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10CFR50.55a(g)

Docket No. 50-348

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Joseph M. Farley Nuclear Plant - Unit 1
Response to the NRC Request for Additional Information
for the Inservice Inspection Program

By letter dated August 3, 1989, the NRC requested Alabama Power Company to provide additional information pertaining to the review of the Unit 1 Second Ten-Year Inservice Inspection (ISI) Program. Revision 0 of this program was submitted to the NRC by letter dated November 23, 1987. The NRC granted interim approval of the reliefs requested in Revision 0 by letter dated December 10, 1987. Revisions 1 and 2 of the program including two additional relief requests were submitted by letter dated September 9, 1988.

Alabama Power Company responded to the NRC's Request for Additional Information, Enclosure 1 (for Unit 1) by letter dated October 5, 1989. In two instances, one involving the acceptability of the existing ultrasonic calibration blocks for performing 1983 Code examinations and the other regarding hydrostatic testing of portions of the service water, component cooling water, chemical and volume control, spent fuel pool cooling and reactor makeup systems, a substantial review effort was necessary to provide a suitable response. Enclosed for your review is Alabama Power Company's final response which summarizes the results of these additional reviews.

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If there are any questions or if additional information is needed, please advise.

Respectfully submitted,

ALABAMA POWER COMPANY

W. G. Hairston, III

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Enclosure

cc: Mr. S. D. Ebneter w/1
Mr. E. A. Reeves w/1
Mr. G. F. Maxwell w/0
Mr. B. Brown w/1

ENCLOSURE

Joseph M. Farley Nuclear Plant - Unit 1
Response to the NRC's Request for Additional
Information for the Inservice Inspection Program

Alabama Power Company's initial response to the NRC's Request for Additional Information (RAI) was provided on October 5, 1989. Additional information is herewith submitted which completes all items requested by the RAI. The following items correspond to Enclosure 1, Item 2 of the NRC's RAI:

J. Relief Requests RR-5 and RR-6

Provide the following information with regard to ISI calibration standards:

NRC Request:

For each of the subject relief requests, provide technical justification as to why obtaining the appropriate calibration block is impractical.

APCo Reply:

Relief Request RR-5 pertains to calibration block dimensions for piping and thin-walled vessel examinations. In general, dimensional design for these calibration blocks was based on the existing codes and standards in use at the time of fabrication. The existing calibration blocks were fabricated from materials representative of the specifications in use at that time. These blocks were utilized for preservice and inservice examination and provide an important reference from which to evaluate future examination results. Further review has indicated that while under the present Code, dimensional deviations exist between the component and calibration block, these differences are inconsequential to the examination results and would in most cases result in conservative examination results. Fabrication of new calibration blocks, solely for the purpose of achieving dimensional congruity with the component will not in Alabama Power Company's judgment improve examination quality. The consistent use of calibration standards between the preservice and inservice examinations performed to date and future examinations would be lost if new calibration blocks were utilized.

Calibration block ALA/APR-33 is used for the examination of cast austenitic stainless steel reactor coolant loop piping materials in the hot, cold and the crossover legs which have different diameters and thicknesses. The calibration block is the same nominal diameter as the hot leg, but is of smaller diameter than the crossover leg piping and larger diameter than the cold leg piping. Use of the calibration block for examination of the larger crossover leg piping is conservative since calibrating on a smaller diameter calibration block and examining a larger diameter component would tend to decrease ultrasonic attenuation. The calibration block thickness differs from that of all three legs; however, it is considered representative since its thickness is close to the average thickness for all three legs. Code Case N-461 allows the use of calibration blocks which are within plus or minus 25% of the pipe wall thickness which would envelope the loop piping thickness differences. The ASME has approved this Code Case and the NRC is considering incorporation of N-461 into a future revision of Regulatory Guide 1.147. Regardless of the differences in diameter and thickness, the NRC has reviewed and accepted the special

examination techniques which Alabama Power Company utilizes for reactor coolant loop examination as permitted by Section XI, Paragraph IWA-2240. This review included an attenuation comparison of the calibration block and the coolant loop piping. It was concluded that the calibration block was representative of the installed piping and would therefore provide a conservative examination.

