



**Entergy
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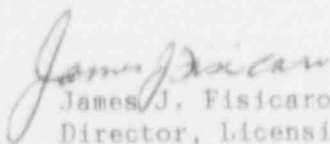
U. S. Nuclear Regulatory Commission
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SUBJECT: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Licensee Event Report 50-368/91-011-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(iv), enclosed is the subject report.

Very truly yours,


James J. Fisicaro
Director, Licensing

JJF/TFS/mmg
Enclosure

cc: Regional Administrator
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Arkansas Nuclear One, Unit Two

DOCKET NUMBER (2) PAGE (3)
050003 681 OF 04TITLE (4) Subcritical Reactor Trip During Surveillance Testing Of the Reactor Protective System
Due To A Procedural Deficiency

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																	
Month	Day	Year	Yea.	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)																
0	4	1	5	9	9	1	--	0	1	1	--	0	0	0	5	1	4	9	1			0	5	0	0	0

OPERATING MODE (9) 3 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(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)(vi)	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)

LICENSEE CONTACT FOR THIS LER (12)

Name	Telephone Number
Thomas F. Scott, Nuclear Safety and Licensing Specialist	Area Code 501964-5000

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

Cause	System	Component	Manufacturer	Reportable to NRC	Cause	System	Component	Manufacturer	Reportable to NRC

SUPPLEMENT REPORT EXPECTED (14)

Yes (If yes, complete expected Submission Date)	No	EXPECTED SUBMISSION DATE (15)	Month	Day	Year

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

On April 15, 1991 at 0837 hours, with the reactor subcritical and control element assemblies inserted, an automatic Reactor Protective System trip occurred. Surveillance testing was being performed to determine the response time of the core protection calculator generated trip associated with Departure from Nucleate Boiling following reactor coolant pump flow coast down. Due to a procedural deficiency, trip signals were not bypassed as part of the test preparation. When the core protection calculator was reinitialized, trip signals were generated as a normal consequence of the process. These trip signals caused the trip circuit breakers to open before anticipated by the procedure. Testing was stopped and the procedure was corrected. Similar procedures for the surveillance testing of the other channels will be revised. The event is being reviewed with appropriate maintenance department personnel to take advantage of the lessons learned.

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Arkansas Nuclear One, Unit Two		Year		Sequential Number		Revision Number																
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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 2 (ANO-2) was in hot standby conditions (Mode 3) with Reactor Coolant System (RCS) [AB] temperature at 545 degrees and pressure at 2250 psia. Response time testing of the Reactor Protective System (RPS) [JC] was in progress. There were no inoperable structures, systems, or components that contributed to the event.

B. Event Description

On April 15, 1991, at approximately 0837 hours, a subcritical reactor trip occurred during surveillance testing of the RPS.

The Core Protection Calculators (CPCs) are components of the ANO-2 RPS used to initiate automatic protective action, i.e., reactor trip signals, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and certain analyzed accidents. The CPC system consists of four independent digital computers (channels) which receive and process inputs from sensors monitoring various parameters affecting Local Power Density (LPD) and Departure from Nucleate Boiling Ratio (DNBR) and initiate a reactor trip signal to assure that specified acceptable fuel design limits are not exceeded. A provision exists for bypassing channel trip inputs to the protection system logic for maintenance or testing. The trip logic is converted from a 2-out-of-4 to a 2-out-of-3 logic for the parameters being tested. Only one channel for any one parameter may be bypassed at any one time.

RPS Channel A surveillance testing was being performed by Instrumentation and Control maintenance personnel to measure the response time of the CPC trip associated with DNBR following a trip of operating Reactor Coolant Pumps (RCPs). Steps leading up to tripping two RCPs included loading test software into the CPC. Immediately following closure of the RPS trip circuit breakers (TCBs), the CPC test software program was reinitialized at the CPC test cart terminal. This action resulted in generation of trip signals for both low DNBR and high LPD for the RPS channel as a normal consequence of the reinitialization process. Since provisions were not included in the surveillance procedure for bypassing these trip signals, an unanticipated reactor trip occurred when the Channel A trip signal was combined with an existing trip signal from Channel B. The RPS actuation occurred approximately four procedural steps before it was expected.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

C. Root Cause

The root cause of this event is a procedural deficiency. The previous test was performed with an earlier procedure revision which did not require closing the TCBS until after CPC software manipulations were complete. Performing the earlier revision of the procedure exactly as written resulted in a successful test without premature opening of the TCBS. Changing the step sequence during the procedure revision process resulted in the deficiency.

D. Corrective Action

Testing was stopped and a change was made to correct the deficiencies in the surveillance procedure before proceeding with the test.

The administrative process for procedure preparation, review, approval and validation was reviewed and judged to be adequate. No changes to the process are required because of this event.

Surveillance procedures for the other RPS channels were reviewed. They contain similar deficiencies. These procedures will be revised prior to their next use but no later than August 15, 1992.

The event is being reviewed with appropriate maintenance department personnel to take advantage of the lessons learned. This action is expected to be complete by May 23, 1991.

E. Safety Significance

There were no safety consequences or implications as a result of this event. The reactor was subcritical at the time of the trip with control element assemblies fully inserted. The only components actuated were the reactor trip circuit breakers.

F. Basis For Reportability

This event constituted an automatic actuation of the Reactor Protective System that was not part of a preplanned sequence and is reportable per 10CFR50.73(a)(2)(iv). The event was reported at 1457 hours on April 15, 1991 per the provisions of 10CFR50.72(b)(2)(ii).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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					91--	011--	00	

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

G. Additional Information

Previous similar events involving reactor trips caused by procedural deficiencies were reported in Licensee Event Reports 50-368/84-001-00, 50-368/87-009-00, and 50-313/89-037-00.

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