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Alabama Power
the southern electric system

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August 27, 1979

Docket No. 50-348

Mr. James P. O'Reilly, Director
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N.W.
Suite 3100
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

Enclosed is Alabama Power Company's response to I.E. Bulletin 79-17, "Pipe Cracks in Stagnant Borated Water Systems at PWR Plants".

Yours very truly,

F. L. Clayton, Jr.

FLCJr/HRF:bhj

Enclosure

cc: Mr. R. A. Thomas
Mr. G. F. Trowbridge
Office of I&E
Div. of Reactor Operations
Inspection
Washington, D.C. 20555

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ENCLOSURE

Item 1: Conduct a review of safety related stainless steel piping systems within 30 days of the date of this Bulletin to identify systems and portions of systems which contain stagnant oxygenated borated water. These systems typically include ECCS, decay/residual heat removal, spent fuel pool cooling, containment spray and borated water storage tank (BWST-RWST) piping.

Response: Safety related stainless steel piping systems were reviewed to identify stagnant oxygenated borated water systems. The following systems and portions of systems fall into this category:

(1) SIS - Accumulators

(2) SIS - High Head Safety Injection (HHSI) System from the HHSI pump discharge header to the reactor coolant system except for the boron injection tank recirculation lines.

(3) SIS - Low Head Safety Injection System/Residual Heat Removal System.

(4) Containment Spray System up to the last isolation valve.

Item 1a: Provide the extent and dates of the hydrotests, visual,and volumetric examinations performed per 10 CFR 50.55a(g) (Re: IE Circular 76-06 enclosed) of identified systems. Include a description of the non-destructive examination procedures, procedure qualifications and acceptance criteria, the sampling plan, results of the examinations and any related corrective actions taken.

Response: Inservice inspection non-destructive examination has been performed on Class I and Class II pressure retaining components and piping which is required to be completed during the first forty (40) month period following preservice inspection (forty (40) month period expires April 1, 1981).

The attached Table I provides an Inservice Inspection (ISI) history of the identified oxygenated, stagnant borated water piping arranged by system and pipe schedule. The identified ISI was completed on April 8, 1979 except where noted. Three (3) reportable indications were found. However, these indications were determined to be outside diameter piping flaws attributed to manufacturing defects. The procedures, procedure qualifications, the sampling plan, and the acceptance criteria are all prepared, reviewed and maintained in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition through the Summer 1975 Addenda to the extend considered practical and except where specific written relief has been granted by the Commission.

The Class II portions of the containment spray system will receive a visual examination during hydro and the Class III portions of the system will receive an operating pressure test before starting up after the first refueling outage (in progress).

Item 1b: Provide a description of water chemistry controls, summary of chemistry data, any design changes and/or actions taken, such as periodic flushing of recirculation procedures to maintain required water chemistry with respect to pH, B, CL^-, F^-, O_2.

Response: The chemistry controls which are applied to stagnant oxygenated borated water systems are directed at the bulk water sources rather than the piping of those systems. This includes control of the water in the Accumulators, Refueling Water Storage Tank (RWST) which supplies HHSI, LHSI and Containment Spray, and RHR. A description of chemistry controls and a summary of chemistry data for these water sources follow:

Accumulators

Accumulators are sampled for chloride and fluoride monthly. During the period from August, 1977 to July, 1979, the chloride concentration was maintained less than 0.05 ppm except for a two month period in 1977 during which time chloride contamination rose to 0.58 ppm. All three accumulators were drained and refilled and concentration has been maintained less than 0.05 ppm since. During the same period fluoride concentration has been maintained less that 0.02 ppm.

RWST

The RWST is sampled for chloride and fluoride monthly. The specification for each parameter is 0.15 ppm (max.). During the period from July, 1977 to July, 1979 chloride and fluoride concentrations have been maintained less than 0.05 and 0.02 ppm, respectively except for two (2) days in April, 1979 while the Unit was shutdown for refueling. During these two (2) days chloride and fluoride concentration increased to 1.69 and 0.42 ppm, respectively. It is suspected that these higher concentrations were due to contamination by a precision cleaning agent (PCA). The reactor coolant system was less

than 200°F during the out-of-spec condition. The RWST and affected piping were subsequently cleaned up and concentrations are being maintained less than 0.05 and 0.02 for chloride and fluoride, respectively.

