Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

William J. Museler
Site Vice President, Watts Bar Nuclear Plant

NOV 16 1993

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

Gentlemen:

In the Matter of the Application of	)	Docket Nos. 50-390
Tennessee Valley Authority	)	50-391

WATTS BAR NUCLEAR PLANT (WBN) - NRC INSPECTION REPORT NOS. 390, 391/93-53, 93-58, 93-61, 93-71 - REPLY TO NOTICES OF VIOLATION AND NOTICE OF DEVIATION AND INSPECTION REPORT 390, 391/93-43 - SUPPLEMENTAL RESPONSE

The letter provides responses to the subject inspection reports which identified several issues with the Watts Bar Startup and Test Program. TVA is taking a comprehensive approach to resolving issues associated with this important program to ensure future preoperational testing is effective. A summary of these actions is provided in Enclosure 1. In addition, Enclosure 1 addresses NRC's September 14, 1993 letter requesting additional information relative to TVA's August 23, 1993 response to IR 390, 391/93-43.

Enclosure 2 provides TVA's response to Violations 390/93-53-02, 390/93-61-01, and Inspector Followup Item 390/93-71-04 as requested by the staff. Enclosure 3 provides TVA's response to Deviation 390/93-53-03 and Violation 390/93-53-04. Enclosure 4 provides TVA's response to Violation 390/93-58-02 (Examples 3 through 6); our response to Violation 390/93-58-02 (Examples 1 and 2) was provided in TVA's letter of November 4, 1993. Enclosure 5 provides TVA's response to Violation 390/93-71-01. Enclosure 6 summarizes the commitments for this letter.

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

Very truly yours,

W. J. Museler

William J. Museler

Enclosures
cc: See page 2

IE01

cc (Enclosures):

NRC Resident Inspector
Watts Bar Nuclear Plant
Rt. 2, P.O. Box 700
Spring City, Tennessee 37381

Mr. P. S. Tam, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

ENCLOSURE 1

STARTUP PROGRAM IMPROVEMENTS

Background

The Watts Bar Startup and Test Program was formulated in early 1992 to prepare for the initial phase of the Preoperational Test Program. Because of earlier construction issues at WBN, the program was intentionally designed to begin slow and then ramp up as construction activities neared completion on a system basis. The program had the unique charter of reverifying previous construction testing (component functional testing, flushing, etc.) due to the extended time and number of modifications since previous tests were complete. Over the course of the test program, several positive examples of test program implementation have been demonstrated including successful performance and completion of over ten safety-related preop procedures. To date, there have been no errors identified in completed test packages which would cast doubt on the capability of the installed systems to meet design requirements.

While initial testing had been considered sufficient to "debug" program elements, a lack of sufficient management oversight and involvement in subsequent testing resulted in failure to ensure that fundamental adjustments (as required with any test program) were recognized and dealt with consistently. A multi-layered organizational structure inhibited quick and effective communication between senior Startup management and test personnel. Although a number of preoperational test procedures were concurred with by Region II Staff and successfully performed, this sometimes came at the cost of delays and significant re-review to resolve comments by utility and NRC personnel and in some cases resulted in correction of specific technical errors without addressing their underlying causes.

These technical errors, combined with other program weaknesses led site and corporate management to reexamine and eventually restructure the Startup Program.

Restructured Startup Test Program

The new management team consists of a new, highly experienced, Startup Manager and primary leads, several of whom have worked together to direct successful, recent PWR Startups. The Startup Manager will directly supervise administrative and technical leads in each program area thereby eliminating several layers of management. The Startup program will focus on several key elements critical to a successful startup. These key elements are: (1) Improved personnel utilization to ensure that personal experience and expertise are matched with assignments and accountabilities, (2) Increased emphasis on training, (3) Minimum layers of management in order to provide continuous oversight and involvement by the Startup Manager, (4) Clear program requirements, (5) Emphasis on personal accountability throughout the organization, and (6) Improved communication with QA and NRC to ensure that needed adjustments are quickly recognized and incorporated.

The principal Startup administrative procedures used for development, review, approval, and conduct of preoperational and acceptance test procedures and for conduct of generic (component) testing are being streamlined to reflect prior startup experience while maintaining FSAR commitments and TVA QA requirements. Thorough training will be conducted for test personnel on revised requirements and management expectations prior to review and approval of preoperational and acceptance test procedures. The training will cover the intent of procedures as well as content. Subsequent to training, changes to program requirements will be limited. Personnel will be held accountable for full compliance with procedure content and intent.

Management expectations have been communicated to test personnel stressing test procedure accuracy and thoroughness. Lectures and/or written directions were provided to SUT supervisors, engineers, and Joint Test Group (JTG) personnel to stress procedural compliance with a discussion of recent examples of procedure non-compliance and the serious nature of the recent NRC violations. Simply stated: test program personnel will be expected to expend the effort to comply with procedural requirements and discuss potential concerns with superiors; management personnel will take the time to listen, understand, and consistently resolve issues brought to their attention.

The "key elements" when applied to the primary program functional areas (test development, conduct, and program administration) will assure successful program implementation. The following summarizes expectations in these functional areas:

Test Procedure Development, Review, and Approval

Significant effort is focused on the need to improve the technical and administrative quality of test procedures. These initiatives are outlined as follows:

- Centralized control of test procedure development under one manager

- Personal accountability/self-checking by procedure preparer

- Streamlining and improvement of administrative procedures which govern test development. This process is expected to result in SUT test procedures which have clear, consistent requirements free of ambiguous, cumbersome, or conflicting methodologies.

- Increased emphasis on accountability and quality of peer and JTG reviews; elimination of redundant test working group (TWG) and editorial reviews which dilute accountability

- Elimination of test scoping documents (TSDs) as a formal input to test procedure.[1] Startup to have principal responsibility to ensure applicable engineering requirements and NRC commitments are addressed. Close working relationship with Nuclear Engineering system engineer during test procedure development.

- Review of FSAR Chapter 14 Test Summaries in progress to eliminate ambiguities/questions on preoperational test requirements and commitments. The following are objectives for this process (consistent with TVA's August 23, 1993 commitments made in response to Violation 390/93-43-02):

  - Review the regulatory guides listed in FSAR Chapter 14, Section 14.2.7 to assure that regulatory guides invoked for testing have been appropriately implemented within WBN PTIs).

  - Ensure Chapter 14 test abstract objectives, prerequisites, methods, and acceptance criteria are addressed consistently within PTIs.

  - Ensure that preoperational testing requirements contained in other FSAR chapters are consistent with Chapter 14 abstracts and appropriately implemented within PTIs.

  - Review historical commitments made in formal correspondence to NRC which relate to preoperational testing to assure items are addressed by the test program or are properly dispositioned.

Test Conduct

- Startup manager will personally review preparations for each preoperational test and will be the sole point of authorization to begin test performance.

