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SOUTHERN COMPANY
Energy to Serve Your World℠

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NL-04-1594

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Joseph M. Farley Nuclear Plant, Units 1 and 2
Application for License Renewal – Supplemental Information

Ladies and Gentlemen:

In response to NRC Staff requests, this letter provides supplemental information for the review of the Joseph M. Farley Nuclear Plant, Units 1 and 2, License Renewal Application.

Mr. L. M. Stinson states he is a vice president of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

If you have any questions, please contact Charles Pierce at 205-992-7872.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

L. M. Stinson

Sworn to and subscribed before me this 31 *day of* August, *2004.*

Notary Public

My commission expires: 6-7-05

LMS/JAM/slb

A099

Enclosure: Joseph M. Farley Nuclear Plant, Units 1 and 2
Application for License Renewal – Supplemental Information

cc: Southern Nuclear Operating Company
Mr. J. B. Beasley Jr., Executive Vice President
Mr. D. E. Grissette, General Manager – Plant Farley
Document Services RTYPE: CFA04.054; LC# 14123

U. S. Nuclear Regulatory Commission
Ms. T. Y. Liu, License Renewal Project Manager
Dr. W. D. Travers, Regional Administrator
Mr. S. E. Peters, NRR Project Manager – Farley
Mr. C. A. Patterson, Senior Resident Inspector – Farley

Alabama Department of Public Health
Dr. D. E. Williamson, State Health Officer

ENCLOSURE

Joseph M. Farley Nuclear Plant, Units 1 and 2

Application for License Renewal

Supplemental Information

Supplemental Information on Compressed Air System Aging Management Review Results – Add "Buried" Environment to LRA Section 3.3.2.1.7 & Table 3.3.2-7

SNC has identified that the "buried" environment is applicable to the Compressed Air LRA System, but was inadvertently excluded from the LRA. The in-scope portion of the Compressed Air System includes buried carbon steel piping. Specifically, portions of the in-scope air supply piping from the Turbine Building to the Auxiliary Building [Unit 1 boundary drawing D-170131L sheet 2 (coordinate B-1) and Unit 2 boundary drawing D-200019 sheet 1 (coordinate A-10)] are buried carbon steel piping.

The LRA should read as follows to address this environment:

- Add "buried" to the list of Environments provided in Section 3.3.2.1.7 on page 3.3-9;
- Add "Buried Piping and Tank Inspection Program (Appendix B.5.4)" to the list of Aging Management Programs provided in Section 3.3.2.1.7 on page 3.3-9;
- Include buried piping in Table 3.3.2-7 on page 3.3-66 as shown below:

Component Type *GALL Reference*	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
Piping VII.D.1.1	Pressure Boundary	Carbon Steel	Buried	Loss of Material	Buried Piping and Tank Inspection Program	VII.C1.1-b	3.3.1-18	C

The aging management review results, including aging management program, are consistent with the buried carbon steel components in other LRA systems.

Supplemental Information on the Aging Management Review Results for the High Head (Charging Pump) Casings

NRC Information Notices (IN) 80-38 and 94-63 describe occurrences of loss of material in stainless steel clad charging pump casings manufactured by Pacific Pumps Division of Dresser Industries. The damage results from cracks through the stainless steel cladding that allow corrosive attack of the carbon steel base metal by the boric acid coolant. The clad cracks have been attributed to pump manufacture, occurring in areas that were difficult to access during the cladding process and at areas with sharp corner geometry. As indicated in the INs, the corrosive attack of the charging pump carbon steel base metal resulting from the small cladding cracks proceeds at a relatively slow rate, however undetected and unmonitored it can lead to localized thinning of the casing.

FNP's six (6) charging/high-head safety injection (HHSI) pumps are manufactured by Pacific Pumps Division and have stainless steel clad pump casings consistent with the NRC information notices. Therefore, loss of material due to clad cracking and subsequent base metal corrosion should have been included in the aging management review results for the charging pumps in the LRA. In response to the INs, SNC performs periodic inspection activities as part of FNP's periodic surveillance and preventive maintenance activities. Specifically, non-intrusive ultrasonic testing (UT) of the charging/HHSI pump casings is performed periodically to detect through-clad cavities (loss of material) in the carbon steel base material. A VT-1 visual examination of the internal surface of the charging/HHSI pump casing is performed any time a rotating assembly is removed during pump maintenance.

