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

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November 9, 1982

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

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - NRC-OIE REGION II INSPECTION REPORT 50-390/82-05, 50-391/82-03 - RESPONSE TO VIOLATIONS

The subject inspection report cited TVA with one Severity Level IV and one Severity Level V Violation in accordance with 10 CFR 2.201. Enclosure 2 contains our response to those violations. Enclosure 2 also contains responses to two items of noncompliance cited in paragraphs 5a and 6 of Inspection Report 50-390/82-09, 50-391/82-07. Enclosure 1 addresses TVA's programmatic improvements as requested in the subject inspection report transmittal letter. The submittal date of this report was discussed with Inspectors D. Quick and R. V. Crlenjak on September 8 and October 25, 1982, respectively. Additionally, the content of our responses was briefly discussed with Inspector Crlenjak on November 8, 1982.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Licensing

Enclosures
cc: Mr. Richard C. DeYoung, Director (Enclosures)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
PROGRAMMATIC IMPROVEMENTS

This enclosure responds to the request in the referenced letter that TVA inform NRC Region II 'of the programmatic improvements you have instituted to achieve prompt identification and correction of deficiencies and determination and remedy of their root causes.' The referenced letter cites examples of conditions occurring between April 1980 and January 1982 and basically cites TVA for an inadequate Quality Assurance (QA) program in the area of modifying the program to preclude recurrence of deficiencies.

Since April 1980, TVA has initiated numerous programmatic improvements directed toward identification of root causes and effective action to prevent recurrence. Some of these, initiated in late 1981 or early in 1982, were either in the process of being implemented or were so newly implemented that their effects were not fully apparent at the time of the January 82-05 exit meeting. The following is a summary of improvements implemented which address 'prompt identification of deficiencies and determination and remedy of root causes.' As shown below, these improvements have been implemented in all phases of TVA's organization from the corporate level down to and including the Division of Constructior (CONST) field engineering groups:

1. In September 1982, TVA established a corporate QA organization to provide for a consistent Agency-wide QA program. One of the responsibilities of the organization will be to evaluate reports submitted to NRC on significant nonconformances and NRC findings and verify that corrective actions and actions to prevent recurrence are complete and effective.

2. In early January 1982, TVA began formulating and implementing TVA's Office of Engineering Design and Construction (OEDC) 1982 Action Plan for Quality Improvement. The theme of this plan is 'to support the Quality Program and to direct action toward 'root cause concerns' such as lack of a positive attitude and approach in responding to and resolving issues identified by NRC and TVA QA/QC.' This is a multifaceted plan encompassing both design and construction organizations and is designed to address the root causes of programmatic deficiencies rather than individually identified deficiencies.

   TVA's Division of Engineering Design (EN DES) has completed its action plan except for the issuance of five action team reports. Part of these are related to the EN DES action team recommendations, and their completion is anticipated by the end of 1982. The CONST action plan is complete except for four items, which have been resolved except for final management review and approval of recommendations or further followup on actions taken previously. OEDC QA action items are complete except for issuance of four interdivisional quality assurance procedures (ID-QAP) revisions. The total plan is anticipated to be complete by the end of 1982.

3. On July 21, 1982, the Manager of OEDC, G. B. Kimmons, issued a policy directive to all OEDC employees entitled, 'Timeliness and Responsiveness in Resolving and Reporting Conditions Adverse to Quality.' The purpose of this policy statement was stated as follows:

> The attached program directive on timeliness and responsiveness addresses the primary root causes for many of the problem areas identified by OEDC organizations. This directive establishes requirements for information which should be obtained for any reportability status. Thoroughness and accuracy in the description of identified conditions adverse to quality (CAQs) are essential if we are to adequately resolve the situation and preclude its repetition. This program directive will be included in the OEDC Program Requirements Manual. Implementation by the divisions should be promptly initiated.

This policy statement detailed the methods and requirements for identifying and addressing root causes and emphasized the need for promptness and accuracy in identifying, resolving, and responding to CAQs.

4. In early 1982, an Agency-wide task force was formed to establish and issue a common Q-list to define features included within the QA program by EN DES, CONST, and TVA's Division of Nuclear Power (NUC PR). This Q-list will be used by all TVA organizations to preclude recurring deficiencies arising from inconsistent identification of safety-related systems, structures, and components. Also, TVA has formed a task force to review the Q-list and establish requirements to ensure that features listed are covered by a program consistent with their importance to safety. These efforts, together with the existing Construction Requirements Manual and the Construction Accountability Program, serve as a significant programmatic improvement implemented in response to root causes identified as having common basis.

5. In late 1981 and early 1982, TVA's Nuclear Safety Review Staff conducted two reviews at Watts Bar. One of these was a broad scope review conducted to assess the programs for management controls of quality-related activities and reviewed functional areas; the other was an in-depth review of management controls over specific areas of the program. These reviews resulted in 57 findings related to specific elements and functional areas of the program. Implementation of recommendations based on these findings to either bring the program into compliance or to enhance the program constitutes a wide scope effort on TVA's part to implement programmatic improvements to preclude deficiencies and strengthen corrective mechanisms. OEDC responded to all 57 findings, and one followup review has resulted in tentative closure of 31 findings as of October 13, 1982.

6. TVA has continued with a comprehensive program for identifying and documenting conditions adverse to quality both with NCRs and internal audits. Watts Bar now has about two hundred (200) 10 C.R 50.55(e) items in various stages of resolution. These items involve nearly all aspects of our program and entail considerable effort in identifying root causes and actions to prevent recurrence.

