

NRC Form 366  
(9-83)

U.S. Nuclear Regulatory Commission  
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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 One

DOCKET NUMBER (2) PAGE (3)  
015010101 31 1 3110F1013

TITLE (4) Inadvertent Emergency Feedwater System Actuation Due to Personnel Error  
While Draining a Steam Generator for Secondary Side Chemistry Cleanup

EVENT DATE (5)			LER NUMBER (6)		REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)														
Month	Day	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names		Docket Number(s)												
1	2	01	9	8	8	8	8	--	0	1	9	--	0	0	0	4	1	3	8	9	N/A	015010101
																					N/A	015010101

OPERATING MODE (9) THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8:  
N (Check one or more of the following) (11)

POWER LEVEL (10)	01010	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)
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L I C E N S E E C O N T A C T F O R T H I S L E R ( 1 2 )

Name	Telephone Number
Julie D. Jacks, Nuclear Safety and Licensing Specialist	Area Code 5101964-1311010

C O M P L E T E O N E L I N E F O R E A C H C O M P O N E N T F A I L U R E D E S C R I B E D I N T H I S R E P O R T ( 1 3 )

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

S U P P L E M E N T R E P O R T E X P E C T E D ( 1 4 )

EXPECTED SUBMISSION DATE (15)	Month	Day	Year
<input type="checkbox"/> Yes (If yes, complete Expected Submission Date) <input checked="" type="checkbox"/> No			

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

On December 9, 1988, at 1103 hours an Emergency Feedwater Initiation and Control (EFIC) system actuation of Emergency Feedwater occurred on indicated low water level in 'B' Once-Through Steam Generator (OTSG). The actuation occurred when operators initiated a secondary side cleanup flow path for 'B' OTSG to correct the OTSG chemistry while the plant was at hot shutdown. Normally OTSG cleanup is completed during plant heatup prior to reaching an OTSG pressure of 750 psig; however, delays in the heatup had necessitated performing an OTSG cleanup again at hot shutdown with OTSG pressure at 900 psig. An OTSG drain line orifice bypass valve was partially opened, which is the normal method for achieving proper drain flow. However, the orifice bypass was not needed at the existing OTSG pressure. The EFIC level transmitter sensed a low level on 'B' OTSG, possibly due to a low pressure area being developed at the OTSG drain connection, which is near the lower EFIC level sensing line taps. No emergency feedwater was fed to the OTSG, and the actual OTSG water level was not significantly affected by opening the bypass valve. The root cause of this event was the failure of the operators to recognize that use of the orifice bypass valve was not warranted. A memorandum was issued which discussed this event and emphasized that the bypass valve was not to be used at hot shutdown.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Arkansas Nuclear One - Unit One	DOCKET NUMBER (2) 01510101013113	LER NUMBER (6)			PAGE (3) 01210F1013
		Year 88--	Sequential Number 019--	Revision Number 0	

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 shutdown. Reactor Coolant System (RCS) temperature was 532 degrees Fahrenheit and RCS pressure was 2155 psig. The once-through steam generator (OTSG) [AB-SG] water levels were being controlled at low level limits, approximately 27 inches.

B. Event Description

On December 9, 1988, ANO-1 was conducting a plant startup after refueling outage 1R8. Earlier during the heatup, OTSG secondary side chemistry had been brought within the required specifications in accordance with the plant startup procedure. The OTSGs had been placed on a routine chemistry cleanup flow path, draining from the OTSG secondary side tubesheet drains to the condenser. The water level in the OTSGs is maintained by the startup control valves based on OTSG water level indication from the startup range level indicators. A bypass valve around an orifice in the drain line to the main condenser is throttled as necessary to achieve proper drain flow. The cleanup process is usually completed and the drain path secured before OTSG pressure reaches 750 psig during plant heatup.

