DMB

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
5N 157B Lookout Place

AUG 11 AM 10:03

AUG 5 1986

WBRD-50-391/82-47

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

Dear Dr. Grace:

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 2 - INCOMPLETE OR UNDOCUMENTED CHECKING OF ANALYSIS - WBRD-50-391/82-47 - FINAL REPORT FOR UNIT 2

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on May 13, 1982 in accordance with 10 CFR 50.55(e) as NCR WBN CEB 8211. This was followed by our interim reports dated June 15, 1982 and February 2 and June 24, 1983 and our final report for unit 1 dated October 4, 1983. Further interim reports for unit 2 were submitted on January 17, and October 30, 1985. Enclosed is our final report for unit 2.

If there are any questions, please get in touch with J. A. McDonald at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley, Director
Nuclear Safety and Licensing

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

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

1/1
IE27

ENCLOSURE
WATTS BAR NUCLEAR PLANT UNIT 2
INCOMPLETE OR UNDOCUMENTED CHECKING OF ANALYSES
WBRD-50-391/82-47
NCR WBN CEB 8211
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

EN DES Engineering Procedure (EP) 3.03, "Design Calculations," section 2.3, stated "Safety-related design calculations shall be checked for adequacy by a qualified person or group other than the preparer."

During a routine analysis review, the following deficiencies were discovered within TVA's Office of Engineering (OE), Civil Engineering Branch (CEB).

The following piping stress analysis problems do not meet the requirements set forth in EN DES-EP 3.03 for independent checking: N3-62-7A, NE-62-8A, N3-62-9A, N3-70-9A, N3-70-10A, N3-26-5A, and N3-63-2A. The preparer also performed the checking for these problems.

In addition, an evaluation of analysis problems N3-72-2A and -5A indicates that incomplete checking was performed. The checklist on file for N3-72-2A and -5A is identified as "preliminary" and only a cursory check was performed. A "final" checklist was not completed which requires a detailed check of the input and output to the computer analysis.

Other analysis problems (N3-63-4A, N3-70-8A, and N3-72-A) reflect an independent check on the issued isometrics but do not have on file a signed off checklist.

The above situations are only representative examples and during an independent check of all pipe stress analysis problems other deficient examples were found. Approximately 30 problems are involved in this deficiency.

The root cause of this deficiency is that Watts Bar Piping Analysis Section 2 was using preliminary data in the original issue of these rigorous analysis problems which were not documented per EP 3.03. It was the analysis section's intent that when a reanalysis was performed, the preliminary data would be finalized and that the analysis calculations (incuding flange evaluation) would be prepared, checked, and sent to document storage. There was no system in effect that would have required these problems to be reviewed or reanalyzed.

Safety Implications

This condition could result in piping for safety-related systems not being adequately checked and thereby containing design errors which would prevent the piping being adequately supported. Should the piping for these systems fail during a seismic event, there could be adverse affects to the safe operations of the plant.

Corrective Action

TVA has completed reviewing the qualification of all Unit 2 rigorous analysis problems and reanalyzing where required. All support designs, drawings, and load tables have been reviewed and revised under engineering change notice (ECN) 4770. Modifications will be completed before Unit 2 Fuel Load.

To prevent recurrence, the Division of Nuclear Engineering is following the verification and independent review requirments as outlined in Nuclear Engineering Procedure (NEP)-3.1 "Calculations" which supercedes the previous applicable design procedures.