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Southern Nuclear Operating Company

the southern electric system

J. D. Woodard
Vice President
Farley Project

July 17, 1992

Docket No. 50-364


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

Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report No. LER 92-009-00

Gentlemen:

Joseph M. Farley Nuclear Plant, Unit 2, Licensee Event Report No. LER 92-009-00 is being voluntarily submitted. If you have any questions, please advise.

Respectfully submitted,


J. D. Woodard

JDW/DPH:map 0297

Enclosure

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

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PDR ADCCK 05000364
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) **Joseph M. Farley Nuclear Plant - Unit 2** DOCKET NUMBER (2) **05000364** PAGE (3) **1** OF **5**

TITLE (4)
Agastat Timers on Diesel Generator Sequencers Failed to Meet Acceptance Criteria

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQ NUM	REV	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
06	17	92	92	009	00	07	17	92	J. M. Farley-Unit 1	05000348
										05000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)

OPERATING MODE (9)	1	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL	100	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)	X OTHER (Specify in Abstract below) Voluntary
		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
R. D. Hill, General Manager - Nuclear Plant	AREA CODE: 205, NUMBER: 899-5156

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (if yes, complete EXPECTED SUBMISSION DATE) NO X

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

ABSTRACT (16)

In the fall of 1990, Agastat timers on B2F and B2G sequencers were replaced with calibrated one-step and two-step relays. During subsequent surveillance testing of the B2F sequencer on April 1, 1991, a two-step Agastat timer failed to meet the acceptance criteria of Technical Specification Surveillance 4.8.1.1.2.c.9. The relay was recalibrated and successfully retested. A two-step Agastat timer on B2G sequencer was found to not meet the acceptance criteria during surveillance testing on June 17, 1992. This timer was replaced, calibrated and successfully retested. A possible cause of the failures was the calibration procedure's inadequate guidance for setting of the two-step relays. Therefore, there is a possibility that an Agastat timer for the B2F sequencer could have been out of tolerance for a period of time between replacement and the following surveillance test (December 21, 1990 through April 1, 1991). It is also possible that an Agastat timer for the B2G sequencer could have been out of tolerance for the period of time between replacement and the following surveillance test (November 10, 1990 through June 17, 1992). Although available data indicates that inadequate calibration procedural guidance may have been the cause of the surveillance failures, Southern Nuclear Company (SNC) has initiated an on-going effort to further evaluate this issue.

In order to verify their operability, the B1F, B1G and B2F sequencers were tested on July 8, 1992. The results of these tests were provided to the NRC EDSFI Team. As discussed with the NRC in the EDSFI exit meeting of July 10, 1992, all four sequencers will again be tested by July 24, 1992 to verify performance of these relays.

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TEXT

Plant and System Identification

Westinghouse - Pressurized Water Reactor

Summary of Event

In the fall of 1990, Agastat timers on B2F and B2G sequencers were replaced with calibrated one-step and two-step relays. During subsequent surveillance testing of the B2F sequencer on April 1, 1991, a two-step Agastat timer failed to meet the acceptance criteria of Technical Specification Surveillance 4.8.1.1.2.c.9. The relay was recalibrated and successfully retested. A two-step Agastat timer on E2G sequencer was found to not meet the acceptance criteria during surveillance testing on June 17, 1992. This timer was replaced, calibrated and successfully retested. A possible cause of the failures was the calibration procedure's inadequate guidance for setting of the two-step relays. Therefore, there is a possibility that an Agastat timer for the B2F sequencer could have been out of tolerance for a period of time between replacement and the following surveillance test (December 21, 1990 through April 1, 1991). It is also possible that an Agastat timer for the B2G sequencer could have been out of tolerance for the period of time between replacement and the following surveillance test (November 10, 1990 through June 17, 1992).

Although available data indicates that inadequate calibration procedural guidance may have been the cause of the surveillance failures, Southern Nuclear Company (SNC) has initiated an on-going effort to further evaluate this issue. Discussions have been initiated with the Agastat manufacturer and other utilities to gather information on performance of these timers. SNC is implementing improvements in calibration, testing and data acquisition techniques related to the Agastat timers.

In order to verify their operability, the B1F, B1G and B2F sequencers were tested on July 8, 1992. The results of these tests were provided to the NRC EDSFI Team. As discussed with the NRC in the EDSFI Exit meeting of July 10, 1992, all four sequencers will again be tested by July 24, 1992 to verify performance of the relays.

Description of Event:

In October, November and December of 1990, Agastat timers for sequencers B2F and B2G were replaced. The new Agastats were calibrated and installed. The sequencers were returned to service based on calibration procedure FNP-0-EMP-1549.01, Revision 5.

On April 1, 1991, the B2F sequencer surveillance was performed in accordance with operations surveillance test procedure FNP-2-STP-80.3. During the testing it was discovered that one of the two-step Agastat timers failed to meet the acceptance criteria. This timer was recalibrated and the test was successfully rerun on April 2, 1991. Another two-step Agastat timer failed the retest. It was also recalibrated and successfully retested on April 2, 1991.

