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NOV 21 1991

U.S. Nuclear Regulatory Commission
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Gentlemen:

In the Matter of the Application of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) - NRC INSPECTION REPORT NO. 50-390/90-24 -
REPLY TO NOTICES OF VIOLATION

- References:
1. Letter from TVA to NRC dated January 30, 1991, "Watts Bar Nuclear Plant (WBN) - NRC Inspection Report No. 50-390/90-24 - Reply to Notice of Violation"
 2. Letter from TVA to NRC dated February 2, 1991, "Watts Bar Nuclear Plant (WBN) - Construction Quality Improvement Effort"

On December 17, 1990, NRC issued Inspection Report No. 50-390, 391/90-24. Enclosure 1 to the inspection report contained two Severity Level IV violations. TVA has reviewed these violations and provides its reply to the notices of violation.

TVA agrees that the three examples of Violation A (390/90-24-01), failure to follow procedures, and the two examples of Violation B (390/90-24-02), failure to promptly identify and correct nonconformances, involve noncompliance with regulatory requirements. Enclosure 1 to this letter provides TVA responses to the identified violations.

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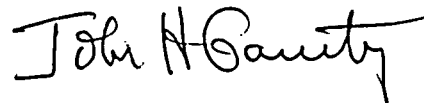
To address NRC's concern regarding insufficient management attention to work controls and resolution of conditions adverse to quality, TVA has initiated extensive management-related corrective actions to resolve the programmatic deficiencies. These corrective actions were discussed with NRC during an April 12, 1991 enforcement conference that involved similar deficiencies. Specific management objectives and the corrective actions required to restart construction activities were also discussed with NRC at a June 27, 1991 onsite meeting. Additionally, NRC has reviewed TVA progress towards construction restart, including the implementation of the new work control processes, and will continue to monitor the resolution of the identified deficiencies prior to providing concurrence for resumption of work activities in the field.

Notification for the subject delays for submittal of TVA's response to this violation was provided to NRC on January 30 and February 2, 1991 (see References 1 and 2).

Enclosure 2 lists the commitments outlined in this submittal.

If there are any questions, please telephone P. L. Pace at (615) 365-1824.

Sincerely,



John H. Garrity

Enclosures

cc (Enclosures):

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ENCLOSURE 1
RESPONSE TO NRC NOTICE OF VIOLATION
VIOLATION NO. 50-390/90-24

DESCRIPTION OF VIOLATION (390/90-24-01)

Part 50 of Title 10 of the Code of Federal Regulations, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," is implemented in part by the Nuclear Quality Assurance Plan (NQAP), paragraph 9.1.3.C which endorses ANSI N45.2 and states that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

The licensee's procedure WBN-CPI-8.1.8-E-102, "Installation of Low and Medium Voltage Power, Control and Instrumentation Cables," requires that immediately after pulling cables, the cable should be temporarily identified. Additionally, for spared or abandoned cables the end shall be capped with a properly sized end cap.

In addition, the licensee's procedure WBN-GCI-8.1.05-01 C, "Work Control," requires that in-process identified deficiencies be evaluated against the CAQ criteria in AI-2.8.15, "Corrective Action - WBN," to determine if the as-found discrepancy meets the CAQ criteria and documented as a CAQR. If it does not meet the CAQ criteria, then the item should be corrected in accordance with the in-process work document.

Contrary to the above, three examples of failure to follow procedure were identified as described below:

DESCRIPTION OF VIOLATION EXAMPLE 1 (a)

On September 14, 1990, the inspector identified seven installed cables that had been previously cut apart in a junction box without any identification on the cable or junction box that indicated authorized, unfinished work on the cables was in process.

ADMISSION OR DENIAL OF THE VIOLATION EXAMPLE

TVA agrees that the violation example occurred as clarified below.

