



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

January 28, 1985

Docket Nos: 50-390, 50-391
and 50-438, 50-439

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Subject: Piping Design Criteria for the Watts Bar and
Bellefonte Nuclear Plants

The staff has reviewed your October 9, 1984, submittal with regard to piping design criteria to be used at the Watts Bar and Bellefonte Nuclear Plants and has concluded that the submittal is not fully acceptable. Enclosed is an explanation of our concerns.

If you have any questions concerning this matter, please contact the project manager, T. J. Kenyon, at FTS 492-7266.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Novak".

Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

Enclosure:
As stated

cc: See next page

DESIGNATED ORIGINAL
Certified By

A handwritten signature in black ink, likely of the certifying official, written over the "Certified By" text.

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A PDR

WATTS BAR

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Enclosure

- a) In Enclosure (1) to the October 9, 1984, letter, TVA requested NRC approval to use the damping values in ASME Code Case N-411 and the alternate peak broadening techniques in ASME Code Case N-397 for the response spectrum seismic analyses of piping systems at the Bellefonte and Watts Bar Nuclear Plants. TVA proposed to use these two Code Cases for any further seismic analyses at both plants.

This request can not be approved unless Enclosure (1) to the referenced letter is revised to the following commitment for both of the subject plants:

"If, as a result of using the damping values in ASME Code Case N-411, piping supports are moved, modified or eliminated, the expected increased piping displacements due to greater piping flexibility will be checked to assure that they can be accommodated and that there will be no adverse interaction with adjacent structures, components and equipment."

- b) In Enclosure (2) to the October 9, 1984, letter, TVA proposed to use the concept of combining multiple support zonal responses by the square root of the sum of the squares (SRSS) method in the seismic analysis of piping systems. This technique was recommended by Brookhaven National Laboratory (BNL) in NUREG/CR-3811, "Alternate Procedures for the Seismic Analysis of Multiply (sic) Supported Piping Systems" dated May 1984. This technique is still under review by the staff, and has not yet been approved. Therefore, the staff recommends that TVA use an acceptable alternative procedure called "Independent Support Motion Method" which will appear in Volume 4 of NUREG-1061, the NRC Piping Review Committee Report. This procedure is attached for your information.

ATTACHMENT

Procedures For Response Combinations For Multiple-Supported Piping

The procedure described below, is known as the Independent Support Motion Method and is a slightly modified version of the recommendation contained in NUREG/CR 3811 for combination of seismic responses in piping systems.

In the independent support motion response spectrum method, the response of multiple-supported piping with independent inputs may be calculated using the following rules for response combinations:

a) For Inertial (or dynamic) Components:

- 1) The responses of different support groups for each direction should be combined by the absolute sum method;
- 2) Modal and directional responses should be combined by the SRSS method without considering closely spaced frequencies.

b) For Pseudo-static Components:

- 1) For each group, the maximum absolute response should be calculated for each input direction, and these should then be combined by the absolute sum rule;
- 2) The directional responses should be combined by the SRSS rule.

c) For the Total Response:

Dynamic and pseudo-static responses should be combined by the SRSS rule.

d) High Frequency Modes:

Algebraic summation should be made for high frequency modes, and the resulting quantity should be combined with the response to lower frequency modes by the SRSS rule.