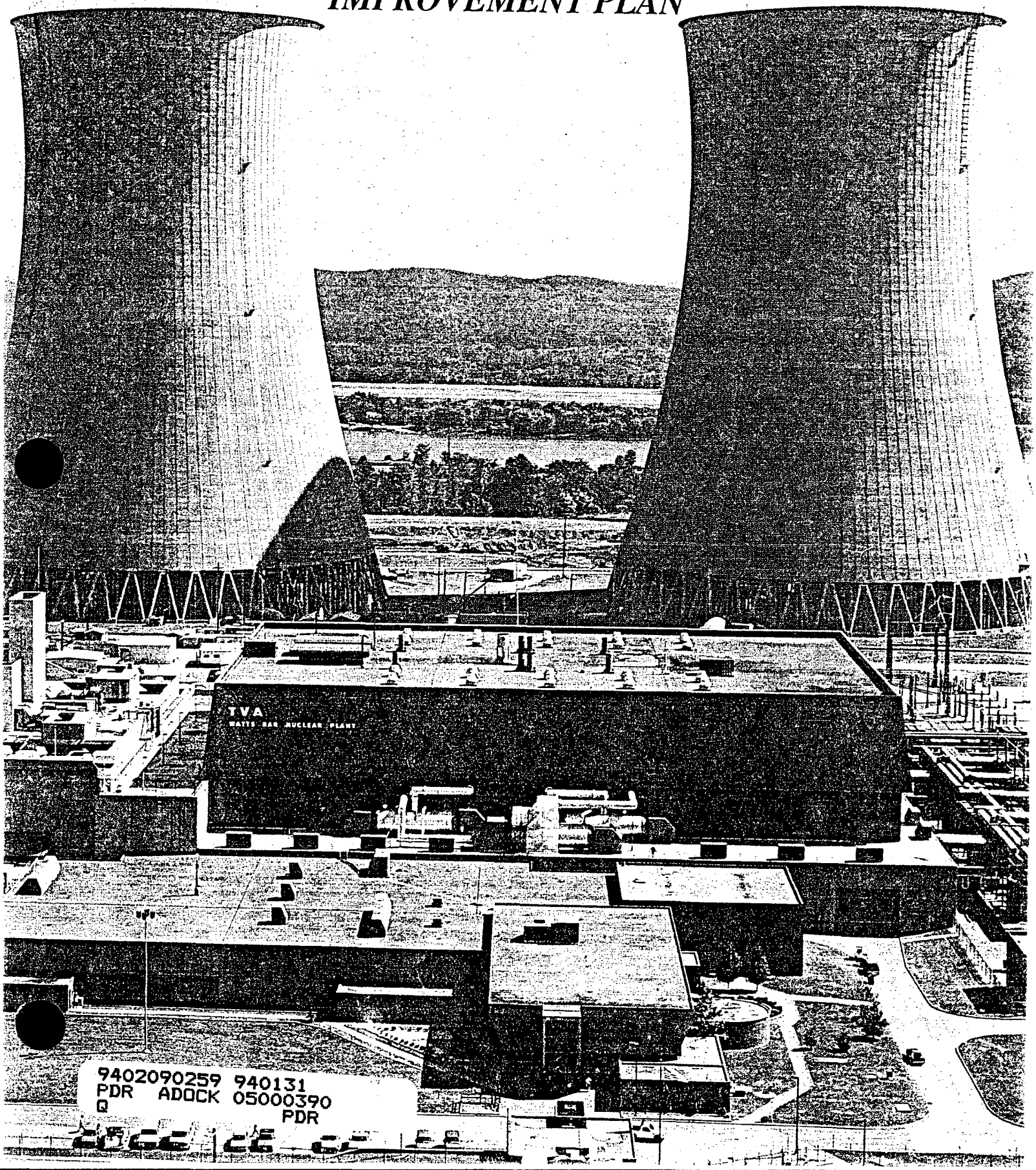
WATTS BAR NUCLEAR PLANT

PREOPERATIONAL TEST PROGRAM IMPROVEMENT PLAN



WATTS BAR NUCLEAR PLANT

PREOPERATIONAL TEST PROGRAM

IMPROVEMENT PLAN

Submitted by

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Approved by

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Verification of Review

A signature on this page documents that the signing individual/organization has reviewed the Preoperational Test Program Improvement Plan and is aware of commitments in this document which impact the organization. Signature on this page does not denote that the organization concurs with all Improvement Plan activities outside of the signer's organizational control.

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INDEX

EXECUTIVE SUMMARY

This report describes significant TVA/WBN activities that have been, or will be, implemented to improve the WBN preoperational testing program such that TVA management and NRC expectations will be satisfied. This plan is issued by the Startup and Test (SUT) organization and reflects TVA management's expectations regarding issues such as, how to improve overall preoperational testing strategy, personnel performance, and management oversight. The plan describes a three step process: (1) identification of issues, (2) development and implementation of corrective actions, and (3) feedback on the effectiveness of actions/management oversight.

The WBN preoperational testing program is described in the WBN Final Safety Analysis Report (FSAR), Chapter 14.0, "Initial Testing Program." The principal NRC guidance document is Regulatory Guide 1.68, "Initial Test Programs For Water-Cooled Nuclear Power Plants," Revision 2, August 1978. In 1982, WBN initiated its preoperational testing program, a prerequisite for plant licensing. However, identification of hardware-related deficiencies and employee concerns resulted in significant program implementation delays. In early 1989, a modified preoperational testing program was formed, known as the WBN Prestart Corrective Action Program (CAP). The modified testing program assumed that earlier preoperational testing activities were acceptable and was designed to revalidate safety related systems using some prior test results.

In early 1992, TVA withdrew the Prestart CAP and committed to a Regulatory Guide 1.68, Rev. 2 test program. As the test program was implemented, it became apparent to TVA and the NRC that performance expectations were not being satisfied. As problems arose, they were not being identified or corrected in a timely or comprehensive manner. This led to recurrence of deficiencies such as procedure errors, personnel performance problems, and inadequate management oversight. On August 27, 1993, Significant Corrective Action Report No. WBSCA930151 was issued, which addressed recurring problems for the previous months. As a result of these findings, a management "administrative hold" was placed on preoperational testing activities. In October, 1993, the Startup and Test Group was reorganized under a new Startup Manager.

One of the first steps taken by the new startup management team was an assessment of SUT deficiencies. This assessment resulted in a phased approach for resolving identified problems:

- Phase I includes activities that must be completed before safety related Preoperational Test Instruction preparation and approval could resume.

- Phase 2 includes activities that are necessary before resuming safety-related preoperational testing.

- Phase 3 includes activities involving enhancements to the SUT program.

During the Startup and Test Program improvement effort, TVA management recognized that there were "soft" issues that also must be addressed before program/process improvements would be effective. The principal "soft" issues being addressed as part of the improvement effort are communications and culture.

To ensure that problems do not recur, the Startup Group is using practical performance indicators and frequent meetings with site management to provide a prompt feedback mechanism for determining appropriate mid-course corrections. Nuclear Assurance has enhanced its oversight activities and has developed an improved methodology for determining when adequate improvement has occurred in the areas of personnel performance, processes, and management involvement. In sum, the new startup organization has developed tools that should lead to successful preoperational testing that will set the stage for successful licensing and operation of WBN.

