

TENNESSEE VALLEY AUTHORITY

5000 CHESTNUT STREET TOWER  
MEMPHIS, TENNESSEE 38102  
5000 Chestnut Street Tower

DEC 19 1978

Mr. Roger S. Boyd, Director  
Division of Project Management  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Boyd:

In the Matter of the Application of the ) Docket Nos. 50-327  
Tennessee Valley Authority ) ~~50-328~~  
50-390  
50-391  
50-438  
50-439

Enclosed are 40 copies of TVA's responses to your request for additional information on the seismic design bases for the Sequoyah, Watts Bar, and Bellefonte Nuclear Plants dated October 4, 1978. We strongly believe that this information, together with our reports entitled "Justification of the Seismic Design Criteria Used for the Sequoyah, Watts Bar, and Bellefonte Nuclear Plants, Phase I and II," clearly demonstrate that the seismic design bases used at these facilities are conservative.

Briefly, our Phase I and II reports provided the following information to justify the seismic design bases at the subject plants.

1. Evaluation of the Giles County earthquake intensity to show that it is conservatively a MMVII-VIII instead of MMVIII.
2. The intensity rating for the Giles County earthquake is soil biased. Historical data of the Giles County earthquake and worldwide data show the intensity is two to three units less on rock than on soil. All subject plant sites are rock sites.
3. The Murphy-O'Brien (CSC) intensity-acceleration relationship is the more appropriate. This results in a maximum acceleration of 0.15g for a MMVIII.
4. Earthquake ground motion reduces with depth. No credit is taken for ground motion reduction with depth.
5. Development of site specific SSE response spectra from strong motion records of appropriate magnitude and distance. A range of magnitudes from 5.3 to 6.3 was used. We believe this magnitude range to be conservative since the Giles County earthquake is estimated to have been from 5.2 to 5.8. Forty percent of the

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data used was for earthquakes with a magnitude greater than that estimated for the Giles County earthquake. Comparison of the site specific response spectra with the plants' design spectra justify the plants' seismic design.

6. Development of site specific SSE response spectra based on parameters other than intensity. This study was performed by our consultants, Weston Geophysical Corporation. It utilizes data available in the eastern United States along with western United States data. A top of rock acceleration of 0.08 was determined.

The information enclosed provides additional information on the sensitivity of the site specific SSE response spectra developed from strong motion records. Also, the probabilities of exceeding the plants' SSE design spectra compared to Phipps Bend Nuclear Plant and to the site specific response spectra developed using strong motion records are presented along with a probabilistic analysis to justify the OBE.

You indicated in your letter of January 13, 1978, that because of the actual procedures utilized for the subject plants, it might be possible to show that the plants, as designed, are adequate by taking into account specific site conditions, earthquake magnitude, and distance to the earthquake source. We believe that the additional information enclosed, along with our Phase I and II reports, addresses these considerations in detail and together do show that the plants, as designed, adequately ensure the health and safety of the public.

Very truly yours,

J. E. Gilleland  
Assistant Manager of Power

Enclosure (40)

FOR ENCLOSURES TO DOCUMENTS,  
REQUEST DENIED THE FILE MATERIAL