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H. D. Thornburg, Chief, Field Support and Enforcement Branch, RO

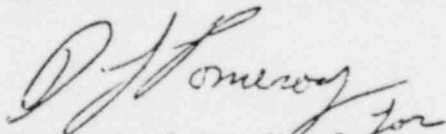
ARKANSAS POWER & LIGHT COMPANY (ANO-1) 50-313 - FLOW ORIFICE DESIGN  
DEFICIENCY - FO:374/C&O:443

This refers to your request to determine the generic aspects of the ANO-1 makeup and recirculation system flow orifice erosion problem described in the accompanying Arkansas Power & Light Company report.

We have discussed the matter by telephone with B&W Lynchburg (R. Williams) and were informed that the questionable flow orifices are multi-stage plate orifices designed and manufactured by Bingham Pump Company and that B&W has isolated the problem to ANO-1, TMI Units 1 & 2, Crystal River 3 and Rancho Seco plants. B&W indicated the affected licensees were notified of the potential deficiency and that a new Bingham orifice has been designed to reduce the exit flow velocity and to locate the last stage venturi concentrically in the orifice shell. B&W stated they are procuring, and will replace, existing orifices at the above plants with those of the new design. For future construction the new Bingham orifices, or other orifice designs which have been evaluated will be required according to B&W.

A review of other PWR systems indicate that Maine Yankee also utilized Bingham flow orifices. In a telephone conversation with Combustion Engineering, Windsor (M. Cross) we were informed that the Maine Yankee orifices have withstood some 18 months of operation, as compared to a few operating hours for failure on ANO-1 units, with no evidence of erosion effects reported. Experience in this instance is attributed to the relatively lower designed flow velocity of this system.

Based on the information available at this time, we do not believe the issuance of a Bulletin is necessary. However, we do recommend the responsible RO inspectors include, in the normal inspection schedule, a review of the orifices replacement program at the above B&W plants. Consideration of the QA aspects of the subject modifications should be included.

  
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