



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

August 31, 2007

10 CFR 50.54(a)
10 CFR 50.55(f)(3)
10 CFR 50.71(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11545 Rockville Pike
Rockville, Maryland 20852-2738

Gentlemen:

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)
AND ORGANIZATION TOPICAL REPORT (TVA-NPOD89-A) - BROWNS
FERRY, SEQUOYAH, AND WATTS BAR NUCLEAR PLANTS - ANNUAL
UPDATES

Pursuant to 10 CFR 50.54(a) and 10 CFR 50.55(f)(3), this letter transmits
TVA's annual updates to TVA's NQA Plan and Nuclear Power Group
Organization Topical Report.

Enclosure 1 provides the updated NQA Plan, Revision 17. Changes since the
previous revision do not involve a reduction in commitment and therefore do
not require NRC approval. Enclosure 2 provides an itemized list of changes to
the NQA Plan since the previous revision with appropriate justification.
Enclosure 3 provides the updated Organizational Topical Report.

Q004

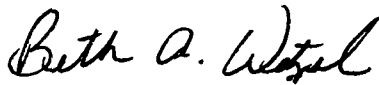
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Since the NQA Plan and Organizational Topical Report applicability encompasses multiple TVA units, updates are provided to NRC on a yearly basis to ensure that TVA meets the refuel cycle submittal criterion pursuant to 10 CFR 50.71(e) for each unit at each site.

There are no new regulatory commitments made by this letter. If you have questions, please contact R. M. Brown at (423) 751-7228.

Sincerely,

A handwritten signature in black ink, appearing to read "Beth A. Wetzel". The signature is fluid and cursive, with the first name "Beth" being the most prominent.

Beth A. Wetzel
Manager, Corporate Nuclear Licensing
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Enclosures
cc: See page 3

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Enclosures

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ENCLOSURE 1

**NUCLEAR QUALITY ASSURANCE PLAN
TVA-NQA-PLN89-A
REVISION 17**

	NUCLEAR QUALITY ASSURANCE	
<div><p>Tennessee Valley Authority</p><p>Nuclear Quality Assurance Plan</p><p>TVA-NQA-PLN89-A</p><p>Revision 17</p></div>		

NUCLEAR QUALITY ASSURANCE PLAN

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<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>DESCRIPTION OF REVISION</u>	<u>PAGES AFFECTED</u>
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.	Fifth annual update	All
Note: Section 12.2.E.2 is effective after NRC approval.			
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, <u>Administrative Controls</u> .	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, <u>Administrative Controls</u> ; 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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<u>REVISION NUMBER</u>	<u>EFFECTIVE DATE</u>	<u>DESCRIPTION OF REVISION</u>	<u>PAGES AFFECTED</u>
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 <i>RPL 12/3/99</i>	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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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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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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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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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

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

Chief Nuclear Officer and
Executive Vice President, Nuclear Power Group

John C. Fornicola

General Manager, Nuclear Assurance

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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
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) 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."

The ASME III QAM is currently inactive because TVA is not actively pursuing an ASME Section III design and construction program. NQA Plan requirements associated with the ASME III QAM are currently not required to be implemented.

3.3.1 Implementation

The requirements established by this Plan and the ASME III QAM are implemented by NPG 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 cleanliness 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 (inactive) are also responsibilities of the Vice President, E&P.
- 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 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. 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. (Responsibility deleted.) |
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.

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 (inactive) 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 (inactive)

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, E&P, 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.

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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.
- D. The Vice President, E&P, is responsible for establishing and implementing programs for training and certification of personnel performing QC activities.

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.
- 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.

C. The Vice President, E&P, is responsible for the development and conduct of installation tests (construction phase) which incorporate engineering requirements.

D. The Site Vice President (delegated to the Site Engineering Manager) is responsible for the development of tests (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.
- B. The Site Vice President (delegated to the Site Engineering Manager) is responsible for providing qualitative/quantitative criteria in design output documents.

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, E&P 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, E&P 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)-(inactive).

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.

*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.

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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

<u>10 CFR 50, Appx B</u> Criterion NQA Plan		<u>10 CFR 72,</u> <u>Subpart G</u>	<u>ANSI N45.2 - 1971</u> Section NQA Plan		<u>ANSI N18.7 - 1976</u> 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														Indoctrination, Training, Qualification, and Certification	Auditing	Computer Software and Data	Definitions
	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			
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 Sects. 5.2.13 5.2.13.1	X Sect. 5.2.13.2	X Sect. 5.2.13.3	X Sects. 5.2.8 5.2.17	X Sects. 5.2.12 5.2.18	X Sects. 5.2.8 5.2.19	X Sect. 5.2.16	X Sect. 5.2.13.4	X Sects. 5.2.6 5.2.8 5.2.14	X Sects. 5.2.7 5.3.5	X Sect. 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 Dry. 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 Sects. 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	Document Control	QA Records	Design Control	Inspection, Test and Operating Status	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Indoctrination, Training, Qualification, and Certification	Auditing	Computer Software and Data	Definitions
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	NOA 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 1.123 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

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
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 10 CFR 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 X 72.172	X 72.144	X 72.176		
10 CFR 73.71															X				

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TABLE 1

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TABLE 1

SOURCE REQUIREMENT DOCUMENT	NQA PLAN SECTION																		
	Procedures and Instructions	Document Control	QA Records	Design Control	Procurement Document Control	Control of Purchased Material, Equipment, and Services	Identification and Control of Materials, Parts, and Components	Inspection and Line Verification	Control of Special Processes	Test Control	Control of M&TE and Installed Safety-Related I&C Devices	Handling, Storage and Shipping	Inspection, Test and Operating Status	Control of Maintenance	Adverse Conditions	Indoctrination, Training, Qualification, and Certification	Auditing	Computer Software and Data	Definitions
	6.1.4	6.2.4	6.3.4	7.4	8.1.4	8.2.4	8.3.4	9.1.4	9.3.4	9.4.4	9.5.4	9.6.4	9.7.4	9.8.4	10.4	11.4	12.4	13.4	15.0
*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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Table 2

REGULATORY GUIDE CONFORMANCE STATUS

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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Table 2

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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 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

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Table 2

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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
Page 1 of 4GUIDELINES 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.

APPENDIX C
Page 2 of 4

- 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."

APPENDIX C
Page 3 of 4

- 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. |

APPENDIX C

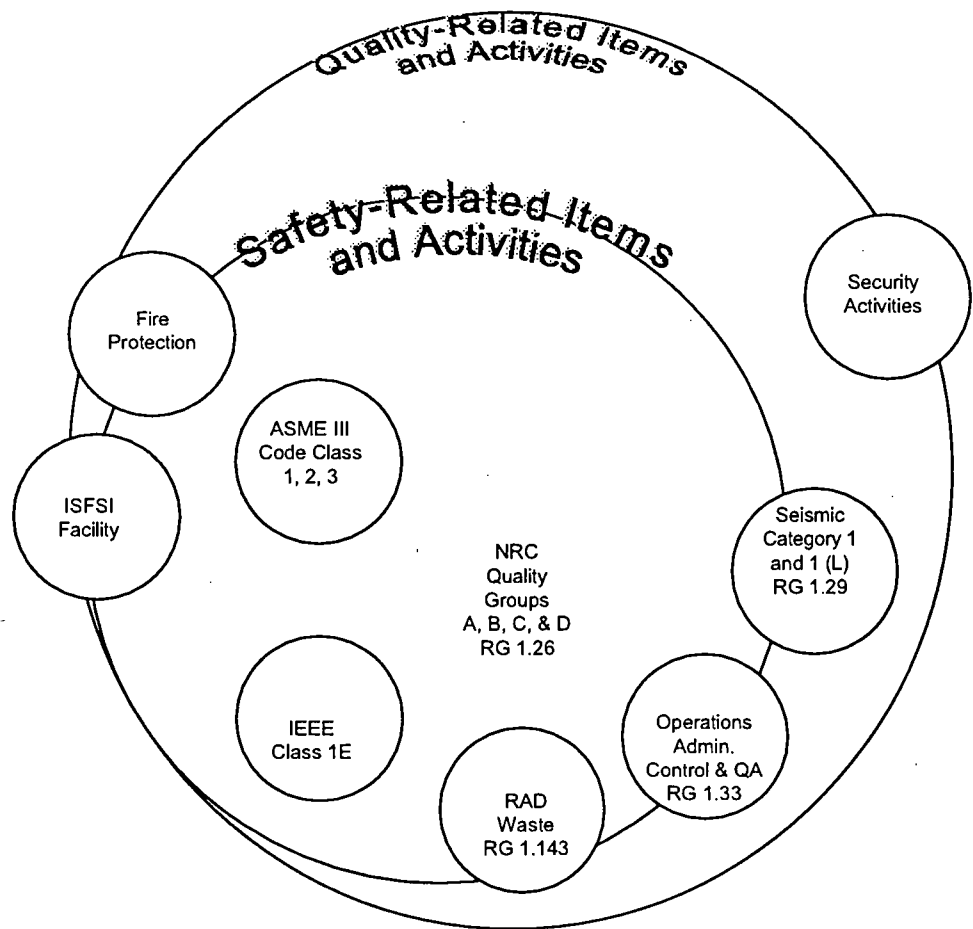
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5.0 Classification of Dry Cask Storage System

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.

APPENDIX D
Page 1 of 1

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
Page 1 of 1

DEFERRED PLANT EQUIPMENT POLICY

Background

TVA's integrated resource plan - Energy Vision 2020 - identifies the need for a flexible range of options and alternatives required to meet, among other things, the Tennessee Valley region's base-load power supply needs through the year 2020. Until the decision on generating options to meet future load forecast are finalized, maintaining WBN Unit 2 in a deferred status is consistent with TVA's need to maintain a flexible range of generating options. In the event TVA plans to reactivate construction at any of these units, NRC will be notified by letter as specified in Generic Letter 87-15.

Policy

Equipment age will be an important factor in determining suitability for use in the event of construction restart of deferred units. Some other factors include age degradation due to design life, outdated or obsolete equipment, design improvements, and economic feasibility to replace rather than preserve indefinitely the equipment under the lay-up program. For these reasons, TVA may terminate lay-up preventative maintenance on selected equipment without further notification to NRC by entering the equipment into the corrective action program as deferred equipment. This allows the equipment to be abandoned in place as deferred equipment rather than stored in place until further decision is made regarding plant construction restart. Deferred equipment is not tagged since work controls on deferred units do not allow equipment to be placed in service at operating units without further evaluation and equipment disposition. Any deferred equipment shall be prohibited from use in nuclear safety-related applications unless compliance is fully restored in accordance with implementing procedures.