Calibration block ALA-24 has a nominal thickness greater than the examined piping. Use of a thicker calibration block is conservative since examination of a thinner component would tend to decrease ultrasonic attenuation. As discussed above, NRC approval of Code Case N-461 will permit the use of this calibration block since the calibration block thickness is within plus or minus 25% of the component thickness.

Calibration block ALA-25 differs in both thickness and diameter from the 16 inch diameter reducer which connects the 14 inch diameter feedwater piping to the steam generator nozzle. The reducer is schedule 100 with a nominal thickness of 1.031 inches; however, in the area of interest it is machined to a nominal thickness of 0.758 inch to match the steam generator nozzle thickness. Therefore, use of the .750 inch thick calibration block will provide a representative examination of the nozzle to reducer weld. Again, application of Code Case N-461, once NRC approval is obtained, would permit the use of this calibration block. The calibration block is 14 inches in diameter and is used for examining the 16 inch diameter reducer to steam generator nozzle weld. As discussed above, use of this calibration block is considered conservative since calibration on a smaller diameter calibration block and examination of a larger diameter component would tend to reduce ultrasonic attenuation.

Calibration block ALA-5 was fabricated from 8 inch diameter stainless steel pipe and is utilized for examination of a 9.5 inch diameter component. Calibration on a smaller diameter calibration block for examination of a larger diameter component is considered conservative since it would tend to decrease ultrasonic attenuation. Regardless, APCo utilizes enhanced ultrasonic examination techniques on all stainless steel components. This technique includes requirements that the refracted angle be recorded for each examined component. In addition to the required 45° examination, a 60° examination is also utilized and both are performed at increased sensitivity by adjusting the gain to an average noise level of 10 percent of full screen height. This enhanced examination technique more than adequately compensates for any mismatch between the calibration block and the examined component.

Calibration blocks ALA-31 and ALA-32 are fabricated from stainless steel plate and are used to examine thin-walled vessels ranging from 22 to 84 inches in nominal diameter. Use of the flat calibration block is considered acceptable based on guidance from the ASME Code, Section V, Articles 4 and 5, which state that for diameters greater than 20 inches, a block of essentially the same curvature or alternately a flat basic calibration block shall be used. Given the large diameter of the components being examined, the flat calibration block is considered to be acceptable. As discussed above, use of the enhanced ultrasonic examination technique more than adequately compensates for any mismatch between the calibration block and the curvature of the examined component.

Calibration block ALA-23 is fabricated from carbon steel plate and it is used to examine 34.5 inch diameter piping. Given the guidance from Section V for the use of flat basic calibration blocks where the component diameter exceeds 20 inches, the flat calibration block is considered acceptable.

Relief Request RR-6 pertains to calibration block materials for piping and thin-walled vessel examinations. After a substantial comparison of the calibration block and component materials and a review of the examination requirements of Section XI; Appendix III, Paragraph III-3411 as clarified by ASME Code Interpretation XI-1-86-61, it was found that all calibration block materials are in compliance, therefore, relief request RR-6 is not required and will be deleted from the ISI Program with the next revision.

NRC Request:

Relief Request RR-5: Identify the calibration blocks for which relief is requested and provide information with regard to the actual wall thickness and curvature differences between the calibration blocks and the components to be examined.

APCo Reply:

Attachment 1 is a list of the calibration blocks for which relief from thickness and/or curvature requirements is requested. This list includes the calibration block thickness or diameter, as appropriate, the examined component thickness or diameter and the material.

NRC Request:

Relief Request RR-6: Identify the calibration blocks for which relief is requested and provide additional information with regard to the materials of fabrication and acoustic compatibility with the component to be examined.

APCo Reply:

For the reasons cited above, Relief Request RR-6 will be deleted from the ISI Program with the next revision.