7. At the construction site, the number of management personnel has doubled since 1980. Most of these new positions are involved with quality control and ensuring adequate management controls over various aspects of the QA program. The Construction Engineer's Organization is now completely separated into engineering and quality control functions up to the Assistant Construction Engineer level with a corresponding increase in manpower at lower levels. This results in managers and lower level inspectors functioning more objectively and independently since they report through separate lines of authority.

8. An additional area of responsibility, the Construction Quality Manager, was established early in 1982 to ensure adequate investigation of CAQs to determine specific and root causes, oversee procedure changes resulting from deficiencies, ensure adequate responses, and to effect training or retraining as required to preclude recurrence of deficiencies. The Quality Manager's Organization has primary responsibility to ensure prompt programmatic and written response to deficiencies and to ensure that the response addresses the underlying or root cause.

9. As a means of addressing recurring deficiencies in the procedural area, a Procedures and Training Unit was established and has, to date, placed all procedures in standard format; reviewed all procedures to ensure all requirements are addressed; removed QA activities from non-QA procedures and placed them in QA procedures; separated quality control activities from engineering activities; and combined fragmented instructions into centralized procedures. This has resulted in the reformatting, restructuring, or revision of over 150 procedures since early 1982.

10. An enhanced orientation and training program has been implemented at the construction site. One element of this program is to ensure that employees are aware of the requirements to promptly identify and document or report any suspected conditions adverse to quality. All employees are trained in this requirement, and this policy is enforced by the project conduct guidelines which are provided to each employee upon initial employment.

11. An enhanced program to control system transfers from CONST to NUC PR has been implemented and includes the additional procedural controls discussed in response to violation 390/82-05-01. Other elements of this program include a startup task force made up of representatives from EN DES, CONST, and NUC PR, and a comprehensive review of all transfers made from 1980 to 1982. This review is being conducted to demonstrate the validity of 'as-documented' configuration at the time of transfer for previous transfers. At present, this program is approximately 40 percent complete, with no major discrepancies identified to date.

12. The OEDC Project Manager for Watts Bar Nuclear Plant was named in September 1981 and reports directly to the Manager, OEDC. He has overall responsibility for the planning and direction of the design and construction of the Watts Bar Nuclear Plant. Generally working through the Construction Project Manager and the Design Project

Manager of the Watts Bar Nuclear Plant project, he assures the overall planning, organizing, scheduling, procurement, quality control, and expediting of work to meet design and construction schedules and budgets. He also is responsible for coordination of Watts Bar Nuclear Plant activities with the Office of Power and other TVA organizations.

13. TVA has committed to perform an independent review of Watts Bar Nuclear Plant. The review will be performed by Black & Veatch and is to be conducted on the auxiliary feedwater (AFW) system to provide a comprehensive assessment of TVA's design and construction activities at Watts Bar and to provide additional confidence to TVA on the adequacy of the design and construction. The review started on September 6, 1982, and is scheduled to be complete on December 6, 1982, when the final report is issued in parallel to TVA and NRC.

14. OEDC has implemented a Tracking and Reporting of Open Items System (TROI) to provide an overall standard method in OEDC to sort, select, and identify the more important open items for the purpose of informing upper line and QA management of major problems on open items. The TROI system will be the overall standard method used in OEDC to track and monitor the status of the more important items affecting the design and construction quality program. The TROI System will include nonconformances (NCRs) including supplier NCRs, audit deficiencies, and stop-work orders. The system will also include the following: Authorized Nuclear Inspector items Special Inspection Service (SISs); Nuclear Safety Review Staff (NSRS) items requiring closure; NRC violations, unresolved items, and inspector followup items, 10CFR50.55(e) reports, 10CFR21 reports; and Commitment Tracking Records (CTRs) for licensing commitments. Conditions adverse to quality of less importance than NCRs (such as Quality Control Investigation Reports (QCIRs)) will not be included in TROI but will be tracked separately by the organization responsible for that type of condition adverse to quality.

The above items are elements of TVA's continually evolving program directed at achieving prompt identification and correction of deficiencies and their root causes. These program elements were not implemented in response to specific deficiencies but wide-range or broad-scope root causes. The items enumerated above, plus programmatic improvements implemented previously, are evidence of TVA responsiveness to NRC- and TVA-identified programmatic deficiencies.

ENCLOSURE 2
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
RESPONSE TO VIOLATIONS

Violation 50-390/82-05-01, 50-391/82-03-01

10CFR50, Appendix B, Criterion XVI, as implemented by the licensee's approved QA program, requires the licensee to establish measures to assure that significant conditions adverse to quality are promptly identified and corrected, the cause of each condition is determined, and corrective action is taken to preclude repetition.

Contrary to the above, as of January 29, 1982, the licensee had not established measures that assured that certain significant conditions adverse to quality were either promptly identified and corrected, the cause of the condition determined, or that action was taken to preclude repetition. These conditions were identified by the licensee or by an NRC inspector between April 1980 and January 1982. Those identified by an NRC inspector were brought to the licensee's attention at the time of disclosure, at the conclusion of the inspection and in the relevant Inspection Report.

This is a Severity Level IV Violation (Supplement II).

