

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)  
Salem Generating Station - Unit 1DOCKET NUMBER (2)  
0 5 0 0 0 2 7 2 1 OF 0 5

TITLE (4)

Service Water Leaks Inside Containment

EVENT DATE (5)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (9)													
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)											
1	1	1	8	4	8	4	0	2	7	0	0	1	2	0	2	8	4	0	5	0	0	0
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																			
POWER LEVEL (10)			20.402(b) 20.405(e) 50.73(a)(2)(iv) 73.71(b)																			
01010			20.405(a)(1)(i) 50.36(e)(1) 50.73(a)(2)(v) 73.71(e)																			
			20.405(a)(1)(ii) 50.36(e)(2) 50.73(a)(2)(vi) X OTHER (Specify in Abstract below and in Text, NRC Form 388A)																			
			20.405(a)(1)(iii) 50.73(a)(2)(i) 50.73(a)(2)(vii)(A) IE Bulletin																			
			20.405(a)(1)(iv) 50.73(a)(2)(ii) 50.73(a)(2)(vii)(B) 80-24																			
			20.405(a)(1)(v) 50.73(a)(2)(iii) 50.73(a)(2)(ix)																			

LICENSEE CONTACT FOR THIS LER (12)

NAME  
B. W. Smith

TELEPHONE NUMBER

AREA CODE  
6 0 9 3 3 9 - 4 0 2 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	
B	B	I	P	S	F	X	9	9	9	Y	
B	B	I	P	S	F	X	9	9	9	Y	

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

At 1400 and 1900 hours, November 18, 1984, during pre-startup containment inspections, service water leaks were discovered on No. 14 and No. 11 Containment Fan Coil Units (CFCU's) respectively. The CFCU's were isolated and Technical Specification Action Statements 3.6.2.3.a and 3.6.2.3.b were entered. The leaks were located in the area where the CFCU carbon steel, cement lined vent lines are welded to the flanges for valves 11SW61 and 14SW61. The failures were caused by external surface corrosion of the piping due to the surface of the piping remaining moist from condensation. Some galvanic corrosion was noted at the pipe flange and valve flange mating areas due to the dissimilar metals (stainless steel valves and valve flanges and carbon steel piping). The vent lines, flanges and valves were replaced. The piping was temporarily replaced with stainless steel; but, will eventually be replaced with cement lined carbon steel piping when material is available. In addition, plans are to utilize maloney gasket kits to prevent the galvanic corrosion. No water accumulated inside containment, and no other equipment was affected by the events. The remaining fan coil units and containment spray systems remained in an operable status throughout the events. Due to the service water leaks inside containment, this report is required in accordance with IE Bulletin Number 80-24.

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PDR ADOCK 05000272  
S PDR

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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:**

Service Water Leaks Inside Containment - No. 11 and No. 14 Containment Fan Coil Unit (CFCU) Vent Lines

Event Date: 11/18/84

Report Date: 12/02/84

This report was initiated by Incident Report No. 84-192 and 84-193

**CONDITIONS PRIOR TO OCCURRENCE:**

Mode 3 - Rx Power 000 % - Unit Load 0000 MWe

**DESCRIPTION OF OCCURRENCE:**

At 1400 hours, November 18, 1984, during a pre-startup inspection of the containment, a service water leak was discovered on a vent line for No. 14 CFCU [BK]. No. 14 CFCU was isolated and Technical Specification Action Statement 3.6.2.3.a was entered. At 1900 hours, November 18, 1984, during a subsequent containment inspection, a supervisor observed a second service water leak on No. 11 CFCU vent line. No. 11 CFCU was immediately isolated. Since this constituted the second group of CFCU's being inoperable, Technical Specification Action Statement 3.6.2.3.b was entered. In accordance with the Code of Federal Regulations, 10CFR 50.72(b), the Nuclear Regulatory Commission was notified of the Service Water System [BI] leaks in the containment at 1419 hours and 1921 hours, November 18, 1984, respectively.

**APPARENT CAUSE OF OCCURRENCE:**

Investigations revealed that the leaks were from No. 11 and No. 14 CFCU Service Water Supply Header vent lines, at a point where the vent lines were welded to the flanges for Valves 11SW61 and 14SW61. Additional leakage was noted at the vent line flange and the valve flange mating surfaces. Inspection of the vent lines, after removal, revealed that the cement lining was not damaged and the inside diameter of the pipes were intact.

