9.9.2.B.7 (continued)

f. Review of violations of Technical Specifications (investigate reported or suspected incidents involving safety questions or violations of the Technical Specifications for BFN only).

g. Review of reportable events as required by 10 CFR 50.73. At BFN, also include review of unusual events, operating anomalies, and abnormal performance of plant equipment.

h. Special reviews, investigations, or analyses and reports thereon as requested by the Plant Manager or the NSRB.

i. Review of any accidental, unplanned, or uncontrolled radioactive release and associated reports. PORC will forward reports covering the evaluation and recommendations to prevent recurrence to the Site Vice President (Chief Nuclear Officer and Executive Vice President, TVA Nuclear, for BFN) and to the NSRB.

j. Review of unit operations to detect potential nuclear safety hazards. Items that may be included in this review are NRC inspection reports, QA audit, NSRB audit results, American Nuclear Insurer (ANI) inspection results, significant corrective action documents, and Operations Logs. (BFN and SQN only)

k. Review of administrative procedures describing selected programs in site-specific technical specifications (WBN only).

l. Review of selected safety evaluations for (a) procedures and (b) changes to procedures, equipment, systems, or facilities to verify that such actions did not constitute an unreviewed safety question. (SQN and WBN only).

m. Review of all safety evaluations for modifications to structures, systems, or components that affect nuclear safety to verify that such actions did not constitute an unreviewed safety question as defined in 10 CFR 50.59, or requires a change to the Technical Specifications. (BFN only)

n. Review changes to the radwaste treatment system. (BFN only)

o. Review of the Nuclear Quality Assurance Plan sections applicable to PORC.

9.9.3 Records

A. For WBN, written records of reviews of items considered under Section 9.9.2.A.4 shall be maintained in accordance with approved procedures.

9.9.3 (continued)

B. The PORC shall maintain written minutes of each PORC meeting that, as a minimum, document the results of its activities. Copies shall be provided to the Site Vice President and the NSRB. At a minimum, the PORC minutes shall include:

1. Results of the activities conducted under the provisions of Section 9.9;

2. Recommended approval or disapproval of items considered under Section 9.9.2.B.7;

3. Determination of whether each item considered under Sections 9.9.2.B.7.c, .d, .e, .l, and .m constitutes an unreviewed safety question as defined in 10 CFR 50.59.

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

10.2.2 (continued)

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.

10.2.5 (continued)

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 Senior Vice President, NO, 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 Senior Vice President, NO, 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.

11.2.2 (continued)

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 Senior Vice President, NO, is responsible for the development of the program for indoctrination and training.

B. Other TVAN Vice Presidents are responsible for delineating training requirements in their applicable areas of responsibility and providing these requirements to the Senior Vice President, NO.

C. The General Manager, Nuclear Human Resources is responsible for establishing a position qualification documentation and validation program.

D. Vice Presidents and General 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 TVAN 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.

12.2 (continued)

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 organization 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.

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

12.2.E.4 (continued)

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 annually 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.

13.2 (continued)

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 13.2B, E, and F apply. In addition, this application software shall be validated through documented tests and test results independently reviewed.

13.3 Responsibilities

The Chief Engineer 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."

14.1 (continued)

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

10 CFR 73.71, "Reporting of Safeguards Events."

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

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

10 CFR 100, "Reactor Site Criteria."

14.2 Regulatory Guidance

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

14.3 TVA Licensing Submittal Documents

Browns Ferry Nuclear Plant Technical Specifications, Administrative Controls Section.

Sequoyah Nuclear Plant Technical Specifications, Administrative Controls Section.

Watts Bar Nuclear Plant Technical Specifications, Administrative Controls Section.

14.4 QA Manuals

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

14.5 Other

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

NRC 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).

14.5 (continued)

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.

15.0 (continued)

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.)

15.0 (continued)

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.

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.

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.

*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. Example: second-party verification where a participating craftsman verifies that work and/or testing has been accomplished.

15.0 (continued)

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.

15.0 (continued)

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.

15.0 (continued)

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).

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.