W. Relief Request RR-33

NRC Request:

Provide detailed technical justifications demonstrating impracticality and discuss the following concerns with regard to most of the systems involved (i.e., service water, component cooling water, chemical and volume control, reactor makeup): Are these systems required by the Technical Specification to be operable in all modes (e.g., during vessel examinations when fuel is removed from the reactor)? Do any of these systems have multiple trains of which one could receive the Code-required examination? Do these systems have portions which can be "valved out" to accommodate the Code-required hydrostatic test?

APCo Reply:

Those portions of the service water, component cooling water, chemical and volume control and spent fuel pool cooling systems which can be isolated without loss of redundant trains within the system will be hydrostatically tested to the extent practical as required by the Code. A detailed review was conducted to identify those portions of these systems which cannot be hydrostatically tested as required by the Code. A listing of these is provided in Attachment 2. The piping and components listed either lie beyond the Code boundary valve used to isolate the system for performance of the hydrostatic test or interconnect the redundant system trains such that removal from service for testing would render the entire system inoperable. RR-33 will be revised accordingly to incorporate this table and the revised relief request will be resubmitted with the next ISI Program revision.

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ATTACHMENT 1

SUMMARY OF CALIBRATION BLOCK DIMENSIONAL
DIFFERENCES UNDER THE S83 CODE REQUIREMENTS
(RELIEF REQUEST RR-5)

WALL THICKNESS DEVIATIONS

Calibration Block No.	Calibration Block Th.(in.)	Pipe Dia.(in.)	Pipe Schedule	Pipe Wall Thickness(in.)	Material
ALA/APR-33	2.487	27.5	Special	2.30	Cast SS
ALA/APR-33	2.487	29.0	Special	2.42	Cast SS
ALA/APR-33	2.487	31.0	Special	2.59	Cast SS
ALA-24	1.200	32.0	Special	1.033	Carbon
ALA-25	0.750	16.0	100	1.031	Carbon

CURVATURE DEVIATIONS

Calibration Block No.	Calibration Block Dia.(in.)	Component Description	Component Diameter(in.)	Material
ALA/APR-33	29	Pipe	27.5	Cast SS
ALA/APR-33	29	Pipe	31.0	Cast SS
ALA-5	8	Thin-Walled Vessel	9.5	Stainless
ALA-32	Flat	Thin-Walled Vessel	39.75	Stainless
ALA-31	Flat	Thin-Walled Vessel	21.78	Stainless
ALA-31	Flat	Thin-Walled Vessel	84.00	Stainless
ALA-23	Flat	Pipe	34.55	Carbon
ALA-25	14	Reducer	16x14	Carbon

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ATTACHMENT 2

Listing of
Portions of Service Water, Component
Cooling Water, Chemical and Volume
Control and Spent Fuel Pool Cooling
Systems Which Cannot
Be Hydrostatically Tested

Service Water (1)

1. Portion of Piping upstream of valves Q1P16V540 and Q1P16V541.
2. Portion of Piping downstream of valves Q1P16V516 and Q1P16V517.

Spent Fuel Pool Cooling (2)

1. Portion of Piping downstream of valves Q1G31V003A and Q1G31V003B.
2. Portion of Piping downstream of valve Q1G31V005.
3. Portion of Piping upstream of valves Q1G31V001A and Q1G31V001B.

Component Cooling Water (2)

1. Component Cooling Water Surge Tank.
2. Portion of Piping from CCW surge tank to valves Q1P17V117A, Q1P17V117B, Q1P17V121A, Q1P17V121B, Q1P17V110A, Q1P17V110B, Q1P17V110E, Q1P17V110F, Q1P17V109A, Q1P17V109C, Q1P17V278A, Q1P17V278B, Q1P17V278C, Q1P17V144A, Q1P17V144C, Q1P17V017A, Q1P17V017B

Chemical and Volume Control (2)

1. Portion of Piping from valve Q1E21V019 to discharge of Boron Injection Recirculation Pumps - valves Q1E21V006A and Q1E21V006B.

Notes:

(1) These portions of Class 3 piping are unisolable from non-safety related piping providing service water supply to and from the turbine building.

(2) These portions of Class 3 piping and components cannot be isolated for hydrostatic test since removal from service for testing would render the entire system inoperable.

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