REASON FOR THE VIOLATION EXAMPLE

Construction Process Instruction (CPI) 8.1.8-E-102, "Installation of Low and Medium Voltage Power, Control and Instrumentation Cables," and Administrative Instruction (AI)-8.8, "Control of Modification Work After Transfer," both contain requirements for temporary tagging of the in-process work. The associated workplan, K-M08302A-1, was generated to replace portions of cables to resolve the WBN cable damage issue. The work performed inside junction box 1JB-4153, as described in the violation example, involved the cutting of seven cables. In accordance with CPI-8.1.8-E-102, craft personnel temporarily identified each cable to be cut by attaching white tape (with the cable number indicated) to each cable prior to cutting. Before leaving the work area, however, the craft failed to install the additional tag required by AI-8.8, "Control of Modification Work After Transfer," to identify the in-process work condition. Although the craft personnel interviewed were aware of the AI-8.8 tagging requirement, the procedure was not followed and the in-process work tag was not installed.

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REASON FOR THE VIOLATION EXAMPLE (Cont'd)

TVA would like to clarify the NRC inspection report discussion regarding the requirements of GPI-8.1.8-E-102 for the installation of end caps for spare or abandoned cables. This procedure section only applied to spare cables. Since the subject cables were not spares, the requirement for end caps was not applicable.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The tagging required by AI-8.8 was completed for this workplan. Problem Reporting Document (PRD) WBN 900485P was initiated to document this deficiency and has been subsequently closed.

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION

A stop work order was issued by Nuclear Quality Assurance for electrical construction on December 21, 1990. This stop work order responded, in part, to TVA management and NRC concerns regarding the WBN work control program. As a result of that stop work order, a comprehensive craft and certification training program will be implemented before work is resumed. This program will include training in the necessary tagging requirements for identifying in-process work. The schedule for resumption of work in the field will be coordinated with NRC staff.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

TVA is in full compliance.

SUPPLEMENTAL INFORMATION

In reviewing this issue, TVA has reevaluated the need for identifying in-process work activities. While the identification of in-process work is a construction practice that may prevent the initiation of unnecessary deficiency tracking documents, TVA considers the current administrative controls for the work control process to be adequate for ensuring that in-process work is completed and that the plant configuration is maintained. In addition, even though the failure to identify in-process work may adversely affect worker efficiency, TVA does not consider the failure to identify in-process work to be adverse to plant safety. Therefore, the procedural requirement for the installation of in-process work tags has been deleted.

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DESCRIPTION OF VIOLATION EXAMPLE 1 (b)

On September 15, 1990, the inspector identified a main steam generator pressure transmitter, previously installed by craft persons and accepted by quality control, which was electrically disconnected from its source such that it could not perform its function and was not tagged or otherwise identified to indicate that authorized work has occurred on the pressure transmitter.

ADMISSION OR DENIAL OF THE VIOLATION EXAMPLE

TVA agrees that the violation example occurred as stated.

REASON FOR THE VIOLATION EXAMPLE

This deficiency is attributed to the misinterpretation of the AI-8.8 tagging requirement by construction engineering personnel and craft personnel. Contributing to the deficiency was the fact that AI-8.8 did not clearly specify in-process work tagging requirements which included tagging of temporary alterations to a system.

AI-8.8 required tagging of in-process work that is not completed at the end of the work shift as well as for work performed that results in leaving the system in a temporary condition (i.e., lifted leads). The objective of this requirement was to prevent the misidentification of in-process work as a deficiency in plant configuration.

The in-process work discussed in the NRC inspection report involves a design change to relocate transmitter 1-PT-1-26-B. The design change involves several separate activities such as cable removal, physical relocation of the transmitter, and cable reinstallation. In this case, more than one workplan was used to control the several activities associated with the design change. Workplan K-P07252A-1, which was discussed in the NRC inspection report, included work instructions for completing some activities associated with the design change including removal of the electrical cables to the transmitter. Although the system was left in a temporarily altered condition, no in-process work at the transmitter remained with respect to that workplan after the cable removal activity was completed. The personnel involved incorrectly interpreted the tagging requirements of AI-8.8 to be only applicable to jobs (workplans) that had not yet been completed, rather than also applicable to temporary conditions. This resulted in their failure to install the tag required to identify the lifted leads.