APPENDIX G
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TYPES OF CONTROLLED DOCUMENTS AND MANUALS

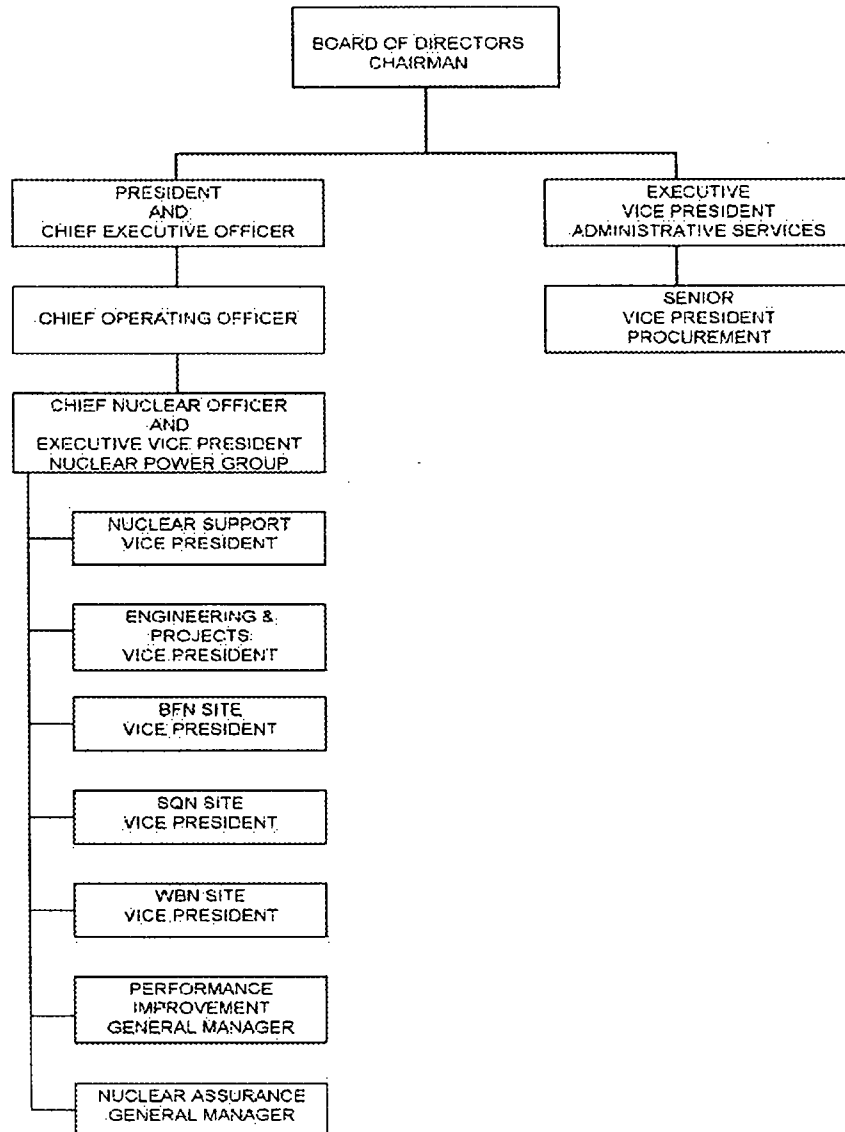
1. Design Specifications and Drawings
2. Safety Analysis Reports for the 10 CFR 50 Reactor Power Facilities
3. Program Manuals
4. Plant Instructions
5. Radiological Protection Plan
6. Nuclear Engineering Procedures Manual
7. Site Engineering Project Manuals
8. ASME Section III Quality Assurance Manual
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

NUCLEAR QUALITY ASSURANCE PLAN

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TVA NQAP ORGANIZATION CHARTS

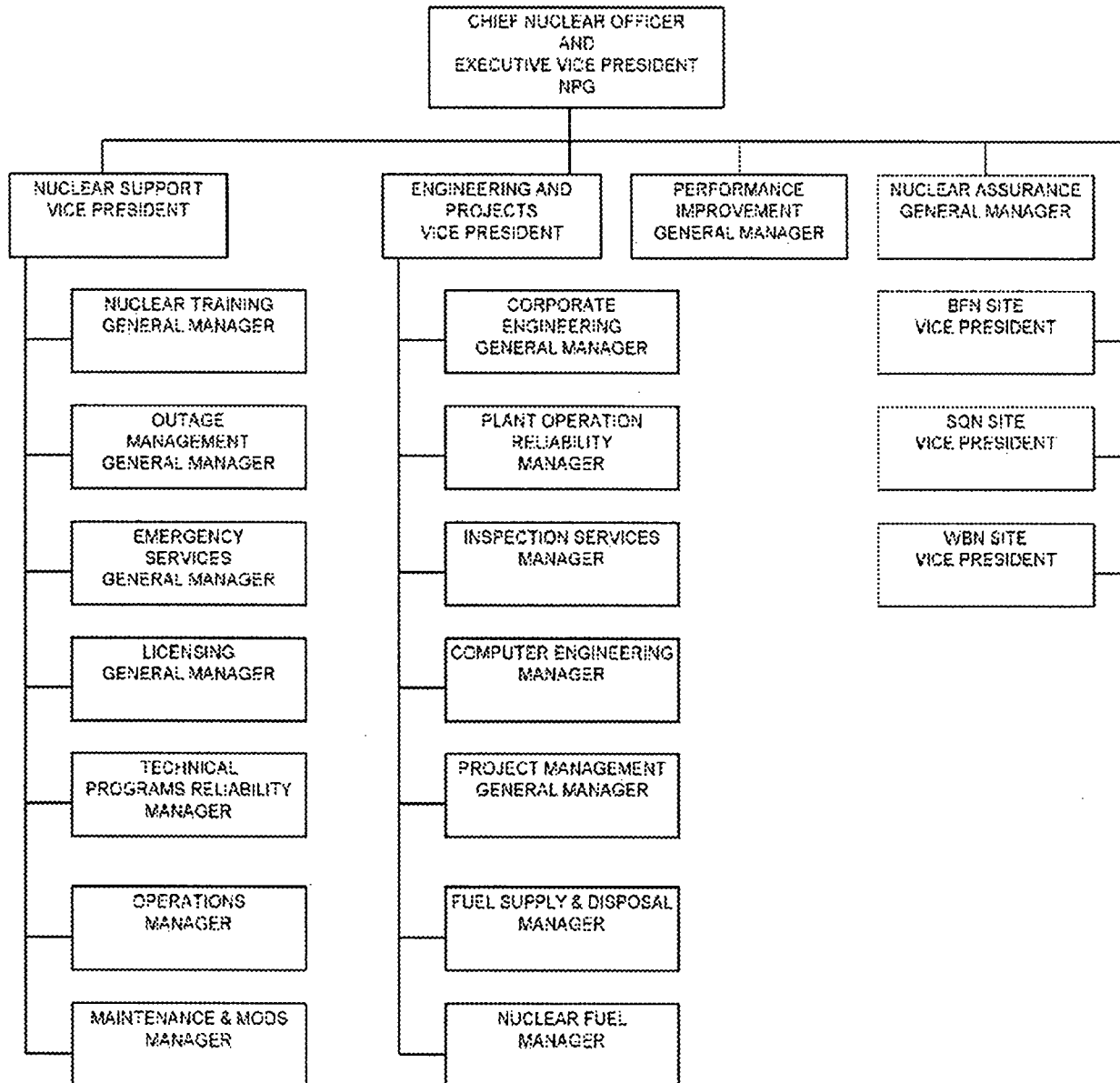


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TVA NQAP ORGANIZATION CHARTS



ENCLOSURE 2

**TENNESSEE VALLEY AUTHORITY
NUCLEAR QUALITY ASSURANCE PLAN (TVA-NQA-PLN89-A)
REVISION 17**

DESCRIPTION OF CHANGES

**TENNESSEE VALLEY AUTHORITY
NUCLEAR QUALITY ASSURANCE PLAN (TVA-NQA-PLN89-A), REVISION 17
DESCRIPTION OF CHANGES**

<u>Revision 17 Changes</u>	<u>Change and Justification</u>
Various Sections	Changed TVA Nuclear (and TVAN) to Nuclear Power Group (and NPG) throughout the document. This is a title change only.
Various Sections	Changed the title “Manager, Nuclear Assurance and Licensing” to “General Manager, Nuclear Assurance.” This is a title change only.
Various Sections	Deleted reference to “Senior Vice President, Nuclear Operations.” This position has been eliminated with responsibilities transferred to other organizations. No responsibilities were deleted.
Various Sections	Changed the title “Senior Vice President, Nuclear Support” to “Vice President, Nuclear Support.” This is a title change only.
Various Sections	Changed the title “Engineering and Technical Services Vice President” to “Engineering and Projects Vice President.” This is a title change only.
Various Sections	Deleted reference to “Browns Ferry Unit 1 Restart Site Nuclear Assurance Manager.” This position deleted based on restart of BFN Unit 1.
Various Sections	Changed the title “Corporate Nuclear Licensing and Industry Affairs Manager” to “Licensing General Manager.” This is a title change only.
Various Sections	Deleted reference to “Browns Ferry Unit 1 Restart Vice President.” This position deleted based on restart of BFN Unit 1.

**TENNESSEE VALLEY AUTHORITY
NUCLEAR QUALITY ASSURANCE PLAN (TVA-NQA-PLN89-A), REVISION 17
DESCRIPTION OF CHANGES**

4.1.4 Responsibilities for implementing programs at licensed units, plant technical reviews and PORC, and fire protection changed from Nuclear Operations Senior Vice President to Site Vice Presidents.

Change based on reorganization.

4.1.10 Responsibility for the Nuclear Experience Review Program changed from Nuclear Licensing to Performance Improvement.

Change based on reorganization.

6.1.3.A Responsibility changed from Senior Vice President, Nuclear Operations to Vice President, Nuclear Support.

Change based on reorganization.

6.2.3 Responsibility changed from Senior Vice President, Nuclear Operations to Vice President, Nuclear Support.

Change based on reorganization.

6.3.3 Responsibility changed from Senior Vice President, Nuclear Operations to Vice President, Nuclear Support.

Change based on reorganization.

9.1.3.B Responsibility changed from Senior Vice President, Nuclear Operations to Vice President, Nuclear Support.

Change based on reorganization.

9.3.3.E Responsibility changed from Senior Vice President, Nuclear Operations to Vice President, Nuclear Support.

Change based on reorganization.

9.5.3.A Responsibility changed from Senior Vice President, Nuclear Operations to Site Vice President.

Change based on reorganization.

**TENNESSEE VALLEY AUTHORITY
NUCLEAR QUALITY ASSURANCE PLAN (TVA-NQA-PLN89-A), REVISION 17
DESCRIPTION OF CHANGES**

9.7.3.A & D	Responsibilities changed from Senior Vice President, Nuclear Operations to Site Vice President. Change based on reorganization.
9.8.3.A & C	Responsibilities changed from Senior Vice President, Nuclear Operations to Site Vice President. Change based on reorganization.
10.3.A & D	Responsibilities changed from Senior Vice President, Nuclear Operations to General Manager, Performance Improvement. Change based on reorganization.
11.3.A & B	Responsibilities changed from Senior Vice President, Nuclear Operations to Vice President, Nuclear Support. Change based on reorganization.
13.3	Responsibilities changed from Senior Vice President, Nuclear Operations to Vice President, Engineering & Projects. Change based on reorganization.
Various Sections	Deleted reference to Bellefonte (BLN) Based on NRC approval of withdrawal of BLN construction permit.
Various Sections	Corrected several incorrect section references. A previous revision to NQA Plan resulted in renumbering some sections. A few internal references were not revised to reflect the renumbering.
Appendix B	Added Exception to Reg. Guide 1.33 concerning Commercial Grade Calibration Services. Change based on approved NRC Safety Evaluation.

**TENNESSEE VALLEY AUTHORITY
NUCLEAR QUALITY ASSURANCE PLAN (TVA-NQA-PLN89-A), REVISION 17
DESCRIPTION OF CHANGES**

Appendix B **Added Exception to Reg. Guide 1.123 concerning Commercial Grade Calibration Services.**

Change based on approved NRC Safety Evaluation.

Appendix B **Added Exception to Reg. Guide 1.144 concerning Commercial Grade Calibration Services.**

Change based on approved NRC Safety Evaluation.

Appendix H **Updated Organization Charts.**

Changes based on reorganization.

Appendix I **Deleted the BFN Unit 1 Restart Organization matrix.**

Deleted based on restart of BFN Unit 1.

