50-328

TENNESSEE VALLEY AUTHORITY

400 Chestnut Street Tower II

February 23, 1981

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

SEQUOYAH NUCLEAR PLANT UNIT 2 AND WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - DEFECTIVE REACTOR VESSEL UPPER INTERNALS GUIDE TUBE SUPPORT PINS - NCR SQN NEB 8006 AND NCR WBN NEB 8001 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector M. J. Gouge on March 24, 1980, in accordance with 10 CFR 50.55(e). Interim reports were submitted on April 23, July 24, September 10, and December 15, 1980. Enclosed is our final report.

If you have any questions, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure
cc: Mr. Victor Stello, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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U.S. NUCLEAR REGULATORY COMMISSION

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ENCLOSURE

SEQUOYAH NUCLEAR PLANT UNIT 2
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
NCR'S SQN NEB 8006 AND WBN NEB 8001
DEFECTIVE REACTOR VESSEL UPPER INTERNALS GUIDE TUBE SUPPORT PINS
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

This deficiency was discovered following a metallurgical evaluation of the upper internals guide tube support pins from a nondomestic Westinghouse nuclear plant. Subsequent to this discovery, Westinghouse has determined that this deficiency is generic to Westinghouse plants with an upper head injection system.

The original guide tube pins supplied by Westinghouse were, by virtue of their heat treatment, susceptible to intergranular stress corrosion cracking. After some length of service in the reactor coolant, the pins could possibly fail and either release metallic pieces into the reactor coolant system or result in misalignment between guide tube and control rod, which could prevent control rod insertion.

Safety Implications

If this deficiency had remained uncorrected, it is possible that intergranular stress corrosion might have resulted in failure of one or more upper internals guide tube pins. Failure of a pin or pins could result in either control rod insertion failure due to misalignment between the guide tubes and control rods or release of metallic pieces into the reactor coolant system. The safety of the plant would be adversely affected if more than one control rod could not be inserted.

Corrective Action

TVA will replace the upper internals guide tube support pins with new pins supplied by Westinghouse. The new pins will be installed before fuel loading of the respective unit. Westinghouse has filed a report which documents that the new support pins are heat treated to produce a microstructure that is similar to microstructures that have resisted intergranular stress corrosion. The design of the new pins has also been slightly modified so as to reduce the possibility of releasing metallic pieces into the reactor coolant system or misalignment between the guide tubes and control rods should cracking occur.

Westinghouse has stated that they are performing additional work to obtain a better understanding of the heat treatments and microstructures that resist intergranular stress corrosion. Also, EPRI is considering the funding of a program for the same purpose that would include evaluations of alternative alloys.

It is believed that the new support pins are acceptable and do not compromise the safety of the plant. This is based on the fact that even if a guide tube support pin should fail, the modified pin design would prevent a safety concern.