May 19, 2005

Mr. L. M. Stinson Vice President - Farley Project Southern Nuclear Operating Company, Inc. P.O. Box 1295 Birmingham, AL 35201-1295

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2 RE: REQUEST FOR RELIEF RR-56, SECOND 10-YEAR INTERVAL INSERVICE INSPECTION (TAC NO. MC2559)

Dear Mr. Stinson:

By letters dated March 31, 2004, and January 28, 2005, Southern Nuclear Operating Company, Inc. (SNC, the licensee), proposed its second 10-Year Inservice Inspection (ISI) Interval Request for Relief RR-56 for the Joseph M. Farley Nuclear Plant, Unit 2. This request for relief concerns the examination of Reactor Pressure Vessel (RPV) lower shell to bottom head circumferential weld No. APRI-1-1100-8. It is noted that SNC did not submit this request in the proper or timely manner. Per Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(5)(iii) and 50.55a(g)(5)(iv), a licensee must submit a request for relief to the Nuclear Regulatory commission (NRC) no later than 12 months after the expiration of the 10-year ISI interval in which the American Society of Mechanical Engineers (ASME) Code, Section XI examination was performed and is determined to be impractical. In this particular case, the licensee performed the examination in November 1999 during the second 10-year ISI interval that ended on July 29, 2001.

The licensee performed the examination under 10 CFR 50.55a(g)(6)(ii)(A)(3) which requires one time augmented reactor vessel shell weld examinations. Under this section, if a licensee is unable to obtain essentially 100 percent coverage of the shell welds specified in 10 CFR 50.55a(g)(6)(ii)(A)(2), it must submit an alternative to the rule. If a licensee elects to apply the augmented examination results to its ASME Code, Section XI requirements, it is required to submit a separate request for relief under impracticality pursuant to 10 CFR 50.55a(g)(5)(iii) and 10 CFR 50.55a(g)(5)(iv).

SNC did submit an alternative to the augmented reactor vessel shell weld examination where it did not meet essentially 100 percent coverage for the RPV lower shell to bottom head circumferential weld No. APRI-1-1100-8. The NRC staff authorized the licensee's alternative in its Safety Evaluation dated August 1, 2001. However, the licensee failed to submit a request for relief pursuant to 10 CFR 50.55a(g)(5)(iii) and 10 CFR 50.55a(g)(5)(iv) by the end of its second 10-year interval. Subsequently, several years later, the licensee submitted request for relief RR-56 by letter dated March 31, 2004, in order to apply the November 1999 augmented examination results to its ASME Code, Section XI requirements for the second 10-year ISI interval on July 29, 2001, whether or not compliance with the ASME Code requirements were going to be an issue and should have sought regulatory relief at that time.

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Regardless, based upon the request for relief, the NRC staff concludes that the ASME Code requirements are impractical and that imposition of the ASME Code requirements would result in a significant burden on the licensee because the aforementioned components would have to be redesigned. Furthermore, the examination coverage obtained provides reasonable assurance of structural integrity of the RPV lower shell to bottom head circumferential weld No. APRI-1-1100-8. 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. 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. All other requirements of the ASME Code, Sections III and XI for which relief has not been specifically requested remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

Sincerely,

/**RA**/

Evangelos C. Marinos, Chief, Section 1 Project Directorate II Division of Licensing Project Management Office of Nuclear Reactor Regulation

Docket Nos. 50-364

Enclosure: As stated

cc w/encl: See next page

L. M. Stinson

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*No Major Changes to SE NRR-028

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

REQUEST FOR RELIEF NO. RR-56

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-364

1.0 INTRODUCTION

By letters dated March 31, 2004, and January 28, 2005, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(5)(iii) and 10 CFR 50.55a(g)(5)(iv), Southern Nuclear Operating Company, Inc. (SNC, the licensee), submitted request for relief RR-56 for the second 10-Year Inservice Inspection (ISI) Interval for the Joseph M. Farley Nuclear Plant (FNP), Unit 2. Approval of this request would allow for SNC to use less than the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code required examination coverage for the Reactor Pressure Vessel (RPV) lower shell to bottom head circumferential weld No. APRI-1-1100-8.

2.0 REGULATORY EVALUATION

10 CFR 50.55a(g) requires that ISI of the ASME Boiler and Pressure Vessel Code Class 1, 2, and 3 components be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code and applicable addenda, except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(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: (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, 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 ASME Code of record for FNP, Unit 2 second 10-year ISI interval is the 1989 Edition of the ASME Code, Section XI.

Enclosure

3.0 TECHNICAL EVALUATION

Code Requirement:

Item No. B1.11, Category B-A, Table IWB-2500-1 of ASME Section XI (1989 Edition) requires a volumetric examination of the [Reactor Pressure Vessel] RPV lower shell to bottom head circumferential weld (see Figure 56-1¹). The applicable examination volume is shown in Figure IWB-2500-1 and the examination volume includes 100% of the weld length. Additionally Section XI, Article I-2100 requires that ultrasonic examination (UT) of vessel welds greater than two inches in thickness be conducted in accordance with ASME Code, Section V, Article 4, as supplemented by Appendix I. Article 4 also requires twodirectional coverage wherever feasible. Scanning was done to locate reflectors parallel to, as well as transverse to, the weld.

System/Component for Which Relief is Requested:

Relief is requested for the examination of Reactor Pressure Vessel (RPV) lower shell to bottom head circumferential weld. Specifically, this weld is identified as: APRI 1-1100-8

Code Requirement for Which Relief is Requested:

Relief is requested from meeting the required coverage for this weld.