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CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The tagging required by AI-8.8 was completed. PRD WBN 900485P was initiated to document this deficiency (see Violation A, Example (a)). This document has been subsequently closed.

As a result of the stop work order, the Safety Net Review Program was initiated. A walkdown of incomplete workplans will be performed, as necessary, to verify the status of the work documented in the original workplan. During the walkdowns, cables requiring tagging under the current program will be identified and tagged (i.e., lifted leads). These reviews include the open workplans that were not completed at the time of the imposition of the stop work order. This effort is tracked by the closure of Significant Corrective Action Report (SCAR) WBN 900602SCA which was previously reported to NRC as Construction Deficiency Report 50-390, 391/90-12. This corrective action report documents those actions necessary to address the construction work control issues resulting from the stop work order.

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION

A stop work order was issued by Nuclear Quality Assurance for electrical construction on December 21, 1990, in response to management concerns in the WBN work control program. As a result of that stop work order, a comprehensive review of the WBN work control program has been initiated (see response to violation Example 2 (b)). In addition to the review of the work control program, a comprehensive training and certification program is being developed for construction and craft personnel. The program includes training in the necessary tagging requirements for the identification of in-process work. The schedule for resumption of work activities in the field will be coordinated with NRC staff.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

TVA will be in full compliance with the completion of the Safety Net Review Program which is being conducted and tracked by SCAR WBN 900602SCA. The closure of this corrective action will be completed by December 1992.

SUPPLEMENTAL INFORMATION

As described above for Corrective Steps Taken for Violation 1, Example (a), the procedural requirement for the installation of in-process work tags has been deleted.

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DESCRIPTION OF VIOLATION EXAMPLE 1 (c)

On July 25, 1990, during work activities associated with Work Plan KMO-8515 A-1, the inspectors found that licensee personnel had not properly documented a deficient condition in which the actual plant wiring configuration did not match the current approved wiring diagram (45B2772-4E) for the 480 Volt Control and Auxiliary Building Vital Board 2B1-B, Compartment 4E. In-process identified deficiencies are required to be documented and evaluated against the Condition Adverse to Quality procedure to determine the correct method for resolution.

ADMISSION OR DENIAL OF THE VIOLATION EXAMPLE

TVA agrees that the violation example occurred as stated.

REASON FOR THE VIOLATION EXAMPLE

This violation is attributed to the lack of attention to detail and the failure to follow procedures by the WBN personnel involved. Contributing to the violation is the failure by the construction supervisors involved to ensure that CAQs are documented and corrected in a timely manner.

While performing electrical continuity checks for multi-conductor cables, craft personnel observed the subject deficient electrical terminal board lugs. The subject workplan was revised to relug the subject cable conductors to correct the deficiency. During the implementation of the revised workplan, craft personnel lifted several conductors for the subject cables without completing the required lift log and without the required independent verification for each conductor. After realizing the error, craft personnel reterminated the conductors from memory and completed the portion of the lift log (including independent verification) attesting to the retermination. After completing the lift log, craft personnel compared the subject cable conductor reterminations to the associated design drawing and discovered that one conductor was incorrectly terminated. (Previously completed Quality Control [QC] inspection documentation for this conductor provides assurance that the incorrect termination was the result of the craft personnel's error when reterminating the conductors from memory.)

The initiation of a corrective action document in accordance with AI-2.8.15, "Corrective Action - WBN," for the retermination incident was discussed by the craft personnel and a QC inspector in the area. The craft personnel also contacted the appropriate construction management personnel and responsible construction engineer. Subsequent to the incident, the QC inspector and the construction engineer terminated their employment at WBN without initiating the required CAQ. TVA construction management failed to initiate the appropriate report to document this issue due to inattention to detail.

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CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The hardware deficiencies associated with the subject lugs and termination error have been corrected by completion of the revised workplan KMO-8515 A-1. SCAR WBN 900464PSCA was initiated and subsequently incorporated into SCAR WBN 900602SCA to document the retermination incident and the termination error that occurred during the incident.

