

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

83 OCT 17 ~~October 20~~ 13, 1983

WBRD-50-390/82-05, -391/82-05  
BLRD-50-438/82-02, -439/82-02

U.S. Nuclear Regulatory Commission  
Region II  
ATTN: James P. O'Reilly, Regional Administrator  
101 Marietta Street, Suite 2900  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR AND BELLEFONTE NUCLEAR PLANTS - REPORTABLE DEFICIENCY - GENERIC  
DEFICIENCY IN DESIGN REVIEW - WBRD-50-390/82-05, -391/82-05 -  
BLRD-50-438/82-02, -439/82-02

The subject deficiency was initially reported to NRC-OIE, Region II,  
Inspector Ross Butcher on December 15, 1981 as NCR M81-13, Deficiency  
No. 5. The first, second, third, and fourth interim reports were  
submitted on January 19, March 31, December 13, 1982, and April 20, 1983.  
In accordance with paragraph 50.55(e) of 10 CFR Part 50, enclosed is  
our final report on the subject deficiency.

If you have any questions, please get in touch with Ralph Shell at FTS  
858-2676.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*DS Kammer*  
for L. M. Mills, Manager  
Nuclear Licensing

Enclosure

cc (Enclosure):

Mr. R. C. DeYoung, Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Records Center  
Institute of Nuclear Power Operations  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, Georgia 30339

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WBRD-50-390/82-05, -391/82-05  
BLRD-50-438/82-02, -439/82-02

ENCLOSURE  
WATTS BAR AND BELLEFONTE NUCLEAR PLANTS  
GENERIC DEFICIENCY IN DESIGN REVIEW  
10CFR50.55(e) REPORT NO. 5 (FINAL)  
AUDIT M81-13, DEFICIENCY 5

Description of Deficiency

This deficiency is concerned with apparent failures of the design review process to verify the accuracy and adequacy of design documents. Evidence of this deficiency is illustrated by numerous NCRs which were properly written after design errors were discovered. For example, BLNBLP8119, BLNBLP8122, BLNBLP8118, BLNBLP8124, and WBNSWP8159 all involved inadequacies in issued design criteria by issued drawings, etc. BLNBLP8121, BLNBLP8123, WBNCEB8115, WBNSPW8157, and WBNWP8115 involved inadequate design. BLNBLP8120, WBNCEB8116, WBNMEB98005, and WBNSWP8156 involved various inaccuracies in drawing or in analysis of the design. Each of these errors was discovered after the final design review was completed and procedures, drawings, etc., were issued. (This deficiency concerns only the design review process and does not concern the nonconformance program.)

Safety Implications

Failure of the design review process to identify deficiencies could result in the installation and use of improperly designed structures, systems, or components which could adversely affect safe plant operations.

Corrective Action

TVA has in the past and continues to take the position that its final design adequately reflects the intent as defined by the PSARs, FSARs, and SERs on all of its nuclear plants operating and under construction. This position is supported by the results of the many audits and reviews performed on our plants such as:

Watts Bar (WBN) - Black and Veatch  
Bellefonte (BLN) - Institute for Nuclear Power Operations (INPO)  
BLN - NRC Construction Appraisal Team (CAT)  
WBN & BLN - NRC-OIE on-site inspections

While each of these audits/reviews have resulted in findings, none have identified what we believe to be deficiencies attributed to a major design program breakdown.

It is, therefore, TVA's position that no additional reviews of past designs for our nuclear plants need be performed. We have, however, seen the need to evaluate our design program to determine what improvements can be made to our design review process in order to reduce the number of random deficiencies which arise. In order to accomplish this review, the TVA Office of Engineering Design and Construction (OEDC) established an Action Plan for Quality Improvement. TVA's Division of Engineering Design (EN DES), as part of this plan, initiated a comprehensive analysis of the EN DES design control process. The action team assigned to this task made three recommendations which, in combination with the design process in place, would improve the quality of TVA's design output. The recommendations of the "Design Control Action Team" were:

1. Prepare a formal description of the design processes and use that description as the basis for training in the division.
2. Improve the surveillance of the design process through the initiation of design evaluations and detail technical evaluations.
3. Identify to the "Task Force on Staffing and Training" the areas in which expanded training is needed.

The division is implementing these three recommendations by preparing both a formal report which will describe the design process and procedures, EN DES EPs 3.57, "Design Evaluations," and 3.58, "Detail Technical Evaluations," which direct the performance of design evaluations and detail technical evaluations. The report and the procedures are scheduled to be issued by October 21, 1983. These procedures will then be included in the training on EPs on the normal training schedule.

The design evaluations will be multi-discipline system reviews and are intended to ensure that (1) design requirements are understood and are being met, (2) design inputs are adequately established, defined, and are being controlled, and (3) outputs are understandable to the user. Detail technical evaluations on the other hand will be conducted on selected systems, subsystems, or design details at key steps in the design process and will assess the technical adequacy of the design output. Both types of evaluations are in addition to the design verification reviews we presently perform.

These changes to the design review process will be implemented by January 1, 1984.