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

December 4, 2007

10 CFR 50.55(f)(3)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN P1-35
Washington, D.C. 20555-0001

In the Matter of	) Docket Nos.	50-259	50-328
Tennessee Valley Authority	)	50-260	50-390
		50-296	50-391
		50-327	

TVA NUCLEAR QUALITY ASSURANCE (NQA) PLAN (TVA-NQA-PLN89-A) - BROWNS FERRY, SEQUOYAH AND WATTS BAR NUCLEAR PLANTS - UPDATE

Pursuant to 10 CFR 50.55(f)(3) this letter transmits an update to the TVA NQA Plan.

Reference 1 informed the NRC of TVA's intention to reactivate and complete construction activities at Watts Bar Unit 2. The primary purpose for this revision to the TVA NQA Plan is to incorporate the Watts Bar Unit 2 completion organization.

Enclosure 1 provides the updated NQA Plan, Revision 18. Changes since the previous revision do not involve a reduction in commitment and therefore do not require NRC approval.

There are no new regulatory commitments made by this letter.
If you have any questions, please contact me at (423) 751-6506.

Sincerely,

Ashok S. Bhatnagar
Senior Vice President
Nuclear Generation Development and Construction

Reference: TVA letter dated August 3, 2007, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Reactivation of Construction Activities"

Enclosure
cc: See page 3

Q004
D030
NRR

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NUCLEAR QUALITY ASSURANCE

Tennessee Valley Authority

Nuclear Quality Assurance Plan

TVA-NQA-PLN89-A

Revision 18

REVISION LOG
Page 1 of 7

REVISION NUMBER	EFFECTIVE DATE	DESCRIPTION OF REVISION	PAGES AFFECTED
0	Refer to Appendix A	Initial Issue	All
1	No later than 2/25/91	First annual update	All
2	No later than 4/17/92	Second annual update	All
3	No later than 4/19/93	Third annual update	All
4	No later than 4/19/94	Fourth annual update	All
5	No later than 6/15/95 for BLN, BFN and SQN. By fuel load for WBN. Note: Section 12.2.E.2 is effective after NRC approval.	Fifth annual update	All
6	Upon issuance for BLN, BFN, and SQN. By fuel load for WBN.	Revised to incorporate subject matter relocated from WBN Unit 1 Technical Specifications, Chapter 5.0, Administrative Controls.	4, 15, 16, 17, 22, 23, 25, 65-71, 77, 78, 79, 92, 103, 110, 111
7	Subsequent to NRC's acceptance of corresponding Technical Specification changes. Effective 7/27/98	Revised to incorporate subject matter relocated from SQN and BFN Technical Specifications, Chapter 6.0, Administrative Controls; and other changes as indicated by revision bars.	2, 6, 9, 11-18, 20-26, 30, 31, 33, 34, 39, 42, 45, 46, 49, 51, 52, 55, 59, 60, 62, 64, 65, 67, 69-79, 86, 87, 89, 92-94, 97, 111, 115, 119-121, 123, 126, 133-136
8	9/11/98	Revised to update organization charts in Appendix H, and position titles and functional responsibilities throughout the Plan. Removed redundant information from Section 4.1 that is addressed in the Responsibilities sections throughout the Plan. Revised Section 9.9 as a step in standardizing Plant Reviews.	3-7, 8-29, 32-35, 37-43, 45, 48, 50, 51, 53-59, 61, 63, 64, 66, 67, 87, 92, 94, 95, 100, 102, 105, 106, 108, 109

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REVISION NUMBER	EFFECTIVE DATE	DESCRIPTION OF REVISION	PAGES AFFECTED
8-A1	5/25/99	Addendum No. 1 adds responsibilities for the Procurement organization and the Nuclear Support organization, changes the reporting relationship of Corporate Licensing, and clarifies a function of Qualified Reviewers.	2, 5, 7, 10, 13, 14, 20, 26, 34, 35, 37, 38, 50, 55, 63, 108, 109
9	1/31/2000 RPL 12/3/99	Incorporated changes made in Revision 8, Addendum No. 1, and other changes as indicated by revision bars. Revised to add responsibilities associated with independent technical reviews in Sections 4.1.3.D and 4.1.4.A. Added reference to 10 CFR 72 in Sections 5.1.A, 5.4.B, and 14.1, and Appendix B. Changed effective date from 12/13/99 to 1/31/2000 to accommodate impacted procedure revisions.	2, 3, 7, 10, 13, 14, 20, 24, 26, 35, 38, 39, 51, 56, 65, 70, 84, 92, 96, 109, 110
9-A1	1/31/2000	Addendum No. 1 clarifies that the ASME III QAM is currently inactive.	2, 5, 8, 11, 18, 22, 23, 70
10	9/8/00	Incorporated changes made in Revision 9, Addendum No. 1, and other changes as indicated by revision bars. Standardized the requirements for plant reviews and the Plant Operations Review Committees (PORCs) in Section 9.9. Revised title in Appendix H.	2, 3, 55-59, 107, 109

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REVISION NUMBER	EFFECTIVE DATE	DESCRIPTION OF REVISION	PAGES AFFECTED
11	6/29/01	Added reference to self-evaluation in Section 3.3.4. Updated to comply with 10 CFR 50.59 rule changes in Sections 4.1.3.B.5.b, 9.9.2.A.5, and 9.9.2.B.7.i. Changed reference to "the quarterly trend report" in Section 4.1.4.A. to "a performance report at least quarterly." Updated the description of functions performed by the Nuclear Assurance organization in Section 4.1.6 to consolidate overlapping functions. Added reference to ANSI/ASNT CP-189-1991 in Appendix B, Table 1, page 8 to comply with 10 CFR 50.55a(b)(a). Revised Site Quality Managers qualification requirements in Section 4.1.6 and Appendix B, Table 2, page 9. Revised commitment to NRC Regulatory Guide 1.146 concerning Lead Auditor qualification consistent with approved NRC safety evaluations (Appendix B, Table 2, page 23). Revised Appendix H org. chart to reflect title change. Deleted the BLN Site Nuclear Assurance and Licensing Manager from Sections 4.1.6.A, 4.1.6.C and the Appendix H Organization Chart.	1-4, 10, 13, 15-18, 55, 57, 83, 84, 98, 106, 107
11-A1	8/20/01	Deleted the reference to the Vice President, E&TS, as the Chairman of the Nuclear Safety Review Board.	3, 6, 12
11-A2	1/18/02	Revise the annual Fire Protection audit frequency to "a maximum interval of 24 months."	3, 6, 63

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REVISION NUMBER	EFFECTIVE DATE	DESCRIPTION OF REVISION	PAGES AFFECTED
12	08/19/02	Incorporate Addendum Nos. 1 and 2 to Revision 11. Added reference to 10 CFR 72 in Sections 5.1.B, 9.9.2.A.5, 9.9.2.B.7, 12.2.E.4.d, and 14.1. Added 10 CFR 72, Subpart G references to Appendix A matrix. Clarified that Regulatory Guide 1.88 with noted alternatives apply to 10 CFR 72 records in Appendix B, Regulatory Guide Conformance Status. Included the requirement that 10 CFR 72 records must be maintained in duplicate. Update retention times for 10 CFR 50.59 records to agree with 10 CFR 50.59(d)(3) in Appendix B for WBN, SQN, and BFN. Added records and retention time for 10 CFR 72 records to Appendix B for SQN and BFN. Added reference to 10 CFR 72 in Appendix C, Section 4.4. Deleted note on Appendix H, Page 1.	1-4, 7, 21, 57, 59, 65, 69, 77, 93, 95-98, 103, 108
12-A1	06/09/03	Added clarification to Section 4.1.6.A	4, 7, 17
12-A2	06/20/03	Added reference to BFN Unit 1 Restart organization in Section 4.1.6, new Section 4.1.8, and Appendix H. Added Appendix I, BFN Unit 1 Restart Organizational Matrix.	4, 7, 17, 18, 20, 108-110
13	08/27/03	Incorporated Addendum Nos. 1 and 2 to Revision 12. Updated Appendix H Organization Chart. Corrected minor format errors.	4, 7, 21, 58, 109
13-A1	03/12/04	Clarify and enhance ISFSI requirements to implement 10CFR72. (SQN PERs 03-12911 and 12912)	4, 5, 7-9, 15, 23, 26, 56, 69, 70, 72, 76, 84, 94, 97, 98, 102-106, 109
13-A2	04/30/04	Moved the reporting relationship of the General Manager, NA (and organization) from a "direct" report of the CNO and Executive Vice President, TVAN, to a direct (hard-line) report to the Vice President, Nuclear Support. The General Manager, NA still retains access and a "dotted-line" reporting channel to the CNO and Executive Vice President, TVAN.	4, 7, 16, 17, 110, 111

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REVISION NUMBER	EFFECTIVE DATE	DESCRIPTION OF REVISION	PAGES AFFECTED
13-A3	6/4/04	Deleted requirement that the General Manager concur with TVAN Inspector Certifications (Sections 9.1.3.D and 9.3.3.F). Added Appendix F, Deferred Plant Equipment Policy.	1-5, 8, 9, 45, 47, 110
14	8/31/04	Incorporated Addendum Nos. 1, 2 and 3 from Revision 13.	All
14-A1	12/17/04	Revised definition of "Independent Spent Fuel Storage Installation (ISFSI)." Added definition of "Greater than Class C Waste (GTCC Waste)."	5, 8, 73, 74
14-A2	5/17/05	Added reference to Reg. Guide 1.189 in Appendix B, Table 1.	5, 8, 84
15	8/31/05	Incorporated Addendum Nos. 1 & 2 from revision 14. Updated organization titles. Updated Appendix H organization charts.	5, 6, 8, 9, 12, 14, 17, 18, 19, 21, 22, 23, 28, 35, 40, 43, 44, 46, 48, 49, 52, 53, 55, 56, 63, 65, 68, 69, 73, 74, 84, 88, 111, 112, 113
15-A1	7/14/06	Clarified Section 3.3.3 concerning assessment of NA performance. Clarified Section 4.1.6.A concerning the NA Organizational Structure. Clarified Section 4.1.6.E concerning reporting responsibility of the Evaluation and Analysis Group. Clarified Section 4.1.6.F.5 concerning evaluation of QA Training.	5, 8, 12, 18, 19, 20
16	8/31/06	Incorporated Addendum No. 15-A1. Updated organization titles. Updated Appendix H organization charts. Corrected minor typographical errors. Transferred responsibility for NSRB support from Nuclear Assurance to Corporate Nuclear Licensing and Industry Affairs.	5, 7, 8, 12, 14 -18, 20, 21, 34, 39, 42, 44, 45, 47, 52, 53, 55, 63, 67, 85, 109, 110

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REVISION NUMBER	EFFECTIVE DATE	DESCRIPTION OF REVISION	PAGES AFFECTED
16-A1	5/8/07	Deleted reference to Bellefonte (BLN) in Sections 3.3.3; 4.1.6.F; Appendix C, Section 3.0; and Appendix F due to withdrawal of construction permit. Corrected references in Sections 4.1.7.D; Appendix A; Appendix B, Reg Guide 1.88, WBN QA Records List. Updated Title in Appendix I.	6, 9, 13, 18, 19, 78, 96, 102, 108, 112
17	08/31/07	Incorporated Addendum No. 16-A1. Updated organization titles. Updated Appendix H organization charts. Deleted reference to Browns Ferry Unit 1 organization. Deleted Appendix I. Added exceptions to Appendix B, Regulatory Guide Conformance Status, NRC Regulatory Guides 1.33, 1.123 and 1.146 concerning Commercial-Grade Calibration Services. Revised some responsibilities based on re-organization.	6, 7, 9, 10-19, 21-24, 28, 29, 31, 35, 40, 43-46, 48, 51, 53-56, 60, 62, 64, 67, 68, 78, 79, 89, 93, 94, 96, 101-106, 109, 111, 112
18	11/30/07	Pointer to a new organization is introduced as a result of an internal re-organization. The Nuclear Generation Development and Construction organization lead by a senior vice president reports to the COO and is at the same management level as the CNO. The WBN 2 specific position of Project Nuclear Assurance Manager is introduced with responsibilities and education and experience requirements specified. This change is like the one done for the recently completed BFN 1 restart. Addressed ASME III reactivation. The ASME III QA manual will be modified to allow the limited scope activities associated with completing the paperwork for work did started but did not complete under our old N stamp. Bechtel will complete the ASME work under their N Stamp. Clarified Inspection Services Organization Manager to indicate they do not apply to WBN 2. The responsibilities for construction completion are contracted to the Engineering Procurement and Contractor (Bechtel).	6, 7, 9-13, 16-19, 23, 25-26, 36, 44, 46, 49, 52, 55, 57, 71, 77, 110-113, 115-117

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REVISION NUMBER	EFFECTIVE DATE	DESCRIPTION OF REVISION	PAGES AFFECTED
18 (Cont'd)		Throughout body of the NQA Plan reassigned responsibility for construction and unlicensed unit activities from the corporate VP Engineering to the VP WBN Unit 2 to be consistent with the internal organizational recognizing NGDC as the group completing construction. Deleted text in Appendix F for deferred equipment policy since it is no longer applicable. Our 120 day letter to the NRC indicated needed equipment will be completely refurbished and no credit is taken for preservation activities. The Appendix was renamed and text added to describe the construction completion organization for TVA and Bechtel. Appendix H organization charts were reworked to reflect the organization changes described in the text of the NQA Plan.	

NUCLEAR QUALITY ASSURANCE PROGRAM (NQAP) POLICY STATEMENT

It is the policy of the Tennessee Valley Authority (TVA) that activities which affect quality be accomplished in a planned and systematic manner to achieve compliance with preestablished quality objectives and acceptance criteria. Accordingly, TVA has established and will maintain a Nuclear Quality Assurance Program (NQAP). The NQAP includes the Nuclear Quality Assurance Plan and the approved documents which are used to implement the Plan. The quality assurance program and requirements for specific items and activities are applied commensurate with their importance to safe, reliable nuclear operations and independent spent fuel storage.

Management policies and requirements for the TVA NQAP are established by the Chief Nuclear Officer and Executive Vice President, Nuclear Power Group (NPG). These management policies and requirements provide the controls that must be applied to the activities performed by and for the agency to ensure implementation of TVA commitments.

Nuclear Assurance (NA) is responsible for maintaining the TVA Nuclear Quality Assurance Plan. NA is responsible for determining if the quality assurance program and quality requirements are being implemented by performing verification activities and informing management of quality problems.

The QA program is founded on the principle that the line organization has the primary responsibility for quality and safety. Self-assessment practices are used to ensure the desired levels of quality and safety are achieved and maintained.

Line management is responsible for establishing quality requirements in procedures and instructions and ensuring that the achievement of quality receives major emphasis in planning, implementing, verifying, and documenting work. Quality assurance objectives are not to be subordinated to achieving cost or schedule objectives. Line management will be held accountable for compliance with the quality assurance program and quality requirements.

Conflicts involving interpretation of quality assurance requirements of TVA's NQAP are resolved by the General Manager, NA, or (if necessary) the Chief Nuclear Officer and Executive Vice President, NPG. Where TVA has delegated responsibility for implementation of parts of the NQAP to contractors, TVA line management retains responsibility for adequacy of contractor implementation of quality requirements.

Activities may be performed by a contractor using their quality assurance program, provided that the contractor's quality assurance program is approved by TVA and appropriate interfaces are established.

Each employee is encouraged and expected to do the job right the first time and is responsible for complying with the requirements contained in the Nuclear Quality Assurance Plan and its implementing documents. Procedures and instructions must be followed or appropriately changed through a controlled change process before work proceeds.

William R. Campbell	John C. Fornicola
Chief Nuclear Officer and Executive Vice President, Nuclear Power Group	General Manager, Nuclear Assurance

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APPENDICES

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LIST OF ABBREVIATIONS

The following abbreviations are used in this Plan:

AISC	- American Institute of Steel Construction
ALARA	- As Low as Reasonably Achievable
ANS	- American Nuclear Society
ANSI	- American National Standards Institute
ASME	- American Society of Mechanical Engineers
ASME III QAM	- ASME Section III Quality Assurance Manual
ASNT	- American Society for Nondestructive Testing
ATWS	- Anticipated Transient Without Scram
AWS	- American Welding Society
BFN	- Browns Ferry Nuclear Plant
BLN	- Bellefonte Nuclear Plant
CFR	- Code of Federal Regulations
DOE	- Department of Energy
E&P	- Engineering and Projects
E&TS	- Engineering and Technical Services
EPRI	- Electric Power Research Institute
FSAR	- Final Safety Analysis Report
I&C	- Instrument and Control
IEEE	- Institute of Electrical and Electronics Engineers
ISFSI	- Independent Spent Fuel Storage Installation
ITS	- Important to Safety
M&TE	- Measuring and Test Equipment
NA	- Nuclear Assurance
NDE	- Nondestructive Examination
NFPA	- National Fire Protection Association
NGDC	- Nuclear Generation Development and Construction
NNS	- Non-nuclear Safety
NO	- Nuclear Operations
NPG	- Nuclear Power Group
NPS	- Nuclear Procedures System
NQAP	- Nuclear Quality Assurance Program
NRC	- Nuclear Regulatory Commission
NS	- Nuclear Support
NSRB	- Nuclear Safety Review Board
NSSS	- Nuclear Steam Supply System
PI	- Performance Improvement
PORC	- Plant Operations Review Committee
QA	- Quality Assurance
QC	- Quality Control
SNM	- Special Nuclear Material
SQN	- Sequoyah Nuclear Plant
TVA	- Tennessee Valley Authority
TVAN	- Tennessee Valley Authority Nuclear
WBN	- Watts Bar Nuclear Plant

1.0 PURPOSE

This document defines and describes the nuclear quality assurance (QA) requirements for Tennessee Valley Authority and establishes responsibilities for their implementation. The principal objective of the Nuclear Quality Assurance Program (NQAP) is to provide confidence that activities affecting quality during design, construction, operation, and maintenance are accomplished in a manner to achieve compliance with preestablished quality objectives and acceptance criteria.

2.0 APPLICABILITY

The NQAP applies to (1) Tennessee Valley Authority Nuclear Power Group (NPG) and Nuclear Generation Development and Construction (NGDC) personnel and organizations performing activities that could affect quality-related structures, systems, and components at TVA's nuclear plants and ISFSI; (2) TVA non-nuclear organizations working either directly under the TVA NQAP or under their program as required by Intergroup Agreement; and (3) contractor activities that could affect quality-related structures, systems, and components, unless NPG has approved alternate administrative controls for those activities.

3.0 GENERAL

This Nuclear Quality Assurance Plan is formatted in such a manner as to provide users with a functionally usable document from which NPS documents are developed to implement the requirements stated herein.

The source requirement documents for QA activities are listed in Appendix B. Not only are the source requirement documents listed (e.g., ANSI Standards and Regulatory Guides) but they also specify the particular sections of these source documents that must be addressed (e.g., ANSI N18.7, Section 5.2.12). Providing specific sections of the source requirement documents facilitates use by individuals responsible for the development of applicable procedures and instructions.

However, it must be stressed that the entire set of source requirement documents referenced in each section must be reviewed and understood to capture the program requirements of each source requirement document in NQAP procedures and instructions.

The following subsections identify the management and regulatory requirements applicable to the NQAP. An overview of the program and a description of the functions of the various organizations performing activities within the scope of the program are provided.

3.1 General Management Requirements

The management policies and requirements for the NQAP are established by the Chief Nuclear Officer and Executive Vice President, TVA NPG. These management policies and requirements provide the administrative controls that shall be applied to activities performed by and for TVA to ensure activities are performed in a manner consistent with QA objectives and to provide adequate record of accomplishment of commitments.

3.2 General Regulatory Requirements

The NQAP shall address the conditions of licenses and permits and encompass the applicable regulatory requirements contained in Appendix B of this Plan.

3.3 NQAP Overview

The NQAP includes the NQAP Policy, this Nuclear Quality Assurance Plan, the ASME Section III Quality Assurance Manual (ASME III QAM), and other quality-related NPS documents. The NQAP provides direction and implements requirements derived from regulatory requirements, national codes and standards, and other TVA commitments. General regulatory guidance and national standards that TVA is obligated to implement in the NQAP are listed in Appendix B, "Regulatory Guide Conformance Status."

3.3.1 Implementation

The requirements established by this Plan and the ASME III QAM are implemented by NPG and NGDC documents sponsored by various organizations. To ensure the NQAP is fully integrated and implemented, procedures and instructions address additional implementing level details contained in requirement documents on which the NQAP is based.

The terms "procedure" and/or "instruction," when used within this Plan, also includes written standards and documents of a similar nature.

3.3.2 Authority and Organizational Freedom of Those Performing QA Verification

Personnel with responsibility for performing QA verification functions shall have sufficient authority and organizational freedom to:

A. Identify quality problems.

B. Initiate, recommend, and provide corrective actions through a comprehensive corrective action program.

C. Verify the implementation of corrective actions.

D. Initiate stop work, if required, to restrict further processing, delivery, or installation of a nonconforming item or unsatisfactory condition until completion of corrective action or satisfactory dispositioning.

The individuals and organizations responsible for performing QA verifications and assessments of the NQAP shall be formally designated and sufficiently independent from considerations of cost or scheduling to ensure objectivity in performing assessments. They shall be afforded direct access to appropriate management levels.

QA verification of conformance to established quality assurance program requirements is accomplished by those who have neither the direct responsibility nor the authority for performing the quality-related work activities being verified.

3.3.3 Assessment of Effectiveness

The General Manager, NA, shall assess the overall effectiveness of the NQAP for Corporate and nuclear plant sites (BFN, SQN, and WBN). Results shall be reported to the Chief Nuclear Officer and Executive Vice President, NPG, and affected vice presidents. These assessments include NPG and non-NPG organizations and contractors. NA verifies the effectiveness of NSSS suppliers through audits and annual review of their performance.

The General Manager, NA, shall arrange for a biennial assessment of NPG Corporate and site NA organizations' performance by an organization external to the NA organization.

3.3.4 Achievement of Quality in Performance

Management personnel shall ensure, through organizational structure, self-evaluation, and assigned functional responsibilities, that the attainment of program objectives is accomplished by those who have been assigned the work. Achievement of quality in the performance of quality-related activities is the responsibility of each individual involved in TVA's nuclear power program.

3.3.5 Interpretation of Quality Assurance Program Requirements

The General Manager, NA, shall provide interpretation of Nuclear Quality Assurance Plan requirements. Differences involving interpretation or implementation of the Nuclear Quality Assurance Plan shall be immediately identified and reported to NA for resolution. If satisfactory resolution is not readily attainable, then the difference shall be escalated to the Chief Nuclear Officer and Executive Vice President, NPG.

4.0 ORGANIZATION

The organizational structure, functional responsibilities, levels of authority, and lines of internal and external communication for the management, direction, and execution of the NQAP shall be clearly established for all organizational levels. This Nuclear Quality Assurance Plan describes the general organizational structure and primary responsibilities of NPG organizations and responsibilities of non-NPG organizations involved in the NQAP. The NPG Human Resources organization shall prepare organization charts that show overall NPG organizational structure.

The overall organizational structure is shown in Appendix H. The NA organization is responsible for establishing upper-tier QA Program requirements and implementation of Quality Assurance functions at Corporate and nuclear plant sites. The size of the NA organization, including the size of respective Site NA staffs, is determined by assessing the resources required to adequately perform functions and workloads assigned to each NA organizational unit.

Each plant's Final Safety Analysis Report (FSAR) references the NPG Organization Description (TVA-NPOD89) or provides a description of other key organizational positions, including the Chief Nuclear Officer and Executive Vice President, NPG's, organization and plant operating staffs, responsible for administering and implementing the NQAP.

4.1 Functions of Organizations

TVA management, while carrying out their functions, are required to fully comply with all aspects of the NQAP applicable to their organization and ensure proper implementation. This subsection identifies (1) functional responsibilities that are generally implemented through procedures and instructions by all TVA organizations involved in the program, and (2) specific NQAP responsibilities for sponsors of upper-tier Corporate program documents.

4.1.1 The Chief Nuclear Officer and Executive Vice President, NPG, has the overall responsibility for the establishment, implementation, and administration of TVA's NQAP and the evaluation of its effectiveness. This responsibility is administered through his management staff as shown in Appendix H.

4.1.2 TVA Organizations

All TVA organizations that work directly under the TVA NQAP have the following general functions:

A. Invoke appropriate NQAP requirements on other organizations that provide services for quality-related programs and features.

B. Regularly review the status and adequacy of those parts of the NQAP which they are executing.

C. Develop, control, and maintain procedures and instructions as appropriate to implement quality-related activities and processes.

D. Ensure appropriate controls for documents and records generated within the organization or received from external sources.