Management personnel that were involved have been counseled regarding the types of deficiencies that constitute CAQs and the requirements of AI-2.8.15 to document these deficiencies in a timely manner. SCAR WBP 910016SCA was initiated and subsequently closed to address this failure to document the retermination incident and termination error on a CAQ in a timely manner.

As a result of the violation included in NRC Inspection Report 50-390, 391/90-27, TVA has initiated a broad review of deficiencies in the WBN corrective action program. Additional information regarding the extent of this condition and the necessary corrective actions are provided in TVA's response to similar violations noted in NRC Inspection Report 50-391/90-27.

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION

As described above, TVA has initiated a review of NRC identified weaknesses in the WBN corrective action program. The details of this review as well as the required corrective actions are provided in TVA's response to the 50-390/90-27-01 violation.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Compliance regarding the subject violation was achieved when the violation was properly documented on a CAQ. Actions to correct the hardware deficiency will be completed after restart of construction activities at WBN in accordance with system completion milestones.

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DESCRIPTION OF VIOLATION (390/90-24-02)

Part 50 of Title 10 of the Code of Federal Regulations, Appendix B, Criterion XVI, "Corrective Action," is implemented in part by the Nuclear Quality Assurance Plan (NQAP), paragraph 10.4, which endorses ANSI N45-2-1971 (Section 16) and requires that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to the above, nonconformances were not adequately corrected in a timely manner as described below:

DESCRIPTION OF VIOLATION EXAMPLE 2 (a)

During the period October 9 through 18, 1990, the inspector determined that defects (rear plates fused to pipe) in box anchor supports, which were identified by the licensee in February 1986, had not been adequately evaluated and corrected in accordance with the ASME Code Section III. Specifically, the nonconforming rear plate welds were not evaluated in accordance with Section III NB3600, for maximum allowable stresses, and NB4400, for fabrication regarding welding qualification and nondestructive examination requirements.

ADMISSION OR DENIAL OF THE VIOLATION EXAMPLE

TVA admits that the violation example occurred as stated.

REASON FOR THE VIOLATION EXAMPLE

This violation occurred because the evaluation that was performed to justify the inadvertent anchor box welds failed to consider the ASME code requirements that must be satisfied if the welds had been left in place. The original drawings indicated that the welds were to be flush with the interface of the pipe. When the welds were made, an overrun occurred in some cases which resulted in the pipe being fused to the plate.

The original evaluation that was performed to disposition the deficiencies in the box anchor supports identified by NCR 6264 was used as a basis to determine structural adequacy only. The requirements of the ASME, Section III Code, which applies to configurations with material integrally attached to a Class I, II, or III piping system (as were these deficient supports) were not considered at the time.

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REASON FOR THE VIOLATION EXAMPLE (Cont'd)

ASME Sections NB/NC 3600 require that if deviations occur regarding design requirements, stress calculations are required to determine if corrective actions are necessary. If stress calculations cannot be performed (due to the complexity of the defect) then experiments or tests are required to demonstrate acceptability of the design. Also, the ASME Code requires specific controls when welding temporary or permanent attachments to code class piping. Additionally, ASME Section NB/NC 4400 requires that the welding procedure and welder must be qualified to specific requirements before welding on piping material, and structural and pressure boundary welds must be nondestructively examined to determine acceptance. These requirements are applicable only when the rear plate welds are fused to the piping material. Since these plates were inadvertently fused to the pipe, the requirements were not originally considered for these configurations.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

Drawings have been revised to indicate that this weld is to be stopped short of the pipe for future installations. In addition, a program to identify the presence of fusion to the ASME pressure boundary has been developed. An inspection of each box anchor in question will be performed in order to determine if there is fusion present. A design change notice (DCN) has been issued to provide modifications to supports where fusion has been identified.

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION

The initial corrective action steps included the revision of the drawings to show a gap between the termination of the weld and the pipe interface and to repair two anchors in Unit 2 which were conservatively determined to be a possible failure. These actions have been completed.