15.0 (continued)

*Storage

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

Surveillance Tests

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

Test Record Drawings

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

Test Scoping Documents

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

Test Deficiency

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

Trend Analysis

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

*Verification

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

APPENDIX A

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

10 CFR 50, Appx B		ANSI N45.2 - 1971		ANSI N18.7 - 1976	
Criterion	NQA Plan	Section	NQA Plan	Section	NQA Plan
I	4.0;4.1	2.0	5.0	3.1	4.1;5.0
II	5.0	3.0	4.0;4.1	3.2	4.0;4.1
III	7.0	4.0	7.0	3.3	11.0
IV	8.1	5.0	8.1	3.4	4.0;11.0
V	6.0;7.0;9.9	6.0	6.0;7.0;9.9	4.0	4.1.3.B.5;5.3;6.0
VI	6.0;7.0;9.9	7.0	6.0;7.0;9.9		4.1.3.C.7.b;9.9; 12.0
VII	8.2	8.0	8.2	5.1	5.0
VIII	8.3	9.0	8.3	5.2.1	4.0
IX	9.3	10.0	9.3	5.2.2	6.0
X	9.1	11.0	9.1	5.2.3	6.0
XI	9.4	12.0	9.4	5.2.4	6.0
XII	9.5	13.0	9.5	5.2.5	6.0
XIII	9.6	14.0	9.6	5.2.6	6.0;9.7
XIV	9.7	15.0	9.7	5.2.7	6.0;9.8
XV	10.0	16.0	10.0	5.2.8	6.0;9.1;9.4
XVI	10.0	17.0	10.0	5.2.9	5.1;6.0
XVII	6.3	18.0	6.3	5.2.10	4.1.2;6.0
XVIII	12.0	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	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

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

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

TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	Procedures and Instructions 6.1.4	Document Control 6.2.4	QA Records 6.3.4	Design Control 7.4	Procurement Document Control 8.1.4	Control of Purchased Material, Equipment, and Services 8.2.4	Identification and Control of Materials, Parts, and Components 8.3.4	Inspection and Line Verification 9.1.4	Control of Special Processes 9.3.4	Test Control 9.4.4	Control of M&TE and Installed Safety-Related I&C Devices 9.5.4	Handling, Storage, and Shipping 9.6.4	Inspection, Test, and Operating Status 9.7.4	Control of Maintenance 9.8.4	Adverse Conditions 10.4	Indoctrination, Training, Qualification, and Certification 11.4	Auditing 12.4	Computer Software and Data 13.4	Definitions 15.0
Reg. Guide 1.8 R/2 April 1987 ANSI N18.1 - 1971, and ANSI/ANS 3.1 - 1981 "Personnel Selection & Training"																X			
Reg. Guide 1.33 R/2 February 1978 ANSI N18.7 - 1976/ANS-3.2 "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants"	X Sect 5	X Sect 5.2.15	X Sect 5.2.13	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 Sects 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 - 1977 "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 Sect 14	X Sect 15		X Sects 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
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TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	Procedures and Instructions 5.1.4	Document Control 5.2.4	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 1.38 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
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TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	0 1 4 Procedures and Instructions	0 2 4 Document Control	0 3 4 QA Records	7 4 Design Control	4 1 4 Procurement Document Control	8 2 4 Control of Purchased Material, Equipment, and Services	8 3 4 Identification and Control of Materials, Parts, and Components	9 1 4 Inspection and Line Verification	9 1 4 Control of Special Processes	9 4 4 Test Control	9 5 4 Control of M&TE and Installed Safety-Related I&C Devices	9 6 4 Handling, Storage, and Shipping	9 7 4 Inspection, Test, and Operating Status	9 8 4 Control of Maintenance	10 4 Adverse Conditions	11 4 Indoctrination, Training, Qualification, and Certification	12 4 Auditing	13 4 Computer Software and Data	15 0 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 Secta 2.1 2.2	X Sect 2.2	X Sect 7			X Sect 7	X	Secta 2.3.4 5.6		X	X Sect 2.5	X Sect 2.5	X Secta 4.2 5.1					
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 Secta 2.1 2.2	X Sect 2.2	X Sect 7			X Sect 7	X	Secta 2.3.3 4.5		X	X Sect 2.8	X Sect 2.5	X Secta 4.2 5.1	Secta 11 3.5-H 4.5-H.C				

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Table 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 6.1.4	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	Audits 12.4	Computer Software and Data 13.4	Deviations 15.0
Reg. Guide 1.88 R.2 October 1976 ANSI/N45.2.9 - 1974 "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants"	X		X		X Secs 4.2 & 7.2														
Reg. Guide 1.94 R.2 June 1976 ANSI N45.2.11 - 1974 "Quality Assurance Requirements for the Design of Nuclear Power Plants"	X Secs 2.2.7			X													X Sect 11	X Sect 6.1	
Reg. Guide 1.144 R.1 September 1980 ANSI N45.2.12 - 1977 "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants"																	X		
Reg. Guide 1.74 February 1974 ANSI N45.2.10 - 1973 "Quality Assurance Terms and Definitions"															X				