- Increased supervisory accountability for the quality of field activities; procedure production no longer under jurisdiction of section supervisor

- Procedure compliance and personal accountability/ownership by test directors will be expected

- Increased program focus on ancillary activities - pretest activities, deficiency processing and evaluating, use of chronological log, trouble shooting, processing test instruction changes, packaging test results, etc.

---

[1] This modifies TVA's commitments regarding TSDs in TVA's August 23, 1993, response to Violation 390/93-43-02.

Program Administration

In addition to restructuring the SUT organization and reemphasizing procedural compliance, improvements were found necessary in program areas which had no clear point of accountability or for which a number of concerns warranted a more detailed evaluation of the program. These areas include system boundary drawings, temporary operating plans (TOPs), and temporary modifications (TMODs) as these programs are essential in maintaining effective configuration controls during Startup Testing activities. In addition, other SUT programs (e.g., component testing, system turnover, system cleanliness, etc.) are being re-reviewed to ensure each has "ownership" and to confirm the "health" of the program. Other attributes include:

- Personal involvement of Startup Manager in field activities
- Centralized responsibility within Startup for procedure control and records handling
- Development of a more effective, accurate, and timely process for trending test deficiencies by Site QA with close interface with SUT

Conclusion

In summary, the improvements discussed herein are vital to assure the successful performance of the Startup and Test Program. Although no substitute for knowledgeable personnel, good design, and proper "tools," the fundamental tenets - personal accountability, procedural compliance, self checking with a questioning attitude, thorough reviews, and management oversight will form the basis of future test activities. As questions and concerns arise through self evaluations, QA audits, test engineer/peer comments, regulatory reviews, etc., the program will be responsive and complete to ensure issues are dealt with effectively.

Note: This enclosure serves as supplemental information (in response to NRC's September 14, 1993 letter) and the actions to prevent future occurrence for the specific violations and deviation in the subsequent enclosures.

ENCLOSURE 2

WATTS BAR NUCLEAR PLANT UNIT 1
REPLY TO NRC LETTERS OF AUGUST 27 AND SEPTEMBER 29, 1993
NRC VIOLATIONS 50-390/93-53-02 AND 50-390/93-61-01

VIOLATIONS 390/93-53-02 AND 390/93-61-01

10 CFR 50 Appendix B, Criterion V as implemented by TVA Nuclear Quality Assurance (NQA) Plan, TVA-NQA-PLN 89-A (Revision 3), Section 6.1 requires that activities effecting 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. Instructions, procedures or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Startup Manual Procedure (SMP-8.0), Administration of Preoperational Test Procedures (Revision 11) sections 2.1, 2.2, 2.3 and 2.4 specifies the requirements under which the preoperational test instruction (PTI) is developed, reviewed and approved.

SMP-8.0 paragraph 2.4.A specifies that the test engineer is responsible for ensuring that the PTI is technically and administratively accurate. Paragraph 2.4.D of SMP 8.0 requires that after completion of PTI technical review and resolution of comments by the test engineer, the Startup and Test Manager will sign the approval sheet as reviewer. This signature indicates the technical review is complete. Paragraph 2.4.G of SMP-8.0 specifies the Startup Manager provides the final approval of the PTI.

SMP-3.0 (Revision 7), Joint Test Group Charter, paragraph, 2.3.B.1 requires the Joint Test Group (JTG) to review and recommend approval of all PTIs. Paragraph 2.3.B.4 of SMP 3.0 requires the JTG to perform technical reviews of documents and advise the Startup Manager on the disposition of those items reviewed.

Contrary to the above as of July 30, 1993 licensee personnel failed to perform adequate review of the following preoperational test instructions. These PTIs were approved for use with significant technical and administrative deficiencies which would adversely affect the PTI test objective, test results and acceptance criteria.

Note: **The examples of Violation cited by NRC are summarized in Attachment 1 to this enclosure. Their full text is contained in the subject NRC Inspection Reports**

REASON FOR VIOLATION

The programmatic causal factors for these violations and their corrective actions are discussed in Enclosure 1. The following provides a discussion of TVA's evaluation of some of the more significant deficiencies cited in Inspection Reports 50-390, 391/93-53 and 50-390, 391/93-61 including Inspector Followup Item (IFI) 390/93-71-04 opened in Inspection Report 390/93-71 (NRC letter dated October 28, 1993). TVA's response for these issues corresponds to the violation examples listed in Attachment 1.

Attachment 1 also summarizes TVA's investigation results (under Significant Corrective Action Report (SCAR) WBSCA930151) for items cited in the violations but not addressed below. These items primarily relate to administrative issues such as lack of strict compliance with Startup procedures, attention to detail, and insufficient reviews. Corrective actions for these concerns are described in Enclosure 1. Additional detail is contained in SCAR WBSCA930151, available upon request.

VIOLATION 390/93-53-02

PTI-261.02 (REVISION 0, JUNE 4, 1993), COMPUTER INPUT AND DATA VERIFICATION

NRC Concern:

PTI-261.02 Section 6.2, Cold Junction Box RTD Calibration Curve Development. Licensee personnel made calculation errors when developing the resistance input values for the RTDs and the millivolt input values for the thermocouples. The calculation errors would have resulted in the plant process computer displaying temperatures in excess of PTI-261.02 acceptance criteria of ±0.1°F.

PTI-261.02, Section 4.G Prerequisite Action 4.1.15 specifies that the RT cards, normal-loaded reference voltages be verified within a tolerance of approximately ±0.1%. Vendor drawing 845A349, Revision 5, RT Card Schematic Diagram, specifies a tolerance of approximately ±0.006%.

TVA Response:

PTI-261.02 Example 1 - Calibration Curve Calculation Errors

The errors resulted from, (1) Inadequate review of comment incorporation, (2) Calculation errors by the test engineer, and (3) Inadequate peer review of the calculation results. The test engineer's draft test procedure required the use of a decade resistance box (DRB) to simulate inputs for both the thermocouple cold reference junction box RTDs and other RTDs. The principal review of the test which was performed by a Plant Technical Support System engineer commented that a calculational methodology should be used to determine input values rather than the DRB. His comment was intended to apply only to the "non" cold reference junction box RTDs, however, the test engineer inappropriately incorporated the comment for all RTDs. On subsequent review, the reviewer did not fully review the change. The calculation errors resulted when the test engineer developed the digital inputs using equations provided in the test instruction. Although the equations were mathematically correct, lack of self-checking by the engineer resulted in the errors which were then not identified by the JTG reviews due to not independently verifying the data input values.

PTI-261-02 Example 2 - RT Card Tolerance Issue

As a result of insufficient attention to detail, the test engineer did not realize that the RT card tolerance values (+/- 0.5mV, i.e., approximately +/- 0.006%) were specified on the vendor drawing 845A349. The value of +/- 0.1% was considered to be an appropriate nominal accuracy for this type of equipment based on his experience. The JTG and peer reviews did not identify the discrepancies.