Subsequent to the NRC's review for closure, TVA's evaluation indicated that the corrective action failed to specify the appropriate nondestructive examination (NDE) test for the welds that affect ASME code piping. The subject NCR was reopened on November 14, 1990.

TVA will review each of the fused and possibly fused welds on Class 2 and 3 piping (no Class 1 piping is involved). To determine if there is fusion at the pipe, WBN has developed an ultrasonic method of evaluating for fusion using mock-ups duplicating actual field configurations. This method allows a qualified nondestructive testing inspector to determine if there is fusion between the box anchor and the pipe. Ultrasonic examinations will be used when more conventional methods (such as feeler gauges) prove inconclusive. If there is fusion or if the NDE review is not conclusive, the fused area will be removed from the pipe. The pipe will then be tested for damage and repaired, if required, per code requirements (ASME Section III, Subsections NC and ND). The ASME Code Sections in question are no longer applicable when the fused welds are removed.

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CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION (Continued)

Specifically, the corrective actions to address this issue include the following;

1. A list of box anchors will be generated and a field inspection will be performed to identify those configurations where box anchor supports may be deficient.
2. If the field inspections provide evidence of fusion or is inconclusive, the anchor will be added to the existing DCN and reworked in accordance with the ASME Section III requirements.
3. Drawings will be revised to indicate acceptable weld configurations made prior to the issue of the revised drawing that prescribes future installation requirements.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

TVA is in full compliance for future installations since welding requirements have been more clearly defined on the applicable drawings. The removal of the fused area on Class 2 and Class 3 piping will be completed to support group system completion and prestart testing activities.

DESCRIPTION OF VIOLATION EXAMPLE 2 (b)

During the inspection period of September 22 through October 19, 1990, the inspector determined that for deficiencies in work control identified prior to October 1985, the required extensive follow-up reviews by the licensee to determine the extent of the condition and establish corrective action had not commenced five years after the deficiency was identified.

ADMISSION OR DENIAL OF THE VIOLATION EXAMPLE

TVA admits that the violation example occurred as stated.

REASON FOR THE VIOLATION EXAMPLE

This deficiency is attributed to inadequate management attention to the timely implementation of corrective action. Corrective actions for the cited Unit 2 work control deficiency were originally developed in December 1985. Subsequent revisions to the Unit 2 corrective actions included actions to address the applicability of the deficiency to Unit 1. However, during the 1985-86 timeframe, responsibility for Unit 1 systems was transferred from the Construction group to the Modifications group in preparation for fuel loading. Since the Construction group's work activities for Unit 2 were not applicable to the Modifications group's work activities for Unit 1, it was incorrectly determined that the deficiency did not apply to Unit 1. However, as later determined, since the work release process had been used for Unit 1 work control before transfer to the Modifications group, the deficiency was applicable to Unit 1.

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CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

TVA has assigned project management to coordinate, manage, and expedite adverse conditions processing and closure. Workoff curves and timeliness performance goals have been established for each organization and reviewed by site management on a periodic basis. This additional management attention helps ensure that implementation of the remaining Unit 1 corrective actions are accomplished in a more efficient and timely manner. Also, the work release process has been discontinued at WBN.

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION

In September 1990, the implementation of the corrective action plan for the Unit 1 deficiency was initiated. The sample review of completed Unit 1 work releases is complete, and the results were evaluated. Resolution of the discrepancies generated as a result of the sample review will include the corrective actions to address the effect of this deficiency on Unit 1 completed work, if required. The resolution of these issues are tracked by Problem Evaluation Reports (PERs) WBP 900600PPER and WBP 900601PPER.

Additional information regarding the WBN programmatic corrective action program was provided to NRC on October 9, 1991, in response to NRC Violation 390/90-27-01.

Programmatic Actions

TVA recognizes that this deficiency was due to ineffective management attention to address and resolve this work control issue. As a result of numerous examples cited in NRC inspection reports, TVA has initiated extensive actions to resolve deficiencies in the WBN work control program. TVA terminated construction installation activities associated with workplans and maintenance requests (with the exception of preventative maintenance activities) effective December 21, 1990. TVA management is currently reviewing the construction work control program to ensure that, upon the resumption of construction activities, work can be completed accurately and according to procedures.

