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Southern Nuclear Operating Company
the southern electric system

May 22, 1996

Docket Number: 50-364

10 CFR 50.73

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

Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report Number 96-002-00
Misapplication of Technical Specification 4.4.6
Requirements Regarding F*

Ladies and Gentlemen:

Joseph M. Farley Nuclear Plant Licensee Event Report No. 96-002-00 is being submitted in accordance with 10 CFR 50.73(a)(2)(i) and 10 CFR 50.36(c)(2). If you have any questions, please advise.

Respectful'y submitted,

Dave Morey

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Enclosure

cc: Mr. S. D. Ebnetter, Region II Administrator
Mr. B. L. Siegel, NRR Senior Project Manager
Mr. T. M. Ross, FNP Resident Inspector

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), 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)

Joseph M. Farley Nuclear Plant - Unit 2

DOCKET NUMBER (2)

05000364

PAGE (3)

1 OF 6

TITLE (4)

Misapplication of Technical Specification 4.4.6 Requirements Regarding F*

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												
0	4	2	2	9	6	9	6	-	0	3	2	-	0	0	0	5	2	2	9	6	

OPERATING MODE (9)

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 1: (Check one or more) (11)

POWER LEVEL (10)

1	0	0	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(vm)
			20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)
			20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71
			20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	OTHER
			20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract
			20.2203(a)(2)(iv)	50.36(c)(2)	X	50.73(a)(2)(vi)	or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
R.D. Hill, General Manager - Nuclear Plant	AREA CODE 334 899 - 5156

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

MONTH DAY YEAR

SUBMISSION

DATE (15)

YES (If yes, complete EXPECTED SUBMISSION DATE)

X NO

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

At approximately 1822 on April 22, 1996 with Unit 2 in mode 1 operating at 100 percent power, it was determined that Unit 2 was in a condition prohibited by Technical Specifications and Unit 2 entered Technical Specification 3.0.3. At that time FNP had determined that Unit 2 was operating with 6 steam generator tubes in service with axial indications that did not meet F* tube definition requirements of Technical Specifications 4.4.6.4.a.11. These 6 tubes should have been repaired or plugged during the Unit 2 Tenth Refueling Outage (U2RF10 - Spring 1995). Following entry into Technical Specification 3.0.3, a power reduction was commenced at 1834. At approximately 2308 on April 22, 1996, NRC enforcement discretion was granted relative to Technical Specification 3/4.4.6 and Technical Specification 3.0.3 was exited. The power reduction was subsequently secured at approximately 35 percent power.

This event was caused by an inadequate surveillance test procedure used to verify Technical Specification compliance of the Steam Generator inspection program performed by a vendor. The procedure was inadequate in that it did not contain the acceptance criteria against which an evaluation of acceptability should have been made for F* tube determination. The surveillance test procedure used to verify Technical Specification compliance of the Steam Generator inspection program will be revised to delineate Steam Generator inspection program Technical Specification acceptance criteria.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 500 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET.

FACILITY NAME (1)

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TEXT (If more space is required, use additional NRC Form 366) (17)

Plant and System Identification

Westinghouse -- Pressurized Water Reactor

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

Description of Event

At approximately 1822 on April 22, 1996 with Unit 2 in mode 1 operating at 100 percent power, it was determined that Unit 2 was in a condition prohibited by Technical Specifications and Unit 2 entered Technical Specification 3.0.3. At that time FNP had determined that Unit 2 was operating with 6 steam generator tubes in service with axial indications that did not meet F* tube definition requirements of Technical Specifications 4.4.6.4.a.11. These 6 tubes should have been repaired or plugged during the Unit 2 Tenth Refueling Outage (U2RF10 - Spring 1995). Following entry into Technical Specification 3.0.3, a power reduction was commenced at 1834. At approximately 2308 on April 22, 1996, NRC enforcement discretion was granted relative to Technical Specification 3/4.4.6 and Technical Specification 3.0.3 was exited. The power reduction was subsequently secured at approximately 35 percent power.

During the course of an industry initiative steam generator assessment pilot program in April 1996, Farley Nuclear Plant (FNP) management became aware of a potential problem concerning the application of Technical Specification requirements regarding F* distance. The application of Technical Specification requirements regarding F* was suspect due to the following two factors: (1) It was determined that the steam generator data analysis guideline utilized by data analysts in evaluating eddy current data contained an incomplete application of the Technical Specification requirements regarding F* distance. Specifically, the application of F* distance utilized in the data analysis guideline did not include considerations for measuring from the bottom of the roll transition; and (2) The emergence of advanced technological methodologies for flaw location had not been applied to the Technical Specification F* distance requirement. These two factors resulted in an incomplete analysis criteria and therefore a misapplication of the Technical Specification requirement regarding F* distance. A re-analysis of Unit 2 Tenth Refueling Outage steam generator tube bobbin coil probe and rotating pancake coil (RPC) probe eddy current test results was subsequently performed. The re-analysis consisted of a re-evaluation to Technical Specification F* distance requirements of all (270) steam generator tubes identified during U2RF10 as F* tubes using bobbin coil and/or RPC eddy current test results.

LICENSEE EVENT REPORT (LER)
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		9 6	- 0 0 2	- 0 0	3	OF	6

TEXT (If more space is required, use additional NRC Form 366) (17)

Farley Unit 2 Technical Specification 4.4.6.4.a.12 defines an F* tube as a tube: a) with degradation equal to or greater than 40% below the F* distance, and b) which has no indication of imperfections greater than or equal to 20% of nominal wall thickness within the F* distance, and c) that remains in service. Technical Specifications 4.4.6.4.a.11 defines F* distance as being equal to 1.79 inches and is measured down from the top of the tubesheet or the bottom of the roll transition, whichever is lower in elevation. The implementation of Technical Specification F* criterion occurred during the U2RF5 (Fall - 1987) outage. The FNP Steam Generator inspection program is verified to be performed in accordance with Technical Specifications by use of a site procedure. The FNP surveillance test procedure utilized to verify the implementation of Technical Specification F* criterion was not revised to include F* acceptance criteria. Subsequent procedure revisions also failed to adequately address the Technical Specification F* acceptance criteria.

