



Entergy

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October 11, 1999

ICAN109902

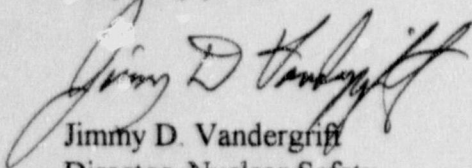
U. S. Nuclear Regulatory Commission  
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Washington, DC 20555

Subject: Arkansas Nuclear One - Unit - 1  
Docket No. 50-313  
License No. DPR-51  
Licensee Event Report 50-313/1999-003-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(iv), enclosed is the subject report concerning an automatic initiation of the Emergency Feedwater System.

Very truly yours,



Jimmy D. Vandergriff  
Director, Nuclear Safety

JDV/rhs

enclosure

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cc: Mr. Ellis W. Merschoff  
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555 0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Arkansas Nuclear One - Unit 1		DOCKET NUMBER (2) 05000313	PAGE (3) 1 of 4
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TITLE (4) Automatic Initiation Of The Emergency Feedwater System During Plant Shutdown As A Result Of Securing The Running Reactor Coolant Pumps Due To Reverse Rotation Of An Idle Pump

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 NAME	DOCKET NUMBER
09	11	1999	1999	003	00	10	11	1999	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)												
POWER LEVEL (10) 000	20.402(b)	20.405(c)	X	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
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	Specify in		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	Abstract Below		20.405(a)(1)(v)	50.73(a)(2)(x)	and in Text

LICENSEE CONTACT FOR THIS LER (12)										
NAME Richard H. Scheide, Nuclear Safety and Licensing Specialist								TELEPHONE NUMBER (include Area Code) 501-858-4618		

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	AB	MC	A180	Y						

SUPPLEMENTAL REPORT EXPECTED (14)					EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	NO X							

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

At approximately 0301 on September 11, 1999, during plant shutdown in preparation for Refueling Outage 1R15, an automatic initiation of the Emergency Feedwater System (EFW) occurred when Operations personnel secured the running Reactor Coolant Pumps (RCPs) in accordance with a plant procedure in response to indications that an idle RCP was rotating in the reverse direction. The pump rotating in the reverse direction was the result of the failure of the motor anti-rotation device. Operations personnel responded properly and in accordance with plant procedures during this event and the EFW system operated as designed. Natural circulation cooling was established and continued until approximately 1400 on September 11 when two RCPs were restarted following installation of a restraining device on the affected RCP. The RCP anti-rotation device was replaced during the refueling outage. There are no additional corrective actions deemed necessary regarding this event. A similar previous event was reported in LER 50-313/92-003-00.

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TEXT CONTINUATION

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

## A. Plant Status

At the time this event occurred, Arkansas Nuclear One Unit 1 (ANO-1) was in Hot Shutdown preparing for Refueling Outage 1R15. Operations personnel were in the process of securing two of the four operating Reactor Coolant Pumps (RCPs) in accordance with the normal shutdown procedure. The Emergency Feedwater Initiation and Control (EFIC) [BA] system remained armed to actuate the Emergency Feedwater System (EFW) [BA].

## B. Event Description

On September 11, 1999, at approximately 0301, an automatic initiation of the EFW System occurred when Operations personnel secured all running RCPs in accordance with a plant procedure in response to indications that an idle RCP was rotating in the reverse direction.

EFIC monitors Once Through Steam Generator (OTSG) levels and pressures, main feedwater pump status, RCP status, and Engineered Safeguards Actuation System channels 3 and 4 in order to initiate EFW or OTSG isolation should an actuation setpoint be reached. EFW is initiated to protect the core from an overheating condition upon loss of Main Feedwater or RCP circulation. OTSG isolation is initiated to protect the core from an overcooling condition if a main steam or feedwater line rupture occurs.

At approximately 0253 on September 11, Operations personnel began securing RCPs in accordance with the normal shutdown procedure. At 0253, RCP P-32A was secured and at 0257, P-32D was secured. At 0301, after verifying that P-32D was rotating in the reverse direction, operators secured the operating RCPs (P-32B and P-32C) in accordance with the applicable Abnormal Operating Procedure. The EFIC system, sensing the loss of all RCPs, initiated EFW as designed. The EFW system functioned properly and natural circulation cooling was established.

At approximately 0500, after reaching natural circulation levels in the OTSGs, operators began feeding the OTSGs with the non-safety related Auxiliary Feedwater Pump (P-75) [SJ], and at 0512 the steam-driven EFW pump (P-7A) was secured. At 0608, motor-driven EFW pump P-7B was secured and EFIC was reset.

Natural circulation cooling continued until a restraining device was installed on P-32D. At approximately 1400, after installation of the restraining device, P-32B and P-32C were started and natural circulation cooling was discontinued. The plant continued normal cooldown to Cold Shutdown.

## C. Root Cause

P-32D rotating in the reverse direction was the result of the failure of the motor anti-rotation device. The root cause of the anti-rotation device failure is being investigated in accordance with the ANO Corrective Action Program.

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Operator actions taken in response to identification of reverse rotation of P-32D were proper and in accordance with approved plant procedures. The EFIC and EFW systems responded as designed to all RCPs being stopped.

## D. Corrective Actions

The P-32D anti-rotation device was replaced during the refueling outage.

ANO-1 Technical Specifications require that the EFW initiation logic for loss of RCPs and Main Feedwater pumps be operable when neutron flux is greater than 10 percent. However, ANO typically arms EFIC below 10 percent power during startup and leaves it armed below 10 percent power during shutdown. As a corrective action relating to a similar event (LER 50-313/92-003-00), ANO procedures were evaluated to determine the acceptability of having EFIC armed below 10 percent power. The review concluded that having EFIC armed below 10 percent power was safe and appropriate. For example, during this event, the automatic initiation of EFW and the associated ramp increase in OTSG levels resulted in an orderly transition to natural circulation cooling.

The procedure review also evaluated the acceptability of allowing EFW to initiate automatically as opposed to manual initiation when automatic initiation is imminent. It was concluded that operator actions to secure the running RCPs to minimize equipment damage instead of manually initiating EFW was appropriate and prudent.

There are no further corrective actions deemed necessary regarding this event.

## E. Safety Significance

The reactor was not critical at the time this event occurred. Operator actions taken in response to the identification of reverse rotation of P-32D were proper and in accordance with the applicable procedure. The EFIC and EFW systems responded as designed to the loss of RCPs. Therefore, there was minimal safety significance associated with this event.

## F. Basis for Reportability

Automatic initiation of the EFW system is reportable pursuant to 10CFR50.73(a)(2)(iv) as an ESF actuation. This event was also reported to the NRC Operations Center in accordance with 10CFR50.72(b)(2)(ii) on September 11, 1999, at 0500 CDT.

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

G. Additional Information

Licensee Event Report 50-313/92-003-00 reported a similar event in which EFW automatically initiated following the failure of a RCP anti-rotation device during plant startup.

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