Corrective Actions

PTI-261-02 will be rewritten, reviewed, and approved subject to the program improvements discussed in Enclosure 1. Increased thoroughness and accountability on the part of the test preparer and reviewers should prevent these types of errors in the future.

PTI-002.02 (REVISION 0, APRIL 30, 1993) CONDENSER VACUUM PREOPERATIONAL TEST

NRC Concern:

Test Scoping Document - 15. Condenser Vacuum, section 4.1.3 and FSAR section 10.4.1.4 specifies that the condenser shell leak test be verified complete as a prerequisite for PTI-002.02. There was no prerequisite step for this verification in the PTI.

TVA Response

Preop Test PTI-002-02 did not contain a prerequisite step for verifying that the condenser shell leak test was complete because the leak test had previously been performed (early 1980's) and was not required to be performed again. However, due to inadequate communications and inattention to detail, the test scoping document (TSD) NCS-15 was not revised to clarify that the prerequisite was unnecessary for the current test.

Corrective Action

The TSD was revised to delete the prerequisite and the preop test was successfully performed.

PTI-27.01 SECTION 6.1 CONDENSER CIRCULATING WATER (CCW) INLET AND OUTLET VALVE INTERLOCK LOGIC TEST:

NRC Concern:

PTI-27.01 section 5.12 acceptance criteria requires that the CCW inlet/outlet valve on one flow path cannot be closed if both valves on the other flow path are not fully open. The test method provided was for these valves to be fully shut. Testing in this manner does not properly test valve interlock function which is derived from valves being in a not fully open position.

TVA Response:

For PTI-27-01, the error in valve logic testing resulted from inattention to detail by the test writer and reviewers, in not properly implementing the acceptance criteria from the test scoping document. The valves should have been positioned in the "not fully open" position, instead of the closed position.

Corrective Action

PTI-27-01 was revised to incorporate the "not fully open" test method. A review of other completed PTIs is in progress to determine whether this condition is an isolated case (Note: See additional example for PTI-74-01, below). In addition, appropriate consideration will be given to similar valve-logic testing issues for future PTIs.

PTI-74.01 (REVISION 0, APPROVED JUNE 18, 1993) RESIDUAL HEAT REMOVAL SYSTEM:

NRC Concern:

Example 1 - PTI-74.01 had many steps throughout the procedure which required handswitches to be manually placed in the open or closed position without returning the switches to the normal position. The "C" handswitches are three position maintain type switches that do not automatically return (spring return) to the normal position. In several sections of the procedure, for example steps 6.1.38, 6.2.3;3, 6.3.30 and 6.4.30, the as-left status of these switches had not been properly considered in that unexpected operations of valve motor operators would have occurred in subsequent test steps.

Example 2 - Sections 6.11 and 6.12 of PTI-74.01 provide instructions for testing the control logic for the RHR HX outlet flow control valves 1-FCV-74-16 and -28. These valves are air-operated valves that utilize an analog signal to maintain valve position at a setpoint established in the Main Control Room or Auxiliary Control Room. An SI signal removes the control signal and causes the valves to open fully, and remain open while the signal is present. Once the SI signal is removed, the valves remain fully open until reset to remote manual control by handswitches HS-74-16 and -28. The handswitches (i.e. HS-74-16 and HS-74-28) function to restore remote manual control by deenergizing a seal-in circuit. The handswitches are wired with two normally closed contacts in series with an SI contact and relay. The series switch contacts can be opened separately by turning the handswitch right or left (clockwise or counter clockwise). Instruction Steps 6.11.24, 6.11.28, 6.12.24, and 6.12.28 required that the appropriate handswitches be placed in the reset position. However, the procedure failed to consider that the switch could be reset by turning the switch, either right or left. In order to correctly test the design features of handswitches (HS-74-16 and - 28) reset circuitry the handswitches must be placed in both left and right positions as each position operates different contacts.

Example 3 - TSD W-4.1, Revision 3, Change No. 1, provides in Table 9-4 the acceptance criteria for the annunciator control circuit of flow control valves 1-FCV-74-16 and -28. These valves are maintained in the open position during normal plant operations and are alarmed to indicate when they are not fully open. The test objective and acceptance criteria as described in Table 9-4 was to verify that the valves annunciated and alarmed ("ESF Component Not Normal") when valves 1-FCV-74-16 and -28 were "not open". However, the acceptance criteria in PTI-74.01, Revision 0, did not meet the intent of the TSD in that the alarms were only being verified with the valves in the fully closed or the fully open positions.

TVA Response:

Example 1 - The "C" handswitch problem was brought to the attention of the Inspector by the test director/test writer as an item that had been detected during the performance of component testing and which was being added to the PTI under a change notice prior to test authorization. This switch configuration should have been identified during the test instruction review cycle.

Example 2 - The contacts for handswitches HS-74-16 and HS-74-28 were verified during component testing for their respective valves. Since PTI-74-01 confirmed that the SI signal did interrupt the remote valve operating circuit, it was

considered adequate to use either the left or right position of the handswitch to reset the logic; the individual reset contacts were not being tested. However, Startup expects to take a more conservative approach on the extent of credit taken for prior component level testing, and considers that checking the contacts as described in the inspection report is warranted.

Example 3 - The error in valve logic testing on PTI-74-01 resulted from inattention to detail by the test writer and reviewers, in not properly implementing the acceptance criteria from the test scoping document. The valves should have been positioned in the "not fully open" position, instead of the closed position.

Corrective Action

The PTI was revised to: (1) incorporate instructions to manually place the switch in the normal position, (2) include a check of each set of contacts, and (3) correct the valve logic annunciator test.

VIOLATION 50-390/93-61-01 - FAILURE TO PERFORM ADEQUATE REVIEW OF PTI-63-02, SAFETY INJECTION SYSTEM ACCUMULATOR TEST AND PTI-63-03, CHARGING, SAFETY INJECTION AND RESIDUAL HEAT REMOVAL SYSTEM FLOW BALANCE

NRC Concern:

For PTI-63.02 the licensee failed to provide the acceptance criteria required to determine that the cold leg accumulator discharge piping resistances to flow measurements are within the design range.

TVA Response

As noted in the inspection report, f(L/D) acceptance criteria had initially been specified by TSD-W.3.1B. As a result of increasing the accumulator discharge valve stroke time (due to valve operator gear train problems), TVA recognized that by the time the valves went fully open, sufficient data might not be available for calculation of f(L/D). Rather than specifying an unattainable acceptance criteria in the TSD, NE replaced it with a statement requiring transmittal of the data to Engineering for evaluation. The PTI reflected this approach in Section 7.0, Post Test Activities. Due to the inspector's concern, the original criteria was reinstated in the TSD (by reference to the Westinghouse Startup Manual), and within the PTI. The test was then performed, and as expected, the criteria which limited valid data to that obtained after the valve was fully open with system pressure greater than 30 psi, could not be met. However, a review of the data collected was performed by engineering and supported by a Westinghouse letter. This review confirmed that the f(L/D) pipe flow resistance was satisfactory. Therefore, no further actions are required.

