

TENNESSEE VALLEY AUTHORITY

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JUL 29 1987

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Attn: Gentlemen:

In the Matter of the)
Tennessee Valley Authority)

Docket Nos. 50-259
50-260
50-296
50-390
50-391
50-438
50-439

**BROWNS FERRY, WATTS BAR, AND BELLEFONTE NUCLEAR PLANTS - NRC INSPECTION
REPORTS 50-259, 260, 296/86-35; 50-390, 391/86-22; 50-438, 439/86-08 -
RESPONSE TO FOLLOW-UP ACTION ITEMS**

TVA's letter to you dated May 8, 1987, transmitted a schedule for response to IE Inspection Report Nos. 50-259, 260, 296/86-35; 50-390, 391/86-22; 50-438, 439/86-08 for Browns Ferry, Watts Bar, and Bellefonte Nuclear Plants technical issues. TVA's response to these issues is contained in enclosure 1 for Browns Ferry, enclosure 2 for Watts Bar, and enclosure 3 for Bellefonte. Enclosure 4 is a list of commitments made by TVA to NRC in responding to these matters.

If you have any questions, please telephone D. L. Williams at (615) 632-7170.

To the best of my knowledge, I declare the statements contained herein are complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


R. L. Gridley, Director
Nuclear Safety and Licensing

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

JUL 29 1987

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ENCLOSURE 1

NRC INSPECTION REPORT NOS.
50-259, 260, AND 296/86-35
JAMES M. TAYLOR'S LETTER TO S. A. WHITE
DATED JANUARY 28, 1987

TVA's response to technical issues (findings) pertaining to Browns Ferry Nuclear Plant (BFN) is provided below. Note that only the portion of NRC's evaluation for a specific sample number where finding(s) are discussed is listed and responded to by TVA.

Sample No. 1 (NCR SQNCEB8409)

The TVA resolution for the Sequoyah Nuclear Plant (SQN) water spray nonconformance should be reviewed and accepted by the NRC before restart. BFN also will have to establish a method for resolution and obtain NRC acceptance before restart. Watts Bar Nuclear Plant (WBN) efforts appear to be adequate and Bellefonte Nuclear Plant (BLN) has stated that it will take action before fuel loading.

TVA Response

In addition to NCR SQNCEB8409 for SQN, SCRBFNMEB8605 has been issued for BFN to address the potential for inadvertent water spray on essential equipment. Corrective action for both CAQs include walkdown inspections to identify and document the postulated hazards of water spray from piping that has not been designed and installed for pressure boundary integrity. TVA will present to the NRC the corrective action plan and schedule of implementation for SCRBFNMEB8605 by March 2, 1988. Additional details on this matter are contained in Browns Ferry Nuclear Performance Plan (BFNPP) Section III.3.10.

Sample No. 5 (NCR SQNEEB8111)

The problem of motor overvoltage will be addressed during the current, large scale electrical recalculation effort at BFN and eventually at BLN. However, those problems that have the potential to be generic and existed before December 28, 1982, and that were not investigated at other plants should be reviewed by TVA.

TVA Response

During the week of December 15, 1986, NRC reviewed TVA's implementation of the CAQ Generic Review Program (GRP). The inspection was documented by NRC inspection reports 50-259, 260, 296/86-43, 50-327, 328/86-73, 50-390-27, 391/86-26, and 50-438, 439/86-11 dated April 27, 1987. Two violations were cited regarding the adequacy of CAQ generic reviews. TVA has responded to these matters by letter from R. L. Gridley dated July 10, 1987. In addition, (as described in the BFNPP, Section III.4.1) TVA has contracted to perform the majority of the essential electrical calculations, including voltage drop studies that will determine the operating voltages at the terminals of BFN safety-related motors. Upon completion of these calculations, any

safety-related motor that is determined to be operating outside of its rating will be identified as a deficiency and dispositioned in accordance with Division of Nuclear Engineering (DNE) Procedure NEP 9.1, Corrective Action.

Sample No. 6 (NCR SQNCEB8029)

The NRC inspection team agrees with TVA's specific decision to void NCR SQNCEB8029 and not to provide protective devices at new HELB location 44A because the stress differential of 171 lb/in² between old break location B2 and new break location 44A is within the margin of uncertainty for stresses derived from analysis of idealized mathematical models. However, the team does not agree with the generic exception which TVA has taken to Regulatory Guide 1.46 with the change only being incorporated in SQN Design Criteria SQN-DC-V-2.13. TVA CEB should amend the SQN Updated FSAR to reflect this exception. The team did not review comparable TVA documentation for either the BFN or WBN. Any comparable documentation deficiencies for BFN, WBN, or BLN should be corrected by TVA.

