



DEC 13 2004

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U. S. Nuclear Regulatory Commission  
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Washington, DC 20555

LER 311/04-009-00  
SALEM - UNIT 2  
FACILITY OPERATING LICENSE NO. DPR-75  
DOCKET NO. 50-311

This Licensee Event Report, "ECCS Leakage Outside Containment Exceeds Dose Analysis Limits (23 Charging Pump)," is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(v).

The attached LER contains no commitments.

Sincerely,

A handwritten signature in black ink, appearing to read "Carl Fricker", written over a horizontal line.

Carl Fricker  
Salem Plant Manager

Attachment

/EHV

C Distribution  
LER File 3.7

JE22

# LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory 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 and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects@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 <b>Salem Generating Station Unit 2</b>	2. DOCKET NUMBER <b>05000311</b>	3. PAGE <b>1 OF 4</b>
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4. TITLE  
**ECCS Leakage Outside Containment Exceeds Dose Analysis Limits (23 Charging Pump)**

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
10	13	2004	2004	- 009 -	00	12	13	2004	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE <b>1</b>	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)				
10. POWER LEVEL <b>100%</b>	<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)(vii)(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)(vii)(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 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 checked="" 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 checked="" 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 <b>E. H. Villar, Licensing Engineer</b>	TELEPHONE NUMBER (Include Area Code) <b>856-339-5456</b>
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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	CB	V		No					

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)

This event is reportable in accordance with 10CFR50.73(a)(2)(v), "any event or condition that could have prevented the fulfillment of the safety function of structures or system that are needed to:....(C) control the release of radioactive material; or (D) mitigate the consequences of an accident."

On October 13, 2004, at approximately 14:06 the 23 Positive Displacement Charging Pump (PDP) was removed from service to perform scheduled maintenance. The maintenance involved the removal of the suction stabilizer and placing a flange on the suction side piping where the suction stabilizer was removed. Following the tagging evolution, operations personnel noted a 0.55 gpm (125,000 cc/hr) leak back through the suction flange for the PDP. The leakage exceeded the administrative limit (2200 cc/hr) and 3800 cc/hr limit stated in the Final Safety Analysis Report (FSAR) Section 6.3.2.11 for emergency core cooling system (ECCS) leakage outside the containment. Because this leakage could not have been isolated from the recirculation flow path during the recirculation phase of the design basis LOCA, the assumptions made in the dose analysis calculations were violated. The apparent cause for the excessive leakage has been determined to be the failure of the 2CV64 to provide full isolation of the pump. Immediate actions were taken to restore system integrity by removing the blind flange and re-installing the suction stabilizer, thus containing any leakage within the system pressure boundary. Additionally, a corrective action work order has been initiated to repair the discharge valve (2CV64) during the next outage.

**LICENSEE EVENT REPORT (LER)**

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		2004 - 0 0 9 00			

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

**PLANT AND SYSTEM IDENTIFICATION**

Chemical and Volume Control System (CVCS) {CB}

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

**IDENTIFICATION OF OCCURRENCE**

Event Date: October 13, 2004

Discovery Date: October 13, 2004

**CONDITIONS PRIOR TO OCCURRENCE**

Salem Unit 2 was in Mode 1 (POWER OPERATION) at approximately 100% power at the time of the event. No structures, systems or components were inoperable at the time of the occurrence that contributed to the event.

**DESCRIPTION OF OCCURRENCE**

On October 13, 2004, at approximately 14:06 the 23 Positive Displacement Charging Pump (PDP){P} (CVCS){CB} was removed from service to perform scheduled maintenance. The maintenance involved the removal of the suction stabilizer and placing a flange on the suction side piping where the suction stabilizer was removed. Following the tagging evolution, operations personnel noted a 0.55 gpm (125,000 cc/hr) leak through the suction flange for the PDP. The leakage exceeded the administrative limit (2200 cc/hr) and 3800 cc/hr limit stated in the Final Safety Analysis Report (FSAR) Section 6.3.2.11 for emergency core cooling system (ECCS) leakage outside the containment. Because this leakage could not have been isolated from the recirculation flow path during the recirculation phase of the design basis LOCA, the assumptions made in the dose analysis calculations were violated.

The dose analysis assumption for ECCS leakage outside containment ensures that following a Loss of Coolant Accident (LOCA) the radioactive releases will remain within the requirements of 10CFR100 for offsite releases and 10CFR50 Appendix A General Design Criterion 19 (GDC-19) for exposure to Control Room Operators.

Although there is sufficient margin between the current dose analysis and 10CFR100 limits, the GDC-19 limits for exposure to the Control Room Operators cannot be demonstrated with the identified leakage. Accordingly, an immediate report to the NRC was performed for any event or condition that "at the time of discovery" could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material.

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

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

This event is reportable in accordance with 10CFR50.73(a)(2)(v), "any event or condition that could have prevented the fulfillment of the safety function of structures or system that are needed to:....(C) control the release of radioactive material; or (D) mitigate the consequences of an accident."

**CAUSE OF OCCURRENCE**

The apparent cause for the excessive leakage has been determined to be the failure of the 2CV64 to provide full isolation of the pump.

**PREVIOUS OCCURRENCES**

A review of reportable events for Salem and Hope Creek in the last two years identified one prior similar occurrence. LER 311/01-006 issued November 1, 2001 identified one event where the ECCS leakage outside containment exceeded the dose analysis limit. The cause of this event was attributed to having the wrong packing configuration and torque requirements specified on the packing data sheet for the affected component (valve 2CV49). The corrective actions taken were appropriate and specific for that event; but they would not have been expected to prevent this occurrence.

**SAFETY CONSEQUENCES AND IMPLICATIONS**

There was no safety consequences associated with this event.

As stated above, the additional leakage would not have exceeded the limits of 10CFR100 for offsite releases. However, the limits of GDC-19 for exposure of the Control Room Operators would have been exceeded had a LOCA occurred while this leakage existed as determined by a review of the LOCA dose analysis.

The LOCA dose analysis calculation is a conservative model used to determine the effect of the radioactive release to the control room operators. This model does not assume any compensatory measures are taken by the operators to reduce their exposure to the radioactive release beyond the control room emergency air conditioning system aligning to its post-accident configuration. In the event the ECCS leakage exceeded the limit in the dose analysis, control room operators could don self-contained breathing apparatuses (SCBAs) to minimize their thyroid radiation exposure. If SCBAs were worn the thyroid dose to the control room operators would be reduced to a level that is a small fraction of the GDC 19 limit. However, the overall control room dose to the operators could be expected to exceed the GDC 19 limits by a small amount if more realistic input assumptions relating to such factors as containment release rates and atmospheric dispersion are not credited.

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**SAFETY CONSEQUENCES AND IMPLICATIONS (cont'd)**

In accordance with Technical Specification 6.8.4.a, "Primary Coolant Sources Outside Containment," Salem station has a program to monitor leakage outside the containment and take action to reduce the leakage within the assumption of the LOCA dose analysis. Through implementation of this program the increase in Reactor Coolant System (RCS) unidentified leakage was determined to be outside containment and actions were expeditiously taken to minimize the leakage.

Based on the above, there was no impact to the health and safety of the public.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02 occurred.

**CORRECTIVE ACTIONS**

1. Immediate actions were taken to restore system integrity by removing the blind flange and re-installing the suction stabilizer, thus containing any leakage within the system pressure boundary.
2. A corrective action work order has been initiated to repair the discharge valve (2CV64) during the next outage.

**COMMITMENTS**

This LER contains no Commitments.