



**Entergy
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September 23, 1994

2CAN099401

U. S. Nuclear Regulatory Commission
Document Control Desk
Mail Station P1-137
Washington, DC 20555

Subject: Arkansas Nuclear One -- Unit 2
Docket No. 50-368
License No. NPF-6
Licensee Event Report 50-368/94-003-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(B), enclosed is the subject report concerning surveillance testing of Control Element Assembly position indication.

Very truly yours,

for Dwight C. Mims
Director, Licensing

DCM/tfs

enclosure

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cc: Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Institute of Nuclear Power Operations
700 Galleria Parkway
Atlanta, GA 30339-5957

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 (MNNB 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 Two

DOCKET NUMBER (2)

05000368

PAGE (3)

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TITLE (4) Control Element Assembly Position Indication Surveillance Testing Not Performed As Required By Technical Specifications Due To Personnel Error Associated With Computer Software Change

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
08	24	94	94	003	00	09	23	94	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)							
POWER LEVEL (10)		100	20.402(b)		20.405(c)		50.73(a)(2)(iv)		70.71(b)	
			20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		70.71(c)	
			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER	
			20.405(a)(1)(iii)		X 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)(iii)		50.73(a)(2)(x)		and in Text	

LICENSEE CONTACT FOR THIS LER (12)

NAME

Thomas F. Scott, Nuclear Safety and Licensing Specialist

TELEPHONE NUMBER (Include Area Code)

501-858-4623

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)

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

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

On August 24, 1994, with the unit operating at full power steady-state conditions, ANO-2 Operations personnel discovered that surveillance testing of Control Element Assembly (CEA) position indication had not been completed as required by Technical Specifications (TS). The surveillance is required at least once per 12 hours and is normally completed each 8 hours by reviewing a report generated by the Plant Monitoring System (PMS) computer. The communication data link between the CEA Calculators and PMS had failed. No failure alarm was generated and the report did not clearly indicate invalid data as expected. When the problem was discovered, the data link was restored and the surveillance was completed to verify that no CEA position deviations existed. The total time of non-compliance with TS requirements was approximately 29 hours and 28 minutes. The root cause of the condition was determined to have been a personnel error in failing to fully specify requirements for a computer software change that inadvertently omitted indication of data quality attributes that had previously existed to identify a data link failure. Corrective actions include software corrections and a review of the condition with the responsible project manager. There have been no previous similar events reported by ANO as LERs.

NRC FORM 366A (5-92)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95	
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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 condition was discovered, Arkansas Nuclear One Unit 2 (ANO-2) was operating at steady-state conditions at approximately 100 percent power.

B Event Description

On August 24, 1994, ANO-2 Operations personnel discovered that surveillance testing of Control Element Assembly (CEA) [AA] position indication had not been completed as required by Technical Specifications (TS).

Indication of CEA position is provided by two diverse, independent systems. The pulse counting indication system infers the position of each CEA by maintaining a record of the "raise" and "lower" control pulses sent to each magnetic jack Control Element Drive Mechanism (CEDM) [AA]. The reed switch position indication system utilizes a series of magnetically actuated reed switches called reed switch position transmitters (RSPTs) to provide signals representing CEA position. Two independent RSPTs are provided for each CEA. The RSPTs are affixed adjacent to the CEDM pressure housing that contains the CEA extension shaft and actuating magnet. The analog output signal is proportional to the CEA position within the reactor core. CEA position information from the RSPTs is provided to the Core Protection Calculators (CPCs) [JC] and the CEA Calculators (CEACs) [JC].