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Description of Event (Continued)

It was determined on September 28, 1991 that the calibration procedure was a possible cause of the two-step Agastat timers failing to test within the required range. The calibration procedure did not provide clear guidance on the sequence for setting the upper and lower contacts. This could allow the as-left setting of one of the contacts to be out of specified tolerance. As a result, FNP-0-EMP-1549.01 was revised to verify the setting of both the upper and lower contacts of the two-step timers simultaneously vice one at a time per the earlier revision. Revision 6, which included the new guidance, was issued on October 7, 1991.

At the time that it was determined that calibration procedure FNP-0-EMP-1549.01, Revision 5, may have resulted in calibration discrepancies, it was concluded that the operations surveillance test procedures (FNP-1/2-STP-80.3) had been performed for the B1F, B1G, B2F and B2G sequencers. These procedures are an "in-place" verification of sequencer performance and would identify any problems with calibration. However, this test had actually only been performed for the B1F, B1G and B2F sequencers as of September 28, 1991.

On June 17, 1992, the B2G sequencer routine surveillance was performed in accordance with FNP-2-STP-80.3. A two-step sequencer Agastat timer failed to meet the acceptance criteria. This timer was replaced and successfully retested on June 17, 1992.

Since the surveillance on the B2G sequencer was performed on June 17, 1992 and the B2G sequencer timers had not been calibrated under Revision 6 of FNP-0-EMP-1549.01, there is a possibility that the B2G sequencer timer could have been out of tolerance from replacement (November 1990) until June 17, 1992 and B2F could have been out of tolerance from replacement (December 1990) until April 1, 1991, even though there is no conclusive evidence that the situation occurred prior to discovery.

During the Unit 1 refueling outage, a two-step Agastat timer for the B1F sequencer was installed on March 26, 1991. FNP-1-STP-80.3 was performed on April 1, 1991 and the timer was found outside the acceptance criteria. The timer was recalibrated and successfully retested on April 1, 1991. On April 6, 1991 two-step Agastat timers were replaced for the B1G sequencer. FNP-1-STP-80.3 was performed on April 10, 1991 and a timer was found to be outside the acceptance criteria. The timer was recalibrated and successfully retested on April 10, 1991.

Although Agastat timers on B1F and B1G were replaced and calibrated to Revision 5 of FNP-0-EMP-1549.01, a surveillance test in accordance with FNP-1-STP-80.3 was performed following the installation. This ensured the Technical Specification acceptance criteria was met.

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Description of Event (Continued)

While the two-step timers calibrated per Revision 5 of FNP-0-EMP-1549.01 could have been out of tolerance from the time of installation, the surveillance test procedure was conducted, the diesel generator dynamic analysis demonstrates that the diesel generators would have performed their intended function assuming the worst case as-found timer setting. The analysis program used is a detailed dynamic simulation of plant specific motor, load, transformer and diesel generator models, which has been validated by field testing and verified by comparison with the Electromagnetic Transient Program (EMTP), an industry standard program. The timing of the start of safety-related loads was also reviewed assuming the as-found setting of the timers and it was determined that accident analysis assumptions would have been met.

Cause of the Event

There is a possibility that the event could have been caused by inadequate procedural guidance.

Reportability Analysis and Safety Assessment

This event is being reported voluntarily. No systems needed for maintaining safe shutdown were adversely affected.

A simulation of the failure of the Agastat timers was run to determine if the diesel generators would be able to function properly. The diesel generator dynamic analysis demonstrates that the diesel generators would have performed their intended function based on the worst case as-found timer setting. The timing of the start of safety-related loads was also reviewed assuming the as-found setting of the timers and it was determined that accident analysis assumptions would have been met.

This event alone would not have been more severe if it had occurred under different operating conditions as shown by the results of the review of the as-found timer settings discussed above.

The health and safety of the public were not affected.

Corrective Action

Revision 6 of FNP-0-EMP-1549.01 was issued to require verification of the setting of both the upper and lower contacts of the two-step timers simultaneously, rather than one at a time as allowed by Revision 5.

All Agastat timers for the sequencers 31F, B2F, B1G and B2G have been successfully tested to ensure that the problem identified in Revision 5 of FNP-0-EMP-1549.01 has been corrected.

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Corrective Action (Continued)

Although available data indicates that inadequate calibration procedural guidance may have been the cause of the surveillance failures, Southern Nuclear Company (SNC) has initiated an on-going effort to further evaluate this issue. Discussions have been initiated with the Agastat manufacturer and other utilities to gather information on performance of these timers. SNC is implementing improvements in calibration, testing and data acquisition techniques related to the Agastat timers.

In order to verify their operability, the B1F, B1G and B2F sequencers were tested on July 8, 1992. The results of these tests were provided to the NRC EDSFI Team. As discussed with the NRC in the EDSFI exit meeting of July 10, 1992, all four sequencers will again be tested by July 24, 1992 to verify performance of these relays.

Additional Information

No similar events have been reported by FNP.