



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

APR 08 1993

William J. Museler
Site Vice President
Watts Bar Nuclear Plant

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of)	Docket Nos. 50-390
Tennessee Valley Authority)	50-391

WATTS BAR NUCLEAR PLANT (WBN) - STABILITY ANALYSIS OF THE UNDERGROUND BARRIERS FOR THE ESSENTIAL RAW WATER PIPELINES (TAC R00514)

Reference: NRC letter dated January 26, 1993, WBN Stability Analysis of the Underground Barriers for the Essential Raw Cooling Water Pipelines

In the referenced letter, the staff requested that TVA perform an additional stability analysis on the essential raw cooling water (ERCW) underground barrier trenches under simultaneous application of the horizontal and vertical components of the amplified seismic accelerations. The staffs' basis for this request was the issue of effect on design margin given the postulated seismic event.

TVA believes that this issue has been previously reviewed in detail by various NRC staff members and NRC consultants. Attached is the history of reviews and documented acceptance of TVA's analysis by the staff.

TVA's current pseudo-static analysis considering peak horizontal ground accelerations applied to the mass of soil ignores time effects and seismic load reversals. Nevertheless, it is sufficiently conservative to account for refinements which would consider the interaction of vertical and horizontal components of motion as well as their time dependency. Our recent study on the intake channel slope stability referenced in your January 22, 1993 letter demonstrated this conservatism and the acceptability of the original analysis. On this basis, the existing analysis is considered to be technically adequate.

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Nevertheless, TVA has performed the additional study as requested in the referenced letter and determined that the factor of safety against failure with the vertical earthquake component added with the horizontal component to be 1.04, which still meets WBN-FSAR commitments.

Should you wish to discuss this further, please contact P. L. Pace at (615)-365-1824.

Very truly yours,



William J. Museler

Enclosure

cc (Enclosure):

NRC Resident Inspector
Watts Bar Nuclear Plant
P.O. Box 700
Spring City, Tennessee 37381

Mr. P. S. Tam, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

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GLP:PLP:WAM:EMW

cc (Enclosure):

- M. K. Brandon, NET E7-WBN
- M. J. Burzynski, LP 5B-C
- S. O. Casteel, FSB 2K-WBN
- E. S. Christenbury, ET 11H-K
- J. D. Christensen, QAC 1A-WBN
- W. R. Cobean, Jr., LP 3B-C
- L. M. Cuoco, LP 5B-C
- W. L. Elliott, IOB 1A-WBN
- M. J. Fecht, LP 5B-C
- R. W. Huston, Rockville Licensing Office
- R. W. Johnson, FSB 2Q-WBN
- N. C. Kazanas, FSB 1B-WBN
- T. J. McGrath, LP 3B-C
- R. M. McSwain, MR 2C-C
- D. E. Moody, MOB 2R-WBN
- G. R. Mullee, BR 5D-C
- D. E. Nunn, LP 3B-C
- D. E. Nunn, FSB 1A-WBN
- RIMS, QAC 1G-WBN

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ENCLOSURE

UNDERGROUND BARRIER TRENCH/INTAKE CHANNEL
STABILITY ANALYSIS
CHRONOLOGY

SSER Supplement 3 - January 1985	Design of underground barrier for ERCW pipeline accepted. *Staff reviewed *U.S. Corps of Engineers, Tulsa District reviewed and accepted analysis based upon as-built conditions.
FSAR Amendments 54-63	Incorporated as-built information for underground barriers.
T. Marsh to P. Tam, October 10, 1990 (NRC audit August 6-9, 1990)	Reaffirmed the acceptability of underground barrier stability.
T. Cheng to G. Bagchi, January 23, 1992 (NRC audit April 15-19, 1991)	Accepted the slope stability for the ERCW/HPFP pipelines. Slope stability of intake channel left as open item.
NRC to TVA letter, July 19, 1991	Requested additional information as part of FSAR review Amendments 54-63.
TVA to NRC letter, August 22, 1991	Provided responses to RAI on FSAR amendments.
NRC to TVA letter, January 31, 1992 (NRC audit September 9-13, 1991)	Delineated need for additional information for: *Buried piping bearing pressures for Category I structures, *Shear stresses in sheetpile walls, *Intake channel slope stability
TVA to NRC letter, April 1, 1992	Explained factors of safety in calculation for intake channel.
NRC to TVA letter, May 26, 1992	In-office review accepted input for buried piping, Category I structures bearing pressures, and sheetpile walls. Intake channel slope stability still open.
SSER 9, June 16, 1992	Request explanation of factor of safety in calculations (which were previously provided on 4/1/92), and combines open item for intake channel slope stability with explanation of factor of safety.
TVA to NRC letter, July 27, 1992	Provides study justifying the stability analysis of intake channel slope.
NRC to TVA, December 18, 1992	Accepted intake channel slope stability.
TVA Study on Underground Barrier, March 29, 1993	Study adding vertical component (T30 930331832)