NRC Concern:

For PTI-63.03 several technical errors were identified which would have adversely effected the PTI test objectives, test results and acceptance criteria. The following are examples of technical errors identified during the review:

- The acceptance criteria provided in the test procedure to determine if the ECCS pumps meet or exceed the minimum pump head/flow design values were incorrect. The acceptance criteria provided was the FSAR pump head/flow curves degraded 5%.

- The test method and tolerances used to establish the required flow rate for the development of each ECCS pump head/flow curve is inadequate and result in non-conservative acceptance criteria for evaluating total developed head.

- The acceptance criteria stated in the test procedure for the charging pumps and safety injection pumps cold leg flow balances concerning flowrates are different from those specified in the ECCS Analysis Technical Report.

- The test method does not properly reverify cold leg injection flow balance after the ECCS throttle valves are shut and reopened and following installation of throttle valve locking devices.

- M&TE and system instrumentation used to take test data is not corrected for accuracy as required by vendor documents. System flow instrumentation is used during the flow balance without applying correction factors which significantly effects flowrate acceptance criteria.

- The ECCS Analysis Technical Report specifies a minimum total injection flow rate for the cold leg injection modes. The test procedure does not specify a value.

<u>TVA Response:</u>

The cited examples of technical errors identified for PTI-63.03 occurred as a result of insufficient technical review of engineering test scoping documents (as required by EAI-3.07) and insufficient preparation and technical review of PTI-63.03 to ensure the test instruction was technically accurate in accordance with SMP-8.0, paragraph 2.4.A.

Although the acceptance criteria provided for the ECCS pumps (5% FSAR Degraded Pump Curves) satisfied Technical Specification operating limits, selection of this criterion was considered to be nonconservative for preoperational testing and, given the insufficient consideration of tolerance issues, could have decreased analyzed safety margins.

The failure to correctly translate flow balance data from the <u>W</u> ECCS Analysis Technical Report into System Descriptions and Test Scoping Documents occurred due to inadvertently using data from a previous <u>W</u> analysis report and insufficient technical review to detect this error.

Given the TSD acceptance criteria for pump head in terms of specific flowrates, without a full pump curve, Startup considered that using a single value of pump head for the narrow (+/- 5 gpm) band about a given flowrate was reasonable. However, it is acknowledged that in combination with the use of degraded curves noted above, a non-conservative result could have been obtained.

Corrective Actions

Preop Test Instruction PTI-63-03 will be rewritten, reviewed, and approved by the Startup Manager and will address the specific comments noted in the inspection report. These issues (e.g., instrumentation accuracy, methods of setting flow rates, etc.), will be considered for their impact on future preop test instructions.

Because Test Scoping Documents (TSDs) will not be maintained (See discussion in Enclosure 1), NE will ensure that any design basis information in TSDs (which affect safety-related systems and which does not exist in other documents) is retained in appropriate design documents.

INSPECTOR FOLLOWUP ITEM 390/93-71-04 - PTI-63-01 SAFETY INJECTION INTEGRATED FLOW TEST

NRC Concern

PTI-63-01 contained additional examples of failure to perform adequate technical reviews of proposed test instructions. (Refer to Attachment 1 for details)

TVA Response

Preop test 63-01 contained administrative errors and technical errors due to insufficient attention to detail by the preparer and reviewers. These items will be corrected in the revised PTI.

Corrective Action

In conjunction with TVA's resolution of IFI 390/93-71-04, PTI-63-01 will be rewritten, reviewed, and approved by the Startup Manager subject to the program improvements discussed in Enclosure 1.

NRC DOC #	PROBLEM DEFINITION	CAUSE	CORRECTIVE ACTION
VIO 50-390/93-53-02	a. Calculation errors (PTI 261-02)	Refer to Enclosure 2	Enclosure 2
	b. Test steps reference incorrect data sheet for selecting conversion constants (PTI 261-02)	- Work practices (Writer and reviewer) - Document not followed correctly	Enclosure 1 and SCAR WBSCA930151
	c. M&TE used had incorrect accuracy to support test requirements (PTI 261-02)	- Work practices (Writer and reviewer) - Document not followed correctly	Enclosure 1 and SCAR WBSCA930151
	d. Prereq. step referenced tolerance which disagreed with vendor drawings tolerance (PTI 261-02)	Refer to Enclosure 2	Enclosure 2
	e. REFERENCE section did not contain FSAR references (PTI 261-02)	- Work practices (Writer and reviewer) - Document not followed correctly	Enclosure 1 and SCAR WBSCA930151
	f. Steps verify quantitative Acceptance Criteria without provisions to: 1. Record valve position 2. Record M&TE ID# 3. Second-party signoff (PTI 002-02)	- Work practices (Writer and reviewer) - Document not followed correctly	Enclosure 1 and SCAR WBSCA930151
	g. Restoration of T-MOD did not provide for second-party verifications (PTI 002-02)	- Work practices (Writer and reviewer) - Document not followed correctly	Enclosure 1 and SCAR WBSCA930151
	h. TSD contained prereq. for condenser shell leak test but not incorporated in PTI (PTI 002-02)	Refer to Enclosure 2	Enclosure 2
	i. Test method for valve interlock verification not appropriate (closed vs. not fully open) (PTI 27-01)	Refer to Enclosure 2	Enclosure 2

NRC DOC #	PROBLEM DEFINITION	CAUSE	CORRECTIVE ACTION
VIO 50-390/93-53-02 (continued)	j. Steps did not correctly specify pump light indication (PTI 70-01)	- Work practices (Writer and reviewer) - Document not followed correctly	Enclosure 1 and SCAR WBSCA930151
	k. Incorrect cross- referencing of acceptance criteria from Section 5.0 to 6.0 (PTI 70-01)	- Work practices (Writer and reviewer) - Document not followed correctly	Enclosure 1 and SCAR WBSCA930151
	l. Incorrect step numbering (PTI 70-01)	- Work practices (Writer and reviewer) - Document not followed correctly	Enclosure 1 and SCAR WBSCA930151
	m. Incorrect switch testing (maintained vs spring return to normal) (PTI 74-01)	Refer to Enclosure 2	Enclosure 2
	n. TSD required pump motor ammeter to be verified; test did not have this verified (PTI 74-01)	Ammeter check was intended to be included in later test on same system. However, 74-01 was changed to incorporate the comment.	Enclosure 1 and SCAR WBSCA930151
	o. HS functioned to reset by being placed either right or left, test did not correctly test this design feature (PTI 74-01)	Refer to Enclosure 2	Enclosure 2
	p. Acceptance Criteria of Test did not meet the intent of TSD Acceptance Criteria & test objectives (PTI 74-01)	Refer to Enclosure 2	Enclosure 2