TVA Response

TVA will review this matter by November 15, 1987, and if similar discrepancies are noted, an FSAR revision will be submitted at the next appropriate 10 CFR 50.71(e) update for BFN.

Sample No. 10 (SCRSONMEB8514)

The team concludes that TVA's corrective action to requalify the seal material to the higher accident temperature was both appropriate and timely. However, the team notes that TVA Drawing 44W290-6 (Ref. 10-5) specifies the use of General Electric or Dow Corning caulking compounds for the normal and accident conditions detailed in TVA Specification 2883 to ensure that the elastomeric seals are leak tight. However, TVA Design Criteria No. SQN-DC-V-2.4.3 (Ref. 10-1) only requires that the caulking remain functional under normal conditions. TVA should document the ability of the caulking compounds to function under the revised accident conditions. This should be addressed for all TVA facilities.

TVA Response

The action required by the subject report is for documentation of the caulking compound used by TVA in the installation of the seals between the ice condenser and containment vessel. These seals are installed at TVA's SQN and WBN plants only and, therefore, not applicable to BFN.

Sample No. 13 (SCRSONCEB8506)

Although the generic consideration for this item was properly made for WBN, the team could not locate any documentation where such consideration also was made for BFN and BLN.

TVA Response

As described above, the NRC team could not locate any documentation where TVA had performed a generic review evaluation of SCRSONCEB8506 for BFN. However, this review had been completed on December 23, 1985, and found that a similar condition did exist at BFN. This condition had been documented by SCRBFNCEB8518.

Sample No. 37 (SCR BFNEEB8524R2)

The NRC inspection team believes that this issue must be reviewed for possible inclusion in any TVA restart list of items to be completed before the restart of any of the BFN units. The NRC inspection team had no disagreement with the action taken to date except to comment that the target date for the establishment of a plan to resolve this issue has been missed. The team suggests that when the plan is developed and approved the Tracking and Reporting Open Items (TROI) target completion date should be established consistent with the plan. It is noted that this SCR was included in the restart list (open NCR/SCRs) of July 31, 1986, contained in the August 28, 1986, submittal of the NPP by TVA for BFN.

TVA Response

Several significant electrical issues, including SCRBFNEEB8524, are being addressed under SCRBFNEEB8529 Revision 2, "Minimum Set of Electrical Calculations". This electrical calculations program is described in Section III.4.1 of the BFNPP and both SCRs are listed in Appendix D of the BFNPP as restart items.

Sample No. 38 (BFNBWP8304R1)

The designation by TVA of this item as nonreportable is acceptable. The resolution of the problem was adequate; however, the time span of 2-1/2 years seems excessive for a very minor change. Although the procedures were in place in 1971 and TVA claims the design staff had been trained on them, the cables from this item were added by an ECN in 1977. Although this item appears to be an isolated item, the action noted to prevent recurrence should not have claimed 1971 procedures changes as effective. The reference number on the SCR completion verification sheet was incorrect; TVA had provided the reference number for the original engineering change notice instead of Revision 2 of the notice which took care of this NCR.

TVA Response

Before November 26, 1985, electrical physical separation design criteria existed in the form of many documents from various sources. On November 26, 1985, Detailed Design Criteria BFN-50-794, Physical Independence of Electrical Systems, was issued for BFN. This design criteria consolidates all separation requirements in a single, accessible, concise document. Section 5.5.1 of this design criteria, for example, states; "The designations for redundant divisions of safety-related conduit and cables shall have appropriate suffixes assigned to both the conduit and cable numbers." For example, the conduit in question (designated as "M80") indicates that this conduit once was an installed spare; and when safety-related cables were installed in it, the conduit should have been redesignated with appropriate analysis as a safety-related conduit bearing the same suffix as the installed cables. The issuance and implementation of design criteria BFN-50-794 is intended to serve as recurrence control for the condition originally documented by BFNBWP8304.

The RIMS number shown on the completion verification sheet for BFNBWP8304 R1 has been verified as being correct. The Engineering Change Notice (ECN) cover sheet when issued is not revised.

Sample No. 41 (SCRBFNCEB8508R1)

The NRC inspection team notes that the deflection check for pipe support R43 results in a lateral displacement of approximately 3/8 inch. However, the support is modeled as a rigid restraint (i.e., zero displacement) in the piping analysis. There were apparently no displacement or minimum frequency criteria invoked for the design of pipe supports at BFN. References 41-3, -4, and -6 do not specify any displacement or minimum frequency criteria for existing pipe supports located in piping systems reanalyzed for hydrodynamic loads. The NRC inspection team believes that any future reanalysis completed for BFN piping systems or portions thereof should address this issue in the criteria or analysis procedure.

