

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Salem Generating Station - Unit 2DOCKET NUMBER (2)
0 5 0 0 0 3 1 1 1
PAGE (3)
1 OF 13TITLE (4)
Reactor Trip From 54% - Turbine Trip and P-7

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	4	2	3	8	5	8	5	0	0	6	0	5	0	0	0		
											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) 0 1 5 1 4	<table border="1"><tr><td>20.402(b)</td><td>20.406(e)</td><td><input checked="" type="checkbox"/></td><td>50.73(a)(2)(iv)</td><td>73.71(b)</td></tr><tr><td>20.406(a)(1)(i)</td><td>50.38(a)(1)</td><td><input type="checkbox"/></td><td>50.73(a)(2)(v)</td><td>73.71(e)</td></tr><tr><td>20.406(a)(1)(ii)</td><td>50.38(a)(2)</td><td><input type="checkbox"/></td><td>50.73(a)(2)(vii)</td><td>OTHER (Specify in Abstract below and in Text, NRC Form 368A)</td></tr><tr><td>20.406(a)(1)(iii)</td><td>50.73(a)(2)(i)</td><td><input type="checkbox"/></td><td>50.73(a)(2)(viii)(A)</td><td></td></tr><tr><td>20.406(a)(1)(iv)</td><td>50.73(a)(2)(ii)</td><td><input type="checkbox"/></td><td>50.73(a)(2)(viii)(B)</td><td></td></tr><tr><td>20.406(a)(1)(v)</td><td>50.73(a)(2)(iii)</td><td><input type="checkbox"/></td><td>50.73(a)(2)(ix)</td><td></td></tr></table>	20.402(b)	20.406(e)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)	20.406(a)(1)(i)	50.38(a)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(e)	20.406(a)(1)(ii)	50.38(a)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 368A)	20.406(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)		20.406(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)		20.406(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)	
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LICENSEE CONTACT FOR THIS LER (12)
NAME
J. L. Rupp - LER Coordinator
TELEPHONE NUMBER
AREA CODE
6 0 9 3 3 9 - 4 3 0 1 9

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	

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)

On April 23, 1985, during routine power operations, a reactor trip was initiated by a turbine trip, when a partially filled Main Turbine Lube Oil Cooler was placed in service. Testing verified that the cooler vent line remains full of oil, even when the cooler is partially drained. When the out-of-service cooler was pressurized, the residual oil flow observed in the lube oil cooler vent line "bull's-eye" provided false indication that the cooler was full. The cooler was then placed in service, and a momentary drop in turbine lube oil pressure resulted in the turbine/reactor trip. The root cause of the event was determined to be the lack of sufficient procedural guidance to ensure that operators clearly distinguish the difference between residual vent line oil and a solid stream of oil, which verifies that the cooler is completely full. To preclude recurrence, the Main Turbine Lubricating Oil System operating procedure was revised to include a section specifically addressing the rotation of the in-service oil cooler. The turbine trip and the reactor trip occurred as required to prevent turbine bearing damage, and to minimize the primary plant transient. This occurrence involved no undue risk to the health or safety of the public; however, the automatic actuation of the Reactor Protection System is reportable in accordance with 10 CFR 50.73(a)(2)(iv).

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Salem Generating Station	DOCKET NUMBER	LER NUMBER	PAGE
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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 54% - Turbine Trip and P-7

Event Date: 04/23/85

Report Date: 05/23/85

This report was initiated by Incident Report No. 85-102

CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 - Rx Power 054 % - Unit Load 550 MWe

DESCRIPTION OF OCCURRENCE:

At 0022 hours, April 23, 1985, during routine power operation, a reactor trip occurred. The first out annunciator was "Turbine trip and P-7". The operating shift was in the process of shifting Main Turbine Lube Oil Coolers [TD] at the time, and initial investigation revealed that the turbine trip was the result of low lube oil pressure signals. The Unit was stabilized in Mode 3 (Hot Standby), and at 0039 hours, in accordance with the requirements of the Code of Federal Regulations, 10CFR 50.72(b)(2)(ii), the Commission was notified of the automatic actuation of the Reactor Protection System [JC].

APPARENT CAUSE OF OCCURRENCE:

A detailed investigation of the event revealed that the lube oil coolers were shifted in accordance with existing instructions. Specifically, the equalizing valve between the in-service and the out-of-service coolers was opened, and oil filled the vent line "bull's-eye", indicating that the out-of-service lube oil cooler was full of oil. However, the out-of-service cooler was actually partially drained, and the oil which appeared in the "bull's-eye" was residual oil which remained in the vent line when the cooler was last removed from service. The out-of-service lube oil cooler had not been utilized since turbine lube oil testing was performed during a previous outage. When the equalizing valve between the in-service and the out-of-service coolers was opened, the partially drained cooler began to fill with oil. The residual oil in the vent line began to flow through the "bull's-eye", providing a false indication to the operators that the cooler was full.

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Salem Generating Station	DOCKET NUMBER	LER NUMBER	PAGE
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APPARENT CAUSE OF OCCURRENCE: (cont'd)

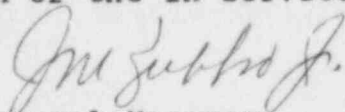
Upon placing the cooler in service, air entered the system, causing a momentary drop in turbine lube oil pressure and the resultant turbine/reactor trip. Subsequent testing verified that the vent line remains full of oil following partial draining of the lube oil cooler, and the testing confirmed this scenario. The root cause of this event was attributed to the lack of sufficient procedural guidance to preclude the possibility of interpreting the "full's-eye" indication incorrectly.

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 actuated 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 Reactor Coolant System [AB], thereby avoiding 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 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 functioned as designed. The turbine trip and the reactor trip occurred as required to prevent turbine bearing 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:

As previously stated, testing duplicated the sequence of events and verified the scenario detailed in the "Apparent Cause of Occurrence". To preclude recurrence of this event, additional operator guidance was provided by a procedural revision to Operating Procedure OP-III-3.3.1 (Main Turbine Lubricating Oil System-Normal Operation). This procedure was revised to include a section specifically addressing the rotation of the in-service oil cooler.


General Manager-
Salem Operations

JLR:tns

SORC Mtg 85-087



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

Salem Generating Station

May 23, 1985

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 85-006-00

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

Sincerely yours,

A handwritten signature in cursive script, appearing to read "J. M. Zupko, Jr.", is written over the typed name.

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

JLR:tcs

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