TVA Response

The description of violation is contained in Appendix A and under Details in Inspection Reports 390/82-05, 391/82-03, and 390/82-09, 391/82-07. The description references previous inspection reports (81-05, 80-21, 80-13, 81-11, 81-14, 81-02), the HVAC Confirmation of Action Letter, plus various items including construction specifications, site audits, 50.55(e) items, and field instructions. When reviewed in depth, the report references events occurring from 1977 to January 1982.

Admission or Denial of Alleged Violation

TVA has reviewed the numerous elements of this violation and concludes that some are related to previous deficiencies as stipulated in our detailed responses. TVA admits that the events cited in the report occurred but does not agree that all were directly caused by any failures to take prompt corrective measures. In some cases, hindsight indicates that more stringent corrective measures were in order, but corrective measures, including action to preclude repetition, were promptly implemented.

Actions Taken to Prevent Recurrence

The overall actions taken to prevent recurrence are the programmatic improvements recently implemented and detailed herewith. Responses to specific details of the cited violation are given below each item which follows.

Date When Full Compliance Will Be Achieved

TVA believes that the present QA program for Watts Bar is in full compliance with regard to measures for promptly identifying and correcting deficiencies, identifying their causes, and implementing action to prevent repetition.

Discussion of Individual Conditions

The conditions are as follows:

1. Conditions disclosed in Inspection Report Nos. 50-390/81-05 and 391/81-05, dated April 29, 1981.

   (a) Failure to properly identify nonconformance with design drawings and construction specifications regarding: (1) piping separation of process and effluent radiation monitor, (2) safety classification, and (3) housekeeping and maintenance control.

   NOTE: This condition was identified during the exit meeting on January 28, 1982, and not Inspection Report 81-05 as stated. Also this item is not related to matters discussed in TVA's response to the February 10, 1981, Confirmation of Action Letter.

   Admission or Denial of Alleged Violation

   NCR 3866R was initiated on January 5, 1982, before the resident inspector's exit meeting identifying the conflict between Construction Specification N3G-881 and the routing and separation instructions on drawing 47W600-0-4, R6. This NCR was referred to EN DES for disposition and was dispositioned, with some modifications to the recommended disposition, on March 3, 1982. ECN 3352 was issued implementing corrective action on this matter and construction work is proceeding under work package I090-G03.

   Housekeeping requirements for these monitors are now addressed by requiring that the monitors be covered except when installation and testing are in progress and by removing dust and debris accumulated during construction activities before transfer. The clogged line referenced in the report apparently occurred because water inadvertently entered the monitor pump during flushing operations, causing the pump internals to rust. Normal flushing procedures involve 'valving-out' the monitor and flushing the lines only. Engineering personnel have been instructed to be particularly careful in future flushes to preclude recurrence of this condition (flushing was not definitely identified as the cause of this condition).

   Based on TVA's prompt identification before the exit meeting and implementation of corrective measures and the fact that this condition did not occur due to failure to take appropriate corrective measures as committed to in response to Inspection Report 390/81-05, this element of the violation is denied.

(b) Deletion of the final QA inspection of thermal overload bypass circuitry for motor-operated valves due to this circuitry not being included within the scope of Construction Specification N3G-881.

NOTE: This condition was identified during the exit meeting on January 28, 1982, and not Inspection Report 81-05 as stated. Also this item is not related to matters discussed in TVA's response to the February 10, 1981, Confirmation of Action Letter.

Admission or Denial of Alleged Violation

This condition was identified in connection with reportable NCRs W-80-P and W-81-P initiated on January 18, 1982. The reportability of these NCRs was based on 'Test signed off with work not performed,' and not on the safety classification of the thermal overload bypass circuits. The system engineer in this case inappropriately signed the transfer because the activity had been deleted from the QA program rather than because the documentation was complete as is required for QA features.

In response to the item cited in (b) above, wiring associated with these circuits is nonseparated; therefore, it does not meet the criteria given in project Construction Specification N3G-881 for safety-related electrical wiring. However, Division of Nuclear Power's Operational Quality Assurance Manual (OQAM), Appendix A, part 3, defines these circuits as being safety-related. TVA is investigating the apparent discrepancy between Construction Specification N3G-881 and the NUC PR OQAM. The preliminary results of TVA's investigation indicate that the group monitor lights provide a 'quick reference' in checking valve alignment but are not the primary means of position indication. Each valve is provided with a Class IE indicator which is adjacent to the controlling handswitch for the individual valve. The circuits associated with the thermal overload bypass circuitry are for purposes of annunciating status of the bypass and not part of the bypass circuit.

Based on the fact that the feature was not defined as within the QA program, TVA denies that deletion of this inspection is a valid element of the cited violation. However, TVA has recognized and does recognize that detailed and accurate transfer documentation and a consistent, agency-wide listing of features which are within the scope of the QA program are necessary elements of the program. Programmatic improvements implemented and in progress to enhance the transfer process and to establish a common Q-List are discussed in the overall response to Inspection Report 50-390/82-05, 50-391/82-03.

(c) Deletion of design and construction QA design controls over safety-related HVAC balancing dampers which resulted in procurement and installation of dampers that failed to perform their intended functions.

Admission or Denial of Alleged Violation

TVA admits this element of the violation occurred as stated.