E. Ensure appropriate controls are developed and implemented to maintain housekeeping and cleanness requirements of facilities, systems, and components during the performance of work activities.

F. Identify and resolve adverse conditions and perform related corrective action activities including assessing trends for internally and externally identified problems.

G. Make personnel and resources available during audit performance and ensure that audit responses and corrective actions are completed within established timeframes.

H. Develop certification programs as appropriate and ensure that trained, qualified, and, where required, certified employees are used in the performance of quality-related activities.

I. Initiate stop work within their area of responsibilities when warranted.

J. Ensure personnel performing quality-related activities receive indoctrination and training as necessary to ensure that adequate proficiency is achieved and maintained.

K. Ensure procedures adequately address interfaces of affected organizations.

L. Ensure during preparation and review of procedures and procurement documents that appropriate technical and QA requirements are included.

4.1.3 Nuclear Support (NS)

A. In addition to the responsibilities described in subsection 4.1.2, the Vice President, NS, is responsible for ensuring that the QA requirements established by this Plan are either included or referenced (as appropriate) in related NS-sponsored program areas identified in the body of this Plan.

B. Maintaining a position qualification documentation and validation program through Nuclear Human Resources. The Vice President, Nuclear Support is also responsible for Nuclear Security which includes protection of safeguard information, reporting of safeguard events, and development and maintenance of the Site Physical Security/Contingency Plans.

4.1.4 Site Vice Presidents

A. Implementing programs at licensed units, ensuring that the QA requirements of this Plan are appropriately established in licensed units site procedures.

B. The plant technical review process and PORC.

C. Fire Protection

4.1.5 Engineering and Projects (E&P)

A. In addition to the responsibilities described in subsection 4.1.2, the Vice President, E&P, is responsible for ensuring that the QA requirements established by this Plan are either included or referenced (as appropriate) in related E&P-sponsored program areas identified in the body of this Plan. Developing and maintaining the ASME III QAM are the responsibilities of the Vice President, WBN Unit 2.

B. The Engineering organizations are responsible for independent technical reviews. These reviews primarily include:

1. System performance monitoring as required by the Maintenance Rule, 10 CFR 50.65.

2. Technical operability evaluations.

3. Review of technical specification changes that affect the design basis.

4. Review of Final Safety Analysis Report changes that affect the design basis.

5. Self assessments to ensure maintenance of design basis and adequacy of technical programs.

4.1.6 Nuclear Assurance (NA)

A. The General Manager, NA, reports to the Chief Nuclear Officer and Executive Vice President, NPG.

The quality organization has direct access to appropriate levels of management and sufficient independence and organizational freedom to be able to effectively assure conformance to quality assurance program requirements.

The General Manager, NA, administers quality assurance responsibilities through the Corporate Nuclear Assurance Manager, the WBN 2 Project Nuclear Assurance Manager and Site Nuclear Assurance Managers.

The General Manager, NA, is required to have a bachelor's degree in an engineering or related science, or equivalent related experience. The General Manager, NA, shall have at least 10 years experience in a senior managerial capacity with five years' experience in nuclear quality assurance related activities.

B. The Corporate Nuclear Assurance Manager reports directly to the General Manager, NA, and manages the development and maintenance of NPG quality assurance programs to ensure compliance with regulations, commitments, and policies, including those Nuclear Assurance programs that govern activities performed by Site Nuclear Assurance organization personnel.

The Corporate Nuclear Assurance Manager manages TVA's review and qualification of suppliers to ensure final acceptance of all "safety-related material" for all nuclear plants to comply with applicable specifications and requirements. The Corporate Nuclear Assurance Manager manages the training programs for NA personnel, and manages the quality audit and vendor audit programs.

C. The Site Nuclear Assurance Managers report directly to the General Manager, NA, and are responsible for the performance of the quality control and quality assurance functions at the site. The Site Nuclear Assurance Managers provide oversight of day-to-day plant activities important to safety (i.e., the QA organization routinely attends and participates in daily plant work schedule and status meetings to assure they are kept abreast of day-to-day work assignments throughout the plant and that there is adequate QA coverage).

The Site Nuclear Assurance Managers are required to have a bachelor's degree in an engineering or scientific discipline, or equivalent related experience. They shall have at least nine years experience in plant

design, construction, power plant operation or maintenance, including five years experience in QA-related activities.

D The Evaluation and Analysis Group reports directly to the Corporate Nuclear Assurance Manager, and provides senior assessment leadership and technical expertise to the quality assessment programs. This group manages the assessment programs associated with assessing operations, engineering/technical support, modifications, maintenance, security, chemistry, emergency preparedness, and radiological control programs. In addition, this group manages assessment programs affiliated with assurance that TVA and contractor activities meet or exceed industry and regulatory standards.

E. The WBN Unit 2 Project Nuclear Assurance Manager reports directly to the General Manager, NA and is responsible for directing and managing oversight of quality verification, quality assurance audit and surveillance, and supplier quality activities executed by the WBN 2 construction completion contractor.

The WBN Unit 2 Project Nuclear Assurance Manager is required to have a bachelor's degree in an engineering or scientific discipline, or equivalent related experience. He / she shall have at least nine years experience in plant design, construction, power plant operation or maintenance including five years experience in QA related activities.

F. Nuclear Assurance is responsible for:

1. Developing and administering the Nuclear Quality Assurance Plan and the NA organization procedures required to ensure that TVA activities provide the required degree of safety and reliability.

2. Providing oversight of TVA activities by auditing, inspecting, assessing and observing the conduct of activities at Corporate and nuclear plant sites to ensure that they provide the required high degree of safety and reliability and are carried out consistent with applicable laws, regulations, regulatory commitments, licenses, and other requirements. The depth and scope of oversight is dependent on the item's or subject's importance to safety and performance history.

3. (Responsibility moved to Section 4.1.7.B).

4. Stopping work or further processing, delivery, or installation or taking other comparable actions when warranted to control and/or prevent the use of nonconforming materials or continuance of activities adverse to quality at Corporate and nuclear plant sites.

5. Establishing upper-tier QA requirements for QA training and for evaluating the implementation and effectiveness of that training.

6. Developing and implementing the vendor audit and services QA program which includes auditing, source inspection, and surveillance of supplier activities. Developing and maintaining the Acceptable Suppliers List (ASL) of approved vendors.

7. Conducting overview of procured engineering services (offsite) including the review of procurement documents for QA requirements utilizing graded approach criteria, in-depth technical and/or performance based auditing, performing preaward surveys, and reviewing contractor QA programs.

8. Planning, conducting, and reporting the results of Corporate and site audits and following-up identified adverse conditions to ensure appropriate corrective action has been taken.

9. Reviewing and/or auditing QA programs of TVA non-nuclear organizations which support nuclear quality-related activities.

10. Developing, reviewing, and maintaining the Nuclear Quality Assurance Plan.

11. Verifying through assessing or other means that QA requirements are contained in applicable Site QA program procedures, and quality-related activities comply with QA program requirements.

12. Developing (See 9.1.3.A) and implementing (See 9.1.2.C) the Site quality control inspection program.

13. Assisting the responsible organization at the sites in the performance of ASME Section XI NDE.

14. Reviewing the ASME III QAM (WBN 2).

15. Managing development, maintenance, and improvements of site/corporate quality methodologies to evaluate quality programs and technical programs based on observations and trending.

16. Analyzing technical and quality programs from many sources to develop recommendations for senior management action. This includes oversight and independent analysis of trending results. Results are provided to senior management. Advising senior management relative to alternative solutions to technical and quality problems to improve the effectiveness and efficiency of implementation techniques.

17. Advising and interfacing with senior site and corporate management on matters pertaining to the assessment program to aid in the identification and resolution of items that could result in enforcement actions, reduction in power generation, or endangering the health and safety of the general public.

The NA organization reporting relationship is shown in Appendix H.

4.1.7 Licensing

The Licensing General Manager is responsible to:

A. Maintain an interface between TVA and NRC for licensing activities.

B. Direct and manage NSRB support activities.

C. Nuclear Safety Review Board

1. The Nuclear Safety Review Board (NSRB) is an offsite committee which provides senior level oversight of TVA's nuclear program with respect to nuclear safety. The NSRB reviews include the activities of the line organizations, as well as other review, audit, and verification organizations. The NSRB also provides senior level management with an assessment of facility operations and recommendations to improve nuclear safety and plant reliability.

2. The Chairman, NSRB, has an independent reporting relationship to the Chief Nuclear Officer and Executive Vice President, TVA Nuclear, and other NPG management on nuclear safety matters. The Chairman, NSRB, is responsible for advising the Chief Nuclear Officer and Executive Vice President, TVA Nuclear, on the adequacy and implementation of TVA's nuclear safety policies and programs and for evaluating these policies and programs for compliance with regulatory requirements governing nuclear safety.

3. The chairman, NSRB, is responsible for complying with the requirements of ANSI N18.7-1976/ANS 3.2. The Chairman, NSRB, is also responsible for ensuring that the QA requirements established by this Plan related to NSRB functions are either included or referenced (as appropriate) in related procedures or instructions.

4. The NSRB shall function to provide for independent review as specified in Section 4.1.7.C.5.b and oversight of the audits and technical reviews as specified in Sections 12.2.E and 4.1.5.B.

5. The Chairman, members, and alternate members of the NSRB shall be appointed in writing by the chief Nuclear Officer and Executive Vice President, NPG, and shall have an academic degree in engineering or a physical science field, or the equivalent; and in addition, shall have a minimum of five years technical experience in one or more of the areas specified in ANSI N18.7-1976/ANS 3.2. The NSRB shall be composed of at least five members, including the Chairman. Members of the NSRB may be from NPG, or other TVA organizations or external to TVA. No more than two alternates shall participate as voting members in NSRB activities at any one-time.

a. Functions

The NSRB shall, as a minimum, incorporate the following functions:

1. Advise the Chief Nuclear Officer and Executive Vice President, TVA Nuclear, on all matters related to nuclear safety;

2. Recommend to the Chief Nuclear Officer and Executive Vice President, TVA Nuclear, any corrective action to improve nuclear safety and plant operations; and

3. Notify the Chief Nuclear Officer and Executive Vice President, TVA Nuclear, of any safety significant disagreement between the NSRB and the organization or function being reviewed.

b. NSRB Review Responsibilities

The NSRB shall be responsible for the review of:

1. The 10 CFR 50.59 Program. 10 CFR 50.59 evaluations will be screened. Review of representative 10 CFR 50.59 evaluations will be performed, selected based on safety significance, for 1) changes to procedures, equipment or systems and 2) tests or experiments completed under the provision of 10 CFR 50.59, to verify that such actions did not require a license amendment;

2. Proposed changes to procedures, equipment, or systems that require a license amendment as defined in 10 CFR 50.59;

3. Proposed tests or experiments that require a license amendment as defined in 10 CFR 50.59;

4. Proposed changes to Technical Specifications or the Operating License relating to nuclear safety prior to implementation, except in those cases where the change is identical to a previously reviewed proposed change;

5. Violations of codes, regulations, orders, license requirements, and internal procedures or instructions having nuclear safety significance;

6. Reportable events (10 CFR 50.73);

7. Plant staff performance;

8. Recognized indications of unanticipated deficiencies in any aspect of design or operation of structures, system, or components that could affect nuclear safety;

9. Significant accidental, unplanned, or uncontrolled radioactive releases, including corrective action to prevent recurrence;

10. Significant operating abnormalities or deviations from normal and expected performance of equipment that affect nuclear safety; and

11. Implementation of the corrective action program.

12. The 10 CFR 72.48 Program. 10 CFR 72.48 evaluations will be screened. Review of representative 10 CFR 72.48 evaluations will be performed, selected based on safety significance, for 1) changes to procedures, facility, or spent fuel storage cask design, and 2) tests or experiments completed under the provision of 10 CFR 72.48, to verify that such actions did not require a license amendment;

13. Proposed changes to procedures, facility, or spent fuel storage cask design that require a license amendment as defined in 10 CFR 72.48.

c. Minutes of each NSRB meeting and reports of other reviews shall be forwarded to the Chief Nuclear Officer and Executive Vice President, TVA Nuclear, within 30 days following completion of the meeting or review.

4.1.8 Nuclear Business Services

The Manager, NPG Site/Field Business Services and Manager, NPG Business Monitoring & Analysis are responsible for developing, coordinating, and overseeing a strong business and fiscal management program throughout NPG including business planning and budgeting. The Manager, NPG Business Monitoring & Analysis also provides for the monitoring and reporting of NPG goals and objectives and submits a performance report at least quarterly to the Chief Nuclear Officer and Executive Vice President, NPG that provides system performance and status.

4.1.9 Procurement

In addition to the responsibilities described in subsection 4.1.2, the Senior Vice President, Procurement is responsible for ensuring that the QA requirements established by this Plan are either included or referenced (as appropriate) in related Procurement-sponsored program areas identified in the body of this Plan.

4.1.10 Performance Improvement

The General Manager, Performance Improvement is responsible to manage the Nuclear Experience Review Program.

4.1.11 WBN 2 Construction Completion Project (See Appendix F)

5.0 NUCLEAR QA PROGRAM

The General Manager, NA, develops this Plan to establish the requirements of the NQAP that encompass the General Management and General Regulatory Requirements in Sections 3.1 and 3.2 of this Plan. The program requirements apply to design, construction, testing, operation, maintenance, repair, replacement, and modification of TVA nuclear facilities.

NPG and TVA non-nuclear organizations performing activities within the scope of the NQAP shall implement the program through written procedures and instructions.

TVA non-nuclear organizations providing services within the scope of the NQAP through an Intergroup Agreement shall develop QA programs that comply with nuclear requirements. These QA programs shall be assessed and/or audited by NA.

5.1 Program Scope

A. The requirements of the NQAP shall apply to activities associated with structures, systems, and components which are safety-related or controlled by 10 CFR 72, and shall take into account special equipment, environmental conditions, skills, or processes.

B. The requirements shall also apply to TVA identified quality-related programs and features which are important to the continued reliable operation of TVA's nuclear facilities. Organizations responsible for these programs and features shall determine the extent to which these requirements apply and develop and document applicable NQAP elements and the levels of verification required.

Technical requirements related to engineering design are specified by the Vice President, E&P. NA shall review or assess these programs and features. The program procedures shall be included in NPS documents.

Programs and features for which the NQAP applies are listed below. Appendix C, "Guidelines for Determination of TVA-Identified Quality-Related Classifications," was used to develop the list.

1. Radiological Control.

2. Emergency Preparedness.

3. Nuclear Plant Security.

4. Radioactive Material Shipment.

5. Special Nuclear Material Management.

6. Fire Protection.

7. Radwaste Management Systems, Structures, and Components.

8. Seismic Category I (L) Items.

9. Non safety-related Anticipated Transient Without Scram (ATWS) Equipment.

10. Chemistry.

11. Safety Parameter Display System

12. 10 CFR 72 - NUREG/CR - 6407 Important To Safety Category C Components

When using services outside NPG, responsible organizations for the above programs and features shall specify the extent of applicable QA requirements.

C. To facilitate proper application and implementation of the NQAP, the Site Vice President (delegated to the Manager, Site Engineering) shall develop a Q-List for each nuclear unit. The Q-List shall document and classify structures, systems, and components consistent with their importance to safety.

5.2 Graded Approach

The NQAP shall provide for the graded application and verification of QA requirements to quality-related items and activities.

A. The following criteria are to be considered when applying NQAP requirements:

1. The impact on safety of an item malfunction or failure.

2. The specification, design, fabrication complexity, or uniqueness of the item, and the environment under which the item must function.

3. The need for special controls and assessments of equipment, processes, and operational activities.

4. The degree to which functional compliance can be demonstrated by an inspection or test.

5. The quality history of the item or activity and its degree of standardization.

6. The intended life span during which the item must perform a quality-related function.

7. Requirements of applicable codes and standards.

B. The following factors are to be considered in the degree of QA verification required to ensure implementation of NQAP requirements:

1. New activities not previously performed or implemented.

2. Trend or previous histories of quality problems.

3. Activities critical to safety or having the most potential to impact safety.

4. Revisions of the procedures which have recently been implemented.

5. Activities that have not been assessed in the recent past or are performed infrequently.

6. Activities that are performed by new personnel, contractors, or technicians.

7. The requirements of applicable codes and standards that are mandated for the item or activity.

5.3 Program Elements

This section identifies or references the NQAP elements delineated through the ASME III QAM for WBN 2 construction completion and implemented through NPG procedures and instructions. The documents identified in Appendix B contain QA requirements applicable to the NQAP elements. The NQAP shall encompass the following elements:

A. Establishment and use of a comprehensive list of safety-related structures, systems, and components for each TVA nuclear plant unit and ISFSI identifying the critical plant features that will receive the highest level of QA program application.

B. Use of a graded approach in the application and verification of NQAP requirements. Quality-related items and activities shall be subjected to a level of QA controls and verification commensurate with their importance to nuclear safety.

C. Assignment of responsibilities to appropriate organizations and positions for implementation of the NQAP.

D. Preparation of NPS documents which provide specific guidance in planning, performing, assessing, and controlling activities affecting quality to ensure that quality-related activities are performed in accordance with applicable national codes and standards, regulatory requirements, licensing commitments, and management requirements.

E. Verification of the adequacy of quality-related structures, systems, and components by appropriate inspections, tests, and assessments; and of quality-

affecting activities by periodic reviews, audits, and assessments to ensure the adequacy and effectiveness of the NQAP and its implementation.

F. Provisions for adequate indoctrination and training of personnel, and qualification or certification when required, prior to their performing activities which affect quality.

G. Provisions for special controls, processes, test equipment, tools, and skills necessary to attain the required quality.

H. Measures to control cleanness of facilities, material, and equipment; fire prevention; plant access; and equipment protection. Controls shall be applied to the extent necessary to ensure that only proper materials, equipment, processes, and procedures are utilized, and that the quality of items is not degraded through improper practices and techniques.

I. Prompt identification, documentation, evaluation, and correction of adverse conditions.

J. Generation and retention of adequate records to demonstrate compliance with NQAP requirements, applicable national codes and standards, and regulatory requirements.

5.4 Program Documents

The NQAP shall be documented by written procedures and instructions. The NQAP documents, required by this Plan and the ASME III QAM are contained in the NPS. Requirements for preparation, review, concurrence, and approval of NQAP documents are contained in NPS documents.

A. ASME III QAM For WBN 2 Construction Completion

Associated with this Plan is the ASME III QAM. The ASME III QAM is a self-contained manual that prescribes specific QA requirements for the control of items and activities subject to the ASME Code Section III, Division 1. The ASME III QAM satisfies the ASME Section III Code requirement to fully describe both the quality assurance program and the specific responsibilities applied to TVA's activities as an "N" certificate holder. The ASME III QAM is filed with the Authorized Inspection Agency in accordance with the requirements of ASME Code, Section III. Changes to the ASME III QAM shall be coordinated with the Authorized Inspection Agency for review and acceptance prior to implementation.

B. Nuclear Quality Assurance Plan

This Nuclear Quality Assurance Plan contains regulatory and management QA requirements and responsibilities that other NPS documents must address. This Plan and implementing documents meet the requirements of 10 CFR 50, Appendix A; 10 CFR 50, Appendix B; 10 CFR 72, Subpart G; and applicable ASME Section XI requirements for a nuclear QA program. To ensure the nuclear program is fully integrated, additional implementing level details contained in requirements documents shall be included in procedures and instructions sponsored by implementing organizations.

C. Implementing Procedures

The Nuclear Quality Assurance Plan establishes the quality assurance program requirements. The Nuclear Quality Assurance Plan places responsibilities on identified sponsors to develop specific elements of the quality assurance programs addressing specific requirements of source requirement documents. Sponsors of NPS documents are required to identify the document as "quality related" if it contains quality assurance program requirements. Corporate NPS documents identified as quality related receive review and concurrence by NA personnel or others knowledgeable of QA requirements.

5.5 Program Changes

Changes to the Nuclear Quality Assurance Plan shall be submitted to the NRC in compliance with 10 CFR 50.54 and 10 CFR 50.55.

6.0 CONTROL OF DOCUMENTS AND RECORDS

6.1 Procedures and Instructions

6.1.1 General

The QA program requires that quality-related activities shall be prescribed by documented procedures and instructions appropriate to the circumstances. Activities shall be accomplished in accordance with these procedures and instructions.

The requirements of this section are applicable to the preparation, review, and approval of procedures and instructions (for example, this plan, NPS documents, ASME III QAM, etc.). Requirements for the preparation, review, and approval of drawings are in Section 7.0 of this Plan. Requirements for plant reviews are in Section 9.9 of this Plan.

6.1.2 Program Elements

A. Content

Procedures and instructions shall:

1. Describe quality-related activities in adequate detail for the intended user, and include quantitative or qualitative acceptance

criteria sufficient for determining that the activities have been satisfactorily accomplished.

2. Describe significant interfaces between personnel and organizations that affect, or are affected by, quality-related activities.

3. Include or reference appropriate technical, QA, regulatory, and licensing requirements, including those in design output documents.

B. Review

Procedures and instructions shall:

1. Receive a documented review for adequacy by a qualified reviewer other than the preparer.

2. Receive the review and concurrence of affected organizations outside the issuing organization prior to approval, unless concurrence has been established in a higher-level document.

3. Receive a review to ensure proper incorporation of QA requirements. These reviews are by NA personnel or others knowledgeable of QA requirements.

C. Approval

Procedures and instructions shall be approved for release by the sponsoring organization prior to use.

D. Procedural Control

Procedures shall be issued for the identification and control of quality-related procedures, instructions, and their changes. The organizations responsible for preparing, reviewing, approving, and issuing procedures, instructions, and changes shall be specified.

E. Review of Operational Phase Procedures

Operational phase Site procedures and instructions shall be reviewed to ensure that specific known changes in source documents or changes identified through usage are included as necessary and in a timely manner. The following mechanisms ensure that appropriate procedure reviews are conducted:

1. Plant modification program

2. Resolution of issues identified by NA, NRC, Licensing, and corrective action program

3. Technical specification and FSAR update reviews (including the contractor's dry cask storage system Certificate of Compliance licensing basis documents).

4. Source document program and process for administering Site procedures

5. Testing program

F. Change Control

1. Changes to procedures and instructions shall be reviewed and approved prior to their implementation by the same organizations that performed the original review and approval, or by another organization assigned by appropriate management or designated in a controlling procedure or instruction.

2. Changes shall be reviewed by organizations having access to pertinent background information upon which to base their approval and having adequate understanding of the requirements and intent of the original document.

3. Minor changes, such as inconsequential editorial corrections that do not affect the outcome, results, functions, processes, responsibilities, and requirements of the performance of procedures or instructions, do not require the same review as the original, but shall be reviewed and approved as defined in controlling documents.

6.1.3 Responsibilities

A. The Vice President, NS, is responsible for the development of programs to control procedures and instructions. The program elements in Section 6.1.2 and the related source requirements contained within the documents listed in Section 6.1.4 shall be addressed.

B. The General Manager, NA, shall:

1. Perform reviews or assessments of NPS documents that implement the NQAP and,

2. Verify through assessing or other means that reviews are conducted by personnel knowledgeable in QA requirements.

C. TVA organizations that work directly under the TVA NQAP are responsible for:

1. Implementing the requirements of the QA program through written procedures and instructions.

2. Ensuring reviews of NPS documents that implement the NQAP are conducted by personnel knowledgeable of QA requirements.

6.1.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs for procedures and instructions.

6.2 Document Control

6.2.1 General

The QA program requires that for activities affecting quality, measures shall be established to ensure that documents prescribing the activity, including changes, are approved for release by authorized personnel, reviewed for adequacy, and made available to personnel performing the prescribed activity prior to commencing work.

The requirements of this section are applicable to the distribution and control of documents after they have been approved for use.

6.2.2 Program Elements

A. Identification and Distribution

1. The types of documents to be controlled shall be identified. Appendix G lists types of controlled documents and manuals.

2. Master document indexes shall be established and maintained for identifying all controlled documents and their revision status.

3. The distribution of documents shall be controlled and maintained to assist in preventing the use of obsolete or superseded documents.

B. Controlled Use

1. Quality related activities shall be performed in accordance with approved and controlled instructions, procedures, and drawings.

2. Organizations shall ensure through procedures or instructions that those participating in an activity are made aware of and use proper and current documents.

C. Control of Equipment Technical Information

Administrative controls shall provide for control and distribution of equipment technical information (ETI) supplied to TVA.

6.2.3 Responsibilities

The Vice President, NS, is responsible for the development of programs to control documents. The program elements in Section 6.2.2 of this section and the related source requirements contained within the documents listed in Section 6.2.4 shall be addressed.

6.2.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of documents.