ENCLOSURE 3

**TENNESSEE VALLEY AUTHORITY
ORGANIZATIONAL TOPICAL REPORT
TVA-NPOD89-A**

ORGANIZATION DESCRIPTION

LIST OF REVISIONS

REVISION 0	June 1, 1989
REVISION 1	August 13, 1990
REVISION 2	April 18, 1991
REVISION 3	April 17, 1992
REVISION 4	December 27, 1993
REVISION 5	December 16, 1994
REVISION 6	June 29, 1995
REVISION 7	June 27, 1997
REVISION 8	August 25, 1999
REVISION 9	August 25, 2000
REVISION 10	August 24, 2001
REVISION 11	August 26, 2002
REVISION 12	August 22, 2003
REVISION 13	August 31, 2004
REVISION 14	August 30, 2005
REVISION 15.....	June 22, 2006
REVISION 16.....	August 30, 2007

**TVA NUCLEAR POWER GROUP
ORGANIZATION DESCRIPTION**

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- 1.0 Corporate Organization (Nuclear Power Group)
 - 1.1 Executive Vice President Chief Nuclear Officer
 - 1.2 Senior Program Manager Executive Initiatives
 - 1.3 General Manager Nuclear Assurance
 - 1.4 Senior Vice President New Nuclear Generation Development and Construction
 - 1.5 General Manager Business Services
 - 1.6 Chief Administrative Officer and Executive Vice President Administrative Services
- 2.0 Vice President Nuclear Support
 - 2.1 General Manager Emergency Services
 - 2.2 General Manager Training
 - 2.3 General Manager Nuclear Outage Planning and Scheduling
 - 2.4 General Manager Licensing
 - 2.5 Manager Technical Programs Reliability
 - 2.6 Manager Maintenance and Modifications (Corporate Oversight)
 - 2.7 Manager Operations (Corporate Oversight)
- 3.0 Vice President Engineering and Projects
 - 3.1 General Manager Corporate Engineering
 - 3.2 General Manager Project Management
 - 3.3 Manager Inspection Services
 - 3.4 Manager Nuclear Fuel Design
 - 3.5 Manager Nuclear Fuel Supply and Disposal Projects
 - 3.6 Manager Plant Operational Reliability

- 3.7 Manager Computer Engineering
- 4.0 General Manager Performance Improvement
 - 4.1 General Manager Process Methods
 - 4.2 Manager Organization and Cultural Initiatives
 - 4.3 Manager Operating Experience
 - 4.4 Manager Performance Assessment
- 5.0 Site Vice President, Browns Ferry Nuclear Plant
- 6.0 Site Vice President, Sequoyah Nuclear Plant
- 7.0 Site Vice President, Watts Bar Nuclear Plant

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ABSTRACT

The TVA Nuclear Power Group (NPG) Organization Description (TVA-NPOD89-A) includes organization descriptions for Browns Ferry (BFN), Sequoyah (SQN), Watts Bar (WBN), and TVA Corporate Nuclear. This report contains the senior management, technical support and operating organization descriptions, and organization charts that meet the "content" guidance of Nuclear Regulatory Commission's (NRC's) Regulatory Guide 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants - LWR Edition, Rev. 3 (November 1978).

Qualification requirements and training descriptions specified in the standard format document will continue to be addressed in each plant's Final Safety Analysis Report. The detailed TVA Nuclear Assurance organization and program description is contained in the NPG Quality Assurance Plan (TVA-NQA-PLN89-A) and is not repeated herein.

INTRODUCTION

The original purpose of the NPG Organization Description TVA-NPOD89-A was to establish a controlled, single-source document and a disciplined process for communicating organization structure and position descriptions to the NRC. TVA-NPOD89-A will be referenced in future revisions of our license applications including the Safety Analysis Reports, Technical Specifications, the Nuclear Quality Assurance Plan, and other documents that may refer to the NPG organization. This topical report is updated as necessary to reflect major organizational changes. Since this topical report encompasses multiple plants, subsequent updates to the Topical Report will be filed on a yearly basis to ensure that TVA meets the refuel cycle criterion of 10 CFR 50.71(e) for each unit at each site.

TENNESSEE VALLEY AUTHORITY (TVA)

1.0 Corporate Organization

TVA is an agency of the federal government whose major policies, programs, and organization are determined by a part-time, nine member Board structure pursuant to the TVA Governance Restructuring provisions of the Consolidated Appropriate Act, 2005. The Board members are appointed by the President of the United States and confirmed by the Senate for five-year terms. The Board will elect a Chairman and select a Chief Executive Officer to manage TVA's day-to-day business. The Board of Directors is assisted by TVA's Management Committee, which shapes long-term business strategies, recommends major program initiatives, and guides the day-to-day operations. The Corporate organization is shown in Figure 1-1.

TVA Nuclear Power Group (NPG) is responsible for nuclear plant engineering and design, construction, operation, quality assurance, and compliance with regulatory requirements. NPG plans and manages the Nuclear Program to meet the requirements of TVA's Power Program consistent with safety, environmental, quality, and economic objectives. The general organization of NPG is shown in Figure 1-2.

1.1 Executive Vice President Chief Nuclear Officer (CNO)

The CNO is the senior nuclear manager with direct authority and responsibility for the management, control, and supervision of TVA's Nuclear Power Program and for the execution of nuclear programs, policies, and decisions that the Board of Directors approves or adopts. The CNO reports directly to the Chief Operating Officer (COO). The COO reports directly to the TVA Chief Executive Officer.

The CNO is responsible for the overall safety, efficiency, and economy of nuclear operations. The CNO establishes management and operating policies and procedure's related to TVA's Nuclear Program and is responsible for personnel, planning, scheduling, licensing, engineering and design, construction, operation, quality assurance, training, maintenance, and technical and administrative matters related to these programs. The CNO coordinates activities and functions of the NPG with other TVA organizations in order to carry out TVA's corporate policy and to meet corporate goals and objectives. This position is responsible for all aspects of TVA's interface and relations with the NRC and other entities with jurisdiction over or interest in TVA's Nuclear Program.

Other responsibilities include: development and implementation of an effective radiological Emergency Preparedness Program; directing shutdown of nuclear facilities when deemed appropriate; and development

of long-range, strategic plans for all NPG programs, activities, and facilities.

Concerns Resolution reports to the Manager, Organizational and Cultural Initiatives, but has direct access to the CNO. This provides sufficient independence and freedom to ensure that employee concerns are properly addressed. The Manager, Organizational and Cultural Initiatives is a direct report to the General Manager, Performance Improvement.

Nuclear Assurance reports directly to the CNO. This provides independence and freedom to effectively ensure conformance to Quality Assurance Program requirements.

The CNO's direct reports are provided in Figure 1-2. These functions are described in more detail in subsequent sections of this Topical Report.

1.2 Senior Program Manager Executive Initiatives

This position reports directly to the CNO. Responsibilities include managing large NPG-wide CNO initiatives with multi-site impact that achieve overall effectiveness, standardization, reduction of costs and cycle times, and increased overall operating effectiveness and efficiency. In addition, this position coordinates with multiple disciplines and senior management across NPG.

1.3 General Manager Nuclear Assurance

This position administrates responsibilities through the Corporate NA Manager, Site NA Managers, and the Manager Nuclear Assurance Project, WBN Unit 2. Responsibilities include managing the development and maintenance of Nuclear Assurance Program to ensure compliance with regulations, commitments, and policies, including programs that govern activities performed by Site NA organization. Responsibilities also include managing the review and qualification of TVA material suppliers to ensure final acceptance of all "safety-related material" for nuclear plant use to comply with applicable specifications and requirements.

1.4 Senior Vice President New Nuclear Generation Development and Construction

This position provides oversight and directs the organization responsible for the development of new nuclear generation, including WBN Unit 2 and NUSTART, including new generation licensing activities. Responsibilities

include development and communication of business elements to determine the value of TVA's unfinished assets and establishing strategies and plans for how they can best be used to meet future needs, governance and oversight of all activities for the WBN U2 construction restart, and Tritium Production Program. In addition, this position ensures all managed activities are conducted in accordance with appropriate TVA and external regulations and policies.

This position's direct reports and/or administrative areas of responsibility are provided in Figure 1-3.

1.4.1 Manager Project Support

This position manages support programs for the Nuclear Generation Development and Construction Strategic Business Unit including Corrective Action, Industrial Safety, Employee Concerns Resolution, Security, Communications, and Performance Analysis. Accountable for ensuring that managed activities are conducted in accordance with all applicable TVA policies, programs, and procedures; and federal, state, and local regulations.

1.4.2 Vice President Watts Bar Unit 2 Completion

This position provides general management and oversight of all activities for the WBN Unit 2 completion including construction, operations, engineering, maintenance, cost scheduling, and pre-op startup to ensure safe and efficient completion of the WBN Unit 2 and thorough and complete coordination and integration with the WBN's operating unit in compliance with TVA Nuclear policies and procedures, Technical Specifications, and federal, state, and local regulations.

1.4.3 Manager New Generation Licensing

This position manages the licensing organization for new generation efforts; develops the new generation licensing vision and strategy for the organization and; interfaces with industry organizations such as the NRC, Institute of Nuclear Power Operations (INPO), and Nuclear Energy Institute (NEI).

1.4.4 Vice President New Generation Development

This position provides oversight and directs the Nuclear Generation Development organization which is responsible for the development of new nuclear generation, including activities

connected with Bellefonte, NUSTART and Watts Bar Unit 2. Responsibilities include: development and communication of business elements to determine the value of TVA's unfinished assets and establishing strategies and plans for how they can best be used to meet future needs, the Tritium Production Program; advises executives on new nuclear generation assets for TVA; develops key partnerships for new generation projects, when necessary, with outside parties and with distributor customers; coordinates legislative initiatives with TVA's Office of General Counsel and Washington Office and Strategic Program Initiatives with Department of Energy (DOE); and ensures all managed activities are conducted in accordance with appropriate TVA and external regulations and policies.

1.4.5 Manager Project Controls

This position manages and directs the work of a multi-discipline group to provide project control and scheduling and project risk analysis for large, complex system-wide projects. Information obtained from performance of these services will be used by Nuclear Generation Development and Construction to control costs, predict performance, identify root causes, and develop improvement solutions and ensure that project cost and schedule processes are consistently implemented across the organization.

1.5 General Manager Business Services

This position provides financial management, business support, and oversight for all aspects of the Administrative Services Business Unit and Corporate Support Business Units. Responsibilities include financial statement integrity, technical accounting guidance, Sarbanes-Oxley control environment compliance, financial and operational performance reporting, annual business plan development, budgeting and forecasting, financial analysis, cost management, capital project planning, application system administration, business system development and integration, management support systems and processes, business process management, and quality initiatives that support organizational effectiveness.

1.6 Chief Administrative Officer and Executive Vice President Administrative Services

This position is responsible for managing and directing multiple corporation-wide administrative functions and business services. Responsibilities include directing a broad range of activities including planning and the development and implementation of procedures,

practices and programs in support of TVA's mission. This person also assures that the functions support and efficiently promote the corporate goals with sound policies and integrates these functions to serve the operating organizations.

Seven direct reports include: Vice President Information Services; Vice President Enterprise Performance and Analysis; Senior Vice President Procurement, Director; TVA Police; Vice President Retirement Services; Vice President Human Resources; and Vice President Facilities Management.

1.6.1 Vice President Human Resources (HR)

This position provides support to the CNO in the areas of HR Operations, Health and Safety, Technical Training and Organizational Effectiveness, Work Force Planning, Shared Resources, Compensation and HR Planning, Labor Relations, Human Resource Information Systems (HRIS), and Benefits. This position reports directly to the CAO.

1.6.1.1 Senior Manager Human Resource Operations (HRO)

This position manages the delivery and implementation of HRO Program to all TVA organizations through HRO Service Managers and Consultants including programs such as workforce planning and staffing, leadership continuity, succession planning, performance management, compensation, employee recognition, learning and development, and labor relations (i.e.; enhance workforce strategies and improve efficiency, innovation and competitiveness). In addition, this position serves as a change agent for innovative, cost effective HRO Program and initiatives, and assists and advises executives and managers in HRO matters.

