



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 2, 1993

Docket Nos. 50-390 -
and 50-391

Tennessee Valley Authority
ATTN: Dr. Mark O. Medford, Vice President
Technical Support
3B Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Dr. Medford:

SUBJECT: WATTS BAR NUCLEAR PLANT - STABILITY ANALYSIS OF THE UNDERGROUND
BARRIERS FOR THE ESSENTIAL RAW COOLING WATER PIPELINES
(TAC NO. R00514)

By letter dated April 8, 1993, TVA provided information regarding stability analysis of the underground barriers for the essential raw cooling water (ERCW) pipelines. TVA's letter was in response to the staff's request for additional information dated January 26, 1993. As stated in Section 2.5.4 of the Watts Bar Safety Evaluation Report Supplement 9 (SSER 9), the subject issue is considered part of the staff's efforts in the Watts Bar Civil Calculations Program.

The issue is regarding the need to consider the simultaneous action of the horizontal and vertical components of earthquake vibratory ground motion in the stability analysis of slopes. In its April 8, 1993 letter, TVA stated that its current pseudo-static analysis considering the peak ground accelerations applied to the mass of soil ignores time effects and seismic load reversals. TVA considered its analysis procedures to be sufficiently conservative to account for refinements which would consider the interaction of vertical and horizontal components of motion, as well as their time dependency. Nevertheless, the analysis was done as requested by the staff. As a result, TVA determined that the safety factor against failure to be 1.04.

The staff reviewed TVA's submitted information. Based on the calculated safety factor of 1.04, the staff concludes that the ERCW underground barriers are safe against failure under the simultaneous action of the horizontal and vertical components of safe shutdown earthquake ground motion. This

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Dr. Mark O. Medford

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conclusion, together with the conclusion reached in the staff's letter dated December 18, 1992 (regarding stability analysis of intake channel slopes), fully resolve the issue identified in SSER 9.

The review was performed by Mr. R. Pichumani.

Sincerely,

Original signed by

Peter S. Tam, Senior Project Manager
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

cc: See next page

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DOCUMENT NAME: ERCW

Watts Bar Nuclear Plant

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