6.3 QA Records

6.3.1 General

The QA program established for the generation, collection, storage, maintenance, and retrieval of QA records requires that records be correctly identified, reviewed, stamped or otherwise authenticated, retained, and retrievable without undue delay.

6.3.2 Program Elements

A. Sufficient records and documentation shall be prepared and maintained to provide evidence of the quality of items or activities affecting quality. QA records shall be legible, complete, and identifiable to the item involved.

B. Design specifications, procurement documents, procedures, and instructions shall specify the QA records to be generated, supplied, and maintained by or for TVA. Retention times shall be designated. Indexes shall be established to designate those types of QA records to be maintained.

C. Measures shall be established to maintain control of in-process QA documents prior to their completion.

D. Requirements and responsibilities shall be established consistent with applicable codes, standards, and procurement documents for record transmittal, receipt, retention, updating and supplementing of information, and maintenance of the records subsequent to the completion of work and record retrieval.

E. Permanent and temporary QA record storage facilities shall be established to store QA records to prevent infestation, deterioration, or destruction.

F. Measures shall be taken to preclude the entry of unauthorized personnel into QA record storage areas to ensure the integrity of the stored QA records.

G. Records shall be maintained in a manner that will allow access by the Authorized Inspection Agency representative.

6.3.3 Responsibilities

The Vice President, NS, is responsible for the development of a QA records program. The program elements in Section 6.3.2 and the related source requirements contained within the documents listed in Section 6.3.4 shall be addressed.

6.3.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of records.

7.0 DESIGN CONTROL

7.1 General

The QA program requires that measures shall be established and documented to ensure that applicable specified design requirements, such as design bases, regulatory requirements, and codes and standards, are correctly translated into specifications, drawings, procedures, or instructions.

7.2 Program Elements

7.2.1 Basic

A. Specific items, services, and activities subject to design control shall be identified (e.g., reactor physics analysis, stress and thermal analyses, computer code development and use, computer software, compatibility of materials, drawings, specifications, engineering procedures, and instructions).

B. Design activities shall be documented in sufficient detail to permit verifications and audits.

C. Measures shall be established and implemented to ensure that design output documents appropriately identify engineering requirements that apply to plant activities, and to ensure that plant personnel are made aware of engineering requirements that could affect the performance and scope of their responsibilities before those engineering requirements are implemented.

D. Measures shall be established and implemented to provide test requirements in design output documents for the following tests as appropriate:

1. Design qualification.

2. Product acceptance (proof).

3. Preoperational.

4. Construction.

5. Start-up.

6. Surveillance.

7. Functional.

8. Postmaintenance.

9. Postmodification.

E. Measures shall be established and implemented to provide documented input to other organizations which may request input for their special tests.

F. Acceptance criteria shall be defined for verifications, inspections, and tests in appropriate design output documents.

G. Design output documents shall be utilized, as appropriate, for procurement activities.

H. The Q-List identified in Section 5.1.C of this Plan shall be developed using appropriate regulations, regulatory guides, and national codes and standards (such as 10 CFR 50, Appendix R; Regulatory Guides 1.26 and 1.29; and ASME Boiler and Pressure Vessel Code).

I. Measures shall be established to ensure the environmental qualification (EQ) of safety-related electrical and mechanical equipment is included, as appropriate, within the design basis.

J. Errors and deficiencies in approved design documents, including design methods (such as described in calculations) that could affect quality-related activities are documented and corrected. (Reference Section 10.0 of this Plan)

7.2.2 Design Inputs

A. Design assumptions, design inputs, and deviations from approved design inputs shall be identified, reviewed, approved, and documented prior to declaring the structure, system, or component affected by the design operable.

B. Design inputs shall be correctly translated into design outputs.

C. Provisions shall be made to relate the final design to the source of design input.

7.2.3 Design Analysis

A. The performance of design analysis shall be planned and controlled.

B. The suitability of application of materials, parts, equipment, and processes essential to the function of a structure, system, or component shall be reviewed to ensure that functional requirements are met.

7.2.4 Interface Control

Internal and external design responsibilities and interface controls shall be established and defined to facilitate the preparation, review, approval, release, distribution, and revision of documents involving design interfaces. This process ensures that quality-related structures, systems, and components are compatible geometrically, functionally, and with plant processes and environments.

7.2.5 Design Output

A. Engineering requirements on plant activities (e.g., operation, maintenance, installation, modification, surveillance) shall be identified in design output documents.

B. Measures shall be established and documented to control the preparation, review, approval, issuance, and revision of design output documents. These measures shall include criteria and responsibilities to ensure that adequate technical and quality requirements are incorporated prior to issuance.

C. Drawings and specifications shall include, as appropriate, quantitative and qualitative acceptance criteria. These acceptance criteria shall be sufficient for determining that quality-related activities have been satisfactorily accomplished.

D. Drawings and specifications shall receive documented reviews and approvals (and concurrences as required) by responsible organizations prior to use.

E. After approval, drawings shall be controlled in accordance with the requirements of Sections 6.2 and 6.3 of this Plan.

F. Revisions shall be reviewed and approved by the same organizations that performed the original review unless another appropriate organization that has access to pertinent background information is designated in the appropriate NPS document or procurement documents.

7.2.6 Design Verification

A. The translation of design inputs into design documents shall be verified and the verification documented.

B. Criteria for determining design verification methods shall be established, identified, implemented, and procedurally controlled. The responsibilities of the verifier, the areas and features to be verified, and documentation requirements shall be included.

C. Design verification shall be performed by individuals or groups other than those who performed the original design.

D. For nuclear units under a construction permit, design verification shall be complete prior to initial fuel loading.

E. For operating nuclear units, design verification shall be complete prior to reliance upon the component, system, or structure to perform its function. Design outputs which are released prior to verification being completed shall be identified and tracked to ensure the component, system, or structure is not relied upon to perform its function until the verification is complete.

F. When a verification test is used to verify the adequacy of a specific design feature in lieu of other verifying processes, the test shall include suitable qualification testing of a prototype unit under conditions that simulate, to the extent practical, the most adverse design condition. The prototype, component, and feature tests are performed as early as possible and prior to plant installation of the equipment or at least prior to the point where installation of the item would be relied upon to perform its function. In those cases where the most adverse design conditions can not be achieved in tests, suitable analysis shall be performed to extrapolate test results to design conditions.

7.2.7 Design Changes

A. Design changes, including field changes and modifications, shall be identified. They are subject to design control measures commensurate with or better than those applied to the original design.

B. Design changes shall be reviewed and approved by the organization responsible for the original design unless another appropriate organization that has access to pertinent background information is designated in the appropriate NPS document or procurement documents.

C. Design changes that affect the supply of a quality-related item or service controlled by procurement documents shall not be returned to operation until: (1) the change is reflected in the appropriate change document such as a contract or purchase order change notice, (2) the change document has received the requisite reviews and approvals, and (3) the change document has been submitted to and accepted by the respective supplier.

D. Proposed modifications to quality-related structures, systems, and components shall be reviewed, approved, and controlled in accordance with applicable requirements of the Operating License and Section 9.9 of this Plan.

E. Design modifications shall be at least equivalent to the quality specified in the latest approved design basis.

F. Measures to control plant configuration and ensure that the actual plant configuration is accurately depicted on drawings and other appropriate design output documents and reconciled with the applicable design basis shall be established, documented, and implemented.

G. The design integrity shall be maintained during plant maintenance and modification processes, including temporary changes, and throughout the life of the plant.

7.3 Responsibilities

A. The Vice President, E&P, is responsible for the development of a design control program. The program elements in Section 7.2 and the related source requirements contained within the documents listed in Section 7.4 shall be addressed.

B. The Vice President, WBN Unit 2, is responsible for implementation of programs for maintaining design control at unlicensed units.

C. The Vice President, E&P, is responsible for implementation of programs for maintaining design control at licensed units and Corporate.

7.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for control of the design process.

8.0 PROCUREMENT AND MATERIAL CONTROL

8.1 Procurement Document Control

8.1.1 General

The QA program requires that measures shall be established to ensure that control is applied to documents used to obtain materials, parts, components, spare and replacement parts, and services required to construct, test, modify, maintain, repair, or operate nuclear facilities, commensurate with their importance to safety.

8.1.2 Program Elements

A. Procurement Document Planning

The procurement process, as documented in NPG procedures, shall identify each activity in the process, who accomplishes the activity, how, and when the activity is performed. The process shall be planned to integrate the following activities as a minimum:

1. Document preparation, review, and change control.

2. Selection of procurement sources.

3. Bid evaluations and award.

4. Purchaser control of supplier performance.

5. Verification activities of purchaser.

6. Control of nonconformances.

7. Corrective actions.

8. Acceptance of item or service.

9. QA records.

10. Audit of procurement program.

B. Procurement Document Content

In the preparation of procurement documents, responsible organizations shall as applicable:

1. Specify or reference applicable design basis technical requirements as defined by Engineering, such as regulatory requirements (including 10 CFR 50.49 and 10 CFR Part 21 as applicable); QA requirements; material and component identification requirements; drawings; specifications; inspection and test requirements (including acceptance criteria); calibration, handling, storage, packaging, and shipping requirements; and special process instructions. All technical requirements shall be prepared, reviewed, and released under the requirements established by Section 7.0 of this Plan.

2. For commercial-grade replacement items intended for safety-related use, Engineering shall determine critical characteristics and specify inspection and acceptance criteria to ensure that items dedicated after receipt are acceptable for use as replacement parts.

3. As appropriate, require that suppliers have a documented QA program that is approved by TVA and appropriate interfaces established.

4. As appropriate, require that NQAP requirements be imposed on subvendors and subcontractors in sub-tier procurement documents.

5. Identify the documentation to be prepared and/or maintained by the supplier and submitted to TVA for review and approval.

6. Identify records to be retained, maintained, and controlled by the vendor or contractor, and those documents and records that the vendors or contractors shall transfer to TVA prior to installation or use of an item or service as applicable.

7. Include provisions for right of access to the facilities and records of vendors, contractors, and sub-tier vendors and contractors for source surveillances and audits.

8. Include requirements as defined by Engineering to ensure that suitable spare and replacement materials and components are purchased to the applicable requirements of the NQAP and: (1) specifications and codes equivalent to those specified for the original equipment, or those specifications and codes specified by approved design output; or (2) in cases where the original item or part is found to be commercially "off the shelf" or without specifically identified quality assurance requirements, spare and replacement parts may be similarly procured but, at the very least, equivalent performance is ensured; or (3) in those where the QA requirements of the original item cannot be determined, a documented evaluation establishing the requirements and controls is conducted.

9. Include requirements for reporting nonconformances and for approving corrective actions and nonconformance dispositions.

C. Procurement Document Review and Approval

The review and approval of procurement documents shall include a documented review to ensure that technical, quality assurance, and administrative requirements are included in procurement documents prior to their use.

D. Procurement Document Change Control

Changes in procurement documents shall be subject to the same degree of control as was utilized in the original documents. Changes such as typographical corrections, quantity, or monetary changes do not require a review.

8.1.3 Responsibilities

A. The Senior Vice President, Procurement, is responsible for the development of a procurement document control program. The program elements in Section 8.1.2 and the related source requirements contained within the documents listed in Section 8.1.4 shall be addressed.

B. The Senior Vice President, Procurement, is responsible for implementation of programs for maintaining procurement document control.

8.1.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for control of procurement documents.

8.2 Control of Purchased Material, Equipment, and Services

8.2.1 General

The QA program requires that measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors, conform to the procurement documents.

8.2.2 Program Elements

A. Evaluation and Selection of Suppliers

1. Evaluations of prospective suppliers shall be conducted and documented to demonstrate that their qualifications and capabilities are adequate to meet procurement document requirements. Supplier evaluations shall include supplier performance assessments as appropriate.

2. Evaluations and selection of procurement sources shall include, as appropriate, the use of historical quality performance data, source surveys or audits, or source qualification programs.

3. A list of approved suppliers shall be maintained.

B. Bid Evaluation and Award

A documented system for reviewing and evaluating bids and correcting bid discrepancies shall be established to ensure suppliers' conformance to procurement document requirements.

C. Effectiveness Assessments

1. The effectiveness of the suppliers' control of quality shall be assessed through periodic audits and/or surveillances utilizing a graded approach consistent with the importance, complexity, and quantity of the items and services procured.

2. The assessments shall consist of, as appropriate, checks, reviews, verifications, examinations, and witnessing of activities related to the fabrication, testing, inspection, and shipment of material, including periodic assessments of suppliers' certificates of conformance.

3. Records, qualifications, and process specifications or procedures shall be documented and verified to be in accordance with contract requirements.

D. Acceptance of Procured Services

Procured services shall be accepted, as appropriate, by:

1. Technical verification of product/data produced.

2. Assessments and/or audit of the activity.

3. Review of objective evidence such as certifications.

E. Acceptance of Procured Items

Procured items shall be accepted by receipt inspection and any combination of the following, as appropriate, based on the item's degree of complexity, uniqueness, and safety classification.

1. Source verification.

2. Preinstallation testing inspection.

3. Supplier certificate of conformance.

4. Post installation testing.

F. Receipt Inspection

1. Receipt inspection shall be performed utilizing graded approach criteria to ensure that material and equipment is properly identified to the purchase document and receiving documentation and meets requirements of procurement documents. When graded approach criteria are applied to receipt inspection activities, line verification will be required. The QA organization shall independently verify line organization performance to ensure adequacy of line verifications.

2. Deficiencies, such as damage, shall be documented and resolution of the deficiency shall be in accordance with approved documents.

3. Records, such as inspection and test records, shall be available at the Site prior to installation or use of the material or equipment.

G. Maintaining Disposition of Received Items

1. A quality control method for identifying the status of items (e.g., an inventory system, tagging, labeling, color code) shall be employed that indicates whether items received are acceptable or unacceptable for installation.

2. Items may be installed prior to final disposition of a deficiency. Nonconforming items shall be controlled in accordance with Section 10.2.1.

8.2.3 Responsibilities

A. The Senior Vice President, Procurement, is responsible for the development of programs to control purchased material, equipment, and

services. The program elements in Section 8.2.2 and the related source requirements contained within the documents listed in Section 8.2.4 shall be addressed.

B. The Senior Vice President, Procurement, is responsible for implementation of programs for maintaining control of purchased material, equipment, and services.

C. The General Manager, NA, is responsible for evaluation and selection of suppliers, acceptance of procured items (as described in Section 9.1.2.C), periodic assessments of suppliers utilizing graded approach criteria, and maintenance of an approved suppliers' list.

8.2.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of purchased material, equipment, and services.

8.3 Identification and Control of Materials, Parts, and Components

8.3.1 General

The QA program shall ensure that only correct and accepted items are installed and used, and that an item can be related to applicable drawings, specifications, or technical documents at any stage of construction, maintenance, or modification as required.

8.3.2 Program Elements

A. Identification

Identification of quality-related items shall be verified and documented prior to release for fabrication, assembly, shipping, and installation. Identification requirements shall be specified in applicable design and procurement documents. Determination of identification requirements shall be based on the item importance to safety, quality, or potential hazards.

B. Traceability

Traceability of materials, parts, or components to specific manufacturing, installation, maintenance, and/or test records shall be provided as required by codes, standards, or specifications; and shall be accomplished through the recording of heat, batch, lot, part, or serial numbers, or other appropriate identification, either on the item or on records traceable to the item.

8.3.3 Responsibilities

A. The Senior Vice President, Procurement, is responsible for the development of the material management program for identification and

control of materials, parts, and components. The program elements in Section 8.3.2 and the related source requirements contained within the documents listed in Section 8.3.4 shall be addressed.

B. The Senior Vice President, Procurement, is responsible for implementation of programs for maintaining identification and control of materials, parts, and components.

8.3.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the identification and control of items.

9.0 CONTROL OF PLANT ACTIVITIES

9.1 Inspection and Line Verification

9.1.1 General

The QA program requires that inspection and line verification procedures and instructions include provisions for inspections and line verifications to ensure quality.

9.1.2 Program Elements

A. Line Verification

1. Line verifications shall be performed and documented to substantiate and ensure that an activity or condition has been implemented and accomplished in conformance with specific requirements.

2. Requirements for line verification identified by design output documents shall be included in implementing documents.

3. Qualification of personnel performing line verifications shall be contained in procedures and instructions developed by the organization performing the line verification.

B. Inspection Plans and Instructions

Inspections shall be controlled by plans or instructions which implement requirements, assign responsibilities, and identify acceptance criteria derived from design output documents as appropriate.

1. Inspections to verify conformance to codes, standards, and design output shall be required for each operation. Factors used to determine the extent of inspections to be performed are listed in Section 5.2 of this Plan.

2. Inspection hold points, witness points, and notification points shall be used as required or needed to verify in-process or final achievement of quality. When graded approach criteria are applied to design/regulatory required inspection activities, line verification will be required. The NA organization shall independently verify line organization performance to ensure adequacy of line verifications.

3. Indirect control by assessment of processing methods, equipment, and personnel shall be specified when direct inspection is impossible or disadvantageous.

4. Instructions for activities such as sampling, assessments, and independent inspections shall be included.

5. Persons responsible for performing sampling, assessments, and independent inspections shall be specified.

C. Inspection Performance

Inspections shall be performed by NA or other qualified individuals approved by NA utilizing graded approach criteria in accordance with controlled plans or instructions which specify attributes to be verified in accordance with requirements and acceptance criteria.

1. Inspections shall be performed by individuals delineated above other than those who performed or directly supervised the activity being inspected.

2. Personnel performing inspections shall be trained, qualified, and certified, as required, within their discipline in accordance with established requirements. The requirements criteria shall be approved by NA.

3. M&TE used to perform inspections shall be controlled, calibrated, and maintained as required in Section 9.5 of this Plan. The identification of M&TE shall be documented.

4. Work shall not proceed beyond designated hold points prior to release by authorized personnel.

D. Results

Records of inspection results and personnel performing the inspection shall be retained as required in Section 6.3 of this Plan.

1. Inspection records shall be identified as such and shall be retrievable.

2. Inspection records shall contain a description of the type of inspection, the date performed, inspection or verification of corrective action results, and identification of the inspector and

data recorder as well as the person approving the inspection results including the date of approval.

3. Inspection records and/or data sheets shall include a statement attesting to the acceptability of results and provide for identifying the individual who performed the evaluation.

4. Periodic trending of inspection results shall be performed and reported to appropriate management.

5. Records shall be kept in sufficient detail to permit adequate evaluation of inspection activities.

9.1.3 Responsibilities

A. The Vice President, E&P, and the General Manager, NA, are responsible for including the applicable QA program elements in Section 9.1.2 and the related source requirements found in the documents listed in Section 9.1.4, within the inspection program. The General Manager, NA, reviews and approves the inspection program to ensure inclusion of QA requirements.

B. The Vice President, E&P, and the Vice President, NS, are responsible for including the program elements in Section 9.1.2 and the related source requirements contained within the documents listed in Section 9.1.4, as applicable, within the line verification program.

C. The Vice President, E&P is responsible for providing qualitative/quantitative criteria in design output documents which are incorporated in implementing procedures. For WBN 2 construction completion the responsibility is assigned to the Vice President WBN Unit 2.

D. The Vice President, E&P, is responsible for establishing and implementing programs for training and certification of personnel performing QC activities. For WBN 2 construction completion the responsibility is assigned to the Vice President WBN Unit 2.

9.1.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for inspection.

9.2 Quality Assurance Assessments

9.2.1 General

Assessments by NA are performed as a type of verification to ensure that observed quality-related activities are performed in accordance with requirements and desired results are achieved.

9.2.2 Program Elements

A. Assessment procedures and instructions shall address assessment techniques.

B. Assessment frequencies shall be based on such factors as the status and safety significance of the activity or process, frequency of occurrence, degree and acceptability of previous experience, adverse trends, and testing or operation sequences.

C. The results of assessments shall be documented and reported to appropriate levels of management.

D. Records shall be maintained in sufficient detail to provide adequate documentation of assessed activities.

E. Follow-up verifications or additional assessments shall be conducted as necessary to ensure that required corrective action has been taken.

F. Assessments shall be performed in accordance with written procedures and instructions by qualified and appropriately trained personnel not having direct responsibility in the areas being assessed.

9.2.3 Responsibilities

The General Manager, NA, is responsible for the development and implementation of the QA assessment program.

9.2.4 Source Requirement Documents

None applicable.

9.3 Control of Special Processes

9.3.1 General

Those processes, as determined by the Engineering organization, which by their nature make a direct inspection either impossible or disadvantageous are controlled as special processes.

Special processes shall be controlled and accomplished in accordance with approved process control documents by qualified personnel using qualified written procedures.

9.3.2 Program Elements

A. Processes which are to be controlled as special processes shall be documented in design output documents and maintained current. These processes shall include, but not be limited to: welding, forming and bending, heat treating, chemical cleaning, protective coatings, and NDE.

B. Measures shall be established, documented, and implemented, as appropriate, using specifications, procedures, and instructions to ensure that special processes are accomplished under controlled conditions and

in accordance with applicable codes, standards, specifications, manufacturer instructions, or other special requirements. These measures shall include requirements for procedures, equipment, personnel, specifications, and control of consumable materials.

C. When a special process is not covered by existing codes or standards, or when an item's quality requirements exceed the requirements of existing codes or standards, any special requirements necessary for controlling, implementing, and documenting the special process shall be defined as appropriate.

D. Procedure, Equipment, and Personnel Qualification and Certification

1. Personnel performing special processes shall be qualified and, when required, certified in accordance with the applicable codes, standards, and any special requirements.

2. Qualification or certification of procedures, equipment, and personnel required by codes, standards, or any special requirements shall be performed.

3. Documentation shall be maintained for these qualifications and certifications. M&TE used in special processes shall be controlled in accordance with Section 9.5 of this Plan.

E. Results

Results of examinations associated with special processes shall be documented and evaluated for acceptability. Documentation shall provide for identifying the individual who performed the evaluation.

9.3.3 Responsibilities

A. The Vice President, E&P is responsible for development of programs for control of special processes. The program elements in Section 9.3.2 and the related source requirements contained within the documents listed in Section 9.3.4 shall be addressed.

B. The Manager, Inspection Services, is responsible for interpretation of NDE results when not achievable at the site level, and development and implementation of NDE methods and procedures. He is also responsible for the qualification or certification of procedures, equipment, and personnel. For WBN 2 construction completion, the Vice President WBN 2 has delegated to the construction completion contractor the work of developing and implementing the NDE Program for ASME Section III work as described above in this paragraph (See also Appendix F).

C. The General Manager, NA, reviews and approves the inspection program for control of special processes to ensure inclusion of QA requirements. He is also responsible for the development of upper-tier QA requirements for the NDE program (refer to Section 9.3.2).

D. The Vice President, E&P is responsible for coordinating with appropriate organizations and determining which processes are to be controlled as special processes and for developing engineering requirements for NDE.

E. The Vice President, E&P, and the Vice President, NS, are responsible for the qualification or certification of special process procedures, equipment, and personnel for all areas other than NDE.

9.3.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of special processes.

9.4 Test Control

9.4.1 General

The QA program requires that controls shall be established to ensure that required testing is identified and performed in accordance with procedures which incorporate engineering requirements.

9.4.2 Program Elements

A. The following types of tests, as a minimum, shall be included:

1. Design qualification tests.
2. Product acceptance (proof) tests prior to installation.
3. Preoperational tests.
4. Construction tests.
5. Start-up tests.
6. Surveillance tests.
7. Functional tests.
8. Postmaintenance tests.
9. Postmodification tests.
10. Special tests.

B. Test Performance

1. Tests shall be accomplished in accordance with written and approved test procedures which include the requirements and acceptance criteria of technical specifications, drawings,

specifications, codes, standards, regulatory requirements, and scoping documents as applicable.

2. Tests performed following plant repairs, replacements, maintenance, or modifications shall be conducted in accordance with the original design and testing requirements or approved documented alternatives. Tests shall be sufficient to confirm that the changes produce expected results and do not reduce safety of operations.

3. Test procedures or instructions include the following, as applicable:

   a. Description of test objective.

   b. Instructions for performing the test.

   c. Test prerequisites such as calibrated instrumentation, adequate test equipment and instrumentation including their accuracy requirements, completeness of the item to be tested, suitable and controlled environmental conditions, provisions for data collection and storage, and qualified personnel.

   d. Provisions to assure test prerequisites have been met.

   e. Mandatory inspection hold points.

   f. Acceptance or rejection criteria.

   g. Methods of recording, documenting, and reviewing test data and results.

   h. Provisions for assuring that adverse conditions are corrected, or are evaluated and determined not to adversely impact testing, prior to the initiation of preoperational testing of the affected item.

