

March 28, 2006

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, UNITS 1 AND 2 - REQUEST FOR
RELIEF NO. RR-57 AND RR-58 REGARDING CONTAINMENT TENDON
INSPECTIONS (TAC NOS. MC7209 AND MC7210)

Dear Mr. Stinson:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated May 31, 2005, as supplemented on February 13, 2006, the Southern Nuclear Operating Company, the licensee for the Joseph M. Farley Nuclear Plant, requested two alternatives, RR-57 and RR-58, to the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code), Section XI, 1992 Edition and 1992 Addenda, Subsections IWL-2421(a) and IWL-2421(b) respectively, with regard to examination of the containment tendon. A related application for amendment of the facility Technical Specifications dated June 1, 2005, addressed by separate correspondence.

The NRC staff has completed its review of the subject request for relief. As documented in the enclosed Safety Evaluation, the NRC staff concludes that the proposed alternative provides an acceptable level of quality and safety. Therefore, the licensee's proposed alternative to the ASME Code requirements is authorized pursuant to Title 10, of the *Code of Federal Regulations* Section 50.55a(a)(3)(i), for the first and subsequent containment inspection intervals, as described in the Safety Evaluation.

Sincerely,

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosure: Safety Evaluation

cc w/enclosure: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

CONTAINMENT INSERVICE INSPECTION RELIEF REQUESTS

SOUTHERN NUCLEAR OPERATING COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-348 AND 50-364

1.0 INTRODUCTION

By letter dated May 31, 2005 (Reference 5.1), as supplemented on February 13, 2006 (Reference 5.5), the Southern Nuclear Operating Company (SNC or the licensee) proposed two relief requests (RR-57 and RR-58) associated with the containment inservice inspection (ISI) requirements for the Joseph M. Farley (FNP or Farley), Units 1 and 2. This evaluation addresses the acceptability of the relief requests.

2.0 REGULATORY EVALUATION

Subsection IWL of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code)(Reference 5.2) provides the requirements for ISI of Class CC (concrete containments) of light-water cooled power plants. In the *Federal Register* notice dated August 8, 1996 (61 FR 41303, Reference 5.3), the Nuclear Regulatory Commission (NRC) amended its regulations to incorporate, by reference, the 1992 edition with 1992 Addenda of Subsection IWL of the ASME Code. The effective date for the amended rule was September 9, 1996, and it required licensees to incorporate the ISI requirements into their ISI plans and to complete the first containment inspection by September 9, 2001.

However, a licensee may propose alternatives to certain requirements of the regulation pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50.55a(a)(3). Part 50.55a(a)(3), (Reference 5.4) states, in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the 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 compensatory increase in the level of quality and safety.

The licensee requested relief from the requirements of Subsection IWL of Section XI of the ASME Code for its Farley units. The NRC's findings with respect to authorizing the alternatives are discussed in the following sections.

Enclosure

3.0 TECHNICAL EVALUATION

3.1 Relief Request RR-57

3.1.1 Code Requirements

IWL-2421, "Sites With Two Plants," paragraph (a) allows the use of IWL-2421 paragraph (b) examination requirements if both containments utilize the same pre-stressing system, if they are essentially identical in design, if the post tensioning operations for the two containments were completed not more than two-years apart, and if both containments are similarly exposed to or protected from the outside environment.

3.1.2 Specific Relief Request

In lieu of meeting the IWL-2420(a) examination requirements, SNC proposes to use the examination requirements of IWL-2421(b) without meeting the specific two-year (24-month) criteria of IWL-2421(a). This two-year criteria was established by the ASME Code to ensure, to the extent practical, that when using the IWL-2421 rules, the two containments in a two unit site would be essentially identical.

The licensee proposes to use 26 months (the actual duration between the completion of Unit 1 and Unit 2 post-tensioning operations) as meeting the requirement of IWL-2421(a), which specifies a 24-month period between the completion of the post-tensioning operations between the units.

3.1.3 Proposed Alternative Duration

The proposed alternative is applicable for the first and the subsequent containment inspection intervals.