TVA Response

The original design basis for seismic class 1 piping at BFN did not include specific limits for support displacement or frequency. The general BFN FSAR commitment for structural integrity and functional adequacy under design loading conditions did imply some restriction of support displacements, but no specific limits were set.

There was no formal BFN support design criteria with specific deflection or frequency limitations until September 1986 when criteria BFN-50-724 was issued. Since 1980, support design/evaluation practice to limit support displacements under normalized loads to approximately 1/8-inch has been followed, unless special justification is provided in the calculation. This practice was applicable when the external torus attached piping supports (including support R43) were analyzed for newly defined hydrodynamic loads and other coincident loads in accordance with BFN-SO-D706, the general design criteria for the Long-Term Torus Integrity Program (LTTIP). The analytical and design work for the LTTIP was summarized in a BFN plant unique analysis report which was approved by the NRC in May 1985.

The specific support which was questioned by this observation, R43, is an external torus attached piping support. The calculation for the support has been reviewed for technical adequacy and found to contain a conservative factor in the displacement prediction. The correct displacement is 0.14-inch under normalized load. Thus, the approximately 1/8-inch displacement limit is actually satisfied for support R43. More than 300 additional unit 2 external torus attached piping calculations have been assessed for this concern, and in no case has a calculated support displacement greater than 0.15-inch been found at an assumed rigid support point in the piping analysis. Of these 300 supports, a few were found without appropriate displacement evaluations; and those are being evaluated accordingly. The unit 2 effort will be completed by March 2, 1988.

For future analyses, displacement of the torus attached piping supports will be more rigorously controlled by a revision of the LTTIP general design criteria which formalizes the informal practice described above. This revisor will be issued by September 30, 1987. Other seismic class 1 piping supports will be evaluated in accordance with BFN-50-724, or similar criteria, when new analysis or reanalyses are performed.

Sample No. 42 (SCRBFNCEB8512)

The NRC inspection team concurs with TVA's conclusion that SCRBFNCEB8512 was not reportable, but does not agree that no generic implications were involved because TVA's instructions provided to design personnel to prevent recurrence stated: "This action is being taken due to the various detailing discrepancies identified for U-bolts in this and other SCRs/Audits" (reference 42-13). The NRC inspection team agrees with TVA's corrective action to modify pipe supports H-70 and H-71 in accordance with the vertical restraints modeled in the piping analysis. However, the team notes that there were apparently no displacement or minimum frequency criteria invoked for the design of pipe supports at Browns Ferry. References 42-4, -6, and -8 do not specify any displacement or minimum frequency criteria for existing pipe supports located in piping systems reanalyzed for hydrodynamic loads. In addition, it does not appear that pipe supports were evaluated for friction resulting from dead and operating thermal loads as required by USAS B31.1.0, the piping code of record for Browns Ferry Nuclear Plant.

The NRC inspection team believes any future reanalysis completed for Browns Ferry piping systems or portions thereof should address these issues. Some of these issues could be addressed in the criteria or analysis procedures since the results in some cases may be affected.

TVA Response

A generic condition evaluation was not originally performed for SCRBFNCEB8512, Revision 0 because it was believed that the errors in analysis of supports H-70 and H-71 represented isolated instances where U-bolts for this particular instance were improperly used for unidirectional supports. After issuance of SCRBFNCEB8512, a guidance memorandum was routed to BFN support designers, as action to prevent recurrence, to provide more general guidance regarding design requirements for U-bolt supports. SCRBFNCEB8512 was revised March 10, 1987, to require a potential generic condition evaluation to be performed at other TVA plant sites after further evaluation of this matter in light of NRC's observation. This condition is currently being evaluated for generic applicability to other TVA plants.

NRC's evaluation of this sample expressed additional concerns about support deflection/frequency criteria and as-built programs. Those concerns are addressed in the preceding response to Sample Number 41.

On the matter of friction resulting from dead and operating thermal loads, there was no formal BFN support design criteria with specific requirements for consideration of support friction under deadweight and thermal loading until design criteria BFN-50-724 was issued in September 1986. Since 1980, it has been a practice of support design/evaluation to consider support friction under those loading conditions. In addition, a general reference calculation was issued in July 1984 stating explicit guidance for consideration of friction in LTTIP pipe support design/evaluation.

