Docket Files

MAY 8 1979

Docket Nos.: 50-390
50-391

MEMORANDUM FOR: Steven A. Varga, Chief, Light Water Reactors Branch No. 4, Division of Project Management

FROM: C. R. Stahle, Project Manager, Light Water Reactors Branch No. 4, Division of Project Management

SUBJECT: MEETING WITH TVA ON WATTS BAR NUCLEAR PLANT - BUCKLING CRITERIA

Date & Time: (a) Thursday, May 17, 1979
10:30 a.m.

(b) Friday, May 18, 1979
8:30 a.m.

Location: (b) Knoxville, Tenn.
(a) Watts Bar Site, Rhea County, Tenn.

Purpose: To discuss the buckling design criteria using the attached Requests for Information as a basis for discussion.

Participants: NRC - A. Hafiz, R. Lipinski

Int'l. Structural Engrg., Inc. - Drs. Seide, Weingarten, Masro

TVA - D. Ormsby, et.al.

Original signed by:

C. R. Stahle, Project Manager
Light Water Reactors Branch No. 4
Division of Project Management

Attachment:
As stated

7906060007

M 4

GD

cc: See next page

OFFICE	DPM:LWR#4	DPM:LWR#4				
SURNAME	CRStahle/jt	SAVarga				
DATE	5/ /79	5/ /79				

NRC FORM 318 (9-76) NRCM 0240 ★ U.S. GOVERNMENT PRINTING OFFICE: 1978 - 265 - 769

MAY 8 1979

MEETING NOTICE DISTRIBUTION

Docket File
NRC PDR
Local PDR
TIC
Branch LWR#4 File
NRR Reading
H. Denton
E. Case
D. Crutchfield
D. Bunch
R. Boyd
R. Mattson
R. DeYoung
D. Muller
D. Ross
D. Vassallo
D. Skovholt
W. Gammill
F. Williams
J. Stolz
R. Baer
O. Parr
S. Varga
P. Collins
T. Speis
W. Haass
C. Heltemes
ACRS (16)
L. Crocker
H. Berkow
Project Manager C. R. Stahle
Attorney, ELD
IE (3)
SD (7)
Licensing Assistant M. Service
Receptionist
L. Rubenstein
L. Soffer
J. Knight
S. Hanauer
R. Tedesco
S. Pawlicki
F. Schauer
K. Kniel
T. Novak
Z. Rosztoczy
R. Bosnak
R. Satterfield
W. Butler
F. Rosa
V. Moore
M. Ernst
R. Denise
R. Ballard
B. Youngblood
W. Regan
G. Chipman
R. Houston
J. Collins
W. Kreger
G. Lear
M. Spangler
V. Benaroya
L. Hulman
H. Ornstein
J. LeDoux, IE
Principal Staff Participants:
A. Hafiz
R. Lipinski

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

MAY 8 1979

Docket Nos.: 50-390
50-391

MEMORANDUM FOR: Steven A. Varga, Chief, Light Water Reactors Branch No. 4, Division of Project Management

FROM: C. R. Stahle, Project Manager, Light Water Reactors Branch No. 4, Division of Project Management

SUBJECT: MEETING WITH TVA ON WATTS BAR NUCLEAR PLANT - BUCKLING CRITERIA

Date & Time: (a) Thursday, May 17, 1979
10:30 a.m.

(b) Friday, May 18, 1979
8:30 a.m.

Location: (b) Knoxville, Tenn.
(a) Watts Bar Site, Rhea County, Tenn.

Purpose: To discuss the buckling design criteria using the attached Requests for Information as a basis for discussion.

Participants: NRC - A. Hafiz, R. Lipinski

Int'l. Structural Engrg., Inc. - Drs. Seide, Weingarten, Masro

TVA - D. Ormsby, et.al.

C. R. Stahle, Project Manager
Light Water Reactors Branch No. 4
Division of Project Management

Attachment:
As stated

cc: See next page

Tennessee Valley Authority

cc:
Herbert S. Sanger, Jr. Esq.
General Counsel
Tennessee Valley Authority
400 Commerce Avenue
E11B33
Knoxville, Tennessee 37902

Mr. E. G. Beasley
Tennessee Valley Authority
400 Commerce Avenue
W10C131 C
Knoxville, Tennessee 37902

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

Mr. David Lambert
Tennessee Valley Authority
400 Chestnut Street Tower II
Chattanooga, Tennessee 37401

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

WATTS BAR NUCLEAR POWER PLANT
THE BUCKLING STRESS CRITERIA FOR
THE STEEL CONTAINMENT
Request for Information

The buckling design criteria report (Appendix 3.8B and Section 3.8.2) of the Watts Bar/FSAR has been studied. It became apparent, from the study, that the report does not contain enough information for a meaningful evaluation. It is, therefore, requested that the following information be supplied:

1. Provide a description of the exact applied loads used in the buckling analysis. If any computer programs were used to obtain these loads, a complete description of the computer programs should be supplied. This description should include a discussion of the analytical and numerical methods used in the program, as well as a statement of its limitations and the methods used in its verification.

2. Provide a description of how the buckling curves contained in the report were applied to the buckling of the containment vessel. The description should include the application of these buckling curves to asymmetric dynamic loads in the areas where penetrations are present.

3. Provide in-depth description of all computer programs used in the buckling analysis. The description should state the origin of the programs, its limitations and the methods used to verify its validity.

4. Provide a description of the assumptions involved in modeling the containment vessel in order to use the programs identified in question 3. This description should include a discussion of any convergence and/or accuracy checks that were made.

5. Provide a complete step-by-step description of which and how the buckling stress criteria were applied.

6. Explain the procedure of obtaining the stress distribution in the shell using lumped mass beam model instead of a shell model for the dynamic seismic analysis.

7. Explain the justification for using an axisymmetric geometry computer program for the containment vessel.

8. Provide the criteria used in the computer program to calculate the buckling loads, description of the mass matrix formulation and how the maxima at each time point were chosen in the CBI containment shell analysis using the finite element model.

9. Explain in detail the criteria and its justification for determining the interaction effects between the containment shell and the attached equipment.

10. Was a thermal buckling analysis conducted? If the answer is yes, describe step-by-step the procedure that was followed.

11. Provide a list of all of the loading combinations and the stress allowables (stress intensity and buckling stress) which had been used in the design of the steel containment.

12. Indicate the critical loading combinations which control the design of the steel containment shell with regard to stress intensity and buckling. Identify, also, the region and/or regions of the steel containment which was controlled by these critical loadings.

13. Indicate, approximately, the contribution (as a percentage of the allowable stress intensity and allowable buckling loads) of each of the loading identified in question 12.