FNP's operating experience demonstrates these periodic inspection activities are adequate to manage this aging effect. In 1996, the rotating assembly of the 2A charging/HHSI pump was removed for a pump maintenance activity. FNP visually discovered a brownish-red residue at two locations in the suction end of the casing indicative of carbon steel base metal corrosion from through-clad cracks. VT-1, VT-3, and radiography were performed, and a corrosion wastage assessment was performed by the NSSS vendor (Westinghouse). The 2A pump was placed on an increased frequency of inspection, with UT of the pump casing performed every six months during the next three plant operating cycles to quantify the rate of material loss. The results of these inspections indicated no apparent changes from the previous inspection results. A VT exam was also performed after the third cycle of operation (March 2001). The results of these inspections confirmed the corrosion of the carbon steel base metal is progressing at a very slow rate. The UT of the 2A pump casing is now performed on an 18 month frequency.

There has been no evidence of clad cracking in any of the other five (5) charging/HHSI pumps manufactured by Pacific Pumps Division. Non-intrusive UT exams of the 1A, 1B, 1C, 2B, and 2C charging/HHSI pump casings are performed on a 36-month frequency. Visual examination of the internal surface of the charging/HHSI pump casing is performed any time a rotating assembly is removed during pump maintenance.

To incorporate this additional aging effect/mechanism into the aging management review results for the charging/HHSI pump casings, the LRA should read as follows.

The aging management review results for the Emergency Core Cooling System in Table 3.2.2-3 for the High Head Pump Casings (page 3.2-25) should include the following additional line item:

Component Type *GALL Reference*	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
High Head Pump Casings V.D1.2.1	Pressure Boundary	Carbon Steel/ with Stainless Steel Clad	Borated Water	Loss of Material (Base Metal Corrosion due to Clad Cracking)	Periodic Surveillance and Preventive Maintenance Activities			H

The further evaluation discussion item, Section 3.3.2.2.4 on Crack Initiation and Growth due to Cracking or Stress Corrosion Cracking, should read as follows (changes shown in ***bold italics***):

> "The FNP high head pumps are centrifugal pumps normally used for chemical and volume control, and are shared with the emergency core cooling system. ***The AMR results are included with the emergency core cooling system results in Table 3.2.2-3.*** These high head pump casings are carbon steel with internal surfaces clad with austenitic stainless steel. The FNP AMR results for this casing indicate that the aging effect requiring management for the borated water environment is loss of material ***in the stainless steel cladding*** due to localized corrosion, ***and loss of material in the carbon steel base metal due to boric acid corrosion resulting from clad cracking (re., IN 94-63 and IN 80-38).*** The normal operating temperature of these pumps is below the 140° F threshold for stress corrosion cracking. The FNP Water Chemistry Control Program (Appendix B.3.2) will manage loss of material ***in the stainless steel cladding*** in these pump casings. ***The FNP Periodic Surveillance and Preventive Maintenance Activities (Appendix B.5.9) will manage loss of material in the carbon steel base metal due to corrosion."***

Section B.5.9, "Periodic Surveillance and Preventive Maintenance Activities," was added as an aging management program in the supplemental response to RAI 2.3.3.23-1 in SNC letter NL-04-1038 dated June 18, 2004. Description of the activities credited for aging management are described in Section B.5.9.6, "Detection of Aging Effects." The activities described in Section B.5.9 should include the following:

> *HHSI/Charging Pump Casing Inspections*
>
> The HHSI/charging pump casing inspections are existing periodic tasks that manage loss of material in the carbon steel base metal resulting from boric acid corrosion format locations of clad cracking. Inspections include periodic non-intrusive UT exams of accessible areas of the pump casings to detect through-clad cavities (loss of material) in the carbon steel base material. Visual examination of the internal surface of the charging/HHSI pump casing is performed any time a rotating assembly is removed during pump maintenance.