Zach Turner

From:	Zach Turner
Sent:	Wednesday, April 30, 2025 9:18 AM
То:	Sparkman, Wesley A.
Cc:	Joyce, Ryan M.; Michael Markley; Matthew Mitchell; Alan Blamey; Sarah Temple; Patrick
	roley, Omar Khan NKR, Jay Collins, Stephen Cumblidge
Subject:	Verbal Authorization of SNC Alternative Request FNP-ISI-ALT-05-13 (EPID L-2025- LLR-0048)

Wes,

This email serves as documentation of the verbal authorization for the alternative request that the NRC provided this morning (April 30, 2025). This email will be made publicly available. As discussed on the call, a formal Safety Evaluation (SE) will be issued at a later date in accordance with NRR Office Instruction LIC-102. The verbal authorization does not preclude the NRC staff from asking additional clarification question while preparing the written SE.

Very Respectfully,

Zach Turner, Project Manager Nuclear Regulatory Commission Division of Operating Reactor Licensing NRR/DORL/LPL2-1 (301) 415-2258 Office: OWFN-07C12 Mail Stop: O-08 B01A

VERBAL AUTHORIZATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION FOR ALTERNATIVE FNP-ISI-ALT-05-13 REQUEST FOR AN ALTERNATE FOR REACTOR VESSEL BOTTOM HEAD INSPECTION SOUTHERN NUCLEAR OPERATING COMPANY JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NO. 2 DOCKET NO. 50-364

Technical Evaluation read by Matthew Mitchell, Chief of the Piping and Head Penetrations Branch, Office of Nuclear Reactor Regulation

By letter dated April 28, 2025, (Agencywide Documents Access and Management System Accession No. ML25118A329), as supplemented by letter dated April 29, 2025, (ML25119A334), Southern Nuclear Operating Company (the licensee, SNC) requested relief from Subparagraph IWB-3142.2 of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) related to supplemental examinations of reactor pressure vessel (RPV) bottom-mounted instrument penetrations and instrument connections at the Joseph M. Farley, Unit No. 2 (Farley, Unit 2). The licensee submitted alternative FNP-ISI-ALT-05-13 pursuant to 10 CFR 50.55a(z)(2) on the basis that performance of the supplemental examinations would cause hardship without a compensating increase in quality and safety. The duration of the request is until completion of the unit's fall 2026 refueling outage (2R31). In performance of the current refueling outage bare metal visual examination of the RPV bottom-mounted instrument penetrations and instrument connections, the licensee found a relevant conditions on the head surface in annulus areas at penetrations 1, 2, 5, 8, 12, 13, 17, 19, 20, 22, 23, 26, 28, 29, 36, 37, 39, 42, 43 and 46 for ASME Code Case N-722-1 Item number B15.80 examinations. Additionally, boric acid was present on the alloy 600 tube-to-safe end butt welds at penetration locations 1-6, 8, 9, 10, 13, 17, 19, 20, 22, 26, 28, 29, 36, 37, 43 and 46 for ASME Code Case N-722-1, Item number B15.100 examinations. To address these relevant conditions, the licensee can perform supplemental examinations for acceptance under IWB-3142.2. However, the license documented specific hardships associated with the performance of these examinations for all locations in the submittal. As an alternative to these supplemental examinations, the licensee proposed to evaluate the source of the leakage and take actions to ensure structural integrity of the subject items for the duration of the alternative.

The licensee first determined that the most likely source of the leakage was from the cavity seal, which is designed to provide a leak tight barrier while the refueling cavity is flooded to prevent refueling water from coming into contact with the reactor vessel exterior. The licensee details the activities to reach their conclusion in their submittal, which included pre-flood-up visual inspection of the lower head, analysis of the leakage path, cleaning of the associated deposits and chemical analysis from five locations.

Then the licensee proposed the following actions as an alternative to the supplemental examinations. The licensee cleaned and verified the structural integrity of the RPV head surface, the subject penetration nozzles and instrumentation connections. Prior to startup, the licensee will perform a visual examination of the bottom of the vessel above the insulation during the ASME Class 1 system leakage test (at normal operating pressure) to confirm there is no active reactor coolant pressure boundary leakage occurring from the subject locations. During the upcoming cycle of operation, the licensee stated that it would monitor for leakage in a manner which will continue to ensure the structural integrity of the subject locations. Finally, the licensee proposes to perform bare metal visual examinations in accordance with N-722-1 of the bottom vessel (ASME Code N-722-1, Item numbers B15.80 and B15.100) prior to reactor cavity flood-up during 2R31 and will continue to do so each refueling outage until cavity seal leakage has been completely corrected.

The U. S. Nuclear Regulatory Commission (NRC) staff reviewed the licensee's identified hardship and found the licensee's estimation of radiological dose and industrial risk to perform the supplemental examinations during the current outage was consistent with estimates at other facilities. The NRC staff finds that the licensee has identified a hardship consistent with 10 CFR 50.55a(z)(2).

The NRC staff reviewed the licensee's proposal and found: (1) the licensee's analysis of the most probable source of the deposits was acceptable based on a pre-flood-up visual photo, the light cleaning required for deposit removal, and the results of the chemical analysis from five deposit locations; (2) the licensee's visual examinations at normal operating pressure will provide reasonable assurance of no significant active leakage prior to startup; (3) the licensee's leak detection capability and action levels will ensure any potential leakage will be identified prior to the point of challenging the structural integrity of the subject locations; and (4) the visual examination prior to reactor cavity flood-up during 2R31 (and each subsequent outage until the cavity seal leakage has been completely corrected) will ensure reactor coolant pressure boundary integrity is maintained.

Therefore, the NRC staff finds that the licensee's proposed alternative provides reasonable assurance of the structural integrity of the RPV lower head, subject penetration nozzles and instrument connections for the next operating cycle at Farley, Unit 2, without requiring the licensee to perform supplemental examinations during the current refueling outage.

NRC Staff Conclusion read by Michael Markley, Branch Chief, Plant Licensing Branch II-1, Office of Nuclear Reactor Regulation

As Chief of Plant Licensing Branch II-1, I concur with the Piping and Head Penetration Branch's evaluation.

The NRC staff has determined that complying with the specified requirements described in the licensee's alternative FNP-ISI-ALT-05-13 would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Further, the licensee's proposed alternative provides reasonable assurance of structural integrity of the RPV lower head, subject penetration nozzles and instrument connections. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2).

Therefore, as of April 30, 2025, the NRC authorizes the use of alternative FNP-ISI-ALT-05-13 until completion of the 2R31 refueling outage at Farley, Unit 2 scheduled for fall 2026.

All other requirements of ASME Code and 10 CFR 50.55a(g)(6)(ii)(D) for which relief was not specifically requested and authorized by the NRC staff remain applicable, including the third-party review by the Authorized Nuclear Inservice Inspector.

This verbal authorization does not preclude the NRC staff from asking additional questions and clarifications regarding alternative FNP-ISI-ALT-05-13 while preparing the subsequent written safety evaluation.