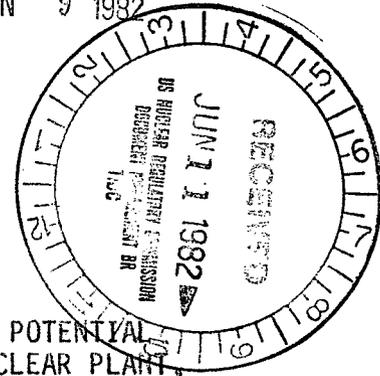


Docket Nos: 50-390
and 50-391

JUN 9 1982



APPLICANT: Tennessee Valley Authority
FACILITY: Watts Bar Nuclear Plant, Units 1 and 2
SUBJECT: SUMMARY OF MEETING TO DISCUSS THE LIQUEFACTION POTENTIAL
BENEATH THE ERCW PIPELINES AT THE WATTS BAR NUCLEAR PLANT,
UNITS 1 AND 2

On May 14, 1982, representatives of TVA, Woodward-Clyde Associates, and the NRC met in Bethesda to discuss the potential for liquefaction beneath the ERCW pipelines at the Watts Bar Nuclear Plant, Units 1 and 2. Attendees are listed in Enclosure (1). The agenda for the meeting consisted of responses to the three areas of concern sent to TVA on May 7, 1982.

1. Definition of the Location of the Safe Shutdown Earthquake (SSE):

The staff raised a question concerning TVA's change of the SSE for purposes of evaluation of the liquefaction potential at the site. The Watts Bar FSAR defines SSE by the vibratory ground motion on rock. However, TVA's analysis of the propagation of the SSE peak horizontal acceleration (0.18g) through the soil to the ground surface yielded a calculated peak horizontal acceleration of approximately 0.6g at the ground surface. TVA expressed the opinion that this was unreasonably high for an earthquake of Intensity VIII.

The staff responded that redefinition of the SSE in this manner is not acceptable. Possible acceptable methods for determining the value at the ground surface were discussed, including a) amplification to the surface using 0.18g at the rock-soil interface; b) a conservative site specific study using appropriate distance, earthquake size, and geologic conditions to determine vibratory motion at the surface (with assumptions and supportive arguments also presented to the staff if TVA chooses this approach); or c) other approaches that TVA may later present for determining a conservative estimate.

With respect to all items, the staff advised TVA to keep the NRC staff informed of any method that they might propose before expending much manpower on it.

2. Use of the Modified Liquefaction Evaluation Approach

The staff raised the concern that use of the modified liquefaction evaluation approach as presented in the Seed and Idriss paper, "Evaluation of Liquefaction Potential of Sand Deposits Based on Observations of Performance in Previous Earthquakes (1981)" is not an acceptable method for Watts Bar.

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The staff made a presentation of its concerns which have resulted from its review of the Seed and Idriss paper. TVA and their consultants replied verbally to the staff's comments. Upon completion of the discussion, the staff expressed the position that the proposed empirical approach is not acceptable at this time since a) the paper presents a relatively new approach that has not had the opportunity to undergo peer review; b) there are uncertainties in the paper resulting from the lack of supporting data available at this time; and c) use of this approach may not yield conservative results.

Understanding that resolution of this concern on the Watts Bar facility must be completed in 6-8 months to prevent the issue from interfering with licensing the plant, the staff stated that it does not believe that the questions and concerns raised up to this point could be resolved in this time frame. The staff pointed out that this decision does not rule out the use of this empirical approach at a later date.

The staff stated that it will complete its review of the cyclic triaxial test results and will evaluate them in light of the TVA's anticipated formal response to item (1) above. The results of the evaluation of this material will be provided to TVA in a time frame that would not interfere with completion of any necessary remedial actions prior to fuel load.

The staff position as stated to TVA in the meeting is given in Enclosure (2).

