

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Salem Generating Station - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 1 1 1					PAGE (3) 1 OF 4							
TITLE (4) Boric Acid Tanks & Boron Injection Tank Boron Concentration Below Spec.																						
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	7	2	3	8	5	8	5	0	1	6	0	0	0	8	2	2	8	5	0 5 0 0 0			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																				
1		20.402(b)				20.405(e)				50.73(a)(2)(iv)				73.71(b)								
POWER LEVEL (10)		20.405(a)(1)(i)				50.36(e)(1)				50.73(a)(2)(v)				73.71(e)								
0 2 10		20.405(a)(1)(ii)				50.36(e)(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)(ix)												
LICENSEE CONTACT FOR THIS LER (12)																						
NAME J. L. Rupp-Operations Licensing Engineer										TELEPHONE NUMBER 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 NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC												
X	C	B	S	H	V	R	3	4	4	N												
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 July 23, 1985, following Unit startup operations, analysis of routine samples obtained from both Boric Acid Storage Tanks (BAST's) and from the Boron Injection Tank (BIT) revealed that the boron concentrations in all three tanks were 1100 to 1200 ppm below the minimum required value of 20,000 ppm. Technical Specification Action Statements 3.5.4.1 and 3.1.2.6.a were entered, and a Unit shutdown was commenced. This event was attributed to an equipment malfunction; i.e., 2CV173 (a check valve located between the boric acid blender and the BAST's and the BIT) apparently leaked by while performing Reactor Coolant System dilution operations during the recent startup. This resulted in the addition of approximately 1000 gallons of water to the tanks, and their inadvertent dilution. 2CV173 did not leak during subsequent testing; however, since this is the only likely flow path to the BAST's and the BIT, it is assumed that the check valve "hung up" during this one occasion. The boron concentrations of all tanks were restored to within specifications, and the action statements were terminated. Due to the isolated nature of the event, no further corrective actions were deemed necessary. This event involved no undue risk to the health or safety of the public; however, the completion of the Unit shutdown is reportable in accordance with 10CFR 50.73(a)(2)(i)(A).

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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:

Boron Concentrations in the Boric Acid Storage Tanks [CB] and the Boron Injection Tank [CB] Below Technical Specification Limit

Event Date: 07/23/85

Report Date: 08/22/85

This report was initiated by Incident Report No. 85-185

### CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 - Rx Power 20 % - Unit Load 140 MWe

### DESCRIPTION OF OCCURRENCE:

A Unit startup commenced at 2100 hours, July 22, 1985, with Mode 1 (power operation) being achieved at 0400 hours, July 23, 1985. At 0520 hours, analysis of routine samples obtained from both Boric Acid Storage Tanks (BAST's) and from the Boron Injection Tank (BIT) revealed that the boron concentrations in all three (3) tanks were below the minimum value required by the Technical Specifications. The Technical Specifications require the boron concentration in these tanks to be maintained between 20,000 and 22,500 ppm. Actual values were as follows: No. 21 BAST - 18,944 ppm; No. 22 BAST - 18,906 ppm; BIT - 18,807 ppm. Technical Specification Action Statements 3.5.4.1 and 3.1.2.6.a were entered at that time, and both the BIT and the BAST's were declared inoperable.

Action Statement 3.5.4.1 states:

With the BIT inoperable, restore the tank to operable status within one (1) hour or be in hot standby (Mode 3) and borated to a shutdown margin equivalent to one percent (1%) delta-k/k at 200°F within the next six (6) hours; restore the tank to operable status within the next seven (7) days or be in hot shutdown (Mode 4) within the next twelve (12) hours.

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

Action Statement 3.1.2.6.a states:

With the boric acid storage system inoperable and being used as one of the required borated water sources, restore the storage system to operable status within seventy-two (72) hours or be in at least hot standby (Mode 3) within the next six (6) hours and borated to a shutdown margin equivalent to at least one percent (1%) delta-k/k at 200°F; restore the boric acid storage system to operable status within the next seven (7) days or be in cold shutdown (Mode 5) within the next thirty (30) hours.

In accordance with the action requirements, a Unit shutdown was commenced at 0531 hours, July 23, 1985. At 0601 hours, in accordance with the requirements of the Code of Federal Regulations, 10CFR 50.72(b)(1)(i)(A), the Commission was notified of the initiation of the Unit shutdown. At 0617 hours, the Unit was stabilized in Mode 3.

**APPARENT CAUSE OF OCCURRENCE:**

The boron concentrations of the BAST's and the BIT were apparently lowered by the addition of approximately one-thousand (1000) gallons of water to these tanks during the Reactor Coolant System dilution operations which were performed during the recent startup. Investigation revealed that all applicable procedures were followed. The primary system valves and Chemical and Volume Control System [CB] valves associated with the boron injection flow paths were checked and found to be in their normal positions. Although not substantiated by a special leak test procedure which was performed, this event was attributed to an equipment malfunction; i.e., 2CV173 (a check valve located between the boric acid blender and the BAST's and the BIT) apparently leaked by during the Reactor Coolant System dilution operations, resulting in the inadvertent dilution of the BAST's and the BIT. The valve seated properly and did not leak during subsequent testing; however, since this is the only likely flow path to the BAST's and the BIT, it is assumed that the check valve "hung up" during this one occasion.

**ANALYSIS OF OCCURRENCE:**

The boron injection system ensures that negative reactivity control is available during each mode of operation. The BAST's and the Refueling Water Storage Tank provide the borated water sources needed to perform this function. The operability of the boron injection system as part of the Emergency Core Cooling System ensures that sufficient negative reactivity is injected into the core to counteract any positive increase in reactivity caused by Reactor Coolant System [AB] cooldown.

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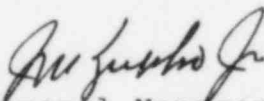
ANALYSIS OF OCCURRENCE: (cont'd)

Reactor Coolant System cooldown can be caused by inadvertent depressurization, a loss-of-coolant accident or a steam line rupture. The limits on boron concentration ensure that the assumptions used in the steam line break analysis are met for the negative reactivity insertion required to offset the effects of the Reactor Coolant System cooldown. The minimum boron concentration in the BAST's ensures sufficient negative reactivity is available to achieve a shutdown margin of 1.6% delta-k/k, after xenon decay and cooldown to 200°F at End of Life (EOL).

The potential affect on the Reactor Coolant System boron concentration, resulting from the reduction of the BIT boron concentration by approximately 1200 ppm, is minimal and would have a negligible effect on the core shutdown margin achieved upon injection of the BIT following a steam line break. With the BAST concentrations slightly low (by approximately 1100 ppm), the Technical Specification requirement to borate to 1% shutdown margin would be achievable since the basis for the 20,000 ppm is to achieve a 1.6% shutdown margin. Therefore, this event involved no undue risk to the health or safety of the public. However, because of Technical Specification requirements, a shutdown was initiated, and because that shutdown was completed, the event is reportable in accordance with the requirements of the Code of Federal Regulations, 10CFR 50.73(a)(2)(i)(A).

CORRECTIVE ACTION:

The boron concentrations of the BAST's and the BIT were restored to within specifications, and Technical Specification Action Statements 3.5.4.1 and 3.1.2.6.a were terminated at 1450 hours, July 23, 1985. Due to the isolated nature of the event, no further corrective actions were deemed necessary.

  
General Manager-  
Salem Operations

JLR:tns

SORC Mtg 85-120





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

Salem Generating Station

August 22, 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 85-016-00

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

Sincerely yours,

A handwritten signature in dark ink, appearing to read "J. M. Zupko, Jr.", written in a cursive style.

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

JLR:pc

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