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AUG 07 2014

Docket Nos.: 50-348  
50-364

NL-14-1131

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

Joseph M. Farley Nuclear Plant – Units 1 and 2  
Response to the Request for Additional Information Regarding  
ISI Program Alternative FNP-ISI-ALT-16, Version 1.0

Ladies and Gentlemen:

By letter dated May 28, 2014, (Agencywide Documents Access and Management System (ADAMS) Accession Number ML14148A492) Southern Nuclear Operating Company (SNC) submitted a request for approval to use an alternative to the American Society of Mechanical Engineers (ASME) Section XI code requirement of subarticle IWC-5220 for leakage testing of the Class 2 reactor vessel flange leak-off lines for both Units 1 and 2 of the Joseph M. Farley Nuclear Plant (FNP).

Subsequently, by letter dated July 15, 2014, (ADAMS Accession Number ML14189A020), the U. S. Nuclear Regulatory Commission (NRC) submitted a Request for Additional Information (RAI) to enable completion of their review. The enclosure to this letter provides SNC's response to the RAIs.

This letter contains no NRC commitments. If you have any questions, please contact Ken McElroy at (205) 992-7369.

Respectfully submitted,

A handwritten signature in black ink that reads "C.R. Pierce". The signature is written in a cursive, flowing style.

C.R. Pierce  
Regulatory Affairs Director

CRP/JMC/

Enclosure: Response to Request for Additional Information

cc: Southern Nuclear Operating Company  
Mr. S. E. Kuczynski, Chairman, President & CEO  
Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer  
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U. S. Nuclear Regulatory Commission  
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Mr. S. A. Williams, NRR Project Manager - Farley  
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**Farley Nuclear Plant - Unit 1 and 2  
Response to the Request for Additional Information Regarding  
ISI Program Alternative FNP-ISI-ALT-16, Version 1.0**

**Enclosure**

**Response to Request for Additional Information**

Enclosure to NL-14-1131  
Response to Request for Additional Information

By letter dated May 28, 2014 (Agencywide Documents Access and Management System (ADAMS), Accession Number ML14148A492), Southern Nuclear Operating Company, submitted for staff review and approval ISI Program Alternative Request FNP-ISI-ALT-16, which requests an alternative to the ASME Section XI Code requirement of subarticle IWC-5220 for pressure testing of the Class 2 reactor vessel flange leak-off line each inspection period. In a letter from the NRC dated July 15, 2014, the NRC staff indicated that additional information was needed to perform their review of the proposed alternative. This enclosure contains the requested information.

FNP-ISI-ALT-16-RAI-1:

*"Describe the Joseph M. Farley Nuclear Plant operating experience with regard to reactor pressure vessel flange O-ring leakage and/or leak-off line leakage (i.e. history of any leakage, cause, corrective actions)."*

SNC Response to FNP-ISI-ALT-16-RAI-1:

One example of operating experience was identified for Farley with regard to reactor pressure vessel flange O-ring or leak-off line leakage. At the end of the 1R17 refueling outage in November of 2001, the inner O-ring was suspected of leaking by due to an elevated temperature indication of the downstream temperature indicator. This caused a control room annunciator to go into alarm. Further investigation confirmed leakby of the inner O-ring. The inner O-ring was isolated and the leak-off line was re-configured to the outer O-ring, upon doing so, temperature indication trended back to ambient conditions. The leak-off line was operated in this manner until the next refueling outage.

During the 1R18 refueling outage in spring of 2003 the O-rings were replaced. Upon inspection of the inner O-ring and seating surface, no debris and no detectable damage to the vessel flange area was found. However, the inner O-ring did have indications of wear. Following replacement of the O-rings during the refueling outage, no issues were documented during start-up operations. Six months after restart after 1R18, follow-up was performed to determine if there was any indication of inner O-ring leakage, however, no indications of leakage were found.

FNP-ISI-ALT-16-RAI-2:

*"ASME Code Case N-805, Reference 1 of FNP-ISI-ALT-16 states that it is the opinion of the ASME Committee that as an alternative the leakage test of the Class 1 or 2 portions of the leak detection system shall be conducted at ambient conditions after the refueling cavity has been filled to its "normal" refueling water level for at least 4 hours. In the first paragraph of the Proposed Alternative and Basis for Use section of FNP-ISI-ALT-16 it states the test shall be conducted at ambient conditions after the refueling cavity has been flooded to its "minimum" water level for refueling operations of 23 feet above the RPV flange for at least four hours.*

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*Is 23 feet above the RPV flange also the "normal" refueling water level? If not, please justify performing the test at less than the "normal" refueling water level."*

**SNC Response to FNP-ISI-ALT-16-RAI-2:**

The reason 23 ft was used was because it is the minimum allowed level for refueling operations. Farley's procedures for Refueling Operations contains steps and precautions that ensure the water is at least 23 ft above the RPV flange and that the water level does not exceed 24 ft above the flange. Exceeding 24 ft above the RPV flange will result in water entering the refueling cavity ductwork.

Additionally, if the refueling water level goes as high as 24 feet it only results in about an increase of 0.5 psig from the 10 psig that results from 23 feet.

**FNP-ISI-ALT-16-RAI-3:**

*"For the accessible portions of the Reactor Pressure Vessel Flange Leak-off Piping:*

- a. *Discuss if the piping is insulated or not. If the piping is insulated, will the insulation be removed? If insulation will not be removed, discuss how the piping will be examined to identify potential pipe through-wall leakage.*
- b. *If the subject piping is located in a high elevation or far away location from the examiner, describe how the pipe through-wall leakage can be identified."*

**SNC Response to FNP-ISI-ALT-16-RAI-3:**

- a. It is uncertain as to whether or not the Reactor Pressure Vessel Flange Leak-off Piping is insulated or not. It is, however, believed that the piping is uninsulated based on observations made by ISI personnel.

Currently no plans are being made to remove insulation if it is indeed installed. Instead, examinations will be performed using ASME Section XI, 2001 Edition through 2003 Addenda criteria for examination of any insulated piping to determine if a through-wall leak exists. As indicated in IWA-5242(b), "Essentially horizontal surfaces of insulation shall be examined at each insulation joint if accessible for direct VT-2 examination." Also, as indicated in IWA-5242(c), "When examining insulated components, the examination of the surrounding area (including floor areas or equipment surfaces located underneath the components) for evidence of leakage, or other areas to which such leakage may be channeled, shall be required." If an indication of leakage is identified during the examination, additional actions will be taken to confirm the presence or absence of a through-wall leak.

- b. A portion of the accessible Reactor Pressure Vessel Flange Leak-off Piping is located at an elevated area where a direct VT-2 visual examination is not

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capable of being performed. In situations such as this, the examination will include inspection of the surrounding areas below the line for evidence of leakage as permitted by IWA-5241(b) of the ASME Section XI Code, 2001 Edition through 2003 Addenda. If an indication of leakage is identified during the examination, additional actions will be taken to confirm the presence or absence of a through-wall leak.