The omission of friction was not a significant factor reflected in SCRBFNCEB8512 because the calculated pipe movement in the unrestrained axial direction for supports H-70 and H-71 was less than 1/16-inch (the displacement at which friction effects must be evaluated in accordance with BFN-50-724 and current nuclear industry practice). The significant pipe movements for these supports were lateral to the pipe and in the plane of the U-bolts which were installed with nominal 1/16-inch gaps. Since the calculated lateral pipe movements were greater than 1/16-inch, the piping model and support design were incompatible as described in the SCR. The revised calculations for modified supports H-70 and H-71 properly consider friction in accordance with the general reference calculation.

As-built conditions are being evaluated for LTTIP external torus attached piping supports. As a part of those evaluations, the support calculations are being reviewed and revised, as necessary, for consideration of friction effects. As of June 6, 1987, over 300 unit 2 supports had been reviewed for this consideration. No hardware problems were found due to friction loads; however, some calculations were identified where friction was not properly considered in accordance with the general reference calculation. Those calculations are being revised accordingly. The LTTIP torus attached piping support calculations will include appropriate as-built, friction load, and displacement considerations. The effort for unit 2 is scheduled for completion by March 2, 1988.

To provide improved control of friction considerations for future torus attached piping support evaluations, the LTTIP general design criteria will be revised by September 30, 1987, to require consideration of friction in accordance with the general reference calculation. Other seismic Class 1 piping supports will be evaluated for friction effects according to BFN-50-724 to similar criteria when new analyses and reanalyses are performed.

Sample No. 43 (SCRBFNCEB8517)

The NRC inspection team believes that TVA also should evaluate all ASME Class 2 and 3 equivalent piping systems at BFN with respect to these instructions to confirm that all required thermal stress range analyses have been performed.

TVA Response

The referenced NRC report stated that TVA should also evaluate all existing ASME Class 2 and 3 equivalent piping analyses at BFN with respect to the instructions to be added to the Rigorous Analysis Handbook (RAH) in accordance with SCRBFNCEB8517, to confirm that required thermal stress range analyses have been considered.

BFN Engineering Project is waiting issuance of the subject addition to the RAH by Civil Engineering Branch Central Staff. This revision to the RAH will be issued by June 27, 1988. Upon RAH issuance, the required evaluation will be handled as follows:

- a. The evaluations which are applicable to the BFN IE Bulletin (IEB 79-14) program will be completed as part of analysis associated with that program.
- b. Analyses for seismic Class 1 piping systems outside the BFN IEB 79-14 program such as torus attached piping, CRD piping, small bore piping, instrument lines, and tubing will also be evaluated; however, this will be done separately. SCRBFNCEB8517 is being revised to add this corrective action.

Sample No. 45 (NCR BFNCEB8005)

The NRC inspection team has reviewed the available documentation and sample calculations for the structural modifications and agrees that the correct safety significance was assigned to this NCR. However, although there is a memorandum written to determine potential reportability (reference 45-3), the NRC team could not locate any documentation to determine whether this item was reported to the NRC. Even though this item was initiated by an IE bulletin and TVA has submitted responses which were reviewed by the NRC, the responses to the bulletin do not relieve or substitute for reporting requirements of the regulations. TVA should evaluate issues of the block walls for reportability.

TVA Response

TVA's initial response to IE Bulletin 80-11 (refer to J. L. Cross's letter to J. P. O'Reilly dated November 7, 1980) provided a summary of our evaluation of masonry walls. That response indicated that all masonry walls with the exception of two, were acceptable for service. The remaining two walls were deemed marginal from an analytical basis and TVA elected to repair the walls at that time. Additional information on Bulletin 80-11, along the same lines, was provided in the letter from L. M. Mills to J. P. O'Reilly dated October 1, 1981.

TVA subsequently reperformed the analysis for tornado depressurization effects on masonry walls using a more detailed model. This new analysis indicated additional walls could fail (refer to J. A. Domer's letter of December 17, 1984, to H. R. Denton for additional details). This condition was determined to be reportable and was submitted to NRC as Licensee Event Report BFRO-50-259/84030.

In summary, we have reexamined this item and believe that reporting requirements were satisfied.

Sample No. 45 (Continued)

Although the technical resolution was appropriate, the NRC inspection team believes that the resolution of the issues has not been timely. The NCR was initiated on September 22, 1980, and the work has been delayed and had not been completed as of May 19, 1986 (reference 45-20). The cognizant TVA engineer stated that this is due to the inability of construction personnel to perform the modifications. The NRC inspection team believes the corrective action on block walls at each unit should be completed prior to the restart of that particular unit at BFN.

TVA Response

TVA agrees that corrective action on these block walls was not timely. However, corrective action has been completed on the most critical walls. The corrective action on block walls are being tracked as restart items for each unit as IE Bulletin 80-11 commitments. Unit 2 corrective action is specifically addressed in attachment IV-3 of the BFNPP.

