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September 10, 2007

Docket No.: 50-348

NL-07-1608

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

Joseph M. Farley Nuclear Plant – Unit 1  
Request for Relief, RR-55  
Temporary Non-Code Repair of Service Water Piping

Ladies and Gentlemen:

Pursuant to 10 CFR 50.55a, Southern Nuclear Operating Company (SNC) hereby requests NRC approval of a proposed request for relief that is consistent with the intent of NRC Generic Letter 90-05, for a temporary non-Code repair of a service water piping pinhole leak downstream of Q1P16V510.

This request for relief is to remain in effect until the next refueling outage or the next Unit 1 cold shutdown greater than 30 days, whichever occurs first. The next Unit 1 outage (1R21) is scheduled to begin in September 2007.

The details of the 10 CFR 50.55a request are contained in the enclosure.

If you have any questions, please advise.

Sincerely,

A handwritten signature in black ink, appearing to read "B. J. George", with a stylized flourish at the end.

B. J. George  
Manager, Nuclear Licensing

BJG/JLS/daj

Enclosure: Request for Relief, RR-55, Temporary Non-Code Repair of Service  
Water Piping

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cc: Southern Nuclear Operating Company  
Mr. J. T. Gasser, Executive Vice President  
Mr. J. R. Johnson, Vice President – Plant Farley  
Mr. D. H. Jones, Vice President – Engineering  
RType: CFA04.054; LC# 14629

U. S. Nuclear Regulatory Commission  
Dr. W. D. Travers, Regional Administrator  
Ms. K. R. Cotton, NRR Project Manager – Farley  
Mr. E. L. Crowe, Senior Resident Inspector – Farley

**Joseph M. Farley Nuclear Plant – Unit 1**

**Enclosure**

**Request for Relief, RR-55  
Temporary Non-Code Repair of Service Water Piping**

## **Enclosure**

### **Joseph M. Farley Nuclear Plant – Unit 1 Request for Relief, RR-55, Temporary Non-Code Repair of Service Water Piping**

**UNIT:** Farley Unit 1

**COMPONENT:** 36-inch Nominal Pipe Size (NPS) carbon steel pipe

**SYSTEM:** Service Water (SW)

**ASME CODE CLASS:** 3

**FUNCTION:** This section of piping is the strainer bypass line downstream of valve Q1P16V510.

**CODE REQUIREMENT:** The 1989 Edition of ASME Section XI requires that when a repair replacement activity (RRA) is performed, the requirements of either IWA-4000 or IWA-7000 must be satisfied in order to restore the system's structural integrity back to its original design requirements.

**ALTERNATIVE REQUIREMENT:** In place of the ASME Code requirements, Southern Nuclear Operating Company (SNC) is implementing the alternative requirements of NRC Generic Letter (GL) 90-05 until the next refueling outage or the next Unit 1 cold shutdown greater than 30 days, whichever occurs first.

SNC has evaluated this leak and implemented the requirements of GL 90-05, as documented by this request for relief.

**POSITIVE FLAW DETECTION DURING PLANT OPERATION:** On June 9, 2007, a through-wall leak was discovered in the Service Water system. The leak is located in the carbon steel 36-inch piping of the Service Water strainer bypass line. The location is in the 36-inch elbow downstream of valve Q1P16V510. The leak rate was approximately 30 drops per minute. The initial leakage is documented in Farley Condition Report #2007105791.

**HARDSHIP OF REPAIR:** ASME Code repair of this location is a hardship since the repair would require B-Train Service Water to be tagged and drained, which would require a plant shutdown.

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**DEGRADATION****MECHANISM:**

The cause of the leak is postulated to be localized pitting, possibly due to Microbiologically Influenced Corrosion (MIC) attack. No crack-like characteristics were noted.

**FLAW****CHARACTERIZATION:**

The flaw is located in the base metal of the 36-inch elbow. The exterior size of the pinhole is less than 1/16-inch diameter. UT did not detect any other indications in an area comprised of a 12-inch band around the full circumference of the elbow, in the vicinity of the original flaw location. The maximum dimension of the flaw was determined to be 1.5 inches. This value was based on the UT thickness measurements plotting out the area where the wall thickness was less than the minimum wall of 0.224 inches.

Immediately adjacent to the flaw through-wall area on both sides (radially) and downstream (axially) the wall thickness immediately returns to nominal wall thickness.

**EVALUATION****APPROACH****AND RESULTS:**

A volumetric (UT) examination was performed on the flaw. This information was used to perform the structural integrity calculation, required by GL 90-05, by the through-wall method. The results of this evaluation show that the largest calculated stress intensity factor "K" of  $16.27 \text{ ksi(in)} \exp(1/2)$  is less than the  $35 \text{ ksi(in)} \exp(1/2)$  acceptance criteria for carbon steel.

Engineering personnel reviewed the design requirements for this system and have determined that the amount of leakage found does not prevent the system from performing its safety function. The impact of this leakage on nearby components was also evaluated and it was determined that those components would not be adversely affected by leakage or spray. Flooding is not credible with the current leakage and the patch. Any leakage will be directed into an existing drain.

Based on the above, SNC determined that the structural integrity of the Service Water piping at this location has not been impaired. Compliance with the specified requirements of the Section XI Code would result in hardship without a compensating increase in the level of quality and safety; therefore, approval of this request per 10 CFR 50.55a(a)(3)(ii) should be granted.

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**AUGMENTED  
EXAMINATIONS:**

The piping with the initial flaw is moderate energy piping and therefore, five other similar Unit-1 locations were chosen for the augmented volumetric examinations per GL 90-05. No flaws were detected by these examinations; thus, SNC has concluded that the initial leak is a localized condition.

**PROPOSED  
TEMPORARY  
NON-CODE  
REPAIR:**

Based on the evaluation above, SNC requests relief from the requirements of IWA-4000 and -7000 of the ASME Section XI Code. SNC plans to leave this piping "as is" with a banded rubber patch that will direct leakage into an existing floor drain. The total weight of this patch is less than 20 pounds, which is considered negligible from a pipe loading standpoint. The leakage is negligible and does not present a maintenance or operational problem. The GL 90-05 evaluation shows that this piping still has structural integrity. Based on the continued monitoring discussed below, SNC will reevaluate the need for additional corrective actions as appropriate.

**GL 90-05  
ACTION PLAN:**

An ASME Section XI RRA will be performed before the completion of the Farley Unit 1 1R21 refueling outage or the next Unit 1 cold shutdown greater than 30 days, whichever occurs first. The 1R21 outage is scheduled to begin in September 2007.

The following action will be performed by SNC for this component until ASME Section XI repair or replacement is performed:

- Site personnel will perform a daily qualitative assessment of leakage with the housekeeping patch installed to identify any degradation of structural integrity. If the leak rate increases significantly, an engineering evaluation will be performed to determine the need for additional action, including a re-assessment of structural integrity.
- A follow-up volumetric (UT) examination would typically be performed on or before each three-month anniversary of the completion of the engineering evaluation until the repair or replacement is completed. However, since the 1R21 outage is scheduled to start in September, this examination will be performed only if the 1R21 outage is delayed.

**REQUEST FOR  
RELIEF STATUS:**

This request for relief is awaiting NRC approval.