NRC DOC #	PROBLEM DEFINITION	CAUSE	CORRECTIVE ACTION
VIO 50-390/93-61-01	a. Did not include Acceptance Criteria for line resistance (PTI 63-02)	See Enclosure 2	Enclosure 2
	b. TSD uses 5% Degraded curve (PTI 63-03)	See Enclosure 2	
	c. Flow rates outside W analysis (PTI 63-03)	See Enclosure 2	
	d. M&TE not corrected for accuracy (PTI 63-03)	See Enclosure 2	
	e. Test methods/tolerances inadequate for evaluating ECCS pump performance (PTI 63-03)	See Enclosure 2	
	f. Flow balance not verified following ECCS throttle valve repositioning (PTI 63-03)	See Enclosure 2	
IFI 50-390/93-71-04 (PTI-63-01)	a. Equipment precautions and limitations not included or not consistent with SMP-8.0 administrative requirements	- Work practices (Writer and reviewer) - Document not followed correctly	PTI-63-01 will be rewritten, reviewed, and approved by the Startup Manager subject to the program improvements discussed in Enclosure 1.
	b. Inadequate guidance, precautions, limitations to ensure adequate cooling (CCS) available for pumps	The Component Cooling Water flow balance was scheduled before PTI-63-03, a prerequisite for PTI-63-01. Therefore, the wording of prerequisites 4.3.24, 4.3.25, and 4.3.26 was appropriate.	
	c. No prerequisite to verify testing of Contmt Spray System was complete as necessary to support test	Only CSS pump operability is required in support of this PTI. Since that would already have been assured by completion of CS system flushing, scheduled prior to PTI-63-01, a prerequisite was not considered necessary.	

NRC DOC #	PROBLEM DEFINITION	CAUSE	CORRECTIVE ACTION
IFI 50-390/93-71-04 (PTI-63-01) (continued)	d. Prerequisites which installed test gauges incorrectly referred to test section where gauges were needed	Administrative error - The extent of impact likely would have been a delay in test performance.	PTI-63-01 will be rewritten, reviewed, and approved by the Startup Manager subject to the program improvements discussed in Enclosure 1.
	e. Unclear/ambiguous data sheets. No provisions to record RWST ave temp. used in calculation	Sufficient information was available to determine vapor pressure and perform calculation.	
	f. Seal rate flow, Step 6.1.25, 78-80 gpm. W req'd seal flow 80.9-86.9 gpm	Insufficient review/verification.	
	g. Use of incorrect conversion constant of 0.337 ft/% level used to calc. RWST head correction. Scaling Doc SSD-1-63-50 results in constant of 0.3225.	Although not same value as the setpoint scaling document, the constant used (from the W ECCS report), results in a more conservative value of corrected head for the range used in the PTI.	
	h. Inadequate specifications for 9 of 11 data logger channels.	The prerequisite statement should have referred to both Appendix D and F where channel identification and test points were appropriately identified.	

Summary

Corrective Action Taken and Results Achieved

In addition to the actions taken or planned as discussed in Enclosure 2 and SCAR WBSCA930151, preoperational tests for PTI-261-02, PTI-63-01, and PTI-63-03 will be revised, as necessary, to address the NRC's concerns.

Corrective Action To Be Taken To Avoid Further Violation

Actions to prevent recurrence are summarized in Enclosure 1.

Date When Full Compliance Will Be Achieved

TVA will be in compliance upon issuance of preoperational test procedures for PTI-261-02, PTI-63-01, and PTI-63-03, in support of their respective system testing milestone.

ENCLOSURE 3

WATTS BAR NUCLEAR PLANT UNIT 1
REPLY TO NRC's AUGUST 27, 1993 LETTER
NRC DEVIATION 50-390/93-53-03 AND VIOLATION 50-390/93-53-04

DESCRIPTION OF DEVIATION (390/93-53-03)

Licensee FSAR (Amendment 74) Chapter 14.0, Section 14.2.12.1 (Preoperational Tests) documents the commitment that the test summaries for each of the preoperational tests to be performed, along with an index to these summaries, are provided in table 14.2-1. These summaries describe the various tests which are specified as preoperational tests in Regulatory Guide 1.68.

FSAR Chapter 14.0, Table 14.2-1, (sheet 54), Computer System Test Summary identifies plant process computer (PPC) design features to be preoperationally tested as follows:

Objective Paragraph 2; To verify the operation, calibration and accuracy of the instrumentation involved in the measurement, transmittal, conversion, and computer printout of process parameters.

Test Method 4; verify the accuracy of computer input parameters.

Acceptance Criteria 2; The calibration and operation of the elements of the P2500 Plant Computer transmit accurate conversion, measurement and display of analog and digital input signals using the P2500 Plant Computer System.

Contrary to the above, Test Scoping Document (TSD) (Revision 3 dated October 15, 1992) W9.9, Computer Input and Data Printout Verification deleted the commitment to perform preoperational tests for verifying the accuracy of the readout for all analog and digital input signals using the P2500 Plant Computer System. The revision to TSD W9.9 states these design features will be verified during component testing phase of the instrument loop.

REASON FOR DEVIATION

The deviation resulted from inadequate internal review of the proposed FSAR Chapter 14 Test Summary prior to submittal of the FSAR Amendment to NRC. Although the intended test strategy was clear to the test engineer, that strategy was not reflected in the Test Summary submittal. The Computer System Test Summary Objective states:

> The purpose of this test is to verify the P2500 process computer has been internally wired properly and that the internal CPU, I/O and analog converters function properly.
>
> To verify the operation, calibration and accuracy of the instrumentation involved in the measurement, transmittal, conversion, and computer printout of process parameters.
>
> To verify the proper operation of the P2500 computer software.

Startup personnel responsible for preparing the FSAR intended that Objective Paragraph 2 would refer to computer system internal devices rather than "field" instruments/devices. TVA intended that the preoperational test of the P2500 Plant Computer System would be performed to demonstrate the proper operation of the computer itself. Operation of the field instruments/devices would be verified during component testing and/or other preoperational testing in order to allow ongoing/planned work on the systems in which the devices were installed.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The Computer System Test Summary (FSAR Table 14.2-1, Sheet 54) will be revised to clearly delineate the test requirements associated with the P2500 Plant Computer System.

CORRECTIVE STEPS TO BE TAKEN TO AVOID FURTHER DEVIATIONS

The programmatic initiatives discussed in Enclosure 1 to this letter are expected to prevent the recurrence of similar problems. In particular, these actions include reviews of FSAR Chapter 14 to ensure specified test objectives, methods, and acceptance criteria are consistently reflected in Preoperational test procedures.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

The Computer System Test Summary (FSAR Table 14.2-1, Sheet 54) will be revised and approved through TVA's onsite review process prior to formal approval of Preop test procedure PTI-261-02.