3. Procedure for Analyzing Seismic Response of ERCW Pipes

The staff requested additional information about the methods and procedures used to analyze the seismic response of the ERCW pipelines.

TVA presented a brief history of these methods and stated the procedures could be found in internal TVA design criterion. TVA agreed to document these procedures by revising the FSAR to show salient points of this design criteria and the results of their analysis.

[Signature]
T. J. Kenyon, Project Manager
Licensing Branch No. 4
Division of Licensing

Enclosures:
As stated

cc: See next page

OFFICE	DL:LB #4	HGEB	HGEB	HGEB	GSE	DL:LB #4
SURNAME	T. Kenyon/hmc	D Gupta	L He Tye	G Lear	R Rotherman	E Anderson
DATE	6/3/82	6/3/82	6/3/82	6/3/82	6/7/82	6/7/82

May 14, 1982
Attendees List for
Liquefaction Meeting
on Watts Bar

NAME

ORGANIZATION

T. J. Kenyon	NRC - Div. of Licensing
V. A. Bianco	TVA - EN DES
L. M. Mills	TVA
R. H. Shell	TVA - Nuclear Licensing Staff
H. B. Sera	W. C. C.
C. Y. Chang	W. C. C.
I. M. Idriss	W. C. C.
R. L. Rothman	NRC/Geosciences
F. R. Hand	TVA - EN DES
J. A. Ellis	TVA - EN DES
Joe Hunt	TVA - EN DES
Lyman Heller	NRC/HGEB/DE
George Lear	NRC/HGEB/DE
Dinesh C. Gupta	NRC/HGEB/DE
Banad Jagannath	NRC/HGEB/DE
J. P. Knight	NRC/DE
J. L. King	NRC/DE/GSB
C. Stahle	NRC/DOL
Gilse-Noche	NRC
J. Kane	NRC/DE
H. B. Seed	UC - Berkeley

OFFICE ▶							
SURNAME ▶							
DATE ▶							

ENCLOSURE (2)

POSITION ON WATTS BAR REGARDING -
PIPELINE FOUNDATION LIQUEFACTION CLEANUP

1) Seed-Idriss Methodology (1981) for Silty Sands:

In the time frame allowed for the Watts Bar License Review, the Seed and Idriss (1981) method can not be used by the staff as a basis for meeting the Safety Requirements (Rules, Regulations, SRP's etc.) for this plant.

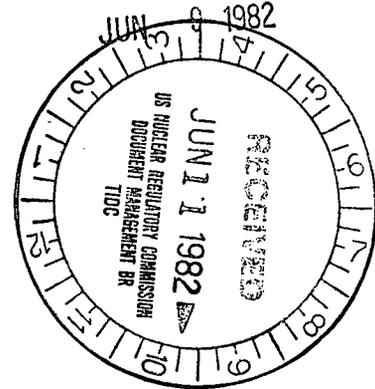
This position does not rule out the use of the procedure on other plants in the future.

2) The NRC staff will complete its review of TVA's documents to determine the acceptability of the cyclic soil stresses, as affected by the earthquake determined acceptable by staff seismologists. Conclusions will be provided to TVA before TVA needs to begin any remedial actions.

OFFICE ▶	.....	.....	.....	.....	.....	.....	.....
SURNAME ▶	.....	.....	.....	.....	.....	.....	.....
DATE ▶	.....	.....	.....	.....	.....	.....	.....

MEETING SUMMARY DISTRIBUTION

Docket No(s): 50-390/391
NRC/PDR
Local PDR
TIC/NSIC/TERA
LB #4 r/f
Attorney, OELD
OIE
E. Adensam
Project Manager T. Kenyon
Licensing Assistant M. Duncan



NRC Participants:

T. J. Kenyon
R. L. Rothman
Lyman Heller
George Lear
D. C. Gupta
B. Jagannath
J. P. Knight
J. L. King
C. Stahle
Gilse-Noche
J. Kane

bcc: Applicant & Service List