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SUBJECT: Provides supplemental info re program for assuring seismic adequacy of flexible conduit in response to verbal request from NRC.

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MAY

P R I O R I T Y D O C U M E N T

Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609

September 28, 1995

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2 AND 3 - SEISMIC ADEQUACY OF FLEXIBLE CONDUITS

This letter provides supplemental information regarding the program for assuring the seismic adequacy of flexible conduit in response to a verbal request from the NRC Staff. TVA has identified flexible conduits being routed between the diesel generator and reactor building structures. These flexible conduit runs contain sufficient slack to accommodate the postulated seismic movements. The background of this issue and additional details regarding the program for assuring the seismic adequacy of flexible conduit is provided in the enclosure.

There are no new commitments contained in this letter. If you have any questions, please contact me at (205) 729-2636.

Sincerely,

Pedro Salas
Manager of Site Licensing

Enclosure
cc: see page 2

A030
1/1

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ENCLOSURE

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNITS 1, 2 AND 3

SEISMIC ADEQUACY OF FLEXIBLE CONDUITS

BACKGROUND

BFN was initially constructed using General Construction Specification G-3, "Installing Electrical Conduit Systems and Fabricated Conduit Boxes." This specification required that flexible conduit be provided for electrical connections to equipment (such as motors, valves, lighting fixtures), but contained no specific requirement for minimum lengths for seismic and thermal movements. TVA subsequently recognized the need for flexible conduit length requirements to ensure adequate thermal movements and revised General Construction Specification G-40, "Installing Electrical Conduit Systems and Conduit Boxes," in October of 1980. However, G-40 was not made applicable to BFN until January 15, 1986.

The overall program that resolved the flexible conduit issue for BFN Unit 2 was described in Volume 3 of TVA's Nuclear Performance Plan (Reference 1). Programmatic details were provided in References 2 and 3. For the restart of Unit 2, TVA committed to inspect all flexible conduits attached to electrical equipment covered by 10 CFR 50.49. These inspections verified that the lengths of the flexible conduits were adequate to accommodate thermal and seismic movement. Those flexible conduits not meeting the requirements of G-40 were reworked, replaced, or technically justified on a case by case basis. TVA also committed to evaluate other flexible conduit attached to safety related equipment (other than 10 CFR 50.49 electrical equipment) within the scope of BFN's program to address Unresolved Safety Issue (USI) A-46. NRC acceptance of this program was included as part of Reference 4. In Reference 5, TVA stated that the flexible conduit program would be implemented on Units 1 and 3 in accordance with the Unit 2 precedent.

In Reference 6, TVA provided a schedule for flexible conduits associated with the resolution of USI A-46. NRC requested additional information regarding the schedule in Reference 7. In Reference 8, TVA clarified the two-phased approach for resolving flexible conduit concerns. Flexible conduits attached to electrical equipment covered by 10 CFR 50.49 would be resolved prior to restart of Unit 3. Seismic qualification of flexible conduit, other than those connected to electrical equipment covered by 10 CFR 50.49 (i.e., important to safety, but in a mild environment), would be included as part of the resolution of

In Reference 9, NRC found this program acceptable; however, additional information was requested regarding two separate issues regarding flexible conduit. TVA provided the requested information in Reference 10.

SUPPLEMENTAL INFORMATION

TVA has identified flexible conduits being routed between the diesel generator and reactor building structures. The maximum seismic deflection between the reactor and diesel generator buildings is 0.385 inches. The installation drawing specifies that the flexible conduit shall not be in tension when it is installed. Due to the length of the cable, the requirement not to install the flexible conduit in tension, and the relatively small maximum deflection between the structures, TVA has determined that these flexible conduit runs contain sufficient slack to accommodate the postulated seismic movements.

REFERENCES

1. TVA letter to NRC, dated October 24, 1988, Browns Ferry Nuclear Plant - Nuclear Performance Plan, Revision 2

2. TVA letter to NRC, dated August 18, 1989, Flexible Conduit Program Plan

3. TVA letter to NRC, dated March 2, 1990, Response to Request for Additional Information - Flexible Conduit - Letter Dated December 19, 1989

4. NRC letter to TVA, dated January 23, 1991, NUREG-1232, Volume 3, Supplement 2 - Browns Ferry, Unit 2

5. TVA letter to NRC, dated July 10, 1991, Regulatory Framework for the Restart of Units 1 and 3

6. TVA letter to NRC, dated September 21, 1992, Supplement 1 to Generic Letter 87-02, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46 and Supplement 4 to Generic Letter 88-20, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities

7. NRC letter to TVA, dated November 19, 1992, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

8. TVA letter to NRC, dated January 19, 1993, Generic Letter (GL) 87-02, Supplement 1, 120-Day Response, Request for Additional Information

9. NRC letter to TVA, dated March 19, 1993, Generic Letter 87-02, Supplement 1 Response - Browns Ferry Nuclear Plant

10. TVA letter to NRC, dated October 15, 1993, Generic Letter (GL) 87-02, Supplement 1, Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46 - Response to Request for Additional Information Regarding the Evaluation of the Seismic Adequacy of Flexible Conduit