This document is a one-time summary of the key issues being addressed in the Preoperational Test Program Improvement Plan. The details of TVA's response to NRC issues that have been raised are contained in docketed correspondence to the NRC. Updates of the PTPIP are not anticipated.

PREOPERATIONAL TEST PROGRAM IMPROVEMENT PLAN

I. PURPOSE

The purpose of the WBN Preoperational Test Program Improvement Plan (PTPIP) is to describe significant activities that have been, or will be, implemented to improve the WBN preoperational testing program such that TVA management and NRC expectations will be satisfied. This plan is issued by the Startup and Test (SUT) organization. It reflects SUT management's expectations regarding issues such as overall preoperational testing strategy, personnel performance improvements, and management oversight. The PTPIP does not provide a detailed discussion of every SUT activity, and is not intended to be a "living" document.

II. HISTORY/BACKGROUND

The WBN preoperational testing program is described in the WBN Final Safety Analysis Report (FSAR), Chapter 14.0, "Initial Testing Program." The principal NRC guidance document is Regulatory Guide 1.68, "Initial Test Programs For Water-Cooled Nuclear Power Plants," Revision 2, August 1978. In 1982, WBN initiated its preoperational testing program, a prerequisite for obtaining an operating license. However, identification of hardware-related deficiencies and employee concerns resulted in significant delays in licensing efforts. In early 1989, the WBN Prestart Corrective Action Program (CAP) was formed. This modified preoperational testing program assumed that earlier testing activities were acceptable, and was structured to revalidate safety related systems using previous test results. However, in early 1992, TVA withdrew the Prestart CAP and committed to perform a Regulatory Guide 1.68, Rev. 2 test program.

In mid-1993, it became apparent to TVA management that deficiencies in the SUT program were not being promptly corrected, attention to detail was inadequate, and the testing process was inefficient. By October 1993, the SUT organization was restructured, and new, experienced SUT personnel were placed in senior SUT management positions. With the new SUT Group came a new management team with a modified and proven approach to preoperational testing. The core senior management team for the new SUT group has successfully implemented startup test programs at several nuclear power facilities prior to arriving at WBN. See Appendix 2 for a list of previous experience. Because of this extensive experience, the new SUT management soon realized that several approaches being used at WBN to develop, implement, and document preoperational testing required adjustment. Accordingly, several changes have been made in the overall preoperational testing

program, processes for test procedure development, review and approval methodology, conduct of tests, and program administration. TVA concludes that these improvements, when fully implemented, will result in a comprehensive and satisfactory preoperational testing program that will set the stage for successful operation of WBN.

III. IMPROVEMENT PLAN METHODOLOGY

As previously stated, the PTPIP, in part, describes management expectations that must be satisfied during preoperational testing activities. These expectations are:

(1) Preoperational test planning documents, implementation of those documents and documentation of results must have minimal administrative and technical errors, and no errors that would invalidate the testing activity. For this to occur, the following must be implemented:

   a. Adequate engineering documents must be provided.

   b. Engineering support documents must be correctly translated into a process that ensures that the ability of the component/system to perform its intended safety function.

(2) Collected data must verify the ability of the component/system to perform the intended safety function.

(3) Any deficiencies discovered during these processes must be promptly fed back into the testing process and appropriate adjustments/retests conducted.

(4) Preoperational tests must be performed consistent with approved test procedures. Any deviations from these procedures must be permitted by the administrative procedures process.

(5) The above actions must be consistent with NRC expectations.

The PTPIP documents a three step process for how to better ensure that these expectations are met: (A) identification of issues, (B) development and implementation of corrective actions, and (C) feedback on the effectiveness of actions/management oversight. Each step must be substantially completed for the relevant problem area before effectiveness will be apparent. Incremental progress, however, should be apparent through feedback mechanisms and performance indicator monitoring. The following is a discussion of each step of the plan.

A. Identification of Issues

As discussed previously, TVA assessments and NRC inspection reports were the primary source for identified problems. The following is a discussion of these problem identification sources.

1. NRC Inspection Reports

On July 23, 1993, the NRC issued Inspection Report Nos. 50-390, 391/93-43, which summarized an inspection (June 1 - 30, 1993) of WBN preoperational test instructions and component/ system testing. As a result of this inspection, the NRC issued two Severity Level IV violations and a Notice of Deviation against WBN. The violations and deviation cited inadequate procedures, inadequate design controls and design output documents, and failure to satisfy a commitment to the NRC regarding a test scoping document. TVA's August 23, 1993 response to the violations and deviation committed to several violation-specific and programmatic corrective actions.

On August 27, 1993, the NRC issued Inspection Report Nos. 50-390, 391/94-53, which summarized another inspection (July 1 - 30, 1993) of preoperational test instructions and component/system testing. As a result of this inspection, the NRC Issued two Severity Level IV violations and one Notice of Deviation against WBN. Similar to the July 23, 1993 inspection report, these violations and deviation generally involved inadequate procedures, and failure to satisfy a commitment to the NRC.

On August 27, 1993, in response to the July and August NRC inspection reports and several TVA-identified adverse conditions, the WBN Nuclear Assurance organization initiated Significant Corrective Action Report WBSCA930151 (SCAR 151). Deficiencies summarized in the SCAR were identified by the NRC (i.e., 6 Severity Level IV violations and 1 Notice of Deviation) and TVA (i.e., 9 Problem Evaluation Reports (PERs) and 7 Finding Investigation Reports (FIRs)) during July and August 1993. The SCAR was issued at this time primarily because WBN NA determined that previous findings represented an adverse trend regarding procedural noncompliance by the SUT organization. The adverse trend was characterized by the Nuclear Assurance organization as a deteriorating level of quality performance by the Startup and Test organization. Based on this conclusion, the Startup Manager, at the direction of site management, placed an "administrative hold" on safety related preoperational testing in the field, ATIs, and non-safety PTIs. Limited component testing continued. SCAR 151 is discussed more fully in Section III.A.2 below.

Three additional NRC inspection reports were issued (September 29, 1993 (IR 93-61 for August 1 - 31, 1993), October 4, 1993 (IR 93-58 for August 1 - 31, 1993), and October 28, 1993 (IR 93-71 for September 1 - 30, 1993)), which cited deficiencies very similar to previous inspection results. In a November 16, 1993 letter to the NRC, TVA responded to Inspection Reports 50-390, 391/93-53, 93-58, 93-61, 93-71, and

supplemented its previous response to 93-43. This response described significant changes in the WBN preoperational testing program and associated management positions and provided responses to specific violations. The corrective actions provided in the November 16, 1993 submittal have been evolving since that date. Those actions, and enhancements to already planned corrective actions are addressed in this plan.

2. SCAR WBSCA930151 (SCAR-151)

SCAR-151 addresses TVA and NRC-identified deficiencies in the SUT Program. The scope of the SCAR is limited, in that it only addresses deficiencies identified in Problem Evaluation Reports (PERs), Finding Investigation Reports (FIRs), and NRC inspection reports issued during July and August 1993. The SCAR does not address in significant detail all contributors to inadequate performance such as, e.g., culture. Because of the limited scope of SCAR-151, it should not be considered the corrective action document that, if implemented fully, will address all deficiencies in the WBN preoperational testing program. However, the SCAR does address all corrective actions necessary for resumption of safety related testing activities. As noted throughout this document, several additional actions have been, and will be, implemented to ensure that preoperational testing is adequate to satisfy TVA management expectations.

