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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 50-368/2000-003-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(B), enclosed is the subject report concerning the Refueling Machine.

Very truly yours,

Jimmy D. Vandergrift
Director, Nuclear Safety

JDV/tfs

enclosure

IE22

cc: Mr. Ellis W. Merschoff
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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

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 (MNBB 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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Arkansas Nuclear One - Unit 2	05000368	1 of 4

TITLE (4) Overload Cut Off Limits For The Refueling Machine Were Not Set As Required By Technical Specifications Due To An Incorrect Dummy Fuel Assembly Weight Being Used For Calibration

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
11	16	2000	2000	003	00	12	14	2000	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	6	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)	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)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	Specify in Abstract Below		
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	and in Text		
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Thomas F. Scott, Nuclear Safety and Licensing Specialist	501-858-4623

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

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

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

At the start of core reload during a scheduled refueling outage, Refueling Machine underload indications were received. Fuel movement was suspended. Investigations revealed that the actual weight of the dummy fuel assembly used to calibrate the signal condition unit of the Refueling Machine was approximately 104 pounds heavier than the value that had been used since 1994. Calibration was performed with the revised weight and underload setpoints were adjusted before resuming fuel loading. A subsequent evaluation determined that the incorrect dummy fuel assembly weight had also affected Refueling Machine overload limits and resulted in their not being set as required by Technical Specifications. Inspections conducted during the outage confirmed that the condition had not resulted in damage to the fuel, core internals, or Reactor Vessel. The cause of the weight discrepancy in 1994 is attributed to use of a load cell with a large span to conduct the measurement. Applicable procedure changes were performed to incorporate the revised dummy fuel assembly weight.

A. Plant Status

At the time this condition was discovered, Arkansas Nuclear One Unit 2 (ANO-2) was in Mode 6, Refueling, with core reload in progress during a scheduled refueling outage.

B. Event Description

Overload cut off limits for the Refueling Machine [CF] were not set as required by Technical Specifications (TS).

The ANO-2 Refueling Machine is used to move fuel assemblies or Control Element Assemblies (CEAs). TS 3.9.6.b and 3.9.6.c establish operability requirements for overload cut off limits for the Refueling Machine. If the operability requirements are not satisfied, the TS action specifies that the Refueling Machine not be used for movement of fuel assemblies or CEAs within the Reactor Vessel. TS surveillance requirement 4.9.6 requires that overload cut off limits be demonstrated operable within 72 hours prior to the start of fuel assembly movement in the Reactor Vessel.

During a scheduled refueling outage, the reactor core was off-loaded to the Spent Fuel Pool [DB]. At 0245 on November 16, 2000, core-re-load began. While loading the first three fuel assemblies, numerous underload indications were experienced. At 0434, fuel handling activities were suspended to investigate the reason for the underload indications. As part of the investigation, the weight of the dummy fuel assembly that is used to calibrate the signal conditioning unit of the Refueling Machine was weighed. The weight was determined to be approximately 2008 pounds. A value of 1904 pounds had been used for calibration of the signal conditioning unit. A calibration was performed using the revised dummy fuel assembly weight. Fuel assembly movement was resumed at 1905 on November 16, 2000, and proceeded through the reload sequence.

When this condition was discovered, it was determined that there are no TS operability requirements associated with the underload conditions. The only setpoints adjusted on November 16, 2000 were for underload conditions. Because the effect of the dummy fuel assembly weight discrepancy on the overload cut off limits was not clear, an evaluation was performed. On November 30, 2000, the evaluation concluded that the weight discrepancy resulted in the TS-required overload limits being outside their required values before the signal conditioning unit was re-calibrated.

C. Root Cause

Personnel cognizant of dummy fuel assembly use since 1992 confirmed that no activity had occurred to alter its weight. The procedure in use for Refueling Machine checkout in 1992 used a conservative weight of 2387 pounds. The dummy fuel assembly weight was determined to be approximately 1904 pounds in February 1994. The incorrect value had been incorporated into procedures at that time. A review of documentation associated with that determination indicates that the most likely reason for the discrepancy is that a load cell with a large span was used.

D. Corrective Actions

Before fuel handling was resumed, calibration of the Refueling Machine signal conditioning unit was completed using the correct weight of the dummy fuel assembly. This resulted in proper setpoints for both overload and underload cut offs.

Applicable procedure changes were implemented to incorporate the revised dummy fuel assembly weight.

E. Safety Significance

The Refueling Machine does not provide any function required to shut down the reactor, maintain the reactor safely shutdown, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident. The purpose of the overload cut off limits is to prevent excessive lifting forces from causing damage to the Reactor Vessel or core internals in the event they are inadvertently engaged during fuel assembly lifting operations. Inspection of fuel assemblies was performed during the core off-load and there was no damage present. A general inspection of the core barrel was performed before reload. No damage was noted to the core internals or Reactor Vessel. The magnitude of the discrepancy between the required and actual cut off values would not be expected to result in significant damage to the internals if inadvertent engagement had occurred. Therefore, this condition is judged to have minimal actual safety significance.

F. Basis for Reportability

Movement of fuel assemblies and CEAs within the Reactor Vessel without overload cut off limits established as required by TS 3.9.6 constitutes a condition reportable under 10CFR50.73(a)(2)(i)(B) as operation prohibited by Technical Specifications.

G. Additional Information

The ANO-2 Refueling Machine is Model DWG A-15796-E manufactured by Programmed and Remote Systems Corporation, manufacturer code P405.

There have been no previous similar conditions reported by ANO as Licensee Event Reports (LERs).

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