

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

1630 Chestnut Street Tower II

July 15, 1985

WBRD-50-390/85-20

WBRD-50-391/85-19

U.S. Nuclear Regulatory Commission
Region II
Attn: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - POTENTIAL INTERACTION OF FLUX MAPPING
SYSTEM AND SEAL TABLE - WBRD-50-390/85-20, WBRD-50-391/85-19 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
S. Weise on July 2, 1985 in accordance with 10 CFR 50.55(e) as NCR WBN NEB
8509. Enclosed is our final report. We consider 10 CFR Part 21 applicable to
this deficiency.

If you have any questions, please get in touch with R. H. Shell at
FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. W. Hufham, Manager
Licensing and Risk Protection

Enclosure

cc: Mr. James Jaylor, Director (Enclosure) ✓
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center (Enclosure)
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
POTENTIAL INTERACTION OF THE FLUX MAPPING SYSTEM AND SEAL TABLE
WBRD-50-390/85-20, WBRD-50-391/85-19
NCR WBN NEB 8509
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

There is the possibility of interaction between the flux mapping system which is nonnuclear safety, and the seal table which is part of the reactor coolant system pressure boundary, due to seismic loading. The flux mapping system and the seal table were supplied as part of Westinghouse's (Pittsburgh, Pennsylvania) nuclear steam supply system (NSSS). At Watts Bar Nuclear Plant (WBN) the flux mapping transfer cart is suspended from a rail car and track over the seal table. The flux mapping system components (including rail car) are not seismically qualified and potentially could fall onto the seal table during a seismic event.

This interaction was not considered during the initial design, layout, and installation by the NSSS supplier (Westinghouse) or the architect-engineer (TVA).

Safety Implications

The consequences of the flux mapping system, or parts thereof, falling on the seal table were not analyzed. It is possible that the reactor coolant system pressure boundary would be breached by damage (as a result of this interaction) to the flux thimble guide tubes at the seal table. Complete severance of one or more of the flux thimble guide tubes would constitute a loss of coolant accident (LOCA) which could adversely affect the safe operation of the plant.

Corrective Action

TVA has performed a seismic analysis to qualify the flux mapping system. This analysis requires structural modifications to the existing flux mapping system. The design and construction work for these modifications is being accomplished through engineering change notice (ECN) 5765 for unit 1 and ECN 5766 for unit 2.

In order to prevent recurrence of this condition, Westinghouse plans to review and revise all necessary flux mapping documentation to clarify all interface criteria, including seismic and structural criteria.

TVA will complete corrective action for unit 1 after fuel loading but before initial criticality. This timeframe is considered acceptable since there is no danger of a release of fission products until after initial criticality (i.e., there are no fission products present until after initial criticality). It is necessary to schedule the work in this time period

because the flux thimble tubes are currently withdrawn from the reactor vessel and extend above the normal operating position of the flux mapping cart. The flux mapping cart is now in its refueling position and must be in the normal operating position to perform the required modifications. The flux thimble tubes cannot be lowered into the reactor vessel until the fuel assemblies are in position to provide support and guidance.

All corrective action for unit 2 will be completed by November 3, 1986.