TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

July 20, 1983

WBRD-50-390/82-06, -391/82-06
BLRD-50-438/82-03, -439/82-03

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 - ENGINEERING CHANGE REVIEW AND HANDLING - WBRD-50-390/82-06, -391/82-06 - BLRD-50-438/82-03, -439/82-03

The subject deficiency was initially reported to NRC-OIE, Region II, Inspector Ross Butcher on December 15, 1981 as Audit M81-13, Deficiency Nos. 2, 3, and 4. In accordance with paragraph 50.55(e) of 10 CFR Part 50, we are enclosing our final report for Watts Bar and items 2 and 4 of Bellefonte Nuclear Plant, and the sixth interim report for item 3 for Bellefonte. We anticipate transmitting additional information on item 3 of Bellefonte on or before October 21, 1983.

If you have any questions, please call Ralph Shell at FTS 858-2676.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

D S Kammer
for L. M. Mills, Manager
Nuclear Licensing

Enclosure
cc (Enclosure):
Mr. R. C. DeYoung, Director
Office of Inspection and Enforcement
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ENCLOSURE
WATTS BAR AND BELLEFONTE NUCLEAR PLANTS
ENGINEERING CHANGE NOTICE REVIEW AND HANDLING
10CFR50.55(e) REPORT NO. 6
FINAL FOR WATTS BAR, INTERIM FOR BELLEFONTE
AUDIT M81-13, DEFICIENCY NOs. 2, 3, AND 4
WBRD-50-390/82-06, -391/82-06
BLRD-50-438/82-03, -439/82-03

Description of Deficiency (Deficiency 2)

EN DES-EP 4 02 R9, Figure 2, 'Engineering Change Notices (ECNs) - Handling,' states in part that Thermal Power Engineering (TPE) Branch review must be marked' 'Yes' if the ECN requires change to a safety-related system or change in a conceptual document . . . for which at least one TPE branch is responsible'; and 'if 'Yes' above, the cover sheet original enters 'N/A' and his initials where a TPE approval signature is not needed: approval of all TPE branches is not always required.'

Contrary to the above, numerous ECNs which involved safety-related changes were not routed or reviewed by the responsible branch(es). (The audit cited one example for Watts Bar and nine examples for Bellefonte.)

The audit cited one example for Watts Bar which was ECN No. 2958. Following a thorough investigation, it was determined that ECN 2958 was handled properly by not requiring any TPE branch approval.

Bellefonte ECNs 1225, 1231, 1236, 1238, 1274, 1282, 1290, 1350, and 1352 were cited as being deficient in not receiving proper Thermal Power Engineering (TPE) Branches' approval. Further investigation of ECNs cited in Deficiency No. 2 enabled the following conclusions to be made:

1. EN DES-EP 4.02, 'Engineering Change Notices - Handling,' figure 2, page 28, can be misinterpreted as to when TPE approval is required.

2. TPE approval was given in the form of a design criteria change, post TMI caused revision, or change as a design improvement not involving plant concepts.

3. Changes involved only detailed design and, therefore, was of no interest to any TPE branch.

4. 'Reference and Description of Change' paragraphs do not adequately describe the changes in some instances, thereby, misleading anyone not familiar with the changes.

5. No deficiencies exist in determining TPE approval.

The results of the investigations were presented to TVA's Office of Quality Assurance and the audit deficiency has been closed.

Based on the above discussion, TVA considers deficiency 2 to have no applicability to the Watts Bar and Bellefonte Nuclear Plants and is, therefore, no longer reportable under the requirements of 10CFR50.55(e). It

should be noted that although there have been no deficiencies in determining proper approval, EN DES-EP 4.02 was revised to provide further clarification on the requirements for review and approval of ECNs by the Engineering Support Branches (formerly TPE branches).

Description of Deficiency (Deficiency 3)

EN DES-EP 4.02 R9, Figure 3, 'Engineering Change Notices - Handling,' states in part that the 'nonconformance report (NCR) required' block must be marked ''Yes' if the project or a branch has prepared or will prepare a nonconformance report related to the design change. See footnote 1, page 1.'

Footnote 1, page 1, states, 'A nonconformance report (see EN DES-EP 1.26) must be processed when an issued design document must be changed to correct a significant or recurring condition which could have resulted in a required safety-related function not being fulfilled. This excludes changes for preplanned design development, improvement of an already satisfactory design, changes that are directed by new or revised standards or regulations, and nonsafety-related changes.'