C. Test Results

Test results shall be documented in a suitable test results package that contains:

1. The identification of the item to which it applies.

2. The identification of instructions followed in performing the test.

3. Pertinent inspection and test data.

4. Significant dates and times.

5. Signature of inspector or tester.

6. Conditions encountered which were not anticipated, including identification of deviations or adverse conditions, and actions taken to resolve the condition.

D. Results Evaluation

The technical acceptability of the results shall be evaluated by an appropriate authority to ensure that the test requirements have been satisfied.

E. Records of test results shall be retained in accordance with Section 6.3 of this Plan.

9.4.3 Responsibilities

A. The Vice President, E&P, is responsible for the development of test control programs. The program elements in Section 9.4.2 and the related source requirements contained within the documents listed in Section 9.4.4 shall be addressed.

B. The Site Vice President (delegated to the Site Engineering Manager) is responsible for reviewing test results and specifying through design output documents the acceptance criteria for tests necessary to demonstrate an item's compliance with design parameters for initial acceptance and major modifications for licensed units.

C. The Vice President WBN Unit 2 (delegated to the Pre-Op Startup Manager) is responsible for the development and conduct of construction (component acceptance test) and preoperational tests which incorporate engineering requirements. For lower tier responsibilities related to Watts Bar Unit 2 testing program see UFSAR Section 14.

D. The Site Vice President (delegated to the Site Engineering Manager) is responsible for the development of tests (startup and operations phase) which incorporate engineering requirements and for the conduct of tests, including leak tests (operations phase). He is also responsible for documenting, evaluating, and determining acceptability of test results.

E. The General Manager, NA, is responsible for oversight of the test control program (i.e., test performance, test results and acceptability of tests).

9.4.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of tests.

9.5 Control of M&TE and Installed Safety-Related I&C Devices

9.5.1 General

Measures shall be established to control equipment which is used to conduct measurements or tests related to determining the functionality or quality of structures, systems, and components within the scope of the QA program.

9.5.2 Program Elements

A. Requirements Common to M&TE and Installed Safety-Related I&C Devices

1. Procedures or instructions for administrative controls shall establish:

   a. Controls for calibration, selection, identification, and utilization of M&TE and installed safety-related I&C devices.

   b. The scope of the various safety-related calibration and control programs.

   c. The types of equipment to be controlled.

2. Calibration procedures and instructions, as a minimum, shall include:

   a. The identity of the item to be calibrated.

   b. Calibration equipment and reference standards to be used.

   c. Checks, tests, measurements, and acceptance tolerances.

   d. Sequence of operations.

   e. Special instructions when necessary.

   f. Recording of performer and applicable procedure or instruction.

   g. Recording of as-found and as-left data.

3. Intervals shall be established for calibration and adjustments of M&TE and installed safety-related I&C devices. These intervals shall be based on required accuracy, purpose, degree of usage, stability characteristics, and other conditions which may affect the measurement or output data.

4. An index, listing, or log shall be procedurally maintained; and shall identify each piece of M&TE and installed safety-related I&C device within the calibration program.

5. Reference standards shall be traceable to nationally recognized standards or physical constants. When national standards do

not exist, the basis for calibration shall be documented and approved by designated responsible management.

6. Prior to use, M&TE and installed safety-related I&C devices shall be identifiable and traceable to applicable calibration records.

B. Unique Requirements for M&TE

Controls for M&TE shall include the following requirements. These requirements are in addition to those noted in Section 9.5.2.A.

1. M&TE shall be stored, calibrated, and used in environments that will not adversely affect its accuracy.

2. M&TE shall be identified to indicate the date of the last calibration, by whom it was calibrated, and when the next calibration is due.

3. Methods shall be established to identify previous usage of M&TE when found to be out of calibration. These methods shall require that inspections or tests be repeated or a documented evaluation be performed when the integrity of past measurements obtained with the suspect equipment or device cannot be demonstrated.

4. Calibration standards, including test stands, that are used as a standard (i.e., multiple M&TE) shall have an accuracy of at least four times the required accuracy of the equipment being calibrated. When this is not possible, standards shall have an accuracy that ensures the equipment being calibrated will be within required tolerances. The basis of acceptance shall be documented and authorized by identified responsible management.

5. M&TE shall be conspicuously labeled, tagged, or otherwise controlled to ensure performance of required calibrations on or before the established due date.

6. M&TE which are consistently found out of calibration shall be identified as nonconforming, removed from service, and repaired or replaced.

C. Unique Requirements for Installed Safety-Related I&C Devices

Controls for installed safety-related I&C devices shall include the following requirements. These requirements are in addition to those noted in Section 9.5.2.A.

1. The calibration of installed safety-related I&C devices that provide final measurements data or controls shall be against M&TE that have an accuracy equal to or better than the required accuracy of the devices being calibrated.

2. Installed safety-related I&C devices shall be controlled to ensure performance of required periodic calibrations.

3. Environmental qualification controls for 10 CFR 50.49 installed safety-related I&C devices shall be established in applicable design documents. These controls shall be maintained when installed safety-related I&C devices are opened in place or removed for calibration in a laboratory.

4. Installed safety-related I&C devices which are consistently found to be out of calibration shall be identified and repaired or replaced.

D. Unique Requirements for Installed Compliance I&C Devices

Controls for installed compliance I&C devices shall include the following requirements. These requirements are in addition to those noted in Sections 9.5.2.A and 9.5.2.C.

1. Methods shall be established to identify previous usage of installed compliance I&C devices when found to be out of calibration. These methods shall require that inspections or tests be repeated or a documented evaluation be performed when the integrity of past measurements obtained with the suspect equipment or device cannot be demonstrated.

9.5.3 Responsibilities

A. The Site Vice President is responsible for the development of controls for M&TE and installed safety related I&C devices. The program elements in Section 9.5.2 and the related source requirements contained within the documents listed in Section 9.5.4 shall be addressed. For WBN 2 construction completion the responsibility is assigned to the Vice President WBN Unit 2.

B. The Site Vice President (delegated to the Site Engineering Manager) is responsible for providing qualitative/quantitative criteria in design output documents. For WBN 2 construction completion the responsibility is assigned to the Vice President WBN Unit 2.

9.5.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of M&TE and installed safety-related I&C devices.

9.6 Handling, Storage, and Shipping

9.6.1 General

Measures shall be established such that items, including consumables, under the scope of the QA program are handled, stored, and shipped by qualified individuals in a manner to prevent deterioration, contamination, damage, or loss of identification in accordance with approved engineering and procurement documents.

9.6.2 Program Elements

A. Marking

Items and/or their containers shall be adequately marked so that the items may be properly identified, maintained, and preserved during shipping, receiving, and storage. Marking shall also indicate the presence of special environments or the need for special controls.

B. Packaging and Cleaning

1. Packaging shall be adequate to provide protection against effects such as corrosion and contamination which would lower the quality of items or cause deterioration beyond specified limits.

2. Special coverings, special equipment, and special protective environments shall be provided and maintained, as required, by procurement documents and vendor instructions determined to be applicable by the responsible engineer.

3. Cleaning operations shall be performed, as required, prior to coating, packaging, storing, or installing items.

C. Shipping and Handling

Special protection required for shipping shall be provided and maintained, as specified, by procurement documents or vendor instructions. Specified instructions and precautions for handling shall be followed.

D. Storage

1. Methods of controlling stored items, including shelf life, shall be established to minimize the potential for damage or deterioration during storage.

2. Appropriate facilities shall be provided for storage of items requiring special environmental conditions.

3. Periodic assessments of storage areas and stored items shall be performed and documented to verify compliance with storage requirements.

4. Proper maintenance shall be provided for stored items, where necessary to prevent deterioration.

9.6.3 Responsibilities

A. The Senior Vice President, Procurement, is responsible for the development of program controls for handling, storing, and shipping. The program elements in Section 9.6.2 and the related source requirements contained within the documents listed in Section 9.6.4 shall be addressed.

B. The Senior Vice President, Procurement, is responsible for implementation of programs for handling, storage, shipping, and issuance of materials.

C. The Vice President, E&P, is responsible for establishing storage, handling, and shipping requirements and preventive maintenance requirements during storage.

9.6.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of handling, storage, shipping, cleaning, and preservation of items.

9.7 Inspection, Test, and Operating Status

9.7.1 General

Measures shall be established and documented to ensure that the operating status is current and the acceptability of items is known throughout fabrication, storage, construction, installation, operation, maintenance, and modification.

9.7.2 Program Elements

A. Inspection and Test Status

1. The status of inspections and tests shall be identified either on the items or in documents traceable to the items to ensure that required inspections and tests are performed and to preclude inadvertent bypassing.

2. The status of inspections and tests shall be maintained through the use of indicators such as tags, markings, shop travelers, routing cards, stamps, inspection records, or other suitable means.

3. The authority for application and removal of tags, markings, labels, and stamps shall be specified.

4. Deletions or alterations of required inspections, tests, and other critical operations shall be controlled through appropriate changes to applicable procedures. These changes shall be handled in accordance with Section 6.1.2.F of this Plan.

B. Operating Status

1. The operating status of items (including temporary alterations) shall be indicated by status indicators such as tags on valves and switches to prevent inadvertent operation.

2. Plant instructions that require items to be removed from service for maintenance, testing, or modification shall require designated personnel permission and the completion of the appropriate clearance (hold order or approved plant procedures) before commencement of the activity.

9.7.3 Responsibilities

A. The Site Vice President is responsible for the development of controls to maintain inspection, test, and operating status. The program elements in Section 9.7.2 and the related source requirements contained within the documents listed in Section 9.7.4 shall be addressed.

B. The Site Vice President (delegated to the Site Engineering Manager) is responsible for establishing applicable inspection and test acceptance criteria to ensure the acceptability of items is maintained.

C. The Vice President, WBN Unit 2 is responsible for the implementation of programs for maintaining inspection, test, and operating status at unlicensed units.

D. The Site Vice President is responsible for implementation of the programs for maintaining inspection, test, and operating status at licensed units.

9.7.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of inspection, test, and operating status.

9.8 Control of Maintenance

9.8.1 General

The nuclear maintenance program, including corrective and preventive maintenance, shall ensure that quality-related structures, systems, and components are maintained (including appropriate equipment qualification maintenance) at a level sufficient to perform their intended functions.

9.8.2 Program Elements

A. Preventive Maintenance

A preventive maintenance program prescribing the frequency and type of maintenance activities to be performed shall be established and maintained.

B. Procedures and Instructions

Maintenance shall be carried out in accordance with procedures or instructions to ensure quality at least equivalent to that specified in the approved design basis or approved alternatives. Procedures or instructions shall be written to the level of detail that is normally expected of the user group. Training, experience, and the technical complexity of the work are factors which should be considered in determining the level of detail the procedure or instruction should contain. Guidelines shall be established for the use of these procedures or instructions.

C. Maintenance Preplanning

Maintenance shall be preplanned to include as appropriate:

1. Review of work-initiating documents to ensure quality requirements have been addressed.

2. Evaluation of the use of special processes, equipment, and materials including potential hazards to personnel and equipment and ALARA considerations.

3. The potential for common-mode failures when working on similar multiple or redundant systems and components.

4. Documented approval by designated personnel to release equipment or systems for maintenance.

5. Inspection and testing, as appropriate, to ensure a suitable level of confidence. This includes postmaintenance testing commensurate with the maintenance performed to ensure that the equipment is capable of being returned to service, that the original deficiency (if any exists) has been corrected, and that no new deficiency has been created.

D. Malfunctions

The cause of malfunctions shall be evaluated and documented in accordance with TVA's nuclear corrective action program.

E. Trending

The Maintenance Program shall establish the parameters for trending maintenance activities and describe the methods for evaluating and documenting adverse trends.

9.8.3 Responsibilities

A. The Site Vice President is responsible for the development of the nuclear maintenance program. The program elements in Section 9.8.2 and the related source requirements contained within the documents listed in Section 9.8.4 shall be addressed.

B. The Vice President, WBN Unit 2 is responsible for the implementation of the nuclear maintenance program during construction phase activities.

C. The Site Vice President is responsible for the implementation of the nuclear maintenance program during operations phase activities.

9.8.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the Nuclear Maintenance Program.

9.9 Plant Reviews

9.9.1 General

The plant staff organization provides reviews of day-to-day activities to ensure they are conducted in a safe manner. Qualified Reviewers provide for reviews of procedures, procedure changes, and proposed changes to structures, systems, and components that affect nuclear safety in their area of expertise.

The PORC is a multidisciplined committee responsible for providing an oversight review of documents required for the safe operation of the plant. PORC advises the Plant Manager on matters related to nuclear safety.

9.9.2 Plant Reviews

A. Activities which affect nuclear safety shall be conducted as follows:

1. Proposed changes or modifications to plant nuclear safety-related structures, systems, and components shall be reviewed in accordance with approved written procedures. Such modifications shall be reviewed by an individual/group other than the individual/group which designed the modification, but who may be from the same organization as the individual/group which designed the modification. Proposed modifications to plant nuclear safety-related structures, systems, and components shall be approved by the Plant Manager, or designee, prior to implementation.

2. Written procedures shall be established, implemented, and maintained covering the following activities:

a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978 and in accordance with Appendix B of this Plan;

b. The emergency operating procedures which implement NUREG-0737 and NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;

c. Security Plan implementation;

d. Radiological Emergency Plan Implementation;

e. Offsite Dose Calculation Manual implementation;

f. Fire Protection Program Implementation;

g. Radiation Protection Program;

h. Process Control Program Implementation (radwaste packaging and shipping);

i. In-Plant Radiation Monitoring;

j. Quality Assurance Program for effluent and environmental monitoring, using the guidance contained in Regulatory Guide 4.15, December 1977, or Regulatory Guide 1.21, Revision 1, 1974 and Regulatory Guide 4.1, Revision 1, 1975; and

k. ISFSI activities as required by 10 CFR 72 .

3. Procedures required by Section 9.9.2.A.2, procedures and programs required by site-specific technical specifications, other procedures which affect plant nuclear safety, and changes (other than editorial or typographical changes) thereto, shall be prepared and reviewed in accordance with approved administrative procedures prior to implementation except as specified in Section 9.9.2.A.6.

   Procedures or procedure changes shall be reviewed by a qualified individual knowledgeable in the subject matter other than the preparer. The reviewer may be from the same or different organization. Procedures not reviewed by PORC shall be approved by the responsible management in accordance with established program requirements. Procedures reviewed by PORC shall be approved by the Plant Manager, or designee.

4. Qualified Reviewers responsible for reviews performed in accordance with Section 9.9.2.A.3 shall be designated and qualified. Qualifications of qualified reviewers shall be as specified in written procedures. Such reviews shall include a determination of whether additional cross-disciplinary review is necessary. If deemed necessary, such review shall be performed by review personnel of the appropriate discipline.

5. Procedures and intent changes to these procedures within the scope of 10 CFR 50.59 or 10 CFR 72.48 shall be reviewed to determine whether a license amendment is required.

6. Temporarily approved changes to procedures of Section 9.9.2.A.2 shall be made in accordance with ANSI N18.7-1976/ANS 3.2, as modified in Appendix B of this Plan. Such changes shall be documented, reviewed, and approved in accordance with Sections 9.9.2.A.3 and 9.9.2.A.4 within 14 days and in accordance with approved administrative procedures.

B. Plant Operations Review Committee (PORC)

Each plant shall have a PORC which shall function to advise the Plant Manager in matters related to nuclear safety. This advisory function shall be performed by the PORC acting in a formal meeting periodically and as situations demand. PORC shall be organized and shall conduct business as described below. The Chairman and members shall be appointed in writing by the Plant Manager. PORC members shall meet the experience requirements of ANSI N18.1-1971 and ANSI/ANS 3.1-1981 as endorsed by Regulatory Guide 1.8, Revision 2, April 1987, "Qualification and Training of Personnel for Nuclear Power Plants," as outlined in Appendix B of this plan. This applies to the correlated ANSI N18.1-1971 and ANSI/ANS 3.1-1981 Manager or Supervisor position for the represented organization. (Operations representatives who hold or who have held SRO licenses at the station are considered qualified.)

1. Composition

The composition of PORC shall be as follows:

Chairman:	Operations Manager
Member:	Operations representative(s)
Member:	Maintenance and Modifications representative(s)
Member:	Radiological and Chemistry Control (RADCHEM) representative(s)
Member:	Engineering representative(s)

2. Alternates

Alternate chairmen and members shall be appointed in writing by the Plant Manager.

3. Meeting Frequency

The PORC shall meet at least once per calendar month and as convened by the PORC Chairman or designated alternate.

4. Quorum

The PORC shall consist of the Chairman or designated alternate and three of the four functional area representatives.

5. Reporting

The PORC reports to the Plant Manager on its activities and findings. The meeting minutes shall serve as the official correspondence from PORC to the Plant Manager. PORC recommendations shall be recorded in the minutes and submitted to the Plant Manager.

6. Functions

a. Advise the Plant Manager on matters related to nuclear safety;

b. Recommend to the Plant Manager approval or disapproval of items considered under Section 9.9.2.B.7; and

c. Provide written notification to the Site Vice President and the NSRB of safety-significant disagreements between the PORC and the Plant Manager within 24 hours. The Plant Manager shall have responsibility for resolution of such disagreements.

7. Responsibilities

The PORC shall be used to conduct, as a minimum, reviews of the following. The PORC may delegate the performance of reviews, but shall maintain cognizance over and responsibility for them, e.g., subcommittees.

a. The applicable administrative procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978;

b. The emergency operating procedures which implement NUREG-0737 and NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;

c. Physical Security Plan;

d. Radiological Emergency Plan;

e. Offsite Dose Calculation Manual;

f. Process Control Program (radwaste packaging and shipping);

g. Additional PORC reviews specifically required by site-specific technical specifications or the plant's licensing basis;

h. Proposed changes to TS; Technical Requirements Manual; their bases; amendments to the Operating License; and

i. Selected 10 CFR 50.59 evaluations.

j. Selected 10 CFR 72.48 evaluations.

9.9.3 Records

The PORC shall maintain written minutes of PORC meetings that, at a minimum, document the results of its activities. Copies shall be provided to the Site Vice President. At a minimum, the PORC minutes shall include results of the activities conducted under the provisions of Section 9.9.

10.0 ADVERSE CONDITIONS

10.1 General

Measures shall be established to ensure that items that do not conform to requirements are controlled to prevent their inadvertent installation or use. Adverse conditions, including nonconforming items or nonhardware problems such as failure to comply with operating license, technical specifications, or procedures, shall be identified, evaluated, corrected, tracked, trended, and when required, reported to appropriate levels of management. Procedures or instructions implementing the corrective action program shall establish the criteria for documenting and tracking adverse conditions.

10.2 Program Elements

10.2.1 Control of Nonconforming Items

A. Organizations responsible for items determined to be nonconforming during receipt inspection, construction, maintenance, modifications, or operations shall identify (physical identification) and segregate the nonconforming items from acceptable items to prevent further processing, delivery, installation, or inadvertent use. When segregation is not practical, tagging, marking, or other means of identification is acceptable.

B. In cases where a nonconforming item is needed for use prior to correcting the nonconformance, a conditional release request document is required. The conditional release request document requires appropriate reviews and approvals. In addition, for equipment to be energized, operated, or pressurized an evaluation and justification is required.

10.2.2 Corrective Action For Adverse Conditions

A. NPG organizations and onsite non-NPG service organizations performing quality-related activities at nuclear facilities shall promptly identify and resolve adverse conditions.

B. Minor deficiencies which may be brought into compliance within an acceptable timeframe shall be corrected on the spot in accordance with established instructions.

C. Adverse conditions shall be dispositioned by organizations with defined responsibility and authority and shall be corrected in accordance with documented plans.

D. Disposition actions for nonconforming items may be accept-as-is, repair, rework, scrap, or return to vendor. Dispositions of accept-as-is or repair shall be reviewed and approved by Corporate or Site Engineering or, for nuclear fuel-related items, Nuclear Fuels. Reworked or repaired, and replaced items shall satisfy the original inspection and test requirements or acceptable alternatives.

E. The cause of significant adverse conditions shall be determined and corrective action taken to preclude recurrence.

F. Significant adverse conditions shall be reported to appropriate levels of management.

G. The satisfactory completion of corrective actions shall be verified and documented by the appropriate organization.

H. Independent verification of corrective action implementation is performed as specified within the corrective action program.

10.2.3 Escalation of Adverse Conditions

Commensurate with their importance to quality or safety, adverse conditions which are not being effectively or timely resolved shall be escalated to appropriate levels of management in a timely manner.

10.2.4 Tracking

Procedures describing the corrective action program shall establish the requirements for those adverse conditions which shall be tracked.

10.2.5 QA Trending

Trend analysis shall be performed on adverse conditions and quality indicators associated with QA verification activities. Trend results shall be used to advise management of the quality status, identify adverse trends that need increased management attention, and compare quality of performance among organizations. The trend analysis program shall be described in procedures or instructions and shall include the following items as a minimum.

A. Identify the quality indicators associated with QA verification activities to be trended.

B. Specify the process of data handling such as gathering, collecting, sorting, grouping, and coding.

C. Specify the process to be used in analyzing data and trend determination.

D. Describe the actions to be taken when an adverse trend is identified.

E. Describe the type, distribution, and frequency of issue of trend results reporting.

10.2.6 Stop Work

Work shall be stopped under any of the following conditions:

A. Work is proceeding in violation of approved and controlling documents.

B. A condition which clearly indicates that cessation of an activity is the only means available to protect the health and safety of the public and/or plant personnel.

C. An activity, which if continued, will require extensive rework or repair for corrective action.

D. An activity, which if continued, may jeopardize nuclear safety.

E. A condition that represents continual failure to comply with technical or administrative controls.

10.3 Responsibilities

A. The General Manager, Performance Improvement (PI) is responsible for the development of the corrective action program. The program elements in Section 10.2 and the related source requirements contained within the documents listed in Section 10.4 shall be addressed. The General Manager, NA, reviews and approves the corrective action program.

B. Line managers are responsible to stop any work within their areas of responsibility when a continuation of activities could meet the criteria of Section 10.2.6.

C. NA is responsible to issue a formal Stop Work Order, as required, if a line manager fails to act on a stop work condition. Stop Work Orders shall remain in effect until proper evaluation can be made and adequate corrective action can be applied.

D. The General Manager, PI is responsible to establish and maintain trend analysis procedures for adverse conditions and the quality indicators generated by QA verification activities such as audits, assessments, inspection, and vendor audits and surveillances. The General Manager, NA, is responsible for oversight and independent analysis of trending.

10.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the corrective action program.

11.0 INDOCTRINATION, TRAINING, QUALIFICATION, AND CERTIFICATION

11.1 General

Personnel performing quality-related activities shall receive indoctrination and training, as necessary, to ensure that adequate proficiency is achieved and maintained.

11.2 Program Elements

11.2.1 Indoctrination and Training

A. Personnel performing quality-related activities shall receive training related to administrative controls and the purpose, scope, and implementation of the NQAP.

B. For personnel performing quality-related activities, proficiency shall be maintained and demonstrated through activities such as annual performance evaluation, retraining, reexamining, or recertifying.

C. Training of employees performing quality-related activities shall be conducted, as appropriate, when new programs or procedures affect the scope of their work and whenever changes in their duties or responsibilities occur.

D. The scope, method, and objectives of formal training for quality-related activities shall be documented.

E. Records documenting the date, attendance, content, instructor, and duration of training sessions shall be prepared and maintained to demonstrate individual qualification and training program implementation for employees performing quality-related activities.

11.2.2 Qualification and Certification

Qualification and certification programs shall be established and maintained to include the following:

A. Certification of personnel, as needed, to perform inspections, tests, examinations, special processes, or lead audits prior to performance of the activity. Certifications shall delineate the functions personnel are qualified to perform and the criteria used for qualification.

B. Personnel qualification criteria for applicable inspection, test, or examination techniques, audits, special processes, and capabilities necessary to perform the activity safely and in compliance with applicable requirements.

C. A method to assess the performance of certified individuals and the qualifications of employees performing quality-related activities, to determine their initial and continued acceptability for performing their duties and to provide an assessment of the current level of qualification and certification.

D. Development and maintenance of qualification and certification records and documents in accordance with applicable commitments and regulatory requirements.

11.3 Responsibilities

A. The Vice President, NS is responsible for the development of the program for indoctrination and training.

B. Other NPG Vice Presidents are responsible for delineating training requirements in their applicable areas of responsibility and providing these requirements to the Vice President, NS.

C. The Vice President, Nuclear Support, through Nuclear Human Resources, is responsible for establishing a position qualification documentation and validation program.

D. Vice Presidents and General Managers/Managers are responsible for implementing the indoctrination and training program and, as appropriate, developing a certification program and implementing the certification requirements in their area of responsibility.