In conjunction with the Work Force Planning Manager, the Senior Manager HRO is responsible for managing the work force planning to ensure proper staffing and skill requirements meet business needs. Other responsibilities include: ensuring an active succession planning process is in place; continually monitoring and making strategic recommendations for replacement planning; ensuring development activities are identified for progression candidates'

needs; developing and implementing a vision of cultural change at respective site levels in support of the NPG Vision and Business Plan; directing the development and implementation of programs to ensure fair treatment of employees to support the desired performance changes as well as regulatory or legal requirements; and ensuring employees' concerns and complaints are addressed in a timely fashion while administering the Employee Relations Program (i.e.; positive discipline, work policies, etc.).

1.6.1.2 General Manager Health and Safety

This position is responsible for establishing programs and policies that provide and maintain healthful and safe working conditions on TVA premises in compliance with Occupational Safety and Health Act and other legal enactments. This position also manages, directs and provides strategic direction for health and safety processes including the Employee Assistance Program and the Office Workers Compensation Program. This includes directing a staff engaged in Safety Program design and implementation, ensuring a drug free workplace, emergency response and security planning, and other programs designed to promote a skilled and safe workplace. This position also provides oversight of the non-nuclear Fitness for Duty (FFD) Program ensuring components are within professional standards, and program integrity is maintained and meets federal requirements.

1.6.1.3 Senior Manager Employee Technical Training and Organizational Effectiveness

This position is responsible for managing, directing, and designing the strategic direction for the COO Technical Training, Organizational Effectiveness Consulting, and Solutions Support. This involves directing progressive programs and initiatives in support of operational, cultural, and human performance improvement activities.

1.6.1.4 Manager Business Services and TVA Work Force Planning

This position manages the HR business services function for the HR organization and the Work Force Planning function for all of TVA. Responsibilities include managing, planning, and developing activities for Business Services, performing the business management/control functions for HRO and provide business services for all HRO departments. Other services include quarterly performance outlook, annual performance planning, financial analysis and reporting, cost and performance management, compliance review and managerial reporting for the Vice President HRO. In this role the incumbent is an adviser. Additional responsibilities include managing the Workforce Planning process for all TVA organizations, setting process standards for addressing business and customer needs, forecasting recruitment needs, profiling staffing availability, trending and analyzing data and analyzing labor costs to support line managers in the decision making.

1.6.1.5 Senior Manager Shared Resources

This position manages the Shared Resources Organization to provide a highly diverse array of functions, expertise-based consulting, turn-key integrated solutions, and specialty services to TVA organizations. Functional areas of responsibility may change based on the needs of the customer, but functions include areas such as staffing and recruiting, relocation, employment processing, and HR Project Support.

1.6.1.6 Senior Manager Compensation and Human Resource Planning

This position reports to the Executive Vice President HRO. Responsibilities include directing design, development and evaluation of HRO Program and initiatives including compensation for managers and specialists (excluding executives) and non-represented employees, performance management, TVA's integrated staffing plan, 360 degree feedback,

career development and, position selection programs for all TVA employees.

1.6.1.7 Vice President Labor Relations

This position is responsible for the development of agency-wide labor relations strategies and policies and coordination of these strategies and policies in a manner that supports achievement of TVA's strategic plan. This position contributes to TVA's overall mission and goals by establishing partnerships with union leadership, both regionally and nationally, to ensure objectives are met.

1.6.1.8 Senior Manager Human Resource Information Systems (HRIS) and Benefits

This position is responsible for all of TVA's HRIS and HRIS Program, HRIS Data Warehouse, Self-Service Solutions, HRIS Process/Workflow, and HRO Policies/Practices. This position is also responsible for the design and implementation of TVA's Employee Benefits Program and the operation of a centralized HRO Employee Service Center. Responsibilities include oversight and management of programs that includes strategy, integration, implementation, design, rate structure, internal controls, monitoring, and performance.

This position's direct reports and/or administrative areas of responsibility are provided in Figure 1-4.

1.6.2 Senior Vice President Procurement

This position reports to the Chief Administrative Officer and Executive Vice President Administrative Services and is responsible for management of all supply chain activities to TVA.

1.6.2.1 General Manager Materials Management Services

This position manages the development, coordination, implementation, and evaluation of Materials Management Services to support the NPG's sites and organizations. Responsibilities include developing strategies, policies and program

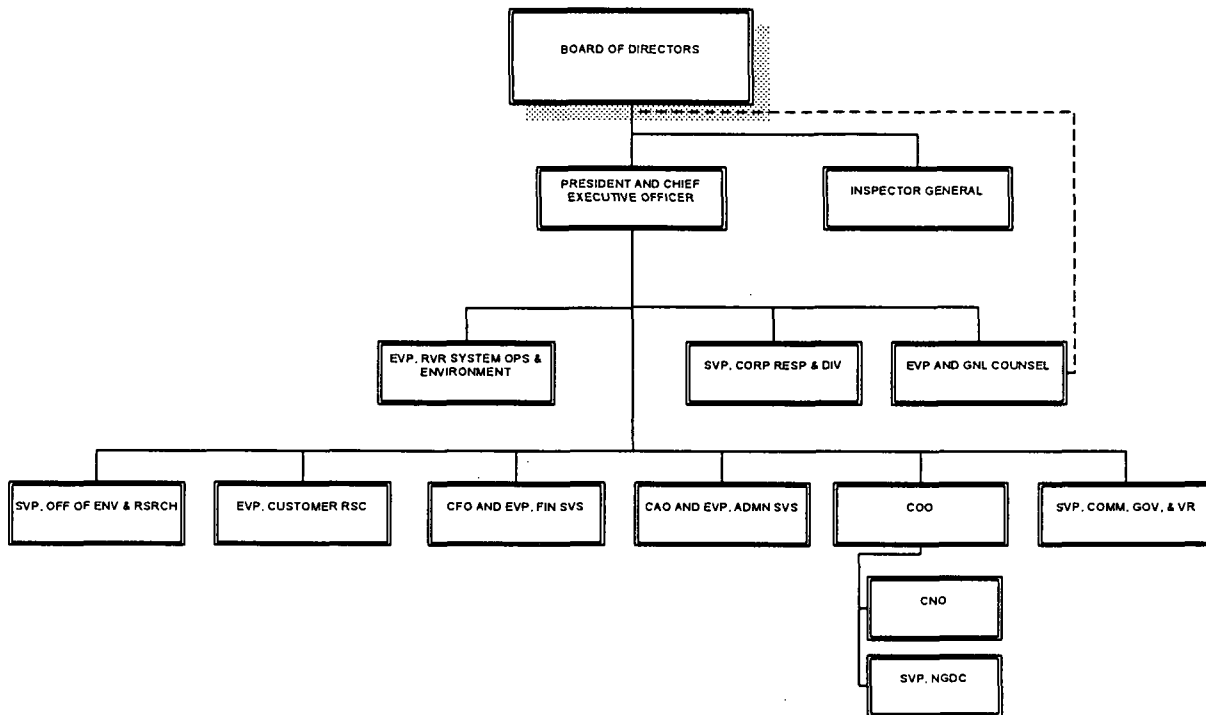
direction for inventory management and warehousing technology for the entire corporation. This position supervises the Managers of NPG and Transmission Power Supply Business Sector, Fossil and Hydro Business Sector, and Inventory Analysis and Reporting.

1.6.2.2 General Manager Chief Operating Officer Contracts

This position provides efficient and timely services for highly specialized components and all other requirements. Responsibilities include developing strategies, policies and process direction consistent with TVA's overall goals for contracting activities for materials standardization efforts, for strategic alliances and leverage opportunities, and for freight transportation activities.

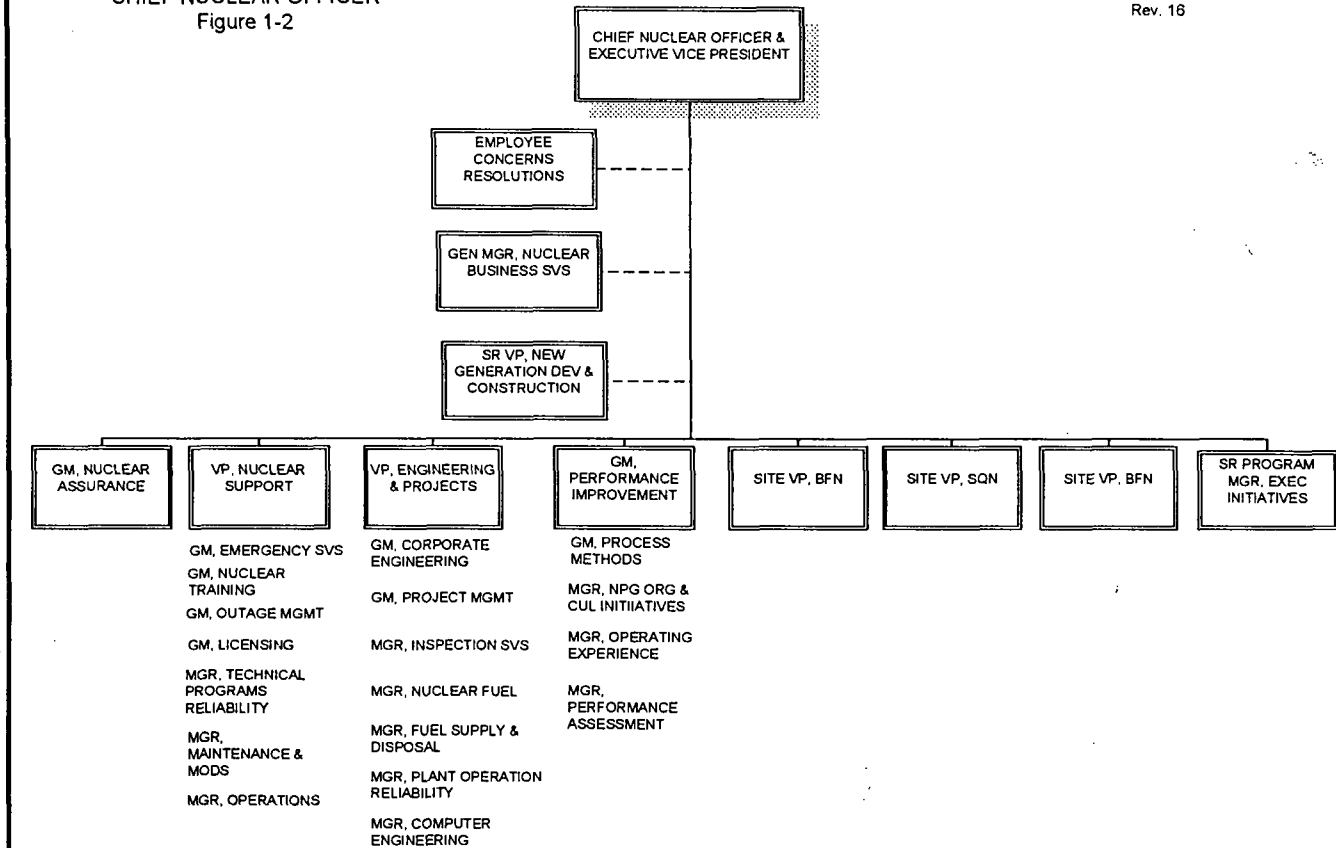
Tennessee Valley Authority
CHIEF EXECUTIVE OFFICER
Figure 1-1

