore, this event did not affect the health or safety of the public. However, due to the actuation of an ESF function, this event is reportable in accordance with Code of Federal Regulations 10CFR 50.73(a)(2)(iv).

CORRECTIVE ACTION:

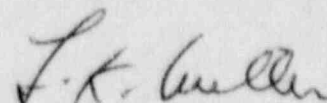
The frayed wire was repaired. The reason the wire frayed has been attributed to wear during the performance of routine maintenance and surveillance activities. To prevent recurrence of this event, the quarterly functional surveillance requirements have been modified to include inspection of the wire (and connectors) which power the printer and CPU drawer from the mounting box.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Salem Generating Station	DOCKET NUMBER	LER NUMBER	PAGE
Unit 2	5000311	90-011-00	4 of 4

CORRECTIVE ACTION: (cont'd)

The Salem Unit 1 RMS system utilize the same Eberline printer (discussed in this LER) for its 1R45 channels. Also, Salem Unit 1 utilizes similar interlock features between the 1R45 and 1R41 channels, as identified for Salem Unit 2 by this LER. Therefore, the printer power supply wiring was inspected after the discovery of the Unit 2 defective wiring. The Unit 1 wiring was found in satisfactory condition with no sign of wear. The Unit 1 functional surveillance has also been modified to include inspection of the wire (and connectors) which power the printer and CPU drawer from the mounting box.



General Manager -
Salem Operations

MJP:pc

SORC Mtg. 90-023