DMB

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

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May 15, 1986

WBRD-50-390/86-47
WBRD-50-391/86-44

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 UNITS 1 AND 2 - REDUNDANT OVERCURRENT PROTECTION FOR ELECTRICAL PENETRATION NUMBER 36 - WBRD-50-390/86-47, WBRD-50-391/86-44 - INTERIM REPORT AND CONTAINMENT PENETRATION PROTECTION - WBRD-50-391/82-70 - FOURTH SUPPLEMENTAL FINAL REPORT

The subject deficiency was initially reported to NRC-Region II Inspector Bob Carroll on April 15, 1986 in accordance with 10 CFR 50.55(e) as SCRs WBN EEB 8630 and 8631 for units 1 and 2, respectively. Enclosed is our interim report. We expect to submit our next report on or about October 17, 1986. Below is our fourth supplemental final report for WBRD-50-391/82-70.

Related NCR WBN EEB 8111 had corrective actions for unit 2 to change penetration circuits by May 22, 1986. Due to the revised unit 2 schedule, this work has been rescheduled and will be completed before unit 2 fuel load.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley, Director
Nuclear Safety and Licensing

Enclosure
cc: Mr. James Taylor, Director (Enclosure)
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U.S. Nuclear Regulatory Commission
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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
REDUNDANT OVERCURRENT PROTECTION FOR ELECTRICAL PENETRATION NUMBER 36
WBRD-50-390/86-47, WBRD-50-391/86-44
SCRs WBN EEB 8630 AND 8631
10 CFR 50.55(e)
INTERIM REPORT

Description of Deficiency

Standby lighting circuits Nos. 10, 11, and 12 from lighting cabinet LS4 (LS2 for unit 2) enters the reactor building (RB) through penetration No. 36 and requires redundant tripping devices to protect the penetration per TVA commitments in FSAR Section 8.1.5.3. Lighting drawing 45W1418-4 was revised and issued for engineering change notice (ECN) 3307 in 1982 to implement the corrective action for NCR WBN EEB 8111, which had been issued to identify the overall lack of redundant overcurrent protection of penetrations. During routine circuit studies for post-loss of coolant accident (LOCA) submergence analysis, it was discovered that the lighting drawing did not provide adequate design information and details to fully implement the corrective action for NCR WBN EEB 8111. There are no TVA mark numbers for the material, no wiring diagram for cable connections, and no circuit designations indicated on the drawing. As a result, the "As Installed" configuration for unit 1 is also incomplete. Although the fuse box and fuseholders were installed, there are no fuses installed and there is no wiring routed through the box. The installation of the unit 2 material has not yet been initiated for resolution of NCR WBN EEB 8111; as such, no site deficiency exists for unit 2.

The lighting provided by these circuits is not considered safety-related and lighting designers were not knowledgeable in penetration protection systems design. As a result, the designer, because of the lack of expertise in this area, did not provide an adequate design to the Division of Nuclear Construction (NU CON) to complete the installation of the penetration protection. The checker, also a lighting designer, failed to question the adequacy of the design. Therefore, the identification of the involved circuits, the types of fuses, and the wiring connections were not adequately specified for containment penetration protection. The cause of the deficiency is attributed to design error because of this lack of knowledge of requirements by the designer and the checker. In addition, coordination and interface review failed to identify this deficiency.

A generic review has been initiated to determine if this deficiency exists at other plants. Initial results of this review indicate a similar condition exists at Sequoyah Nuclear Plant (SQN), and SCR SQN EEB 8632 has been written to identify the condition for SQN.

Safety Implications

Each of the lighting circuits in question has individual overcurrent protection in the form of a circuit breaker. If the circuit breaker failed closed, then a short circuit in the lighting circuit could allow, due to the lack of redundant overcurrent protection, excessive current to create enough heat to cause the sealing material used in the penetration to melt. Failure of the penetration under design basis accident conditions could compromise containment integrity, thereby adversely affecting safe plant operation.

Interim Progress

TVA has initiated the addition of necessary information on affected design drawings for the installation of redundant overcurrent devices and completion of wiring changes. These revisions to the drawings are being accomplished through ECNs 6263 and 6264.

TVA has also initiated a trend analysis review to determine the scope of problems related to requirements for redundant overcurrent protection for electrical penetrations and to identify the root cause if an adverse trend is determined to exist. Our next report will be provided to NRC on or about October 17, 1986.