NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Salem Generating Station - Unit 2	0 5 0 0 0 3 1 1	1 OF 0 4

TITLE (4)

Reactor Trip from 74% - Loss of No. 22 Station Power Transformer

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 9	1 1	8 6	8 6	0 0 9	0 0	1 0	1 0	8 6		0 5 0 0 0
										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)	0 7 4	20.402(b)	20.405(c)	X 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 366A)
		20.405(a)(1)(iii)	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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
M. J. Pollack - LER Coordinator	6 0 9 3 3 9 - 4 0 2 2

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	
AS	F K	S P T	W 1 2 0	Y		AS	F K	T R A N	I 0 0 5	Y	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 1	2 3	8 7

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

On 9/11/86, at 1858 hours, during routine power operation, a reactor trip occurred. The First Out Annuciator was "Reactor Coolant Low Flow/Reactor Coolant Pump Breaker Open and P-8 (reactor above 36% power)". The plant was stabilized in Mode 3 (Hot Standby). The initiating cause of this event was an electrical fault in 2F 4160/230V Transformer. The fault resulted in the operation of overcurrent relay protection which opened the 4KV breaker 2F5D supplying the 2F 4160/230V Transformer. Simultaneously, No. 22 Station Power Transformer (SPT) 13/4KV, was isolated due to Phase A and Phase B differential relay protection operation. The loss of No. 22 SPT resulted in the loss of "F" & "G" 4KV Group Busses. Loss of these busses caused the loss of No. 23 and No. 24 Reactor Coolant Pumps (RCP's) resulting in the reactor trip/turbine trip. Testing of No. 22 SPT confirmed the transformer sustained an internal fault. Upon completion of investigation of the two failed transformers, a supplemental report to this LER will be issued.

IE22
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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 Trip From 74% - Loss of No. 22 Station Power Transformer (SPT)

Event Date: 09/11/86

Report Date: 10/10/86

This report was initiated by Incident Report No. 86-294

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 - Reactor Power at 74% - Load 750 MWe

DESCRIPTION OF OCCURRENCE:

On September 11, 1986, at 1858 hours, during routine power operation, a reactor trip occurred. First out annunciation was "Reactor Coolant Low Flow/Reactor Coolant Pump Breaker Open and P-8 (reactor power above 36%)".

The Unit was stabilized in Mode 3 (Hot Standby), and at 1908 hours, in accordance with the requirements of the Code of Federal Regulations, 10CFR 50.72(b)(2)(ii), the Nuclear Regulatory Commission was notified of the automatic actuation of the Reactor Protection System {JC}.

APPARENT CAUSE OF OCCURRENCE:

The initiating cause of this event was an electrical fault in 2F 4160/230V Transformer {FK} (a dry type forced air cooled transformer). The fault resulted in the operation of overcurrent relay protection which opened the 4KV breaker 2F5D supplying the 2F 4160/230V Transformer. Simultaneously, No. 22 Station Power Transformer (SPT) {FK} 13/4KV (an oil type forced oil/air cooled transformer), was isolated due to Phase A and Phase B differential relay protection operation. The loss of No. 22 SPT resulted in the loss of "F" & "G" 4KV Group Busses. Loss of these busses caused the loss of No. 23 and No. 24 Reactor Coolant Pumps (RCP's) {AB} resulting in the reactor trip/turbine trip.

APPARENT CAUSE OF OCCURRENCE: (cont'd)

As part of the investigation regarding the failure of No. 22 SPT, testing was performed which confirmed the transformer sustained an internal fault (see Corrective Actions section for summary of test results).

ANALYSIS OF OCCURRENCE:

The loss of No. 22 SPT resulted in the loss of 2F and 2G 4KV Group Busses. These busses power Nos. 23 and 24 RCP's, respectively. The loss of two (2) RCP's result in a reduction of forced coolant flow through the core such that with the Unit above 10% power (P-7) a reactor trip/turbine trip will result. This reactor trip ensures that the departure from nucleate boiling ratio remains greater than 1.30 for all design transients in the event of a loss of two or more RCP's with the reactor above 10% power (P-7). The first out annunciator signal differed since one RCP breaker opened prior to the other breaker thereby causing the anticipatory trip experienced, "Reactor Coolant Low Flow/RCP Breaker Open and P-8".

The Reactor Protection System functioned as designed. This occurrence involved no undue risk to the health or safety of the public. However, because of the automatic actuation of the Reactor Protection System, this event is reportable in accordance with the Code of Federal Regulations, 10CFR 50.73(a)(2)(iv).

CORRECTIVE ACTION:

As identified in the Apparent Cause of Occurrence section, the No. 22 SPT sustained an internal fault. A summary of the tests which provide this conclusion include:

1. Excitation Electrical Test - This test indicated high excitation current;

2. Turns Ratio Test - The no load tap changer and the load tap changer were set in a configuration which will give a specific ratio of voltage change (the acceptable range is ±0.5%); one voltage phase could not be balanced on a test set due to high excitation current;

3. Combustible Gas Test - A sample of oil was drawn to determine gas content; The maximum amount of acetylene gas which can be expected is 10 ppm; 37 ppm was found.

Also, all applicable relays associated with the two (2) transformers were tested. No discrepancies were found.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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CORRECTIVE ACTION: (cont'd)

The failed transformers were replaced. Investigation into the cause of their failure is continuing. Upon completion of investigations, a supplemental report to this LER will be issued.

General Manager -
Salem Operations

MJP:pc

SORC Mtg. 86-087

PSE&G

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

Salem Generating Station

October 10, 1986

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 86-009-00

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

MJP:pc

Distribution

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