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Alabama Power
the southern electric system

10CFR50.73

December 12, 1989

Docket No. 50-348

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Dear Sir:

Joseph M. Farley Nuclear Plant - Unit 1
Licensee Event Report No. LER 89-007-00

Joseph M. Farley Nuclear Plant, Unit 1 Licensee Event Report No. LER 89-007-00 is being submitted in accordance with 10CFR50.73.

If you have any questions, please advise.

Respectfully submitted,

W. G. Hairston, III

WGH,III/JAR:md 8.55

Enclosure

cc: Mr. S. D. Ebneter
Mr. G. F. Maxwell

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NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Joseph M. Farley - Unit 1	0 5 0 0 0 3 4 8	1 OF 0 4

TITLE (4)

Both Motor Driven Auxiliary Feedwater Pumps Inoperable Due to Design Error

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 NAMES	DOCKET NUMBER(S)
1 1	1 2	8 9	8 9	- 0 0 7	- 0 0	1 2	1 2	8 9		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	3
POWER LEVEL (10)	0 1 0

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

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)	X 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
D. N. Morey, General Manager-Nuclear Plant	2 0 5 8 9 9 - 5 1 5 6

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

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 fifteen single-space typewritten lines) (16)

At approximately 1830 on 11-12-89, with the unit in Mode 3 (Hot Standby), both motor driven auxiliary feedwater pumps (MDAFWPs) failed to start when the operator tried to start them manually. Just prior to this, the MDAFWPs had started automatically per design, had performed their design function, and then had been stopped by the operator. After the failure of the MDAFWPs to start, the switches that defeat the automatic start of the MDAFWPs when both steam generator feed pumps are tripped were placed in the DEFEAT position and the MDAFWPs were started. The MDAFWPs could then be operated as needed.

This event was caused by cognitive personnel error. While preparing a design change, the designer failed to review all the unit specific documentation associated with the MDAFWP wiring and made the erroneous assumption that the Unit 1 and Unit 2 switchgear compartment internal wiring was identical. In fact, the wiring for each unit was different. Consequently, when the design change was installed in 1988, it was installed in accordance with the erroneous design.

The wiring discrepancy was corrected and the MDAFWPs were tested and returned to service by 0343 on 11-14-89. The appropriate design personnel have been issued written instructions re-emphasizing the importance of reviewing unit specific documentation. Appropriate procedures will be revised to reflect this requirement and sufficient checks have been made to provide reasonable assurance that this was an isolated personnel error.

Plant and System Identification

Westinghouse - Pressurized Water Reactor
Energy Industry Identification System codes are identified in the text as [XX].

Summary of Event

At approximately 1830 on 11-12-89, with the unit in Mode 3 (Hot Standby), both motor driven auxiliary feedwater pumps (MDAFWPs) [BA] failed to start when the operator tried to start them manually. Just prior to this, the MDAFWPs had started automatically per design, had performed their design function, and then had been stopped by the operator. After the failure of the MDAFWPs to start, the switches that defeat the automatic start of the MDAFWPs when both steam generator feed pumps are tripped were placed in the DEFEAT position and the MDAFWPs were started. The MDAFWPs could then be operated as needed.

Description of Event

At 1658 on 11-12-89, the MDAFWPs started automatically per design as a result of a safety injection and reactor trip (LER 89-006-00). After conditions had stabilized, the operator stopped both MDAFWPs so that steam generator blowdown could be established. At approximately 1830, the operator tried to start the MDAFWPs but the pumps would not start. The turbine driven auxiliary feedwater pump was unaffected and provided the required feedwater. After a short investigation (less than ten minutes), the switches that defeat the automatic start of the MDAFWPs when both steam generator feed pumps are tripped were placed in the DEFEAT position and the MDAFWPs were started. The MDAFWPs could then be operated as needed.

On 11-13-89, during troubleshooting, it was determined that the failure of the MDAFWP breakers to close was due to a wiring error in the breaker switchgear. This error was created by the designer during the preparation of a design change which was installed during the Cycle 8-9 refueling outage in the spring of 1988.

It was initially believed that the problem would have affected MDAFWP operation only when the AUTO-DEFEAT switches were in the AUTO position. Thus, plant operation in Mode 1 (Power Operation) only would have been affected. However, after the wiring error was discovered, it was found that the MDAFWP breakers would have failed to close whenever:

- An automatic start signal was present,
- The pumps had been stopped with the automatic start signal present, and
- An attempt was made to close the breaker while the automatic start signal was still present.

Since the error affected the MDAFWP breakers only when an unusual set of circumstances occurred, it was not discovered during the post-installation testing of the design change.

This event was discussed at a Plant Operations Review Committee meeting on 11-13-89. The PORC discussed the wiring error and approved Minor Departures to correct the wiring error.

Cause of Event

This event was caused by cognitive personnel error. The designer did not follow established department practice and failed to use all the unit specific documentation for the Unit 1 switchgear. The erroneous assumption was made that the switchgear compartment internal wiring for the Unit 1 breakers was identical to the wiring on Unit 2. Due to differences in wiring, the problem with the Unit 1 MDAFWP breakers was created, but such a problem never existed on Unit 2.

Reportability Analysis and Safety Assessment

This event is reportable since a single cause or condition caused two independent trains to become inoperable in a single system. This could have affected the capability to remove heat from the reactor coolant system.

The safety significance of this event is lessened by the fact that:

- The turbine driven auxiliary feedwater pump (TDAFWP) remained operable throughout this event and supplied water to the steam generators. The TDAFWP has a capacity equal to the combined capacity of the MDAFWPs.

- The MDAFWPs operated until they were stopped by the operator. The MDAFWPs were able to be started after the AUTO-DEFEAT switches were placed in the DEFEAT position.

- It took personnel only a few minutes (less then 10 minutes) of troubleshooting to determine the conditions required for operation of the MDAFWP breakers.

- An unusual set of circumstances had to occur before the MDAFWPs would have failed to start.

Corrective Action

The wiring discrepancy was corrected and the MDAFWPs were tested and returned to service by 0343 on 11-14-89.

Designer management has met with design and design review personnel instructing them to ensure that all unit specific documentation is used for design and design verification purposes.

The appropriate design personnel have been issued written instructions re-emphasizing the importance of reviewing unit specific documentation.

The designer will revise, by December 29, 1989, project procedures to place additional emphasis on the requirement for using all applicable unit specific documentation for design and design verification purposes.

In addition, the designer has made sufficient checks to provide reasonable assurance that this was an isolated personnel error.

As an additional precaution, Farley Nuclear Plant's other architect engineer has been requested to review this event with appropriate design personnel emphasizing the importance of using unit specific documentation in performing design and verification functions.

Additional Information

The design was provided by Bechtel Power Corporation, 15740 Shady Grove Road, Gaithersburg, Maryland 20877-1454.

This event would not have been more severe under different operating conditions.

No similar LERs have been submitted by FNP.