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Table 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
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	

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TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	10 CFR 21	10 CFR 50 Appendix B	10 CFR 50.49	10 CFR 50.54a	10 CFR 50.54e	10 CFR 50.59	10 CFR 50.72	10 CFR 50.73	10 CFR 50.120	10 CFR 71.71
5.1.4 Procedures and Instructions		X Crit V								
5.2.4 Document Control		X Crit VI								
6.3.4 QA Records		X Crit XVII								
7.4 Design Control		X Crit III	X	X		X				
8.1.4 Procurement Document Control		X Crit IV	X							
8.2.4 Control of Purchased Material, Equipment, and Services	X	X Crit VII								
8.3.4 Identification and Control of Materials, Parts, and Components		X Crit VIII								
9.1.4 Inspection and Line Verification		X Crit X								
9.3.4 Control of Special Processes		X Crit IX								
9.4.4 Test Control		X Crit XI								
9.5.4 Control of M&TE and Installed Safety-Related I&C Devices		X Crit XII								
9.6.4 Handling, Storage, and Shipping		X Crit XIII								
9.7.4 Inspection, Test, and Operating Status		X Crit XIV								
9.3.4 Control of Maintenance	X		X							
10.4 Adverse Conditions	X	X Crit XV XVI			X	X	X	X		X
11.4 Indoctrination, Training, Qualification, and Certification		X Crit II							X	
12.4 Auditing		X Crit XVIII								
13.4 Computer Software and Data		X								
15.0 Definitions										

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TABLE I

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	5.1 Procedures and Instructions	6.2.4 Document Control	6.3.4 QA Records	7.4 Design Control	8.1.4 Procurement Document Control	8.2.4 Control of Purchased Material, Equipment, and Services	8.3.4 Identification and Control of Materials, Parts, and Components	9.1.4 Inspection and Line Verification	9.3.4 Control of Special Processes	9.4.4 Test Control	9.5.4 Control of M&TE and Installed Safety-Related I&C Devices	9.6.4 Handling, Storage, and Shipping	9.7.4 Inspection, Test, and Operating Status	9.8.4 Control of Maintenance	10.4 Adverse Conditions	11.4 Indoctrination, Training, Qualification, and Certification	12.4 Auditing	13.4 Computer Software and Data	15.0 Definitions
ASME Sect III Div 1, Art NCA 4000 "Quality Assurance"	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		
ASME Sect V "Nondestructive Examination"									X										
ASME Sect IX "Welding and Brazing Qualifications"									X										
ASME Sect XI "Rules for Inservice Inspection of Nuclear Power Plants"				X				X	X	X			X						
AWS "Structural Welding Code D1.1"									X										
AISC "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings"									X										

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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
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		

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

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

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

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

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

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

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

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.

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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.

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:

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REGULATORY GUIDE CONFORMANCE STATUS

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.

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.

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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.

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

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

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

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

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

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

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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.

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.

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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.

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 Site Materials and 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.

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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 Site Materials and 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.

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, TVAN 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.

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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.

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.

The NQAP follows this guide with the following alternatives:

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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.

   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

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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:

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

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 reviews performed for changes made to procedures, equipment, or reviews of tests and experiments pursuant to 10 CFR 50.59 (lifetime).

10. Records of the reviews and audits required by NQA Plan Sections 9.9.2, 4.1.3.B, and 12.2.E.5 (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).

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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).

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 reviews performed for changes made to procedures or equipment or reviews of tests and experiments pursuant to 10 CFR 50.59 (lifetime).

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

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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).

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. Reviews of changes made to the procedures or equipment or reviews of tests and experiments to comply with 10 CFR 50.59.

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

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

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

7. Reactor coolant system inservice inspection.

8. 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:

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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.

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.

9. 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.

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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.

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 Sections 3, 4, and 5 with a performance-based graded QA verification program consisting of quality control inspection, line verification, and quality assessments.

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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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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.

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:

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.

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 13.2G and 13.2H of the Nuclear Quality Assurance Plan.