In sum, SCAR-151 addresses corrective actions for three broad deficiency areas: (1) technical and administrative errors in Preoperational Test Instructions (PTIs), (2) procedure non-compliance, and (3) inadequate administration of the program. The SCAR documents individuals and organizations responsible for development and implementation of corrective actions and the schedule for completion of those efforts. Confirmation of improved performance through effectiveness monitoring is not within the scope of SCAR-151, and therefore, must be addressed by other management tools. These tools have been developed by SUT management and are discussed in Section III.C of the PTPIP.

To date, SCAR-151 has been revised three times. Revision 0 was issued on August 27, 1993. Revision 1, issued on September 20, 1993, provided additional examples of procedural non-compliance that were identified by the NRC on September 10, 1993 during performance of a PTI. Revision 2, issued on November 23, 1993, modified the scope of several corrective actions. Revision 3, approved January 11, 1994, ties the restart of safety related systems testing to the completion of the required corrective actions of the SCAR. All actions required for resuming performance of PTIs for safety related systems are complete. NA performed a 100% review of the documentation associated with these items, and has no outstanding comments. Agreement between SUT and NA on later completion of remaining items is documented in NA-WB-93-0135, dated January 26, 1994. Remaining items should be completed by March 1994.

B. Development and Implementation of Corrective Actions

Even though the SUT Group has primary responsibility for improving the quality of preoperational testing activities, it is clear that several support organizations also have a major impact on the success or failure of this effort. In that light, the following discusses significant activities that have been developed by the SUT Group and other organizations to ensure that preoperational testing will satisfy TVA management expectations.

1. Prioritization of Actions

The new SUT management assessed the startup program to determine what corrective actions were needed, and when corrective actions must be implemented to resume safety related preoperational testing activities. Another major consideration was that corrective actions must prevent recurrence of similar deficiencies. The protocol for PTPIP activities was divided into three phases:

Phase 1: Activities that must be completed before PTI preparation and issuance may resume.

Phase 2: Activities that must be completed before safety related preoperational testing may resume.

Phase 3: Activities that involve enhancements to the startup program.

Actions included in each phase are addressed in Table 1. Phases 1 and 2 are complete.

2. Startup Group

The new Startup team reached the following conclusions after assessing SUT deficiencies:

- The organization structure was overly complicated and did not promote accountability or efficiency.
- The procedure writing process must be strengthened.
- Administrative procedures must be strengthened and clarified to support component activity processes such as system flushing and testing.

SUT management's response to these observations was prompt and comprehensive. A description of key modifications follows.

a. Organization

The first organization change that occurred was the replacement of the Startup Manager and the Startup Test Manager with a new, senior-level, Startup Manager and staff. As noted previously, the new personnel provided more extensive experience in preoperational testing activities, and a "fresh" focus on startup objectives. One of the first actions by the new Startup Manager was to eliminate multiple layers of management and personnel. The old structure diluted individual accountability and adversely impacted the ability to accomplish tasks in a timely manner. Accordingly, the new SUT Group organization was streamlined to include only two levels of management. Appendices 5 and 6 detail the old and new SUT Group organizations. This modification resulted in direct lines of authority, clear personnel responsibilities, and with that, accountability for actions. In addition, preoperational testing procedure and program control functions were placed under a single, experienced supervisor. This change further enhanced accountability and simplified management objectives.

b. Procedure Preparation Enhancements

New SUT Group senior management believed that the quality of the PTIs and ATIs was directly dependent on the quality of personnel preparing and reviewing the documents. Therefore, a prompt evaluation of startup personnel experience was performed. The new Startup Manager reviewed the experience of personnel and assigned or re-assigned responsibilities for the preparation and review of PTIs or ATIs according to experience focus areas. Qualifications of these personnel were upgraded and made consistent. Technical writers now must have experience and knowledge equal to a Level II test engineer. Also, the independent peer review must be performed by a Level III qualifiable engineer. These changes already have resulted in improved quality of PTIs and ATIs.

b.1 Procedure Preparation Process

To better enable PTI writers to prepare adequate documents, a more comprehensive procedure writers' and reviewer guide was developed to improve quality, consistency, and content of procedures. See Desk Top Instruction #4, "Preoperational/Acceptance Test Instruction Writers' Guide". The improved writers' guide provides specific direction on which source documents should be used during procedure preparation and standardizes procedure format. Since the Writers' Guide is a desktop instruction, needed modifications can be promptly implemented and provided to PTI preparers.

Communications between procedure preparers and management are ensured with meetings between the Programs and Procedures Supervisor and PTI/ATI writers (held three times a week). Meeting attendees review the status of procedures and openly discuss problems that may have occurred during the procedure preparation process (e.g., comments by the Joint Test Group (JTG), NRC findings or commitments made

that affect procedure preparation). PTI/ATI writers also are required to attend JTG meetings involving discussion of their procedures. This approach provides immediate feedback for procedure improvement. Also, formal training of procedure writers is held, as necessary, to address recurrent deficiencies, provide management philosophy on procedure preparation, and better ensure consistent output documents.

b.2 Procedure Review

Inadequate review of procedures prior to final approval was a major focus area of NRC and TVA preoperational testing program findings. Many errors in documents were not discovered prior to submittal to the NRC, and the overall quality of PTIs did not meet TVA management expectations. These deficiencies were addressed by incorporating a multi-stage review process. Each step of the procedure review process provides an additional barrier for preventing inadequate documents from being presented to the Startup Manager for approval. It is important that "check and balance" steps be effective to ensure that the document presented to the Startup Manager for approval is as complete and accurate as possible. To better ensure success of these steps, as previously discussed, the qualifications and training of the PTI technical writer, and independent peer reviewer have been strengthened.

The PTI technical writer has the initial responsibility to ensure that the PTI is complete and accurate. A checklist is provided in Desk Top Instruction # 4, "Preoperational/ Acceptance Test Instruction Writers' Guide", to better ensure that essential information is not overlooked. A peer reviewer has the responsibility to independently verify procedure adequacy. This individual reviews all aspects of the procedure from administrative consistency to technical correctness.

As an enhancement to the review efforts, SUT management has recently added an administrative review to the procedure review process. The purpose of this review is to detect and resolve administrative deficiencies, thereby allowing the JTG to focus on "big picture" issues. After the administrative review is completed, the JTG performs a final review of the PTI for technical and administrative adequacy. If the JTG is satisfied with the PTI, the document is forwarded to the Startup Manager for approval. See Appendix 4 for a flow diagram of the procedure review process.

c. Joint Test Group

To better ensure adequacy of the "checks and balances" during procedure preparation, JTG responsibilities have been clarified. See SMP 3.0, "Joint Test Group Charter." In sum, the purpose of the JTG is to review and recommend approval (as appropriate) for PTIs, their revisions, and test results. In addition, individual JTG members have been assigned specific primary review, along with overall technical/administrative review responsibilities. The following specific JTG member tasks have been assigned by the Startup Manager:

Quality Member Representative	Verifies that Startup Program requirements are incorporated along with accurate references.
Nuclear Engineering Representative	Verifies "objectives and acceptance criteria" comply with design and license commitments, and the FSAR.
Operations Representative	Verifies correct interface with other systems and that lineups are correct.
Startup Representative	Verifies correct testing methodology and scope.
Technical Support Engineering/NSSS Engineering (Westinghouse Rep.)	Verifies correct technical content of methodology and scope.