Contrary to the above, numerous ECNs which involved conditions adverse to quality were not generated as the result of an NCR. (The audit cited three examples for Watts Bar and 12 examples for Bellefonte.)

The cause of this deficiency was determined to be the inadequate training of those responsible for the preparation of ECNs.

Safety Implications

Failure to generate an NCR could result in the potential generic implications of the deficiency from being fully examined. Actions to prevent the deficiency from recurring are also not addressed. This condition could adversely affect safe plant operations.

Corrective Action

Watts Bar

The audit cited these examples for Watts Bar, which were ECN Nos. 2990, 3092, and 2958.

ECN 2990

ECN 2990 was issued for the original issue of hanger drawings. The original design issue of drawings does not constitute a nonconforming condition. These drawings normally would have been issued without an ECN, but due to the Watts Bar Design Project's (WBP; formerly SWP) program to document all drawing issues on ECNs, either original or revisions, ECN 2990 was written. On this basis, an NCR was not required.

However, in reviewing these events, the following significant nonconforming condition was uncovered:

EN DES does not have a procedurally controlled system to assure that all pipe hangers are designed and subsequently installed before plant operation. This possibility arises because hanger design is dependent upon and triggered by the completion of appropriate predecessor analyses. At present, the problem stems from a lack of procedural control over the analysis activity. As a result, NCR WBNQAB8204 has been written to address this issue.

ECN 3092

ECN 3092 implements a post TMI requirement rather than correcting a nonconforming condition.

ECN 2958

Following a thorough review of ECN 2958, it has been determined that an NCR should have been written. Appropriately an NCR (WBNCEB8217) has been prepared which also notes that the NCR was not prepared in a timely manner.

TVA conducted an initial sampling of the Watts Bar Design Project Organization (WBP) to determine if conditions existed where an Engineering Change Notice (ECN) should have required an accompanying Nonconformance Report (NCR). The results of this sampling indicated problems in one area only within the design project. Therefore, an extended review of ECNs produced in this one area was performed. A total of seven discrepancies were identified. Subsequent investigation revealed that five of these seven discrepancies were nonconforming conditions. These five nonconformances are being processed by TVA in accordance with existing procedures.

In order to prevent recurrence of this problem, WBP has conducted a retraining of all employees to ensure that they are aware of the type of conditions requiring initiation of NCRs.

This information has been provided to TVA's Office of Quality Assurance and accepted for closure of this audit deficiency for the Watts Bar Nuclear Plant. Accordingly, we consider this item closed for Watts Bar.

Bellefonte

ECNs 1225, 1231, 1236, 1238, 1245, 1262, 1274, 1282, 1287, 1290, 1345, and 1352 were cited as being deficient in not requiring NCRs be written as a result of the change required by the ECN. Further review of the ECNs listed above resulted in concluding that NCRs should have been issued for the following:

1. ECN 1262 was written to add automatic air release valves to the CCW heat exchanges, CCW air handling units, and diesel generator cooling water per DIM N4-KE-D740-6. Reanalysis of the essential raw cooling (ERCW) system requires this addition. NCR BLNQAB8203 was issued to document corrective action, assignable cause, and action to prevent recurrence for this design deficiency.

2. ECN 1282 was issued to provide for expansion loops in the section of boric acid pumps after thermal analysis of the system. NCR BLNQAB8201 is being issued to document corrective action, assignable cause, and action to prevent recurrence for this design deficiency.

3. Upon further discussion and evaluation of ECNs 1274, 1290, and 1352, it was determined that nonconforming conditions did not exist for these ECNs as reported in our third interim report on this subject.

4. ECN 1236 was issued to brace powerhouse ladders because of excessive deflection. Investigations of this subject conclude that documented seismic analysis calculations do not exist. NCR BLNQAB8206 was issued to document corrective action, assignable cause, and action to prevent recurrence due to lack of seismic analysis.

The Bellefonte Design Project (BLP) conducted an audit of 100 ECNs to determine the extent of this deficiency. The audit indicated one additional instance where an NCR resulted. Upon further investigation of the NCR, it was determined that a problem did not actually exist and that the NCR should not have been written. Based on the results of this sampling, it was determined that no additional sampling is necessary.

To prevent recurrence of this deficiency, BLP has instituted a training program to educate all personnel in the requirements of Engineering Procedures with respect to ECN review and handling.

This information has been presented to TVA's Office of Quality Assurance for closure of this deficiency.