Reasons for Violation

Watts Bar Design Criteria WB-DC-40-36.1 was changed by design input memorandum (DIM) EX-WB-DC-40-36.1 to allow procurement of safety-related HVAC balancing dampers without vendor seismic and quality assurance requirements because EN DES reclassified the dampers to Limited QA and seismic with qualification to be handled internally in EN DES. The design engineer erroneously interpreted this change in classification as deleting construction QA program requirements for the subject HVAC components.

Corrective Action Taken and Results Achieved

Construction Engineering initiated NCR 3884R which described the deficiencies of the subject components and requested EN DES approval for replacement with a construction-fabricated balancing damper. The design of the balance damper was issued by EN DES following seismic analysis and approved for use since it is fabricated under the existing construction QA program control procedure and met the conditions for integrity and maintenance of the preset balance position required by DIM EX-WB-DC-40-36.1. All deficient dampers either have been or will be replaced before preoperational testing of the HVAC system.

In addition, NCR WBNSWP8217 was initiated by EN DES to report that the FSAR and construction specification N3G-881 did not reflect the exceptions allowed by DIM EX-WB-DC-40-36.1. EN DES will revise FSAR Table 3.2-2A to reflect the limited seismic requirements for these components. This revision will be included in Amendment 48 of the FSAR (presently scheduled for January-February 1983). Construction Specification N3G-881 does not require a revision.

This NCR also reports deficiencies by EN DES in providing Construction Engineering with adequate instructions to ensure that the remaining grilles, terminals, and manual dampers meet the conditions for integrity and maintenance of preset balance position required by the DIM.

EN DES has analyzed the remaining components and has provided instructions/drawings to Construction Engineering which will enable them to meet the required conditions of integrity and maintenance of the preset balance position for these components.

Actions Taken to Prevent Recurrence

Construction Specification N3M-914 was issued April 28, 1982. This document identifies all HVAC systems under the QA program and provides specific acceptance criteria for each system component. EN DES is also in the process of compiling the Watts Bar Quality Assurance List (Q-list). When the list is issued (December 31, 1982), it will supersede Construction Specification N3G-881 as the governing document for identification of structures, systems, and components in the QA program. Use of these documents by EN DES and Construction Engineering personnel will prevent deficiencies similar to what is described in the subject report.

Date When Full Compliance Will Be Achieved

TVA expects to complete all commitments for full compliance on this element of the violation by February 28, 1983.

(d) Failure to provide adequate QA program controls over brazing operations for heating, ventilating, and air-conditioning piping. This resulted in deficiencies in the brazing procedures and the procurement, receipt, and issue of brazing filler material.

NOTE: This item is related to the February 10, 1981, Confirmation of Action Letter.

Admission or Denial of Alleged Violation

This element of violation 82-05-01 cites TVA internal audit WB-W-82-01 as evidence of failure to apply corrective actions as stated in TVA's January 21, 1982, final report on the HVAC Confirmation of Action Letter. Specifically, the final report states, 'The results of this evaluation demonstrated that an adequate QA program was in place and being effectively implemented to control all further activities on HVAC systems.' Site Audit WB-W-82-01, conducted from January 20, 1982, through January 29, 1982, initially and at the time of the 82-05 exit meeting (January 28, 1982) documented a deficiency similar to that cited in paragraph (d) above. However, in responding to this deficiency, site engineering personnel demonstrated that brazing material was procured, received, and issued under QA controls and that the welder performing the brazing was certified to perform the activity. This deficiency, originally classified as significant, was investigated by TVA for reportability under 50.55(e) and evaluated as 'nonreportable' because qualifying documents exist for the brazer and certificates of compliance exist for the brazing filler material.

Corrective action of revising QCI-4.01, 'Storage, Issue, and Control of Welding Materials', to include brazing and soldering materials was implemented and this deficiency was closed on March 2, 1982. Based upon the resolution of audit WB-W-82-01 as opposed to the initial finding, TVA does not agree that this deficiency consitutes an example of significant conditions adverse to quality which <u>were not</u> promptly identified or corrected.

(e) Failure to provide QA program controls over the safety-related main feedwater flow switches (Item A) and steam generator pressure transmitters (Item B) which provide signals to the reactor protection system, to ensure their protection against adverse environmental temperatures.

Admission or Denial of the Alleged Violation

TVA denies Item A and admits Item B of the violation occurred as stated.

Main Feedwater Flow Switches - Item A

TVA admits that the freeze protection for the main feedwater flow sensing lines is not under the QA program. However, TVA does not consider this a violation of NRC requirements. The freeze protection for these lines performs no primary or secondary safety function. The main feedwater flow switches provide input to a redundant reactor trip (feedwater/steam flow mismatch coincident with a low steam generator level) which is not assumed in any of the transient and accident analyses.

Additionally, adequate methods are in place that ensure that the operators are aware of potential freezing in the sensing lines. These methods include:

1. Technical Specification 4.3.1.1 requires a channel check be performed at least once every twelve hours in modes 1 and 2. We believe this will indicate any freezing of the sensing lines. If freezing occurs, the channel is determined inoperable. Per specification 3.1.1, with the operable channels one less than required, the inoperable channel is placed in the trip condition within one hour. Therefore, the protective function is carried out.

2. Malfunctions in the heat tracing system will initiate an alarm in the main control room. Present operating procedures require that this condition be investigated and appropriate actions be taken to restore the heat tracing. This also alerts the operators of the increased potential for freezing of the sensing lines.

It should be noted that TVA had previously evaluated placing freeze protection for this system under the QA program (mid-1978). However, it did not meet the requirements necessary to be included in TVA's QA program.