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GUIDELINES FOR DETERMINATION OF TVA IDENTIFIED QUALITY-RELATED CLASSIFICATIONS

1.0 INTRODUCTION

The guidelines for classifying components, systems, and activities as quality-related depend on the relationship of the terms quality-related and safety-related as discussed in 2.0 and 3.0 below. The guidelines are contained in Section 4.0 of this Appendix.

2.0 QUALITY-RELATED

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

Quality-related is more encompassing than the term safety-related. Appendix D shows the scope of the NQAP. All quality-related items and activities are not necessarily safety-related. Appendix D illustrates the programmatic relationships.

3.0 SAFETY-RELATED

Use of the term safety-related (or variations thereof) and the methodology for classifying items and activities as safety-related has been established in the General Design Criteria and Safety Analysis Report for TVA's Browns Ferry, Sequoyah, Watts Bar, and Bellefonte 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.

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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 TVAN management and approved by the Chief Nuclear Officer and Executive Vice President, TVA Nuclear.

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 TVAN management as requiring some level of quality control because of their importance to plant reliability or operability.

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4.4 Items to which one or more of the following regulatory documents are applicable should be considered for classification as quality-related.

A. Regulatory Guide 1.143, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in LightWater-Cooled Nuclear Power Plants."

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

C. Regulatory Guide 1.29, "Seismic Design Classification."

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

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

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

G. ANS 3.2/ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants."

H. Regulatory Guide 1.33, Revision 2, February 1978, "Quality Assurance Program Requirements (Operation)."

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

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

K. NUREG 0737, "Clarification of TMI Action Plan Requirements."

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

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 TVAN management direction.

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SCOPE OF NUCLEAR QUALITY ASSURANCE PROGRAM

This diagram displays the relationship of safety-related to quality-related items and activities. Examples of these items and activities are shown. It is not intended to show each specific item and activity within the scope of the Nuclear QA Program.

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COMPUTER SOFTWARE

The requirements of Section 13.0 apply to application software which performs any of the following:

1. Directly operate safety-related plant equipment.

2. Generates design output for the design of safety-related or quality-related functions, structures, systems, or components.

3. Used by control room personnel, without further verification, to make plant operating decisions affecting:

   a. The integrity of the reactor coolant pressure boundary.

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

   c. The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR 100 guidelines.

4. Perform calculations, the results of which are used, without further verification to operate, maintain, inspect, or test safety-related or quality-related structures, systems, and components.

5. Performs engineering calculations, the results of which are used, without further verification to support the design of safety-related and quality-related structures, systems, and components.

6. Generates output used to procure safety- or quality- related items.

7. Maintains, controls, or distributes information to be used without further verification in the procurement, design, operation, and maintenance of safety-related or quality-related structures, systems, and components.

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THIS APPENDIX IS DELETED.

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TYPES OF CONTROLLED DOCUMENTS AND MANUALS

1. Design Specifications and Drawings
2. Safety Analysis Reports
3. Program Manuals
4. Plant Instructions
5. Nuclear Fuel Procedures Manual
6. Radiological Protection Plan
7. Nuclear Engineering Procedures Manual
8. Site Engineering Project Manuals
9. ASME Section III Quality Assurance Manual
10. Nuclear Procedures System Manuals
11. As-built Documents
12. Computer Programs
13. Nonconformance Reports
14. Nuclear Quality Assurance Plan
15. System Descriptions
16. Topical Report

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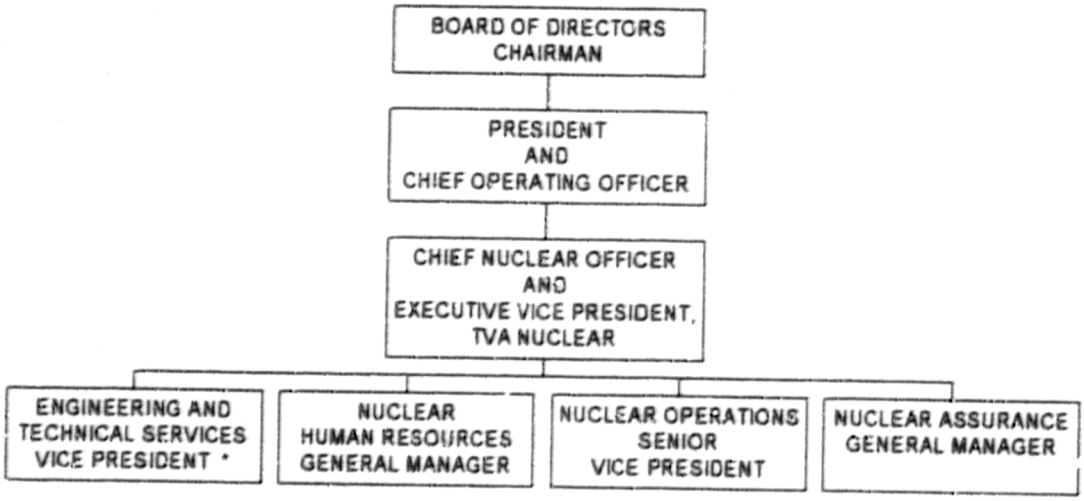
TVA NQA
ORGANIZATION CHARTS