Technical Specifications Limiting Condition for Operation 3.1.3.2 requires that at least two of the three available CEA position indicator channels for each CEA be operable when in Mode 1 or 2. The three channels are RSPT 1, RSPT 2, and the pulse counting position indicator. The associated surveillance 4.1.3.2 requires that each of the channels be determined to be operable at least once per twelve hours by verifying that the channels agree within five inches for each CEA. This surveillance is normally completed each eight hours by reviewing a manually requested computerized "CEA Operability Report". Data from the CEACs are obtained by the Plant Monitoring System (PMS) [ID] computer for the report. A licensed operator ensures that the CEA deviations are within five inches. The operator's evaluation is reviewed by the Shift Superintendent. The report contains a time that data are obtained from the CEACs and the time the PMS report is generated. By convention, it also should display data quality attributes indicating whether data acquisition for individual parameters is functioning properly. The data quality attribute was a printout of "(B)AD" when the data link from the CEAC was out of service.

On August 24, 1994, during monthly testing of a CPC channel, CEAC #1 was placed in INOP. As a backup method of verifying that the CEAC was in INOP, the Operations Shift Engineer obtained a CPC report from the PMS. The date and time of the report were noted as 1825 hours on August 22, 1994. The Computer Support Group was notified. They found that the data communications link between the CEACs and PMS had failed, and they restored it. This allowed the CEA report to be properly transmitted. A review of past surveillance tests revealed that CEA positions from the CEACs had been fixed at the values existing at 1825 hours on August 22

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for five surveillance tests and these tests were therefore invalid. While the time and date information had been correctly shown on the reports for both the time the CEAC data were obtained and the time the PMS report was generated, it had become the practice to use the PMS report date and time combined with the absence of a "(B)AD" data quality indication to verify PMS report validity. This practice was further reinforced by a note printed on each report which indicated that the CEAC data link being out of service results in a data entry of "(B)AD". During the period when the data link was not functioning, only the pulse counter position indication was being accurately logged. A valid surveillance test was completed at approximately 1453 hours on August 24, 1994. No CEA position deviations in excess of the limit were present. For the reports generated when the data link was not functioning, affected parameters did not properly indicate a "(B)AD" quality attribute in accordance with display conventions. The non-compliance with TS requirements existed for approximately 29 hours and 28 minutes, from 0925 hours on August 23, 1994, to 1453 hours on August 24, 1994.

C Root Cause

During the most recent refueling outage, a design change was incorporated to re-locate functions from the Critical Applications Program System (CAPS) [ID] computer to the PMS. Post-modification testing consisted of executing the affected programs and verifying that the output either matched or otherwise gave the same results as the CAPS computer system. The project manager for the design change defined the priority, scope, and depth of this testing. Data link failures were simulated by physically disconnecting the serial link and verifying that time stamps froze. After verification that the data and time stamps were frozen, the link was re-connected. The tasks then automatically recovered and resumed updating. However, no alarm identified that the data were frozen or otherwise bad. The root cause for the condition has been determined to have been a personnel error on the part of the project manager in that there was a failure to fully specify design requirements, i.e., quality attribute display, for the data link and associated reports during development of the software change.

D Corrective Actions

PMS software has been revised to display "(B)AD" quality for affected parameters in the event of CEAC to PMS data link failure.

A verification step was added to the CEA report that requires Operations personnel to verify that the PMS and CEAC time stamps are current.

A review of the project management and system development capabilities of the Computer Support Group indicated no generic concerns. The project manager reviewed the condition and is aware of his responsibility to ensure adequate design input requirements.

The design change was reviewed for additional discrepancies. No other problems were discovered.

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E. Safety Significance

Both CEACs were operable throughout the time when the data link to the PMS was not functioning. Real time CEA position information was always available to the operators. All alarms associated with CEAC failure or CEA position deviation were operable. PMS printouts included real time pulse counter position indication. The plant was operating at steady-state conditions throughout the event with no significant CEA movement performed. A comparison of CEA position information before and after the communication link failure showed that no deviation between the three position indications occurred for any of the CEAs. It is therefore concluded that this condition had minimal safety significance.

F. Basis for Reportability

Failure to complete the surveillance tests during the time when the data link was out of service constituted an operation prohibited by Technical Specifications reportable pursuant to 10CFR50.73(a)(2)(i)(B).

G. Additional Information

There have been no similar events reported by ANO as Licensee Event Reports.

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