Reason for Violation - Item B

TVA had not properly evaluated the impact of fresh air flow from the north valve room intake duct as it passed over these transmitter instrument lines during times that would cause freezing and had not evaluated the adverse affects of extreme low temperatures when the plant was in a nonoperating condition.

Corrective Action Taken and Results Achieved - Item B

TVA is initiating an engineering change notice (ECN No. 3182) to relocate heaters and add duct diverters in the north valve room. This will increase the normal room temperature and will divert fresh air in a direction that will not adversely affect the instrument lines for the steam generator pressure transmitters.

Actions Taken to Prevent Recurrence - Item B

TVA is developing a procedure for freeze protection requirements for all safety-related systems. This procedure will require a review of the present freeze protection requirements of each safety-related system considering items such as long-term loss of offsite power and failure of nonqualified heating and ventilation equipment.

The design review to be conducted will require that any additional safety-related equipment subjected to adverse environmental conditions be appropriately nonconformed and corrected to preclude future problems.

Date When Full Compliance Will be Achieved - Item B

All design and construction for ECN 3182 relocating heaters and adding duct diverters will be complete by May 1, 1983.

Development of the procedure for freeze protection requirements for safety-related systems will be complete on or by November 15, 1982. The review of the present freeze protection will be complete by November 30, 1982. All modifications and additions to existing systems will be complete by April 15, 1983.

2. Conditions disclosed in Inspection Report 50-390/80-21, dated August 18, 1980.

   (a) The committed procedures for establishing punch lists of system status (WBFI-G11) did not contain adequate requirements in that the established punch list for a portion of the essential control air system (32-1) did not accurately identify over 200 incomplete work and documentation items.

   (b) The controlling procedure for establishing these punch lists (WBFI-G-11) was not a QA program procedure as required, nor did it provide adequate instructions for documenting system construction status.

Admission or Denial of Alleged Violation

TVA concurs that this example is a similar instance to the violation documented in Inspection Report 390/80-21.

Reason for Violation

The reason for this element of the violation is failure to implement adequate action to prevent recurrence in response to Infraction 50-390/80/21-01. The root cause of this violation lies in TVA's belief that certain prerequisite activities performed in preparation for system transfers were not within the scope of the QA program. TVA relied upon elements of the QA program such as as-constructed drawings, accountability programs, functional testing, outstanding work item lists and the preoperation test program to ensure the complete and accurate configuration of features and documentation of status. The pretransfer 'punch list' was considered an administrative mechanism used to direct craft priorites in support of activities restraining system transfer. The fact that this program was 'administrative' rather than 'QA' resulted in personnel neglecting to perform a detailed walkdown before transfer.

Corrective Action Taken and Results Achieved

The instruction for establishing punch list status (WBFI-G11) was incorporated into Watts Bar Quality Control Instruction QCI-1.22, 'Transfer of Permanent Features to the Division of Nuclear Power, on April 12, 1982. This placed the 'punch list' under formal QA controls and removed any 'administrative connotations' from this activity. A review of transfers effected between December 17, 1980, and April 12, 1982, has been initiated to ensure that the status of features was accurately recorded before transfer. This review will be completed before March 1983.

Actions Taken to Prevent Recurrence

WBFI-G-11 was incorporated into quality control instruction (QCI) 1.22 in April 1982. QCI-1.22 was revised again on August 9, 1982, to clarify the requirements for documenting outstanding work at the time of transfer. These revisions and the associated training performed in their implementation will preclude future inadequate documentation of systems status at transfer.

Date When Full Compliance Will Be Achieved

The procedure revisions were implemented on the dates stated above and TVA is now in full compliance on action to prevent recurrence.
All action will be complete by March 1983 when the review of transfers between December 17, 1980, and April 12, 1982, will be finished.

3. The licensee failure to apply adequate QA program controls over hydrostatic testing of safety-related systems and components was identified in Inspection Report 390/80-13, dated May 29, 1980. The licensee failure to take corrective and preventive action resulted in overpressurization of the Unit 1 Volume Control Tank during hydrostatic testing on December 22, 1981. The test procedure had not received an adequate technical review.

Admission or Denial of Alleged Violation

Inspection Report 80-13 cited TVA with a four-part infraction related to flushing and hydro-static testing. Part four of this infraction reads as follows:

> As of April 23, 1980, test procedure WBNP-QCP-4.10, Appendix D, Hydrostatic/Pneumatic Testing of Piping Systems and Piping Sub-assemblies, did not include provisions for assuring the adequate establishment of prerequisite overpressure protection. Step 6.1.4.5 required the consideration of precautions to prevent overpressurization and detailed a suitable method which employed a relief valve.
>
> However, licensee personnel have used other methods of providing overpressure protection without these methods being documented or required to meet any formal acceptance criteria. Additionaliy, the procedure does not define the time interval to be recorded in Attachment A and engineers have made recordings based on varying assumptions, which has rendered this information unreliable.

This infraction clearly addresses the mechanical methods employed to ensure overpressure protection in relation to an established test parameter and not to the procedures employed in establishing and verifying the parameters.

The overpressurization of the volume control tank occurred not because of lack of overpressure protection but because of an error in the data used to establish the test parameters. Specifically, the system engineer misread the tank pressure from the nameplate and this error went undetected in the review and approval cycle for the test procedure.

