TENNESSEE VALLEY AUTHORITY
CHATTANOOGA TENNESSEE 37401
400 Chestnut Street Tower II

August 5, 1982

WBRD-50-390/82-06, -391/82-06
BLRD-50-438/82-03, -439/82-03
HTRD-50-518/82-03, -519/82-03
-520/82-03, -521/82-03
PBRD-50-553/82-03, -554/82-03
YCRD-50-566/82-012 -567/82-02

U.S. Nuclear Regulatory Commission
Region II
ATTN: James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR, BELLEFONTE, HARTSVILLE, PHIPPS BEND, AND YELLOW CREEK 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 - HTRD-50-518/82-03, -519/82-03, -520/82-03, -521/82-03 - PBRD-50-553/82-03, -554/82-03 - YCRD-50-566/82-02, -567/82-02

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 third interim report for the Watts Bar and Bellefonte Nuclear Plants. Our final report for the Hartsville, Phipps Bend, and Yellow Creek Nuclear Plants was submitted on March 31, 1982. We anticipate transmitting the next report for Watts Bar and Bellefonte on or before January 19, 1983. A two-day extension was discussed with and granted by NRC-OIE Inspector Ross Butcher on August 2 and 3, 1982.

If you have any questions, please get in touch with Jim Domer for BWRs at FTS 858-2725 or Ralph Shell for PWRs at FTS 858-2676.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Licensing

Enclosure
cc: Mr. R. C. DeYoung, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE
WATTS BAR AND BELLEFONTE NUCLEAR PLANTS
ENGINEERING CHANGE NOTICE REVIEW AND HANDLING
10 CFR 50.55(e) REPORT NO. 3 (INTERIM)
AUDIT M81-13, DEFICIENCY NOS. 2, 3, AND 4
WBRD-50-390/82-06, -391/82-06
BLRD-50-428/82-03, -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 originial 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.)

Interim Progress

This deficiency has been evaluated by appropriate design projects in EN DES. The results are as follows:

Watts Bar

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.

However as a result of post audit discussions, a change will be made to EN DES-EP 4.02, "Engineering Change Notices (ECNs) - Handling," to clarify the requirements for review and approval of ECNs by the Thermal Power Engineering Branches.

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

4. "Reference and Description of Change" does not adequately describe the change in some instances, thereby, misleading anyone not familiar with the change.

5. No deficiencies exist in determining TPE approval.

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.)

Interim Progress

This deficiency has been evaluated by appropriate design projects in EN DES. The results are as follows:

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 Special Work Permit (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.

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 1274 was written to implement a drawing revision. The wrong UNID code was used on a 2-train junction box. With this wrong designation, the computer could not route cable. A nonsignificant NCR would have been appropriate. Since cable could not have been routed, safety would not have been affected; therefore, this is not a serious violation.

2. 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 is being issued to document corrective action, assignable cause, and action to prevent recurrence for this design deficiency.

3. 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.

4. ECN 1290 was written to evaluate effects of conduit supports on annulus steel and modify as required. This evaluation was done because of concern of potential overstress of structural members. These concerns were justified and modifications were made. NCR BLNQAB8204 is being issued to document corrective action, assignable cause, and action to prevent recurrence for this design deficiency.

5. ECN 1352 was issued to provide for addition of seismic expansion anchors for reactor coolant drains, vents, and piping after reanalysis. NCR BLNQAB8202 is being written to document corrective action, assignable cause, and action to prevent recurrence for this design deficiency.

6. 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 is being issued to document corrective action, assignable cause, and action to prevent recurrence due to lack of seismic analysis.

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.)

Interim Progress

This deficiency has been evaluated by appropriate design projects in EN DES. The results are as follows:

Watts Bar

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

ECN 2991

SWP 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) has been prepared as well as an NCR (WBNQAB8202) which notes the failure to prepare an NCR.

ECN 3092

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

SWP is planning to do the following activities to ensure appropriate corrective action and action to prevent recurrence:

1. Review a random sample of ECNs (approximately 10 percent of total to date) to ensure that the ECN cover sheet properly indicates if an NCR is required. The result of the sample will be reviewed by the design project manager who will determine the significance of results and/or if the sample should be expanded. Upon completion, this activity and its results will be appropriately documented.

2. Provide instructions to all project personnel who prepare and review ECNs to assure that they are alert to the requirements of EN DES-EP 1.26 R4, "Nonconformances - Reporting and Handling by EN DES." Such instruction will be appropriately documented.

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, Deficiency 2 would apply to this ECN.)

3. ECNs 1236, 1262, 1274, and 1352 were addressed in Deficiency No. 3; all other ECNs were handled adequately.

TVA is studying possible revision to EN DES-EP 4.02 and other corrective actions.