

Docket Nos. ~~50-439~~  
50-439

5-14-76

Tennessee Valley Authority  
ATTN: Mr. Godwin Williams, Jr.  
Manager of Power  
830 Power Building  
Chattanooga, Tennessee 37401

Gentlemen:

We have completed our review of Amendment 13 to the "Bellefonte Nuclear Plant Preliminary Safety Analysis Report" (PSAR) dated October 22, 1975. This review also included the information provided by TVA in the Mr. J. E. Gilleland to Mr. Karl Kniel letter of January 27, 1976. Our evaluation of this amendment is contained in the attached enclosure.

The changes as submitted in Amendment 13 and the additional information supplied do not represent a change to the principal architectural and engineering criteria which formed the basis for the issuance of the Bellefonte Construction Permits. We, therefore, find that incorporation of these changes to the PSAR does not require any amendment to the construction permits.

The additional information presented in the January 27, 1976, letter should be incorporated into the Bellefonte PSAR via the next amendment. The information should be added to both the Questions and Answer Section and to all other appropriate subsections within the PSAR. Also, the next amendment should include discussion, in the appropriate sections of the PSAR, relating to the Babcock & Wilcox Topical Reports (BAW-10085, BAW-10097, BAW-10099) added to the reference list in Section 1.6.1 by Amendment 13.

Sincerely,

Karl Kniel, Chief  
Light Water Reactors Branch #2  
Division of Project Management

Enclosure:  
Evaluation

*W*

cc: See next page				
OFFICE >				
SURNAME >				
DATE >				

cc: ~~HERBERT S. SANGER, Jr.~~  
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bcc: Mr. E. G. Beasley  
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Mr. T. Spink  
Licensing Engineer  
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Chattanooga, Tennessee 37401

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bcc: JRBuchanan  
TBAbernathy

ELD  
*W.D. Patton*  
4/25/76

Acceptable  
w/ corrections  
noted on page 3

OFFICE →	LWR #2 <i>WJP</i>	RAB <i>WJEC</i>	Plant Sys. <i>WJ</i>	ISSUE <i>WJ</i>	<i>CMA</i>	AD: ENG. <i>WJ</i>
SURNAME →	WJPike:as KKniel <i>PK</i>	WKreger 4/28/76	RLTedesco B 176	RHouston 4/30/76	CHeltemes 4/30/76	RMaccary 6/16/76
DATE →	5/12/76					



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

May 14, 1976

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50-439

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ATTN: Mr. Godwin Williams, Jr.  
Manager of Power  
830 Power Building  
Chattanooga, Tennessee 37401

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Sincerely,

A handwritten signature in cursive script, appearing to read "Karl Kniel".

Karl Kniel, Chief  
Light Water Reactors Branch #2  
Division of Project Management

Enclosure:  
Evaluation

cc: See next page

cc: Herbert S. Sanger, Jr., Esq.  
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Chattanooga, Tennessee 37401

ENCLOSURE

TENNESSEE VALLEY AUTHORITY  
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-438 AND 50-439  
SAFETY EVALUATION OF AMENDMENT 13

Background

On October 22, 1975, the Tennessee Valley Authority submitted Amendment 13 to the Bellefonte Nuclear Plant Preliminary Safety Analysis Report (PSAR). The amendment contained the following:

1. Revisions reflecting a general updating of Section 11.6, Offsite Radiological Monitoring Program.
2. Revisions reflecting a general updating of Chapter 13, Conduct of Operations.
3. Revisions reflecting a general updating of Section 16.6, Administrative Controls.
4. Revisions reflecting a new structural design of the borated water storage tanks.

The Nuclear Regulatory Commission staff requested additional information, the latter part of November, 1975, from TVA concerning the borated water storage tanks. TVA supplied the requested information on January 27, 1976.

Radiological Monitoring

The radiological environment monitoring program description of Section 11.6 continues to be acceptable. The changes made reflect a more accurate description of the program as currently implemented and to be implemented. The program is consistent with the recommendations contained in Regulatory Guide 4.1, revision 1, "Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants" and with recommendations relative to radiological environmental monitoring contained in draft Regulatory Guide 4.8, "Guide for the Preparation of Environmental Technical Specifications for Nuclear Power Plants." The proposed changes to the radiological environmental monitoring program do not represent a change to the principal criteria which formed the basis for the construction permits.