Sample No. 46 (NCR BFNCEB8304R1)

The remaining issue which the NRC inspection team was not able to ascertain was whether the resolution had been completed for the redesign and rework on the flued head support. The NRC inspection team believes this issue should be resolved before restart.

TVA Response

In response to the referenced NRC report, the subject calculations and drawings have been issued for all three BFN units. The modifications required for unit 2 restart are referred to in Appendix D of the BFNPP.

Sample No. 48 (SCRBFNCEB8514)

The NRC inspection team believes that the root cause was determined and that an extensive reanalysis effort was undertaken. The team agrees that the technical resolution is proceeding in an appropriate manner. The NRC inspection team believes the reanalysis and any required action on the reanalysis of the chimney should be completed before restart of the units.

TVA Response

In response to the reference NRC report concerning SCRBFNCEB8514 and the reanalysis of the chimney, the reanalysis has been completed. The chimney was found to be acceptable as noted in the calculation package dated August 28, 1986.

Sample No. 49 (SCRBFNCEB8518)

The evaluation performed is for unit 2 since this unit is the first one for restart. Evaluation of cable tray supports on other units also has to be performed since the same problems exist in these units. This issue should be resolved before restart of any BFN unit.

TVA Response

The corrective action for this issue is described in Section III.3.3 of the BFNPP.

Sample No. 50 (NCR BFNEDB8002)

The team also determined that while the item was not a violation of a design completed by DNE, a condition requiring TVA action had been identified. The team did not determine whether a field change or modification was eventually completed for this issue nor how the physical change, if required, was made. TVA should provide this information.

TVA Response

Browns Ferry Engineering Project Civil Group has inspected the subject instrument lines and has determined that field changes or modifications have not been made. This piping will be included in the Small Bore Piping Reconciliation Program (reference BFEP-PI 87-40) as described in Section III.3.7 of the BFNPP.

Sample No. 61 (NCR BLNCEB8409)

The generic considerations for BLN will be addressed as a part of the corrective action for this NCR. Although, the determination of reportability information worksheet for 10CFR50.55(e) states that this problem may exist for other plants (reference 61-11), the team could not locate any documentation where such considerations were undertaken.

TVA Response

When NCR BLNCEB8409 was originally issued to document a nonconforming condition for BLN, BFN was not requested to determine if this condition was applicable to BFN. A request to evaluate if this condition exists at BFN and other TVA nuclear plants was issued on February 13, 1987, and has been evaluated for BFN. It was determined that this condition does not exist at BFN as noted in response memorandum dated February 27, 1987.

ENCLOSURE 2

NRC INSPECTION REPORT NOS.
50-390/86-22 AND 50-391/86-22
JAMES M. TAYLOR'S LETTER TO S. A. WHITE
DATED JANUARY 28, 1987

TVA's response to technical issues (findings) pertaining to WBN is provided below. Note that only the portion of NRC's evaluation for a specific sample number where finding(s) are discussed is listed and responded to by TVA.

Sample No. 6 (NCR SQNCEB8029)

The NRC inspection team agrees with TVA's specific decision to void NCR SQNCEB8029 and not to provide protective devices at new HELB location 44A because the stress differential of 171 lb/in² between old break location B2 and new break location 44A is within the margin of uncertainty for stresses derived from analysis of idealized mathematical models. However, the team does not agree with the generic exception which TVA has taken to Regulatory Guide 1.46 with the change only being incorporated in SQN Design Criteria SQN-DC-V-2.13. TVA CEB should amend the SQN Updated FSAR to reflect this exception. The team did not review comparable TVA documentation for either BFN or WBN. Any comparable documentation deficiencies for BFN, WBN, or BLN should be corrected by TVA.

TVA Response

The TVA WBN Pipe Rupture Design Criteria WB-DC-40-31.50, Section 4.2.1.5 has been revised (Revision 4, September 19, 1985) to address the issue of pipe break locations on reanalyzed piping, and incorporated the exceptions to Regulatory Guide 1.46 as submitted to NRC on May 29, 1981. Section 3.6A.2.1.2 of the WBN FSAR will be revised prior to unit 1 fuel load.

Sample No. 10 (SCRSQNMEB8514)

The team concludes that TVA's corrective action to requalify the seal material to the higher accident temperature was both appropriate and timely. However, the team notes that TVA Drawing 44W290-6 (Ref. 10-5) specifies the use of General Electric or Dow Corning caulking compounds for the normal and accident conditions detailed in TVA Specification 2883 to ensure that the elastomeric seals are leak tight. However, TVA Design Criteria No. SQN-DC-V-2.4.3 (Ref. 10-1) only requires that the caulking remain functional under normal conditions. TVA should document the ability of the caulking compounds to function under the revised accident conditions. This should be addressed for all TVA facilities.