DESCRIPTION OF VIOLATION (390/93-53-04)

10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings, as implemented by TVA Nuclear Quality Assurance (NQA) Plan TVA-NQA-PLN-89-A, Revision 3, Section 6.1, requires 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. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Site Standard Practice (SSP)-2.07, Document Control (Revision 5 dated June 7, 1993) Section 3.15, Using Vendor Drawings, specifies the following requirements:

SSP-2.07 paragraph 3.15.A, Determine if a TVA generated configuration control drawing (CCD) or as-constructed drawing (ACD) exists that shows the configuration, dimensions, inspection and testing criteria needed for the prescribed activity.

SSP-2.07 paragraph 3.15.D, If a TVA CCD or ACD drawing can not be found in the control program that shows the needed information, ensure the vendor drawing to be used is reviewed and evaluated by Nuclear Engineering before use.

Contrary to the above, as of July 30, 1993 Startup and Test Group personnel used vendor drawing Nos. 774A759 (Revision 6), Computer System Division Standard Drawing Resistance Temperature Detector (RTD) and 845A349 (Revision 5), Resistance to Temperature (RT) Card Schematic Diagram, in the development of Preoperational Test Instruction (PTI)-261.02, Plant Process Computer Input and Data Printout Verification (dated June 4, 1993), without these drawings having been reviewed and evaluated by Nuclear Engineering.

REASON FOR VIOLATION

The violation resulted from the omission of relevant information in Startup Manual Procedure (SMP)-8.0, Administration of Preoperational Test Procedures. The vendor drawings cited in the subject violation were technically correct, however, they were not approved by Nuclear Engineering. Preoperational Test Instructions are processed in accordance with SMP-8.0 which did not emphasize requirements already stated in SSP-2.07. Specifically, it did not contain guidance that vendor manuals are to have been through the approval process and drawings in vendor manuals must have separate engineering approval prior to their use. This resulted in a lack of procedural adherence to SSP-2.07.

CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

Westinghouse vendor drawing No. 774A759, Revision 6, Computer System Division Standard Drawing Resistance Temperature Detector, was approved by Nuclear Engineering on August 25, 1993.

Westinghouse vendor drawing No. 845A349, Revision 6, PRODAC Series Analog RGD Bridge Card, was approved by Nuclear Engineering on August 25, 1993.

CORRECTIVE ACTIONS TO BE TAKEN TO AVOID FURTHER VIOLATION

SMP-8.0, Administration of Preoperational Test Procedures, will be revised to require all vendor manuals and drawings which are used in the development of the test instructions to be referenced in the test procedures. Vendor manuals must have been through the approval process as specified by SSP-2.10, Vendor Manual/Information Control, and drawings in vendor manuals must have separate engineering approval prior to use. Startup and Test Group personnel are being made aware of these changes.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Revision to SMP-8.0 and training of personnel on its revised requirements will be completed by December 15, 1993.

ENCLOSURE 4

WATTS BAR NUCLEAR PLANT UNIT 1
REPLY TO NRC'S OCTOBER 4, 1993 LETTER TO TVA
NRC VIOLATION 50-390/93-58-01

DESCRIPTION OF VIOLATION (EXAMPLES 3 - 6)

10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," states that activities affecting quality shall be prescribed by documented instructions, procedures and drawings of a type appropriate to the circumstances and shall be performed in accordance with these instructions, procedures, and drawings.

Nuclear Quality Assurance Plan TVA-NQA-PLN89-A, Procedures and Instructions, Revision 3, Section 6.1, requires that quality-related activities shall be prescribed by documented procedures and instructions appropriate to the circumstances. Section 6.2, Document Control, requires that quality-related activities be performed in accordance with approved and controlled instructions, procedures, and drawings.

Contrary to the above, activities affecting quality were not prescribed by documented procedures and were not accomplished in accordance with approved procedures:

Nuclear Quality Assurance Plan TVA-NQA-PLN89-A, Revision 3, Section 10.2.2.D, Corrective Actions for Adverse Conditions, requires that reworked items shall satisfy the original inspection and test requirements or acceptable alternatives.

ANSI N45.2.4-1974 (IEEE 336), Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations, and ANSI N45.2.6-1974, Qualifications of Inspection, Examination, and Testing Personnel for the Construction Phase of Nuclear Power Plants require performance of inspections by certified personnel and documentation of the inspector, the type of observation, the instructions/procedures used, as well as the results.

Startup Manual Procedure SMP-9.0, Test Conduct, Revision 16, provides requirements and responsibilities for personnel involved in the conduct of all Startup and Test testing activities.

3. As of August 31, 1993, rework controls involving test deficiencies were not prescribed in procedures in that SMP-9.0 did not require rework to be in compliance with the original inspection and test requirements, or other comparable re-inspection alternatives.

SMP-9.0, paragraph 2.5.A requires that a chronological test log be maintained by the test director during troubleshooting of generic tests.

4. As of August 31, 1993, SMP-9.0 was not adhered to, in that entries were not available in a chronological log that detailed troubleshooting activities for six wiring installations reworked by the startup organization.

Site Standard Practice SSP-3.04, Corrective Action Program, Revision 10, paragraph 1.0, specifies that administrative control programs fulfill the requirement to identify and track to closure actions necessary to correct adverse conditions.

5. As of August 31, 1993, SSP-3.04 was not adhered to, in that, although test deficiencies 4 and 5 on Preoperational Test Instruction PTI-20-01 [SIC, ATI-20-01] were documented on test deficiency forms, the basis for the failure to follow procedures and actions to prevent recurrence were not addressed on the test deficiency forms nor any other document.

6. As of August 27, 1993, SSP-3.04 was not adhered to, in that, although corrective action for three test deficiencies (all closed on May 17, 1993) stated that the resolution was "...accept-as-is. Vendor manual changes to follow.", no vendor manual revision request had been issued, nor was it otherwise documented or scheduled for issue.

REASON FOR VIOLATION (EXAMPLES 3 AND 4)

Failure to document restoration activities for the six cited wiring deficiencies using a chronological log and lifted lead log resulted from failure to follow established procedures due to lack of attention to detail by test engineers/test directors, reviewers, and approvers. As discussed in Enclosure 1 to this letter, problems encountered in the startup testing area have generally related more to weaknesses in program implementation (e.g., strict procedural compliance, personal accountability) and less with weaknesses in programs/processes. Over-complexity in some areas (e.g., trouble shooting, etc.) has contributed to inconsistent implementation. However, TVA considers that the basic processes established by the startup program for trouble shooting and rework controls for test deficiencies are consistent with QA program requirements.

For example, startup procedure SMP-9.0 (Revision 16, June 21, 1993) provides allowances for accomplishing and documenting rework of a minor nature under a test deficiency (DN) without requiring initiation of a work order or work request when the rework: (1) does not require any special processes or replacement of parts and (2) is solely to resolve configuration in accordance with approved design documents. The Component Test Program described in SMP-6.0 endorses the use of Generic Test Procedures (GTEs) which provide specific work controls and verifications for restoration activities. Specifically, Generic Test Procedure GTEXXX-02, "Scheme Verification" provides requirements (Step 6.12.1, "Lifted Wires Relanded") to verify by signature that (1) bend radius, tightness, and damage are acceptable when reinstalling lifted leads and (2) that restoration is complete (Step 6.12.5) and the use of a wire lift/land log with second party verification for lifted conductors. Some of these controls had been added to define the approved scope of trouble-shooting activities and the appropriate transition point to other work control processes in response to NRC concerns expressed in Violation 50-390/93-41-02. The Staff's review and closure of this issue is provided in Inspection Report 50-390, 391/93-37.