RHR

The RHR System is sampled for chloride and fluoride three times a week just prior to and during service. The system is also sampled daily for Dissolved Oxygen while in MODES 4, 5, and 6 and when the reactor coolant system (RCS) temperature is greater than 180°F. The specification (LCO) for chloride and fluoride is 0.15 ppm (max.) steady state limit and 1.0 ppm (max.) transient limit. The specification (LCO) for Dissolved Oxygen is 0.10 ppm (max.) steady state limit and 1.0 ppm transient limit. For RCS temperature less than 250°F Dissolved Oxygen is not an LCO parameter. Since July, 1977 chloride and fluoride concentrations have been maintained below 0.05 and 0.02 ppm, respectively except for the two (2) day periods discussed under the heading of RWST. Dissolved oxygen has been maintained below the steady state limit for all applicable temperatures (<250°F).

Item 1c: Describe the preservice NDE performed on the weld joints of identified systems. The description is to include the applicable ASME Code sections and supplements (addenda) that were followed, and the acceptance criterion.

Response: The identified components received a preservice examination in accordance with the requirements of the ASME Code, Section XI, 1971 Edition through the Winter 1971 Addenda for Class 1 and Winter 1972 Addenda for Class 2 to the extent considered practical. In addition, the preservice inspection incorporated as much of the 1974 Edition of ASME XI, through the Summer 1976 Addenda as considered practical. The acceptance criterion for the preservice examinations was in accordance with the Codes followed. As a result, the applicable identified components received the following examinations in accordance with it's associated ASME Code Class:

Class	Item	Examination	Extent
1	Piping Circ. and Longitudinal Welds	UT, PT, VT, VT @ Hydro	100%
1	Pipe Branch Conn. ≤4"	UT, PT, VT, VT @ Hydro	100%
1	Pipe Branch Conn. >4"	PT, VT, VT @ Hydro	100%
1	Pipe Socket Welds	PT, VT, VT @ Hydro	100%
2	Pipe Welds and Branch Connections (Containing Reactor Coolant)	UT, PT VT @ Hydro	100 % equivalent of Single Stream
2	Pipe Welds and Branch Connections (Not containing reactor coolant)	UT, PT, VT @ Hydro	50% equivalent of Single Stream
3	Pipe Welds	VT @ Hydro	100%
1,2,3	All pipe welds exempt from NDE	VT @ Hydro	100%

Item 1d: Facilities having previously experienced cracking in identified systems, item 1, are requested to identify (list) the new materials utilized in repair or replacement on a system-by-system basis. If a report of this information and that requested above has been previously submitted to the NRC, please reference the specific report(s) in response to this Bulletin.

Response: No previous cracking has been experienced.

In addition to having performed the required ISI as discussed in item 1a above, circumferential butt welds on the Class I portion of the discharge lines of all three accumulators were inspected on August 23, 1979. Ultrasonic testing on these lines was performed per (1) the Code requirements discussed in response to item 1a above and, (2) Westinghouse procedure "Manual Ultrasonic Testing for Investigating the Presence of Intergranular Corrosion". No indications were discovered.

TABLE I

History Of NDE Performed
Which Satisfy All The Requirements
For First Forty Months

Identified System	Pipe Schedule or Wall Thickness	Extent NDE Performed UT	PT
SIS (Accumulators)	140	9+	0
	40	(Exempt)*	
	3/8" Wall	(Exempt)*	
SIS (HHSI)	160	0	159
	40		
	3/8" Wall		
RHR/LHSI	160	14	0
	140	7	0
	40	14	0
	3/8" Wall	2	0
Cont. Spray	40	(Exempt)*	

+ Additional testing performed August 23, 1979 as a result of I.E. Bulletin 79-17.

* Exempt from non-destructive examination only (ie. UT, PT).