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December 19, 2003

Docket Nos.: 50-348  
50-364

NL-03-2552

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

**Joseph M. Farley Nuclear Plant - Unit 1 and Unit 2  
Relief Request RR-53 - Use of Alternate Code Case for  
New Construction of Replacement Reactor Vessel Head Adapters**

Ladies and Gentlemen:

In accordance with 10 CFR 50.55a, Southern Nuclear Operating Company (SNC) requests NRC approval of the enclosed relief request RR-53 for Farley Unit 1 and Unit 2, to use the design stress intensity values of Code Case N-698. This code case is pending endorsement by the NRC.

SNC requests NRC approval of this request by April 2, 2004 in order to support reactor vessel head replacement during the Farley Nuclear Plant Unit 1 1R19 maintenance / refueling outage currently scheduled to begin in the fall of 2004.

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

Sincerely,

A handwritten signature in black ink, appearing to read "J. B. Beasley, Jr.", is written over a printed name. The signature is stylized and cursive.

J. B. Beasley, Jr.

JBB/JLS/sdl

Enclosure: Relief Request RR-53

A047

U.S. Nuclear Regulatory Commission

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cc: Southern Nuclear Operating Company  
Mr. J. D. Woodard, Executive Vice President  
Mr. L. M. Stinson, General Manager - Farley  
Mr. D. E. Grissette, General Manager - Plant Farley  
Document Services RTYPE: CFA04.054; LC# 13891

U. S. Nuclear Regulatory Commission  
Mr. L. A. Reyes, Regional Administrator  
Mr. S. E. Peters, NRR Project Manager - Farley  
Mr. T. P. Johnson, Senior Resident Inspector - Farley

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**Enclosure**

**Relief Request RR-53**

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- I. System/Component for Which Relief is Requested: Relief is requested for Reactor Pressure Vessel (RPV) closure heads manufactured to the requirements of Section III of 1998 edition and 2000 addenda of the ASME Boiler and Pressure Vessel Code
  
- II. Code Requirement for Which an Alternate Is Requested: The replacement reactor vessel head manufactured to the requirements of Section III of 1998 edition and 2000 addenda of the ASME Boiler and Pressure Vessel Code, Section NB-3112.4 requires the use of design stress intensity values for materials listed in the tables of Section II, Part D, Subpart 1. Table 2B of Section II, Part D contains the design stress intensity values for Type Designation UNS N06690 for the SB-167 specification for Class 1 components.
  
- III. Request for Relief Description: Section II, Part B, Table 3 of the SB-167 specification provides a UNS N06690 yield strength that is dependent on manufactured condition. For seamless pipe and tube that is less than or equal to 5.0 inch O.D., Table 3 specifies a minimum yield strength of 30 ksi for hot-worked or hot-worked annealed and 35 ksi for cold-worked annealed.

The UNS N06690 adapters in the replacement head are manufactured using a hot working process. Evaluation of the hot-worked UNS N06690 tubing has shown that a minimum yield strength of 35 ksi is inherent to the material. Because of the large margin in the minimum yield strength in ASME Section II, Table 3; an ASME Code Case was needed to permit the use of higher design stress intensity values (23.3 ksi in lieu of 20 ksi) when the minimum yield strength is specified as 35 ksi for hot-worked UNS N06690 Class 1 components.

Therefore, ASME Code Case N-698 "Design Stress Intensities and Yield Strength Values for UNS N06690 with a Minimum Specified Yield Strength of 35 ksi, Class 1 Components Section III, Division 1" was developed and approved by the ASME permitting the use of higher stress intensities associated with 35 ksi minimum yield strength, hot-worked UNS N06690 SB-167. It is requested that the design stress intensity values of Code Case N-698 be approved pursuant to 10 CFR 50.55a(a)(3)(i) pending endorsement by the NRC.

- IV. Basis for Relief: The use of UNS N06690 in the SB-167 specification has been previously approved by the ASME as Code Case N-474-2 "Design Stress Intensities and Yield Strength Values for UNS N06690 with a Minimum Specified Yield Strength of 35 ksi, Class 1 Components Section III, Division 1," and accepted by the NRC in Regulatory Guide 1.85, Revision 31, dated March 1999. The design stress intensities and yield strength of Code Case N-474-2 were incorporated into the 1999 addenda for the annealed condition without specification of type of anneal.

Code Case N-525, "Design Stress Intensities and Yield Strength Values for UNS N06690 with a Minimum Specified Yield Strength of 30 ksi, Class 1 Components Section III, Division 1" was accepted by the NRC staff for use in the construction of components in Regulatory Guide 1.84, Revision 32, dated June 2003, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," which is incorporated into 10 CFR 50.55a(b) by reference.

Code Case N-525 does not address the manufactured condition of the UNS N06690 for which a 30 ksi yield strength is specified. Table 3 of the SB-167 specification in Section II, Part B implies that the specified 30 ksi yield strength in Code Case N-525 applies to hot-worked UNS N06690 and in the same way implies the specified 35 ksi yield strength of Code Case N-474-2 and the 1999 addenda would apply to cold-worked UNS N06690.

Based on evaluation of hot-worked UNS N06690 SB-167, Code Case N-698 adjusts the yield strength values for hot-worked UNS N06690 to the evaluated value of 35 ksi minimum and provides associated design stress intensity values that coincide with those of Section II, Part D, Subpart 1 of the 1999 addenda.

The use of Code Case N-698 is considered conservative in that associated design analyses will be performed utilizing the most recent determination of material strength values. Implementation of Code Case N-698 would therefore represent a suitable alternate to Section II, Part D for UNS N06690 SB-167 material and provide an acceptable level of quality and safety to assure pressure boundary requirements are maintained. Therefore, approval should be granted pursuant to 10 CFR 50.55a(a)(3)(i).

- V. Implementation Schedule: This relief request is for RPV closure heads manufactured to the requirements of Section III of 1998 edition and 2000 addenda of the ASME Boiler and Pressure Vessel Code and applicable to the ISI interval from December 1, 1997 to November 30, 2007.
- VI. Relief Request Status: This is a new relief request awaiting NRC approval.