*ALSO SERVES AS NSRB CHAIRMAN

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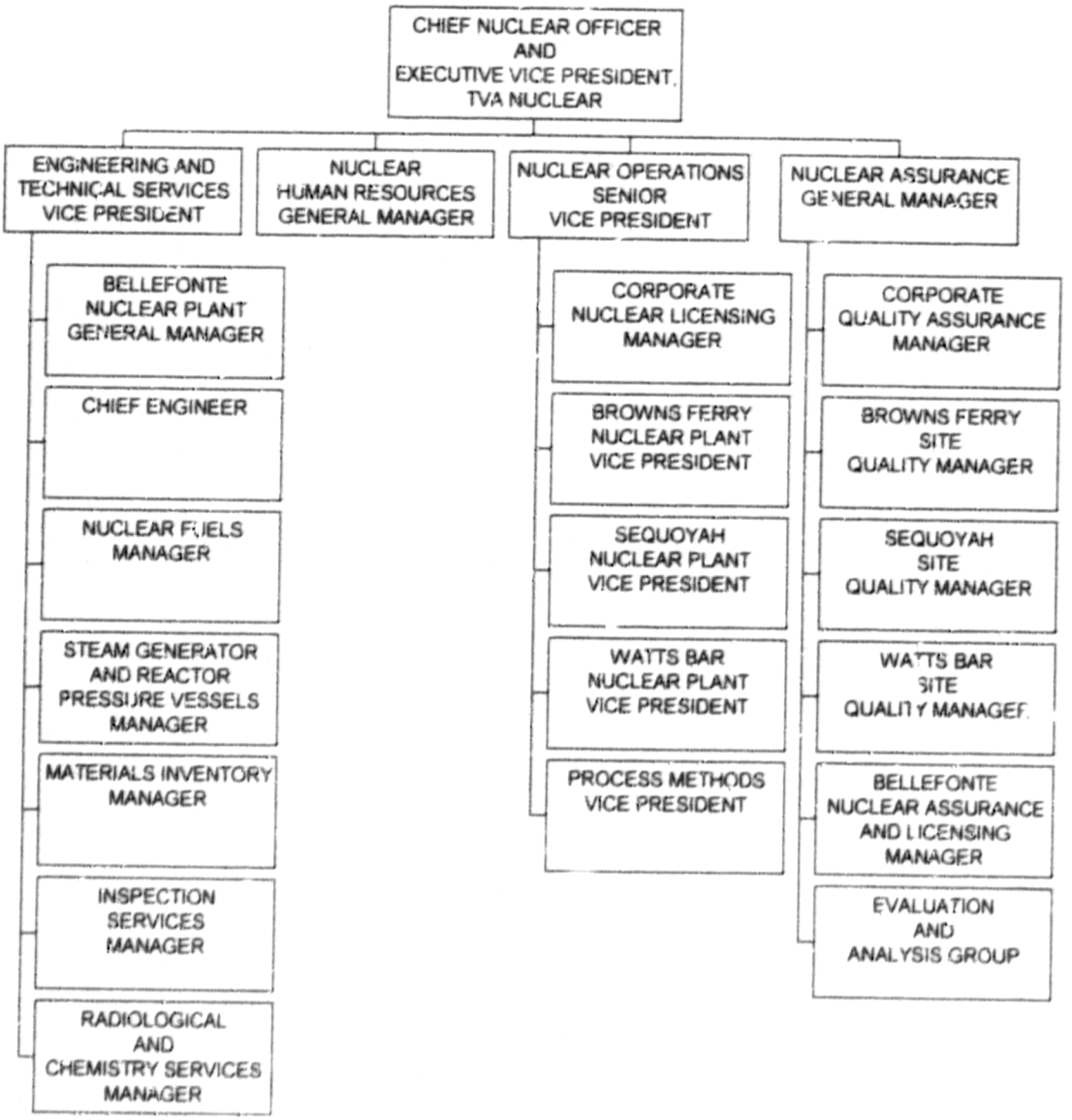
TVA NQAP
ORGANIZATION CHARTS



