

**Southern Nuclear  
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October 10, 2007

Docket No.: 50-348

NL-07-1958

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

Joseph M. Farley Nuclear Plant – Unit 1 Relief Request RR-60 (Version 3.0)  
Proposed Alternative In Accordance with 10 CFR 50.55a(a)(3)(ii)

Ladies and Gentlemen:

Pursuant to 10 CFR 50.55a(a)(3)(ii), Southern Nuclear Operating Company (SNC) hereby requests NRC approval of proposed alternative RR-60 (Version 3.0) to defer testing of a section of the Chemical Volume and Control System piping until the next Unit 1 refueling outage scheduled for the Spring 2009. This alternative to the ASME Section XI Code, 1989 Edition with no addenda, is for the Farley Nuclear Plant Unit 1 3<sup>rd</sup> 10-Year ISI Interval and the details of the request for alternative are contained in the enclosure to this letter. SNC previously submitted proposed alternatives RR-60 (Version 2.0) in NL-07-1718 on September 12, 2007 for Unit 1 and 2.

Based on additional information requested in telecons with the NRC Staff, SNC hereby withdraws RR-60 Version 2.0 for Unit 1 and 2. For Unit 2, SNC will perform additional research and, if necessary, submit an updated relief request.

The details of the 10 CFR 50.55a request are contained in the enclosure. Approval is requested by November 1, 2007 to support the current Unit 1 outage.

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

Sincerely,

A handwritten signature in black ink, appearing to read "B. J. George". The signature is written in a cursive style with a long horizontal stroke at the end.

B. J. George  
Manager, Nuclear Licensing

BJG/JLS/phr

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cc: Southern Nuclear Operating Company  
Mr. J. T. Gasser, Executive Vice President  
Mr. J. R. Johnson, Vice President – Farley  
Mr. D. H. Jones, Vice President – Engineering  
RType: CFA04.054; LC# 14656

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**

**Relief Request RR-60 (Version 3.0), Proposed Alternative In Accordance with  
10 CFR 50.55a(a)(3)(ii)**

**SOUTHERN NUCLEAR OPERATING COMPANY**  
**JOSEPH M. FARLEY NUCLEAR PLANT 3<sup>rd</sup> 10-year ISI PROGRAM**  
**PROPOSED ALTERNATIVE IN ACCORDANCE WITH 10 CFR 50.55a(a)(3)(ii)**  
**RR-60 – Version 3.0**

**PLANT/UNIT:** Joseph M. Farley Nuclear Plant (FNP) Unit 1.

**INTERVAL:** 3<sup>rd</sup> 10-Year ISI Interval beginning December 1, 1997 and ending November 30, 2007.

**COMPONENTS AFFECTED:** A 2" nominal pipe size Chemical Volume and Control System (CVCS) piping segment between check valve Q1E21V109 and Air Operated Valve (AOV) Q1E21V245.

**CODE EDITION AND ADDENDA:** ASME Section XI Code 1989 Edition with no Addenda.

**REQUIREMENTS:** Table IWB-2500-1, Items B15.51 (piping) and B15.71 (valves) and ASME Section XI Code Case N-498-4 require a pressure test of the entire Class 1 System boundary, once every 10 years, at nominal operating pressure, accompanied by visual examination (VT-2) after a hold time of 10 minutes for non-insulated and 4 hours for insulated components.

**REASON FOR REQUEST:** This 2" CVCS Auxiliary Pressurizer (PRZR) Spray Line piping segment (approximately 110 feet long) cannot be pressurized in accordance with the ASME Section XI requirements without undue hardship.

**PROPOSED ALTERNATIVE AND BASIS:**

- FNP proposes a one cycle (18-month) deferral of the VT-2 examination of this piping segment at Reactor Coolant System (RCS) nominal operating pressure (NOP) due to hardship. FNP will perform additional research and submit an updated relief request, if necessary, at least 1 year prior to start of the next Unit 1 Refueling Outage (1R22 in March 2009).
- The subject piping segment will be visually examined after shutdown from the current cycle for evidence of leakage. FNP believes that nominal valve seat leakage, over an 18-month operating cycle, would result in RCS NOP between the two isolation valves. Therefore, visual examination after shutdown would identify any leakage as accumulation of boric acid.