The JTG has been instructed by the Startup Manager to reject any procedure that is poorly prepared, instead of trying to substantially improve procedure quality through the JTG review process. Since this direction is difficult to quantify, an iterative process will occur until the JTG and the Startup Manager reach agreement on the threshold of quality deficiencies that warrant summary rejection. SUT Group management expects agreement on the appropriate threshold during issuance of the first few PTIs.

d. Additional Process Changes

In addition to process changes that occurred as a result of organization restructuring and clarified responsibilities, several "administrative" changes have been made that will improve the overall preoperational testing process. These process improvements include: (a) the review of Startup Manual Procedures to determine if clarification is necessary; (b) development of a new Startup Manual Procedure (SMP 15, "Test Matrix") that compiles all preoperational test requirements and commitments into a matrix and illustrates where this information is addressed in other procedures; and (c)

development of a new Startup Manual Procedure (SMP 14.0, "Test Deficiencies") to more clearly define the proper documentation and resolution of Test Deficiency Notices (DNs).

The above steps minimize the continued usefulness of Test Scoping Documents (TSDs). These documents, which, for example, ensured conformance with licensing commitments and regulatory guides, and ensured that testing encompassed issued design, etc., provided similar information as the Test Matrix. The TSDs are being downgraded to an inactive status and SUT considers the TSDs, for procedures development, as "Information Only" documents.

However, the TSDs do contain useful information. To ensure that necessary activities are not inadvertently overlooked as a result of TSD downgrading, the following steps also will be taken: (1) procedures that address the generation of, or reference test scoping documents will be revised to delete TSDs as the primary basis for the document, (2) existing TSDs will be reviewed to identify special test requirements that must be captured in design output documents via the Design Change Notices (DCNs) process, and (3) involvement of startup group engineers will be increased to ensure that there is a common understanding of how compliance with regulatory requirements will occur. Collectively, these steps should ensure that useful information is retained in active documents and organizations once involved in TSD development maintain involvement.

e. Performance of PTIs and ATIs

Changes to the preoperational testing process have been made which should result in improved test performance and strengthened management controls over testing activities. For example, the Startup Manager will personally authorize test initiation. PTI changes will be approved only by the Startup Manager or his designee. Also, Test Results Reports and Results Package formats will be standardized to minimize inadvertent omission of routine information.

3. Nuclear Assurance Oversight

While deficiencies in the preoperational testing program are largely attributable to the SUT organization, TVA's oversight of the program failed to correct the generally declining trend and did not adequately address the failure to meet TVA management expectations regarding procedure development inadequacies. Several problems were identified by Nuclear Assurance (NA); however, assessments of the effectiveness of corrective actions were inadequate. It is imperative that concurrent with organizational, administrative, and process improvements in the preoperational testing program, the NA organization must provide comprehensive and effective oversight of corrective action implementation. Therefore, in addition to improving the line organization, NA oversight has been enhanced. The WBN NA organization has

NA's assessment of SUT corrective action implementation will serve as the barometer of whether deficiencies have been adequately corrected and whether recurrence controls are effective. The significant aspects of NA's approach are briefly discussed below.

NA Oversight will be conducted by a team of evaluators that will provide continuous coverage of SUT activities. This enhanced NA oversight effort will include dayshift, backshift, and weekend monitoring of testing activities. The NA team will evaluate, among other things, component testing, PTIs, ATIs, temporary modifications (TMODs), temporary operating plans (TOPs), training and qualification of test personnel, personnel performance, corrective actions and actions to prevent recurrence of issues identified in SCAR-151, proper handling of test deficiencies, and test activity documentation.

Assessment summary reports from NA to the SUT Manager typically are generated every week, and weekly Startup Group/NA management meetings are held to ensure that concerns are addressed in a timely manner. Also, NA provides site management with monthly and quarterly performance reports that utilize "window" performance indicators.

C. Feedback on Implementation Progress/Site Management Oversight

1. Culture Improvements

The WBN workforce is conscientious, attentive to duties, and makes significant efforts to satisfy management expectations. However, when a large portion of this population makes errors that are not reasonably justified, "culture" must be considered as a root cause. Culture is determined in great part by senior managements' clear expression of expectations, enforcement of those expectations (i.e., rewarding for good performance and taking disciplinary action for substandard work) and accurate feedback so that adjustments can be made to management philosophies before problems become critical. An evaluation of these factors led TVA management to conclude that one or more of these essential elements for maintaining proper culture was marginally effective at WBN.

Culture was addressed in great part by the replacement of SUT Group management with personnel possessing recognized industry experience. This has resulted in improved worker confidence that preoperational testing activities are on the correct course and improved worker attitudes and morale, i.e., culture. SUT Group management's clear expression of expectations, rewards for good performance, and (when appropriate) strong, consistent disciplinary action has led to improvement in the quality of work. SUT Group management will continue to ensure that the preoperational testing culture remains positive by frequent meetings with all levels of personnel, an open door policy, and prompt responsiveness by supervision to

inadequate performance and to employee issues.

2. Improved Communications

WBN senior site management's expectations regarding preoperational testing activities either were not clearly communicated to the SUT Group or were not adequately enforced by SUT management. Site management has responded to this finding by ensuring that the WBN Site Vice-President (WBNSVP) "direct reports" clearly understand WBNSVP directives. These directives are provided to WBNSVP "direct reports" during daily debriefings, weekly status meetings, and information feedback. In addition, in order to allow the Plant Manager to fully focus on preparing the plant and plant personnel for Unit 1 operation, the Startup Manager has been reassigned to report directly to the new Vice-President, Site Operations. A more direct interface between the SUT organization and senior site management has improved communications between the organizations.

Communications between the Startup Group and other support organizations has improved, but remains an area requiring management attention. A team approach is critical to the overall success of the preoperational testing program. Therefore, senior site management continues to have periodic meetings with SUT management to clearly express the importance of coordination between site groups. As a result of these efforts, improvements have been noted in coordination of SUT and WBN site efforts, and preoperational testing schedule accuracy. This way of doing business will require frequent attention and mid-course corrections until expectations are satisfied.

3. Performance Indicators

SUT Group management has implemented a performance indicator system that will provide early warning of declining performance. These indicator areas were developed based on areas of declining performance that were not previously recognized as precursors to general SUT program inadequacy. By monitoring these areas, early warning of problems and successes will be provided to SUT and site management. Modifications to these indicators may be necessary to continuously ensure that they provide an accurate portrayal of progress. Preoperational testing-related performance indicators track the following SUT Group-related information:

- Deficiency Notices (DNs) written due to PTI/ATI/Special Performance Test (SPT) deficiencies.

- DNs written because of component testing deficiencies.

- Open TMODS will be assessed based on the adequacy of engineering drawing updates, engineering log updates, and tagging.

- Change Notices (CNs) associated with procedural deficiencies

- The number of administrative or technical comments generated by JTG on procedures.