ENCLOSURE 2

Description Of Changes
TVA Nuclear Quality Assurance Plan
Revision 8

TENNESSEE VALLEY AUTHORITY
NUCLEAR QUALITY ASSURANCE PLAN (TVA-NQA-PLN89-A), REVISION 8
DESCRIPTION OF CHANGES

Section Changed in Revision 7	Change and Justification
Policy Statement	Changed the title of "President, TVA Nuclear and Chief Nuclear Officer," to "Chief Nuclear Officer and Executive Vice President, TVA Nuclear." This title change does not affect quality-related responsibilities and is reflected throughout the Plan. Changed "Nuclear Assurance and Licensing (NA&L)" to "Nuclear Assurance (NA)." This change is reflected throughout the Plan. This change separates Nuclear Assurance and Licensing into two organizations. The General Manager, Nuclear Assurance, reports to the Chief Nuclear Officer and Executive Vice President, TVA Nuclear. This more clearly defines the independent reporting relationship of the Nuclear Assurance organization. Corresponding changes were made to the signatories at the bottom of the page.
List of Abbreviations	Deleted the term "ISEG," as it is not used in the Plan. Deleted the term "P&OM," as it is not used in the Plan.
3.3.3, second paragraph	Changed "Vice President, Engineering and Technical Services (E&TS)" to "The General Manager, NA." Also changed the term "quality assurance" to "NA." This change updates the NA organizational name change and functional responsibility for arranging the biennial assessment. Performance of the assessment is not affected by this change. The assessment continues to be performed in a manner that ensures independence from the organization being assessed.
4.0, fourth line	Changed "The TVAN Policy and Organization Manual (P&OM)" to "This Nuclear Quality Assurance Plan." Reference to the P&OM is no longer appropriate, as its contents are being relocated to other TVA internal documents which are already discussed in the Plan. For example, Intergroup Agreements (see Sections 2.0 and 5.0) are TVA internal documents that describe the interface responsibilities of TVAN and TVA non-nuclear organizations which support the nuclear quality assurance program. The Nuclear Quality Assurance Plan adequately describes organizational structure and primary responsibilities through the Appendix H organization charts and various sections of the Plan.
4.1.1	Deleted reference to the positions subordinate to the Chief Nuclear Officer and Executive Vice President, TVA Nuclear, and made reference to the organization charts in Appendix H. This change removes information from Section 4.1.1 that is redundant to the organization charts.
4.1.3.A	Deleted reference to the positions subordinate to the Vice President, E&TS, and made reference to the organization charts in Appendix H. This change removes

	information that is redundant to the organization charts in Appendix H. The organization charts adequately identify the organizational elements which function within the QA program.
	Added areas of responsibility (Emergency Preparedness, Chemistry, etc.) that were previously addressed under other management positions in Sections 4.1.3.B.3 and 4.1.5.A. This change updates the organizational responsibilities. Deleted items 1 through 16. This change removes information that is redundant to the Responsibilities sections of the Plan (e.g., Sections 6.1.3, 6.2.3, 6.3.3, etc.).
4.1.3.B	Deleted reference to the positions subordinate to the Vice President, E&TS. This information is redundant to the organization charts in Appendix H which depict the current organization. Section 4.1.3.B.5 was renumbered as 4.1.3.B.
4.1.3.B.1 and B.2	Deleted. This change removes information that is redundant to Section 4.1.3.A and the Responsibilities sections of the Plan (e.g., Sections 7.3.A, 9.1.3, 9.3.3, etc.).
4.1.3.B.3	Deleted. Nuclear Security was relocated to Section 4.1.5.A. Emergency Preparedness was relocated to Section 4.1.3.A. Administrative Support and Procedures functions are addressed in Sections 6.1.3.A, 6.2.3, 6.3.3, and 13.3. This change updates the organizational responsibilities.
4.1.3.B.4	Relocated to Section 4.1.6 and updated the organizational responsibilities. The subordinate function of Licensing and Industry Affairs was relocated to Section 4.1.5.D. This change updates the organizational responsibilities. Refer also to the justification for the Policy Statement change regarding the reporting relationship of the General Manager, NA.
4.1.3.B.5	Renumbered as Section 4.1.3.B.
	Updated the reference to Section 4.1.5.D.3 in the renumbered Section 4.1.3.B.4. Changed the renumbered Section 4.1.3.B.5.b.4 to read as follows: "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." This change clarifies the existing text by reciting the ANSI N18.7-1976 requirement.
4.1.3.B.6	Deleted. The reporting relationship of the General Manager, Bellefonte, is shown in Appendix H organization charts. The deferred plant QA program requirements are no longer applicable to Bellefonte. A corresponding change was made by deleting Appendix F.
4.1.3.C	Relocated to Section 4.1.6. Except for Bellefonte, the licensing functions are relocated to Section 4.1.5.D. The licensing functions include managing the Nuclear Experience Review Program and the independent technical review function, and maintaining an interface between TVA and NRC. Managing a program for tracking and trending adverse conditions, formerly under Licensing and Industry Affairs in Section 4.1.3.C.7.c, is addressed in Section 10.3.

