July 17, 2003

Mr. J. B. Beasley, Jr.
Vice President - Farley Project
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2 RE: SECOND AND THIRD 10-YEAR INTERVAL INSERVICE INSPECTION REQUEST FOR RELIEF NO. RR-47 (TAC NO. MB6947)

Dear Mr. Beasley:

By letter dated December 5, 2002, Southern Nuclear Operating Company submitted Relief Request RR-47 for the Joseph M. Farley Nuclear Plant, Unit 2 regarding its Second and Third 10-Year Interval Inservice Inspection (ISI) Program Plan. This relief will allow reduced examination coverage for the Residual Heat Removal Heat Exchanger Shell Flange Weld. The Nuclear Regulatory Commission (NRC) staff has found your request for relief acceptable.

The NRC staff has concluded that the Code requirements are impractical and that imposition of the Code would result in a significant burden on the licensee because the subject components would have to be redesigned. Therefore, the licensee's request for relief is granted pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(6)(i) for the second 10-year ISI interval and third 10-year ISI interval. All other requirements of the ASME Code, Section III and XI for which relief has not been specifically requested remain applicable, including third party review by the Authorized Nuclear Inservice Inspector. The NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

The NRC staff's evaluation and conclusions are contained in the enclosed Safety Evaluation. If you have any questions, contact Frank Rinaldi at (301) 415-1447.

Sincerely,

/RA/

John A. Nakoski, Section Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-364

Enclosure: As stated

cc w/encl: See next page

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PUBLIC	FRinaldi	TMcLellan	ACRS	PDII-1 Reading
CHawes	SCoffin	OGC	JNakoski	BBonser, RII

**See previous concurrence

ADAMS ACCESSION NO.: ML031990465 * No major change to SE

OFFICE	PM:PDII/S1	LA:PDII/S1	SC:EMCB*	OGC**	SC:PDII/S1
NAME	FRinaldi	CHawes	SCoffin	RHoefling	JNakoski
DATE	7/16/03	7/15/03	5/22/03	7/14/03	7/17/03

OFFICIAL RECORD COPY

Joseph M. Farley Nuclear Plant

cc:

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REGULATORY REGULATION

SECOND AND THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

REQUEST FOR RELIEF NO. RR-47

SOUTHERN NUCLEAR OPERATING COMPANY, INC., ET AL.

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-364

1.0 INTRODUCTION

By letter dated December 5, 2002, the Southern Nuclear Operating Company (the licensee) submitted Relief Request RR-47 for Joseph M. Farley Nuclear Plant, Unit 2 (Farley-2), concerning the Second and Third 10-Year Interval Inservice Inspection (ISI) Program Plan.

2.0 REGULATORY REQUIREMENTS

Inservice inspection of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (Code) and applicable addenda as required by Title10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g), except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(6)(g)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission (NRC), if the applicant demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, “Rules for Inservice Inspection of Nuclear Power Plant Components,” to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The Code of record for the Farley-2 second and third 10-year ISI interval is the 1989 Edition of the ASME Boiler and Pressure Vessel Code. The licensee in its letter dated December 5, 2002, stated that as the third interval for Farley, Unit 1 started before the third interval for Farley-2, this request is being submitted for portions of the Farley-2 second and third intervals. This is to provide consistency with the Farley, Unit 1

third interval. The licensee was approved to update the Farley-2 ASME Code Edition early in the interval to coincide with the Farley, Unit 1 ISI interval by NRC letter dated March 20, 1997.

3.0 TECHNICAL EVALUATION

Code Requirement:

Category C-A, [Item C1.20,] Table IWC-2500-1, of ASME Section XI, 1989 Edition, no addenda requires volumetric examination of pressure-retaining welds in Class 2 vessels each inspection interval. The applicable examination volume is shown in ASME Section XI Figure IWC-2500-1. All examinations should include essentially 100% of the weld length.

Section XI, Subarticle I-2200 requires that ultrasonic examinations of vessel welds, less than or equal to two inches in thickness, and all piping welds be conducted in accordance with Appendix III. Subarticle III-3230 of Appendix III requires full coverage of the examination volume from four directions: axial up, axial down, circumferential clockwise and circumferential counter-clockwise. The axial scans are used to locate reflectors parallel to the weld while the circumferential scans are used to locate reflectors transverse to the weld. For austenitic welds, ASME Section XI, Appendix III, Supplement 4, requires that the angle beam examination for reflectors transverse to the weld be performed on the weld crown and 1/2 inch of the base material on each side of the weld.

