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March 14, 1990

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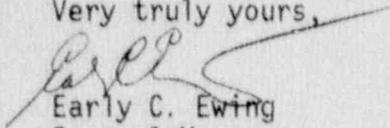
U. S. Nuclear Regulatory Commission  
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Washington, D. C. 20555

SUBJECT: Arkansas Nuclear One - Unit 2  
Docket No. 50-368  
License No. NPF-6  
Licensee Event Report No. 50-368/90-004-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(ii)(B) and 10CFR50.73(a)(2)(v), attached is the subject report concerning a missing backwater valve in a floor drain which created a condition that could have prevented the fulfillment of the safety function of the Emergency Feedwater System.

Very truly yours,

  
Early C. Ewing  
General Manager,  
Technical Support  
and Assessment

ECE/DM/abw

cc: Regional Administrator  
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NRC Form 366  
(9-83)

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

L I C E N S E E E V E N T R E P O R T ( L E R )

FACILITY NAME (1) Arkansas Nuclear One, Unit Two DOCKET NUMBER (2) PAGE (3)  
050000316810F03

TITLE (4) Missing Backwater Valve in Floor Drain Created a Condition Which Could Have Prevented the Fulfillment of the Safety Function of the Emergency Feedwater System

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)		
01	21	29	09	004	00	03	11	09		050000		

OPERATING MODE (9) 1 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:

POWER LEVEL (10)	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.405(c)	50.36(c)(1)	50.36(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vii)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	Other (Specify in Abstract below and in Text, NRC Form 366A)	
														X								

LICENSEE CONTACT FOR THIS LER (12)

Name	Telephone Number
Dana Millar, Nuclear Safety and Licensing Specialist	Area Code 501964-131010

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)  No

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

On February 12, 1990, while performing a review of the Equipment and Floor Drain System (EFDS), it was identified that there was not a backwater valve located in the floor drain pipe in one of the Emergency Feedwater (EFW) pump rooms. Each of the two EFW pump rooms is designed to be a watertight compartment with normally closed watertight doors at the entrance of each room, watertight seals at each penetration into and out of the room, and backwater valves in each drain pipe. Additionally, a float type level switch with audible and visible annunciation in the Control Room is installed in each room. The backwater valves are designed and installed to prevent crossflooding between the EFW pump rooms. With the backwater valve missing in one room, the potential for crossflooding existed. Since Control Room annunciation was available, it is reasonable to assume that an operator could be dispatched to the area and take appropriate actions if a high water level were detected. The safety significance is, therefore, minimal. The details of the specific root cause of this event are unknown, however, the ultimate root cause was inadequate configuration control. As depicted on design drawings, the backwater valves were installed in both pump rooms in 1975. It is not known specifically how the valves were removed, however, it is possible the valve was removed during a maintenance activity and not reinstalled. On February 15, 1990, backwater valves were installed in both EFW pump rooms.

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 2	015 010 01 3 6 8	9-0	--	0	0	4	--	0	0	012 OF 013

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

A. Plant Status

At the time of discovery of this condition, Arkansas Nuclear One, Unit Two (ANO-2) was operating at 100 percent power in Mode 1 (Power Operation). Reactor Coolant System (RCS) [AB] temperature was approximately 580 degrees Fahrenheit and RCS pressure about 2250 psia.

B. Event Description

On February 12, 1990, while performing a review of the Equipment and Floor Drain Systems (EFDS), it was identified that there was not a backwater valve located in the floor drain pipe in one of the Emergency Feedwater (EFW) [BA] pump rooms. The backwater valves are designed to prevent crossflooding between the EFW pump rooms.

The EFW pumps, one motor driven (2P7B) and one turbine driven (2P7A), are located in the auxiliary building at the 329 foot elevation. Each pump is housed in a watertight room with normally closed watertight doors at the entrance of each room. Each penetration into and out of the room has a watertight seal to prevent crossflooding or flooding from external sources. Backwater valves are supposed to be installed in the floor drain lines from each of the EFW rooms to avoid crossflooding through the drain system. Additionally, a float type level switch with audible and visible annunciation in the Control Room is installed in each EFW pump room near the floor to detect any gross water leakage.