Topical Report
TVA-NPOD89-A
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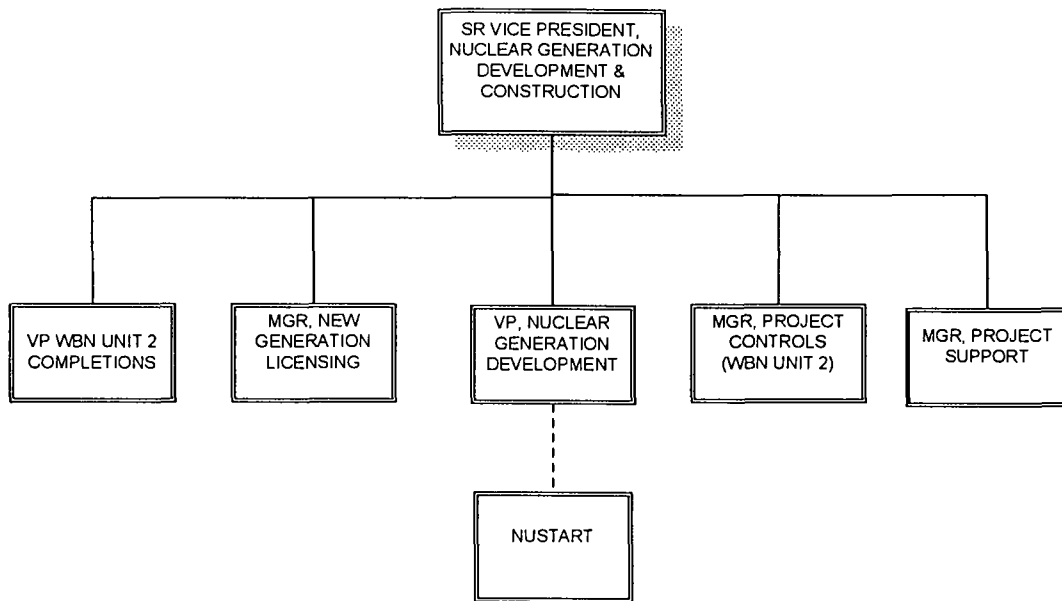
Tennessee Valley Authority
CHIEF NUCLEAR OFFICER
Figure 1-2

Topical Report
TVA-NPOD89-A
Rev. 16

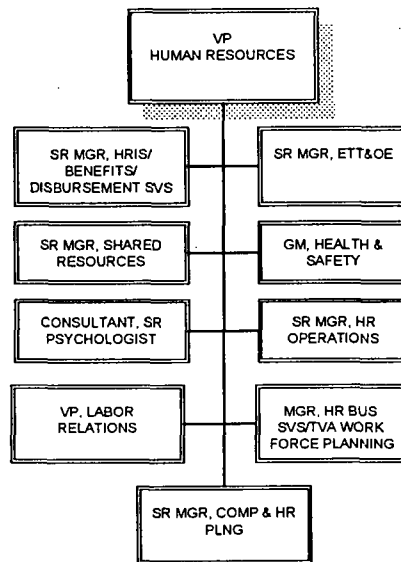


Tennessee Valley Authority
NUCLEAR GEN DEVELOPMENT & CONST
FIGURE 1-3

Topical Report
TVA-NPOD89-A
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Tennessee Valley Authority
HUMAN RESOURCES
Figure 1-4



2.0 Vice President Nuclear Support

This position provides technical support to NPG. Responsibilities include Emergency Services, Training, Outage Management, Licensing, Technical Program Reliability, Maintenance and Modifications (corporate oversight), and Operations (corporate oversight). This manager serves as a key member of the NPG executive team and advises the CNO and other corporate and site management on a wide range of Nuclear Support issues. In addition, this manager ensures all managed activities are conducted in accordance with appropriate TVA and external regulations and policies.

This position's principle reports and/or administrative responsibilities are shown in Figure 2-1.

2.1 General Manager Emergency Services

This position provides technical support and oversight to NPG in the areas of Security, Emergency Preparedness, Nuclear Access Services, Fitness for Duty, and Psychological and Medical Services. Other responsibilities include: serving as the NPG expert on nuclear security regulatory issues; providing strategic guidance to corporate and site managers on range of issues including security operations, nuclear plant check-in, and industry codes and standards; and providing oversight for the management of the Emergency Preparedness Program.

2.2 General Manager Nuclear Training

This position provides corporate governance and oversight of the planning, development, implementation, and evaluation of federally regulated and nationally accredited Training Program to ensure sufficient qualified personnel to operate, maintain, and modify TVA's nuclear power plants.

2.3 General Manager Nuclear Outage Planning and Scheduling

This position provides corporate governance and oversight of the plant outages and outage scheduling so that outages are executed in a timely and efficient manner in order to provide safe, reliable, and efficient generation to meet system needs. This position also provides corporate governance and oversight for plant outage safety requirements and comprehensive Scheduling Program.

2.4 General Manager Licensing

This position provides oversight and direction of the NPG Corporate and Site Licensing functions in support of the operations of TVA's licensed nuclear plants. This position is responsible for the development of regulatory vision and strategy for regulatory issues for both Corporate and Sites and providing policy recommendations. This position provides a single point-of-contact for regulatory interface on licensing issues common to more than one TVA site and has signature authority for NRC submittals. In addition, this position provides direction for implementation of the Site Regulatory and Compliance Program dealing with regulatory agencies including applicable federal, state, and local authorities.

2.5 Manager Technical Programs Reliability

This position manages critical NPG processes for Welding, Meteorological/Environmental, Radiological Control, Chemistry, and other areas as assigned. This manager provides leadership and direction to achieve high reliability and standardization of NPG processes to support both outage and non-outage operations at NPG sites. This position also provides authoritative decisions and recommendations on behalf of NPG regarding critical issues and consults and ensures resolution of issues with senior management, company officers and policy making representatives from regulatory and industry organizations.

2.6 Manager Maintenance and Modifications (Corporate Oversight)

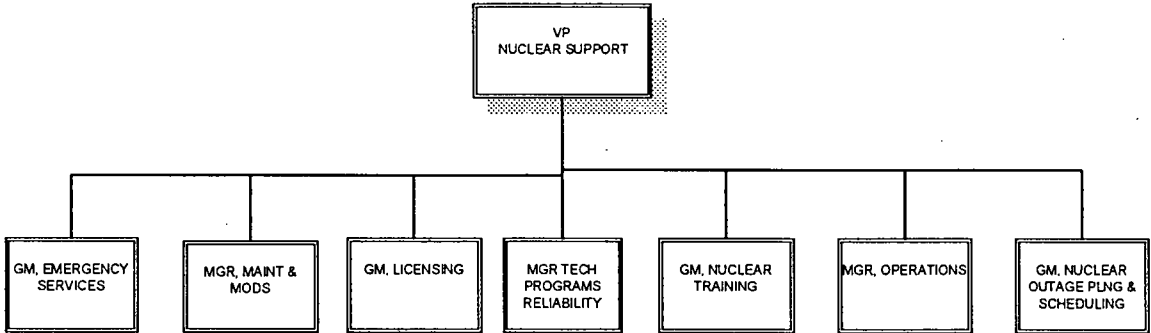
This position provides corporate oversight of maintenance and modification functions for NPG's nuclear power plants. Responsibilities include ensuring managed activities are conducted in accordance with appropriate regulations and NPG's policies, programs, and procedures and plant Technical Specifications and federal, state, and local regulations.

2.7 Manager Operations (Corporate Oversight)

This position provides corporate oversight of the operations, fire protection, and work control functions for NPG's fleet of nuclear power plants in order to provide reliable and efficient generation to meet needs and safety requirements; provide for sufficient, qualified, and licensed personnel to satisfy regulatory requirements; design and implement

process improvements to increase efficiency, effectiveness, and productivity while minimizing associated costs to improve competitiveness.

Tennessee Valley Authority
NUCLEAR SUPPORT
Figure 2-1



3.0 Vice President Engineering and Projects

This position is responsible for establishing and directing all engineering and project management functions within the NPG fleet. This includes Corporate Engineering, Project Management, Inspection Services, Nuclear Fuel Design, Nuclear Fuel Supply and Disposal Projects, Plant Operational Reliability, and Computer Engineering. Responsibilities include governance and oversight of site engineering functions and policy compliance for the NPG's fleet in regard to engineering and project management functions. In addition, this position advises NPG executives on technical issues affecting the sites and serves as the fleet representative on the Engineering Peer Team.

This position's direct reports and/or areas of responsibilities are provided in Figure 3.1.

3.1 General Manager Corporate Engineering

This position manages the engineering services activities for the NPG as well as governance and oversight of Engineering. The primary responsibilities are to maintain the site design basis, plant configuration control, and allocate the design margins on safety-related systems. Other responsibilities include: ensuring the Engineering Programs are managed in an effective and efficient manner; implements technical and design authority requirements and orders to the Site Engineering Managers as authorized by the Vice President, Engineering and Projects (NPG Design Authority); ensuring managed activities are conducted in accordance with appropriate regulations and TVA policies and procedures in a manner to maintain technical integrity of TVA facilities; and safeguard the health and safety of the general public, the environment, and employees.

3.2 General Manager Project Management

This position provides oversight and governance for the NPG project management strategic approach. Responsibilities include: implementation of consistent and effective project management concepts, techniques, Software Programs, Training Program and certification; directing management of all major nuclear technical projects, including steam generator replacements, Dry Cask Storage Program, and major site or facility modifications and; directing the nuclear project management strategic approach to ensure that managed

activities are conducted in accordance with appropriate regulations and TVA policies, programs, and procedures and plant Technical Specifications, and federal, state and local regulations.

3.3 Manager Inspection Services

This position directs and manages the activities and resources of the Inspection Services organization to provide the resolution of technical problems, technical support, and requested nondestructive examination (NDE)/quality control (QC) inspections of NPG's power plants through the utilization of skilled examiners and level III overviews.

Responsibilities include ensuring conformance with applicable American Society of Mechanical Engineers (ASME) Codes, regulatory agency, and TVA guidelines and requirements; providing NDE QC technical support to address problems or special assignments such as new technical development or technology transfer; supporting NDE QC training and training development of specialized NDE QC techniques and; representing TVA in NDE QC matters with ASME, American National Standards Institute (ANSI), American Welding Society (AWS), NRC, Electric Power Research Institute (EPRI), Institute of Nuclear Power Operations (INPO), etc.

3.4 Manager Nuclear Fuel Design

This position manages the Nuclear Fuel Design Program to support the safe operation of NPG facilities and directs Nuclear Core Design, Fuel Analysis and Reactor Engineering activities to support fuel utilization and reactor operation for TVA's boiling water reactor (BWR) and pressurized water reactor (PWR) units. In addition, this position manages the highly enriched uranium (HEU) project and fuel related aspects of the Department of Energy's (DOE) tritium production project.

3.5 Manager Nuclear Fuel Supply and Disposal Projects

This position is accountable for managing and directing the technical, commercial, and administrative functions of the nuclear fuel supply, including development of energy requirements, monitoring the nuclear fuel market, developing NPG's nuclear fuel supply strategy, develops long-range financial forecasts, maintains relationships with fuel supply vendors, administering contracts (e.g.; delivery requirements and schedules), and processing invoices for fuel supply transactions. In addition, this position manages the Spent Fuel Disposal contract with

DOE and oversees payments to DOE and directs activities to provide for long-term onsite storage and ultimate disposal of spent nuclear fuel assemblies and components.

3.6 Manager Plant Operational Reliability

This position is responsible for managing the Plant Operational Reliability department to ensure critical equipment supports safe, reliable, and economic generation. Other responsibilities include chief accountability for the Equipment Reliability Program; provides authoritative decisions and recommendations on behalf of NPG regarding critical issues related to equipment reliability; consults and ensures resolution of issues with senior management level personnel, company officers and policy making representatives from regulatory and industry organizations and; accountable for ensuring Business Plan Goals for generation, forced loss rate, and operating capacity are not impacted by equipment degradation or failure.

