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U. S. Nuclear Regulatory Commission
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Washington, D. C. 20555-0001

Joseph M. Farley Nuclear Plant Units 1 and 2
Response to Request for Additional Information Regarding Alternative Request
FNP-ISI-ALT-20, VERSION 1.0, REGARDING SYSTEM LEAKAGE TEST

Ladies and Gentlemen:

By letter dated December 7, 2016 (Accession Number ML16342C529), Southern Nuclear Operating Company (SNC) requested relief from the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for performing the system leakage testing at or near the end of inspection interval. Relief request FNP-ISI-ALT-20, version 1.0 is for the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2. The Nuclear Regulatory Commission (NRC) staff is reviewing the submittal and has determined that additional information is needed to complete its review. The Enclosure provides the SNC response to the additional information requested by the NRC staff.

This letter contains no NRC commitments. If you have any questions, please contact Ken McElroy at 205.992.7369.

Respectfully submitted,

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Enclosure: SNC Response to Request for Additional Information

cc: Southern Nuclear Operating Company
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Joseph M. Farley Nuclear Plant Units 1 and 2
Response to Request for Additional Information Regarding Alternative Request
FNP-ISI-ALT-20, Version 1.0, Regarding System Leakage Test

Enclosure

SNC Response to Request for Additional Information

RAI No. 1:

On page E-14 of the relief request, the licensee described the manner that each piping segment will be pressurized to accommodate the system leakage test of that segment, but did not state what the test pressure will be. Please provide a numerical value of the test pressure for each piping segment.

SNC Response to NRC RAI No. 1:

- For the Safety Injection System (SIS) to Reactor Coolant System (RCS) Cold legs associated with the Accumulator Tanks, [piping segments 1, 2, and 3] the examinations will be performed using the outboard Class 2 highest system functional pressure associated with the tanks. The accumulator piping will be examined during the reactor shutdown for refueling outage at a pressure between 601 and 649 psig.

- For the SIS HI and LO Head, Hot leg/Cold Leg injection lines [piping segments 4, 5, 6, 7, 8, and 9] the examinations will be performed using the outboard Class 2 system functional pressure associated with the SIS HI Head (Charging Pumps), during the full flow test. The charging pump comprehensive testing is performed at a flow of 610 gpm and a discharge pressure typically between 1200 and 1600 psig. All 4 charging pump paths are tested each outage, and the two Residual Heat Removal (RHR) paths can be examined as well since this alignment will also pressurize those paths.

- For the RHR suction lines, Hot Leg Loops 1 and 3 [piping segments 10 and 11], the examinations will be performed using the outboard Class 2 highest system functional pressure associated with the RHR suction lines. During cooldown at the beginning of an outage, this section of piping is in service and can be examined. Per FNP Procedure SOP-7.0, RCS pressure is less than 375 psig.

RAI No. 2:

Are there any area(s) of the piping segments (Tables 2 and 3 of relief request) insulated or inaccessible? If yes, please discuss how the VT-2 visual examination will be conducted to ensure any potential leakage in the insulated or inaccessible area(s) will be identified during examination and discuss the appropriate corrective actions that will be taken.

SNC Response to NRC RAI No. 2:

Yes, there are sections of insulated pipe, typically closer to the RCS loops. This insulation is metal reflective insulation and leakage should be apparent (i.e., it won't soak in). No evidence of leakage is allowed from welds or component bodies. Any leakage is reported and actions are taken to determine the source of the leakage and corrective actions. Additionally, the insulated segments are inspected every outage after a 4 hour hold time during the Class 1 walkdown in Mode 3. The form used to record the visual exam includes inspecting for and documenting such things as any wet insulation, moisture on wall/floor, leakage collection system issues, discoloration or residue, sprays or drips, mechanical joint leakage, valve packing, and through wall leakage.

RAI No. 3:

Are there any welded connections (e.g., butt, socket) in each piping segment (Tables 2 and 3 of relief request)? If yes,

a. Discuss whether any of the welds have been examined by volumetric and/or surface examinations during the current 10-year inservice inspection (ISI) interval, and whether any weld(s) is in the risk-informed inservice inspection program and has been or will be examined in the current 10-year ISI interval.

b. Discuss whether any pressure boundary leakage was identified during the current 10-year ISI interval in each pipe segment under consideration regardless of how the leakage was identified (e.g., from the ASME Code, Section XI, required pressure testing, boric acid corrosion control program walkdowns, reactor restart walkdowns, etc.).

SNC Response to NRC RAI No. 3:

a. Yes, there are approximately 650 welded connections in the program scope. These welds were originally classified as Category B-J, during the first period of the fourth inservice inspection interval, but are now included in the risk-informed program and classified as Category R-A. Sixty-one welded connections have been examined, 55 volumetric exams and 6 surface exams during the current 10-year inservice inspection interval. Five volumetric exams are scheduled for the upcoming Fall 2017 Unit 2 outage. In all the exams performed, there have been no recordable indications documented.

b. There are eleven Class 1 check valves located in the piping segments that have been reported in the Corrective Action Program for boric acid leakage at the gasket joints over the last 10 years. There has not been any through-wall leakage reported in any of these piping segments. Identified leaks are tracked in the Boric Acid Corrosion Control Program (BACCP) leak management database.

RAI No. 4:

In Section titled "Reason for Request," the NRC staff notes that the licensee stated, in part, *"The system pressure requirements of IWC-5221 are an alternative to the system pressure requirements of CC N-800, which are:"* The NRC notes that code cases provide alternatives to the ASME Code, not the reverse. Please modify or justify this statement.

SNC Response to NRC RAI No. 4:

The modified statement is below:

Reason for Request

Pursuant to 10 CFR 50.55a(z)(2), an alternative is being requested by Southern Nuclear Operating Company, Inc. (SNC) for the FNP Units 1 and 2 on the basis that a hardship and unusual difficulty exists in establishing a system configuration that will subject

selected Class 1 components to RCS pressure during the system pressure test to be performed in accordance with IWB-5222(b) at or near the end of each FNP Unit's ISI Interval without a compensating increase in the level of quality and safety. SNC requests authorization to perform the examination of selected Class 1 piping and valves at plant conditions other than those required by IWB-5222(b) by using the alternative boundaries permitted by Code Case N-800 (Reference 2) with IWC-5221 defining the alternative Class 2 system test pressure between the Class 1 isolation valves. IWC-5221 states:

"The system leakage test shall be conducted at the system pressure obtained while the system, or portion of the system, is in service performing its normal operating function or at the system pressure developed during a test to verify system operability (e.g., to demonstrate system safety function or satisfy technical specification surveillance requirements.)".

The system pressure requirements of Code Case N-800 are an alternative to the IWC-5221 system pressure requirements. Code Case N-800 states:

"*...The system leakage test shall be conducted using the pressure associated with the Class 2 system function that provides the highest pressure between the Class 1 isolation valves."*

Additionally, Code Case N-800 is not yet addressed or approved in the latest revision of Regulatory Guide 1.147 Revision 17 and currently requires NRC authorization prior to use. However, the Case has been incorporated into Draft Regulatory Guide DG-1296 with no proposed NRC conditions for its use.