Due to an abnormally long and delayed heatup, an OTSG cleanup was required again while the plant was at hot shutdown with the OTSG pressure at approximately 900 psig. Operators established the drain flow path for 'B' OTSG and the licensed control room operator sent the auxiliary operator to partially open the drain line orifice bypass valve for 'B' OTSG (HV-175) as is normally done when draining 'B' OTSG at low pressures. However, the operator did not realize that with OTSG pressure at 900 psig, adequate drain flow would be achieved through the orifice without opening HV-175, and that OTSG level control would be more difficult with HV-175 partially open.

When the auxiliary operator opened HV-175 approximately one quarter open, the 'B' OTSG level indication for the Emergency Feedwater Initiation and Control (EFIC) system decreased. While the control room operator was attempting to contact the auxiliary operator and verify proper feedwater response, at 1103 hours the EFIC system automatically actuated Emergency Feedwater [BA] on an indicated low level of 14.5 inches in 'B' OTSG. The operators verified proper OTSG level on the startup range indication and reset EFIC approximately 30 seconds after the actuation. The auxiliary operator was contacted and HV-175 was closed.

During this event, although the indicated EFIC low range water level decreased, no decrease was observed on the startup range water level indicator. Evaluations of the event and discussions with Babcock and Wilcox personnel suggest that the EFIC actuation occurred due to the location of the lower sensing line taps for the EFIC level transmitters. These taps are located in the lower tube sheet area near the point where the drain line is connected to the OTSG. When HV-175 was opened, a low pressure area may have been created near the EFIC level transmitter lower taps. The resulting pressure differential sensed by the EFIC transmitters was indicated as a low OTSG level. Since the startup range level transmitter uses level taps located in a different area of the OTSG secondary side, this indication was not affected.

C. Safety Significance

The EFIC system actuated properly in response to a sensed OTSG low level; however, no emergency feedwater was fed to the OTSG. The actual OTSG water level was not significantly affected by opening the orifice bypass valve.

D. Root Cause

The root cause of this event was personnel error: the operators failed to recognize that the orifice drain bypass valve was not required to be open when OTSG pressure was at 900 psig. The existing differential pressure between the OTSG and the condenser was sufficient to provide an adequate drain flow rate without use of the bypass valve. This task was not specifically addressed by a procedure which discussed draining the OTSG at 900 psig. The plant startup procedure covers OTSG cleanup; however, the process is assumed to be completed and the alignment secured before hot shutdown conditions are reached.

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	051000313	88	019	00	031013

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

E. Basis for Reportability

As the EFIC system is considered to be an Engineered Safeguards Features (ESF) system, this event is reportable under 10CFR50.73(a)(2)(iv), any manual or automatic actuation of any ESF.

This event was reported to the NRC Operations Center at 1340 hours on December 9, 1988, in accordance with 10CFR50.72(b)(2)(ii).

F. Corrective Actions

A memorandum was issued from the Operations Superintendent to the Shift Operations Supervisors describing the event and emphasizing that the orifice drain bypass valves are not to be used at hot shutdown conditions.

G. Additional Information

No similar events at ANO-1 have been reported.

Energy Industry Identification System codes are identified in the text as brackets [XX].



ARKANSAS POWER & LIGHT COMPANY

April 13, 1989

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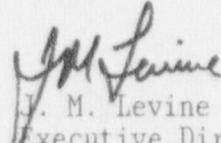
U. S. Nuclear Regulatory Commission  
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Washington, D. C. 20555

SUBJECT: Arkansas Nuclear One - Unit 1  
Docket No. 50-313  
License No. DPR-51  
Licensee Event Report No. 313/88-019-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(iv), attached is the subject report concerning an inadvertant emergency feedwater system actuation due to a personnel error while draining a steam generator for secondary side chemistry cleanup.

Very truly yours,

  
J. M. Levine  
Executive Director,  
Nuclear Operations

JML:JDJ:vgh  
attachment

cc w/att: Regional Administrator  
Region IV  
U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011

INPO Records Center  
1500 Circle 75 Parkway  
Atlanta, GA 30339-3064

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