TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

April 21, 1983

WBRD-50-390/82-11
WBRD-50-391/82-11

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 - DESIGN OF HVAC PENETRATIONS IN CONTAINMENT - WBRD-50-390/82-11, WBRD-50-391/82-11 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on December 24, 1981 in accordance with 10 CFR 50.55(e) as NCR WBN CEB 8120. Interim reports were submitted on January 28, April 28, August 9, and December 13, 1982 and March 24, 1983.

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 by RHS

L. M. Mills, Manager
Nuclear Licensing

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

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
DESIGN OF HVAC PENETRATIONS IN CONTAINMENT
NCR WBN CEB 8120
WBRD-50-390/82-11, WBRD-50-391/82-11
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

The containment vessel contractor (Chicago Bridge and Iron) designed the HVAC and electrical nonprocess penetrations in an unconservative manner as a result of inadequate load definitions in TVA's containment design specification WBNP-DS-1705-1440-3. Thus, lacking complete load definitions, the contractor applied the total mass of the piping assemblies at the end of the nozzles in lieu of at the mass center which produces higher bending moments. These higher bending moments can cause the containment shell around these penetrations to be overstressed.

Safety Implications

Overstressing the containment shell around the HVAC and electrical nonprocess penetrations could affect the safe operation of the plant in that the containment might fail in these areas and thus not provide the isolation required during an accident situation. Loss of containment isolation could result in offsite doses higher than allowed by 10 CFR 100.

Corrective Action

All nonprocess penetrations were reanalyzed for proper load definition. Seven penetrations, X-4, X-6, X-7, X-9A, X-9B, X-10A, and X-10B, on each unit were found to be overstressed. Additional supports were required to eliminate this condition and meet the stress criteria specified in WBNP-D-17C5-1440-3. These supports are expected to be installed on units 1 and 2 under engineering change notice (ECN) 2689 by November 18, 1983, and October 15, 1984, respectively.

Inadequate load definition in the design specification occurred due to the inadequacy of the Quality Assurance (QA) procedures and engineering procedures at the time the design specification was issued. Engineering procedure (EP) 3.05, "Design Specification for ASME Boiler and Pressure Vessel Code Section III Components and Appurtenances Preparation, Correlation, and Certification," Revision 4, was issued on March 15, 1982, requiring independent review to prevent occurrences of this type in the future.