

LR-N03-0304



**JUL 1 8 2003**

U. S. Nuclear Regulatory Commission  
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Washington, DC 20555

**LER 272/03-001-00**  
**SALEM GENERATING STATION - UNIT 1**  
**FACILITY OPERATING LICENSE NO. DPR-70**  
**DOCKET NO. 50-272**

This Licensee Event Report entitled "Plant Operation For Greater Than 72 Hours With 13 AFW Pump Inoperable" is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(v)(B)&(D).

Sincerely,

A handwritten signature in black ink, appearing to read "L. Waldinger".

L. Waldinger  
Director – Site Operations

Attachment

BJT

C     Distribution  
      LER File 3.7

*TE22*

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

<b>1. FACILITY NAME</b> SALEM GENERATING STATION UNIT 1	<b>2. DOCKET NUMBER</b> 05000272	<b>3. PAGE</b> 1 OF 4
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**4. TITLE**  
PLANT OPERATION FOR GREATER THAN 72 HOURS WITH 13 AFW PUMP INOPERABLE

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
5	23	03	03	001	00	07	18	03	Salem Unit 1	
									FACILITY NAME	DOCKET NUMBER

<b>9. OPERATING MODE</b> 1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>				
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
<b>10. POWER LEVEL</b> 100	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 73.71(a)(4)	
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(5)	
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 366A	
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)		
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)		
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)		
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)		
<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)			

**12. LICENSEE CONTACT FOR THIS LER**

<b>NAME</b> Brian J. Thomas, Licensing Engineer	<b>TELEPHONE NUMBER (Include Area Code)</b> 856-339-2022
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	BA	FCV	M120	Y	X	BA	SHV	S075	Y

<b>14. SUPPLEMENTAL REPORT EXPECTED</b>				<b>15. EXPECTED SUBMISSION DATE</b>		
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO		MONTH	DAY	YEAR

**16. ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On May 23, 2003, during the performance of surveillance testing on the 13 Turbine Driven Auxiliary Feedwater (TDAFW) pump {BA/-}, the TDAFW pump tripped. During the start of the 13 TDAFW pump, the steam admission valve (1MS132) valve popped open. The popping open of the 1MS132 valve caused an in-rush of steam and mechanical agitation (shaking and vibration) of the steam line. This mechanical agitation resulted in the unlatching of the steam trip valve (1MS52) for the 13 TDAFW pump causing the pump to trip.

The cause of the 13 TDAFW pump trip is attributed to the popping open of the 1MS132 steam valve due to the split block being loose, which created a mechanical agitation of the steam line that led to the unlatching of the 1MS52 trip valve. Corrective actions consist of the tightening of the split block for the 1MS132 valve and satisfactory re-test of the valve, and changes to the maintenance procedure for the MS132 valves regarding the tightening of split blocks.

This report is being made in accordance with 10CFR50.73(a)(2)(i)(B), "any operation or condition which was prohibited by the plant's Technical Specification" and 10CFR50.73(a)(2)(v)(B) & (D), "any event or condition that could have prevented the fulfillment of the safety structures that are needed to: remove residual heat and mitigate the consequences of an accident."

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

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SALEM UNIT 1	05000272	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		03	0 0 1	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**PLANT AND SYSTEM IDENTIFICATION**

Westinghouse – Pressurized Water Reactor

Auxiliary Feedwater System (BA/-)

\* Energy Industry Identification System {EIIIS} codes and component function identifier codes appear as (SS/CCC)

**CONDITIONS PRIOR TO OCCURRENCE**

Salem Unit 1 was in Mode 1 at 100% power at the time of discovery. No additional equipment was out of service that contributed to this event.

**DESCRIPTION OF OCCURRENCE**

On May 23, 2003, during the performance of surveillance testing on the 13 Turbine Driven Auxiliary Feedwater (TDAFW) pump {BA/-}, the TDAFW pump tripped. During the start of the 13 TDAFW pump, the steam admission valve (1MS132) valve popped open. The popping open of the 1MS132 valve caused an in-rush of steam and mechanical agitation (shaking and vibration) of the steam line. This mechanical agitation resulted in the unlatching of the steam trip valve (1MS52) for the 13 TDAFW pump causing the pump to trip. Prior to running the TDAFW pump for testing, the trip latch for the 1MS52 trip valve is tested and re-latched. Operators involved in the latching of the 1MS52 valve during this test state that the latch was properly reset.