E. The program elements in Section 11.2 and the related source requirements contained within the documents listed in Section 11.4 shall be addressed in the development and implementation of indoctrination, training, qualification, and certification activities.

11.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the indoctrination, training, qualification, and certification program.

12.0 AUDITING

12.1 General

Measures shall be established to implement a comprehensive audit program which consists of internal audits, including NPG and other TVA organizations, which support the nuclear program and contractor/supplier audits to determine and assess the adequacy and effectiveness of the QA program.

12.2 Program Elements

A. An audit plan shall be prepared identifying the audits to be performed and their frequencies and schedule.

B. Audits shall include: a determination of the effectiveness of QA program elements; evaluation of work areas, activities, processes, and items; review of documents and records; review of audit results with responsible management; follow-up on corrective action taken for deviations identified during the audit; and escalation to appropriate senior management of any safety significant disagreement between the auditing organization and the organization or function being audited.

C. Audits shall be performed in accordance with written procedures or checklists by qualified, certified, and appropriately trained personnel not having direct responsibilities in the areas being audited.

D. Audited organizations shall provide access to facilities, documents, and personnel needed to perform the audits. They shall take necessary action to correct deviations identified by the audit in a timely manner.

E. Internal Audits

1. The scope of an audit shall be determined by considering such factors as work areas, activities, processes, or items and the specific organizations involved.

2. The auditing organizations shall ensure that audit procedures and instructions adequately cover applicable elements of the NQAP.

3. Audits of Design and Construction Phase units and the Fitness for Duty Program are in accordance with the Code of Federal Regulations.

4. Audits of operational phase units shall be performed with oversight by the NSRB. Except as noted in f, g, h, m, and n below, audit frequencies shall be biennially. These audits shall encompass:

   a. The conformance to provisions contained within the Technical Specifications and applicable license conditions.

   b. The performance, training and qualifications of the plant staff.

   c. The results of actions taken to correct deficiencies occurring in site equipment, structures, systems, components, or method of operation that affect nuclear safety.

   d. The performance of activities required by the Nuclear Quality Assurance Program to meet the criteria of Appendix B, 10 CFR Part 50 and 10 CFR Part 72, Subpart G.

e. Any other activities and documents considered appropriate by the NSRB or the Chief Nuclear Officer and Executive Vice President, TVA Nuclear.

f. The fire protection programmatic controls including the implementing procedures at least once per 24 months.

g. An independent fire protection and loss prevention program inspection and audit shall be performed at a maximum interval of 24 months utilizing either qualified offsite license personnel or an outside fire protection firm.

h. An inspection and audit of the fire protection and loss prevention program shall be performed by an outside qualified fire consultant at intervals no greater than three years.

i. The Radiological Environmental Monitoring program and the results thereof.

j. The performance of activities required by the Nuclear Quality Assurance Program to meet the criteria of Regulatory Guide 4.15, December 1977, or Regulatory Guide 1.21, Rev. 1, 1974, and Regulatory Guide 4.1, 1975.

k. The Offsite Dose Calculation Manual and implementing procedures.

l. The Process Control Program and implementing procedures for solidification of wet radioactive wastes.

m. The site Radiological Emergency Plan and implementing procedures in accordance with the Code of Federal Regulations.

n. The site Physical Security/Contingency Plan and implementing procedures in accordance with the Code of Federal Regulations.

5. Audit reports, including recommendations to the management of the organization being audited, shall be maintained.

F. Contractor/Supplier Audits

1. Audits of selected suppliers shall be conducted to verify implementation and adequacy of specified QA requirements.

2. Contractors/suppliers to be audited shall be selected on the basis of the importance of their products or services to safety, status of contract activity, historical performance of the supplier, and potential QA problems that may be discovered during source surveillance inspection activities or earlier audits.

3. Audit schedules shall be prepared and audits shall be conducted in accordance with the schedules.

4. Audit reports shall be prepared and reviewed by the audit team, approved by management, and transmitted to the supplier and appropriate management within TVA.

12.3 Responsibilities

A. The General Manager, NA, is responsible for the development of the audit program. The program elements in Section 12.2 and the related source requirements contained within the documents listed in Section 12.4 shall be addressed.

B. NA is responsible to conduct audits, including audits of selected suppliers, to verify implementation and adequacy of specified QA requirements.

12.4 Source Requirement Documents

The applicable source requirement documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of audits.

13.0 COMPUTER SOFTWARE AND DATA

13.1 General

The program elements in Section 13.2 of this Plan apply to application software meeting the criteria of Appendix E of this Plan, whether procured or developed at TVA. The controls established shall be commensurate with the importance of the application software to nuclear safety.

13.2 Program Elements

A. Controls shall be established for the development of application software and associated documentation, including requirements specification, design specifications, coding conventions, and user documentation.

B. Controls shall be established for changes to application software and associated software documentation.

C. Software documentation shall be controlled in accordance with Section 6.2 of this Plan.

D. Software documentation specified as QA records shall be controlled in accordance with Section 6.3 of this Plan.

E. Documentation shall be provided for application software describing the correct usage.

F. A central list of application software which meets the criteria of Appendix E of this Plan, with appropriate levels of classification shall be established and maintained. Involved personnel shall be trained on the intent and purpose of the list.

G. Prior to implementation, application software shall be verified to demonstrate that the system requirements are satisfied in the system design, implemented in the computer code, validated through documented tests, and the test results independently reviewed.

H. Controls shall be established to verify the accuracy and integrity of data input into automated computer databases.

I. For currently active application software developed or purchased prior to October 16, 1986, only the requirements of Section 13.2.B, E, and F apply. In addition, this application software shall be validated through documented tests and test results independently reviewed.

13.3 Responsibilities

The Vice President, E&P is responsible for the development of controls for computer software and data. The program elements in Section 13.2 and the criteria of Appendix E of this Plan shall be addressed.

13.4 Source Requirement Documents

The applicable source requirements documents and their exceptions are noted in Appendix B of this Plan. These establish mandatory controls which must be addressed in the development of programs and procedures for the control of computer software and data.

14.0 REFERENCES

14.1 Regulations

10 CFR 20, "Standards for Protection Against Radiation."

10 CFR 21, "Reporting of Defects and Noncompliance."

10 CFR 50, "Domestic Licensing of Production and Utilization Facilities."

10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants."

10 CFR 50.54, "Conditions of Licenses."

10 CFR 50.55, "Conditions of Construction Permits."

10 CFR 50.55a, "Codes and Standards."

10 CFR 50.55(e), "Conditions of Construction Permits."

10 CFR 50.59, "Changes, Tests, and Experiments."

10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants."

10 CFR 50, Appendix B, "Quality Assurance Requirements for Nuclear Power Plants and Fuel Reprocessing Plants."

10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979."

10 CFR 50.62, "Requirements for Reduction of Risk From Anticipated Transients Without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants."

10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors."

10 CFR 50.73, "Licensee Event Report System."

10 CFR 50.120, "Training and Qualification of Nuclear Power Plant Personnel."

10 CFR 55, "Operators' Licenses."

10 CFR 70, "Domestic Licensing of Special Nuclear Material."

10 CFR 71, Subpart H, "Quality Assurance (Packaging and Transportation of Radioactive Material)."

10 CFR 72, Subpart F, "General Design Criteria. "

10 CFR 72, Subpart G, "Quality Assurance (Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste)."

10 CFR 72, Subpart K, "General License for Storage of Spent Fuel at Power Reactor Sites."

10 CFR 72, Subpart I, "Training and Certification of Personnel."

10 CFR 72.48, "Changes, Tests, and Experiments. "

10 CFR 73.55, " Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage."

10 CFR 73.71, "Reporting of Safeguards Events."

10 CFR 74, "Material Control and Accounting of Special Nuclear Material."

10 CFR 75, "Safeguards on Nuclear Material - Implementation of US/IAEA Agreement."

10 CFR 100, "Reactor Site Criteria."

14.2 Regulatory Guidance

Refer to listing in Appendixes B and C of this Plan.

14.3 TVA Licensing Submittal Documents

Browns Ferry Nuclear Plant Technical Specifications, Administrative Controls Section.

Sequoyah Nuclear Plant Technical Specifications, Administrative Controls Section.

Watts Bar Nuclear Plant Technical Specifications, Administrative Controls Section.

14.4 QA Manuals

ASME Section III Quality Assurance Manual (ASME III QAM).

14.5 Other

INPO 84-010, "Vendor Equipment Technical Information Program (VETIP)," March 1984.

NRC Certificate of Compliance for the Holtec International HI-STORM 100 Cask System, Docket No. 72-1014.

NRC letter from H. J. Thompson, Jr., dated April 16, 1985, "Quality Assurance Guidance for ATWS Equipment That Is Not Safety Related," Generic Letter 85-06 (A02 850422 044).

NRC letter from D. G. Eisenhut dated April 24, 1986, "Implementation of Fire Protection Requirements," Generic Letter 86-10 (A02 860512 005).

NUREG 0800, Section 9.5.1, Branch Technical Position, CMEB 9.5-1 (formerly BTP ASB 9.5-1), Rev. 2, July 1981, "Fire Protection for Nuclear Power Plants."

Appendix A to Branch Technical Positions APCSB 9.5-1, August 23, 1976.

15.0 DEFINITIONS

The terms and definitions identified in this section are important in order to have a consistent understanding of requirements of the NQAP. Regulatory Guide 1.74, which endorses ANSI N45.2.10, contains terms and definitions applicable to the nuclear industry. This section identifies acceptable alternatives to these definitions with an asterisk(*).

Adverse Conditions

Deficiencies including nonconforming material, parts, or components; failures; malfunctions; deviations; hardware problems involving noncompliance with licensing commitments, specifications, or drawing requirements; abnormal occurrences; and nonhardware problems such as failure to comply with the operating license, technical specifications, licensing commitments, procedures, instructions, or regulations.

Assessment

An evaluation of the adequacy and effectiveness of quality programs, processes, ongoing tasks or activities, or management controls to identify opportunities for improvement, performance problems, or verify resolution of problems.

*Audit

A documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that applicable elements of the NQAP have been developed, documented, and effectively implemented in accordance with specified requirements. An audit should not be confused with assessment or inspection for the sole purpose of process control or product acceptance.

Basic Component

Refer to 10 CFR 21 for definition of basic component.

Commercial-Grade Items

Refer to 10 CFR 21 for definition of commercial grade items.

Construction Tests

Those tests which are performed on safety-related and other plant components and systems on nuclear units which may satisfy prerequisites to the preoperational test program. Construction tests include pressure and other integrity tests; component and piping system cleaning and flushing; and equipment checkout, initial operation, and adjustments.

Corrective Action

The action taken to correct an adverse condition. Corrective action includes interim measures and corrective and preventive actions.

Dedication

Refer to 10 CFR 21 for definition of dedication.

Emergency Preparedness

A program which ensures the preparation and implementation of plans and procedures to provide, in the event of an emergency, protective measures for health and safety of TVA personnel and the public.

Environmental Protection

A program that provides controls, mainly in association with Environmental Protection Agency (EPA) requirements, for nonradiological environmental monitoring and compliance activities. These include hazardous and nonradiological waste material (solid, liquid, and gas) which could be released to the environment.

Features

Refers to either individual structures, systems, and components specifically called out by the scope of this Plan (such as seismic Category 1 [L] items) or structures, systems, and components that may be integral to, or associated with, the programs identified in Section 5.1.B of this Plan.

Fire Protection

A program that provides controls necessary for the protection of the life and health of TVA plant personnel and the public, to limit damage of property, and to minimize loss of generating capacity resulting from fire or explosion.

Functional Test

The manual operation or initiation of a system, subsystem, or component to verify that it functions within design tolerances (e.g., the manual start of a core spray pump to verify that it runs and that it pumps the required volume of water.)

Graded Approach

A methodology of applying a grading criteria based on an item's impact on safety, quality history, and other factors such that determination can be made as to the type and degree of QA program requirements which need to be applied. Refer to Section 5.2.

Greater than Class C waste (GTCC waste)

Low-level radioactive waste that exceeds the concentration limits of radionuclides established for Class C waste in 10CFR61.55.

Handling

The act of physically moving items by hand or by mechanical means but not including transport modes.

Hold Point

A designated stopping place during or following a specific activity at which inspection or examination is required before further work can be performed.

Important to Safety (10 CFR 72)

A system, structure, or component condition/function required to store spent nuclear fuel safely; to prevent damage to spent nuclear fuel or high-level waste container during handling and storage, and to provide reasonable assurance that spent nuclear fuel can be received, handled, packaged, stored and retrieved without undue risk to the health and safety of the public.

Independent Offsite Safety Review

Safety reviews performed by the Nuclear Safety Review Board (NSRB) which provide additional assurance that TVA licensed nuclear plants are operating without undue risk to the health and safety of plant personnel and the public.

Independent Spent Fuel Storage Installation (ISFSI)

A complex designed and constructed for the interim storage of spent nuclear fuel, solid reactor-related GTCC waste, and other radioactive materials associated with spent fuel and reactor-related GTCC waste storage. An ISFSI which is located on the site of

another facility licensed under 10CFR72 or a facility licensed under 10CFR50 and which shares common utilities and services with that facility or is physically connected with that other facility may still be considered independent.

*Inspection

A phase of quality control performed by certified inspection personnel or other qualified individuals approved by NA that, by means of examination, observation, and/or measurement determines the conformance of materials, supplies, components, parts, appurtenances, systems, processes, or structures to predetermined quality requirements.

Installed Compliance Instrumentation and Control (I&C) Devices

Process instruments which are used to determine or verify compliance with plant technical specification requirements for parameters such as flows, pressures, temperatures, levels, voltages, and currents.

Item

Any level of unit assembly, including structure, system, subsystem, subassembly, component, part, or material.

Line Verification

A routine verification by a qualified individual who is in the work-performing organization who did not perform or directly supervise the activity to be verified. Examples: second-party verification where a participating craftsman verifies that work and/or testing has been accomplished.

Measuring and Test Equipment (M&TE)

Equipment or devices used to calibrate, measure, gauge, examine, compare, test, inspect, monitor, or control in order to acquire data to determine compliance with design, specification, licensing, or other established requirements. M&TE includes both laboratory and portable instruments, gauges, tools, fixtures, test or analytical test stands, reference and transfer standards, nondestructive examination equipment, etc., where data obtained will be used to determine acceptability or be the basis for design or engineering evaluations.

Nonsafety-Related Anticipated Transient Without Scram (ATWS)

Special features that, as referenced in 10 CFR 50.62, fall into a category of items which could be related to an expected operational transient (such as loss of feedwater, loss of condenser vacuum, or loss of offsite power to the reactor) which is not accompanied by the reactor trip system shutting down the reactor.

Notification Point

A specific preestablished point within a selected activity where work may proceed after contacting and receiving concurrence from the organization responsible for the notification point.

Nuclear Plant Security

A program which provides controls to ensure continued operability of security equipment and the integrity of nuclear plant security. This includes prevention of sabotage, safeguard information and material, plant access, and physical security events.

Operational Phase

That period of time during which the principal activity is associated with normal operation of the plant. This phase of plant life is considered to begin formally with receipt of the operating license onsite and ends with commencement of plant decommissioning. In addition, there are certain preoperational activities (for example, testing, training, maintenance) proceduralized in accordance with operations NQAP requirements and initiated by the operations staff prior to receipt of the operating license which are considered to be operational phase activities at the time these activities begin.

Postmaintenance Tests

Testing performed after completion of maintenance to verify the operational/functional acceptability of components/systems upon completion of maintenance.

Postmodification Tests

Tests performed after completion of a plant modification to demonstrate conformance with as-designed requirements and to determine the effect of the modification on the overall system.

Preoperational Tests

Tests identified in a facility's Safety Analysis Report and performed on any system or plant feature for the purpose of proving its ability to perform its designed function.

Procurement Documents

Contractually binding documents that identify and define the requirements that items or services must meet in order to be considered acceptable by the purchaser.

Programs

Programs which administer and control activities and associated features as identified in Section 5.1.B of this Plan that require control based on regulatory requirements or TVA commitments.

Quality Assurance Records

Those records which furnish documentary evidence of the quality of items and of activities affecting quality. A document is considered to be a QA record when the document has been completed.

Quality-Related

Quality-related is a term which encompasses quality assurance program requirements that describe activities which affect structures, systems, and components. These requirements provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. In addition to safety-related structures, systems, components, and activities, the term "quality-related" encompasses the broad class of plant features covered (not necessarily explicitly) in the General Design Criteria of 10 CFR 50, Appendix A, that contribute in an important way to the safe operation and protection of the public in all phases and aspects of facility operation (i.e., normal operation and transient control as well as accident mitigation).

Radioactive Material Shipment

A program that provides controls for handling and/or shipping of radioactive material (NRC-licensed packages only).

Radwaste Management Systems, Structures, and Components

Special features containing radioactive materials (i.e., liquids, gases, or solids) that, by design or operating practice, provide a means of processing prior to final disposition.

Reference Standards

Standards (primary, secondary, and working standards where appropriate) used in a calibration program. These standards establish the basic accuracy limits for the calibration program.

Reportable Events

Any of those conditions specified in 10 CFR 50.73.

Safety-Related Structures, Systems, and Components

Those items that are necessary to ensure:

1. The integrity of the reactor coolant pressure boundary.

2. The capability to shutdown the reactor and maintain it in a safe condition.

3. The capability to prevent or mitigate the consequences of an incident which could result in potential offsite exposures comparable to those specified in 10 CFR 100.

Seismic Category I(L)

Special features that apply to nonsafety-related systems, structures, and components which provide structural integrity in preventing damage to a safety-related system, structure, and component in case of a failure and/or damage during a safe shutdown earthquake (SSE).

Significant Adverse Condition

A documented adverse condition that is determined to be a QA programmatic deficiency. Criteria for significance are specified in the corrective action program.

Special Nuclear Material Management

A program which provides for special nuclear material (SNM) control and accountability as required by 10 CFR 70, 74, and 75. This program includes SNM inventories and system reviews, inspections, records management, and DOE/NRC inventory and transfer reports.

Special Tests

A test that is (a) an engineering test including qualification testing for design verification or evaluation of components, structures, or systems, (b) a general test that is not specifically related to plant systems or features, such as the material testing and product testing that is normally performed by a testing lab, or (c) tests or experiments not described in the facilities Safety Analysis Report which may affect the operation of systems described therein (reference 10 CFR 50.59 and 10 CFR 72.48).

Startup Tests

Those tests as identified in the Final Safety Analysis Report that commence after receipt of an operating license allowing fuel loading and testing at ranges through zero power, power escalation, and 100% warranty run. Startup tests prove that the unit has been properly designed and constructed and will meet all licensing requirements and specific contractual criteria. Startup tests are also referred to as Power Ascension Tests.

*Storage

The act of holding items at the construction or operating Site in an area other than its permanent location in the plant.

Surveillance Tests

Periodic tests to verify that structures, systems, and components continue to function or are in a state of readiness to perform their functions.

Test Record Drawings

A set of as-constructed drawings which depict the configuration of a system as tested.

Test Scoping Documents

Documents which include descriptions of each test to be performed including safety precautions to be followed, specific identification of test objectives, the means of performing the test, prerequisites that must be completed, environmental conditions required for testing, justification for a proposed degree of simulation less than full simulation, and specific acceptance criteria or a description of the means of determining acceptance criteria from functional testing requirements.

Test Deficiency

Any condition during which the equipment or system being tested: (1) fails to operate (e.g., pump will not operate, no control room annunciation), (2) operates in a suspected adverse manner (e.g., motor operates but smokes, questionable vibration), or (3) operates outside limits of documented acceptance criteria (e.g., inadequate flow, slow valve closure time).

Trend Analysis

Evaluation of data that has been compiled or grouped onto charts, diagrams, reports, or other formats such that the prevailing tendency of selected parameters can identify areas that need improving and areas of past successes.

*Verification

An act of confirming, substantiating, and ensuring that an activity or condition has been implemented and accomplished in conformance with specific requirements. This includes line verifications.

APPENDIX A

COMPARISON MATRIX OF QUALITY ASSURANCE PLAN REQUIREMENTS WITH THOSE OF 10 CFR 50, APPENDIX B, 10 CFR 72, SUBPART G, AND SELECTED ANSI STANDARDS

10 CFR 50, Appx B Criterion	NQA Plan	10 CFR 72, Subpart G	ANSI N45.2 - 1971 Section	NQA Plan	ANSI N18.7 - 1976 Section	NQA Plan
I	4.0;4.1	72.142	2.0	5.0	3.1	4.1;5.0
II	5.0	72.144	3.0	4.0;4.1	3.2	4.0;4.1
III	7.0	72.146	4.0	7.0	3.3	11.0
IV	8.1	72.148	5.0	8.1	3.4	4.0;11.0
V	6.0;7.0;9.9	72.150	6.0	6.0;7.0;9.9	4.0	4.1.7.C;5.3;6.0
VI	6.0;7.0;9.9	72.152	7.0	6.0;7.0;9.9		4.1.6;9.9;12.0
VII	8.2	72.154	8.0	8.2	5.1	5.0
VIII	8.3	72.156	9.0	8.3	5.2.1	4.0
IX	9.3	72.158	10.0	9.3	5.2.2	6.0
X	9.1	72.160	11.0	9.1	5.2.3	6.0
XI	9.4	72.162	12.0	9.4	5.2.4	6.0
XII	9.5	72.164	13.0	9.5	5.2.5	6.0
XIII	9.6	72.166	14.0	9.6	5.2.6	6.0;9.7
XIV	9.7	72.168	15.0	9.7	5.2.7	6.0;9.8
XV	10.0	72.170	16.0	10.0	5.2.8	6.0;9.1;9.4
XVI	10.0	72.172	17.0	10.0	5.2.9	5.1;6.0
XVII	6.3	72.174	18.0	6.3	5.2.10	4.1.2;6.0
XVIII	12.0	72.176	19.0	12.0	5.2.11	6.0;10.0
					5.2.12	6.0;6.3
					5.2.13	6.0;8.0;9.6
					5.2.14	6.0;10.0
					5.2.15	6.0
					5.2.16	6.0;9.5
					5.2.17	6.0;9.1
					5.2.18	6.0;9.3
					5.2.19	6.0;9.4
					5.3	6.0
					5.3.1	6.0
					5.3.2	6.0
					5.3.3	6.0
					5.3.4	6.0
					5.3.5	6.0;9.8
					5.3.6	6.0;5.1
					5.3.7	6.0;9.5
					5.3.8	6.0;5.1
					5.3.9	6.0;5.1
					5.3.10	6.0;9.1;9.4

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Table 1 (pages 1 through 8) is a matrix of the source requirement documents (e.g., Regulatory Guides and ANSI Standards) which apply to applicable portions of the NQA Plan. Table 1 specifies the particular sections of the source documents (e.g., ANSI N18.7, Section 5.2.12) that establish mandatory controls which must be addressed in the development of the associated implemented programs and procedures.

Table 2 (pages 9 through 24) identifies alternatives to sections of the source requirement documents listed in Table 1.

TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	Procedures and Instructions 6.1.4	Document Control 6.2.4	QA Records 6.3.4	Design Control 7.4	Procurement Document Control 8.1.4	Control of Purchased Material, Equipment, and Services 8.2.4	Identification and Control of Materials, Parts, and Components 8.3.4	Inspection and Line Verification 9.1.4	Control of Special Processes 9.3.4	Test Control 9.4.4	Control of M&TE and Installed Safety-Related I&C Devices 9.5.4	Handling, Storage and Shipping 9.6.4	Inspection, Test and Operating Status 9.7.4	Control of Maintenance 9.8.4	Adverse Conditions 10.4	Indoctrination, Training, Qualification, and Certification 11.4	Auditing 12.4	Computer Software and Data 13.4	Definitions 15.0
Reg. Guide 1.8 R/2 April 1987 ANSI N18.1 - 1971, and ANSI/ANS 3.1 - 1981, "Personnel Selection & Training"																X			
Reg. Guide 1.33 R/2 February 1978 ANSI N18.7 - 1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants"	X Sect. 5	X Sect. 5.2.15	X Sect. 5.2.12	X Sect. 5.2.7.2	X Secs. 5.2.13 5.2.13. 1	X Sect. 5.2.13. 2	X Sect. 5.2.13. 3	X Secs. 5.2.8 5.2.17	X Secs. 5.2.,12 5.2.18	X Secs. 5.2.8 5.2.19	X Sect. 5.2.16	X Sect. 5.2.13. 4	X Secs. 5.2.6 5.2.8 5.2.14	X Secs. 5.2.7 5.3.5	X Secs. 5.2.11 5.2.14	X Sect. 3.3	X Sect. 4.5		
Reg. Guide 1.28 R/3 August 1985 ANSI N45.2 - 1971 "Quality Assurance Program Requirements for Nuclear Power Plants"	X Sect. 6	X Sect. 7	X Sect. 18	X Sect. 4	X Sect. 5	X Sect. 6	X Sect. 9	X Sect. 11	X Sect. 10	X Sect. 12	X Sect. 13	X Drvy. 14	X Sect. 15		X Sect.s. 16 17	X Sect. 2	X Sect. 19		
Reg. Guide 1.37 R/O March 16, 1973 ANSI N45.2.1 - 1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants"	X Secs. 2.1 2.2		X Sect. 9					X	X Sect. 2.5	X	X Sect. 2.5	X							

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TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	Procedures and Instructions 6.1.4	Document Control 6.2.4	QA Records 6.3.4	Design Control 7.4	Procurement Document Control 8.1.4	Control of Purchased Material, Equipment, and Services 8.2.4	Identification nd Control of Materials, Parts, and Components 8.3.4	Inspection and Line Verification 9.1.4	Control of Special Processes 9.3.4	Test Control 9.4.4	Control of M&TE and Installed Safety-Related I&C Devices 9.5.4	Handling, Storage and Shipping 9.6.4	Inspection, Test and Operating Status 9.7.4	Control of Maintenance 9.8.4	Adverse Conditions 10.4	Indoctrination, Training, Qualification, and Certification 11.4	Auditing 12.4	Computer Software and Data 13.4	Definitions 15.0
Reg. Guide 1.38 R/2 May 1977 ANSI N45.2.2 - 1972 "Packaging, Shipping, Receiving,Storage, and Handling of Items for Nuclear Power Plants (During the Construction Phase)"	X Sects. 2.1 2..2		X Sect. 8			X Sect. 5	X	X Sects. 5.2 7.4		X Sects. 2.3 2.5	X Sect. 2.5	X		X Sect. 6					
Reg. Guide 1.39 R/2 September 1977 ANSI N45.2.3 - 1973 "Housekeeping During the Construction Phase of Nuclear Power Plants"	X Sects. 2.1,2.2		X Sect 4					X				X Sect. 3.3							
Reg. Guide 1.30 R/0 August 11, 1972 ANSI N45.2 .4 - 1972, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations"	X Sects. 2.1 2.3	X Sect. 2.3	X Sect. 8			X Sect. 2.2	X	X Sects. 2.4,5.1 6.1,7.0		X	X Sect. 2.6	X Sect. 2.2	X						

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TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	Procedures and Instructions 6.1.4	Document Control 6.2.4	QA Records 6.3.4	Design Control 7.4	Inspection, Test and Operating Status 8.1.4	Control of Purchased Material, Equipment, and Services 8.2.4	Identification nd Control of Materials, Parts, and Components 8.3.4	Inspection and Line Verification 9.1.4	Control of Special Processes 9.3.4	Test Control 9.4.4	Control of M&TE and Installed Safety-Related I&C Devices 9.5.4	Handling, Storage and Shipping 9.6.4	Inspection, Test and Operating Status 9.7.4	Control of Maintenance 9.8.4	Adverse Conditions 10.4	Indoctrination, Training, Qualification, and Certification 11.4	Auditing 12.4	Computer Software and Data 13.4	Definitions 15.0
Reg. Guide 1.94 R/1 April 1976 ANSI N45. 2.5 - 1974 Supplementary Quality "Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants"	X Sect. 2.1 2.2	X Sect. 2.2	X Sect. 7			X Sect. 7	X	X Sects. 2.3, 4, 5,6		X	X Sect. 2.5	X	X Sects. 3,4,5						
Reg. Guide 1.58 R/1 September 1980 ANSI/ASME N45.2.6 - 1978 "Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants"			X Sect. 6					X	X							X			
Reg. Guide 1.116 R/0-R June 1976 ANSI N45.2 .8 - 1975, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants"	X Sects. 2.1 2.2	X Sect. 2.2	X Sect. 7			X Sect. 7	X	X Sects. 2.3, 3 4,5		X	X Sect. 2.8	X Sects. 2.5	X Sects. 4..2 5.1	X Sects. 3.1 3.5-H 4.5-B,C					

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TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	Procedures and Instructions 6.1.4	Document Control 6.2.4	QA Records 6.3.4	Design Control 7.4	Procurement Document Control 8.1.4	Control of Purchased Material, Equipment, and Services 8.2.4	Identification nd Control of Materials, Parts, and Components 8.3.4	Inspection and Line Verification 9.1.4	Control of Special Processes 9.3.4	Test Control 9.4.4	Control of M&TE and Installed Safety-Related I&C Devices 9.5.4	Handling, Storage and Shipping 9.6.4	Inspection, Test and Operating Status 9.7.4	Control of Maintenance 9.8.4	Adverse Conditions 10.4	Indoctrination, Training, Qualification, and Certification 11.4	Auditing 12.4	Computer Software and Data 13.4	Definitions 15.0
Reg. Guide 1.88 R/2 October 1976 ANSI N45.2.9 - 1974 "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants"	X		X		X Sects. 4.2,6.2 7.2														
Reg. Guide 1.74 February 1974 ANSI N45.2.10 - 1973 "Quality Assurance Terms and Definitions"																			X
Reg. Guide 1.64 R/2 June 1976 ANSI N45.2 .11 - 1974 "Quality Assurance Requirements for the Design of Nuclear Power Plants"	X Sects. 2.2.7			X													X Sect. 11	X Sect. 6.1	
Reg. Guide 1.144 R/1 September 1980 ANSI N45.2.12 - 1977 "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants"																	X		

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TABLE 1

NQA PLAN SECTION / SOURCE REQUIREMENT DOCUMENT	Procedures and Instructions 6.1.4	Document Control 6.2.4	QA Records 6.3.4	Design Control 7.4	Procurement Document Control 8.1.4	Control of Purchased Material, Equipment, and Services 8.2.4	Identification nd Control of Materials, Parts, and Components 8.3.4	Inspection and Line Verification 9.1.4	Control of Special Processes 9.3.4	Test Control 9.4.4	Control of M&TE and Installed Safety-Related I&C Devices 9.5.4	Handling, Storage and Shipping 9.6.4	Inspection, Test and Operating Status 9.7.4	Control of Maintenance 9.8.4	Adverse Conditions 10.4	Indoctrination, Training, Qualification, and Certification 11.4	Auditing 12.4	Computer Software and Data 13.4	Definitions 15.0
Reg. Guide 1.123 R/1 July 1977 ANSI N45.2.13 - 1976 "Quality Requirements for Control of Procurement of Items and Services for Nuclear Power Plants"	X Sect. 2		X Sect. 11		X Sect. 3.0	X		X Sects. 7 10			X Sect. 7.4						X		
Reg. Guide 1.146 R/0 August 1980 ANSI N45. 2.23 - 1978 "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants"																X	X		
Reg. Guide 1.152 November 1985 ANSI/IEEE- ANS-7-4.3.2 - 1982, "Application Criteria for Programmable Digital Computer Systems in Safety Systems of Nuclear Power Generating Stations"																		X Sects. 6 7	
Reg. Guide 1.189, April 2001 "Fire Protection for Operating Nuclear Power Plants"																	X 1.7.10.1		

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TABLE 1

NQA PLAN SECTION / SOURCE REQUIREMENT DOCUMENT	Procedures and Instructions 6.1.4	Document Control 6.2.4	QA Records 6.3.4	Design Control 7.4	Procurement Document Control 8.1.4	Control of Purchased Material, Equipment, and Services 8.2.4	Identification nd Control of Materials, Parts, and Components 8.3.4	Inspection and Line Verification 9.1.4	Control of Special Processes 9.3.4	Test Control 9.4.4	Control of M&TE and Installed Safety-Related I&C Devices 9.5.4	Handling, Storage and Shipping 9.6.4	Inspection, Test and Operating Status 9.7.4	Control of Maintenance 9.8.4	Adverse Conditions 10.4	Indoctrination, Training, Qualification, and Certification 11.4	Auditing 12.4	Computer Software and Data 13.4	Definitions 15.0
10 CFR 21						X								X	X				
10 CFR 50 Appendix B	X Crit. V	X Crit. VI	X Crit. XVII	X Crit. III	X Crit. IV	X Crit. VII	X Crit. VIII	X Crit. X	X Crit. IX	X Crit. XI	X Crit. XII	X Crit. XIII	X Crit. XIV		X Crit. XV XVI	X Crit II	X Crit. XVIII	X	
10 CFR 50.49				X	X									X					
10 CFR 50.55a				X															
10 CFR 50.55e															X				
10 CFR 50.59 10CFR 72.48				X											X				
10 CFR 50.72															X				
10 CFR 50.73															X				
10 CFR 50.120																X			
10 CFR 72, Subpart G	X 72.150	X 72.152	X 72.174	X 72.146	X 72.148	X 72.154	X 72.156	X 72.160	X 72.158	X 72.162	X 72.164	X 72.166	X 72.168		X 72.170 72.172	X 72.144	X 72.176		
10 CFR 73.71															X				

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ASME Sect III DIV. 1, Art. NCA 4000 "Quality Assurance"	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		
ASME Sect. V. "Nondestructive Examination"									X										
ASME Sect. IX "Welding and Brazing Qualifications"									X										
ASME Sect. XI, "Rules for Inservice Inspection of Nuclear Power Plants"				X				X	X	X			X		X				
AWS, "Structural Welding Code D1.1"									X										
AISC, "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings"									X										

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*ASNT SNT-TC-1A-1984 "Personnel Qualification and Certification in Nondestructive Testing"									X										
Plant Technical Specifications (Administrative Controls Section)	X																		
NUTAC Report on Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events, "Section 2.2.2 (letter from L.M. Mills to H. R. Denton dated September 17, 1984)			X										X		X		X		
*ANSI/ASNT CP-189-1991 "Standard for Qualification and Certification of Nondestructive Testing Personnel"									X										

*NOTE: In accordance with ASME Code, Section XI, Division 1, 1995 Edition with Addenda through 1996 (1995/A96), Article IWA, Paragraph IWA, 2310, "Personnel performing nondestructive examination (NDE) shall be qualified in accordance with ANSI/ASNT CP-189...Certifications based on SNT-TC-1A are valid until re-certification is required. Re-certification shall be in accordance with...ANSI/ASNT CP-189..."

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NRC Regulatory Guide 1.8 - "Personnel Selection and Training," Revision 2, 4/87, endorses ANSI N18.1-1971 and ANSI/ANS 3.1-1981.

The Nuclear Quality Assurance Program (NQAP) follows this Guide with the following alternatives:

1. TVA will meet the requirements of Regulatory Guide 1.8, Revision 2 (4/87) for all new personnel qualifying on positions identified in regulatory position C.1 after January 1, 1990. Personnel qualified on these positions prior to this date will still meet the requirements of Regulatory Guide 1.8, Revision 1-R (5/77). As specified in regulatory position C.2, all other positions will meet the requirements of ANSI/ANS N18.1-1971.

2. Section 4.3.2 - There may be occasions where TVA will utilize a composite crew (multidiscipline) during operations phase activities to efficiently perform a task. As such, a foreman may not have the experience required in one of the disciplines he supervises. In these instances, the foreman will meet the requirements of ANSI N18.1 in at least one of the disciplines, and additional technical support, procedure support, and/or discipline support will be available to the foreman for the task period.

3. In lieu of the training guidelines endorsed by Regulatory Guide 1.8, Revision 2, specified in Regulatory Position Sections C.1.b and C.1.f, TVA shall comply with the requirements of 10 CFR 55.31(a) (4) and 10 CFR 55.59 as they apply to training programs based on a Systems Approach to Training (SAT) as defined in 10 CFR 55.4 and using a plant-referenced simulator as required by 10 CFR 55.45.

4. TVA uses the methodology for equating education and experience contained in ANSI 3.1-1987 for guidance to evaluate equivalent related experience for a degree.

5. In addition to the training guidelines in subsections 5.3.2, 5.3.3, 5.3.4, and 5.5 of ANSI N18.1-1971, TVA shall comply with the requirements of 10 CFR 50.120 as it applies to training programs based on a systems approach to training.

6. In lieu of the one year of experience in the implementation of the quality assurance program for Site Nuclear Assurance Managers (ANSI/ANS 3.1-1981, Section 4.4.5.b), TVA requires five years experience in QA-related activities.

NRC Regulatory Guide 1.28 - "Quality Assurance Program Requirements (Design and Construction)," Revision 3, 8/85, allows continued implementation of ANSI N45.2-1971 as previously committed.

The NQAP follows this Guide.

NRC Regulatory Guide 1.30 - "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment," 8/72, endorses ANSI N45.2.4-1972.

The NQAP follows this Guide with the following alternatives:

1. ANSI N45.2.4 states that the Appendixes are not a part of the standard, therefore, TVA does not consider the Appendixes to be mandatory.

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2. Section 2.1, "Planning" - The intent of this section shall be met in different forms depending on magnitude and scope of work.

3. During the operational phase, tests are performed as determined by the site engineering organization, modification, or maintenance engineers, as appropriate, based upon the equipment or system functions that could be impacted by the work performed.

4. TVA's alternative to the tagging of in-plant process instruments for calibration status (ANSI N45.2.4, Section 6.2.1) is that each item of process control instrumentation is uniquely identified with an instrument number. This number is utilized in an instrument maintenance record so that the current calibration status and data attesting to the status of each item are documented along with the identification of the person performing the calibration. In addition, this record system provides a mechanism for evaluating equipment performance and adjusting calibration frequencies to ensure quality performance.

5. Section 6.2.2 - For modifications, TVA interprets this section as not requiring that an entire system be retested after modifications. Testing will be performed on equipment that has or could be impacted by the modification in accordance with applicable design and testing requirements to verify that operability requirements are met and that interfacing components and equipment functions have not been degraded.

6. TVA implements the requirements of N45.2.4 Sections 5.1 and 6.1 with a performance-based graded QA verification program consisting of quality control inspection, line verification, and quality assessments.

NRC Regulatory Guide 1.33 - "Quality Assurance Program Requirements (Operations)," Revision 2, 2/78 endorses ANSI N18.7-1976/ANS 3.2.

The NQAP follows this Guide with the following alternatives:

1. ANSI N18.7-1976 references certain other standards to which TVA takes exception. TVA's exception and appropriate alternatives to the other standards are listed in this Appendix in the appropriate location.

2. Section 5.2.2 - The guidelines of this section are accepted with the following interpretations:

   a. Temporary changes which clearly do not change the intent of the approved procedure shall as a minimum be approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator License on the unit affected or as defined in Section 9.9 of this Plan, the FSAR, or appropriate plant procedures.

   b. For facilities holding a construction permit where system(s) and/or components have been released to the operations organization, temporary changes to procedures, as described above, shall as a minimum be approved by two members of the plant management staff, at least one of whom shall be a designated member of the plant operations management staff.

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3. Section 5.2.13.1 - The statement that changes made to procurement documents be subject to the same degree of control as was used in the preparation of the original documents is applied consistent with the requirements of ANSI N45.2.11, paragraph 7.2. Minor changes to documents, such as inconsequential editorial corrections or changes to commercial terms and conditions, may not require that the revised document receive the same review and approval as the original documents.

4. Section 5.2.15 - The guidelines of this section are accepted with the following alternatives:

   a. Minor changes to documents are processed as delineated in Section 6.1.2.F.3 of this Plan.

   b. TVA has programmatic controls in place that make a biennial review process unnecessarily duplicative. These programmatic controls ensure procedures are periodically reviewed and maintained current when pertinent source material is revised; the plant design changes; and/or any deficiencies occur. TVA has determined that this approach better addresses the purpose of the biennial review process and that, from a technical and practical standpoint, is better suited to ensure the validity of operational phase site procedures and instructions.

5. Section 5.2.17 - The statement that deviations, their cause, and any corrective action completed or planned shall be documented will apply to significant deviations. Other identified deviations will be documented and corrected. This interpretation is consistent with Appendix B to 10 CFR 50, Criterion XVI, "Corrective Action."

6. TVA will comply with regulatory position C.4 except that audit frequencies are specified in NQA Plan Section 12.2.E.

7. Section 4.3.4.4.c - The independent review body implements this section by reviewing reportable events that are reported to the NRC in accordance with 10 CFR 50.73.

8. When purchasing commercial-grade calibration services from certain accredited calibration laboratories, the procurement documents are not required to impose a quality assurance program consistent with ANSI N45.2-1971. Alternative requirements described in Regulatory Guide 1.123 may be implemented in lieu of imposing a quality assurance program consistent with ANSI N45.2-1971.

NRC Regulatory Guide 1.37 - "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants," 3/73, endorses ANSI N45.2.1-1973.

The NQAP follows this Guide with the following alternatives:

1. The phrase "when applicable" used in Regulatory Guide 1.37, paragraph C.2, leaves open to interpretations which specific requirements and recommendations contained in ANSI N45.2.1-1973 are applicable to and achievable during the construction or operation phase. The interpretation of "when applicable" will be made with appropriate concurrence in a written procedure before its application.

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2. The second sentence of paragraph C.3 should be amended to read:

"The water quality for final flushes of fluid systems and associated components during the operations phase shall be at least equivalent to the quality required for normal operation. This requirement does not apply to dissolved oxygen or nitrogen limits nor does it infer that other additives normally in the system water will be added to the flush water."

3. Temporary ink markings placed by the fabricator as mill marks may remain on components that operate at temperatures greater than 140°F (normal or accident) and have a 40-year integrated radiation dose less than 10^6 rads.

4. Control of halogen, sulfur, or low-melting metal contents is not required for abrasive tools such as grinding wheels, cutoff wheels, sanding paper, and flapper wheels. Use of abrasive tools on corrosion-resistant alloys shall be followed by cleaning with an approved solvent. Particulate residue shall be removed by vacuum, brush, dry wiping cloth, or air, with special attention to crevices.

5. Temporary tape and markings (ink and paint) may remain on components that operate at temperatures less than 140°F (normal or accident).

6. Section 2.1, "Planning - For operations phase activities, the required planning is frequently performed on a generic basis for application to many systems and component installations. This results in standard procedures for cleaning, inspection, and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures are reviewed for applicability in each case. Cleaning procedures are limited in scope to those actions or activities which are essential to maintain or achieve required quality. This is consistent with Section 5.2.17, paragraph 5, of ANSI N18.7-1976, which provides for examination, measurement, or testing to ensure quality or indirect control by monitoring of processing methods.

7. TVA intends to conform to the cleanness requirements of Section 3.1 of ANSI N45.2.1-1973 with the exception of permissible particle sizes for cleanness Classes B and D. In these cases, TVA will conform to the requirements of ANSI N45.2.1-1980, Section 3.2.2.1(b), which states, "There shall be no particles larger than 1/32 inches by 1/16 inches long (0.8 mm by 1.6 mm)" for cleanness Class B, and Section 3.2.4.4 which states, "Particles no larger than 1/16 inch by 1/8 inch long (1.6 mm by 3.2 mm) on a 14-mesh (1.4 mm, ASTM E-11, "Specification for Wire Cloth Sieves for Testing Purposes) or finer filter, or the equivalent" for cleanness Class D.

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NRC Regulatory Guide 1.38 - "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants," Revision 2, 5/77 endorses ANSI N45.2.2-1972.

The NQAP follows this Guide with the following alternatives:

1. Storage requirements at the site are determined by the responsible engineering unit. This determination involves an evaluation of the complexity of the item and its importance to safety. The various types of storage are provided (yard, warehouse, humidity controlled, etc.) but the classification levels of N45.2.2 are not necessarily employed.

2. In accordance with ASME QA Case 78-N45.2.2-01-0, welding electrodes hermetically sealed in metal containers may be stored under conditions described for level C items unless other storage requirements are specified by the manufacturer. Storage conditions for level C items may also apply to bare wire and consumable inserts unless specified otherwise by the manufacturer.

3. Austenitic stainless steel and nickel alloy items may have markings applied directly to the bare metal surfaces provided the requirements of TVA internal procedures, which control the chemical content of the marking materials, are met.

4. Tubing and piping materials shall have end caps or plugs while in storage unless specified otherwise by engineering specification. End caps or plugs are not mandatory on tube or pipe fittings provided the requirements of TVA internal procedures to store under cover with protection from the elements are met. These materials are required to be in a visually clean condition and free of visually detectable defects prior to installation.

5. Section 6.4.1 - TVA will meet this section through periodic inspection of randomly selected stored items by QC inspection personnel certified to ANSI N45.2.6. The criteria and factors regarding frequency and degree are established in Section 5.2A and B of this Plan.

6. TVA takes exception to ANSI N45.2.2, Section 5.2.1. TVA's alternative is that shipping damage inspection shall be done before unloading if evidence of possible shipping damage would be lost in unloading, such as when the item is secured to the carrier, covered by tarpaulin, accompanied by a visible impact recorder, or when the contract requires any of the above. Personnel performing preliminary visual observations (prior to unloading) per Section 5.2.1 need not be qualified to ANSI N45.2.6. Item inspections per Section 5.2.2 are performed by personnel qualified to ANSI N45.2.6. The item inspections also ensure that no damage has occurred during shipping.

7. Section 6.4.2(8) - TVA will follow either vendor recommendations for preventive maintenance, an engineering evaluation, or engineering requirements documents delineating appropriate maintenance requirements, for items in storage. Engineering evaluations and engineering requirement documents will consider vendor recommendations.

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8. Section 6.5 (last sentence) - During a period of installed storage or extended layup after release of an item from permanent storage, vendor recommendations for preventive maintenance, or an engineering evaluation or an engineering requirements document delineating appropriate maintenance requirements will be followed. Engineering evaluations and engineering requirement documents will consider vendor recommendations.

9. TVA's alternative to the requirements of Section 6.6 of ANSI N45.2.2 is that Procurement will maintain written records of pertinent information such as storage location and receipt inspection results and will take necessary action to provide packaging for items not suitably packaged for storage. Written records of personnel access to nuclear stores are kept for entry during times when nuclear stores personnel are not on duty. All other times, the storeroom is locked and admittance is controlled by stores personnel.

10. TVA does not utilize specific levels for classification of items (ANSI N45.2.2, Section 2.7); however, the specific requirements identified in the Standard are used as a guide with respect to protecting the equipment.

11. TVA does not utilize specific levels for packaging (ANSI N45.2.2, Section 3.2). All purchased items have been properly packaged. Additionally, periodic storage inspections are conducted to ensure protective measures specified in the Standard to prevent damage or deterioration are complied with and are imposed until the item or component is issued for use. Purchased items undergo receiving inspection using the graded approach. This inspection verifies that items have been properly packaged for shipment and will ensure that any special protective measures specified in the Standard to prevent damage, deterioration, or contamination will be imposed until the item or component is issued for use.

12. TVA takes exception to the requirement (ANSI N45.2.2, Section 6.2.4) that salt-tablet dispensers in any storage area shall not be permitted. TVA Procurement stores salt-tablet dispensers in sealed containers for use outside of the storage area only.

13. Sections 7.3.2 and 7.4.2 - Use of hoisting equipment beyond its rated load is acceptable when specifically approved with technical justification by engineering.

14. Section 5.2.2(1) Physical Properties - QC Inspectors, Engineers, or other technically competent individuals assure that physical properties conform to specified requirements and that chemical and physical test reports meet the requirements.

15. Section 2.4 - Off-site inspection, examination or testing is audited by personnel who are qualified in accordance with ANSI N45.2.23 rather than ANSI N45.2.6 as stated in the ANSI Standard.

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NRC Regulatory Guide 1.39 - "Housekeeping Requirements for Water-Cooled Nuclear Power Plants," Revision 2, 9/77 endorses ANSI N45.2.3-1973.

The NQAP follows this Guide with the following alternative:

The zone designations of Section 2.1 of N45.2.3 and the requirements associated with each zone are not consistent with the requirements for an operating plant. Instead, NPG procedures or instructions for housekeeping activities which include the applicable requirements outlined in Section 2.1 of N45.2.3 and which take into account radiation control considerations, security considerations, fire protection considerations, and personnel and equipment safety considerations are developed on a case basis.

NRC Regulatory Guide 1.58 - "Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel," Revision 1, 9/80 endorses ANSI N45.2.6-1978.

The NQAP follows this Guide with the following alternatives:

1. TVA complies with Regulatory Position C.1 of this Regulatory Guide, as follows:

   - Construction testing personnel are qualified to Regulatory Guide 1.28 (ANSI N45.2).
   - Operations, maintenance, and modification testing personnel are qualified to Regulatory Guide 1.8 (ANSI N18.1) as endorsed in Appendix B of this Plan.
   - Quality control inspection personnel are qualified to ANSI N45.2.6.