Performance issues are discussed promptly between the Startup Manager and the WBN Vice-President, Site Operations (or his designate) to ensure that performance expectations are being addressed. Performance indicator graphs and a brief report is provided to the Startup Manager weekly. The Startup Manager briefs the WBN Site Vice-President during a weekly staff meetings. The WBN Site Vice-President provides expectations and comment on SUT Group performance during this meeting.

Recurrence prevention is addressed by performance indicator assessment and feedback during daily and weekly staff/management meetings. It is the responsibility of WBN senior management and SUT Group management to maintain cognizance of performance trends and to act before deficiencies significantly impact the preoperational test program. Success of this effort is ultimately determined by a successful, efficient, and timely preoperational test effort. The indicators reflect known parameters and have shown improved performance. These indicators will be modified, if required, to provide for additional management attention.

As noted previously, the NA organization has initiated a "windows" assessment performance indicator program which will provide management with a broad indication of performance.

Appendix 1

Startup Manual Procedures (SMP) Summary

SMP 1.0, "Startup Manual Introduction"

Provides a general overview of the preoperational test program planned for completion prior to fuel load, and establishes standard methods for SMP preparation, review, approval, revision, an distribution. This SMP addresses preoperational testing program history, program scope, organization and interfaces, test program description, administrative controls, and turnover of systems/areas to startup.

SMP 2.0, "Organization"

Describes the SUT organization and defines the responsibilities of its members.

SMP 3.0, "Joint Test Group Charter"

Establishes JTG responsibilities and method of operation. Also addresses the establishment of the JTG, JTG membership qualifications, JTG responsibilities, and implementation of the JTG program.

SMP 4.0, "Transfer of Jurisdiction"

Provides requirements for the release of permanent plant systems and equipment to the Startup Group. This SMP also controls the turnover of permanent plant equipment and systems from SUT to the Plant, and the re-transfer of systems and equipment to the Modifications organization. Specific directions included in this SMP include: release of systems and equipment to Startup, Operations turnover, performance of walkdowns, Master Tracking System (MTS) issue deferral, and Tracking of Open Items (TROI) MTS Status Change Request methodology.

Appendix 1
(cont.)

Startup Manual Procedures Summary

SMP 5.0, "Indoctrination, Training, and Certification of Startup and Test Personnel"

Describes indoctrination, training, and certification requirements for Startup Group personnel. It includes direction on indoctrination, training, certification, and certification maintenance.

SMP 6.0, "Component Test Program"

Controls the administration of the Component Test Program at WBN, including Generic Testing (GT), Special Performance Test (SPT) Procedures and test results; and the use of plant procedures and the Component Test Matrix.

SMP 7.0, "Control of System Cleanliness, Layup, and Flushing"

Provides guidelines for ensuring that a system is cleaned and remains clean throughout the startup testing process.

SMP 8.0, "Administration of Preoperational Test Instructions"

Establishes the requirements under which PTIs, ATIs, and SPTs shall be conducted such that FSAR and Regulatory Guide 1.68 requirements are satisfied. It is noteworthy that PTIs, ATIs, and SPTs approved prior to the effective date of this procedure will not be backfitted for format changes. Technical content and startup commitments; however, must be revised accordingly.

SMP 9.0, "Test Conduct"

Provides requirements and responsibilities for personnel involved in the conduct of all startup and testing activities. This SMP establishes the process for: MTS evaluation, pre-authorization activities for PTIs and ATIs, pre-test activities, test activities, chronological test log, test deficiencies, trending test deficiencies, continuing testing with an open deficiency, reperforming steps, change notices, exiting a test, reentering a test after a break, measuring and test equipment, test jumpers, and retesting.

Appendix 1
(cont.)

Startup Manual Procedures Summary

SMP 10.0, "Packaging and Processing Test Results"

Provides the requirements for packaging, review, approval, and processing of test results consistent with NQAP TVA-NQA-PLN 89-A § 9.4.2.C.

SMP 11.0, "Temporary Modifications"

Controls the installation, removal, and identification of TMODs at WBN. This SMP also requires, among other things, a periodic sampling review of TMODs.

SMP 12.0, "Temporary Operating Plan"

Provides direction for the preparation, review, approval, and use of Temporary Operating Plans (TOPs) for systems and equipment. TOP preparation; review and approval; applicability; implementation; and changes/revisions are addressed.

SMP 13.0, "Boundary Drawings"

Describes the method used for defining and documenting the boundaries of systems, subsystems, or areas.

SMP 14.0, "Test Deficiencies"

Sets the requirements for the initiating Test Deficiencies Notices (TDN) during testing.

SMP 15.0, "Test Matrix", under development

Will contain a matrix of all testing requirements and commitments associated with the PTI procedures.

Appendix 2

Startup and Testing Group Senior Management Prior Experience

- SHIPPINGPORT
- BEAVER VALLEY 1
- CALLAWAY
- NORTH ANNA 1 & 2
- ANGRA (SOUTH AMERICA)
- SEABROOK
- COMANCHE PEAK 1 & 2
- SOUTH TEXAS 1 & 2
- TURKEY POINT 3 & 4 DUAL UNIT OUTAGE

PROBLEM AREAS	CORRECTIVE ACTIONS	SCHEDULE/STATUS
Problem #1: Technical and Administrative Errors in PTIs		
a. Inadequate Review and Approval	SMP-8.0, general revision.	Complete
	SMP retraining on SMP-8.0.	Complete
	JTG responsibilities refocused.	Complete
	Disciplined JTG comment incorporation verification.	Complete
b. Inadequate Internal Guidance	SMP-8.0, general revision.	Complete
	Establish policy of what is in SMPs vs. what belongs in SUDs to eliminate potential conflict in requirements.	Complete
	Revise SMP-8.0 to address use of test equipment software in performance of test.	Complete
c. Inadequate Engineering/ Licensing Documentation	Update TSDs to include FSAR and other NRC commitment requirements, or delete TSDs as the primary input document to PTI/ATIs and redefine the source of test requirements.	Complete
d. Personnel Unfamiliarity	SMP retraining on SMP-8.0.	Complete
e. Inattention to Details	SUT Manager lecture on strict procedure compliance to managers.	Complete
	SUT Manager memorandum on examples of procedure noncompliance to test engineers.	Complete
	SUT Manager memo to all SUT personnel and JTG members distributing violation information.	Complete

PROBLEM AREAS	CORRECTIVE ACTIONS	SCHEDULE/STATUS
Problem #2: Procedure Non-Compliance		
a. Inadequate Written Communication/Procedure Adequacy	SMP-8.0, general revision.	Complete
	Establish policy of what is in SMPs vs what belongs in Desk Top Instructions (DTIs)/SUDs to eliminate potential conflict in requirements.	Complete
	Revise SMP-8.0 to address use of test equipment software in performance of test.	Complete
	Revise selected GTs to make them more "user friendly".*/	1 GT remaining; expected completion by 2/15/94
	Revise SMP-4.0 to specify responsibilities for administrative review of turnover packages.*/	Complete
	Revise SMPs to address escalation of DNs associated with Design or Construction errors into other administrative control programs; address reportability reviews, and clarify chronological log requirements for GT troubleshooting.	Complete
	Revise SMP-6.0 to require additional review of SPTs and clarify requirements to have the system test engineer perform a review of plant-performed component testing.	Complete
	Review past Startup Manager's memorandums for guidance which should be proceduralized.	Complete
b. Inadequate Self-checking	SUT Manager lecture on strict procedure compliance to managers.	Complete

*/ Not required for resumption of performance of PTIs on safety related systems.

