Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

MAR 26 1991

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

SEQUOYAH NUCLEAR PLANT (SQN) - SEISMIC QUALIFICATION OF CABLE TRAYS AND CONDUIT (PHASE II, DESIGN BASELINE AND VERIFICATION, TAC NOS. R00419/R00420)

Reference: NRC letter to TVA dated January 18, 1991, on the above subject

As requested in the above reference, Enclosure 1 contains a discussion on the seismic qualification of cable trays and conduits at Sequoyah that carry safety-related cables. With respect to cable trays, the discussion presented in Enclosure 1 was derived from efforts to resolve Employee Concern (EC) 238.03 SQN-04. For conduits, Design Criteria SQN-DC-V-13.10 defines the requirements for seismic qualification.

The cable trays and conduits were evaluated before restart and were determined to be acceptable for restart and operability. For cable trays, EC 238.03 SQN-04 defined commitments to document the long-term criteria and evaluate the trays to that criteria. The long-term criteria have been developed and are described in Enclosure 1. Cable trays will be evaluated in accordance with EC 238.03 SQN-04. Conduits have been evaluated and qualified to the design criteria.

As noted in the above reference, there is no clear discussion in the SQN Updated Final Safety Analysis Report (UFSAR) on the seismic qualification of cable trays and conduit. Accordingly, TVA agrees to provide a clarification to the UFSAR in next year's (1991) annual UFSAR update.

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U.S. Nuclear Regulatory Commission

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Please direct questions concerning this issue to W. C. Ludwig at (615) 843-7460.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark J. Burzynski for

E. G. Wallace, Manager
Nuclear Licensing and
Regulatory Affairs

cc (Enclosures):
Ms. S. C. Black, Deputy Director
Project Directorate II-4
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Marylan 20852

Mr. J. N. Donohew, . t Manager
U.S. Nuclear Regulato.y Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

NRC Resident Inspector
Sequoyah Nuclear Plant
2600 Igou Ferry Road
Soddy Daisy, Tennessee 37379

Mr. B. A. Wilson, Project Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Cable Trays

The cable tray criteria are derived from testing. A factor of safety of 1.25, against the tested capacity, is maintained for the vertical load for horizontal tray configurations. A maximum ductility factor of three (based on test data) is used to define an elastic-perfectly plastic curve that is used in the transverse direction (parallel to the rungs). These limits are used in an interaction equation to evaluate tray sections for the safe shutdown earthquake (SSE) loading condition. The trays will also be evaluated to ensure a minimum factor of safety of 1.25 against test capacity for actual dead loads.

Cable tray "X" and "T" fittings will be evaluated to ensure a minimum factor of safety of 1.25 against formation of a first hinge in the direction for normal vertical loadings. These fittings will not be evaluated in the horizontal direction since intersecting trays provide axial support in this direction.

Other cable tray components (i.e., bolts and connectors) will be evaluated using American Iron and Steel Institute or American Institute of Steel Construction allowables with a 0.9 Fy limit. Where test data is used to establish capacities, a factor of safety of 1.5 will be maintained against the ultimate test load for the SSE loading condition.

The cable trays are designed to carry a design load of 30 pounds per square foot (45 pounds per linear foot for 18-inch trays). In cases where weights exceed these values (because of cable overfill and application of fire-retardant coating), the actual dead loads will be used. The trays will be qualified for dead load, construction load, design basis accident loads, and SSE loads.

Conduit

SQN Design Criteria SQN-DC-V-13.10 requires that the deadweight plus SSE stress for conduit be limited to a maximum of 0.9 of the material yield stress for safety-related conduit systems attached to Category I buildings.

Since conduit systems contain threaded connections that may occur anywhere within the system, a stress intensification factor is applied to the yield stress of the conduit to obtain the allowable design stress (yield stress / [.75 x 2.3]). This ensures that the maximum conduit stress based on the sectional properties of the conduit will not exceed the 0.9 Fy allowable.

ENCLOSURE 2

The information contained in Enclosure 1 of this response will be used to provide a revised SQN Updated Final Safety Analysis Report (UFSAR) in the 1991 Annual UFSAR update that is scheduled to be submitted by April 15, 1992.