2. Certifications may not correspond to the levels established in N45.2.6. Inspection, examination, and testing personnel may be classified by disciplines (mechanical, civil, electrical, instrumentation, hanger, etc.) and certified by procedure to perform the functions identified in N45.2.6, Tables I, L-I, and L-II.

3. Medical eye examinations for inspection, testing, and examination personnel are made in accordance with TVA eye examination requirements.

4. ASNT recommended practice SNT-TC-1A-1984 will be used to qualify and certify nondestructive examination personnel after February 26, 1990. Personnel qualified prior to this date will still meet the requirements of SNT-TC-1A-1980. In ASME Section XI applications, SNT-TC-1A as modified by ASME Section XI will be used. ANSI/ASNT CP-189, 1991 is acceptable for qualification of personnel performing nondestructive examination of primary containment. Certifications based on SNT-TC-1A are valid until recertification is required.

5. TVA complies with Regulatory Position C.2 as follows: For containment leak rate testing personnel, TVA as a minimum will meet the qualification requirements of ANSI N45.2.6 as endorsed by Regulatory Guide 1.58, Revision 1.

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NRC Regulatory Guide 1.64 - "Quality Assurance Requirements for the Design of Nuclear Power Plants," Revision 2, 6/76, endorses ANSI N45.2.11-1974.

The Nuclear Quality Assurance Plan follows this Guide with the following alternative to Regulatory Position C.2:

> If in an exceptional circumstance, the engineer's supervisor is the only person technically qualified to perform the review, the design verification review will be conducted by the supervisor, provided that:
>
> 1. The other provisions of this Regulatory Guide and ANSI N45.2.11, Section 6.1 are satisfied.
>
> 2. The justification is individually documented and approved in advance by the supervisor's management.
>
> 3. NA will audit the use of supervisors as design verifiers to guard against abuse.

NRC Regulatory Guide 1.74 - "Quality Assurance Terms and Definitions," 2/74, endorses ANSI N45.2.10-1973.

The NQAP follows this Guide with applicable alternatives noted in Section 15 of this Plan.

NRC Regulatory Guide 1.88 - "Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records," Revision 2, 10/76, endorses ANSI N45.2.9-1974.

Requirements of Regulatory Guide 1.88 (and the alternatives listed below) apply to 10 CFR 72 required records including: Records required by 10 CFR 72 must be maintained in duplicate storage.

The NQAP follows this guide with the following alternatives :

Section 2.2.1 - TVA may also define lifetime QA records to be "life of the nuclear liability policy, plus the subsequent 10 years during which claims may be covered by the policy." This definition is consistent with ANI/MAELU Information Bulletin 80-1A, Revision 2, and the requirements of our nuclear insurer.

Section 5.4.3 - In order to preclude deterioration, manufacturer's packaging and storage recommendations for special process records will be considered.

Section 5.6 - TVA will provide two-hour minimum fire-rated protection for QA records and utilize one of the following alternatives as single storage facilities:

1. A fire-resistive vault or file room that meets the applicable requirements of ANSI N45.2.9-1974 with the following exceptions:

   a. Records will be afforded the protection of a two-hour rated facility.

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b. Records will be stored in fully enclosed cabinets.

c. Structure, doors, frames, and hardware shall be designed to fully comply with a minimum two-hour rating.

d. Pipes or penetrations will be allowed for fire protection, lighting, temperature, humidity control, or communications.

e. Work not directly associated with records storage or retrieval will be prohibited in the facility.

f. Smoking and eating/drinking will be prohibited throughout the records facility.

2. One-hour fire-rated cabinets if the following conditions are met:

a. The records are recreatable, OR

b. Are contained within a facility of fire-resistive construction with adequate smoke detection or fire-suppression systems: OR

c. Are within a facility with a fuel loading less than 25 pounds/square foot as defined by NFPA 232-1980.

QA records may be temporarily stored for 60 days or less in steel file cabinets or drawers if the following conditions are met:

1. The records are recreatable, OR

2. Are contained within a facility of fire-resistive construction with adequate smoke detection or fire-suppression systems: OR

3. Are within a facility with a fuel loading less than 25 pounds/square foot as defined by NFPA 232-1980.

For storage of film and other processed records, humidity and temperature controls shall be provided to maintain a stable environment. Recommendations by the manufacturer will be considered in determining an acceptable range of tolerance.

In addition to the records specified in Appendix A to ANSI N45.2.9-1974, the following records and retention times are applicable to WBN:

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1. Licensee Event Reports required by 10 CFR 50.73 (3 years).

2. Records of changes made to the procedures required by NQA Plan Section 9.9.2.B.7.a for WBN only (3 years).

3. Records of surveillance activities, inspections, and calibrations required by the Technical Specifications and the Fire Protection Program (5 years).

4. Records of sealed source and fission detector leak tests and results (5 years).

5. Records of annual physical inventory of all sealed source material of record (5 years).

6. Records of reactor tests and experiments (lifetime).

7. Records of inservice inspections performed pursuant to the Technical Specifications (lifetime).

8. Records of quality assurance activities required by the NQA Plan not listed in items 1 through 5 above and which are classified as permanent records by applicable regulations, codes, and standards (lifetime).

9. Records of 50.59 screening reviews and evaluations performed for changes made to equipment pursuant to 10 CFR 50.59 (lifetime). Records of 50.59 screening reviews and evaluations performed for changes made to procedures or tests and experiments pursuant to 10 CFR 50.59 (5 years).

10. Records of the reviews required by NQA Plan Sections 9.9.2 and 4.1.7.C (lifetime).

11. Records of the service lives of all hydraulic and mechanical snubbers required by Technical Requirement (TR) 3.7.3, "Snubbers," including the date at which the service life commences, and associated installation and maintenance records (lifetime).

12. Records of secondary water sampling and water quality (lifetime).

13. Records of analyses required by the Radiological Environmental Monitoring Program that would permit evaluation of the accuracy of the analysis at a later date (these records should include procedures effective at specified times and QA records showing that these procedures were followed (lifetime).

14. Records of reviews performed for changes made to the Offsite Dose Calculation Manual and the Process Control Program (lifetime).

15. Records of steam generator tube surveillance (lifetime).

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In addition to the records specified in Appendix A to ANSI N45.2.9-1974, the following records and retention times are applicable to SQN:

1. Licensee Event Reports required by 10 CFR 50.73 (five years).

2. Records of surveillances activities, inspections and calibrations required by the Technical Specifications (five years).

3. Records of changes made to the procedures required by NQA Plan Section 9.9.2.A.2 for SQN only (five years).

4. Records of sealed source and fission detector leak tests and results (five years).

5. Records of annual physical inventory of all sealed source material of record (five years).

6. Records of gaseous and liquid radioactive material released to the environs and the resulting calculated dose to an individual member of the public (lifetime).

7. Records of reactor tests and experiments (lifetime).

8. Records of in-service inspections performed pursuant to the Technical Specifications (lifetime).

9. Records of 50.59 screening reviews and evaluations performed for changes made to equipment pursuant to 10 CFR 50.59 (lifetime). Records of 50.59 screening reviews and evaluations performed for changes made to procedures or tests and experiments pursuant to 10 CFR 50.59 (5 years).

10. Records of analyses required by the radiological environmental monitoring program (lifetime).

11. Records of secondary water sampling and water quality (lifetime)

12. Records of the service life monitoring of all safety-related hydraulic and mechanical snubbers, required by Technical Specification 3.7.9, including the maintenance performed to renew the service life (lifetime).

13. Records for Environmental Qualification which are covered under the provisions of Paragraph 2.c (12) (b) of License No. DPR-77 (lifetime).

14. Records of reviews performed for changes made to the OFFSITE DOSE CALCULATION MANUAL and the PROCESS CONTROL PROGRAM (lifetime).

15. Records required by 10 CFR 72 (retained for the life of the Storage Cask License).

16. Records of screening reviews and evaluations performed for changes made to spent fuel storage cask design, procedures, tests or experiments pursuant to 10 CFR 72.48 (retained for the life of the Storage Cask License) .

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In addition to the records specified in Appendix A to ANSI N45.2.9-1974, the following records and retention times are applicable to BFN. These records shall be kept in a manner convenient for review.

1. Reportable Events

2. Checks, inspections, tests and calibrations of components and systems, including such diverse items as source leakage.

3. Records of 50.59 screening reviews and evaluations performed for changes made to equipment pursuant to 10 CFR 50.59 (lifetime). Records of 50.59 screening reviews and evaluations performed for changes made to procedures or tests and experiments pursuant to 10 CFR 50.59 (5 years).

4. Records of screening reviews and evaluations performed for changes made to the facility, spent fuel storage cask design, procedures, tests or experiments pursuant to 10 CFR 72.48 (retained for the life of the Storage Cask License).

5. Test results in units of microcuries for leak tests.

6. Record of annual physical inventory verifying accountability of sources on record .

7. Records of gaseous and liquid radioactive waste released to the environs, and the resulting calculated dose to individual, MEMBERS OF THE PUBLIC

8. Reactor coolant system inservice inspection.

9. Records required by 10 CFR 72 (retained for the life of the Storage Cask License).

10. Design fatigue usage evaluation.

    Monitoring and recording requirements below will be met for various portions of the reactor coolant pressure boundary (RCPB) for which detailed fatigue usage evaluation per the ASME Boiler and Pressure Vessel Code Section III was performed for the conditions defined in the design specification. In this plant, the applicable codes require fatigue usage evaluation for the reactor pressure vessel only. The locations to be monitored shall be:

    1. The feedwater nozzles
    2. The shell at or near the waterline.
    3. The flange studs.

    Transients that occur during plant operations will be reviewed and a cumulative fatigue usage factor determined.

    For transients which are more severe than the transients evaluated in the stress report, code fatigue usage calculations will be made and tabulated separately.

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In the annual operating report, the fatigue usage factor determined for the transients defined above shall be added and a cumulative fatigue usage factor to date shall be reported. When the cumulative usage factor reaches a value of 1.0, an inservice inspection shall be included for the specific location at the next scheduled inspection (3-1/3-year interval) period and 3-1/3-year intervals thereafter, and a subsequent evaluation performed in accordance with the rules of ASME Section XI Code if any flaw indications are detected. The results of the evaluation shall be submitted in a Special Report for review by the Commission.

11. Reviews performed for changes made to the Offsite Dose Calculation Manual and the Process Control Program.

Except where covered by applicable regulations, items 1 through 5 above shall be retained for a period of at least five years and items 6 through 9 shall be retained for the life of the plant. A complete inventory of radioactive materials in possession shall be maintained current at all times.

NRC Regulatory Guide 1.94 - "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants, " Revision 1, 4/76, endorses ANSI N45.2.5-1974.

The NQAP follows this Guide with the following alternatives:

1. The qualification requirements for quality control (QC) inspectors are stated in our position on Regulatory Guide 1.58 in this table.

2. Testing frequency and QC acceptance criteria for concrete construction is described in the Safety Analysis Report for each plant.

3. Burning of bolt holes is acceptable when specifically approved by engineering.

4. The installation method for high strength bolting may be either the automatic cutoff impact wrench method, turn-of-nut method, or direct tension indicator method.

5. Torque wrench inspection of completed connections installed by the turn-of-nut method shall not be required but may serve to resolve disagreements concerning the results of inspection of bolt tension.

6. Torque wrench inspection of the load indicator washer type of direct tension indicator shall not be required.

7. Bolts shall be considered long enough if the bolt point is flush with or outside the face of the nut.

8. When specified by the design output document, TVA's alternative for visual welding acceptance criteria will be NCIG-01, May 7, 1985, Revision 2, "Visual Weld Acceptance Criteria for Structural Welding of Nuclear Power Plants."

9. For modifications or repairs to structures within the scope of N45.2.5-1974, plant management shall refer to the Site Engineering organization for any design analyses.

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10. Verification of preweld activities, including fit-up, will be verified through a graded QC inspection program, unless 100 percent inspection is specified in design output documents.

11. Much of N45.2.5 applies to construction and preoperational testing. As a result, many of the listed tests are not appropriate in an operational plant. In lieu of this, TVA utilizes the appropriate engineering organizations to establish the need for specific tests or test procedures during the operational phase, and the guidance provided in ANSI N45.2.5-1974 is considered for applicability.

12. TVA implements the requirements of N45.2.5 Section 3, 4, and 5 with a performance-based graded QA verification program consisting of quality control inspection, line verification, and quality assessments.

NRC Regulatory Guide 1.116 - "Quality Assurance Requirements for the Installation, Inspection, and Testing of Mechanical Equipment and Systems," 6/76, endorses ANSI N45.2.8-1975.

The NQAP follows this Guide with the following alternatives:

1. QA programmatic/administrative requirements included in the Regulatory Guide shall apply to construction, maintenance, and modification activities. Technical requirements associated with maintenance and modifications shall be the original requirements or better (e.g., code requirements, material properties, design margins, manufacturing processes, and types of inspection requirements).

2. Much of N45.2.8 applies to construction and preoperational testing. As a result, many of the listed tests are not appropriate in an operational plant. In lieu of this, TVA utilizes the appropriate engineering organizations to establish the need for specific tests or test procedures during the operational phase and the guidance provided in ANSI N45.2.8-1975 is considered for applicability.

3. TVA implements the requirements of N45.2.8 Sections 4.4 and 5.1 with a performance-based, graded QA verification program consisting of quality control inspection, line verification, and quality assessments.

NRC Regulatory Guide 1.123 - "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants," Revision 1, 7/77, endorses ANSI N45.2.13-1976.

The NQAP follows this Guide with the following alternative:

Section 4.2 - In the special case of "commercial grade items: the supplier may not be evaluated by one of the methods identified; however, the procurement documents shall contain acceptance requirements (special receipt inspection requirements, special tests, or functional tests) specific to the item being procured. The acceptance (dedication) of commercial grade items intended for safety-related applications meets the intent of EPRI NP-5652 as accepted by the NRC.

Section 7.5 - Personnel responsible for performing verification activities are qualified in accordance with ANSI N45.2.6 or ANSI N45.2.23 as applicable.

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Section 3.2.3 - When purchasing commercial-grade calibration services from calibration laboratories accredited by a nationally-recognized accrediting body, the procurement documents are not required to impose a quality assurance program consistent with ANSI N45.2-1971. Nationally-recognized accrediting bodies include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology (NIST) and other accrediting bodies recognized by NVLAP via a Mutual Recognition Agreement (MRA). In such cases, accreditation may be accepted in lieu of the Purchaser imposing a QA Program consistent with ANSI N45.2-1971, provided all the following are met:

1. The accreditation is to ANSI/ISO/IEC 17025.

2. The accrediting body is either NVLAP or an accrediting body recognized by NVLAP through an MRA (limited to NVLAP and to American Association for Laboratory Accreditation, which is recognized by NVLAP through the International Laboratory Accreditation Cooperation).

3. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

4. The purchase documents impose additional technical and administrative requirements, as necessary, to satisfy TVA QA Program and technical requirements (must explicitly impose NUPIC clause 14.1.C.7 which requires that the calibration certificate/report include identification of the laboratory equipment/standards used).

5. The purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.

NRC Regulatory Guide 1.144 - "Auditing of Quality Assurance Programs for Nuclear Power Plants," Revision 1, 9/80, endorses ANSI N45.2.12-1977.

The NQAP follows this Guide with the following alternatives:

1. Paragraph 2.3 - Technical specialists who assist in performing audits in their area of special expertise will perform their audit duties under the supervision of a certified lead auditor.

2. TVA implements the requirements of Regulatory Guide paragraph C.3.a and Sections 3.4 and 3.5 of ANSI N45.2.12 with a performance-based, graded QA audit program. Real time adjustments are made to the audit scope, depth, and frequency based on an item's or subject's importance to safety and performance history. Real-time adjustments allow emphasis to be placed in areas where performance is weak and decrease emphasis where performance is evaluated to be good.

3. Section 4.5.2 - NA will have a certified lead auditor or a manager of the auditor either conduct the required follow-up or attest to the acceptability of the follow-up conducted by audit personnel.

4. Regulatory Guide 1.144, Section C.3.b(2)

   When purchasing commercial-grade calibration services from calibration laboratories accredited by a nationally-recognized accrediting body, the accreditation process and accrediting body may

be credited with carrying out a portion of the Purchaser's duties of verifying acceptability and effective implementation of the calibration service supplier's quality assurance program.

Nationally-recognized accrediting bodies include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology (NIST) and other accrediting bodies recognized by NVLAP via a Mutual Recognition Agreement (MRA).

In lieu of performing an audit, accepting an audit by another licensee, or performing a commercial-grade supplier survey, a documented review of the supplier's accreditation shall be performed by the Purchaser. This review shall include, at a minimum, verification of all the following:

a. The accreditation is to ANSI/ISO/IEC 17025.

b. The accrediting body is either NVLAP or an accrediting body recognized by NVLAP through an MRA.
c. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

NRC Regulatory Guide 1.146 - "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants," 8/80, endorses ANSI N45.2.23-1978.

The NQAP follows this Guide with the following alternative:

1. In addition to the State agencies and technical societies recognized by ANSI N45.2.23, Section 2.3.1.3, TVA may grant two points for professional competency to those individuals licensed as either a Reactor Operator (RO) or Senior Reactor Operator (SRO) by the NRC.

2. Replace Section 2.3.4 of ANSI N45.2.23 with the following:

   "Prospective Lead Auditors shall demonstrate their ability to effectively implement the audit process and effectively lead an audit team. This process is described in written procedures which provide for evaluation and documentation of the results of this demonstration. A prospective Lead Auditor shall participate in at least one nuclear quality assurance audit within the year preceding the individuals effective date of qualification."

NRC Regulatory Guide 1.152 - "Criteria For Programmable Digital Computer System Software in Safety-Related Systems of Nuclear Power Plants," November 1985, endorses ANSI/IEEE-ANS-7-4.3.2-1982.

The NQAP follows this Guide consistent with Section D of the Guide, with the following alternative:

For programmable digital computer system software installed in safety-related protection systems, TVA will follow this guide for the verification and validation of program elements specified in Sections 13.2.G and 13.2.H of the Nuclear Quality Assurance Plan.

APPENDIX C
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GUIDELINES FOR DETERMINATION OF TVA IDENTIFIED QUALITY-RELATED CLASSIFICATIONS

1.0 INTRODUCTION

The guidelines for classifying components, systems, and activities as quality-related depend on the relationship of the terms quality-related and safety-related as discussed in 2.0 and 3.0 below. The guidelines are contained in Section 4.0 of this Appendix.

2.0 QUALITY-RELATED

Quality-related (QR) is a term which encompasses quality assurance program requirements that describe activities which affect structures, systems, and components. These requirements provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. In addition to safety-related structures, systems, components, and activities, the term "quality-related" encompasses the broad class of plant features covered (not necessarily explicitly) in the General Design Criteria of 10 CFR 50, Appendix A, that contribute in an important way to the safe operation and protection of the public in all phases and aspects of facility operation (i.e., normal operation and transient control as well as accident mitigation).

Quality-related is more encompassing than the term safety-related. Appendix D shows the scope of the NQAP. All quality-related items and activities are not necessarily safety-related. Appendix D illustrates the programmatic relationships.

3.0 SAFETY-RELATED

Use of the term safety-related (or variations thereof) and the methodology for classifying items and activities as safety-related has been established in the General Design Criteria and Safety Analysis Report for TVA's Browns Ferry, Sequoyah, and Watts Bar Nuclear Plants. The term safety-related as used in this Appendix, this Plan and in NQAP documents is generic in nature.

Items and activities classified as safety-related are subject, without exception, to the requirements of 10 CFR 50, Appendix B. All safety-related items and activities are also quality-related.

4.0 GUIDELINES

Some items and activities are classified as quality-related but not safety-related. However, because some items and activities classified as quality-related are considered important to the continued reliable operation of TVA's nuclear facilities, TVA shall apply the requirements of all or selected parts of the NQAP to such items and activities.

4.1 Structures, systems, and components shall be classified as quality-related but not safety-related if they fit one or more of the following categories:

A. Contain radioactive material and have not been identified as safety-related.

B. Are required by ANS 3.2/ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants," and are not identified as safety-related (e.g., plant security system).

C. Are fire protection features that provide protection for safety-related structures, systems, or components.

D. Are structures, systems, and components that have environmental or operability requirements important to the safe operation of the unit (as specified in the Plant Technical Specifications).

E. Are structures, systems, and components that could impact reliability and operability goals recommended by NPG management and approved by the Chief Nuclear Officer and Executive Vice President, NPG.

4.2 Those components or systems designated as Seismic Category I(L) (Class II for BFN) in nuclear plant FSARs shall be classified as quality-related. Seismic Category I(L) is the nonsafety-related portion of Seismic Category I. (Refer to Appendix D.)

4.3 Additional components or systems, not identified in the FSARs as NNS or Seismic Category I(L,) can be designated as quality-related but not safety-related. Such additional components or systems could include the following:

A. Plant security system.

B. Plant radiological controls and radwaste systems.

C. Other structures, systems, and components which have special environmental or operability requirements.

D. Structures, systems, or equipment designated by NPG management as requiring some level of quality control because of their importance to plant reliability or operability.

4.4 Items to which one or more of the following regulatory documents are applicable should be considered for classification as quality-related.

A. Regulatory Guide 1.143, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in LightWater-Cooled Nuclear Power Plants."

B. 10 CFR 71, Subpart H, "Quality Assurance (Packaging and Transportation of Radioactive Material)."

C. Regulatory Guide 1.29, "Seismic Design Classification."

D. 10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage."

E. 10 CFR 50.62, "Requirements for Reduction of Risk From Anticipated Transients Without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants."

F. 10 CFR 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979."

G. ANS 3.2/ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants."

H. Regulatory Guide 1.33, Revision 2, February 1978, "Quality Assurance Program Requirements (Operation)."

I. NRC letter from H. J. Thompson, Jr., dated April 16, 1985, "Quality Assurance Guidance for ATWS Equipment That is Not Safety Related," Generic Letter 85-06, (A02 850422 044).

J. NRC letter from D. G. Eisenhut dated April 24, 1986, "Implementation of Fire Protection Requirements," Generic Letter 86-10 (A02 860512 005).

K. NUREG 0737, "Clarification of TMI Action Plan Requirements."

L. NUREG 0800, Section 9.5.1, Branch Technical Position, CMEB 9.5-1 (formerly BTP ASB 9.5-1), Revision 2, July 1981, "Fire Protection for Nuclear Power Plants."

M. 10 CFR 72, Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-level Radioactive Waste.

4.5 New systems (or items being added as a result of approved modifications) shall be classified on the same basis as the existing components or systems.

4.6 Classification of components or systems as quality-related but not safety-related shall be performed in accordance with approved corporate or site engineering procedures or at NPG management direction.

5.0 Classification of Dry Cask Storage System

The Dry Cask Storage System is engineered to provide safe storage of spent fuel on the ISFSI pad. These components will be designated as important to Safety (ITS) classification category A, B, C in accordance with NUREG/CR-6407. For procurement purposes, 10 CFR 21 will apply to 10 CFR 72 ITS category A and B components. For on site activities 10 CFR 72 ITS Category A and B components will be treated as safety-related under NPG's existing QA Program. Similarly, 10 CFR 72 ITS Category C components will be treated as quality-related but not safety-related.

