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

84 OCT 23 October 17 1984

WBRD-50-390/84-25
WBRD-50-391/84-23

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - CONDUIT SUPPORT DATA NOT PROVIDED FOR SOME AREAS WITH CONDUIT INSTALLED - WBRD-50-390/84-25, WBRD-50-391/84-23 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector P. E. Fredrickson on April 24, 1984 in accordance with 10 CFR 50.55(e) as NCR WBN CEB 8407. Our first interim report was submitted on May 23, 1984. A new submittal date for this report was established with NRC-OIE Inspector P. E. Fredrickson on June 29 and August 20, 1984. Enclosed is our final report.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

DSKammer

for 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

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
CONDUIT SUPPORT DATA NOT PROVIDED FOR SOME AREAS
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NCR WBN CEB 8407
WBRD-50-390/84-25, WBRD-50-391/84-23
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

WB-DC-40-31.10, "Design Criteria for Seismically Qualifying Conduit Supports," provides allowable span lengths and support loads for supporting seismic category 1 conduit but does not include such information for conduit located in the Auxiliary Building above elevation 755.5', Reactor Building interior concrete structure above elevation 755.6', Reactor Shield Building above elevation 763.0', or Diesel Generator Building above elevation 742.0'. Also, WB-DC-40-31.10 does not include data for supporting conduit in the additional Diesel Generator Building, north steam valve room, or attached to the steel containment vessel.

Apparently, when WB-DC-40-31.10 was developed, it was thought that conduit would not be installed in the above areas. However, conduit has been installed in some of the above areas using data which may not be conservative for those areas.

At the time WB-DC-40-31.10 was developed in April 1975, it was apparently thought that safety-related conduit would not be installed in the upper elevations of the Auxiliary and Reactor Buildings. The upper elevations of the Diesel Generator Guilding were addressed by special requirements in the design criteria but those requirements were overlooked in some cases. The north steam valve room (NSVR) and additional Diesel Generator Building (ADGB) spectra were not specifically addressed in WB-DC-40-31.10 because spectra for those buildings was issued after the original issue date of WB-DC-40-31.10 (NSVR response spectra was initially issued on July 14, 1975, ADGB response spectra on September 22, 1980, and WB-DC-40-31.10 on April 11, 1975). NSVR and ADGB response spectra were apparently thought to be enveloped by the response spectra data used in WB-DC-40-31.10.

Safety Implications

Lack of design criteria for seismic category I conduit above certain elevations introduces an uncertainty with regard to the adequacy of installed conduit such that TVA does not have adequate assurance that the supports will not fail during a seismic event. The higher the elevation, the higher the acceleration that the conduit would experience during a seismic event. This could lead to damage to safety-related cables routed in category I conduit with subsequent failure in maloperation of safety-related equipment, thus having adverse effects on the operation of the plant.

Corrective Action

Allowable span lengths and support loads have been developed for conduit in the Auxiliary Building above elevation 755.5', Reactor Building interior concrete structure above elevation 755.6', Reactor Building Shield Building above elevation 763.0', Diesel Generator Building above 742.0', additional Diesel Generator Building and north steam valve room. It has been determined that no safety-related conduit is rigidly attached to or supported from the steel containment vessel. WB-DC-40-31.10 has been revised to include the new data.

The allowable span lengths equal or exceed the allowable span lengths provided to TVA's Division of Construction (CONST) on drawing No. 47A056-1D, R1, for all sizes of uninsulated steel conduit and 5-inch nominal size uninsulated aluminum conduit. (Note: Insulated conduit is not addressed because the original data for insulated conduit was invalidated by the corrective action required to correct the condition documented in nonconformance report (NCR) WBN EEB 8408, WBRD-50-390,391/84-18 (see letter from L. M. Mills to J. P. O'Reilly dated May 4, 1984). For aluminum conduit, only 5-inch nominal size is addressed because other sizes of aluminum conduit have not been used.

Support design loads increased for some conduit sizes in some areas of the plant. Standard supports with more than a 20-percent increase in the previous design loads were evaluated and, the 47A056 series drawings were revised to account for the increased support loads. Installed supports with more than a 20-percent increase in the previous design loads were identified and reviewed on a case-by-case basis and it was determined that there were no unacceptable designs.

Conduit support variances were identified and reevaluated using the revised data. Where a variance was determined to be unacceptable, a new variance was written and evaluated. As a result of this review and evaluation, one was found to be unacceptable and was redesigned.

As action required to prevent recurrence, TVA has developed data for all areas of the plant where safety-related conduit may exist, and clearly noted limitations and exclusions in WB-DC-40-31.10 and on the 47A056 series drawings used to provide information to CONST.

In addition, TVA has reviewed this condition for applicability to other TVA nuclear plants. The results of that review are discussed below for each plant.

Sequoyah Nuclear Plant (SQN)

SQN-DC-V-13.10, "Design Criteria for Seismically Conduit Supports," provides span lengths and support loads for supporting category I conduit at SQN. However, SQN-DC-V-13.10 does not specifically address all structures containing category I conduit. An NCR has been written to document this condition and track completion of a similar evaluation of conduit support loads and allowable spans.

Browns Ferry Nuclear Plant (BFN)

BFN-50-714, "Design Criteria for Conduit Support Seismic Design," provides span lengths and support loads for supporting category I conduit at BFN. Section 1.0 in BFN-50-714 indicates that the criteria may be used for the "Reactor, Desiel-Generator, and Standby Gas Treatment Buildings, and water supply pumping station." There are no other structures containing category I conduit at BFN. Therefore, further review of BFN conduit is not required.

Bellefonte Nuclear Plant (BLN)

N4-50-D718, "Design Criteria for Seismically Qualifying Conduit Supports," provides span lengths and support loads for supporting category I conduit at BLN. Tables 3.1-3 through 3.1-38 on N4-50-D718 plus design input memorandums DIM-N4-50-D718-2 and 3 indicate that the criteria is applicable for the Reactor Building primary and secondary containment, Reactor Building interior concrete structure, Auxiliary Control Building, Diesel Generator Building, main steam valve room B, essential raw cooling water pumping station, and class 1E manholes. There are no other structures containing category I conduit at BLN. Therefore, further review of BLN conduit is not required.