	Providing Nuclear Safety Review Board support, formerly in Section 4.1.3.C.7.c, is addressed in Section 4.1.6.A.3. This change updates the organization names and position titles.
4.1.3.C.7	Relocated to Section 4.1.6.A.6. Updated position titles and added "the Evaluation and Analysis Group." The justification for Section 4.1.3.C.7.b further discusses this change. Removed "and/or licensing" from the General Manager, NA, experience requirements. Licensing is no longer a function of the General Manager, NA.
4.1.3.C.7.a	Relocated to Section 4.1.6.A.7.a, and added general responsibility statements. Combined Sections 4.1.3.C.7.a.6, .9, and .13 into renumbered Section 4.1.6.A.7.a.10. This change combines three redundant responsibility statements into one concise statement of responsibility. Relocated Section 4.1.3.C.7.a.16 to Section 4.1.6.A.7.a.8 and changed "Corporate standards" to "Corporate NPS documents." This change is an update of terminology only and does not change requirements in the Plan. Relocated Section 4.1.3.C.7.a.14 to 4.1.6.A.7.a.11 and clarified TVA "non-nuclear" organizations' responsibility in support of nuclear activities.
4.1.3.C.7.b	Relocated to Section 4.1.6.A.7.b and clarified the general statement of responsibility. Relocated Section 4.1.3.C.7.b.4 to Section 4.1.6.A.7.b.4 and combined with previous Section 4.1.3.C.7.b.13 which was deleted. This change combines two responsibility statements into one concise statement of responsibility. Relocated Section 4.1.3.C.7.b.6 to Section 4.1.6.A.7.b.6 and changed to require oversight of trend analysis and root cause analysis. Responsibility for trend analysis is specified in Section 10.3.D. Section 4.1.6.A.7.c also describes the Evaluation and Analysis Group's responsibility for oversight and independent analysis of trending results. Root cause analysis is not the sole responsibility of the Site Quality Manager, but is performed by organizations responsible for resolution of adverse conditions. (Refer to Section 10.2.2). These changes update organizational responsibilities. Relocated Section 4.1.3.C.7.b.11 to Section 4.1.6.A.7.b.11 and clarified that the ASME Section III Program is applicable to Bellefonte. Relocated Section 4.1.3.C.7.b.16 (a through e) to Section 4.1.5.D.3. Added a new Section 4.1.6.A.7.c, "Evaluation and Analysis Group," as a direct report to the General Manager, NA. This group is responsible to provide senior assessment leadership and technical expertise to the quality assessment programs.
4.1.3.C.7.c	Relocated to Section 4.1.5.D and changed the title to "Nuclear Licensing Manager."