The WBN assessment, quality assurance reviews, and NRC findings that led to the subsequent stop work order revealed that: (a) the "old-program" (pre-1991) work control process did not consistently achieve the required quality; (b) procedures and data sheets often were unnecessarily complicated and hard to follow; (c) many workplans were inconsistent in format, hard to follow, and in some cases, included too many tasks for one document; and (d) the workplan process was not entirely effective in controlling the quality of the physical work and the quality associated documentation.

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Programmatic Actions (Cont'd)

Therefore, TVA determined that a new work control process that clearly identified craft, field engineering, and supervisory responsibilities was necessary. Also, a standard workplan format was necessary such that the same work would be performed in the same manner, with instructions provided in the same format, each time. Procedures also required revision to simplify implementation. Existing construction generated workplans will be withdrawn from implementation and will be reviewed for adequacy and closed with any outstanding work identified and implemented through the new work control processes.

TVA has developed the new work control process based on a proven program used at the Browns Ferry Nuclear Plant (BFN). New WBN procedures have been developed (consistent with the BFN approach) which provide a configuration control program/work control process/closure process that will govern the design change effort from initiation of the workplan, implementation, testing, and closure of the modification documentation to the point where the equipment is returned to service.

The implementing procedures for WBN modification and activities have been rewritten based on the Modification and Addition Instructions (MAIs) used at BFN. As a result of this change, the number of procedures necessary to perform construction activities at WBN has been reduced. In addition, the data sheets that are contained in WBN procedures have been revised and verified to contain the essential information to document acceptable installation without extraneous information. Procedures are current to the latest revisions to the General Engineering Specifications, and data sheets and work steps for frequently performed, standard modifications have been standardized in a QA-controlled workplan data base. This automated workplan data base will more effectively control the size, contents, criteria, complexity, and inspection attributes of standardized workplans. This standardized final product enables the craftsmen to easily identify and comprehend work activities and criteria, and provides for standardized documentation for the final product.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Regarding this example of untimely implementation of corrective action, TVA has completed the review of the Unit 1 work release sample. The discrepancies identified on WBP 900600PPER and WBP 900601PPER are scheduled for completion by January 15, 1992. Additional corrective actions, if required, will be determined and NRC will be notified of any schedule change regarding completion of those items at that time. Closure of the entire issue is tracked under the Quality Assurance Audit Deviation WB-A-86-02-D03.

TVA implementation of the improved work control system will be completed prior to resumption of work activities in the field.

ENCLOSURE 2

LIST OF COMMITMENTS

1. TVA will be in full compliance with the implementation of the craft training program addressing the necessary requirements for identifying in-process work prior to the resumption of work at WBN. The date for resuming work will be coordinated with NRC Staff.
2. A list of box anchors will be generated and a field inspection will be performed to identify those configurations where box anchor supports may be deficient.
3. If the field inspections provide evidence of fusion or is inconclusive, the anchor will be added to the existing DCN and reworked in accordance with the ASME Section III requirements.
4. Drawings will be revised to indicate acceptable weld configurations made prior to the issue of the revised drawing that prescribes future installation requirements.
5. The removal of the fused area on Class 2 and Class 3 piping will be completed to support group system completion and prestart testing activities.
6. The discrepancies identified on WBP 900600PPER and WBP 900601PPER are scheduled for completion by January 15, 1992. Additional corrective actions, if required, will be determined and NRC will be notified of any schedule change regarding completion of those items at that time. Closure of the entire issue is tracked under the Quality Assurance Audit Deviation WB-A-86-02-D03.
7. TVA implementation of the improved work control system will be completed prior to resumption of work activities in the field.
8. The Safety Net Review Program is being conducted and tracked by SCAR WBN 900602SCA. The closure of this corrective action document will be complete by December 1992.