

MAR 28 1978

DOCKET NOS. 50-390/391 50-438/439 50-327/328

APPLICANT: Tennessee Valley Authority

FACILITY: Watts Bar, Bellefonte, Sequoyah

SUBJECT: SUMMARY OF MEETING WITH TVA ON SEISMIC DESIGN BASIS FOR THREE PLANTS

On March 1, 1978, members of the staff and management met with representatives from TVA to discuss their efforts to date on the adequacy of the seismic design for the three nuclear plants that are at various stages of construction. Enclosed is a list of attendees. We informed TVA on December 27, 1977, that our current practice would require nuclear plants being built in the same region as Watts Bar, Sequoyah, and Bellefonte to be designed to withstand a more conservative design basis earthquake. TVA requested this meeting in order to receive as much guidance as possible on this subject matter.

TVA has stated that the information and analysis to confirm the adequacy of the seismic designs would be developed and submitted in two phases and two reports. The first phase report would be generic in nature and based on seismic information previously submitted on the Phipps Bend nuclear plant docket, and other supplemental data. The second phase report would deal with site specific considerations. Preliminary results by TVA of Phase I are as follows:

- (a) In their opinion, the intensity of the Giles County earthquake lies between a Modified Mercalli intensity of VII - VIII and the intensity is soil-biased as evident from the historical data.
- (b) Earthquake intensities on rock are less than for soil by 2 to 3 units for any given earthquake.
- (c) The intensity-acceleration relationships as derived by Trefunac - Brady have significant limitations that need to be considered in determining an acceleration value for design purposes. The limitations cited were 50% of the data in this correlation are from the San Fernando earthquake; utilizes an arithmetic mean instead of logarithmic mean; and it is a visually derived curve.

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- (d) Accelerations are reduced with depth. All three plants are hard sites accomplished by having removed a significant amount of overburden. Therefore, the major structures would receive a lower acceleration for a postulated earthquake.

Based on the above, the preliminary conclusions by TVA are: maximum acceleration at ground surface is 0.20G and maximum acceleration at the top of the rock is 0.15G. These three facilities are designed for an 0.18G.

A general response by the staff to the above preliminary results of TVA was that such findings are not new but they are controversial. Other investigators have not been able to substantiate such results, particularly with data applicable to nuclear power plants. Most emphatically, if such findings become the essence of TVA's justification for the adequacy of seismic designs, the TVA report on this matter must corroborate these findings and determinations with a substantial amount of convincing data and analyses.

With respect to the Phase II report, it will contain a site specific response spectra for the three sites by reviewing and analyzing recorded earthquakes of similar magnitude to the Giles County earthquake. The site specific response spectra would also take into consideration foundation conditions that are relevant. This new design response spectra would be compared to the spectra that was used for Sequoyah, Watts Bar, and Bellefonte. From discussions, it was evident that the applicant did not plan to include the near field conditions of the Giles County earthquake in determining the site specific design spectra. The staff stated that such assumptions would not be acceptable. Prior to the meeting, the applicant stated that Phase I and II reports would be submitted on or about May 1, 1978 and July 3, 1978 respectively.

Original signed by:

Carl Stahle, Project Manager
Light Water Reactors Branch 4
Division of Project Management

Enclosure:
As stated

SEE PREVIOUS PAGES FOR ADDITIONAL CONCURRENCES

OFFICE	LWR-4	LWR-4			
SURNAME	CStahle:nlg	SAVarga	CStahle		
DATE	3/27/78	3/28/78	3/28/78		

Tennessee Valley Authority
ATTN: Mr. N. B. Hughes
Manager of Power
830 Power Building
Chattanooga, Tennessee 37201

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cc: Herbert S. Sanger, Jr., Esq.
General Counsel
Tennessee Valley Authority
400 Commerce Avenue, EllB33
Knoxville, Tennessee 37902

Mr. E. G. Beasley
Tennessee Valley Authority
400 Commerce Avenue, W9C 165
Knoxville, Tennessee 37902

Mr. D. Terrill
Licensing Engineer
Tennessee Valley Authority
303 Power Building
Chattanooga, Tennessee 37401

Mr. Dennis Renner
Babcock & Wilcox Company
P. O. Box 1260
Lynchburg, Virginia 24505

Mr. Robert B. Borsum
Babcock & Wilcox Company
Suite 420
7735 Old Georgetown Road
Bethesda, Maryland 20014

Mr. Michael Harding
Westinghouse Electric Corporation
P. O. Box 355
Pittsburgh, Pa. 15230

Mr. David Lambert
Tennessee Valley Authority
303 Power Building
Chattanooga, Tennessee 37401

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ENCLOSURE

LIST OF ATTENDEES - March 1, 1978 MEETING WITH TVA

TVA

J. Hunt
R. Guthrie
J. Gilleland
R. Holt
W. Seay
C. Walker
A. Guttermen
L. Mills
M. Weisenburg

NRC

R. Boyd
D. Vassallo
S. Varga
R. DeYoung
W. Gammell
C. Stepp
J. Bennett
L. Reiter
I. Sihweil
W. Pike
C. Stahle