System/Component for Which Relief is Requested:

Volumetric examination of the austenitic pressure-retaining weld in the Class 2 vessel identified in Table 1 [see Attachment] to this request for relief.

Code Requirement from Which Relief is Requested:

Relief is requested from performing a full Code coverage volumetric examination to locate reflectors parallel to the Class 2 vessel weld identified in Table 1 to this request for relief.

Licensee's Proposed Alternative Examination:

No alternate examination is proposed. Coverage, to the maximum extent practical, has been obtained.

Licensee's Basis for Requesting Relief:

Physical limitations, due to geometric configuration of the welded areas, restrict coverage of this category C-A weld and make it impossible to achieve 100% of the total examination volume required by Figure IWC-2500-1 and ASME Section XI Appendix III, Supplement 4. See Figure 1 for a picture of this configuration. Complete coverage for reflectors located transverse to the weld was obtained; however, due to physical limitations on both sides of the weld, complete coverage was not obtained for reflectors parallel to the weld. One-direction axial coverage was obtained from the shell side for

approximately 75% of the weld length. The axial scan from the shell side for the remaining length of this weld was limited by the inlet and outlet Residual Heat Removal (RHR) system nozzles and the associated reinforcing plates. No axial scans from the flange side were possible due to the flange and bolting configuration.

The actual examination volume was determined to be 59%. It should be noted that while not a requirement for vessel welds less than or equal to 2-inches in thickness, SNC made a conservative decision to not claim examination coverage for the axial scan from the shell side beyond the weld centerline. This is based on SNC experience learned in the Appendix VIII qualification process using ultrasonic techniques for austenitic piping welds. SNC believes that large flaws on the flange side of the weld would have been observed with the axial scans from the shell side.

Obtaining the required ultrasonic volumetric coverage for this weld would require re-design and replacement of the RHR heat exchanger, which is impractical and would be an extreme burden for Southern Nuclear.

Complete Code coverage of the examination volume was obtained for reflectors transverse to the weld; therefore, axially oriented cracks should have been detected. For reflectors parallel to the weld, a significant length of the weld was examined and there is reasonable assurance that significant circumferential cracking would have been detected and that the structural integrity of the weld is being maintained.

SNC requests that relief be authorized pursuant to 10 CFR 50.55a(g)(6)(i).

Staff Evaluation

The Code requires volumetric examination of essentially 100 percent of the weld length of pressure-retaining welds in Class 2 vessels. The licensee requested relief from performing a full Code coverage volumetric examination on the Class 2 vessel weld APR2-3500-A. The NRC staff determined that, based on Figure 1 contained in the licensee's submittal dated December 5, 2002, the Code required volumetric examinations are impractical, because of geometric configuration of the welded areas. The circumferential scans were completed from both directions and the licensee was able to obtain complete coverage for reflectors located transverse to the weld. However, due to physical limitations on both sides of the weld, complete coverage was not obtained for reflectors parallel to the weld. One-direction axial coverage was obtained from the shell side for approximately 75 percent of the weld length. The axial scan from the shell side for the remaining length of this weld was limited by the inlet and outlet Residual Heat Removal system nozzles and the associated reinforcing plates. No axial scans from the flange side were possible due to the flange and bolting configuration. The licensee obtained a composite volumetric coverage of 59 percent that should have detected any indications. Therefore, the examinations performed provide reasonable assurance of structural integrity of the subject component.

4.0 CONCLUSION

For Request for Relief RR-47, the NRC staff concludes that the Code requirements are impractical and that imposition of the Code would result in a significant burden on the licensee because the subject components would have to be redesigned. Therefore, the licensee's request for relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the second 10-year ISI interval and the third 10-year ISI interval. All other requirements of the ASME Code, Section III and XI for which relief has not been specifically requested remain applicable, including third party review by the Authorized Nuclear Inservice Inspector. The NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Principal Contributor: T. McLellan, DE/EMCB

Date: July 17, 2003

Table [1]

ASME Section XI Category/Item No.	Identification No.	Description	Limitations	Approximate Percentage
C-A/C1.20	APR2-3500-A	RHR Heat Exchanger Shell to Flange Weld	Limited examination from the flange side due to configuration (see Figure 1[2]). Limited examination from the shell side due to the reinforcing plates around the two RHR nozzles	UT- 59%

1. Table 1 is contained in the licensee's letter dated December 5, 2002 and reproduced in this safety evaluation.

2. Figure 1 is contained in the licensee's letter dated December 5, 2002 and is not included in this safety evaluation.

Attachment