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Docket Nos.: 50-348
50-364

NL-11-1542

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

Joseph M. Farley Nuclear Plant
Response to NRC Request for Additional Information
Proposed Alternative FNP-ISI-ALT-11, Version 1.0

Ladies and Gentlemen:

By letter dated March 22, 2011, Southern Nuclear Operating Company (SNC) submitted proposed alternative FNP-ISI-ALT-11, Version 1.0, for Farley Nuclear Plant, Units 1 and 2, to the U. S. Nuclear Regulatory Commission (NRC) for review and approval. Subsequently, the NRC issued a request for additional information (RAI), by letter dated July 28, 2011 (ML11172A081), to enable completion of the review. The responses to the NRC RAIs are provided in the Enclosure.

This letter contains no NRC commitments. If you have any questions, please contact Jack Stringfellow at (205) 992-7037.

Sincerely,

A handwritten signature in black ink that reads "Mark J. Ajluni". The signature is written in a cursive, flowing style.

M. J. Ajluni
Nuclear Licensing Director

MJA/LPH/lac

Enclosure: Response to NRC RAI Regarding Proposed Alternative
FNP-ISI-ALT-11, Version 1.0

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cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. J. T. Gasser, Executive Vice President
Mr. L. M. Stinson, Vice President – Farley
Ms. P. M. Marino, Vice President – Engineering
RTYPE: CFA04.054

U. S. Nuclear Regulatory Commission
Mr. V. M. McCree, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Farley
Mr. E. L. Crowe, Senior Resident Inspector – Farley
Mr. P. G. Boyle, NRR Project Manager

**Joseph M. Farley Nuclear Plant
Response to NRC Request for Additional Information
Proposed Alternative FNP-ISI-ALT-11, Version 1.0**

Enclosure

**Response to NRC RAI Regarding Proposed Alternative
FNP-ISI-ALT-11, Version 1.0**

1. NRC RAI

Provide the year and the addenda of the ASME Code, Section XI that is applicable for the current in-service inspection programs at FNP.

SNC Response to RAI 1

The 2001 Edition of Section XI with Addenda through 2003 is the FNP Code of Record for the fourth ISI interval.

2. NRC RAI

SNC stated that the subject piping was originally designed to ASME Code, Section III, Subsection NC (Code Class 2), 1971 Edition through Summer 1971 Addenda. Subsection NC, paragraph NC-5222 in ASME Code, Section III, requires radiography for the full penetration butt welds. Whereas Subsection NB (Code Class 1), paragraph NB-5220 in ASME Code, Section III, requires radiography and surface examination on 1/2 inch on each side of the full penetration butt welds. Surface quality of the weld is to be verified on Code Class 1 components due to fatigue considerations. However, surface examination was not performed on any of the existing Code Class 2 small bore full penetration pipe butt welds identified in the proposed alternative. Since the subject welds are not to be upgraded to Code Class 1 category, SNC is requested to provide a justification for using Code Class 2 examination requirements for these welds.

SNC Response to RAI 2

The FNP small bore piping systems at issue are socket welded construction. Paragraph NB-5220 specifies examination requirements for circumferential butt welds and is not applicable.

Paragraphs NB-5250 and NC-5250 provide the examination requirements for socket welds and those requirements are identical for Class 1 and 2, namely, either magnetic particle or liquid penetrant examination.

3. NRC RAI

In the proposed alternative, SNC stated that for the Code Class 2 piping support elements, American National Standard Institute (ANSI) B.31.1, "Power Piping," was used. For Code Class 1 piping support elements, ANSI B.31.7, "Nuclear Power Piping," was used. SNC is requested to provide a brief summary of the comparison of the technical attributes (design criteria, fabrication and examination) with respect to the piping support elements, between these codes.

SNC Response to RAI 3

For the Design of ASME Class 1 pipe supports, NB-3674 (ASME Section III-1971) references ANSI B31.7-1969, Divisions 1-720 and 1-721. Similarly for the Design for Class 2 supports, NC-3674 references ANSI B31.1-1967, Paragraphs 120 and 121.