Accordingly, TVA admits that this incident occurred, but denies that this was caused by failure to implement corrective action or action to prevent recurrence in response to Inspection Report 80-13.

Also, this does not represent a failure to identify, correct, or implement action to preclude recurrence. This deficiency was promptly identified by TVA under NCR 3877R, reported to the NRC under 10CFR50.55(e) on January 20, 1982, corrective action, implemented, the 'root cause' identified, and appropriate action to prevent recurrence implemented. The final report was submitted to NRC-OIE on August 27, 1982.

4. On September 23, 1981, the licensee completed an evaluation of the effect of corrosion on carbon steel lines in the Essential Raw Cooling Water (ERCW) system but failed to consider the effects of carbon steel line corrosion in the following ERCW components or operations:

(a) Auxiliary control air compressor cooling water
(b) Screen wash flow
(c) Strainer backflush flow
(d) Flood mode supply of component cooling water to safe-shutdown equipment
(e) Effluent radiation monitor sample line

Admission of Denial of Alleged Violation

TVA concurs with the findings cited in this element of the violation.

Reasons for Violation

Strainer backwash was omitted from requirements for corrosion investigation by oversight. For all the other listed components or operations, responsibility for the corrosion evaluation had not been clearly assigned.

Corrective Action Taken and Results Achieved

The specific items noted in the violation are addressed separately below:

(a) TVA-supplied piping to the Auxiliary Control Air Compressor had already been evaluated; the violation addressed only the failure to consider the vendor-supplied piping. The cognizant TVA design group has recommended replacement of all vendor-supplied piping precluding the need for additional analysis.

(b) Corrosion analysis of the screen wash piping has been completed and is documented in calculation number MEB 821622 303.

(c) Corrosion analysis of the strainer backwash piping has been prepared and is in the final stages of checking.

(d) The flood mode analysis has not yet been completed. However, since the component cooling system is normally filled with demineralized water, its piping should be uncorroded when the flood mode ERCW supply is initiated. Also the ERCW system flood mode demand is much lower than for the LOCA condition. Therefore, flood mode is not expected to be a limiting condition for safe operation.

(e) The cognizant TVA design group has recommended replacement of all carbon steel piping and valves associated with radiation instrument RE-90-133 and R3-90-134 with stainless steel, thereby precluding the need for additional analysis.

Although TVA agrees that the above items should have been addressed in the initial corrosion analysis, none are considered likely to jeopardize safe system operation in the short term and major system problems were identified previously.

Corrective Steps Taken to Avoid Further Noncompliance

TVA will evaluate its corrosion analyses of safety-related raw water systems at its other nuclear plants in light of the noted violations.

Date When Full Compliance Will Be Achieved

All corrosion analyses and generic evaluations will be completed by March 15, 1983. All required piping changes will be implemented before August 1, 1983.

5. The licensee corrective action taken with respect to deficiencies disclosed in Inspection Report Nos. 50-390/81-11, dated June 11, 1981, and 50-391/81-14 dated November 5, 1981, relative to QA control of flushing of safety-related piping systems and components, was inadequate in that (1) Rev. 4 of Construction Specification G-39 deleted the requirement that flush velocity be at least system design flowrate, and (2) G-39 did not provide adequate acceptance criteria for off-line sample apparatus.

(1) Flushing Velocity

Admission or Denial of Alleged Violation

TVA concurs with the finding as cited in this element of the violation.

Reason for Violation

CONST was having difficulty demonstrating that they were meeting velocity requirements and requested relief. The engineer responsible for G-39 felt that the requested change met the intent of ANSI 45.2.1 and, therefore, erroneously deleted the requirement from the specification.

Corrective Action Taken and Results Achieved

Shortly after TVA was cited for not having a velocity requirement, a proposed revision to G-39 correcting this condition was prepared and has been reviewed by CONST. This revision will be issued by December 3, 1982.

QA systems are normally flushed with permanent system pumps. We are confident that these systems have been flushed at an adequate velocity.

Actions Taken to Prevent Recurrence

EN DES and CONST engineers involved in this concern have been apprised of the requirement to have a flushing velocity specified in Construction Specification G-39.

Date When Full Compliance Will Be Achieved

TVA will be in full compliance by December 3, 1982.

(2) Off Line Sample Apparatus

Admission or Denial of Alleged Violation

TVA concurs with the findings as cited in this element of the violation.

Reason for Violation

The need to specify adequate acceptance criteria in the form of a sample flowrate was an oversight.

Corrective Action Taken and Results Achieved

TVA performed tests at TVA's Singleton Materials Laboratory to qualify the off-line sample apparatus. The tests showed that representative samples can be collected. These tests were performed May 4-15, 1982, with the exception that some of the flow rates (shown in Table 1 of MEB 821012 040) were measured September 14-15, 1982.

CONST has verified that when side stream sampling is used, the sample is drawn at a minimum rate of 15 gal/min. Based on measured flow rates during the Singleton tests, we are confident that the sample flow rates have been adequate.

Actions Taken to Prevent Recurrence

G-39 will be revised to specify a minimum sample flowrate of 15 gal/min based on the Singleton Lab Tests. The revision will be issued by December 3, 1982. This requirement will provide adequate acceptance criteria for off-line sample apparatus.

Date When Full Compliance Will Be Achieved

TVA will be in full compliance by December 3, 1982.