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**APPARENT CAUSE OF OCCURRENCE: (cont'd)**

An excessive amount of external surface corrosion was noted at the pipe to flange weld areas and valve flange to pipe flange connections. It appears that the external corrosion of the weld area was due to the heat in the containment and continual flow of cold water through the pipes resulting in moisture accumulation on the surface of the pipe. The apparent cause of the flange to flange connection failures appear to be the result of galvanic corrosion (the valves and valve flange are stainless steel and the pipe and pipe flange is carbon steel). The rubber flange gasket apparently does not prevent this reaction between dissimilar metals from occurring. The welded connections and flange to flange connections on the redundant fan coil units were inspected; the lines that contained 11SW61, 11SW62, 14SW61 and 14SW62 welds were determined to be in need of repair. The condition of all other lines was satisfactory.

**ANALYSIS OF OCCURRENCE:**

Technical Specification 3.6.2.3 requires three (3) independent groups of containment cooling fans to be operable, with two (2) fan systems to each of two (2) groups and one (1) fan system to the third group.

Action Statement 3.6.2.3.a states:

With one group of the above required containment cooling fans inoperable and both containment spray systems operable, restore the inoperable group of cooling fans to operable status within seven (7) days, or be in at least hot standby within the next six (6) hours and in cold shutdown within the following thirty (30) hours.

Following the discovery of the first service water leak, at 1400 hours, November 18, 1984, Technical Specification Action Statement 3.6.2.3.a was appropriately entered. The redundant containment cooling fans and both Containment Spray Systems [BE] remained in an operable status until later the same day at 1900 hours, when the second service water leak was discovered.

Action Statement 3.6.2.3.b states:

With two groups of the required containment cooling fans inoperable, and both Containment Spray Systems [BE] operable, restore at least one group of cooling fans to operable status within seventy-two (72) hours or be in at least hot standby within the next six (6) hours and in cold shutdown within the following thirty (30) hours. Restore both above required groups of cooling fans to operable status within seven (7) days of initial loss or be in at least hot standby within the next six (6) hours and in cold shutdown within the following thirty (30) hours.

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**ANALYSIS OF OCCURRENCE: (cont'd)**

The CFCU's provide 100% redundancy to the Containment Spray System for the purpose of containment cooling and depressurization during a high energy line break inside containment. Therefore, the loss of CFCU's does not impact the ability to reduce or control containment pressure following an accident. During normal operation the CFCU's are required to maintain average containment temperature below the design limit of one-hundred, twenty degrees Fahrenheit (120°F). If air temperature can not be maintained below 120°F, the appropriate action statements would be invoked.

The remaining containment cooling fans and both Containment Spray Systems [BE] remained in an operable status throughout the occurrences, and the inoperable fans were restored to an operable status within the time specified by the Action Requirements. The leaks did not result in any significant detectable accumulation of service water in the Containment, and no equipment damage resulted from the leaks. The events constituted operation in a degraded mode permitted by a limiting condition for operation in accordance with the Technical Specifications. The events involved no undue risk to the health or safety of the public. Due to the service water leaks inside of containment, the events are reportable in accordance with IE Bulletin No. 80-24.

**CORRECTIVE ACTION:**

Due to the unavailability of carbon steel cement lined pipes, the vent lines were replaced with Type 316 Stainless Steel pipe. The flanges and valves were also replaced with stainless steel components. Depending upon material availability and an outage of sufficient duration, these lines will eventually be replaced with carbon steel cement lined pipe or an equivalent replacement. A periodic inspection on these vent lines will be performed because Type 316 Stainless Steel is susceptible to pitting corrosion when installed in the Service Water System.

These vent lines shall continue to be uninsulated, because investigations have revealed that this material acts as a catalyst to corrosion. Since the insulation does not fully eliminate the moisture, it retains the moisture like a sponge, maintaining the surface in a continuous corrosive state. In order to correct the problem of galvanic corrosion between dissimilar metal flanges (when the flanges are eventually replaced with carbon steel components), plans are to utilize a maloney gasket kit vice the rubber gaskets which are presently installed.



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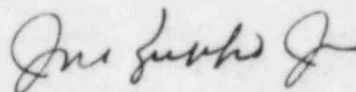
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CORRECTIVE ACTION (cont'd):

All welds were dye-penetrant (PT) inspected. The lines were pressurized, and inservice inspections were performed. The results were satisfactory, and No. 11 and No. 14 CFCU's were declared operable. Technical Specification Action Statements 3.6.2.3.b and 3.6.2.3.a were terminated at 0719 hours and 1600 hours, November 20, 1984, respectively. In addition, Engineering is developing a test procedure to be used for periodic surveillance of Service Water piping in containment.

  
General Manager-  
Salem Operations

BWS:tns

SORC Mtg 84-163



**PSEG**

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

Salem Generating Station

December 2, 1984

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 84-027-00

This Licensee Event Report is being submitted pursuant to the requirements of IE Bulletin Number 80-24. This report is required within fourteen (14) days of discovery.

Sincerely yours,

J. M. Zupko, Jr.  
General Manager-  
Salem Operations

BS:tcs

CC: Distribution

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