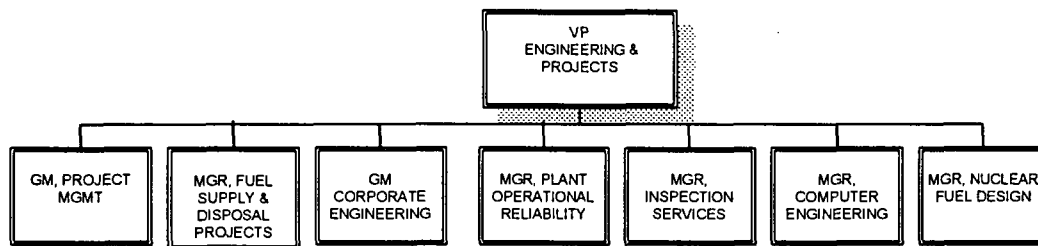
3.7 Manager Computer Engineering

This position is responsible for managing NPG's Computer Engineering organization which is responsible for supporting real-time computer systems for NPG's quality-related programs and plant process monitoring and control applications. Other responsibilities include: the definition and analysis of system requirements; establishing system performance criteria, system design and implementation; system integration and interfaces with plant systems and equipment; installation and testing, maintenance and modification; configuration control activities; defining software quality assurance requirements for NPG; providing interpretation and technical assistance to NPG organizations in the applications of these requirements to safety-related and quality-related computer software; implementing a Software QA Program that establishes the requirements and processes for the development, maintenance, and modification of real-time computer system software; establishing the infrastructure necessary to support real-time computer systems development and maintenance; establishes programmatic requirements and technical guidance for system development, modification, operation, maintenance, and configuration management functions for NPG's real-time computer systems; providing and managing the data center facilities for corporate-based quality-related real-time computer applications; establishing strategic direction and tactical plans for the application of real-time computer system technologies to NPG's process monitoring/control systems, quality-related programs, and plant

simulators; providing technical oversight of NPG's plant simulators to maintain fidelity of plant system models, simulator certification, and regulatory compliance and; providing project management for major multi-site, multi-organizational real-time computer system projects.

Tennessee Valley Authority
ENGINEERING & PROJECTS
Figure 3-1

Topical Report
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4.0 General Manager Performance Improvement

This position oversees NPG's Performance Improvement Program involving the Corrective Action Program, Self Assessment Program, Management Observation Program, Process Methods, Operating Experience, Performance Assessment and others to ensure performance excellence. This includes process improvements, monitoring process status, and supporting sites with specific skill resources. This position also has governance and oversight responsibility of the NPG's plant operations and Employee Concerns Program.

This position's direct reports and/or administrative areas of responsibilities are provided in Figure 4-1.

4.1 General Manager Process Methods

This position is used to focus the NPG on process improvements and peer team support at a higher level. This is considered key to adding depth and vision to NPG's process improvement initiatives.

4.2 Manager Organization and Cultural Initiatives

This position serves as a focal point to direct the NPG initiatives in the areas of organizational culture, nuclear safe culture, and a safety-conscious work environment. This includes oversight, monitoring implementation, and support of all cultural improvement projects. As a strategic partner, this manager works directly with the CNO to deliver a proactive, targeted and measured program designed to maintain a positive work culture and safe work environment within nuclear power. This manager is also responsible for supervising the Employee Concerns Resolution Program.

4.3 Manager Operating Experience

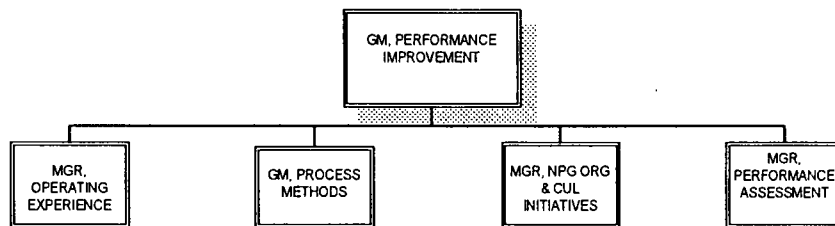
This position is responsible for developing and implementing a comprehensive and effective Operating Experience Program. The position is also responsible for overseeing and incorporating industry activities into the Operating Experience Program including Owners Group and coordination with INPO. This is one of the cornerstone activities for the NPG becoming a learning organization and achieving performance excellence.

4.4 Manager Performance Assessment

This position is responsible for developing and ensuring satisfactory implementation of comprehensive Performance Assessment and Self-

Assessment Programs to provide early identification and correction issues and precursors of issues which could impact nuclear power performance. This includes developing and ensuring satisfactory completion of the operational readiness program for startup of WBN Unit 2 and working closely with the Vice President Nuclear Support, Site Vice Presidents, Senior Vice President Nuclear Generation Development and Construction, and Vice President WBN Unit 2 to accomplish established objectives.

Tennessee Valley Authority
PERFORMANCE IMPROVEMENT
Figure 4-1



5.0 Vice President Browns Ferry Nuclear Plant (BFN)

The Site Vice President is responsible and accountable for activities at the site including operations, modifications, maintenance, support, and engineering services. This includes determining the nature and extent of onsite and offsite support services required to support assigned site operations in accordance with NPG policy and procedures. This also includes quality of work activities.

The Site Vice President's direct reports and/or administrative areas and functional reporting relationships are provided in Figure 5-1.

5.1 Manager Site Engineering

This position is responsible for the development and management of Engineering Design, System Engineering, and Engineering Support. This position is a direct report to the Site Vice President.

5.2 Manager Site Training

This position directs the planning, development, implementation, and evaluation of federally-regulated and nationally-accredited Training Program to ensure sufficient qualified personnel to operate, maintain, and modify the nuclear power plant. The nuclear industry's training organization, the National Academy for Nuclear Training, has administrative and technical support provided by INPO, the industry's self-governance organization. Through the Academy's National Nuclear Accrediting Board, all 12 applicable NPG Training Program in operations, maintenance, and technical training have been accredited and generally, ensure Academy Accreditation is sufficient to satisfy applicable federal regulations. Even more critical than meeting external expectations is the assurance that the nuclear power plant work force has been properly trained on a task-by-task basis to perform individual and team duties in an accurate, timely, and safe manner. This position is responsible for establishing, delivering, and maintaining such performance-based personnel Training Programs. This position reports directly to the Site Vice President.

5.3 Manager Site Project Management

This position is responsible for cost engineering functions including estimating, forecasting, trending/scope control, data analysis, and reporting. Other responsibilities include ensuring technical and programmatic cost requirements of the site organizations (including contractors). Site senior management and TVA executive management

are quantified, integrated, and supported by established processes to a high degree of consistency and reliability. Responsibilities also include corporate employees that are assigned to the site and are responsible for the Information Services. This position reports to the GM, Project Management and has a reporting relationship (dotted line) to the Site Vice President.

5.4 Manager Site Support

The position directs the work of Corporate employees assigned to the site who are responsible for financial activities to provide the overall accounting, budget, and business reporting processes for all areas of activity at the site. In addition, the Site Support Staff is responsible for the development, implementation, and oversight of site analysis and reporting systems to report key indicators, compile data that can be utilized to reduce costs, and increase overall site effectiveness and efficiency. Additionally, the Site Support Staff is responsible for maintaining the site's Corrective Action Program, which identifies and corrects problems and adverse conditions in a manner consistent with the nature of the conditions and its importance to plant safety or plant reliability. This position is a direct report to the Site Vice President.

5.5 Manager Site Emergency Preparedness

This position is responsible for the site's Emergency Preparedness Program to ensure safety of TVA employees and the general public in the event of an accident at the nuclear facility. This position is a direct report to the Site Vice President.

5.6 Manager Site Concerns Resolutions

This position provides site employees with a means for reporting their concerns to a high-level within TVA's nuclear organization if, for any reason, the employees believe that their supervisors would not properly respond to expressing concerns. This position reports to the Manager, Concerns Resolution (Corporate), which provides the program is sufficiently independent and freed to ensure that employee concerns are properly addressed.

5.7 Manager Site Nuclear Assurance

This position provides oversight of quality activities associated with the operation of BFN. Responsibilities are described in detail in TVA's Nuclear Quality Assurance Plan (TVA-NQA-PLN89-A). This

position reports to the General Manager, Nuclear Assurance (Corporate).

5.8 Manager Site Licensing and Industry Affairs

This position provides licensing services associated with the site operating license. This position serves as the primary interface with the NRC for site-related matters. This position reports to the General Manager, Licensing (Corporate).

This manager is responsible for developing the vision and strategy for the site in the areas of the NRC, INPO, NEI, and other industry interfaces.

5.9 Manager Site Nuclear Security

This position is responsible for the management and direction of the Site Nuclear Security Program to ensure security at the nuclear plant sites and compliance with TVA and NRC requirements. This position reports to the General Manager Emergency Services (Corporate).

5.10 Extended Power Uprate Manager

This position is responsible for the planning, development, and coordination of activities associated with projects necessary to uprate Units 2 and 3 to increase generation. This includes oversight of contract personnel, coordination with budget and licensing as well as integration with the current outage and generation plans. This position reports to the Site Vice President.

5.11 Manager Site Human Resources

This position serves as an advisor for Human Resource Program delivery to the nuclear site. In conjunction with line management, this position administers Human Resource policies and practices and consults with line management to develop workforce plans, staffing and recruiting plans, and succession plans. This position also provides consultation in areas such as performance management, compensation and labor relations.

5.12 General Manager Site Operations

This position is responsible for ensuring that plant operations and support activities are conducted in accordance with all applicable regulations.

This position's direct reports and/or areas of administrative responsibilities are provided in Figure 5-2.

a. Plant Manager (PM)

The position's primary responsibility and authority is ensuring safe, reliable, and efficient plant operations in conformance and compliance with all federal, state, and local laws and regulations. Other responsibilities include: ensuring that hardware and software modifications or revisions made subsequent to the original design or construction of the project are authorized and carried out in accordance with procedures and instructions; ensuring that established acceptance criteria are satisfied before plant systems or components are returned to normal operation; and ensuring that adequate and complete records and reports are developed and maintained and that plant personnel are appropriately trained and qualified for their jobs. The position provides operation and maintenance support to the plant and appoints the chairman and other members of the Plant Operational Review Committee.

This position's direct reports and/or areas of administrative responsibilities are provided in Figure 5-2.

i. Manager Maintenance and Modifications

This position is responsible for planning, directing, and managing the plant's Maintenance Program to ensure that equipment and systems are maintained in accordance with operability and reliability engineering practices and requirements. Other responsibilities include major outage work and modifications; development, implementation, and maintenance of the site measuring and test equipment tool rooms; maintenance and testing of the relaying associated with the transmission system, switchyard maintenance, generator protection, and the auxiliary power system; maintenance and testing of all in-plant radios, and all external plant communications systems (with the exception of the Bell system and AT&T equipment).

ii. Manager Radiological Protection

This position guides programs and activities at the plant ensuring that all operations, maintenance, modifications and

engineering activities are conducted in a radiological safe manner and protect plant systems and equipment. This includes developing, implementing, and managing the Site Radiological Program; provides technical assistance (guidance) and project management activities in support of the site consistent with regulatory requirements; develops and maintains procedures and applies standards necessary for the Radiological Protection Program; supports the Site Training Program and provides specialized training in radiological disciplines; ensures compliance with personnel radiation requirements; maintains continuing records of personnel exposure, plant radiation and contamination levels and; implementation of effective site programs for radiochemistry and radiological compliance.

iii. Manager Chemistry/Environmental

This position guides programs and activities at the plant ensuring that all operations, maintenance, modifications, and engineering activities that potentially impact plant chemistry/environmental are conducted in a manner consistent with applicable federal and state regulations and protect the plant systems, equipment, and the environment.

iv. Assistant Plant Manager

This position assumes full responsibility and accountability of the PM during the PM's absence. This is a developmental position for progression to PM. There may be more than one APM position with any of the PM departments under their supervision.

v. Manager Outage and Site Scheduling

This position provides overall responsibility for outage planning, coordination, and monitoring. This includes: planning all outages; establishing work priorities and coordinating shift turnover; managing the plant scheduling processes; and ensuring efficient and effective management of the work control function that is the basis of the site schedule.

vi. Manager Operations

This position provides responsibility for planning, organizing, setting policy, and motivation relating to Operations, and supporting activities (e.g., fire protection surveillances). These activities include operational strategies for generation, water and waste usage, approval authority for system enhancements, and prioritization of maintenance activities. To meet these objectives, functions related to Operations and supporting activities are grouped under one manager responsible for facility generation (i.e., Manager, Operations). This position serves as Chairman of the Plant Operations Review Committee.