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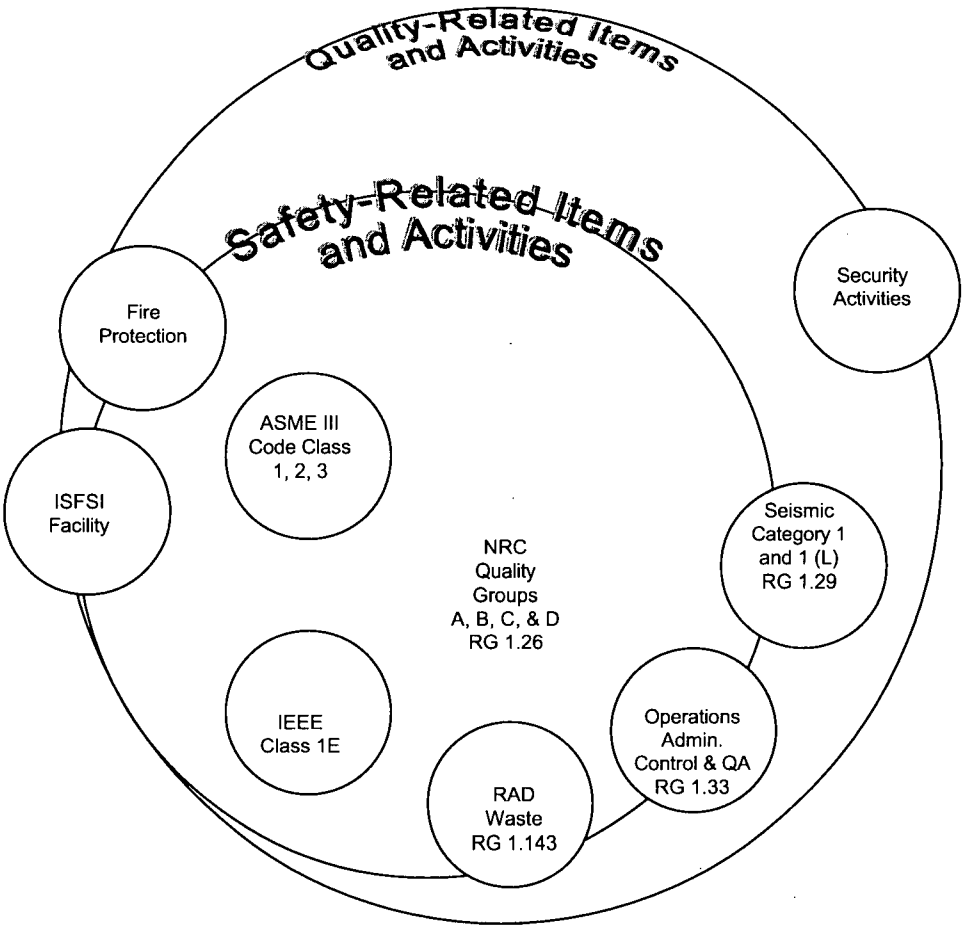
SCOPE OF NUCLEAR QUALITY ASSURANCE PROGRAM



This diagram displays the relationship of safety-related to quality-related items and activities. Examples of these items and activities are shown. It is not intended to show each specific item and activity within the scope of the Nuclear QA Program.

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COMPUTER SOFTWARE

The requirements of Section 13.0 apply to application software which performs any of the following:

1. Directly operate safety-related plant equipment.

2. Generates design output for the design of safety-related or quality-related functions, structures, systems, or components.

3. Used by control room personnel, without further verification, to make plant operating decisions affecting:

   a. The integrity of the reactor coolant pressure boundary.

   b. The capability to shutdown the reactor and maintain it in a safe condition.

   c. The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR 100 guidelines.

4. Perform calculations, the results of which are used, without further verification to operate, maintain, inspect, or test safety-related or quality-related structures, systems, and components.

5. Performs engineering calculations, the results of which are used, without further verification to support the design of safety-related and quality-related structures, systems, and components.

6. Generates output used to procure safety- or quality- related items.

7. Maintains, controls, or distributes information to be used without further verification in the procurement, design, operation, and maintenance of safety-related or quality-related structures, systems, and components.

APPENDIX F
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WATTS BAR UNIT 2 CONSTRUCTION COMPLETION PROJECT

General

This appendix to the Tennessee Valley Authority (TVA) Nuclear Quality Assurance Plan (NQA Plan) describes the top-level policy that assigns major functional responsibilities for construction completion activities conducted by or for TVA Watts Bar Unit 2 (WBN 2) Construction Completion Project. The NQA Plan describes the methods and establishes the administrative control requirements that meet 10 CFR 50, Appendix B and the WBN 2 construction permit.

Current TVA Nuclear Power Group (NPG) programs and procedures that implement the NPG Nuclear Quality Assurance Program (NQAP), as well as the existing NPG organizational structures, focus heavily toward an operating plant structure. This appendix is developed to take into account the unique requirements and commitments necessary to ensure effective quality assurance program implementation and oversight for the WBN 2 Construction Completion Project. This plan incorporates lessons learned from WBN Unit 1 (WBN 1), Browns Ferry Nuclear Plant (BFN) recoveries, and construction projects in the late 1970s and early 1980s (NRC IN 2007-04 and INPO 83-011).

The execution and accountability for the WBN 2 construction completion, construction phase tests and inspections, and related QA activities has been delegated through a TVA contract to Bechtel Power Corporation (Bechtel) and is implemented through the project specific TVA-approved Bechtel Nuclear Quality Assurance Manual (QAM). The TVA review and approval of the QAM and any changes thereto, ensures that regulatory requirements and TVA specific commitments of this NQA Plan are incorporated and that WBN 2 is completed by a quality assurance program as rigorous as that used for completion of WBN 1. The Bechtel ASME Quality Assurance Manual is included by reference in the QAM and is also reviewed and approved by TVA to ensure plant specific commitments are incorporated in the same manner as commitments in the NQA Plan. As part of the execution of the QAM the Bechtel organization is accountable for performing the regulatory required quality control inspection and quality assurance audit functions for the construction-phase activities. TVA retains and exercises the overall responsibility for the establishment and execution of an effective QA program for the construction completion of WBN 2. This appendix describes the Bechtel program and the TVA oversight methods for ensuring the adequacy and effectiveness of the contractor QA organization execution of QAM related activities for construction completion.

Procedures and instructions that control engineering, procurement, construction and QA/QC activities will be developed by Bechtel prior to commencement of those activities and are reviewed and approved by TVA. A part of the review is to identify those procedures for which future changes must be approved by TVA.

1.1 Scope/Applicability

This appendix applies only to WBN 2 construction permit construction phase activities affecting the quality and performance of safety-related structures, systems, and components through component testing and prior to fuel load, including, but not limited to:

Designing	Procuring	Fabricating	Shipping	Receiving	Storing
Handling	Constructing	Installing	Erecting	Inspecting	Repairing
Cleaning	Construction Testing		Licensing	Training	

The policy of TVA is to assure a high degree of availability and reliability of its nuclear plants while ensuring the health and safety of its workers and the public. To this end, selected

elements of the QAM are also applied to certain equipment and activities that are not safety-related, but support safe, economic, and reliable plant operations, or where other NRC guidance establishes quality assurance requirements. Implementing documents establish program element applicability.

ORGANIZATION

This section describes the TVA organizational structure, functional responsibilities, levels of authority and interfaces for establishing, executing, and verifying the implementation of quality assurance requirements for WBN 2. The organizational structure includes offsite and on-site functions including interface responsibilities for multiple organizations performing non-safety-related functions. Implementing documents assign more specific responsibilities and duties, and define the organizations interfaces involved in conducting activities and duties within the scope of this NQA Plan. Management gives careful consideration to the timing, extent and effects of organizational structure changes.

TVA WBN 2 management is responsible to ensure the TVA WBN 2 NA organization and the Bechtel Quality Assurance organizations are sized commensurate with the duties and responsibilities assigned. This is accomplished through the use of dedicated and experienced NA organization performing oversight of the contractor activities both onsite and off and applying lessons learned from the recent completion of BFN 1 and providing feedback to TVA and Bechtel management.

The TVA WBN 2 organization is responsible for plant licensing, engineering, procurement, construction, and pre-operational activities. WBN 2 organization will support the WBN operating organization as necessary for initial fuel loading, precritical, low power and power-ascension testing.

Engineering, procurement, construction, QA/QC and construction testing services are provided to the TVA through a contract with Bechtel that was reviewed by TVA NA to ensure appropriate TVA QA requirements were addressed. This contract will extend the quality assurance requirements described in this document to all applicable contractors and subcontractors through the TVA approved QAM. The transfer of accountability for implementation of the QA program from Bechtel to TVA will be defined in project procedure and will occur prior to fuel load.

The following sections describe the reporting relationships, functional responsibilities and authorities for organizations implementing and supporting the NQA Plan. The TVA Nuclear Power Group and the NGDC organization are described herein.

The Bechtel QA/QC corporate organization and lines of communication to project QA/QC are consistent with those described in the NRC reviewed and accepted Bechtel QA Topical Report BQ-TOP-1, Rev 4A, Bechtel Quality Assurance Program for Nuclear Power Plants. The project specific QA/QC organization is described in the TVA approved QAM and ensures independence is maintained between the organization performing the checking (quality assurance and quality control) functions and the organizations performing the functions.

Organization charts for various TVA departments/locations are contained in the Final Safety Analysis Report that references the TVA organizational description (TVA-NPOD89) or the organization charts describe with more detail the organizational positions and specific functions and responsibilities of those implementing the NQA Plan.

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1.1 President and Chief Executive Officer (CEO)

The CEO is responsible for all aspects of design, construction and operation of TVA's nuclear plants. The CEO is also responsible for all technical and administrative support activities provided by TVA and contractors. The CEO, through the Chief Operating Officer (COO), directs the Executive Vice President and Chief Nuclear Officer (CNO) and the Senior Vice President NGDC. The CEO also directs the executive responsible for Administrative Services. The CEO reports to the TVA Board of Directors with respect to all matters.

1.2 Senior Vice President Nuclear Generation Development and Construction (NGDC)

The Senior Vice President NGDC (SVP NGDC) reports to the COO and is responsible for new nuclear plant licensing, engineering, procurement, construction and preoperational testing activities and for the implementation of this NQA Plan for NGDC activities for WBN 2 construction completion. The SVP NGDC also directs the planning and development of the NGDC staff and organization resources. The SVP NGDC is also responsible for establishing and managing the contracts for the development of new nuclear generation.

1.2.1 Vice President Watts Bar Unit 2 Construction Completion Project

The Vice President Watts Bar Unit 2 reports to the SVP NGDC and is responsible for the overall implementation of quality assurance requirements in the areas specified by the NQA Plan for WBN 2 construction completion and preoperational test activities.

1.3 Executive Vice President Administrative Services

The Executive Vice President Administrative Services reports to the CEO and is responsible for managing the overall Administrative Services organization including assuring that Supply Chain Management and Information Technology support NGDC activities in accordance with the NQA Plan.

1.4 Executive Vice President and Chief Nuclear Officer

The CNO reports to the COO and is the TVA executive responsible for the safe, reliable, and efficient operation of licensed TVA nuclear plants. The CNO directs the operating plants' Vice Presidents and the General Manager Nuclear Assurance. The CNO will support NGDC activities through the Nuclear Assurance organization.

1.4.1 WBN Site Vice President

The Site Vice President WBN Unit 1 operating organization reports to the CNO and is responsible for the overall implementation of quality assurance requirements in the areas specified by the NQA Plan Section 4.1.4. In addition to the requirements of Section 4.1.4, the Site Vice President WBN is responsible for the WBN 2 Initial Fuel Loading, Precritical Tests, Initial Criticality and Low Power Testing, and Power-Ascension Tests.

1.4.2 Nuclear Assurance

The Nuclear Assurance organization is responsible for independently planning and performing activities to verify the effective implementation of the NRC-approved Nuclear Quality Assurance Plan (NQA Plan) described in this document for WBN 2 activities including, but not limited to engineering, QA/QC, licensing, document control, corrective action program and procurement that support plant completion.

1.4.2.1 General Manager Nuclear Assurance

The General Manager Nuclear Assurance reports to the CNO for existing plants' activities and has a direct line of communication to the SVP NGDC for the WBN 2 completion activities and is responsible for developing and maintaining this NQA Plan, evaluating compliance to the programs and managing the NA organization resources.

1.4.2.1.1 Watts Bar Unit 2 Project Nuclear Assurance Manager

The Watts Bar Unit 2 Project Nuclear Assurance Manager (PNAM) reports to the General Manager Nuclear Assurance and has direct lines of communication to the Vice President WBN 2, and is responsible for the verification of implementation of the NQA Plan described in this document. The PNAM is responsible for assuring compliance with regulatory requirements and procedures through audits, assessments and technical reviews; for monitoring organization processes to ensure conformance to commitments and licensing document requirements; and for ensuring that vendors providing quality services, parts and materials to TVA are meeting the requirements of 10 CFR 50, Appendix B through Nuclear Procurement Issues Committee (NUPIC), Bechtel or TVA vendor audits. The PNAM has sufficient independence from other NGDC priorities to bring forward issues affecting safety and quality and makes judgments regarding quality in all areas necessary regarding NGDC activities. The PNAM may make recommendations to the NGDC management regarding improving the quality of work processes. If the PNAM disagrees with any actions taken by the Watts Bar Unit 2 organization relative to NQA Plan implementation and is unable to obtain resolution, the PNAM shall inform the General Manager Nuclear Assurance and if necessary, bring the matter to the attention of the SVP NGDC who will determine the final disposition.

1.5 Authority to Stop Work

TVA WBN 2 NA and Bechtel quality assurance and inspection personnel have the authority, and the responsibility, to stop work in progress which is not being done in accordance with approved procedures or where safety or structure, system or component integrity may be jeopardized. This extends to off-site work performed by suppliers furnishing safety-related materials and services to TVA.

1.6 Organizational Independence

For the WBN 2 Completion Project, independence shall be maintained between the organization performing the checking (quality assurance and quality control) functions and the organizations performing the functions. This provision is not applicable to design review/verification.

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TYPES OF CONTROLLED DOCUMENTS AND MANUALS

1. Design Specifications and Drawings
2. Safety Analysis Reports for the 10 CFR 50 Reactor Power Facilities
3. Program Manuals
4. Plant Instructions
5. Radiological Protection Plan
6. Nuclear Engineering Procedures Manual
7. Site Engineering Project Manuals
8. ASME Section III Quality Assurance Manual
9. Nuclear Procedures System Manuals
10. As-built Documents
11. Computer Programs
12. Nonconformance Reports
13. Nuclear Quality Assurance Plan
14. System Descriptions
15. Topical Report
16. Safety Analysis Reports for the 10 CFR 72 ISFSI Facilities

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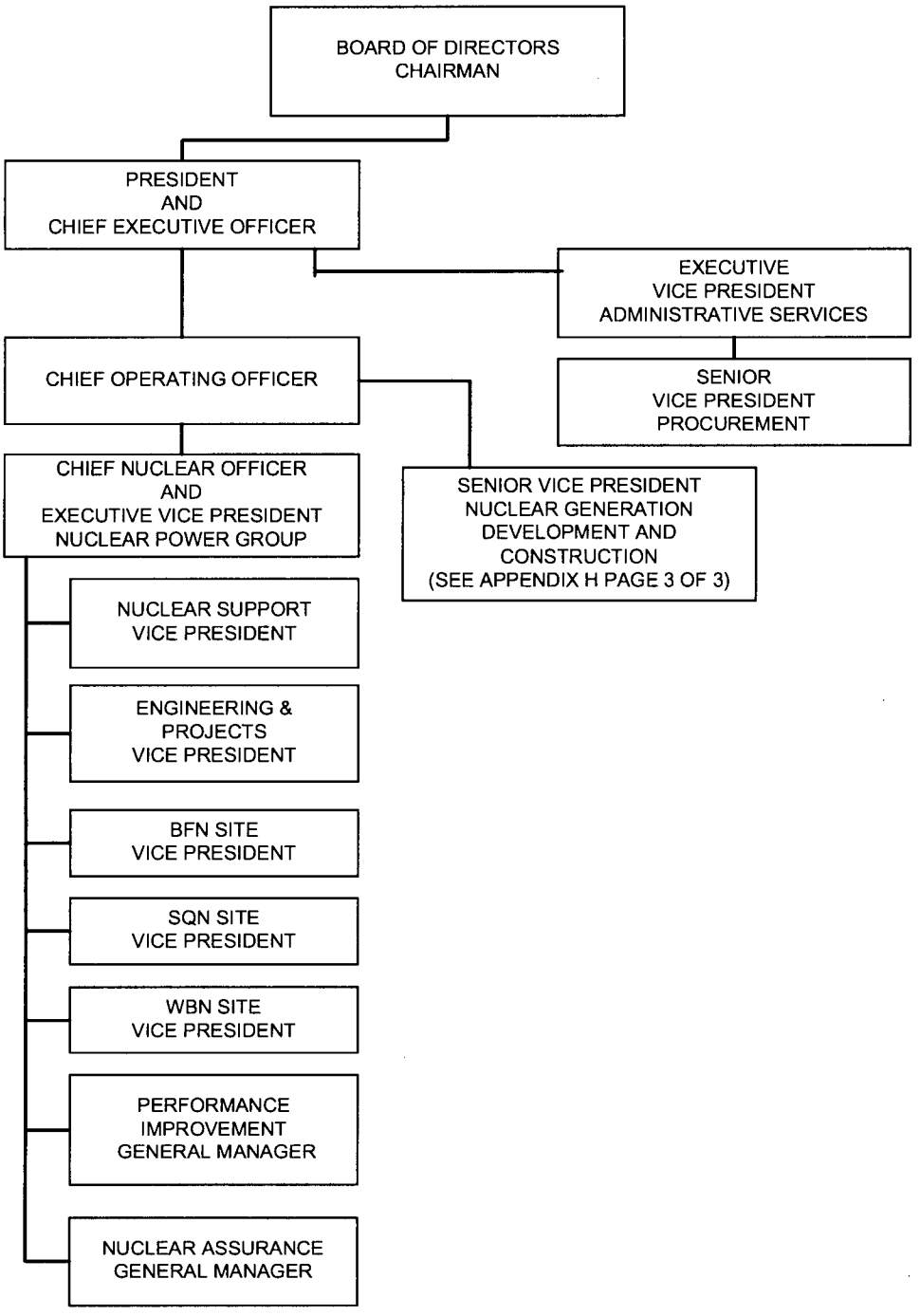
TVA NQAP
ORGANIZATION CHARTS



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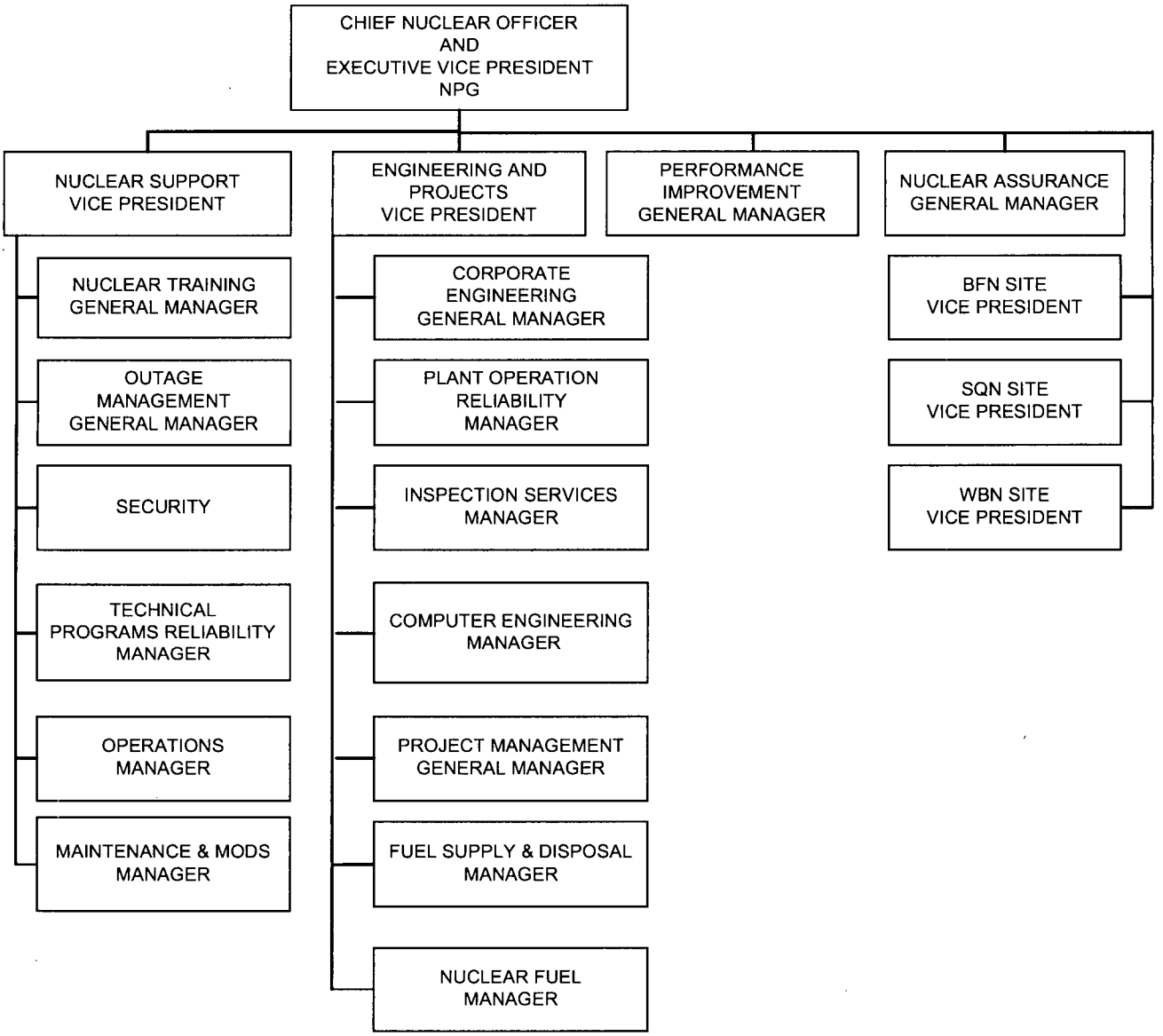
TVA NQAP
ORGANIZATION CHARTS



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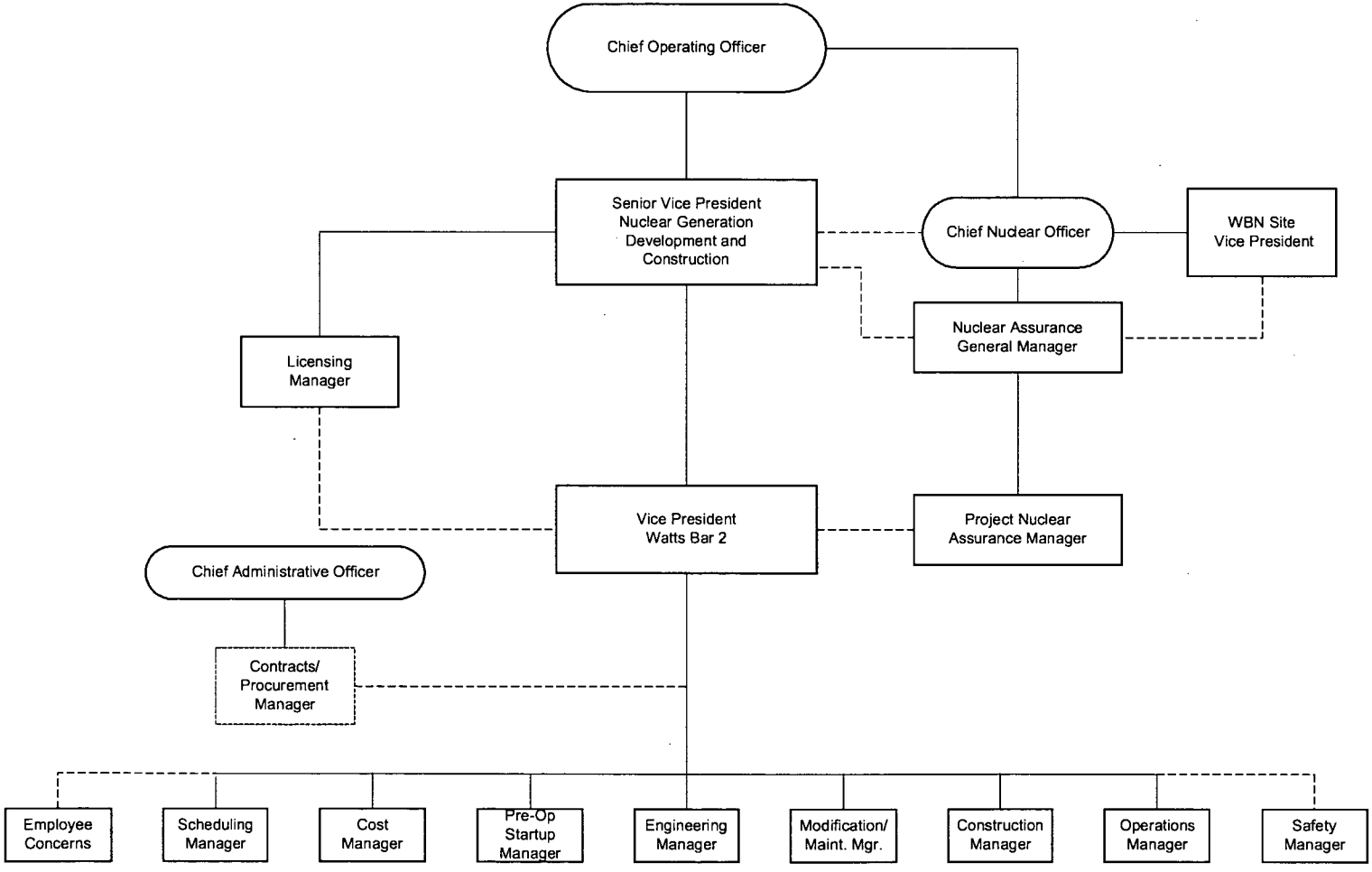
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