PROBLEM AREAS	CORRECTIVE ACTIONS	SCHEDULE/STATUS
Problem #2: Procedure Non-Compliance (cont)		
b. Inadequate Self-checking (cont)	SUT Manager memorandum on examples of procedure noncompliance to test engineers.	Complete
	SUT Manager memo on timeliness of identification/response to adverse conditions.	Complete
	Disciplinary action for specific infractions.	Complete
c. Personnel Unfamiliarly	Retraining for test engineers on SMP-6, -9, -11, -12, -13, and training on Foreign Material Exclusion Area infraction by Startup personnel.	Complete
	SMP retraining on SMP-8.0.	Complete
	Training in selected GTs for Generic Test personnel to improve procedure familiarity.*/	1 GT remaining; expected completion by 2/15/94

*/ Not required for resumption of performance of PTIs on safety related systems.

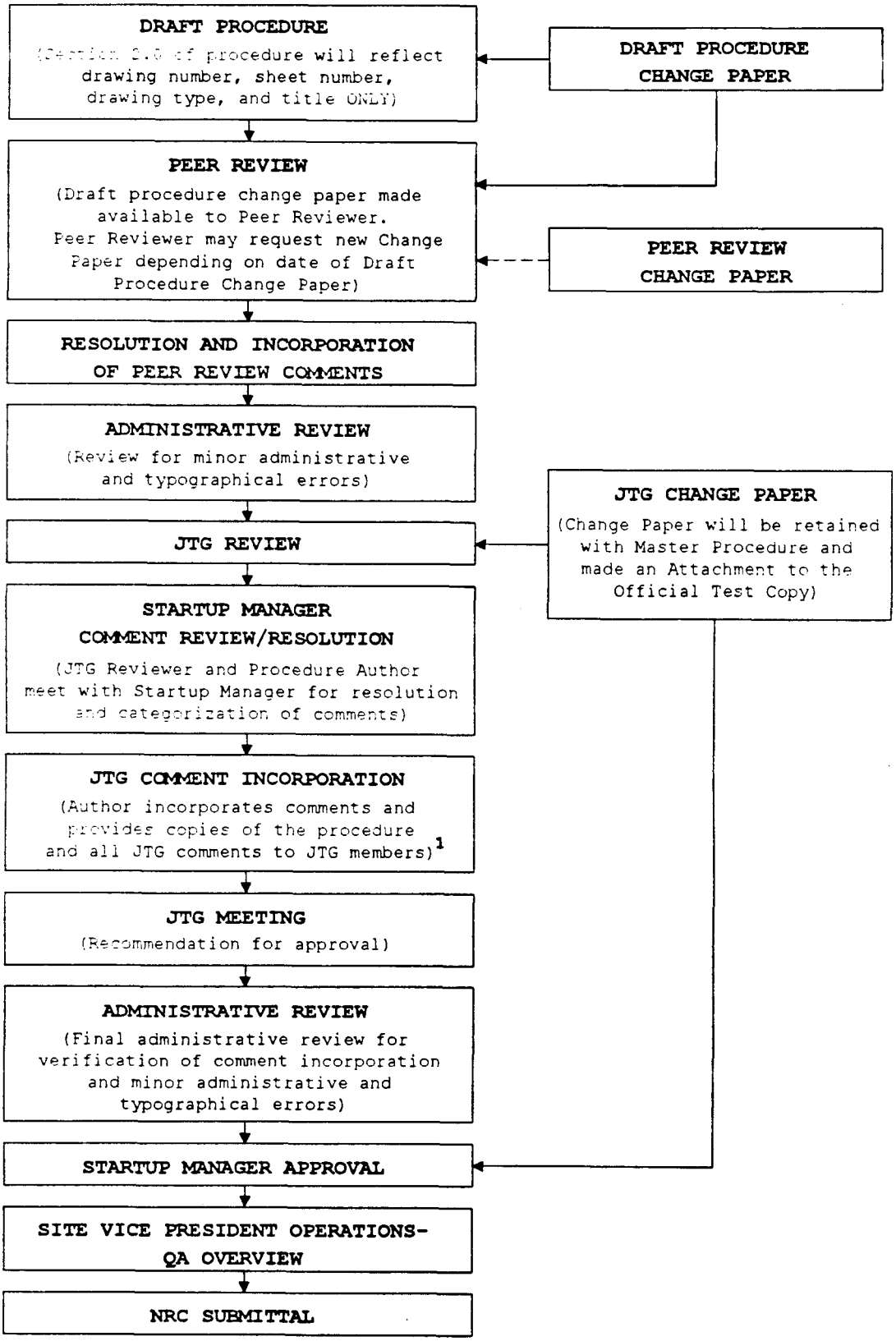
PROBLEM AREAS	CORRECTIVE ACTIONS	SCHEDULE/STATUS
Problem #3: Inadequate Administration of Program		
a. Inadequate Management Monitoring	Staff Boundary Drawing positions and perform a review to determine if TOPs and T-MODs Coordinator positions are required. If required, staff these positions.	Complete
	Perform an in-depth review of the Component Test Program.	Complete
	Review other Startup programs to ensure each has "ownership", if necessary, and require the owner confirm the "health" of that program.	Complete
b. Attention to Detail	SUT Manager memorandum on strict procedure compliance to managers.	Complete
	SUT Manager lecture on examples of procedure noncompliance to test engineers.	Complete

PROBLEM AREAS	CORRECTIVE ACTIONS	SCHEDULE/STATUS
General Enhancements	Clarify that Engineering is required for "accept as is" conditions on Test Deficiencies.	Complete
	Review, with QA, the current practice of performing simple work on Test Deficiencies without a Work Order to confirm this practice is acceptable.	Complete
	Develop a policy on outstanding Drawing Deficiency (DD) identification at time or procedure approval to clarify the required status for DDs at that time.	Complete

