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 1	0 5 0 0 0 2 7 2	1 OF 03

TITLE (4)
Reactor Trip From 10% During Unit Startup Operations

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 1	1 0	8 4	8 4	- 0 0 3	- 0 0	0 2	0 9	8 4		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 1 0	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
J. L. Rupp	AREA CODE 6 0 9 3 3 9 - 4 3 0 9

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	
B	J B	L C	H 0 1 5	Y							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On January 10, 1984, during unit startup operations, a turbine trip occurred due to high-high level in No. 14 Steam Generator; this resulted in a reactor trip. Steam generator water level control was in automatic operation. Coincident with latching the turbine, an overfeed condition developed on No. 13 and No. 14 Steam Generators. This overfeed condition caused Reactor Coolant System temperature to decrease which, in turn, increased reactor power above ten percent. When the high-high water level setpoint in No. 14 Steam Generator was reached, a turbine trip occurred. This caused a reactor trip because power level was greater than ten percent. At power levels below approximately fifteen percent, automatic response of the water level control systems, to changes in steam generator level, is very slow. This results in overcompensation, and relatively large steam generator water level variations. During this occurrence, the oscillations were larger than normal. Because of this, the Steam Generator Feedwater Level Control Systems for No. 13 and No. 14 Steam Generators were thoroughly tested. The system input and output control signals were monitored, with the aid of a brush recorder for over two weeks; no problems were noted. The control systems have functioned satisfactorily during subsequent unit startups, and during power operation.

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 10% During Unit Startup Operations - High High Level No. 14 Steam Generator - Turbine Trip - (Rx Trip #84-03)

Event Date: 01/10/84

Report Date: 02/09/84

This report was initiated by Incident Report No. 84-013

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 - Rx Power 010 % - Unit Load 0000 MWe

DESCRIPTION OF OCCURRENCE:

On January 10, 1984, a plant startup was in progress. The Steam Generator Feedwater Level Control Systems [JB] were in automatic. Coincident with latching the turbine, an overfeed condition (on No. 13 and No. 14 Steam Generators) developed, which caused Reactor Coolant System (RCS) [AB] temperature to decrease. The temperature decrease increased reactor power level to greater than ten percent (10%). At 0136 hours, the water level in No. 14 Steam Generator increased above the high-high level setpoint; this resulted in a turbine trip. Since power level was greater than ten percent (10%), this turbine trip caused a reactor trip.

APPARENT CAUSE OF OCCURRENCE:

The Steam Generator Feedwater Level Control System [JB] is normally a three (3) element control system, during automatic operation. It receives signals from steam flow, feed flow and steam generator level error. At very low power levels (below approximately 15%) the control system senses only the steam generator level error signal, because of the minimum steam flow and feed flow conditions. A steam generator level change has to occur before the level controller can respond. This results in sluggish response and overcompensation by the controller; and consequently, relatively large deviations from the level setpoint. In this case, the level oscillations were very large. A review of the strip chart recorder tracers indicated that an excessive overfeed condition existed on No. 13 and No. 14 Steam Generators just prior to the high level trip.

ANALYSIS OF OCCURRENCE:

The turbine trip, on high-high level in the steam generator, is an anticipatory trip. The primary function of this turbine trip is to prevent moisture carry-over, and subsequent damage to the turbine, due to the high velocity impingement of this moisture on the turbine blades. 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 a turbine trip occurs 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.

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 startup operations is provided by the Source Range, Intermediate Range and low setting of the Power Range neutron flux trips. The Reactor Protection System [JC] functioned as designed. 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 Steam Generator Feedwater Level Control Systems for both 13 and 14 Steam Generators were tested for proper response to all control signals. The valve positioners and the current to the pneumatic converters were checked; they were satisfactory. The valves were stroked both locally and remotely. A brush recorder was installed to monitor the input and output signals of the controllers. It was installed from the time of occurrence until January 27, 1984. No problems were noted. The control systems functioned as designed. Because the increase in level occurred in conjunction with latching the turbine, a thorough investigation was made to determine if there was any connection between the two events. The turbine was latched seven (7) times, and the level control systems consistently functioned properly. The Station Operations Review Committee met to discuss the event and the corrective actions taken. Recommendations were made to monitor the level control systems closely during the next reactor startup. They have continued to function satisfactorily during subsequent plant startups, and during power operation.

Prepared By J. L. Rupp

General Manager -
Salem Operations

SORC Meeting 84-016

PSE&G

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

Salem Generating Station

February 9, 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 84-003-00

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:kll

CC: Distribution

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