

**TENNESSEE VALLEY AUTHORITY**

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

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October 3, 1983

WBRD-50-390/82-88  
WBRD-50-391/82-84

U.S. Nuclear Regulatory Commission  
Region II  
Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

**WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - CONTROL OF CIVIL ENGINEERING  
SUPPORT BRANCH ANALYSIS CALCULATIONS - WBRD-50-390/82-88, WBRD-50-391/82-84  
- FINAL REPORT FOR UNIT 1 AND FOURTH INTERIM REPORT FOR UNIT 2**

The subject deficiency was initially reported to NRC-OIE Inspector D. Quick on August 23, 1982 in accordance with 10 CFR 50.55(e) as NCR WBN CEB 8222. This was followed by interim reports dated September 22, 1982 and February 7 and June 30, 1983. Enclosed is our final report for unit 1 and our fourth interim report for unit 2.

Please note that in our letter dated February 7, 1983, we had stated that we would be combining this NCR with NCR WBN CEB 8211 (WBRD-50-390/82-50, WBRD-50-391/82-47); however, we have decided, for tracking purposes, to report them as separate items. We expect to submit a report for unit 2 by June 23, 1984.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*L. M. Mills*  
L. M. Mills, Manager  
Nuclear Licensing

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**Enclosure**

cc Mr. Richard C. DeYoung, 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

1983-TVA 50<sup>TH</sup> ANNIVERSARY

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## ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2  
CONTROL OF CIVIL ENGINEERING SUPPORT BRANCH ANALYSIS CALCULATIONS  
NCR WBN CEB 8222  
WBRD-50-390/82-88, WBRD-50-391/82-84  
10 CFR 50.55(e)  
FINAL REPORT FOR UNIT 1 AND FOURTH INTERIM REPORT FOR UNIT 2

### Description of Deficiency

Certain piping analysis calculations have not been documented according to the requirements of TVA's Division of Engineering Design (EN DES) Engineering Procedure (EP) 3.03. EN DES-EP 3.03 requires that design calculations be prepared, checked, placed in a volume, and sent to document storage. 10 CFR 50 Appendix B, Criterion III requires verification or checking the adequacy of design. Since these calculations (approximately 30 in all) have not been properly documented, they are now unretrievable for verification or determination whether the appropriate checking has been performed.

Additionally, flange calculations were omitted from some piping analysis calculation packages.

The root cause of this deficiency is that Watts Bar Nuclear (WBN) 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 (including 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. Therefore, approximately 30 problems were never checked.

### Safety Implications

Due to lack of review of design calculations for class 1 and 2 safety-related piping, undiscovered deficiencies in these calculations could lead to inadequate design and construction, and thus have adverse affects on the safe operation of the plant.

### Corrective Action

All stress analysis problems have been reviewed to ensure that the flange qualification requirements have been met and that the calculations have been prepared, checked, and sent to document storage. The flange qualification requirements have been incorporated into the WBN checklist for class 2 and 3 nuclear piping, and the rigorous analysis handbook has been revised to include a section on flange qualification requirements. EN DES has completed the EP training session on EP 3.03 requirements. Also, preliminary data is no longer being used in performing analyses, and all analyses calculations will be verified and documented by October 15, 1983.

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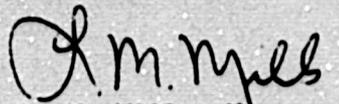
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