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F. L. Clayton, Jr.
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April 5, 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
Reactor Internals Upflow Conversion

Dear Mr. Varga:

In our letter of August 16, 1982 Alabama Power Company advised the NRC that the Farley Nuclear Plant Unit 1 was experiencing higher than expected reactor coolant system radioactivity levels. These radioactivity levels were believed to have been caused by excessive clearances in the reactor vessel lower internals baffle joints which would allow unacceptable water jetting (baffle jetting) on certain fuel assembly rods thereby inducing fuel rod vibration resulting in rod damage or failure due to wear and/or fatigue. Previous baffle peening employed at Farley was believed to have exacerbated the baffle joint clearance problem at other baffle joints. Subsequent inspections of these joints have proven this hypothesis correct.

Although the reactor coolant system radiochemistry continued to remain within Technical Specification limits, Alabama Power Company, in concert with Westinghouse Electric Corporation, performed extensive planning and development work in preparation for correcting this anticipated baffle jetting problem. On January 14, 1983 Farley Nuclear Plant Unit 1 was shutdown for normal refueling and implementation of the modification developed to resolve the baffle jetting problem. This modification consisted of converting the reactor coolant flow direction between the core barrel and the baffles from downflow to upflow to reduce the pressure differential across the baffle joints. Specifically, the modification was accomplished by plugging holes in the core

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barrel; by drilling holes in the upper former plate; and by closing all baffle gaps. The modification was completed as planned with all aspects of the job being covered in Alabama Power Company's planning base for the work.

Alabama Power Company performed a detailed review of the upflow modification which included mechanical, nuclear and thermal-hydraulic design considerations, appropriate accident analyses, and the comprehensive test program employed by Westinghouse to confirm the validity of the proposed upflow conversion. This review concluded that the Unit 1 reactor lower internals upflow conversion could be accomplished in accordance with plant design criteria and within existing plant safety analyses. Alabama Power Company's Plant Operations Review Committee concluded that no unreviewed safety question or technical specification changes were involved and, accordingly, the modification was performed under 10CFR50.59.

During the full core offload which preceded the upflow modification work, fuel cladding damage was visually observed on eleven Cycle 4 baffle fuel assemblies. The damage to the assemblies was at the corner injection baffle joints, primarily in the top fuel span region between grids 7 and 8. Fuel rod and pellet debris resulted from this damage. In addition to the eleven visually observed damaged fuel assemblies, one assembly located at a center injection baffle joint in Cycle 4 and three assemblies in interior core positions were determined to be leaking by fuel sipping. The damaged and leaking assemblies are now stored in the spent fuel pool and will not be utilized in the next reload core. At no time was the health and safety of the public affected. This fuel cladding damage information was provided to the Office of Inspection and Enforcement, Region II, on February 11, 1983 via Joseph M. Farley Nuclear Plant, Unit 1, Licensee Event Report No. LER 83-005/01T-0.

At the request of Mr. E. A. Reeves of your staff, two condensed video-tapes of the eleven fuel assemblies exhibiting visual damage have been forwarded. The one-half inch VHS format tape runs approximately eighty minutes and provides high and low magnification scans of the damaged areas. The three-quarter inch commercial format tape runs approximately eleven minutes and is primarily low magnification scans. These tapes are provided for your use; however, it is requested that they be returned upon completion of your review.

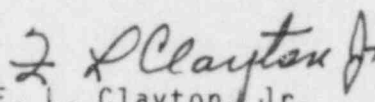
Alabama Power Company is confident that the modifications made during this refueling outage have resolved the problems identified above. We will continue to keep you informed of any changes to this position.

Mr. S. A. Varga
U. S. Nuclear Regulatory Commission

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If you have any questions, please advise.

Yours very truly,


F. L. Clayton, Jr.

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