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

January 4, 1997 ^{9/8} 4

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 93-019-00.

This Licensee Event Report is being submitted pursuant to the requirements of Code of Federal Regulation 10CFR50.73(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

MJPJ:pc

Distribution

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S PDR

The power is in your hands.

LICENSEE EVENT REPORT (LER)

ESTIMATED 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 1	DOCKET NUMBER (2) 0 5 0 0 0 2 7 2	PAGE (3) 1 OF 0 4
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TITLE (4)
Waste Gas Holdup System Oxygen Concentration Greater Than 2% For More Than 48 Hours.

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)						
1	2	0	5	9	3	9	3	0	0	1	9	0	0	0	0	0	0
1	2	0	5	9	3	9	3	0	0	1	9	0	0	0	0	0	0

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 0 0	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.405(b)	20.405(c)(1)	20.405(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vii)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	

LICENSEE CONTACT FOR THIS LER (12)									
NAME M. J. Pastva, Jr. - LER Coordinator							TELEPHONE NUMBER 6 0 9 3 3 9 - 5 1 6 5		
AREA CODE									

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)		
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

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

Oxygen (O₂) concentration within the Waste Gas Holdup System was > 2% for > 48 hours. On 12/3/93, at 0910 hours, Technical Specification (TS) Action Statement 3.11.2.5.a. was entered due to O₂ concentration of 2.17% by volume in 13 Waste Gas Decay Tank (WGDT). Efforts to reduce the O₂ concentration to < 2% were implemented. O₂ concentrations above 2% were subsequently measured in other WGDTs; 3.04% in 11 WGDT on 12/8/93, 3.11% in 14 WGDT on 12/8/93, and 3.29% in 12 WGDT on 12/9/93. The maximum O₂ concentration was 4.25% in 13 WGDT on 12/4/93. The root cause is attributed to "Design, Manufacturing, Construction/Installation", as per NUREG-1022. The source of the O₂ is attributed to routine refueling/ maintenance outage activities. In addition, extensive modifications to the Waste Gas Analyzer and Waste Gas System were performed requiring these systems be opened. Prior to closure, steps were performed to purge these systems with nitrogen. However, the design of these systems does not lend itself to effective purging. Furthermore, the calibration of the Waste Gas Analyzer introduced additional O₂ into the system. This was further complicated due to the fact that the online O₂ analyzer was out of service for replacement. O₂ concentration within the Waste Gas System was reduced to < 2% on 12/12/93, at 0408 hours, at which time the TS Action Statement was exited. Lessons learned from this event will be incorporated into future planning regarding Waste Gas System modifications.

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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:

Waste Gas Holdup System Oxygen Concentration Greater Than 2% For More Than 48 Hours

Event Date: 12/5/93

Report Date: 1/4/94

This report was initiated by Incident Report No. 93-494.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 5; 11th refueling/maintenance outage in progress; Reactor core reload complete

DESCRIPTION OF OCCURRENCE:

Oxygen concentration within the Waste Gas Holdup System {WE} was greater than 2% for more than 48 hours, which exceeded Technical Specification (TS) Action Statement 3.11.2.5.a.

On December 3, 1993, at 0910 hours, TS Action Statement 3.11.2.5.a. was entered due to oxygen concentration of 2.17% by volume as measured in 13 Waste Gas Decay Tank (WGDT). Efforts to reduce the oxygen concentration to < 2% were implemented. Oxygen concentrations above 2% were subsequently measured in other WGDTs; 3.04% in 11 WGDT on December 8, 3.11% in 14 WGDT on December 8, and 3.29% in 12 WGDT on December 9. The maximum measured concentration was 4.25% in 13 WGDT on December 4. Oxygen concentration within the Waste Gas Holdup System was reduced to less than 2% on December 12, 1993 at 0408 hours, at which time the TS Action Statement was exited.

ANALYSIS OF OCCURRENCE:

There is an increased probability of oxygen concentration greater than 2% within the Waste Gas Holdup System after a refueling/maintenance outage. Oxygen may enter the Waste Gas Holdup System via the CVCS Holdup Tanks, the Reactor Coolant Drain Tank, the Pressurizer Relief Tank, and the Volume Control Tank (VCT). The valves which provide direct flow to the Waste Gas Header when these tanks are opened to the

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ANALYSIS OF OCCURRENCE: (cont'd)

ambient atmosphere are required to be closed. In addition, extensive modifications to the Waste Gas Analyzer and the Waste Gas System were performed.

APPARENT CAUSE OF OCCURRENCE:

The root cause is attributed to "Design, Manufacturing, Construction/Installation", as per NUREG-1022. The source of the oxygen is attributed to routine refueling/ maintenance outage activities. In addition, extensive modifications to the Waste Gas Analyzer and Waste Gas System were performed requiring these systems be opened. Prior to closure, steps were performed to purge these systems with nitrogen. However, the design of these systems does not lend itself to effective purging. Furthermore, the calibration of the Waste Gas Analyzer introduced additional oxygen into the system. This situation was further complicated due to the fact that the online oxygen analyzer was out of service for replacement.

PREVIOUS SIMILAR OCCURRENCES:

LER 272/87-019-00 reported a similar event in the Waste Gas System. Corrective actions to the 1987 event have been effective for normal refueling/maintenance outage activities.

SAFETY SIGNIFICANCE

This event is reportable in accordance with 10CFR 50.73(a)(2)(i)(B), since TS Action Statement 3.11.2.5.a was not met.

This event did not affect the health or safety of the public. The concern for oxygen within the Waste Gas Holdup System is due to the presence of hydrogen gas within the system. In sufficient quantities, hydrogen in the presence of oxygen can be explosive. The TS level of not greater than 2% oxygen is conservatively low, ensuring that this explosive hazard is not present. Monitoring of the oxygen concentration in accordance with TS ensures that if the concentration increases above the 2% limitation, expeditious corrective action can be taken to lower the level to below 2%. During this event the highest measured hydrogen concentration was 1.51%, therefore potential for an explosive mixture of hydrogen and oxygen in the Waste Gas Holdup System did not exist.

CORRECTIVE ACTION:


Oxygen concentration within the Waste Gas System was reduced to less than 2% on December 12, 1993 at 0408 hours, at which time the TS Action Statement was exited.

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CORRECTIVE ACTION: (cont'd)

Lessons learned from this event will be incorporated into future planning regarding Waste Gas System modifications.


General Manager -
Salem Operations

MJPJ:pc

SORC Mtg. 94-001