The last time the 13 TDAFW pump was successfully run was on April 8, 2003. Since there is no evidence to determine the exact time that the 13 TDAFW pump was inoperable, it is being conservatively assumed that this pump has been inoperable for greater than 72 hours. In accordance with TS 3.7.1.2, action 'a' requires that, "with one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to operable status with 72 hours or be in at least HOT STANDBY within the next 6 hours."

This LER is being submitted pursuant to 10CFR50.73(a)(2)(i)(B) for "any operation or condition which was prohibited by the plant's Technical Specifications," and 10CFR50.73(a)(2)(v)(B) & (D), "any event or condition that could have prevented the fulfillment of the safety structures that are needed to: remove residual heat and mitigate the consequences of an accident."

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		03	0 0 1	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**CAUSE OF OCCURRENCE**

The cause of the 13 TDAFW pump trip is attributed to the popping open of the 1MS132 steam valve due to the split block being loose, which created a mechanical agitation of the steam line that led to the unlatching of the 1MS52 trip valve. The popping of the 1MS132 valve appears to have been caused by the valve plug and cage binding during initial opening of valve. This binding only occurred when steam was applied to the valve. A steam vortex and pressure wave formed as the inrush of steam through the cage impacted the plug immediately after the pilot lifted. As a result, the valve plug and stem assembly could shift slightly to the side and be rotated if the valve stem is not properly restrained at the split block. The split block on the 1MS132 was found to be loose and required tightening. During the investigation of this event, it was determined that the maintenance procedure for Masonelian valve actuators does not provide any guidance regarding the tightening of the split block blot(s); thus, leaving the tightening of this connection to the skill-of-the-craft. Once properly tightened, the 1MS132 valve operated smoothly and the pump was satisfactorily started.

**PRIOR SIMILAR OCCURRENCES**

A review of LERs for Salem and Hope Creek for the previous two years did not identify any similar occurrences of improper valve operation due to mechanical binding leading to the unavailability of safety related equipment.

**SAFETY CONSEQUENCES**

A review of operations logs identified five instances of removal of one of the two Motor-Driven AFW (MDAFW) pumps from service during the period between April 8 and May 23. With the 13 TDAFW pump inoperable, removing one of the MDAFW pumps from service only leaves one MDAFW pump to respond to an event. In accordance with Salem UFSAR Sections 15.2.8, "Loss of Normal Feedwater," and 15.2.9, "Loss of Offsite Power to the Station Auxiliaries," these analyses assume that the auxiliary feedwater system will deliver 700 gpm of flow to the steam generators. One MDAFW pump is only capable of delivering 440 gpm, which is insufficient auxiliary feedwater flow to meet the assumptions of the analyses. Although, only one MDAFW pump would be available at the start of the event, emergency operating procedures direct the operators to restore the TDAFW pump to service if it failed to start. Guidance to perform the restoration of the TDAFW pump is contained in plant operating procedures. Upon restoration of the TDAFW pump, more than sufficient AFW flow would be available to mitigate these events. Following the trip of the 13 AFW pump, a review of procedures and a walkdown of the 13 TDAFW pump by operators determined that the pump could have been readily restarted.

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**SAFETY CONSEQUENCES (cont'd)**

During the period of April 8 to May 23, 2003, there were no actual events that required the operation of the AFW system. Salem Unit 1 continued to operate in Mode 1 during this entire period. Therefore there were no actual safety consequences associated with this event.

A review of this event determined that this condition was a Safety System Functional Failure (SSFF) as defined in Nuclear Energy Institute (NEI) 99-02.

**CORRECTIVE ACTIONS:**

1. Tightened the split block for the 1MS132 steam admission valve and satisfactorily re-tested the valve.
2. Procedure SH.IC-GP.ZZ-0002(Q), "Disassembly, Inspection, Reassembly and Testing of Masoneilan Model 37/38 Air Operated Actuators", is being revised to include instructions for tightening split blocks.
3. A walkdown of other safety related valves that utilize the split block connection was performed at both Salem and Hope Creek to ensure that the split blocks on these valves were not loose. In addition, the Salem Unit 2 2MS132 valve for the 23 TDAFW pump was verified to be at the correct torque value.

The above actions are being tracked in accordance with PSEG Nuclear's corrective action program.

**COMMITMENTS**

The corrective actions cited in this LER are voluntary enhancements and do not constitute commitments.