The Steam Generator eddy current inspections are performed by a vendor. The implementation of Technical Specification F* distance requirements by the vendor's data analysts in 1987, were verbally instructed concerning the correct determination of F* distance. In the U2RF6 (Spring 1989) outage an informal data analysis guideline was developed which provided for the correct determination of Technical Specification F* distance. However, translating this Technical Specification requirement into an informal data analysis guideline was inappropriate because the data analysis guideline lacked adequate administrative controls for review and approval. As a result, a subsequent revision to the data analysis guideline to accommodate technological changes in eddy current methodologies deleted considerations for measuring from the bottom of the roll transition without considering the impact on Technical Specification acceptance criteria.

With bobbin coil technology, the standard industry practice to identify the flaw location was by the center of its signal. When FNP began 100 percent hot leg top of the tubesheet inspections (about 1990), the RPC probe data was also used to identify the F* tubes. FNP used the industry practice of identifying RPC flaw location based on maximum signal amplitude (a single point). Due to the RPC technology and measurement uncertainties that existed at the time, and the relative short length of the flaws, error allowances were part of standard industry practice to allow for not having located the two ends of the flaw. Around 1992, improved RPC technology allowed the analysts to more clearly identify the flaw length. However, this ability to more accurately identify the beginning (top tip) of the flaw indication was not applied to the F* distance determination.

NRC FORM 386A (4-95)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98	
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION				ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET.	
FACILITY NAME (1) Joseph M. Farley Nuclear Plant - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 6 4	LER NUMBER (6)		PAGE (3)	
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TEXT (If more space is required, use additional NRC Form 386) (17)

The re-evaluation of the U2RF10 data to Technical Specification requirement regarding F* distance included consideration for measuring from the bottom of the roll transition as well as incorporating the identification of flaw tip location. As a result of utilizing the RPC capability for identifying the location of the upper tip of the flaw, concurrent with utilizing the bobbin coil capability for determining the location of the bottom of the roll transition, it was concluded that 6 steam generator tubes had been left in service following the U2RF10 - Spring 1995 outage which should have been repaired or plugged. It should be noted that based on bobbin coil data concerning flaw location, these 6 steam generator tubes were found to be satisfactory.

These 6 steam generator tubes were also re-analyzed for the tubes' ability to meet established industry L* criterion (not included in FNP's Technical Specification). Utilizing RPC probe technology, the L* criterion assesses indications of flaws within the roll expanded region of steam generator tubes based upon location of the indications, the axial length of the indications and the inclination angle of the indications. As discussed in a telephone-conference with the NRC staff on April 22, 1996, enforcement discretion was requested and approved to allow continued operation of FNP Unit 2 within conditions of the relevant L* parameters bounded by the 6 steam generator tubes. The details of the six steam generator tube deficiencies are documented in Southern Nuclear Company's Request for Enforcement Discretion correspondence dated April 23, 1996.

Cause of Event

This event was caused by an inadequate surveillance test procedure used to verify Technical Specification compliance of the Steam Generator inspection program performed by a vendor. The procedure was inadequate in that it did not contain the acceptance criteria against which an evaluation of acceptability should have been made for F* tube determination. Contributing causes to this event were that instructions provided to data analysts and data managers were not subject to a formal review and approval process, and advances in steam generator tube flaw location technology was not re-evaluated to the original Technical Specification acceptance criteria intent.

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TEXT (If more space is required, use additional NRC Form 346) (17)

Safety Assessment

All structural integrity and leakage requirements of draft Regulatory Guide 1.121, Bases for Plugging Degraded PWR Steam Generator Tubes, dated August 1976 continue to be met for the 6 tubes that failed to meet the F* Technical Specification. F* is based on analytical calculations and testing which demonstrated that the structural and leakage integrity margins for F* tubes are consistent with the guidance in draft Regulatory Guide 1.121 and Appendix A to 10 CFR Part 50. L* is an extension of F* that allows tubes with degradation in the F* distance to remain in service provided certain criteria are met. Therefore, there are no significant safety concerns since the structural integrity and leakage integrity requirements were all satisfied.

Corrective Action

The surveillance test procedure used to verify Technical Specification compliance of the Steam Generator inspection program will be revised to delineate Steam Generator inspection program Technical Specification acceptance criteria.

The instructions utilized by the data analysts and data managers will be formalized with a review and approval process.

A broadness review is in progress to review FNP's safety-related vendor services used to support safety related activities.

These actions will be completed by September 30, 1996.

Additional Information

On April 22, 1996, enforcement discretion was granted relative to Technical Specification 3/4.4.6 to allow continued operation of FNP Unit 2 within conditions of the relevant L* parameters bounded by the six steam generator tubes. Operation of Unit 2 under the Notice of Enforcement Discretion was approved until NRC approval of a one time cycle specific L* Technical Specification change submitted on April 23, 1996.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET.

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TEXT (If more space is required, use additional NRC Form 366) (17)

This event does not affect Unit 1 since F* criterion is not applicable to Unit 1 Technical Specifications.

Unit 2 returned to 100 percent power at 0549 on April 23, 1996.

A root cause investigation team was assembled to determine the cause of this event.