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the southern electric system

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

Joseph M. Farley Nuclear Plant - Unit 2
Cycle 9 Reload

Gentlemen:

Joseph M. Farley Nuclear Plant Unit 2 completed its eighth cycle of operation with a refueling outage which commenced on March 6, 1992. The Cycle 8 burnup was 14,758 MWD/MTU. This letter is provided to advise you of Southern Nuclear Operating Company's review of the Farley Unit 2 Cycle 9 reload core design and plans regarding its implementation.

Farley Unit 2 Cycle 9 is the first introduction of a reload region (Region-11) of Westinghouse VANTAGE-5 fuel at Farley Nuclear Plant. The phased transition from Westinghouse low parasitic (LOPAR) fuel to Westinghouse VANTAGE-5 fuel and the associated changes to the Farley Technical Specifications were approved by the NRC on March 11, 1992. The amendment also included additional Technical Specifications changes for removing and replacing the existing Unit 2 Resistance Temperature Detector (RTD) bypass manifold system with fast response RTDs located in the reactor coolant hot leg and cold leg piping.

The Farley Unit 2 Cycle 9 core reload was based on the reanalysis of affected FSAR transients and accidents included in the Farley VANTAGE-5 fuel analysis and was designed to perform within the acceptable design parameters, Technical Specifications and related bases, and setpoints. A total of four LOPAR Region-5, eight LOPAR Region-8, thirty-two LOPAR Region-9, fifty-six LOPAR Region-10, and fifty-seven fresh VANTAGE-5 Region-11 fuel assemblies with 2,480 integral fuel burnable absorber (IFBA) rods will be inserted at the refueling outage. The Region-11 assemblies include VANTAGE-5 fuel design features such as smaller diameter fuel rods (optimized fuel assembly), mid-span zircaloy grids, intermediate flow mixer (IFM) grids, and IFBAs. These design features in addition to extended burnup, removable top nozzle (RTN), and modified debris filter bottom nozzle (MDFBN) used in Cycle 8 complement the Region-11 VANTAGE-5 fuel mechanical design features for Cycle 9.

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The Cycle 9 core also introduces two new double encapsulated secondary sources. These new secondary sources will provide additional margin against source material leakage and do not affect the safe operation of plant systems. The original secondary sources will continue operation in Cycle 9, ensuring adequate neutron flux for the source range detectors while the new sources are being irradiated. The two new sources require no new licensing requirements, and their effects were incorporated in the Cycle 9 reload safety evaluation process.

A detailed review of the Westinghouse Reload Safety Evaluation Report (RSER) for Farley Unit 2 Cycle 9, including all postulated events considered in the FSAR, was performed. The RSER included a review of the Cycle 9 core characteristics to ensure that the assumed values of the input parameters affecting the postulated design basis accident analyses remained bounding. Events for which the assumed values of the input parameters were not bounding were evaluated. (No additional re-analysis was required for the Cycle 9 reload.) For all such events, the results met the NRC acceptance criteria. This verification was performed in accordance with the Westinghouse reload safety evaluation methodology as outlined in the July 1985 Westinghouse topical report entitled "Westinghouse Reload Safety Evaluation Methodology" (WCAP-9272-P-A).

The RSER also verifies Technical Specifications changes are not required beyond those noted in Amendment No. 85 for operation of Farley Unit 2 Cycle 9. Farley's Plant Operations Review Committee (PORC) concluded that no unreviewed safety questions, as defined by 10 CFR 50.59, are involved with this reload. The reload safety evaluation will be reviewed by the Nuclear Operations Review Board (NORB) at a later meeting.

Verification of the reload core design will be demonstrated per the standard startup physics tests normally performed for Westinghouse PWR reload cycles. These tests will include, but not be limited to, measurements of: (1) Control rod drop time; (2) Critical boron concentration; (3) Control rod bank worth; (4) Moderator temperature coefficient; and (5) Startup power distribution using the incore flux mapping system.

Results of these tests and a core loading map will be submitted approximately 90 days after startup of Cycle 9.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

J. D. Woodard

JDW/MGE/AA:map
cc: Mr. S. D. Ebneter
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Mr. G. F. Maxwell