	1. Removed the term "Independent Safety Engineering" which is considered to be synonymous in meaning to independent technical review. Since there is a continuing commitment to manage the independent technical review function, this change is considered a clarification. 2. Relocated this function to Section 10.3. 3. Relocated this function to Section 4.1.6.A.6.
4.1.5	Made reference to the organization charts in Appendix H. Added Nuclear Security as an area of responsibility that was previously under the General Manager, Technical Services, in Section 4.1.3.B.3.a. Relocated Chemistry, Radiological Control, and Radioactive Waste Management to Section 4.1.3.A. These changes update the organizational responsibilities. Deleted item 2 (a through g). This change removes information that is redundant to the Responsibilities sections of the Plan (e.g., Sections 4.1.3.A, 4.1.5.A, 9.1.3, 9.4.3, etc.).
5.3	Deleted "the TVAN P&OM." Refer to the justification for the Section 4.0 change.
5.4.A	Deleted. Refer to the justification for the Section 4.0 change.
5.4.D	Renumbered as Section 5.4.C and changed "Corporate standards" to "Corporate NPS documents." This change is an update of terminology only and does not change requirements in the Plan.
5.1.B, 5.1.C, 6.1.3.A, 6.1.3.B, 6.2.3, 6.3.3, 7.3.A, 7.3.C, 8.1.3.A, 8.2.3.A, 8.3.3.A, 9.1.3.A, 9.1.3.C, 9.1.3.D, 9.2.3, 9.3.3.A, 9.3.3.B, 9.3.3.C, 9.3.3.D, 9.4.3.A, 9.4.3.B, 9.4.3.D, 9.4.3.E, 9.5.3.B, 9.6.3.A, 9.6.3.B, 9.6.3.D, 9.7.3.B, 10.3.A, 10.3.D, 12.3.A, 13.3	Updated the title of the position that is currently responsible for the specified function. This change updates the organizational responsibilities. In Sections 10.3.A and 10.3.D, specified responsibilities for the General Manager, Nuclear Assurance.
6.1.1	Added a new last sentence that refers to Section 9.9 of the Plan for plant reviews. This is a clarification only.
7.2.1.J	Made reference to Section 10.0 of the Plan. This is a clarification only.
7.2.7.D	Changed reference from the "Plant Technical Specifications" to "Section 9.9 of this Plan." Requirements previously located in the Plant Technical Specifications were relocated to Section 9.9 of the Plan in Revision 7.

8.1.2.B.1	Added in the first sentence, ". . . as defined by Engineering . . . ." This is a clarification only.
8.1.2.B.2, 9.3.1	Changed "Site Engineering" to "Engineering." This change updates the organizational responsibilities.
8.1.3.B, 8.2.3.B, 8.3.3.B	Clarified the functional responsibility to be also applicable to corporate activities.
9.1.2.B.2	Clarified the requirement for use of line verification to graded design/regulatory-required inspection activities.
9.9	Consolidated the site-specific plant review requirements for Watts Bar, Sequoyah, and Browns Ferry into a standard set of requirements. Areas of Section 9.9 that are unique to a particular site were not changed in this revision and are identified as to which site they apply.
11.3.D	Added "and General Managers." This is a clarification only.
13.2.A	Changed "user manuals" to "user documentation." This is a clarification only.
13.2.B	Added the word "software" before "documentation." This is a clarification only.
13.2.C, 13.2.D	Simplified the sentences for clarification.
Appendix B, Regulatory Guide 1.33	Changed in item 2a, "Technical Specifications" to "Section 9.9 of this Plan." Requirements previously located in the Plant Technical Specifications were relocated to Section 9.9 of the Plan in Revision 7.
Appendix B, Regulatory Guide 1.58	Added the following additional sentences to item 4: "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." This change is based on the requirements in ASME Section XI, Division 1, 1992 Edition with the 1992 Addenda, which is approved for use in 10 CFR 50.55a (Codes and Standards). Added the following to the end of the sentence in item 5: "as endorsed by Regulatory Guide 1.58, Revision 1." This is a clarification only.
Appendix B, Regulatory Guide 1.88	Under the listing of WBN-specific records, added the following in item 2: "for WBN only." Changed in item 10, reference to 4.1.3.B. This is a clarification only. Under the listing of SQN-specific records, changed item 3 to reference Section 9.9.2.A.2.for SQN only. This is a clarification only.
Appendix E	Changed item 2 from ". . . affecting safety-related . . ." to ". . . for the design of safety-related . . . ." This is a clarification only.

Appendix F	Deleted. The Deferred Plant Quality Assurance Program is no longer applicable to Bellefonte.
Appendix H	The organization charts are updated to reflect the current organization that is involved in the quality assurance program. The position, "President and Chief Operating Officer," is designated as a direct report to the Board of Directors. The Chief Nuclear Officer and Executive Vice President, TVA Nuclear, reports to this position.