Appendix 4

Procedure Preparation Flow Chart

TEST PREPARATION/APPROVAL FLOW CHART

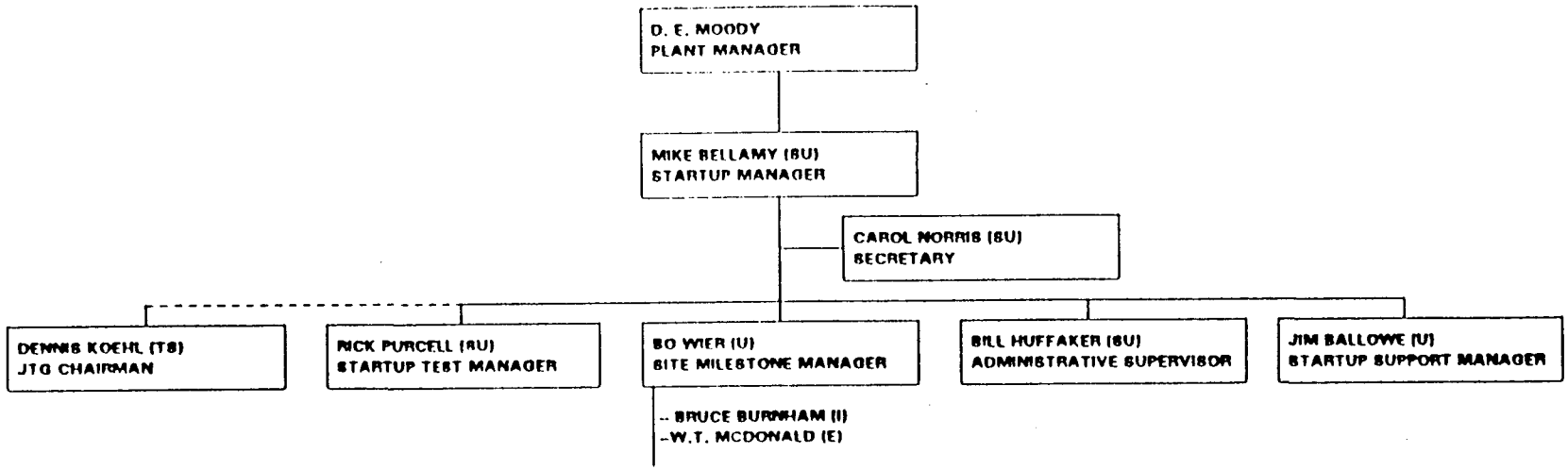


Desk Top Instruction #4 is currently being revised to modify the Site Vice-President, Operations and QA overview to be on a sampling basis. These reviews will occur before the Startup Manager's approval.