3.1.4 Licensee's Basis for Relief

The licensee provided the following basis for its relief request:

The Farley Unit 1 Containment post tensioning operation was completed in April 1975 and Farley Unit 2 was completed in June 1977. This exceeds the requirements of IWL-2421(a) for applying IWL-2421(b) by 2 months. Exceeding the post tensioning operations required time by only 2 months does not present any safety or technical concerns because a 2 month difference is insignificant. Both units share the same design, were under construction during the same time period in a sequential manner, and are exposed to virtually identical environment conditions. This proposed alternative has and will continue to provide an acceptable level of quality and safety; therefore, approval of this request per 10 CFR 50.55a(a)(3)(i) is requested.

The licensee also noted that the NRC staff had approved a 27-month interval between completion of post tensioning work for the Palo Verde Nuclear Generating Station, Unit 1 and the completion of the same on Unit 3 on October 6, 2000.

3.1.5 NRC Staff Evaluation of RR-57

Post-tensioning forces decrease with time as a consequence of concrete shrinkage, concrete creep, and tendon stress relaxation. The provision of a small time interval between two post-tensioning operations ensures that the age-related post-tensioning system behavior is approximately the same, allowing for the tendon population in both units to be considered as one statistical population. An additional delay of two months will make little difference in the relative age-related behavior of the two containments.

The Initial Structural Integrity Test (ISIT) accomplishes the initial set of the containment structure and the post-tensioning system data. The ISIT, therefore, is a logical starting point for monitoring the containment and the post-tensioning system. The IWL and Regulatory Guide 1.35, Revision 2 (Reference 5.6), both utilize this as the starting point for the inspection schedule.

Therefore, the NRC staff concludes that the age-related behavior of the concrete containment system for 26 months will essentially be the same as the age-related behavior for 24 months between the testing of the two units.

3.2 Relief Request RR-58

3.2.1 Code Requirements

For sites with two units, IWL-2421(b) provides rules when both containments utilize the same pre-stressing system, if they are essentially identical in design, if the post-tensioning operations for the two containments were completed not more than two years apart, and if both containments are similarly exposed to or protected from the outside environment (See RR-57 regarding compliance with "two years apart").

IWL-2421(b) requires that examinations be performed as follows:

For the containment with the first SIT, perform the L1.10, "Concrete Surface," L2.10, "Tendon," and L2.20, "Wire or Strand," examinations at 1, 3, and 10 years following the completion of the SIT, and then perform the examinations every 10 years, thereafter.

For the containment with the second SIT, perform the L1.10, L2.10 and L2.20 tendon examinations at 1, 5, and 15 years following the completion of the SIT, and then perform the examinations every 10 years, thereafter.

For each containment, perform Item L2.30 (Anchorage Hardware and Surrounding Concrete), Item L2.40 (Corrosion Protection Medium), and L2.50 (Free Water) examinations at 1, 3, and 5 years following the completion of the SIT, and then perform the examinations every 5 years, thereafter.

3.2.2 Specific Relief Request

In lieu of using the original SIT date to determine when future IWL examinations will be required, SNC proposes to use a common containment administrative date of July 2006 for both units. The required Code examination dates using the SIT (given as a range by applying

the +12-month interval allowed by IWL-2420(c), are shown in Table 1 of the licensee's letter dated February 13, 2006 (Reference 5.5) and the required examination dates using the proposed common administrative date are shown in Table 2 of Reference 5.5.

3.2.3 Proposed Alternative Duration

The proposed alternative is applicable for the first Containment Inspection Interval and subsequent intervals.

3.2.4 Licensee's Basis for Relief

The licensee provided the following basis for its request for relief:

A comparison of Table 1 and Table 2 indicates that the major impact is that the FNP-1 examinations may be performed slightly earlier than originally required and that the FNP-2 examinations may be performed slightly later than originally required. This small administrative shift in examination dates should have an inconsequential effect on containment integrity. This proposed alternative will continue to provide an acceptable level of quality and safety; therefore, approval is requested per 10 CFR 50.55a(a)(3)(i).

