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TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

March 3, 1975

Mr. Donald F. Knuth, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20545

Dear Mr. Knuth:

BROWNS FERRY NUCLEAR PLANT UNITS 2 AND 3 - POTENTIAL DESIGN DEFICIENCY IN VALVE YOKE TO MOTOR MOUNT WELD

Initial report of the subject potential deficiency was made on May 14, 1974, and was followed by our June 14, July 15, August 12, September 13, 1974, and our January 15, 1975, letters, J. E. Gilleland to Donald F. Knuth. Because the yoke to motor base welds of FCV-74-58 in unit 1 failed, similar valves (FCV's 74-58 and 74-72) in units 2 and 3 may be subject to the same type of failure.

Corrective action has been initiated as described in the enclosed sixth interim report on this problem. We are awaiting a formal report from Southwest Research Institute to determine if additional corrective action is required. Their report will be forwarded to the Nuclear Regulatory Commission immediately after being received and reviewed by TVA.

Very truly yours,

J. E. Gilleland
Assistant Manager of Power

Enclosure
CC (Enclosure):
Mr. Norman C. Moseley, Director
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ENCLOSURE

BROWNS FERRY NUCLEAR PLANT UNITS 2 AND 3

FAILURE OF THE WELD BETWEEN THE YOKE AND MOTOR MOUNTING PLATE FOR FLOW CONTROL VALVES (FCV'S) 74-58 AND 74-72

SIXTH INTERIM REPORT

On May 14, 1974, an initial report regarding the subject deficiency was made by telecon to W. S. Little, AEC-DRO Inspector, Region II. The report was made by L. D. Weber and J. A. Raulston in compliance with paragraph 50.55(e) of 10CFR50. There have been five interim reports previous to this report. These were dated June 14, 1974; July 15, 1974; August 12, 1974; September 13, 1974; and January 15, 1975.

Description of Occurrence

On May 12, 1974, the Unit 1 reactor at Browns Ferry was in the cold shutdown condition so that repairs on this unit could be made. While draining a section of the RHR line to permit repair work, torus spray valve FCV 74-58 tripped out electrically when an attempt was made to operate the valve. After some investigation, it was discovered that the valve operator on FCV 74-58 had separated from the valve stem. Because the weld between the yoke and motor base of FCV 74-58 failed in Unit 1, the respective valves (FCV's 74-58 and 74-72) in Units 2 and 3 were assumed to be subject to a similar type of failure.

Cause of Deficiency

Extensive vibrational testing has recently been completed at Browns Ferry. It was determined that the deficiency was caused by both vibrations and an insufficient amount of weld. Overstressing caused by vibration of a weld of insufficient depth resulted in the subject deficiency. The cause of the vibrations was pinpointed by the vibrational tests. These tests indicated that excessive pressure drop across certain components in the RHR system caused the vibrations.

Safety Implications

The function of FCV 74-58 in the RHR system is to provide spray in the torus after a loss of coolant accident. This spray condenses any steam that may exist in the torus, thereby lowering containment pressure. The loss of one of these valves due to the deficiency previously described would not cause the pressure in the containment to rise significantly because there are two spray valves in the torus, and either one is capable of accomplishing the pressure suppression function. Therefore, loss of one spray valve would not incapacitate this subsystem of the RHR system, and the plant would remain controllable in any situation.

Description of Corrective Action

Engineering Change Notice (ECN) L-1316 has been issued to add support hangers to the motor-operated valves FCV 74-58 and FCV 74-72 located in the RHR system. The additional actions needed to correct the vibration problem are being proposed in a formal report which Southwest Research Institute is preparing for TVA. This report will be forwarded to the NRC immediately after being received and reviewed by TVA.

Means Taken to Prevent a Recurrence

All welds on the subject equipment have been inspected. In addition, support hangers have been added by ECN L-1316. Currently, we are awaiting the formal report from Southwest Research Institute. This report will indicate whether additional corrective action is required.