Entergy

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1CAN060405

June 28, 2004

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Licensee Event Report 50-313/2004-001-00
Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51

Dear Sir or Madam:

In accordance with 10CFR50.73(a)(2)(i)(B), enclosed is the subject report concerning a condition prohibited by technical specifications due to an inoperable channel of source range nuclear instrumentation.

New commitments contained in this submittal are summarized in Attachment 1.

Sincerely,

Richard H. Scheide for
Dale E. James
Manager, Licensing

DEJ/fpv

Attachment
Enclosure

IE22

cc: Dr. Bruce S. Mallett
Regional Administrator
U. S. Nuclear Regulatory Commission
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Attachment 1

1CAN060405

Commitment Summary

This table identifies actions discussed in this letter which Entergy Operations, Inc. (Entergy) commits to perform. Any other actions discussed in this submittal are described for the NRC's information and are **not** commitments.

COMMITMENT	TYPE		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
Submit supplemental information for Licensee Event Report 50-313/2004-001-00.	X		8/15/2004

NRC FORM 366 (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2001

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Arkansas Nuclear One - Unit 1	05000313	1 OF 4

TITLE (4) Operation Prohibited by Technical Specifications due to an Inoperable Channel of Required Source Range Nuclear Instrumentation during Core Alterations.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	29	2004	2004	001	00	06	28	2004	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	6
POWER LEVEL (10)	0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)

	20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(i)(C)		50.73(a)(2)(vii)
	20.2201(d)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(A)
	20.2203(a)(1)		20.2203(a)(4)		50.73(a)(2)(ii)(B)		50.73(a)(2)(viii)(B)
	20.2203(a)(2)(i)		50.36(c)(1)(i)(A)		50.73(a)(2)(iii)		50.73(a)(2)(ix)(A)
	20.2203(a)(2)(ii)		50.36(c)(1)(ii)(A)		50.73(a)(2)(iv)(A)		50.73(a)(2)(x)
	20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(v)(A)		73.71(a)(4)
	20.2203(a)(2)(iv)		50.46(a)(3)(ii)		50.73(a)(2)(v)(B)		73.71(a)(5)
	20.2203(a)(2)(v)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(C)		OTHER
	20.2203(a)(2)(vi)	X	50.73(a)(2)(i)(B)		50.73(a)(2)(v)(D)		Specify in Abstract or NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Fred Van Buskirk, Nuclear Safety and Licensing Specialist	479-858-3155

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	JD									

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MO	DAY	YEAR
X	YES (If yes, complete EXPECTED SUBMISSION DATE)		NO		08	15	2004

ABSTRACT (16)

At 2251 CDT on April 29, 2004, with Arkansas Nuclear One, Unit 1 (ANO-1) in Mode 6 for refueling outage 1R18, operators discovered that one of two redundant trains of source range neutron flux monitoring instrumentation was inoperable. ANO-1 technical specifications (TS) require one source range monitor to be operable in Mode 6 and one additional monitor to be operable during core alterations. A review of plant computer historical data determined that the indication for the green train source range nuclear instrument failed at 1052 on April 29, 2004, but was not immediately detected because the count rates indicated on both channels were at the extreme low end of the scale. At the time of the failure, core off-load activities were in progress and continued until all fuel assemblies were removed from the reactor core at 2159. Therefore, for approximately 11 hours the unit was in a condition prohibited by TS due to the inoperability of one of the two required source range channels. The redundant source range channel remained operable and unaffected by this condition. The probable cause of this event is associated with a failure of the input circuit breaker to the processor power supply. Following replacement of the failed component and post maintenance testing, the source range channel was declared operable.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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NARRATIVE (17)

A. Plant Status

At the time this condition was discovered, Arkansas Nuclear One, Unit 1 was shutdown and in Mode 6 for refueling outage 1R18.

B. Event Description

At 2251 on April 29, 2004, during the removal of inverter Y-28 [EF] from service for planned maintenance, the ANO-1 shift manager observed that the plant computer [ID] indication for the green train source range nuclear instrumentation [IG] did not exhibit the expected response when its power supply was de-energized. Specifically, operators anticipated that the indicated count rate would decrease when the inverter was shutdown; however, the indication did not change.

The control room staff began an investigation by reviewing historical trend data on the plant computer, the Safety Parameter Display System (SPDS) [ID], and operator log readings taken at 0835 and 1944 CDT. Due to the extremely low readings, the operator logs did not provide conclusive evidence as to the time of failure of the affected instrument channel. However, it was determined from the evaluation of the plant computer and SPDS data that the green train source range nuclear instrumentation channel had failed at 1052 CDT. Additionally, the review determined that the redundant red train source range instrumentation was functioning normally.

During a portion of the time that one source range channel was inoperable, the failure had not yet been detected and transfer of fuel assemblies from the reactor vessel to the spent fuel pool continued. While such core alterations are in progress, ANO-1 technical specifications require that two source range neutron flux monitors shall be operable. With one of the required channels inoperable, core alterations and any operations that would dilute RCS boron concentration to less than the technical specification limit must be immediately suspended. Contrary to this requirement, while one of the required monitors was inoperable, the transfer of fuel assemblies continued until the core off-load was complete. This condition prohibited by technical specifications was present from 1052 until fuel off-loading activities were completed at 2159 on April 29, 2004. Once core alterations were terminated, no fuel remained in the core and the technical specification requirement was no longer applicable.

C. Root Cause

Analysis is currently in progress to determine the specific cause(s) of the failure of the source range instrumentation. Although this evaluation is not yet completed, preliminary information indicates that the event initiator was a failure of the input circuit breaker to the power supply for the processor. Additionally, during troubleshooting activities, the pre-amplifier power supply was discovered with abnormal ripple voltage output which was subsequently determined to be caused by a failed capacitor. At the present time the specific cause of the channel failure has not been conclusively determined. Entergy will provide the results of the failure analysis in a supplement to this report. This supplement will be submitted no later than August 15, 2004.

D. Corrective Actions

Prior to resumption of core alterations for the core reload, the failed power supply circuit breaker, the power supply, and two pre-amplifiers were replaced. The instrumentation was then tested and operability was demonstrated by performing a channel calibration and functional test in accordance with technical specification requirements. Test results were satisfactory and the green train source range monitoring channel was returned to operable status.

E. Safety Significance

The basis for the requirement for an additional channel of source range neutron flux monitoring during core alterations is to ensure redundant monitoring capability when positive reactivity changes are being made to the core. At the time of this event, ANO-1 was in Mode 6 and a full core off-load of fuel assemblies from the reactor vessel to the spent fuel pool was in progress. When the source range monitoring channel failure occurred, 36 of 177 fuel assemblies remained in the reactor vessel. Transfer of fuel assemblies continued until all of the fuel had been removed from the reactor vessel and relocated to the spent fuel pool. This was accomplished approximately 11 hours after the failure of the required green train source range monitor. Although this failure was not immediately detected, the redundant source range instrument channel was unaffected by this condition and remained operable throughout the remainder of the core off-load activity.

While the likelihood of positive core reactivity changes was diminished with the continued removal of the fuel assemblies, any unexpected changes in core reactivity would have been detected by the operable channel, and operators would have been alerted of a significant change in neutron flux. The unavailability of one train of source range neutron flux monitoring instrumentation did not adversely impact the ability to perform required actions based on this parameter.

For these reasons, the safety significance of this condition was determined to be minimal.

F. Basis for Reportability

This report of a condition prohibited by technical specifications is submitted in accordance with 10CFR50.73(a)(2)(i)(B).

G. Additional Information

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

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