Description of Deficiency (Deficiency 4)

EN DES-EP 4.02 R9, Figure 3, 'Engineering Change Notices - Handling,' includes instructions for filling out the ECN cover sheet. For example, it requires the QA applies block to be marked ''Yes' if the ECN is safety-related . . .' and the NCR required block to be marked ''Yes' if the project or a branch has prepared or will prepare a nonconformance report related to the design change . . . .'

Contrary to the above, numerous ECN cover sheets were marked improperly, thus omitting requirements for the QA applies, Seismic Analysis Required, or NCR Required blocks. (The audit cited four examples for Watts Bar and 15 examples for Bellefonte.)

The cause of this deficiency was determined to be the inadequate training of those responsible for the preparation of ECNs.

Safety Implications

Failure to properly and completely mark ECN cover sheets could result in insufficient review and/or dispositioning of a safety-related design change. This condition could ultimately result in a deficient design being approved for use and thereby adversely affecting safe plant operations.

Corrective Action

Watts Bar

The audit cited four examples for Watts Bar, which were ECN Nos. 2991, 3092, 2958, and 2990.

ECN 2991

SWP (now WBP) had correctly marked the cover sheet that QA applied and that seismic analysis did not apply. However, following further review by EN DES QAB, it was determined that an NCR should have been written. Appropriately, an NCR (WBNQAB8203) was prepared as well as an NCR (WBNQAB8202) which notes the failure to prepare an NCR.

ECN 3092

SWP had correctly marked the cover sheet that QA applied and that seismic analysis applied. However, as noted under Deficiency No. 3, an NCR was not required since the change/addition resulted from a post TMI requirement.

ECN 2958

SWP had correctly marked the cover sheet that QA applied and that seismic analysis applied. However, as noted under Deficiency No. 3, an NCR should have been prepared.

ECN 2990

SWP had correctly marked the cover sheet that QA applied and that seismic analysis applied, and that an NCR was not indicated.

Since the ECN cover sheets cited by the audit as being improperly marked were actually correct with the exception of the 'NCR required' block, the scope of this deficiency is reduced to the same problem identified by Deficiency No. 3. Accordingly, all corrective actions identified for deficiency No. 3 also apply for deficiency No. 4. This information has been provided to TVA's Office of Quality Assurance and accepted for closure of this deficiency for the Watts Bar Nuclear Plant. Accordingly, we consider this item closed for Watts Bar.

Bellefonte

ECNs 1225, 1231, 1236, 1238, 1245, 1262, 1274, 1282, 1284, 1285, 1286, 1287, 1345, 1350, and 1352 were cited as being deficient in improper marking of the cover sheet, thus omitting requirements for QA applies, seismic analysis required, or NCR required blocks. Further review of these potentially deficient ECNs produced these results:

1. ECN 1282 was deficient in not properly marking QA applies and seismic analysis required blocks. As a result of thermal analysis, the ECN was written.

2. ECN 1350 - The QA applies, seismic analysis, and NCR required blocks were incorrectly marked 'no.' A nonconformance report had been written to cover this incorrect design, i.e., NCR 1553. NCR BLNQAB8205 is being issued to document corrective action, assignable cause, and action to prevent recurrence for incorrect application of QA and seismic analysis. No change in equipment design was made, only equipment relocation, i.e., level transmitter resulted from this ECN. (Note 4 of Corrective Actions for Deficiency 2 would apply to this ECN.)

3. ECNs 1236, 1262, 1274, 1290, and 1352 were addressed in Deficiency No. 3.

4. The other eight ECNs were determined to have been marked correctly or handled correctly as indicated below.

The audit of 100 ECNs identified in the response to deficiency No. 3 was also conducted to determine if there were problems with the marking of cover sheets as discussed in this deficiency. The audit revealed five cases where the 'Seismic Analysis Required' block was incorrectly marked 'No.' In each of these cases, however, the required analysis was in fact performed. The audit also revealed nine cases where the 'QA Applies' block was incorrectly marked 'No.' In each of these cases, however, the QA program was in fact applied to the safety-related changes.

Based on the results of this sampling and the fact that all required steps were performed, it was determined that no additional sampling is necessary. To prevent recurrence of this deficiency, BLP has instituted a training program to educate all personnel in the requirements of the engineering procedures with respect to ECN review and handling.

This information has been provided to TVA's Office of Quality Assurance and accepted for closure of this deficiency for the Bellefonte Nuclear Plant. Accordingly, we consider this item closed for Bellefonte.