Response to Paragraph 5a of Inspection Report 50-390/82-09, 391/82-07

The instructions for operating and monitoring the emergency diesel generators, while operating, were provided in SOI 82.2 A through D, 'Running Operation of 1A-A (through 2BB) DG.'

The following deficiencies were identified with the monitoring requirements. The procedure did not require monitoring of the generator bearing temperatures, engine crankcase lube oil level, and coolant expansion tank level.

Also, the procedure was deficient in specifying monitoring requirements as follows.

Fuel oil day tank level was required to be maintained greater than 250 gallons per tank. However, no instrument was installed to provide for such monitoring and the AUO's had no instructions for making the determination otherwise.

An engine exhaust temperature limit of 'approximately equal to' 950°F was given. This corresponded with the normal range provided in the vendor manual, not the 1050°F limit provided by vendor letter dated July 15, 1981.

An essential raw cooling water (ERCW) system flow rate of approximately equal to 1320 gpm to the jacket water heat exchanger was given as a limit. However, each diesel generator set has two jacket water heat exchangers, each with independent ERCW flow paths and flow rate indication (0-750 gpm).

The failure of this equipment monitoring procedure to provide adequate qualitative or quantitative acceptance criteria constitutes a violation of 10 CFR 50, Appendix B, Criterion V. This also represents a failure to take appropriate corrective action per Criterion XVI to prevent further violations similar to those identified in inspection report number 390/81-14. This violation is a further example of failure to take adequate corrective action to prevent recurrence as identified in inspection report number 390/82-05, which has not yet been addressed by the licensee.

Admission or Denial of the Alleged Violation

TVA denies that a violation occurred as stated. TVA admits to a violation of 10 CFR 50, Appendix B, Criterion V in that TVA failed in its equipment monitoring procedure to provide adequate qualitative or quantitative acceptance criteria.

Reasons for Denial

TVA admits that we were deficient in fully implementing a program in accordance with Operations Section Letters (OSLAs) 27 and 28 in that TVA did not adequately stress the importance of closely monitoring equipment during its operation. Furthermore, TVA admits that findings made in conjunction with the emergency diesel generators' operation evaluation is

indicative of a failure to fully disseminate operational policy to the unit operator level in regards to stopping the operation of any equipment whose operational parameters cannot be verified to be within prescribed limitations.

However, TVA denies this represents a failure to take appropriate corrective action per Criterion XVI to prevent further violations similar to those identified in inspection report No. 390/81-14, the details being provided in inspection report Nos. 50-390/82-09 and 50-391/82-07, for which TVA is being charged in inspection report Nos. 50-390/82-05 and 50-391/82-03.

TVA's primary concern in preventing further similar incidents as addressed in inspection report 81-14 was to identify the root cause of the breakdown in the testing program. Our response to 81-14 indicated this root cause to be inadequate test control and an inadequate and improper test procedure review process. For this instance, the test director relied on an operating instruction (OI) that contained operating limits which were not applicable to system conditions established for the test. In other words, the root cause was lack of positive test control, an inadequate review, and misapplication of an OI, not an inadequate OI.

TVA recognizes the failure at the assistant unit operator (AUO) level to monitor and evaluate operating parameters to ensure safe operation of equipment and that such should be performed regardless of the particular situation. However, TVA also feels adequate action has been taken in addressing the basic issues of 81-14.

Reasons for the Violation

Findings made in conjunction with the emergency diesel generators' operation evaluation is indicative of a failure to provide an adequate program to ensure qualitative or quantitative acceptance criteria in equipment operating instructions and logs.

Corrective Steps Which Have Been Taken and the Results Achieved

The SOI-82 series has been reviewed and revised to include the parameters felt necessary for monitoring the operation of the diesel generators. The SOI now includes generator bearing temperatures, engine crankcase lube oil level, coolant expansion tank levels, and the proper essential raw cooling water flow of 650 gpm per engine. Vendor information was rechecked and proper exhaust temperature values were placed in the SOI. The violation details in inspection report No. 50-390/82-09 stated that the fuel oil volume in the day tank is required to be 250 gallons and that no instrument was available to determine the volume and no instructions were provided for the AUO to make the determination in another manner. TVA does not agree that this is a valid part of the violation. The level of fuel oil in the day tank will be determined as part of our surveillance program. The level of oil in the tank when the diesel is running is not a critical monitoring point. Automatic fuel oil pumps will provide fuel from the seven day tanks during diesel operation. In addition, the lack of a level indicator was addressed in DCR 335, submitted January 21, 1981, which provided for the addition of level indicators.

TVA has cleared up any misunderstandings that the AUOs had about which documents should be used in monitoring diesel operation. OSLA 27 has been revised to include the only log information that will be required for monitoring the diesels. AUOs have been made aware that OSLA 27 and the SOIs contain the only information they need to adequately monitor the diesel generators.

Corrective Steps Which Will be Taken to Avoid Further Violations

TVA will continue to stress the use of SOIs and operating logs in OSLA 27 during nonlicensed operator onsite training recognizing operating instructions and logs will be revised as necessary to reflect operational experience. Criteria will be established by January 1, 1983 for the requirements to be included in operating logs. SOIs and operating logs for the systems that have been transferred to NUC PR will be reviewed and revised as necessary by March 1, 1983. SOIs and operating logs for the remaining systems will be reviewed and revised as the systems are transferred.

Date When Full Compliance Will be Achieved

Full compliance will be achieved 90 days following final transfer of the final system from Construction to NUC PR. At this point, all the SOIs and operating logs for all systems will have been reviewed.