TVA notes that electrical restoration activities are currently performed by WBN electricians, are verified by test engineers with appropriate certification, and that the above described controls were commensurate with requirements imposed on plant maintenance activities. The use of certified quality control inspectors for such activities is not required by TVA's QA program. Appropriate criteria for reinspections are provided based on approved work documents and/or craft

skill. Bend radius for example, requires verification that the as-left bend radius condition is equal to or better than the as-found condition. The requirement to terminate conductors "snug-tight" in the absence of torque values is within the electricians working knowledge and training.

With regard to the documentation errors for the six cited wiring deficiencies, a survey of a number of completed generic test packages involving trouble shooting without the use of a chronological log found that the trouble shooting activities were documented either on the deficiency notice itself or on the "remarks" section of the generic test data sheet. The remarks were found to be sufficiently detailed to allow an accurate reconstruction of the test procedure, a key attribute listed for chronological test logs in SMP-9.0. In retrospect, the Startup Department considers these remark entries to be more effective in summarizing the results of trouble shooting. The lack of a chronological log entry would not have detracted from appropriate restoration activities.

Although diligent performance of GTEXXX-02, step 6.12.1 would assure that all lifted conductors were relanded in their correct location, lift/land logs (which invoke second party verification) were provided for additional positive control. However, their use was not universally effective for all applications and it was found that test personnel were sometimes unclear on when use of the log was required. Further, their benefit was largely one of redundance. Typically, trouble shooting is necessary when circuit testing (under the generic test process) determines that conductors are not connected or are improperly connected at the wrong terminals and trouble shooting is necessary to locate and correct the condition. Successful deficiency resolution and completion of the circuit re-test provides assurance that conductors were properly reconnected.

CORRECTIVE ACTION TAKEN AND RESULTS ACHIEVED (EXAMPLES 4 AND 5)

Until further startup procedure changes are developed, retraining has been conducted for test engineers/test directors in the requirements of SMP-9.0 regarding maintaining a chronological test log during trouble shooting activities performed under generic testing.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED (EXAMPLES 4 AND 5)

With respect to the identified concern, TVA is in full compliance.

Additional Information

As discussed in Enclosure 1 to this letter, Startup administrative procedures are being reexamined, and simplified as necessary. Through this process, TVA is refining requirements for maintaining configuration control during testing. This includes controls for trouble shooting (including the scope of allowed rework), control of lifted/removed conductors, fuses, and jumpers; use of test deficiencies; and use of the chronological log during startup test activities. Retraining will be provided to appropriate Startup personnel on these changes. Subject to these revised procedural controls, previous commitments in this area are hereby withdrawn.

REASON FOR VIOLATION (EXAMPLE 5)

TVA considers that the actions taken in regard to deficiencies 4 and 5 of ATI-20-01 were appropriate and in compliance with Site procedural requirements of SSP-3.04 (Revision 10, effective August 2, 1993) and SMP-9.0 (Revision 16, June 21, 1993). SSP-3.04, paragraph 1.0 requires, in part, that administrative control programs: (1) Identify and track to closure actions necessary to correct adverse conditions, (2) Perform trending, (3) Review the condition against the criteria of SCARs, and (4) Provide recurrence control if required. The approved administrative control program for test deficiencies described in SMP-9.0 provides a mechanism to generate DNs during post-test reviews to address deficiencies not previously identified. This DN program requires, in part: (1) Troubleshooting of the condition to determine cause and recommended corrective action if possible, and (2) Evaluation by a Level III reviewer to determine whether a SCAR is required (e.g., deliberate or repetitive procedural violation, etc.) and to determine the need for Startup Management to formulate a plan for recurrence control.

In the specific case, DNs 4 and 5 were initiated during the post-test acceptance review by a peer reviewer to document that the test director had made inappropriate pen and ink changes to the test procedure and that certain test steps were inappropriately made "not applicable." The DN resolution determined that the improper pen and ink changes were technically correct and warranted no further action. The error in the N/A'd steps was corrected by reperforming the steps. The post-test review for these errors considered that immediate identification, documentation, assessment for impact, and correction of the errors was sufficient and in accordance with site procedures. Personal involvement by the test director and his supervisor during the documentation and resolution of the deficient items, including counseling, assured that the individual was made aware of his errors and the requirements which should have been followed. Resolution of the issue also involved the JTG chairman and senior startup management. Therefore, the level III reviewer (section supervisor) for the DNs appropriately determined that sufficient actions had been taken and that no additional recurrence controls were needed. Because the deficiency was discovered after testing was complete and because the DN did not involve hardware problems, the SMP-9.0 requirement to perform trouble shooting to determine cause and corrective action would not be applicable.

Although no additional requirements for performing cause analysis are specified in SMP-9.0, appropriate trending by the DN Trend Program is intended to provide assurance that deficiencies (such as encountered in DN 4 and 5, weaknesses in knowledge of administrative program requirements) if more than isolated cases, will be identified and addressed. As discussed in Enclosure 1, program improvements are planned in the area of trending of test deficiencies. No further corrective actions are required for this violation.

REASON FOR VIOLATION (EXAMPLE 6)

TVA considers that resolution of the three cited test deficiencies was appropriate and does not represent a failure to adhere to the requirements of Site Standard Practice (SSP)-3.04. The failure to initiate a vendor manual revision was an administrative oversight.

SSP-3.04, paragraph 1.0, requires that administrative control programs identify and track to closure actions necessary to correct *adverse* conditions. In the subject case, three separate test deficiencies were initiated in April and May 1993 to document that the full load running amperage for the non-safety related station air compressors A, C, and D exceeded nameplate data and therefore did not meet the acceptance criteria of Generic Test Procedure GTEXXX04, "Coupled/Uncoupled Motor Run-in Test," Revision 1. The test director specified as proposed corrective action for each test deficiency that the design department, Nuclear Engineering, evaluate the full load running amperages to determine if acceptable. NE performed the evaluation under Design Change Notice (DCN) Q-24955-A on May 13, 1993. Upon review, NE determined that a previous Condition Adverse to Quality Report (CAQR) WBP871077 and Quality Information Release (QIR) EBAWBN890026 had documented that operation of these compressor motors at higher amperages than listed on nameplate data was acceptable. Therefore, the response provided under the Q-DCN stated the high amperage condition was acceptable and referenced the acceptable solution provided under the CAQR and QIR. For information, the response noted that a vendor manual revision request would be initiated to reference the CAQR/QIR and to state the motors are acceptable as is. SMP 9.0 requires the test director to document the actual corrective action taken to resolve the test deficiency. In this case, the test director appropriately documented the acceptable solution from the Q-DCN and, although not necessary, noted for completeness that vendor manual changes were to follow. The responsible test group manager attested to the acceptability of this DN resolution. This action alone satisfied the SSP-3.04 requirements to identify and track to closure actions necessary to correct adverse conditions. The status of the vendor manual changes had no bearing on the test deficiency resolution.