TVA Response

The action required by this finding involves documentation of the caulking compound used by TVA in the installation of the seals between the ice condenser and containment vessel. These seals are installed at TVA's SQN and WBN only. This response is, therefore, applicable to only those two plants.

The conflict between TVA specification 2883 and TVA Design Criteria WB-DC-20-6 will be resolved by revising the criteria to require that the caulking perform its required function under accident conditions. The revised criteria will be issued by October 30, 1987. An evaluation made by the MEB Equipment Qualification Section for accident conditions (documented in Quality Information Release (QIR) MEB 78030) has concluded that the General Electric RTV 108 caulking is qualified. SCRWBWBP8780 and SCRWBWBP8781 deal with the generic concern of inadequate seal design and documentation. These SCRs will also address Dow Corning caulking qualification.

Sample No. 12 (NCR GENCEB8406)

The NRC inspection team, however, does not agree with the dismissal of this issue by the WBN project without performing a review. The team has discussed this issue with the WBN project engineer and also with the responsible lead engineer. During this audit, the lead engineer performed additional studies to substantiate the dismissal by WBN (reference 12-20). After reviewing this study, the NRC team still believes that additional review by the WBN project is necessary to close this NCR.

TVA Response

TVA plans to reanalyze rigorously analyzed piping on WBN's Hanger and Analysis Update Program. The rigorously analyzed piping will be reanalyzed by using the later corrected version of TPIPE Computer Program and by using the new class 2 post processor. Other piping analysis problems that utilized the simplified analysis approach and were analyzed by using TPIPE version 4.6D and special post processor version 6.0C will be reviewed and corrected for such deficiencies. These actions will be completed under the WBN Hanger and Analysis Update Program prior to fuel load for each respective unit.

Sample No. 23 (PIR WBNCEB8562)

The team notes that isometric J9 of TVA drawing 47W427-9 should be revised to show that the motor-bearing cooling lines were supplied by TVA and not by Ingersoll-Rand, the pump vendor. The as-built conditions should be determined in the field and the data compared to the design conditions assumed in the analysis and design for the elements on drawing 47W427-9. If the actual conditions fall outside the envelope used in design, then corrective action is necessary.

TVA Response

TVA will revise drawing 47W427-9 to reflect that for the motor- and turbine-driven auxiliary feedwater pumps the pump-bearing cooling lines were supplied by TVA and not by the respective vendors. Additionally, results of field reviews indicated minor drawing inconsistencies with the as-built configuration which did not impact the design. These will be corrected on the next revision of 47W427-9, prior to the fuel load for the respective units.

Sample No. 24 (PIR WBNMEB8542R1)

The team notes that TVA has not been able to access the seismic qualification report for the original Fisher pressure transmitters and that the I&C instrument tabulation has not been updated to list the Foxboro replacement transmitters. This work will need to be completed prior to the startup of the WBN units.

TVA Response

TVA acknowledges the fact that the seismic report for the Fisher transmitters cannot be located in QA records. These Fisher units have since been replaced by qualified Foxboro transmitters. Therefore, TVA will not pursue seismic qualification for the replaced Fisher transmitters since they are no longer in use. However, in order to determine if the potential of a generic condition exists in other TVA nuclear plants, CAQR No. WBP870381 has been issued to address this situation.

The I&C instrument tabulations will be corrected in a future revision prior to fuel load of Watts Bar unit 1.

Sample No. 25 (NCR W-243-PR2)

No provision was made in the piping analysis to incorporate the pump dynamic characteristics. The ability of the TVA Class C piping and supports downstream of the pump discharge nozzle to function during and after an Safe Shutdown Earthquake (SSE) has, therefore, not been proven. It will be necessary to analyze for this condition in addition to completing the modifications as a result of pump and motor vibrations.

TVA Response

TVA is reevaluating the ability of the Class C piping and supports downstream of the pump discharge nozzle to function during and after an SSE. Modifications may be needed based on the results of the evaluation. The evaluation and any required modifications will be completed prior to fuel load for each unit.

Sample No. 30 (SCRWBNCB8537)

The issue is that a series of typical pipe supports designated as 47A058 and 47A059 for use on TVA Category I (L) piping systems were found to have been fabricated and erected so that lateral loads could be imposed on the support. This condition had not been considered in the design. The NRC inspection team believes that this issue should be resolved before the startup of either of the two WBN units.

