ARKANSAS POWER & LIGHT COMPANY

June 16, 1989

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U. S. Nuclear Regulatory Commission
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SUBJECT: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Licensee Event Report No 50-313/89-010-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(A), attached is the subject report concerning a reactor shutdown due to a non-isolable leak in a Reactor Coolant system strength boundary caused by a weld defect.

Very truly yours,

E. C. Ewing
General Manager,
Plant Support

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NRC Form 366
(9-83)

U.S. Nuclear Regulatory Commission
Approved OMB No. 3150-0104
Expires: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Arkansas Nuclear One, Unit One	0 5 0 0 0 3 1 3	1 OF 0 2

TITLE (4) Reactor Shutdown Due to a Non-Isolable Leak in a Reactor Coolant System Strength Boundary Caused by a Weld Defect

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 5 0 0 0
0 5	1 7	8 9	8 9	0 1 0	0 0	0 6	1 6	8 9		0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10) 0 0 0	__	20.402(b)	__	20.405(c)	__	50.73(a)(2)(iv)	__	73.71(b)
	__	20.405(a)(1)(i)	__	50.36(c)(1)	__	50.73(a)(2)(v)	__	73.71(c)
	__	20.405(a)(1)(ii)	__	50.36(c)(2)	__	50.73(a)(2)(vii)	__	Other (Specify in Abstract below and in Text, NRC Form 366A)
	__	20.405(a)(1)(iii)	X	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)(x)		

LICENSEE CONTACT FOR THIS LER (12)

Name	Telephone Number (Area Code)
Larry A. Taylor, Nuclear Safety and Licensing Specialist	5 0 1 9 6 4 - 3 1 0 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

Cause	System	Component	Manufacturer	Reportable to NPRDS	Cause	System	Component	Manufacturer	Reportable to NPRDS

SUPPLEMENT REPORT EXPECTED (14)	EXPECTED SUBMISSION DATE (15)	Month	Day	Year
__ Yes (If yes, complete Expected Submission Date) X No				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On 5/16/89, the daily Reactor Coolant System (RCS) unidentified leakrate determination indicated that RCS leakage had increased approximately 0.2 gallons per minute from the previous days leakrate. Power was reduced to allow a Reactor Building entry in order to locate the source of the increased leakage. At 0045 hours on 5/17/89, it was discovered that the leak was located upstream of RCS loop "B" cold leg drain valve RBD-8B and that it was a non-isolable strength boundary leak. A Notification of Unusual Event (NUE) was declared and a normal Reactor Shutdown was commenced in accordance with Technical Specifications. At 1311 hours, the plant was in Cold Shutdown and the NUE was terminated. A visual inspection of the leak location (a socket weld at the valve to drain line piping) indicated that the leak was small in size, suggesting a pinhole, cold lap, or other welding type flaw. Due to the fact that a suitable replacement valve was not available, a temporary modification was performed which installed welded pipe caps on the drain line. A replacement valve will be installed during the first outage of sufficient duration following its delivery. The safety significance of this event is reduced by the fact that the leak was on a 1.5 inch line and, even if the line had completely failed, the resulting leak would be well within the capability of the High Pressure Injection system to supply sufficient core cooling.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		Year	Sequential Number	Revision Number	
Arkansas Nuclear One, Unit One	0 5 0 0 0 3 1 3	8 9 --	0 1 0 --	0	0 2 OF 0 2

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

A. Plant Status

At the time of this event, Arkansas Nuclear One, Unit 1 (ANO-1) was in Hot Standby with reactor power at approximately 10^{-9} amps.

B. Event Description

On May 16, 1989, with the reactor at 50 percent power, the daily Reactor Coolant System (RCS) [AB] unidentified leakrate determination indicated that RCS leakage had increased approximately 0.2 gallons per minute (gpm) (to 0.74 gpm) from the previous days leakrate determination of .55 gpm. At 1615 hours, a reactor power reduction was commenced in order to facilitate locating the source of the increased RCS leakage in the Reactor Building (RB). The turbine generator was taken off-line at 1856 hours and at 2009 hours, reactor power was stabilized at 10^{-9} amps and the search for the RCS leak was begun. At 0045 hours on May 17, it was determined that the leak was upstream of RCS loop "B" cold leg drain valve RBD-8B and that it was a non-isolable strength boundary leak. A Notification of Unusual Event (NUE) was declared and a normal reactor shutdown was commenced in accordance with Technical Specification 3.1.6.3.a. At 1311 hours, the plant was in Cold Shutdown (less than 200 degrees Fahrenheit) and the NUE was terminated.

C. Safety Significance

The RCS leak was located on a 1.5 inch drain line on the RCS loop "B" cold leg at a valve to piping socket weld on the upstream side of RCS drain valve RBD-8B. Under worst case conditions, if the line had failed completely, it would have resulted in a non-isolable leak through a hole approximately 1.34 inches in diameter. The safety significance of this event is reduced by the fact that analysis has shown that for leaks of 4.0 inches in diameter or smaller, the High Pressure Injection System [BJ] is capable of providing sufficient core cooling.

D. Root Cause

The root cause of this event, although not positively known, is thought to be a weld defect. A visual inspection of the weld indicated that the leak was small in size, suggesting a pinhole, cold lap, or other welding type flaw. In addition, the subject weld is in an area that is not easily accessible, and would be difficult to weld. It should be noted that this weld was renewed during repair of an adjacent weld in February 1989. (Reference LER 50-313/89-002-00)

The valve and piping section containing the socket weld has been shipped to a vendor for laboratory analysis to determine the exact cause of the weld failure.

E. Basis For Reportability

Since the leak discussed in this report was a non-isolable leak in a RCS strength boundary, the reactor was shutdown in accordance with Technical Specification 3.1.6.3.a. Therefore, this event is reportable pursuant to 10CFR50.73(a)(2)(i)(A).

In addition, this event was reported on May 17, 1989, at 0102 hours via the Emergency Notification System in accordance with 10CFR50.72.

F. Corrective Actions

Due to the fact that a suitable replacement valve was not available, a temporary modification was installed which removed the existing valve and installed welded pipe caps which are weighted to simulate the mass of the removed valve.

The RCS loop "B" cold leg drain line configuration will be returned to normal during the first outage of sufficient duration following delivery of the replacement valve.

G. Additional Information

There have been no previous similar events reported in which ANO-1 was required to be shutdown due to a non-isolable RCS strength boundary leak.

Energy Industry Identification System (EIIS) codes are indicated in the text as [XX].