3.2.5 NRC Staff Evaluation of RR-58

For FNP, which has two prestressed concrete containments, the inspection schedule required by IWL would be based on the dates of the first Structural Integrity Test (SIT) for each unit as set forth in IWL- 2421(b) if the FNP satisfied the requirements of IWL- 2421(a). In Section 3.1.5 above, the NRC staff granted relief (RR-57) from IWL2421(a) such that IWL-2421(b) can be applicable to the FNP. Hence, with the granting of RR-57, for Unit 1, the post- tension system inspection schedule is governed by IWL-2421(b)(1), and for Unit 2 by IWL-2421(b)(2). This relief request, RR-58, addresses a relatively small one-time adjustment in the schedule for further examinations by establishing a common administrative date of July 2006 for both FNP units in lieu of the dates that would otherwise be specified by IWL-2421(b).

Table 1 of the licensee's letter dated February 13, 2006, provides the schedule for further examinations based on each unit's first SIT as would otherwise be specified by IWL 2421(b)(1) and IWL 2421(b)(2)000. Table 2 of that letter provides the schedule based on the adjustment of the midpoint for the Unit 1 30-year examination and the Unit 2 25-year examination to a common administrative date of July 2006. A \pm 1-year interval about the midpoint for these examinations is provided by IWL-2420(c) and these two-year intervals are shown in Tables 1 and 2 of the licensee's letter.

The effect of establishing a common administrative date of July 2006 as the baseline for the new schedule advances the midpoint date for the 30-year examination for Unit 1 from February 2007 to July 2006 and delays the midpoint date for the 25-year examination for Unit 2 from May 2005 to July 2006. As noted above, IWL-2420(c) allows these examinations to be conducted within a \pm 1-year interval of the scheduled dates. However, for the Unit 1 30-year and the Unit 2 25-year examinations, the licensee has committed to conduct them no later than by the end of 2006. Further examinations for both units will be based on the common administrative date of July 2006.

The net effect of the change for the July 2006 midpoint examinations will result in a closer interval of sampling than would otherwise have been required by IWL. Hence the deviation from the requirements will not result in any decrease in the quality and safety of the containment post-tensioning system as both samples contribute to the same sample population.

Therefore, the NRC staff finds the basis of the specified date to allow for a new "common administrative," date for tendon inspection to be acceptable.

4.0 Conclusion

The NRC staff has reviewed the justification provided by the licensee in support of the requested relief requests RR-57 and RR-58 from the ISI requirements specified in Subsection IWL of Section XI of the ASME Code. On the basis of its review, the NRC staff concludes that the licensee's proposed alternatives for RR-57 and RR-58 will provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's request for relief is authorized for the FNP for the first containment Inspection Interval and subsequent intervals.

5.0 REFERENCES

- 5.1 Southern Nuclear Operating Company, "Joseph M. Farley Nuclear Plant - ASME Section XI Request for Alternative Numbers RR-57, Proposed Alternative to IWL-2421(a) Requirements, and RR-58, Proposed Alternative to IWL-2421(b) Requirements," Dockets 50-348/364, May 31, 2005.
- 5.2 American Society of Mechanical Engineers, *Boiler and Pressure Vessel Code*, 1992 edition, Section XI, Subsection IWL, "Requirements for Class CC Concrete Components of Light-Water Cooled Plants," 1992 addenda, New York.
- 5.3 U.S. Nuclear Regulatory Commission, "Codes and Standards for Nuclear Power Plants; Subsection IWE and Subsection IWL (10 CFR Part 50)," *Federal Register*, Vol. 61, No. 154, August 8, 1996, pp. 4130 - 41312.
- 5.4 *U. S. Code of Federal Regulations*, "Domestic Licensing of Production and Utilization Facilities," Part 50, Chapter I, Title 10, "*Energy*."
- 5.5 Southern Nuclear Operating Company, "Joseph M. Farley Nuclear Plant - Request for Additional Information RR-58, Proposed Alternative to IWL-2421(b) Requirements and Containment Tendon Surveillance Program," Dockets 50-348/364, February 13, 2006.
- 5.6 NRC Regulatory Guide 1.35, "Inservice Inspection of UngROUTED Tendons In Prestressed Concrete Containment Structures," Revision 2, January 1976.

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Date: March 28, 2006

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