TVA Response

SCRWBNCB8537 was written to identify this potential deficiency. An evaluation was performed, and it was determined that all installed piping supports designated as 47A058 and 47A059 used in Category I (L) piping systems met the requirements set forth by the revised design criteria WB-DC-40-31.9, Section 7.1.3.4 and are acceptable as installed. The SCR was closed on October 10, 1986.

Sample No. 61 (NCR BLNCEB8409)

The generic considerations for BLN will be addressed as a part of the corrective action for this NCR. Although the determination of reportability information worksheet for 10CFR50.55(e) states that this problem, a potential breakdown in design control of piping systems, may exist for other plants (Ref. 61-11), the team could not locate any documentation where such considerations were undertaken.

TVA Response

A potential generic condition evaluation request was issued on February 13, 1987, to request that WBN review the condition for applicability. It was subsequently determined that the condition did not exist at WBN.

ENCLOSURE 3

NRC INSPECTION REPORT NOS.
50-438/86-08 AND 50-439/86-08
JAMES M. TAYLOR'S LETTER TO S. A. WHITE
DATED JANUARY 28, 1987

TVA's response to technical issues (findings) pertaining to BLN is provided below. Note that only the portion of NRC's evaluation for a specific sample number where finding(s) are discussed is listed and responded to by TVA.

Sample No. 5 (NCR SQNEEB8111)

The problem of motor overvoltage will most likely be addressed during the current, large scale electrical recalculation effort at BFN and eventually at BLN. However, those problems that have the potential to be generic and existed before December 28, 1982, and that were not investigated at other plants should be reviewed by TVA.

TVA Response

During the week of December 15, 1986, NRC reviewed TVA's implementation of the CAQ Generic Review Program (GRP). The inspection was documented by NRC inspection reports 50-259, 260, 296/86-43, 50-327, 328/86-73, 50-390/86-27, 50-391/86-26; and 50-438, 439/86-11 dated April 27, 1987. Two violations were cited regarding the adequacy of CAQ generic reviews. TVA has responded to these matters by letter from R. L. Gridley dated July 10, 1987. In addition, TVA's Bellefonte Engineering Project (BLEP) will perform a generic applicability review by August 31, 1987, to determine if this condition exists at BLN.

Sample No. 6 (NCR SQNCEB8029)

The NRC inspection team agrees with TVA's specific decision to void NCR SQNCEB8029 and not to provide protective devices at new HELB location 44A because the stress differential of 171 lb/in² between old break location B2 and new break location 44A is within the margin of uncertainty for stresses derived from analysis of idealized mathematical models. However, the team does not agree with the generic exception which TVA has taken to Regulatory Guide 1.46 with the change only being incorporated in SQN Design Criteria SQN-DC-V-2.13. TVA CEB should amend the SQN Updated FSAR to reflect this exception. The team did not review comparable TVA documentation for either the BFN or WBN. Any comparable documentation deficiencies for BFN, WBN, or BLN should be corrected by TVA.

TVA Response

TVA will review this matter and, if similar discrepancies are noted, an FSAR revision will be submitted at the next appropriate amendment.

Sample No. 10 (SCRSQNMEB8514)

The team concludes that TVA's corrective action to requalify the seal material to the higher accident temperature was both appropriate and timely. However, the team notes that TVA Drawing 44W290-6 (Ref. 10-5) specifies the use of

General Electric or Dow Corning caulking compounds for the normal and accident conditions detailed in TVA Specification 2883 to ensure that the elastomeric seals are leak tight. However, TVA Design Criteria No. SQN-DC-V-2.4.3 (Ref. 10-1) only requires that the caulking compounds to function under the revised accident conditions. This should be addressed for all TVA facilities.

TVA Response

The action required by this finding involves documentation of the caulking compound used by TVA in the installation of the seals between the ice condenser and containment vessel. These seals are installed at TVA's SQN and WBN only. This finding is, therefore, not applicable to BLN.

Sample No. 13 (SCRSQNCB8506)

Although the generic consideration for this item was properly made for WBN, the team could not locate any documentation where such consideration also was made for RFN and BLN.

TVA Response

This review was completed as noted by BLN's generic evaluation response memorandum dated December 27, 1985, which stated that the condition did not exist at BLN.

Sample No. 59 (NCR BLNNEB8004R1)

Based on the NRC inspection team review of this issue, it appears that proper corrective action is underway to correct the concern. This issue should be resolved before plant startup.

TVA Response

Completion of field work to add unit 1 main feedwater (MFW) overflow protection under B&W Field Change Package (FCP) 177A and ECN 0936 is scheduled to be completed six months before fuel load. Unit 2 MFW overflow protection will be completed six months before unit 2 fuel load.