Two principal reports include Superintendent, Operations, and Superintendent, Operations Support.

vii. Superintendent Operations

This position is responsible for all plant operations. The superintendent, through the shift managers, manages the day-to-day operation of the facility, refueling operations, start-up, operational testing, water and waste processing, and plant operations. Other responsibilities include coordinating and scheduling the Training Program for all Operations personnel, as well as providing the nucleus for emergency response teams.

The shift crew for one unit operating normally consists of the shift Manager, Unit Supervisor, Nuclear Unit Operators, and Assistant Unit Operators. Additional licensed and non-licensed personnel are required for multi-unit plant operations. Additional personnel are assigned as required by the Technical Specifications to meet the requirements of 10 CFR 50.54(m)(2). Plant Management and Technical Support personnel are present or on call at all times.

viii. Superintendent Operations Support

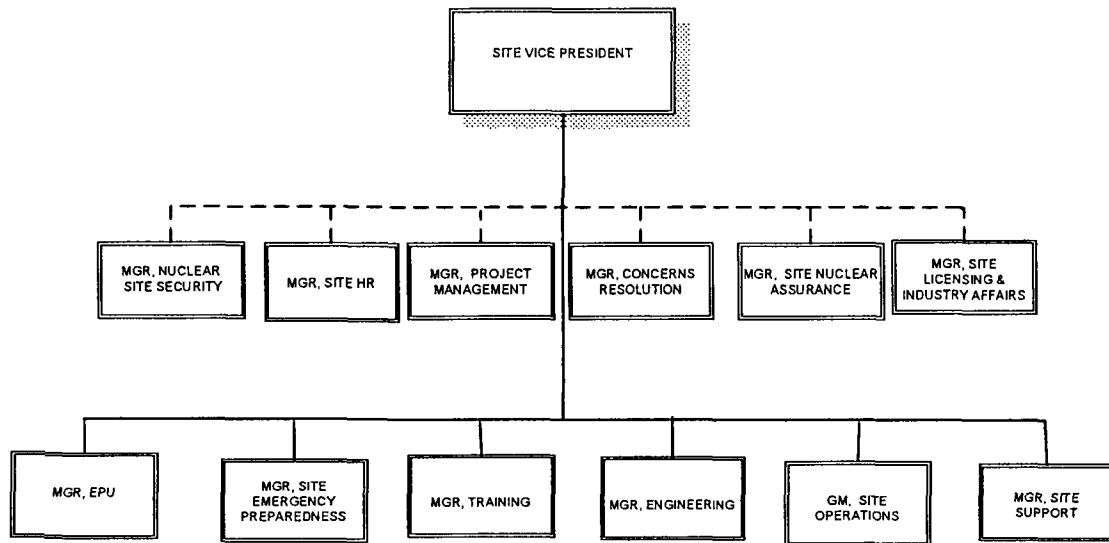
This position is responsible for budget preparation, training oversight, performance monitoring, and assists the Operations Manager in overall program direction for operations.

The Supervisor, Fire Operations, with the overall responsibility for the Fire Protection Program, reports to the Superintendent, Operations Support.

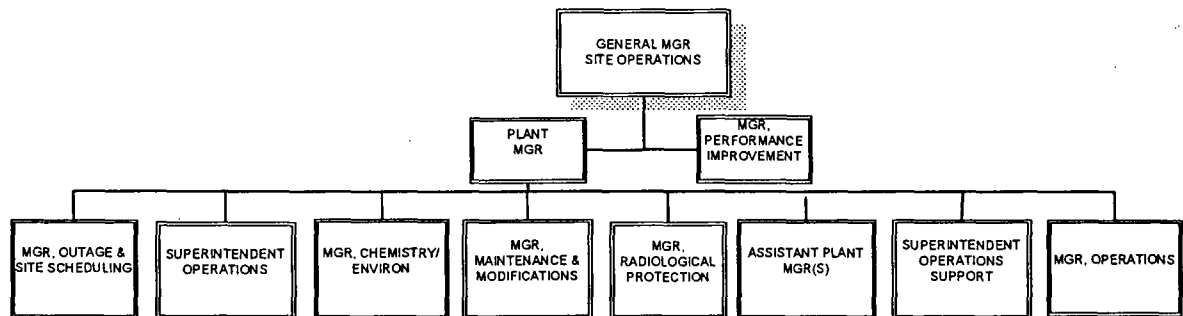
iv. Manager Performance Improvement

This position is responsible for the development, implementation, and oversight of site analysis and reporting systems to report key indicators, compile data that can be utilized to reduce costs, and increase overall site effectiveness and efficiency. The Performance Improvement staff is also responsible for maintaining the site Corrective Action Program that identifies and corrects problems and adverse conditions in a manner consistent with the nature of the conditions and the importance to plant safety or reliability.

Tennessee Valley Authority
Browns Ferry Nuclear Plant
Site Vice President
Figure 5-1



Tennessee Valley Authority
Browns Ferry Nuclear Plant
General Manager Site Operations
Figure 5-2



6.0 Vice President Sequoyah Nuclear Plant (SQN)

The Site Vice President is responsible and accountable for activities at the site including operations, modifications, maintenance, support, and engineering services. This includes determining the nature and extent of onsite and offsite support services required to support site operations in accordance with NPG's policy and procedures. This also includes quality of work activities.

The Site Vice President's direct reports and/or administrative areas and functional reporting relationships are provided in Figure 6-1.

6.1. Manager Site Engineering

This position is responsible for the development and management of the Engineering Design, System Engineering, and Engineering Support. This position is a direct report to the Site Vice President.

6.2 Manager Site Training

This position directs the planning, development, implementation, and evaluation of federally-regulated and nationally-accredited Training Programs to ensure sufficient qualified personnel to operate, maintain, and modify the nuclear power plant. The nuclear industry's training organization, the National Academy for Nuclear Training, is managed by INPO, the industry's self-governance organization. Through the Academy's National Nuclear Accrediting Board, the applicable NPG Training Programs in operations, maintenance, and technical training have been accredited. Generally, maintaining Academy accreditation is sufficient to satisfy applicable federal regulations. Even more critical than meeting external expectations is the assurance that the nuclear power plant work force has been properly trained on a task-by-task basis to perform individual and team duties in an accurate, timely, and safe manner. This position is responsible for establishing, delivering, and maintaining such performance-based personnel Training Programs. This position reports directly to the Site Vice President.

6.3 Manager Project Management

This position is responsible for cost engineering functions including estimating, forecasting, trending/scope control, data analysis, and reporting. Other responsibilities include ensuring technical and programmatic cost requirements of the site organizations (including contractors). Site senior management and TVA executive management are quantified, integrated, and supported by established processes to a

high degree of consistency and reliability. This position also has responsibility for corporate employees that are assigned to the site and are responsible for Information Services. This position reports to the GM, Project Management and has a reporting relationship (dotted line) to the Site Vice President.

6.4 Manager Site Support

This position directs the work of corporate employees assigned to the site who are responsible for financial activities to provide the overall accounting, budget, and business reporting processes for all areas of activity at the site. In addition, the Site Support Staff is responsible for the development, implementation, and oversight of site analysis and reporting systems to report key indicators, compile data that can be utilized to reduce costs, and increase overall site effectiveness and efficiency. Additionally, the Site Support Staff is responsible for maintaining the site's Corrective Action Program, which identifies and corrects problems and adverse conditions in a manner consistent with the nature of the conditions and its importance to plant safety or plant reliability. This position is a direct report to the Site Vice President.

a. Manager Performance Improvement

This position is responsible for the development, implementation, and oversight of site analysis and reporting systems to report key indicators, compile data that can be utilized to reduce costs, and increase overall site effectiveness and efficiency. The Performance Improvement staff is also responsible for maintaining the site Corrective Action Program that identifies and corrects problems and adverse conditions in a manner consistent with the nature of the conditions and the importance to plant safety or reliability.

6.5 Manager Site Emergency Preparedness

This position is responsible for the site's Emergency Preparedness Program to ensure safety of TVA employees and the general public in the event of an accident at the nuclear facility. This position is a direct report to the Site Vice President.

6.6 Manager Site Concerns Resolutions

This position provides site employees with a means for reporting their concerns to a high-level within TVA's nuclear organization if, for any reason, the employees believe that their supervisors would not properly respond to expressing concerns. This position reports to the Manager, Concerns Resolution (Corporate), which provides the Concerns Resolution Program with sufficient independence and freedom to ensure that concerns are properly addressed.

6.7 Manager Site Nuclear Assurance

This position provides oversight of quality activities associated with the operation of SQN. Responsibilities are described in detail in TVA's Nuclear Quality Assurance Plan (TVA-NQA-PLN89-A). This position reports to the General Manager Nuclear Assurance (Corporate).

6.8 Manager Site Licensing and Industry Affairs

This position provides licensing services associated with the site operating licenses. This position serves as the primary interface with the NRC for site-related matters. This position reports to the General Manager, Licensing (Corporate).

This manager is responsible for developing the vision and strategy for the site in the areas of the NRC, INPO, NEI, and other industry interfaces.

6.9 Manager Site Nuclear Security

This position is responsible for the management and direction of the Site Nuclear Security Program to ensure security at the nuclear site and compliance with TVA and NRC requirements. This position reports to the General Manager, Emergency Services (Corporate).

6.10 Manager Site Human Resources

This position serves as an advisor for Human Resource Program delivery to the nuclear site. In conjunction with line management, this position administers Human Resource policies and practices and consults with line management to develop workforce plans, staffing and recruiting plans, and succession plans. This position also

provides consultation in areas such as performance management, compensation and labor relations.

6.11 Plant Manager

The position's primary responsibility and authority is ensuring safe, reliable, and efficient plant operations in conformance and compliance with all federal, state, and local laws and regulations. Other responsibilities include: ensuring that hardware and software modifications or revisions made subsequent to the original design or construction of the project are authorized and carried out in accordance with procedures and instructions; ensuring that established acceptance criteria are satisfied before plant systems or components are returned to normal operation; and ensuring that adequate and complete records and reports are developed and maintained and that plant personnel are appropriately trained and qualified for their jobs. The position provides operation and maintenance support to the plant and appoints the chairman and other members of the Plant Operational Review Committee.

This position's direct reports and/or areas of administrative responsibilities are provided in Figure 6-2.

a. Manager Maintenance and Modifications

This position is responsible for planning, directing, and managing the plant's Maintenance Program to ensure that equipment and systems are maintained in accordance with operability and reliability engineering practices and requirements. Other responsibilities include major outage work and modifications; development, implementation, and maintenance of the site measuring and test equipment tool rooms; maintenance and testing of the relaying associated with the transmission system, switchyard maintenance, generator protection, and the auxiliary power system; maintenance and testing of all in-plant radios, and all external plant communications systems (with the exception of the Bell system and AT&T equipment).

b. Manager Radiological Protection

This position guides programs and activities at the plant ensuring that all operations, maintenance, modifications and engineering activities are conducted in a radiological safe manner and protect

plant systems and equipment. This includes developing, implementing, and managing the Site Radiological Program; provides technical assistance (guidance) and project management activities in support of the site consistent with regulatory requirements; develops and maintains procedures and applies standards necessary for the Radiological Protection Program; supports the Site Training Program and provides specialized training in radiological disciplines; ensures compliance with personnel radiation requirements; maintains continuing records of personnel exposure, plant radiation and contamination levels and; implementation of effective site programs for radiochemistry and radiological compliance.

c. Manager Chemistry/Environmental

The position guides programs and activities at the plant ensuring that all operations, maintenance, modifications, and engineering activities that potentially impact plant chemistry/environmental are conducted in a manner consistent with applicable federal and state regulations and protect the plant systems, equipment, and the environment.

d. Manager Outage and Site Scheduling

This position provides overall responsibility for outage planning, coordination, and monitoring. This includes: planning all outages; establishes work priorities and coordinating shift turnover; managing the plant scheduling processes; and ensuring efficient and effective management of the work control function that is the basis of the site schedule.

e. Manager Operations

This position has responsibility for planning, organizing, setting policy, and motivation relating to Operations, and supporting activities (e.g., fire protection surveillances). These activities include operational strategies for generation, water and waste usage, approval authority for system enhancements, and prioritization of maintenance activities. To meet these objectives, functions related to Operations and supporting activities are grouped under one manager responsible for facility generation (i.e., Manager, Operations). This position serves as Chairman of the Plant Operations Review Committee.

