



MAR 03 2010
LR-N10-0069

10CFR50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington DC 20555-001

LER 311/2010-001
Salem Nuclear Generating Station Unit 2
Facility Operating License No. DPR-75
NRC Docket No. 50-311

Subject: Manual Reactor Trip Due to Degraded Condenser Heat Removal

This Licensee Event Report, "Manual Reactor Trip Due to Degraded Condenser Heat Removal" is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(iv)(A).

The attached LER contains no commitments. Should you have any questions or comments regarding this submittal, please contact Mr. E. H. Villar at 856-339-5456.

Sincerely,



Carl J. Fricker
Site Vice President - Salem

Attachments (1)

IE 22
NRR

MAR 03 2010

cc

Mr. S. Collins, Administrator - Region I
Mr. R. Ennis, Licensing Project Manager - Salem
USNRC Senior Resident Inspector - Salem (X24)
Mr. P. Mulligan, Manager IV
Mr. H. Berrick, Salem Commitment Tracking Coordinator
Mr. L. Marabella, Corporate Commitment Tracking Coordinator

LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollect@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 an 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.

1. FACILITY NAME Salem Generating Station - Unit 2	2. DOCKET NUMBER 05000311	3. PAGE 1 of 4
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4. TITLE Manual Reactor Trip Due to Degraded Condenser Heat Removal
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5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	03	2010	2010	0 0 1	0	03	03	2010		DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)			
10. POWER LEVEL 80%	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER	
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER	
FACILITY NAME Enrique Villar	TELEPHONE NUMBER (Include Area Code) (856) 339 -5456

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
C	KE	-	-	N					

14. SUPPLEMENTAL REPORT EXPECTED					15. EXPECTED SUBMISSION DATE		
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)					<input checked="" type="checkbox"/> NO		
					MONTH	DAY	YEAR

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

On January 3, 2010, at approximately 0804, a manual reactor trip was initiated with reactor power level at approximately 80%. The manual reactor trip was initiated in response to a degraded Circulating Water (CW) system and in accordance with operating procedures. The CW system degradation was due to heavy ice loading that affected the ability of CW traveling water screens (TWS) to operate, which resulted in the loss of four out of six CW pumps.

The unit was returned to service on January 4, 2010, at 1831 after ice was cleared from the screens, condenser water boxes were cleaned and demonstrated to operate properly.

This report is being made in accordance with 10CFR50.73(a)(2)(iv)(A), "any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B)...."

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NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

Westinghouse – Pressurized Water Reactor (PWR/4)

Reactor Protection System (JC/-)

Circulating Water System (KE/ -)

* Energy Industry Identification System {EIS} codes and component function identifier codes appear as {SS/CCC}

IDENTIFICATION OF OCCURRENCE

Event Date: January 3, 2010

Discovery Date: January 3, 2010

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 2 was in Operational Mode 1.

No structures, systems or components were inoperable at the time of the discovery that contributed to the event.

DESCRIPTION OF OCCURRENCE

On January 3 starting at approximately 0600 hours, with Salem Unit 2 at 100% power, control room operators received multiple circulating water {KE/}(CW) traveling water screen {KE/}(SCN) high differential pressure alarms. For the next two hours control room operators responded in accordance with operating and abnormal operating procedures (AOPs) to address heavy ice accumulation on the traveling water screens. Environmental conditions at the time of the event included: at 0600 air temperature was 19°F, wind speed approximately 22 mph, river temperature at 31.8 °F; at 0830 air temperature was 20°F, wind speed approximately 24 mph, and river temperature was 31.1°F.

The following is a brief time line (all times are approximate) leading to the initiation of the manual reactor trip:

0712 Licensed operating personnel initiated a stop on 23B circulating water pump (circulator) due to a TWS differential pressure of five (5) feet, while the 23B circulator was cycling out of service it emergency tripped on a high TWS differential pressure of eight (8) feet and rising.

0723 23B circulator is placed in service in accordance with operating procedures.

0740 23B circulator emergency tripped due to high TWS differential pressure.

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DESCRIPTION OF OCCURRENCE (cont'd)

0745 21B circulator emergency tripped due to high TWS differential pressure.

0747 Commenced reducing main turbine load at 1% per minute to 80% power in accordance with abnormal operating procedures.

0748 23A circulator emergency tripped due to high TWS differential pressure.

0754 21B circulator placed in service and then emergency tripped due to high TWS differential pressure.

0803 21A circulator emergency tripped due to high TWS differential pressure.

0804 Unit 2 reactor is manually tripped from approximately 80% due to having only two circulators (22A and 22B) in service. Control room operating personnel transitioned to Emergency Operating Procedure Trip 1. As expected, the Auxiliary Feedwater Pumps started automatically to feed the steam generators.

0837 Unit 2 is stabilized in Mode 3 in accordance with plant operating procedures.

The unit was returned to service on January 4, 2010, at 1831 after ice was cleared from the screens, condenser water boxes were cleaned and demonstrated to operate properly.

This report is being made in accordance with 10CFR50.73(a)(2)(iv)(A), "any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B)...."

CAUSE OF OCCURRENCE

The cause of the manual reactor trip is attributed to high amounts of river ice and resultant accumulation of ice on the CW traveling water screens. The heavy ice loading caused the high TWS differential pressure. A TWS differential pressure of ten (10) feet causes a circulating water pump trip.

PREVIOUS OCCURRENCES

A review of LERs at Salem Station dating back to 2003 identified two other occasions of a reactor trip due to unusual harsh environmental conditions. LER 311/2003-001 "Manual Reactor Trip Due to Degradation of Condenser Heat Removal" and LER 272/2007-002 "Manual Reactor Trips Due to Degraded Condenser Heat Removal" were caused by excessive grassing. The corrective actions associated with these events were intended to improve the reliability of the CW system in responding to excessive river grass; and therefore would not have been expected to prevent the occurrence of this ice related event.

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SAFETY CONSEQUENCES AND IMPLICATIONS

There was no actual safety consequence associated with this event. Operators appropriately responded to the degraded CW system (loss of circulating water pumps) and the potential loss of normal heat sink (condenser) by manually tripping the reactor in accordance with plant procedures. Plant response to the manual reactor trip was normal. All safety systems operated as required, including the service water system which also takes suction from the river.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02, Regulatory Assessment Performance Indicator Guidelines, did not occur. The event did not result in a condition that alone could have prevented the fulfillment of a safety function of a system needed to remove residual heat.

CORRECTIVE ACTIONS

1. Circulating water traveling water screens and condenser water boxes were cleaned, inspected and returned to normal service.
2. A root cause evaluation was initiated to identify other potential causes and corrective actions to improve response to severe weather conditions.
3. This evaluation and any identified improvements will be tracked in PSEG's corrective action program.

COMMITMENTS

No commitments are made in this LER.