**BASIS**

From the CVCS Regenerative Heat Exchanger, a 2" branch line goes to AOV Q1E21V245, on to 2" check valve Q1E21V109, then through a 2" by 4" pipe expander, then to the auxiliary PRZR spray nozzle. This flow path is used to provide an alternative PRZR pressure control method during off normal conditions, such as when no Reactor Coolant Pumps are running. CVCS is continuously inservice during normal plant operation, therefore the piping up to valve Q1E21V245 is at a pressure  $\geq$  RCS pressure. RCS pressure is controlled by the PRZR which is at  $\geq$  RCS pressure during normal operation. However, the 2" pipe segment between AOV Q1E21V245 and check valve Q1E21V109 cannot be pressurized without impacting proper RCS pressure control.

The following items provide the basis that compliance with the Code

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and Code Case pressure testing requirements for this line segment present an unusual hardship without a compensating increase in the level of quality and safety during the deferral period.

1. AOV Q1E21V245 is normally closed and fails closed and check valve Q1E21V109 is maintained closed during normal operation due to RCS pressure on the down stream side. Therefore, a leak or break in the piping segment between the two valves would be limited to only that allowed by nominal seat leakage from either or both valves.
2. This line segment was not selected for risk informed ISI due to its low safety significance. The PRA model takes no credit for auxiliary spray.
3. Surface examinations, in accordance with ASME Section XI, Examination Category B-J were performed on ten welds on the associated piping during the 3<sup>rd</sup> period of both the 1<sup>st</sup> and 2<sup>nd</sup> ISI Intervals. All surface examinations were satisfactory.

The only practicable way to pressurize the piping segment between check valve Q1E21V109 and AOV Q1E21V245 to nominal RCS pressure would require disassembly of check valve Q1E21V109, removal of the valve disc, reassembly of check valve, pressurize RCS, hold for 4 hours and then perform the VT-2 examination. This method would provide compliance with the Code and Code Case, but results in the following hardships.

1. Valve Q1E21V109 is located inside the containment shield wall in close proximity to RCS piping and the PRZR. This area is considered a High Radiation Area and maintaining personnel dose for ALARA would be of concern. Disassembly of this valve would subject personnel not only to general area radiation dose rates but also very high radiation doses once the valve is opened. FNP estimates 2.4 person-rem for the disassembly and reassembly of this check valve. Once opened, personnel contamination is also of concern since this valve provides a RCS boundary.
2. Unit would not be able to progress directly from pressure test completion into plant startup due to the required RCS depressurization and cooldown to enable disassembly/ reassembly of check valve Q1E21V109 prior to startup. It is estimated that this iteration would require  $\geq 96$  hours (based on; cooldown to  $< 200^{\circ}\text{F}$  (Mode 5), degas RCS (remove hydrogen), depressurize RCS, disassemble valve Q1E21V109 and re-install disc, reassemble valve, fill and vent the RCS, and then heat-up and pressurize to Normal Operating Temperature and Pressure). Valve Q1E21V109 would then require a post reassembly VT-2 examination at normal operating pressure. All this would be critical path time which would extend the refueling outage duration.
3. Check valve disassembly/reassembly increases the opportunity for human error and mechanical damage resulting in unacceptable RCS pressure boundary integrity and valve operation.

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4. Q1E21V109 is a Y-Type, socket welded, check valve with a seal weld at the cover to body connection. Disassembly requires grinding away the seal weld which creates additional opportunities for valve damage. Reassembly requires machining the cover to body surface area to allow for a quality seal weld to prevent leakage during operation.

Therefore, compliance with ASME Section XI Code and Code Case N-498-4 pressure testing requirements results in hardship or unusual difficulty for the FNP Unit 1 Fall 2007 Refueling Outage. Therefore, the proposed alternative of a 1-cycle deferral and visual examination after shutdown from the current operating cycle is warranted per 10CFR50.55a(a)(3)(ii).

This proposal is for the subject piping segment only and the remainder of the Class 1 pressure boundary will be pressure tested in accordance with the referenced code and code case requirements during the Unit 1 Fall 2007 refueling outage.

**DURATION:** Until end of 1R22 Refueling Outage (April, 2009).

**PRECEDENTS:** None.

**REFERENCES:** P&ID D175039 sheet 1.

**STATUS:** Submitted for NRC review.