Two principal reports include Superintendent, Operations and Superintendent, Operations Support.

f. Superintendent Operations

This position is responsible for all plant operations. The superintendent, through the shift operations supervisors, manages the day-to-day operation of the facility, refueling operations, start-up, operational testing, water and waste processing, and plant operations. Other responsibilities include coordinating and scheduling the Training Program for all Operations personnel as well as providing the nucleus for emergency response teams.

The shift crew for one unit operating normally consists of the shift Manager, Unit Supervisor, Nuclear Unit Operators, and Assistant Unit Operators. Additional licensed and non-licensed personnel are required for two-unit operation. Additional operators are assigned as required by the Technical Specifications to meet the requirements of 10 CFR 50.54(m)(2). Plant management and technical support personnel will be present or on call at all times.

g. Superintendent Operations Support

This position is responsible for budget preparation, training oversight, performance monitoring, and assists the Manager, Operations, in overall program direction for operations. The

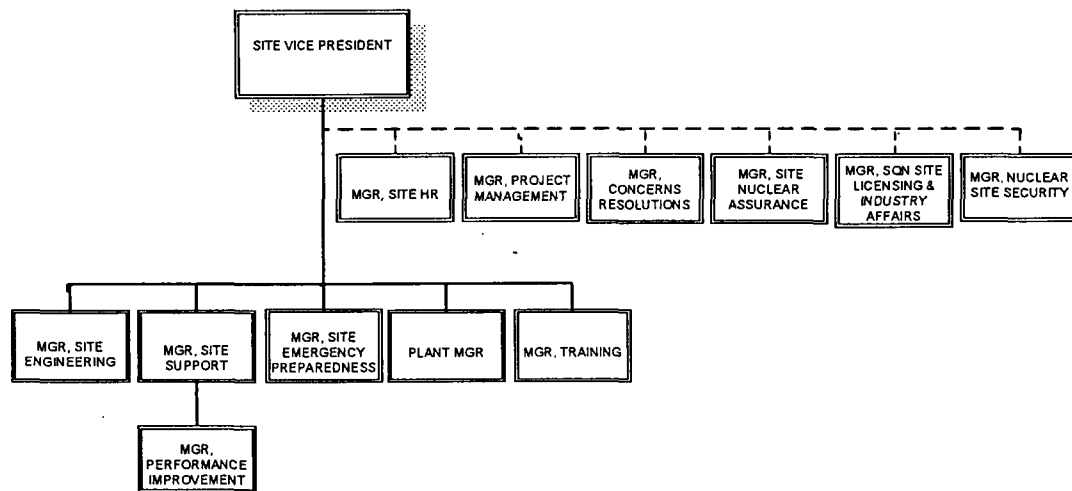
Supervisor, Fire Operations, with the overall responsibility for the Fire Protection Program, reports to the Superintendent, Operations Support.

Tennessee Valley Authority

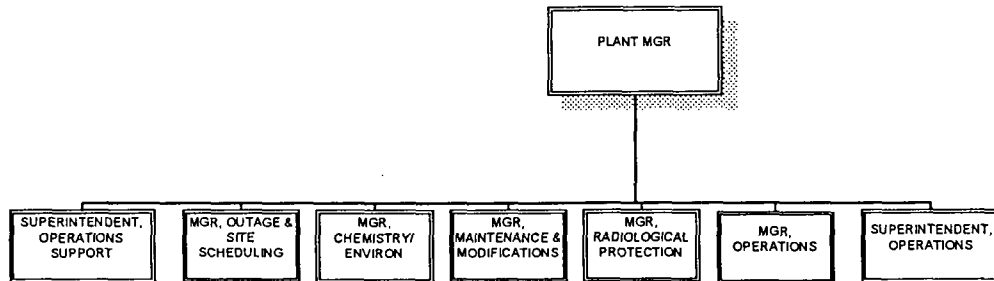
Sequoyah Nuclear Plant

Site Vice President

Figure 6-1



Tennessee Valley Authority
Sequoyah Nuclear Plant
Plant Manager
Figure 6-2



7.0 Vice President Watts Bar Nuclear Plant

The Site Vice President is responsible and accountable for activities at the site, including U1 operations, modifications, maintenance, support, engineering services, and Unit 2 construction permit activities. This includes determining the nature and extent of onsite and offsite support services required to support site operations and activities in accordance with TVA NPG policy and procedures. This also includes quality of work activities.

The Site Vice President's direct reports and/or administrative areas and functional reporting relationships are provided in Figure 7-1.

7.1 Manager Site Engineering

The position is responsible for the development and management of the Engineering Design, System Engineering, and Engineering Support. This position is a direct report to the Site Vice President.

7.2 Manager Site Training

This position directs the planning, development, implementation, and evaluation of federally regulated and nationally accredited Training Program to ensure sufficient qualified personnel to operate, maintain, and modify the nuclear power plant. The nuclear industry's training organization, the National Academy for Nuclear Training, is managed by INPO, the industry's self-governance organization. Through the Academy's National Nuclear Accrediting Board, all 12 applicable NPG Training Programs in operations, maintenance, and technical training have been accredited. Generally, maintaining Academy accreditation is sufficient to satisfy applicable federal regulations. Even more critical than meeting external expectations is the assurance that the nuclear power plant work force has been properly trained on a task-by-task basis to perform individual and team duties in an accurate, timely, and safe manner. This position is responsible for establishing, delivering, and maintaining such performance-based personnel Training Programs. This position reports directly to the Site Vice President.

7.3 Manager Project Management

This position is responsible for cost engineering functions including estimating, forecasting, trending/scope control, data analysis, and reporting. Other responsibilities include ensuring technical and programmatic cost requirements of the site organizations (including contractors), site senior management, and TVA executive management

are quantified, integrated, and supported by established processes to a high degree of consistency and reliability. This position also has responsibility for corporate employees that are assigned to the site and are responsible for Information Services. This position reports to the GM, Project Management and has a reporting relationship (dotted line) to the Site Vice President.

7.4 Manager Site Support

The position directs the work of Corporate employees assigned to the site who are responsible for financial activities to provide the overall accounting, budget, and business reporting processes for all areas of activity at the site. In addition, the Site Support Staff is responsible for the development, implementation, and oversight of site analysis and reporting systems to report key indicators, compile data that can be utilized to reduce costs, and increase overall site effectiveness and efficiency. Additionally, the Site Support Staff is responsible for maintaining the site's Corrective Action Program, which identifies and corrects problems and adverse conditions in a manner consistent with the nature of the conditions and its importance to plant safety or plant reliability. This position is a direct report to the Site Vice President.

a. Manager Performance Improvement

This position is responsible for the development, implementation, and oversight of site analysis and reporting systems to report key indicators, compile data that can be utilized to reduce costs, and increase overall site effectiveness and efficiency. The Performance Improvement staff is also responsible for maintaining the site Corrective Action Program that identifies and corrects problems and adverse conditions in a manner consistent with the nature of the conditions and the importance to plant safety or reliability.

7.5 Manager Site Emergency Preparedness

This position is responsible for the site's Emergency Preparedness Program to ensure safety of TVA employees and the general public in the event of an accident at the nuclear facility. This position is a direct report to the Site Vice President.

7.6 Manager Site Concerns Resolutions

This position provides site employees with a means for reporting their concerns to a high-level within TVA's nuclear organization if, for any reason, the employees believe that their supervisors would not properly respond to expressing concerns. This position reports to the Manager, Concerns Resolution, (Corporate), providing the Employee Concerns Resolution Program sufficient independence and freedom to ensure that concerns are properly addressed.

7.7 Manager Site Nuclear Assurance

This position provides oversight of quality activities associated with the operation of WBN. Responsibilities are described in detail in TVA's Nuclear Quality Assurance Plan (TVA-NQA-PLN89-A). This position reports to the General Manager Nuclear Assurance (Corporate).

7.8 Manager Site Licensing and Industry Affairs

This position provides licensing services associated with the site operating license. This position serves as the primary interface with the NRC for site-related matters. This position reports to the General Manager, Licensing (Corporate).

This manager is responsible for developing the vision and strategy for the site in the areas of the NRC, INPO, NEI, and other industry interfaces.

7.9 Manager Site Nuclear Security

This position is responsible for the management and direction of the Site Security Program to ensure security at the nuclear site and compliance with TVA and NRC requirements. This position reports to the General Manager Emergency Services (Corporate).

7.10 Manager Site Human Resources

This position serves as an advisor for Human Resource Program delivery to the nuclear site. In conjunction with line management, this position administers Human Resource policies and practices and consults with line management to develop workforce plans, staffing and recruiting plans, and succession plans. This position also provides

consultation in areas such as performance management, compensation and labor relations.

7.11 Plant Manager

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Other responsibilities include: ensuring that hardware and software modifications or revisions made subsequent to the original design or construction of the project are authorized and carried out in accordance with procedures and instructions; ensuring that established acceptance criteria are satisfied before plant systems or components are returned to normal operation; and ensuring that adequate and complete records and reports are developed and maintained and that plant personnel are appropriately trained and qualified for their jobs. The position provides operation and maintenance support to the plant and appoints the chairman and other members of the Plant Operational Review Committee.

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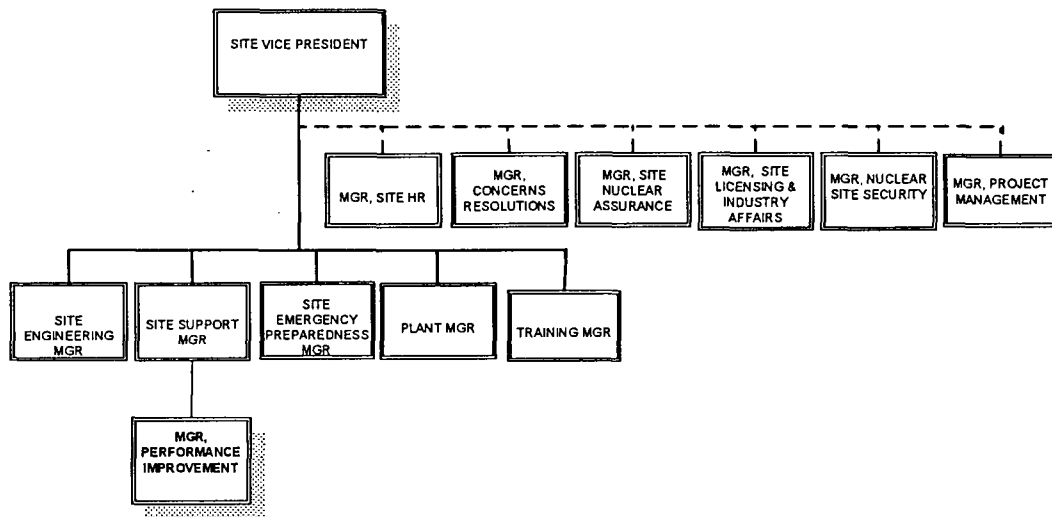
The Supervisor, Fire Operations, with the overall responsibility for the Fire Protection Program, reports to the Superintendent, Operations Support.

Tennessee Valley Authority

Watts Bar Nuclear Plant

Site Vice President

Figure 7-1



Tennessee Valley Authority

Watts Bar Nuclear Plant

Plant Manager

Figure 7-2