At approximately 1815 hours on February 12, 1990, the Operations staff declared 2P7A inoperable due to the missing backwater valve. The 72 hour Technical Specification Action Statement was entered.

C. Safety Significance

The EFW pump rooms are designed to be independent watertight compartments to prevent crossflooding and flooding from external sources. This design is based on: 1) high energy line breaks outside the containment, 2) Non-Seismic Category I line breaks, and 3) design basis events with passive failures. Since there was not a backwater valve in the drain line of the 2P7A EFW pump room, there was no assurance that crossflooding could be prevented if any of the above conditions occurred. A float type level switch with audible and visible annunciation in the Control Room is installed in each EFW pump room. Therefore, it is reasonable to assume if a flooding condition were to occur in either or both rooms it would be detected and appropriate actions by the Operations staff could be taken to mitigate the consequences of the flooding. Additionally, each pump is mounted on a raised section of flooring which provides added protection to the pumps in the event of flooding. With the reliance of operator actions, the safety significance is considered minimal.

D. Root Cause

The details of the specific root cause of this event are unknown, however, the ultimate cause was inadequate configuration control. The backwater valves were installed in the floor drain piping of both EFW pump rooms in 1975 (as depicted on design drawings). An initial review of design changes did not identify any additional modifications to the EFW room backwater valves. Apparently the valve in the 2P7A room was previously removed and not reinstalled.

E. Reportability

This event is reportable pursuant to 10CFR50.73(a)(2)(ii)(B), as a condition which resulted in the plant being in a condition that is outside the design basis of the plant. The event is also reportable pursuant to 10CFR50.73(a)(2)(v), as a condition that alone could have prevented the fulfillment of the safety function of the EFW system which is needed to shut down the reactor and maintain it in a safe shutdown condition.

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 2	015010131618	910	--	0	0	4	--	0	0	013	OF	013

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

F. Corrective Action

On February 15, 1990, backwater valves were installed in both EFW pump rooms. The repairs ensure that crossflooding of the EFW pump rooms will not occur through the drain line piping.

A review of the EFDS was on going when the discrepancy in the EFW pump room was identified. While performing the review of the EFDS it was identified that the rooms housing the B and C High Pressure Safety Injection (HPSI) [BJ] pumps were connected with a common drain line. A backwater valve was located in the drain line of each room and an engineering evaluation of the design basis for the system in the rooms was performed. The design basis requirements were satisfied for the EFDS in the HPSI rooms. No additional discrepancies were identified while performing the review of the EFDS. The EFDS for ANO-1 was not reviewed due to the different design requirements for the EFDS.

The backwater valves, which were not previously been assigned an equipment number, will have equipment numbers assigned by June 1, 1990. The backwater valves will be incorporated into the SIMS data base for future reference and control. Additionally, when a maintenance job order is issued an impact statement (i.e., a statement clarifying the effect of maintenance on the equipment to this and related systems) is now required. Also, a memorandum was issued to maintenance personnel in August, 1989 to emphasize the responsibilities of maintenance personnel regarding configuration control. Directions were given to stop work and contact a maintenance engineer whenever a condition was encountered during work which potentially impacted the design of the plant. The maintenance engineer is to evaluate the condition and determine if a change to the configuration of the plant is involved. The evaluation performed by maintenance engineering is to be documented in writing and maintained as part of the job order package. Training was provided on the contents of the memorandum in November, 1989. A maintenance engineering administrative procedure has been issued which contains the responsibilities of the maintenance engineers. As a result, the improvements provide additional assurance that a backwater valve would not be inadvertently removed and not reinstalled.

The backwater valves will be included in a preventative maintenance (PM) program. This will ensure that the valves are periodically inspected and maintained in an operable condition. The PM program for the backwater valves will be implemented by June 1, 1990.

G. Additional Information

There are no previously reported events identifying missing backwater valves.

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