

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1) Salem Generating Station - Unit 1										DOCKET NUMBER (2) 0 5 0 0 3 2 7 2 1 OF 0 3										PAGE (3) 1		
TITLE (4) Reactor Trip From 100% Due to Turbine Generator 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	2	2	4	8	4	0	0	5	0	0	0	3	2	3	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)																			
1			20.402(b)				20.408(a)				X				30.772(a)(2)(iv)				73.71(b)			
POWER LEVEL (10)			20.408(a)(1)(i)				80.36(a)(1)								80.73(a)(2)(v)				73.73(a)			
1 0 0			20.408(a)(1)(ii)				80.36(a)(2)								80.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 306A)			
			20.408(a)(1)(iii)				80.73(a)(2)(i)								80.73(a)(2)(viii)(A)							
			20.408(a)(1)(iv)				80.73(a)(2)(ii)								80.73(a)(2)(ix)(B)							
			20.408(a)(1)(v)				80.73(a)(2)(iii)								80.73(a)(2)(x)							
LICENSEE CONTACT FOR THIS LER (12)																						
NAME										TELEPHONE NUMBER												
J. L. Rupp										AREA CODE 6 0 9 3 3 9 - 4 3 0												
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												
X	BB	TG	W	1 2 0	Y																	
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR								
X YES (if yes, complete EXPECTED SUBMISSION DATE)												0	5	3 1 8								
NO																						

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

On February 24, 1984, during routine power operation, a reactor trip occurred from one-hundred percent power. The reactor trip was a result of Unit 1 Turbine Generator tripping on generator neutral ground protection. Initial investigation revealed that Coil B31 had failed outside the iron at the cooling water connection, on the exciter end of the generator. A cooling water leak had also developed in this area. Some copper splatter from the failed coil, and degraded insulation was noted in several areas. In addition, some loose generator coils were noted on the exciter end. The full extent of the damage, and the cause of the generator failure is still under investigation. A supplemental report will be issued when the repairs have been completed, and a determination of the cause has been made. The reactor protection system functioned as designed. The turbine trip and the reactor trip occurred as required to prevent additional generator damage, and to minimize the primary plant transient. This occurrence involved no undue risk to the health or safety of the public. Because of the automatic actuation of the Reactor Protection System, the event is reportable in accordance with the Code of Federal Regulations, 10CFR 50.73(a)(2)(iv).

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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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:

Reactor Protection System [JC] - Reactor Trip From 100% - Turbine Generator Failure - (Rx Trip #84-05)

Event Date: 02/24/84

Report Date: 03/23/84

This report was initiated by Incident Report No. 84-038

### CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 - Rx Power 100 % - Unit Load 1129 MWe

### DESCRIPTION OF OCCURRENCE:

At 1726 hours, February 24, 1984, during routine power operation, Unit 1 Turbine Generator tripped on generator neutral ground protection. By design, the turbine trip caused a reactor trip.

### APPARENT CAUSE OF OCCURRENCE:

Initial investigation revealed some loose generator coils on the exciter end. Coil B31 had failed outside the iron at the cooling water connection, on the exciter end of the generator. A cooling water leak had also developed in this area. Some of the generator diamond spacers were found to be loose and worn. In addition, copper splatter from the failed coil and degraded insulation was noted in several areas. The full extent of the damage and the cause of the generator failure is still under investigation.

### ANALYSIS OF OCCURRENCE:

The primary function of the reactor trip (on turbine trip) is to prevent steam generator safety valve actuation, due to the steam generator pressure increase, in the event that the turbine should trip during power operation. A turbine trip is sensed by two (2) out of three (3) signals from low autostop oil pressure or all turbine steam stop valves closed signals. A turbine trip causes a direct reactor trip above approximately ten percent (10%) reactor power (P-7 interlock circuitry), and results in a controlled short term release of steam to the turbine condenser. This steam release removes sensible heat from the RCS, and thereby avoids steam generator safety valve actuation.

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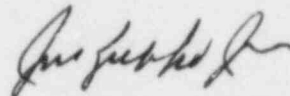
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**ANALYSIS OF OCCURRENCE: (cont'd)**

This reactor trip is anticipatory, and included as part of good engineering practice and prudent design. No credit is taken in any of the safety analyses for this trip. Reactor protection during power operation is provided by the Power Range Detectors, for rapid transients, and by the Overtemperature and Overpower Delta Temperature, for slower developing transients. The Reactor Protection System [JC] functioned as designed. The turbine trip and the reactor trip occurred as required to prevent additional generator damage, and to minimize the primary plant transient. This occurrence involved no undue risk to the health or safety of the public. Because of the automatic actuation of the Reactor Protection System, the event is reportable in accordance with the Code of Federal Regulations, 10CFR 50.73(a)(2)(iv).

**CORRECTIVE ACTION:**

The generator will require extensive repairs. Investigation into the extent and cause of the damage is in progress. A supplemental report will be issued, when the repairs have been completed and a determination of the cause has been made. These are the first generator problems of this type ever experienced at Salem.



General Manager -  
Salem Operations

JLR:tns

SORC Mtg 84-033



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

Salem Generating Station

March 23, 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 84-005-00

This Licensee Event Report is being submitted pursuant to the requirements of 10CFR 50.73(a)(2)(iv). This report is required within thirty (30) days of discovery.

Sincerely yours,

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

JR:k119-6

CC: Distribution

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