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Docket No.: 50-364

NL-06-0826

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

Joseph M. Farley Nuclear Plant – Unit 2
ASME Section XI Request for Relief Number RR-59
Temporary Non-Code Repair of Service Water Piping

Ladies and Gentlemen:

The purpose of this letter is to request, consistent with the intent of NRC Generic Letter (GL) 90-05, relief from the ASME Boiler and Pressure Vessel Code Section XI requirements pursuant to 10 CFR 50.55a(g)(6)(i). The enclosed request for relief RR-59 is submitted in accordance with the provisions of 10 CFR 50.55a to provide relief to allow temporary non-Code repair of a Farley Nuclear Plant (FNP) Unit 2 through-wall pinhole leak on a section of piping that provides Service Water makeup to the Circulating Water canal. This section of piping is ASME Code Class 3 piping. ASME Section XI repairs or replacements will be performed during the next Unit 2 refueling outage or the next Unit 2 cold shutdown greater than 30 days, whichever occurs first.

Evaluations performed per the guidance of Regulatory Information Summary (RIS) 2005-20 and GL 90-05 indicate this leak resulted from a non-crack flaw. It has been determined that the structural integrity of the Service Water piping at this location has not been impaired and the leakage does not prevent the system from performing its safety function.

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This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,



L. M. Stinson

LMS/JLS/sdl

Enclosure: Request for Relief RR-59

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. J. R. Johnson, General Manager – Plant Farley
RTYPE: CFA04.054; LC# 14430

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Farley
Mr. C. A. Patterson, Senior Resident Inspector – Farley

**Joseph M. Farley Nuclear Plant – Unit 2
ASME Section XI Request for Relief Number RR-59
Temporary Non-Code Repair of Service Water Piping**

Enclosure 1

Joseph M. Farley Nuclear Plant – Unit 2
ASME Section XI Request for Relief Number RR-59
Temporary Non-Code Repair of Service Water Piping

UNIT: Farley Unit-2

COMPONENT: 20-inch Nominal Pipe Size (NPS) carbon steel pipe

SYSTEM: Service Water (SW)

ASME CODE CLASS: 3

FUNCTION: This section of piping provides Service Water makeup to the Circulating Water canal in order to maintain proper Circulating Water inventory to support main condenser operation.

CODE REQUIREMENT: When an American Society of Mechanical Engineers (ASME), Section XI Code repair replacement activity (RRA) is performed, the requirements of ASME, Section XI, 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 2 cold shutdown greater than 30 days, whichever occurs first.

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

**POSITIVE FLAW
DETECTION
DURING PLANT
OPERATION:**

On March 3, 2006, a through-wall leak was discovered in the Service Water system. The leak is located in the carbon steel 20-inch piping of the Service Water makeup to the Circulating Water canal, in valve box 2VB-3. The location is in the 30-inch by 20-inch concentric reducer downstream of valve Q2P16V560. The leak rate was approximately 45 ml per minute. The initial leakage is documented in Farley Condition Report #2006101959.

**IMPRACTICALITY
OF REPAIR:**

ASME Code Repair of this location is not possible while the unit is in operation since the line supplies makeup water to the Circulating Water canal with a nominal flow rate of 10,000 gpm. No other sources of water are available to supply this amount of water with the unit in operation.

**ROOT CAUSE
DETERMINATION:**

The root cause for the piping degradation is considered to be due to a manufacturing surface blemish or construction tooling mark that has experienced erosion from localized turbulence downstream of the throttling valve Q2P16V560. The ultrasonic testing (UT) shows a non-crack-like indication.

**FLAW
CHARACTERIZATION:**

The flaw is located in the base metal of the 20-inch end of the 30-inch by 20-inch concentric reducer. The exterior size of the pinhole is less than 1/16-inch diameter. UT did not detect any other indications at the original flaw location. The maximum dimension of the flaw was determined to be 0.4 inches. This value was based on the UT thickness measurements plotting out the area where the wall thickness was less than the ASME minimum of 0.099 inches.

Immediately adjacent to the through-wall area on both sides (radially) and downstream (axially) the wall thickness immediately returns to nominal wall thickness. Upstream of the through-wall flaw, for a length of approximately 4-inches, the wall thickness tapers up to 0.276-inches and the width of the degraded area tapers to 0.2-inches wide from 0.4-inches wide at the flaw. As discussed later, this area will be re-examined volumetrically (with UT) every 3 months, beginning June 14, 2006, to confirm that the flaw remains within the GL90-05 evaluation.

**EVALUATION
APPROACH
AND RESULTS:**

Since a through-wall flaw had been found at this location, SNC chose to perform the evaluation on that basis.

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 $17.23 \text{ ksi}(\text{in})\text{exp}(1/2)$ is less than the $35 \text{ ksi}(\text{in})\text{exp}(1/2)$ 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 the components in the valve box was also evaluated and it was determined that those components would not be adversely affected by leakage or spray. Due to the leakage occurring in a valve box, safety related components could be affected by flooding if the existing sump pump fails and the control room high water level alarm fails. This is being addressed by the weekly walkdown of the valve box. Appropriate action to prevent flooding and damage of the components will be taken at that point. The current leak rate is not sufficient to cause a flood level that will affect any safety related component in less than a week's time.

Based on the above, SNC determined that the structural integrity of the Service Water piping at this location has not been impaired.

**AUGMENTED
EXAMINATIONS:**

The piping with the initial flaw is moderate energy piping and therefore, five other similar locations were chosen in various valve boxes in Unit 1 and 2 for the augmented volumetric examinations per GL 90-05. All of the augmented locations were in high velocity turbulent areas upstream or downstream of large bore throttling valves. 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 housekeeping measures as appropriate.

GL 90-05

ACTION PLAN:

An ASME Section XI RRA will be performed before the completion of the Farley Unit 2 2R18 refueling outage or the next Unit 2 cold shutdown greater than 30 days, whichever occurs first. The 2R18 outage is scheduled to begin in March 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 weekly 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 will be performed on or before each three-month anniversary of the completion of the original examination until the repair or replacement is completed.

STATUS OF

REQUEST FOR RELIEF:

This request for relief is awaiting NRC approval.