TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

JUL 15 1986

WBRD-50-390/86-17
WBRD-50-391/86-13

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) - UNITS 1 AND 2 - LACK OF ADEQUATE CALCULATIONS TO DOCUMENT ELECTRICAL SYSTEM DESIGN BASIS WBRD-50-390/86-17, WBRD 50-391/86-13 - SECOND INTERIM REPORT

The subject deficiency was initially reported to NRC-Region II Inspector Art Johnson on December 23, 1985 in accordance with 10 CFR 50.55(e) as SCR WBN EEB 8571. Our first interim report was submitted on January 28, 1986. Enclosed is our second interim report. We expect to submit our final report on or about October 31, 1986.

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: Mr. James Taylor, 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
LACK OF ADEQUATE CALCULATIONS TO DOCUMENT
ELECTRICAL SYSTEM DESIGN BASIS
WBRD-50-390/86-17, WBRD-50-391/86-13
SCR WBN EEB 8571
10 CFR 50.55(e)
SECOND INTERIM REPORT

Description of Deficiency

The Watts Bar Nuclear Plant (WBN) INPO review and TVA's Office of Quality Assurance audit identified specific electrical design calculations that have not been evaluated and documented. Due to these findings/deviations, problem identification reports (PIRs) WBN EEB 8527 and WBN EEB 8528 were initiated to correct the problems. In pursuing the corrective actions to resolve the PIRs, it was discovered that other calculations were also missing. This significant condition report (SCR) was written to address the fact that for WBN, TVA had failed to identify the minimum set of electrical calculations (calculations on safety-related systems required to shut down the plant), to revise existing calculations to incorporate subsequent design changes, and had issued design documents and drawings without preparing or before completing supporting calculations. These calculations are necessary to ensure the technical adequacy and compliance with the plant design basis. Affected systems include; auxiliary and control power distribution, communications, instrument and control, lighting, raceway, switchyard and transformers.

This condition resulted primarily from inadequately defined requirements to formally document supporting design calculations and studies. At the time the deficiencies occurred no procedures were in place to define the required minimum set of calculations and studies for the electrical systems. Some calculations were completed and kept in an informal status. Those calculations that were formalized were not updated to support document and drawing revisions.

Safety Implications

At present, there is no indication that any of the safety-related electrical systems with missing or incomplete supporting documentation are deficient or would fail in any design basis event. However, without a minimum set of calculations to support the electrical system design basis and technical adequacy, inadequate assurance exists that the components and systems will function as required. This deficiency represents a potential condition which could adversely affect the safe operation of the plant.

Interim Progress

A preliminary minimum set of calculations was identified and compared to existing calculations. This resulted in the identification of additional calculations that need to be performed and existing calculations that need to be revised before fuel loading. TVA has proceeded to perform these calculations based on the preliminary set.

TVA prepared Watts Bar Engineering Project (WBEP) Engineering Procedure (EP)-43.09, "Procedure for identifying the Calculations Required to Support Electrical Design," to provide the process for identifying the required calculations. Sargent and Lundy was contracted to evaluate TVA's methods and procedures for identifying the minimum set of calculations and to review the preliminary set.

Based on the preliminary set, WBEP-EP-43.09, and preliminary comments from Sargent and Lundy, TVA identified a minimum set of electrical calculations in an Electrical Engineering Branch (EEB) policy memorandum. The Sargent and Lundy effort has been completed and TVA is factoring the results into the review of the minimum set of calculations identified in the EEB memorandum. Approximately 80% of the required calculations have been completed. Calculations will be maintained in accordance with the Nuclear Engineering Procedures governing calculations and change control.

TVA will provide our next report on this item to NRC on or about October 31, 1986.