Licensee's Proposed Alternative Examination:

Ultrasonic examination of this weld was performed to the maximum extent practical. No other examination will be conducted.

Licensee's Basis for Requesting Relief:

Examination coverage and the basis for the limitations are listed below. (*Figure 56-1 shows the configuration of the weld including the adjacent core support lugs.*) A total of four core support lugs occupying a space of about 20 degrees each are positioned immediately above the lower shell to bottom head circumferential weld. The composite coverage was calculated as 84.5%.

This weld is not located in the beltline region and is[,] therefore, not susceptible to irradiation embrittlement. All other RPV shell welds with ASME Item Numbers B1.11 and B1.12 received 100% Code-required examination coverage and the examination results for these welds revealed no recordable indications that exceeded the allowable standards of ASME Code [Section XI] paragraph IWB-3500. Southern Nuclear Operating Company believes that if a pattern of

^{1.} Figure 56-1 is not included in this safety evaluation and can be found in the licensee's letter dated March 31, 2004.

degradation exists in this one weld, the UT examination coverage of 84.5% would have detected it. Furthermore, the likelihood of a significant defect existing in the unexamined portion is extremely small.

In addition, for weld APR1-1100-8, Southern Nuclear Operating Company, previously submitted a request for [an] alternative to the 10 CFR 50.55a(g)(6)(ii)(A) requirements. That request, dated December 4, 2000, used the basis discussed above. The proposed alternative was approved per NRC Safety Evaluation (TAC No. MB0738) dated August 1, 2001.

Various techniques have been evaluated including the use of additional angles; however, it was concluded that the techniques described above permit the maximum practical coverage to be obtained. As described above, the examination provides reasonable assurance of the structural integrity of this weld. Southern Nuclear Operating Company proposes these examinations provide acceptable level of quality and safety; therefore, approval should be granted pursuant to 10 CFR 50.55a(a)(3)(i).

4.0 STAFF EVALUATION

The 1989 Edition of the ASME Code, Section XI requires a volumetric examination of the RPV lower shell to bottom head circumferential weld that includes essentially 100 percent of the weld length. Additionally Section XI, Article I-2100 requires that UT of vessel welds greater than two inches in thickness be conducted in accordance with ASME Code, Section V, Article 4, as supplemented by Appendix 1. Article 4 requires two-directional coverage wherever feasible.

At FNP, Unit 2, there are a total of four core support lugs occupying a space of about 20 degrees. Each are positioned immediately above the RPV lower shell to bottom head circumferential weld No. APR-1100-8. From the drawing provided by the licensee, the NRC staff determined that the core support lug would have to be redesigned in order for the licensee to perform the ASME Code-required examination on Weld No. APR-1100-8. This redesign would place a significant burden on SNC. The licensee evaluated various techniques including the use of additional transducer angles to obtain greater coverage of the weld; however, it was concluded that the techniques described by SNC permitted the maximum practical coverage to be obtained. Therefore, the ASME Code requirements are impractical.

The subject weld is not located in the beltline region and is not susceptible to irradiation embrittlement. For the bottom head circumferential shell weld, the licensee obtained volumetric examination coverage of 84.5 percent. SNC also examined circumferential and longitudinal RPV shell welds with ASME Code, Section XI, Table IWB-2500-1, Category B-A, Item Numbers B1.11 and B1.12. The licensee obtained 100 percent examination coverage for these RPV shell welds. The examination results for all the welds revealed no recordable indications that exceeded the allowable standards of ASME Code, Section XI, paragraph IWB-3500.

Therefore, the NRC staff determined that if a pattern of degradation existed in the weld, the examinations performed would have detected a pattern of degradation. Furthermore, the examination coverage obtained provides a reasonable assurance of structural integrity of the RPV lower shell to bottom head circumferential weld No. APR-1100-8.

5.0 CONCLUSION

For this request for relief, the NRC staff concludes that the ASME Code requirements are impractical and that imposition of the ASME Code requirements would result in a significant burden on the licensee because the aforementioned components would have to be redesigned. Furthermore, the examination coverage obtained provides reasonable assurance of structural integrity of the RPV lower shell to bottom head circumferential Weld No. APR-1100-8. 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. 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. All other requirements of the ASME Code, Sections III and XI for which relief has not been specifically requested remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributors: T. McClellan

Date: May 19, 2005

Joseph M. Farley Nuclear Plant, Units 1 & 2

CC:

Mr. J. R. Johnson General Manager Southern Nuclear Operating Company, Inc. P.O. Box 470 Ashford, AL 36312

Mr. B. D. McKinney, Licensing Manager Southern Nuclear Operating Company, Inc. P.O. Box 1295 Birmingham, AL 35201-1295

Mr. M. Stanford Blanton Balch and Bingham Law Firm P.O. Box 306 1710 Sixth Avenue North Birmingham, AL 35201

Mr. J. Gasser Executive Vice President Southern Nuclear Operating Company, Inc. P.O. Box 1295 Birmingham, AL 35201

State Health Officer Alabama Department of Public Health 434 Monroe St. Montgomery, AL 36130-1701

Chairman Houston County Commission P.O. Box 6406 Dothan, AL 36302

Resident Inspector U.S. Nuclear Regulatory Commission 7388 N. State Highway 95 Columbia, AL 36319

William D. Oldfield SAER Supervisor Southern Nuclear Operating Company, Inc. P.O. Box 470 Ashford, AL 36312