Sample No. 64 (NCR BLNCEB8420)

The team agrees with the resolution of this NCR, except that the wrong section of the ASME Code was used to requalify the flange in problem N4-ONM-N. The RAH defines the methods to be used for flange qualification (reference 64-18). Section 1.0 of the same handbook states: "The analyst is expected to use the instructions in this handbook unless adequate justification is documented and approved by the section supervisor." The team could not locate the justification of the use of ASME Code, Section XI (reference 64-4) for the qualification of flanges. Either the justification should be provided on the method or the RAH should be used.

TVA Response

Problem N4-ONM-N will be revised in order to provide adequate justification and documented approval for flange qualification in accordance with ASME Code, Section XI. This revision is scheduled for completion on July 1, 1988.

ENCLOSURE 4

RESPONSE NRC INSPECTION REPORT NOS. 50-259, 260, 296/86-35; 50-390, 391/86-22; 50-438, 439/86-08

LIST OF COMMITMENTS MADE IN ENCLOSURES 1, 2, AND 3

1. TVA will present to the NRC the corrective action plan and schedule of implementation for SCRBFNMEB8605 by March 2, 1988.
2. In reference to NCR SQNCEB8029, TVA will review this matter by November 15, 1987, and if similar discrepancies are noted, an FSAR revision will be submitted at the next appropriate 10CFR50.71(e) update for BFN.
3. TVA to complete remaining displacement evaluations for BFN unit 2 supports in reference to SCRBFNCEB8508 Revision 1, by March 2, 1988.
4. In reference to SCRBFNCEB8508, Revision 1, a revision to the LTTIP general design criteria for pipe supports on BFN will be issued by September 30, 1987, to incorporate displacement and friction considerations for pipe supports.
5. In reference to SCRBFNCEB8512, the LTTIP torus attached piping support calculations for BFN unit 2 will be revised by March 2, 1988, to include appropriate as-built, friction load, and displacement considerations.
6. CEB will revise the Rigorous Analysis Handbook (RAH) in reference to SCRBFNCEB8517, to confirm that thermal stress range analyses have been considered. The RAH revision will be issued by June 27, 1988.
7. SCRBFNCEB8517 will be revised to add corrective action to cover analyses for seismic class I piping outside of that covered under the BFN IE Bulletin 79-14 Program.
8. In reference to NCR SQNCEB8029, TVA WBN Pipe Rupture Design Criteria WB-DC-40-31.50 has been revised to incorporate the exceptions to Regulatory Guide 1.46. Section 3.6A.2.1.2 of the WBN FSAR will be revised prior to unit 1 fuel load.
9. In reference to SCRBNMEB8514, TVA will revise Design Criteria WB-DC-20-6 by October 30, 1987, to resolve conflict between TVA specification 2883 and Design Criteria WB-DC-20-6.
10. In reference to NCR GENCEB8406, TVA will reanalyze previously analyzed piping on WBN by using the later corrected version of TPIPE computer program, and by using the new class 2 post processor. Also, TVA will review other piping analysis problems that utilized the simplified analysis approach for TPIPE versions 4.6D and special post processor 6.0C and correct deficiencies. These actions will be completed prior to the fuel loading of each respective unit.

11. In reference to PIR WBNMEB8542, Revision 1, I&C instrument tabulations will be corrected in a future revision prior to the fuel loading of WBN unit 1.
12. Under the next revision of drawing 47W427-9, TVA will specify that for the motor- and turbine-driven auxiliary feedwater pumps, the pump-bearing cooling lines were supplied by TVA. Also, the drawing revision will clean up minor drawing inconsistencies resulting from field reviews of the as-built configuration. This drawing revision will be made prior to fuel load of the respective WBN unit.
13. In reference to NCR W-243-PR2, piping analysis to incorporate pump dynamic characteristics evaluations, and any resultant corrective actions, will be completed prior to fuel load on each WBN unit.
14. In reference to NCR SQNEEB8111, BLEP will perform a generic applicability review by August 31, 1987, to determine if the condition exist at BLN.
15. In reference to NCR SQNCEB8029, TVA will review this matter and, if similar discrepancies are noted, an FSAR revision will be submitted at the next appropriate amendment to the BLN FSAR.
16. In reference to NCR BLNNEB8004, Revision 1, completion of unit 1 field work to add MFW overflow protection under TVA ECN 0936 is scheduled for six months prior to fuel load. A similar schedule for adding this feature applies to BLN unit 2.
17. In reference to NCR BLNCEB8420, problem N4-ONM-N will be revised by July 1, 1988, to provide adequate justification and documented approval for flange qualification in accordance with ASME Code, Section XI.