Because the Q-DCN is a method of providing an official NE-approved response to a question, it requires no further action and may be closed upon receiving the required signatures. In this case, the stated action to revise the vendor manual was provided within the Q-DCN as additional information. Upon realizing the revision request had not been initiated, NE initiated revision requests # VR-591 and 592. However, TVA emphasizes that the vendor manual change did not require documentation under an administrative control program. The absence of the vendor manual change would not have represented an "adverse condition," did not have an impact on the quality of any work, did not affect equipment subject to 10 CFR 50 Appendix-B Quality Assurance requirements. NE management will discuss this violation example with supervisors including the problem created by referencing future actions on Q-DCNs. No further corrective actions are required for this violation.

ENCLOSURE 5

WATTS BAR NUCLEAR PLANT UNIT 1
REPLY TO NRC'S OCTOBER 28, 1993 LETTER TO TVA
NRC VIOLATION 50-390/93-71-01

DESCRIPTION OF VIOLATION

10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," as implemented by TVA Nuclear Quality Assurance (NQA) Plan, TVA-NQA-PLN89A (Revision 3), in Section 6.1, requires 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. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Startup Manual Procedure (SMP) 9.0, Test Conduct (Revision 16, dated June 21, 1993) Section 2.2, Pre-Authorization Test Activities, and Section 3.1, Quality Assurance (QA) Records provided the following instructions for preoperational test result records:

> Section 2.2, paragraph 2.2.H states, "Attach the authorization package presented to Joint Test Group (JTG) to the test package."
>
> Section 3.1 states, "When the test is a QA record or In-Process QA record, the Chronological Test Log, Test Deficiencies, and Master Tracking System (MTS) Exception Form (as applicable) are considered QA records and are stored as part of the test results package."

Contrary to the above, during this inspection, NRC identified that the test result records of Preoperational Test Instruction (PTI) 232-01, Revision 0, 480V Reactor Vent Boards, approved on June 29, 1993, had not been assembled in accordance with SMP 9.0 in that neither the required test authorization package (presented to the JTG) nor the MTS Exception Forms were included as a part of the approved test results package.

REASON FOR VIOLATION

The violation resulted from inconsistent procedural requirements in SMP-9.0 and 10.0 and insufficient communication of expectations for the storage of test records.

SMP-9.0 Section 2.2.F details items to be presented to JTG at the time of test authorization and includes MTS exception forms. SMP-9.0 Section 2.2.H requires the test authorization package be attached to the test results package and Sections 3.1 and 3.2 note that MTS exception forms (as applicable) are stored as part of the test results package.

However, these requirements were inconsistent with SMP-10.0 "Packaging and Processing Test Results," Section 2.0.C, which details the items to be included in the test results package, but does not include reference to the test

authorization material by name. This resulted in inconsistent implementation of applicable requirements for storage of authorization materials. Further ambiguities were created by startup guidance documents which were inconsistent with the SMPs in this area.

CORRECTIVE ACTION TAKEN AND RESULTS ACHIEVED

A review was performed under WBPER930317 of 100% of ATI and PTI test results packages which have been submitted to the vault. The review determined that 23 test result packages (10 PTIs, 13 ATIs) were deficient by not including the MTS exception forms in the package. Of these, the exception forms for 13 (11 ATIs, 2 PTIs) could not be retrieved from department files.

An evaluation of the impact of the missing forms determined that the inability to retrieve the exception forms did not impact the test results.

CORRECTIVE ACTIONS TO BE TAKEN TO AVOID FURTHER VIOLATION

Startup will submit the MTS exception forms (for the 10 test procedures whose forms were retrieved from section files) to the vault as QA records. WBPER930317 will be referenced in the 13 packages with missing forms to document the disposition of the deficiency.

Startup will revise appropriate procedures to clarify the documentation items to be vaulted as part of the Test Results Package.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Compliance will be achieved by December 15, 1993.

ENCLOSURE 6

LIST OF COMMITMENTS

Enclosure 1 - Programmatic Actions

1. Startup administrative procedures used for development, review, approval, and conduct of preoperational and acceptance test procedures and for conduct of generic (component) testing are being streamlined while maintaining FSAR commitments and TVA QA requirements. Thorough training will be conducted for test personnel on revised requirements and management expectations prior to review and approval of preoperational and acceptance test procedures.

2. FSAR Chapter 14 Test Summaries are being reviewed to eliminate ambiguities/questions on preoperational test requirements and commitments. Objectives for this review are discussed in TVA's November 16, 1993 letter to NRC.

3. TVA will develop an effective, accurate, and timely process for trending of test deficiencies by Site QA.

Enclosure 2 (Violations 390/93-53-02 and 390/93-61-01)

1. Preoperational tests for PTI-261-02, PTI-63-01, and PTI-63-03 will be revised in support of their respective system testing milestone.

2. A review of completed PTIs will be performed to ensure that the approach used for testing of valve-logic was performed appropriately.

3. Appropriate consideration will be given to proper valve-logic testing for future PTIs.

4. Issues such as instrumentation accuracy and methods of setting flow rates will be considered during the development of future preop test instructions.

5. NE will ensure that any design basis information in TSDs (which affect safety-related systems and which does not exist in other documents) is retained in appropriate design output documents.

Enclosure 3 (Deviation 390/93-53-03 and Violation 390/93-53-04)

6. The Computer System Test Summary (FSAR Table 14.2-1, Sheet 54) will be revised to clearly delineate the test requirements associated with the P2500 Plant Computer System.

ENCLOSURE 6

LIST OF COMMITMENTS (Continued)

Enclosure 3 (Deviation 390/93-53-03 and Violation 390/93-53-04) (Continued)

7. SMP-8.0, Administration of Preoperational Test Procedures, will be revised to require all vendor manuals and drawings which are used in the development of the test instructions to be referenced in the test procedures. This revision and training of personnel on the revised requirements will be completed by December 15, 1993.

Enclosure 4 (Violation 390/93-58-01, Example 6)

8. NE management will discuss Violation 390/93-58-01 (Example 6) with supervisors including the problem created by referencing future actions on Q-DCNs.

Enclosure 5 (Violation 390/93-71-01)

9. Startup will submit the MTS exception forms (for the 10 test procedures whose forms were retrieved from section files) to the vault as QA records.

10. WBN PER WBPER930317 will be referenced in the 13 packages with missing MTS exception forms to document the disposition of the deficiency.

11. Startup will revise appropriate procedures to clarify the documentation items to be vaulted as part of the Test Results Package.