Quality Assurance, Emergency Planning, and Industrial Security

Sections 13.0 and 16.6 included the following changes:

1. The addition of a quality assurance audit staff reporting to the Manager of Power;
2. The redesignation and incorporation into a branch, the functions of the Nuclear Operations Coordinator;
3. The addition of a Nuclear Plant Quality Assurance Staff Supervisor and his staff to the Bellefonte plant staff;
4. The addition of one licensed operator to each plant operating shift.

In addition, there were numerous minor changes to update titles to reflect current organization titles. The changes made by Amendment 13 update the "Bellefonte Nuclear Plant Preliminary Safety Analysis Report" (PSAR) to be the same as the Hartsville application. Items 3 and 4 above plus some other minor changes increase the proposed number of the plant staff by about 30 persons.

The changes made to Sections 13.0 and 16.6 meet current NRC staff positions and do not change the conclusions previously described in the "Safety Evaluation of the Bellefonte Nuclear Plant Units 1 and 2."

Borated Water Storage Tanks

The borated water storage tanks originally proposed in the Bellefonte PSAR were to be constructed of steel in accordance with the "ASME Boiler and Pressure Vessel Code." Each tank was to be supported on a reinforced concrete ring foundation on highly compacted backfill and placed on sound base rock. In Amendment 13, the design is revised to allow the tanks to be constructed of reinforced concrete. They will be cylindrical in shape, with a flat bottom, dome roof and lined with stainless steel. The liner will be built with a system of carbon steel angles, channels or studs to maintain stability during construction. The tanks will be built integrally with a reinforced concrete pedestal foundation founded on sound base rock.

Although the pedestal foundation is founded on rock, it will be embedded in 30 feet of soil. The seismic analysis of this system will use two different models. The first model, uses beam elements to represent the foundation and tank, with lateral springs used to represent the influence of the soil. The second model consists of a finite element representation which includes the nearby retaining wall. The design of the tank will be based on the larger results from the two models.

The reinforced concrete portions of the tank serve as the load resisting elements and will be designed in accordance with American Concrete Institute Code 318-71. The various conditions used in the design of these Category I structures will include an appropriate combination of loads likely to occur during normal operation or shutdown, and during postulated accidents and earthquakes. The concrete portions of the tanks will be designed and constructed to the same criteria used for all other Category I concrete structures.

The stainless steel liner will not perform a load-bearing function and is intended to serve only as a water tight membrane. It will be fabricated in accordance with applicable portions of the American Welding Society's Structural Welding Code D1.1-75. The material of construction for the liner will be Type 304 austenitic stainless steel procured to the American Society of Mechanical Engineer's (ASME) Specification SA-240 or the American Society for Testing and Material (ASTM) Specification A-167. Stiffener bars or shapes on the outside of the liner will be carbon steel procured to ASTM Specification A-36. Joint welding procedures will be qualified to ASME Boiler and Pressure Vessel Code, Section IX. Liquid penetrant examination in accordance with ASME Boiler and Pressure Vessel Code, Section III, Subsection NC, will be made to ensure the integrity of all weld joints exposed to borated water.

The use of these criteria will provide reasonable assurance that the Category I borated water storage tanks will withstand all the specified loads without impairment of their structural integrity and safety function. Conformance with these requirements constitutes an acceptable basis for satisfying the requirements of General Design Criteria 2 and 4. The liner material of construction will provide adequate corrosion resistance for the proposed life of the tank in the service environment. The non-destructive examination and acceptance criteria applied to the liner weld joints will provide adequate assurance of leak tight integrity.

The revised design differs from the previous design only in that the Borated Water Storage Tanks have been changed from steel tanks to reinforced concrete cylindrical tanks with a stainless steel liner. This design change does not alter the design bases or criteria upon which the plant was originally accepted and which formed the basis for the construction permits.

Conclusion

The changes incorporated by Amendment 13 to the radiological environment monitoring program, quality assurance, emergency planning, and industrial security reflect a general updating of the Bellefonte PSAR. Titles were changed to reflect current organizational titles. Program descriptions were expanded to more specifically state how programs are being implemented. Changes were made to make the descriptions in the Bellefonte PSAR more consistent with other TVA applications. These changes represent an attempt by the applicant to improve the Bellefonte PSAR and do not change the principal criteria which formed the basis for the construction permits.

The structural changes to the borated water storage tanks were incorporated to reduce the construction costs of these Category I structures. These structures, as modified, can be constructed to withstand all the specified loads required of Category I structures without impairment of their structural integrity and safety function. The functional designs of the tanks remain the same as the designs originally accepted as a basis for the construction permits. We, therefore, find that incorporation of these changes to the PSAR does not constitute a change to the principal architectural and engineering criteria which formed the basis for the issuance of the Bellefonte Construction Permits.