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Alabama Power

the southern electric system

March 17, 1983

Docket No. 50-348

Director, Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. S. A. Varga

Joseph M. Farley Nuclear Plant - Unit 1
Cycle-5 Reload

Gentlemen:

Farley Unit 1 is currently in its fourth refueling outage with Cycle-5 startup scheduled to commence in late March, 1983. This letter is to advise you of Alabama Power Company's review of and plans regarding the Farley Unit 1 Cycle-5 core reload.

The Farley Unit 1 Cycle-5 core reload was designed to perform within the current nominal design parameters, Technical Specifications and related bases, and current setpoints. A total of 60 fresh fuel assemblies were utilized in the design for a Cycle-5 core total of 4 Region 1, 5 Region 3, 16 Region 4, 2 Region 4A, 50 Region 5, 40 Region 6, and 40 Region 7 fuel assemblies arranged in a low neutron leakage loading pattern. The 20 fresh Region 6 fuel assemblies are identical to the Region 6 fuel assemblies previously inserted for Cycle-4. The mechanical, nuclear and thermal-hydraulic design of the Region 7 fuel assemblies is identical to the previous region except for a reduction of rod internal pressure, the use of a reconstitutable bottom nozzle, and a modified corner grid strap design to prevent grid hangup during refueling. These changes are generic in nature to the 17X17 fuel assembly and are not reload dependent. The two Region 4A demonstration assemblies which were described in the July 1978 Westinghouse report "Optimized Fuel Assembly Demonstration Program" (WCAP-9286) principally incorporate reduced fuel rod diameter and the use of Zircaloy spacer grids for all but the top and bottom grid locations. The reload core design places these test assemblies into core locations that prevent them from becoming lead assemblies during normal operation or leading to more limiting conditions during transient conditions analyzed than for the standard fuel assemblies. These demonstration assemblies were used previously in Cycles 2, 3 and 4.

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Alabama Power Company has performed a detailed review of the Westinghouse Reload Safety Evaluation Report (RSER) for Farley Unit 1 Cycle-5, including all postulated incidents considered in the FSAR and the Westinghouse fuel densification report, WCAP-8219, "Fuel Densification Experimental Results and Model for Reactor Operation." The RSER included a review of the core characteristics to determine those parameters affecting the postulated accident analyses reported in the Farley analyses. Alabama Power Company concluded that Cycle-5 design parameters are conservative with respect to those assumed in the previous analysis; therefore, no accident was reanalyzed based on Cycle-5 parameters. This verification is consistent with the Westinghouse reload safety evaluation methodology as outlined in the March 1978 Westinghouse topical report entitled, "Westinghouse Reload Safety Evaluation Methodology," (WCAP-9272).


The reload safety evaluation demonstrated that Technical Specification changes are not required for operation of Farley Unit 1 during Cycle-5. Alabama Power Company's Plant Operations Review Committee and Nuclear Operations Review Board have concluded that no unreviewed safety questions defined by 10CFR50.59 are involved with this reload. Therefore, based on this review, an application for amendment to the Farley Unit 1 operating license is not required.

Verification of the reload core design will be performed 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;
- (5) Startup power distribution using the incore flux mapping system.

Results of these tests and a core loading map will be submitted within ninety (90) days after startup of Cycle-5.

Yours very truly,


F. L. Clayton, Jr.

FLCJr/MDR:mjh-D16

cc: Mr. R. A. Thomas
Mr. G. F. Trowbridge
Mr. J. P. O'Reilly
Mr. E. A. Reeves
Mr. W. H. Bradford