Other support requirements including those associated with fabrication and examination remain as prescribed in 1971 ASME Section III. Thus, the requested brief summary comparison of the technical attributes (design criteria, fabrication and examination) between ANSI B31.1-1967 and ANSI B31.7-1969 is limited to Design criteria only.

For the most part, ANSI B31.7-1969, Divisions 1-720/1-721 and ANSI B31.1-1967, Paragraphs 120/121 track each other verbatim and share a similar numbering system. No design rules or formulas are presented in either code. Below is a brief summary:

Comparison of ANSI B31.7-1969, Divisions 1-720 “Loads on Pipe Supporting Elements” to ANSI B31.1-1967, Paragraphs 120:

A review shows that these two sections are very similar. For small bore Class 1 pipe, the pipe support type would typically be rigid support type with U-bolt or strap. The most relevant paragraphs are B31.7, 1-720.2.4, Supplemental Steel and the corresponding B31.1 counterpart, paragraph 120.2.4. These paragraphs require compliance to American Institute of Steel Construction (AISC) standards from which much of the support design rules originated.

Comparison of ANSI B31.7-1969, Divisions 1-721 “Design of Supporting Elements” to ANSI B31.1-1967, Paragraphs 121:

A review shows that these two sections are very similar for the applicable parts. The most relevant paragraphs are B31.7, 1-721.1.2, Materials and Stresses and the corresponding B31.1 counterpart, paragraph 121.1.2. While the B31.7 paragraph specifies allowable stress to come from Tables A-1, A-8 and A-9 or Table 2 of MSS SP-58, B31.1 specifies the allowable stress from B31.1 Table A. It is noted that the allowable stresses from Table A-8 of B31.7 are identical to those of Table A of B31.1. Also, the adjustment of allowable stresses in B31.1 paragraph 121.1.2 would yield the allowable stresses in MSS SP-58 (such as safety factor of 5 for threaded rod). Other adjustments (for short term load, piping hydrotest loads) have little effect on the design of small bore piping supports and are considered not applicable for the FNP pipe and tubing supports at issue.

The following other differences are noted between ANSI B31.7-1969, Divisions 1-721 “Design of Supporting Elements” to ANSI B31.1-1967, Paragraphs 121:

- B31.1 provides Table 121.1.4 “Suggested Pipe Support Spacing” for the optional use in determining safe pipe and tubing spans whereas the Class 1 requirements found in B31.7 simply state that supports should be spaced to prevent excessive sag, bending, and shear stresses in the piping...” SNC did not rely on this optional information but developed appropriate support spacing guidelines and methods to be used for the pipe support design process.

- B31.1 provides specific information on the use of items, such as corrugated or slip type expansion joints. This guidance is not applicable to the FNP piping and tubing supports in question.
- B31.1 provides specific information about the use of items and materials, such as welded link chain, cast and malleable iron beam clamps, etc. The FNP piping and tubing installation specifications fully detail the acceptable material for use in the subject piping and typically does not allow materials such as those listed.
- B31.1 provides Table 121.2.2(a), which provides ASTM A107 threaded rod capacities. This information is generally available and not specific to B31.1.

The requirements in NB-3674 and NC-3674 are similar and result in similar designs for small bore (NPS 1 and smaller) pipe supports.

4. NRC RAI

SNC is requested to confirm that as-built code reconciliation analyses were performed for the subject components taking into consideration the differences between the various attributes that are addressed in ASME Code, Section III, Code Class 1 and Code Class 2.

SNC Response to RAI 4

SNC performed an as-built Code reconciliation analysis comparing the 1971 editions of ASME Section III Subsections NB for Class 1 and NC for Class 2. This comparison considered each Article of Subsections NB and NC (covering the areas of materials, design, fabrication and installation, examination, testing, protection against overpressure, nameplates, stamping and reports). The results of this comparison were incorporated into the Farley ISI alternative. The comparison is documented under DOEJ-FR1091912101-M001 as part of Request for Engineering Review 1091912101.