

OCT 3 1973

DOCKET NOS.: 50-438 AND 50-439

APPLICANT: TENNESSEE VALLEY AUTHORITY (TVA)

FACILITY: BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2

SUMMARY OF MEETING HELD ON SEPTEMBER 18, 1973 TO DISCUSS STRUCTURAL DESIGN OF CONTAINMENT

On September 18, 1973, representatives of TVA, their NSSS, B&W, and TVA's consultant from Sargent & Lundy met with the Regulatory staff to discuss the structural design of the containment. The discussions included areas of interest to the Structural Engineering Branch.

A list of attendees and a TVA handout are enclosed.

The significant items of discussion are summarized below:

1. Description of Containment

A brief description of some key containment features was presented. The prestressed cylindrical structure is anchored to a limestone rock foundation with grouted rock anchors. The containment will have four buttresses with the prestressing tendons anchored at buttresses 180 degrees apart. The interior concrete base slab is separated from the primary containment by a construction joint in the base slab. TVA is considering using either greased or grouted tendons.

2. Design and Testing of the Rock Anchors

A description of the design of the rock anchors and the basis for this design was presented and is included in the enclosed handout. The proposed tests of the two rock anchor designs, BBRV system and multistrand system, were presented. These tests are in progress now and the results will be submitted to the AEC by January 1, 1974 to confirm the assumptions in the PSAR. A detailed description of the testing program is also contained in the enclosed handout.

3. Three Component Earthquake

TVA presented their approach in designing the Bellefonte containment for the 3-component earthquake. The details of this presentation will be supplied in the PSAR in answer to a recent request for additional information.

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 EGoulbourne AEC PDR RWKlecker  
 - 2 - OGC Local PDR ASchwencer  
 ACRS (16) L Rdg File ISihweil  
 GDittman RP Rdg File TR ADs  
 JKnight PWR-4 Rdg File TR BCs  
 DFisher RCDeYoung RP ADs  
 RMaccary JHendrie RP BCs

4. Tangential Shear

The treatment of tangential shear resulting from horizontal earthquake loads was described. TVA uses a shear friction formulation in their analysis. The staff asked TVA to also consider the shear wall formulation given in the ACI 318 code.

5. Differences in TVA's Criteria to the ACI 359 Code

The most significant difference of the Bellefonte design to the ACI 359 code is the treatment of earthquake forces in service loads. The staff explained its rationale for requiring that these forces be included in the service loads. TVA will present their response to these comments in answer to a recent staff request. TVA agreed to submit their G2 document describing concrete specifications with a comparison of those areas different from the ACI 359 code.

6. Equipment Anchorage

The details of the proposed equipment anchorage system were described. This information will be documented in the PSAR in response to a request for additional information.

7. Analysis, Design and Testing of the Liner Plate Anchorage

A summary of the analytical and design procedure for the liner plate anchorage was given. Tests currently in progress were also described which measure the pull out, deflection and energy absorption capacity of the anchors. TVA indicated that the results of these tests will be available to the AEC by January 1, 1974 to confirm the PSAR design assumptions.

8. Surveillance of Grouted Tendons

TVA indicated that they intend to consider both grouted and greased tendons for the Bellefonte design. Since surveillance requirements would be considerably different for the two types of systems, TVA expressed interest in discussing the requirements for grouted tendons. It was noted that, at present, the PSAR only discusses the use of greased tendons. The present Regulatory position on inservice surveillance of grouted tendons was not clear; therefore, it was agreed to discuss this matter further at a later time.

Original Signed by  
 Donald K. Davis  
 Don K. Davis, Project Manager  
 Pressurized Water Reactors Branch 4  
 Directorate of Licensing

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| Enclosures: |                   |             |  |  |  |
| SURNAME ▶   | List of Attendees | DDavis:cjr  |  |  |  |
| DATE ▶      | TVA Handout       | 10/2/73     |  |  |  |



MEETING HELD ON SEPTEMBER 18, 1973  
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2

LIST OF ATTENDEES

Atomic Energy Commission (Licensing)

D. Davis  
L. Shao  
D. Jeng  
C. Hofmayer

Tennessee Valley Authority (TVA)

D. R. Armentrout  
C. W. Hatmaker  
R. Domer  
C. Glidewell  
R. Giordano  
E. Burdette  
J. Smith  
T. Spink  
N. Perry  
R. Guthrie  
S. Thickman  
J. Raulston

Atomic Energy Commission (RO II)

J. Rausch

Sargent and Lundy

A. Walser

Babcock & Wilcox (B&W)

J. Anderson  
J. Anderton  
R. Lightte