Violation 50-390/82-05-04, 50-391/82-03-04

10 CFR 50, Appendix B, Criterion I, as implemented by the licensee's approved QA program, FSAR Section 17.1A, requires the licensee to establish and delineate in writing the authority and duties of organizations performing activities affecting the safety-related functions of structures, systems, and components.

Contrary to the above, as of January 29, 1982, the licensee had not established and delineated in writing the authority and duties of those organizations responsible for the transfer of: (1) the skid-mounted cooling water piping of the auxiliary control air compressors, and (2) various process and effluent radiation monitors.

This is a Severity Level V Violation (Supplement II).

Admission or Denial of Alleged Violation

TVA admits that the specific examples cited occurred, but does not agree that this is a violation relative to assignment of responsibilities and duties of personnel. TVA also admits there has been a generic problem in this area as defined in the Construction 1982 Action Plan for Quality Improvement, discussed later in this response.

In alleged violation 390/82-05-04 and 391/82-03-04, the skid mounted piping referred to was not part of the transfer boundary, and therefore Mechanical Engineering Unit A correctly indicated 'NA' on the transfer punchlist. This 'NA' did not mean denial of responsibility, but only that they had no responsibility for the features included in the particular transfer boundary. The assignment of work boundaries between the Electrical and Instrumentation Engineering Units has been established since shortly after the Instrumentation Engineering Unit was formed. The units did not deny responsibility for internal wire checking and piping/valve inspection of the radiation monitors because of lack of assignment but because these items are part of the vendor responsibility as discharged through his QA program. The monitors are given an overall functional test before transfer. There are no preventive maintenance requirements for radiation monitors other than protection from damage and general housekeeping. These are general requirements not identified by individual feature in the QA program.

Response To Paragraph 6 of Inspection Report 390/82-09, 391/82-07

Construction QA Audit WB-G-80-05, deficiency No. 2, identified that fifteen features and components listed under 'Miscellaneous Mechanical Equipment' within Construction Specification N3G-881 'Identification of Structures, Systems, and Components covered by the Watts Bar Nuclear Plant Quality Assurance Program' did not have adequate installation and inspection quality assurance inspection applied to them by the construction engineering organization. The 'Corrective Action Proposed

and Implemented' section of the audit indicated that the RHR sump room manway installation and inspection would be documented utilizing the requirements of quality control procedure (QCP) 2.4, 'Fabrication, Erection, and Inspection of Structural and Miscellaneous Steel.'

However, discussions with supervisors over mechanical and civil features revealed that no specific person(s) were assigned construction engineering responsibility for these manways. The inspector noted that the manways were not identified on the computer status program which is the document used to accurately monitor the status of inspection and testing of those identified engineering and construction features. The failure to clearly establish and delineate the authority and duties of persons and organizations performing activities for safety-related functions of structures, system and components is a violation of 10CFR50, Appendix B, Criterion I. As such, this violation is a further example of the organizational violation, 390/82-05-02, which has not yet been addressed by the licensee.

Note: The alleged paragraph six violation references violation 390/82-05-02 (typographical error which should be 390/82-05-04). TVA had not received Inspection Report 390/82-05 at the time of receiving 390/82-09, and both violations are for the same alleged problem, failure to clearly delineate responsibility. Further, the specific example cited in paragraph six resulted from the Civil Engineering Unit supervisor giving the wrong answer to the NRC inspector. The supervisor was not assigned to the Civil Unit when the RHR manway work was perfor , and did not personally have knowledge of it. There is Civil Unit documentation dated as early as 1976 related to these features. However, there was a problem with these manways not being listed in the Civil Accountability Programs which was cited in Audit WB-G-80-05 deficiency 2 (item 390/80-12-08) reported to NRC as a 10CFR50.55(e) item, and closed by NRC in Inspection Report 390/82-10 and 391/81-10. Therefore, this element of the violation is admitted.

Reason for Violation

The root cause was identified as Cause 3 of Root Cause II of the Construction 1982 Action Plan for Quality Improvement, quoted as follows: 'Definition of responsibilities are unclear, workload is excessive, and the involved organizations are reluctant to absorb new demands on an overloaded workforce.'

Corrective Action Taken and Results Achieved

Responsibility assignments for the specific items cited were reviewed with the engineering units at the time of the NRC exit meeting in January 1982. Improved communication on who is responsible for the various aspects of features has been emphasized at engineering supervisors' meetings, most recently on October 1, 1982; and we are not aware of any other feature for which confusion over responsibility exists.

Actions Taken to Prevent Recurrence

Action Item 2-1 of the Construction 1982 Action Plan for Quality Improvement which was to correct Root Cause II of this violation, stated, 'Collect documents specifying responsibilities of construction organizations and their interfaces, conduct responsibility audits, and analyze both documents and develop a statement of organizational responsibilities to be issued to construction managers.' A responsibility description manual covering all the Construction Engineer's organization has been issued for comment, and comments have been returned to the Division Manager's office. This manual contains unit organization charts which are periodically updated plus general work assignments and definitions of specified duties of supervisors, engineers, group leaders, and inspectors. With the final issue and distribution of this manual, there should remain no further general confusion over responsibilities in the Construction Engineer's Organization.

Date When Full Compliance Will Be Achieved

TVA will be in full compliance by February 1, 1983, when the responsibility description manual is issued.