Appendix 5

Previous SUT Organization

STARTUP MANAGEMENT ORGANIZATION
REV 09/13/93

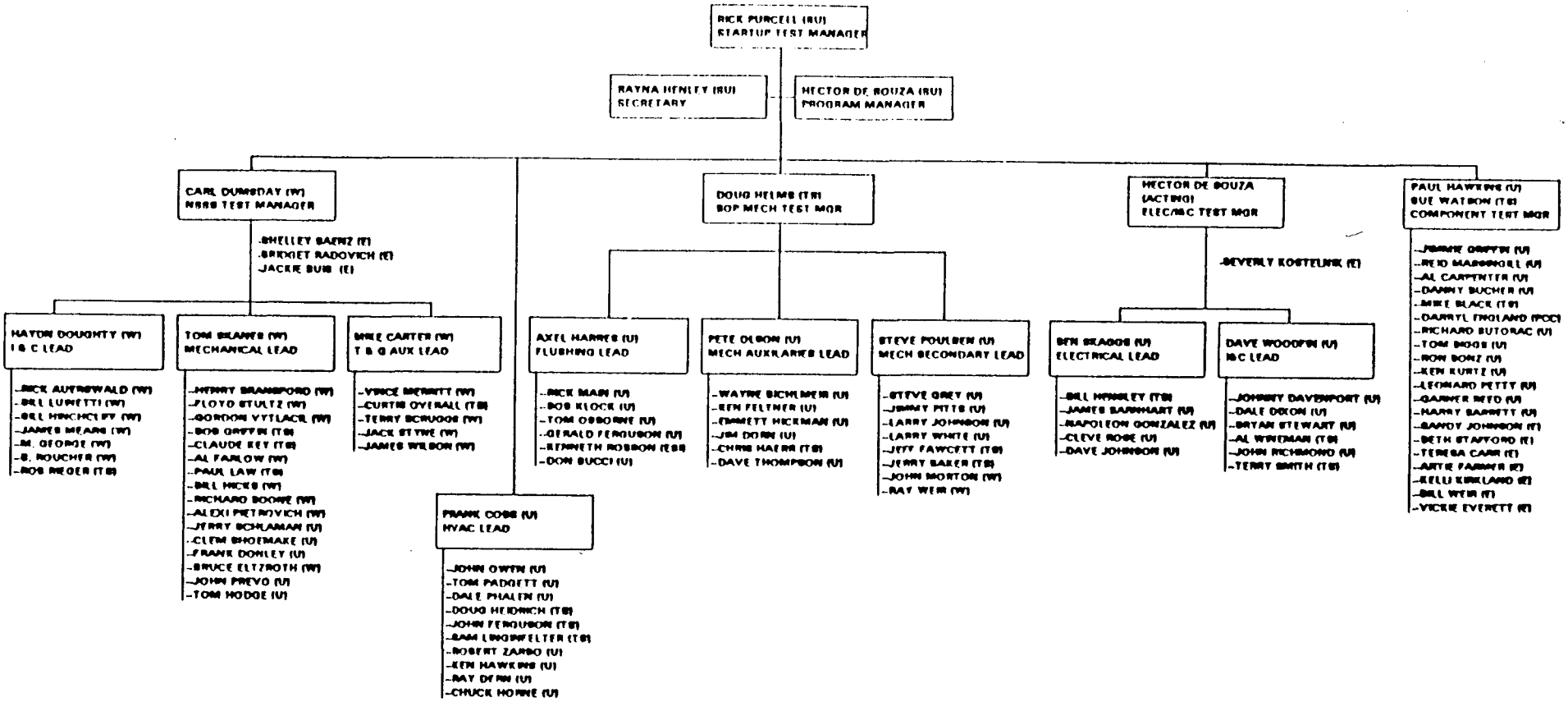


Approved by: _____
Startup Manager

_____
Plant Manager

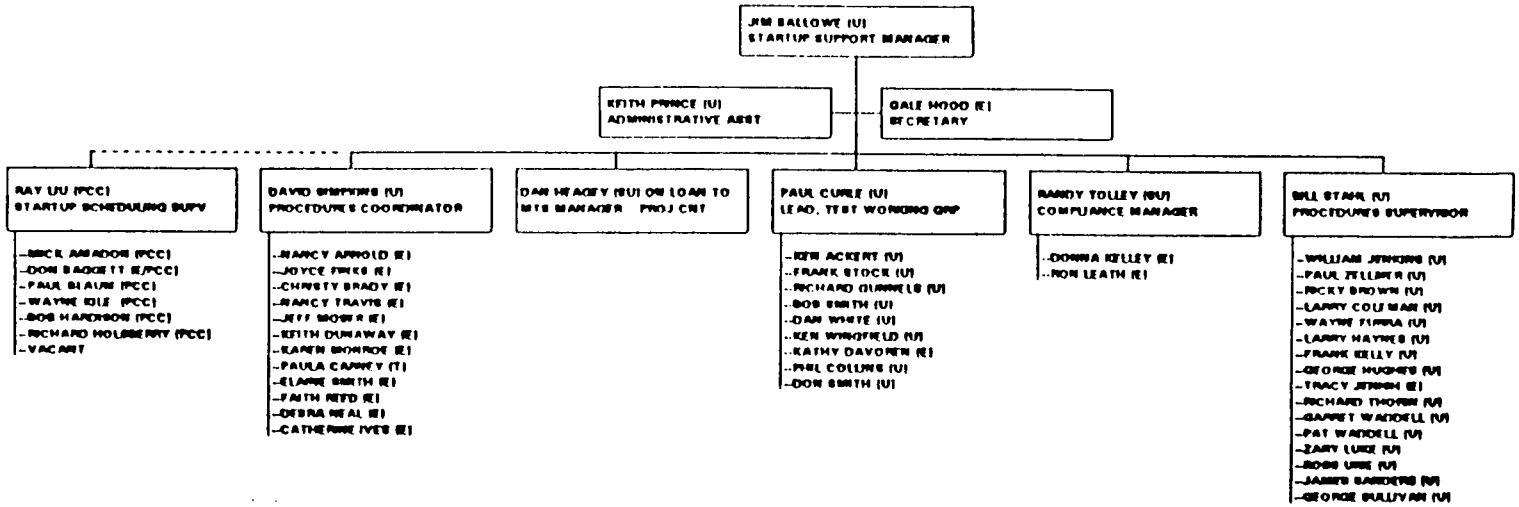
POSITION TITLES REPRESENT FUNCTIONAL ASSIGNMENTS ONLY

STARTUP TEST ORGANIZATION
REV 09/13/93



POSITION TITLES REPRESENT FUNCTIONAL ASSIGNMENTS ONLY

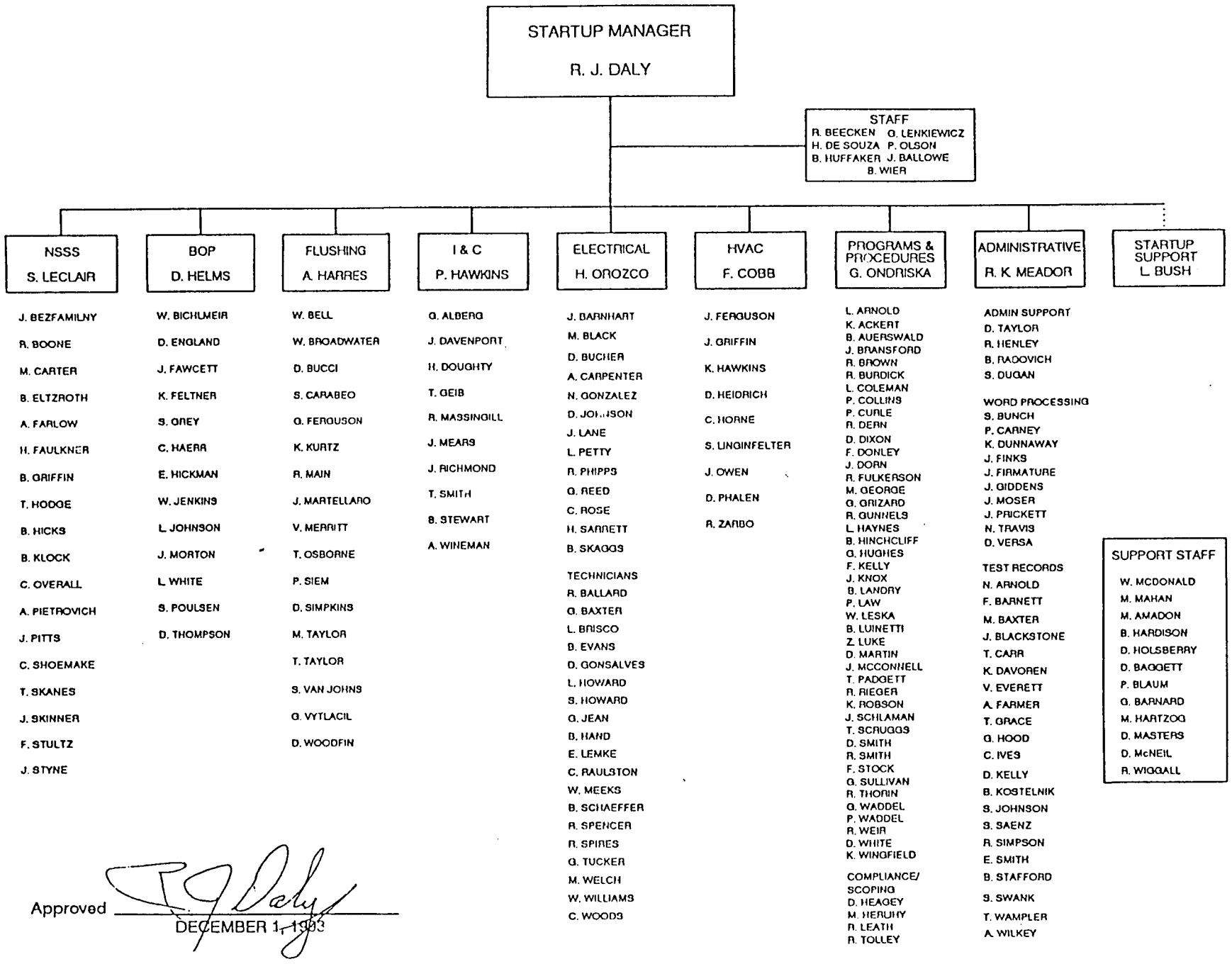
STARTUP SUPPORT ORGANIZATION
REV 09/13/93



POSITION TITLES REPRESENT FUNCTIONAL
ASSIGNMENTS ONLY

New SUT Organization

STARTUP AND T[illegible] ORGANIZATION



Approved R. J. Daly
DECEMBER 1, 1993

Table 1

Phase I, II, III Protocol

Phase I:

- Reorganization of Startup Group
- Revision of SMP 6.0, "Component Test Program"
- Revision of SMP 7.0, "Control of System Cleanness, Layup, and Flushing
- Revision of SMP 8.0, "Administration of Preoperational Test Procedures
- Revision of DTI 4, "Preoperational/Acceptance Test Instruction Writers' Guide"

Phase II:

- Revision of SMP 1.0, "Startup Manual Indoctrination"
- Revision of SMP 3.0, "Joint Test Group Charter"
- Revision of SMP 9.0, "Test Conduct"
- Revision of SMP 12.0, "Temporary Operating Plan"
- Issuance of SMP 14.0, "Test Deficiencies"
- Issuance of SUD 23, "Preoperational/Acceptance Test Conduct and Test Results Package Review"

Phase III:

- Revision of SMP 2.0, "Startup Organization"
- Revision of SMP 4.0, "Transfer of Jurisdiction"
- Revision of SMP 5.0, "Training"
- Revision of SMP 10.0, "Packaging and Processing Test Results"
- Revision of SMP 11.0, "Temporary Modifications"
- Revision of SMP 13.0, "Boundary Drawings"
- Issuance of SMP 15, "Test Matrix"

ENCLOSURE 3

LIST OF NEW COMMITMENTS

1. TVA expects to provide proposed changes to FSAR Chapter 14 in Amendment 86 of the FSAR, currently scheduled for transmittal to NRC on February 28, 1994.

2. TVA will reperform preoperational testing of the safety injection accumulator system under PTI 63-02. TVA will notify NRC of our schedule for this test.

3. Startup controls for minor rework related to conductor manipulations require incorporation in several additional Generic test procedures which will be revised by February 11, 1994.

4. TVA will review other site procedures (e.g., for maintenance activities) related to conductor manipulations to ensure this G-38 interpretation for vendor panel wiring is addressed. This action including correction of identified procedures will be completed by March 18, 1994.

5. TVA will perform retesting of valve interlock logic for valves FCV-62-69, FCV-62-70, and FCV-62-72 in preop test PTI-62-02, currently expected to be approved by JTG by in early February 1994.

6. Further revision of DTI-4 will be made to address the performance of flow balancing (reverification of flowrates after throttle valve manipulations to record final valve settings). This revision will be completed by February 28, 1994.

7. TVA will perform a review of FSAR Chapter 14 test summaries and develop a cross reference of the test summary objectives, methods, and acceptance criteria with the implementing PTIs by March 14, 1994.