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 Vice President, Technical Support as delegated to the General Manager, Operations Services is responsible for the development of the program for indoctrination and training.

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

C. The Manager, Nuclear Employee Relations and Development is responsible for establishing a position qualification documentation and validation program.

D. Vice Presidents 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 Nuclear Power and other TVA organizations, which support the nuclear program and contractor/supplier audits to determine and assess the adequacy and effectiveness of the QA program.

12.2 Program Elements

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

B. Audits shall include: a determination of the effectiveness of QA program elements; evaluation of work areas, activities, processes, and items; review of documents and records; review of audit results with responsible management; and follow-up on corrective action taken for deviations identified during the audit.

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. Auditing organizations shall ensure that audit procedures and instructions adequately cover applicable elements of the NQAP. Audits shall be scheduled in accordance with plant technical specifications and regulatory requirements and to the extent possible based upon the status and importance to safety of the activities being performed.

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 Vice President, Technical Support as delegated to the General Manager, Nuclear Assurance 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. Nuclear Assurance 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 manuals.

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

C. Controls shall be established for the issue, use, and distribution of application software and associated documentation in accordance with Section 6.2 of this plan.

D. Controls shall be established for maintenance and retention of application software and associated documentation 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

13.2.F (continued)

shall be established and maintained. Involved personnel shall be trained on the intent and purpose of the list.

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

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

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

13.3 Responsibilities

The Vice President, Technical Support as delegated to the General Manager, Nuclear Support 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."

14.1 (continued)

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

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

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

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

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

10 CFR 50.73, "Licensee Event Report System."

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

10 CFR 55, "Operators' Licenses."

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

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

10 CFR 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).

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.

15.0 (continued)

Basic Component

A plant structure, system, component, or part thereof 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 shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in paragraph 100.11 of Title 10, Chapter 1, Code of Federal Regulations - Energy. In all cases, "basic component" includes safety related design, analysis, inspection, testing, fabrication, replacement parts, or consulting services that are associated with the component hardware whether these services are performed by the component supplier or others (10 CFR 21.3 and 10 CFR 50.2).

Commercial-Grade Items

Items that are: (1) not subject to design or specification requirements that are unique to nuclear facilities or activities, (2) used in applications other than nuclear facilities and activities, and (3) to be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description (for example, a catalog).

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.

Critical Structures, Systems, and Components (CSSC)

See Safety-Related.

Corrective Action

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

Dedication

The point in time after which a commercial grade item is accepted for safety-related application(s) and deficiency reporting becomes the responsibility of the party performing the acceptance.

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.

15.0 (continued)

Environmental Protection

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

Features

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

Fire Protection

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

Functional Test

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

Graded Approach

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

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.

15.0 (continued)

*Inspection

A phase of quality control performed by certified inspection personnel or other qualified individuals approved by Nuclear Assurance 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 the work to be verified. Examples: second-party verification where a participating craftsman verifies that work and/or testing has been accomplished; foreman signoff on a maintenance request to document that the craftsman has successfully completed his work.

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.

15.0 (continued)

Nuclear Plant Security

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

Operational Phase

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

Postmaintenance Tests

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

Postmodification Tests

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

Preoperational Tests

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

Procurement Documents

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

Programs

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

Quality Assurance Records

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

15.0 (continued)

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.

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).

15.0 (continued)

Significant Adverse Condition

A documented adverse condition that is determined to be a QA programmatic deficiency or reportable to the NRC.

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.

*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.

15.0 (continued)

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	6.0	6.0;7.0	4.0	5.3;6.0
VI	6.0;7.0	7.0	6.0;7.0		7.2;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	6.0;9.4
				5.3	6.0
				5.3.1	6.0
				5.3.2	6.0
				5.3.3	6.0
				5.3.4	6.0
				5.3.5	6.0;9.8
				5.3.6	6.0;5.1
				5.3.7	6.0;9.5
				5.3.8	6.0;5.1
				5.3.9	6.0;5.1
				5.3.10	6.0;9.1;9.4

APPENDIX B
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Table 1
REGULATORY GUIDE CONFORMANCE STATUS

Table 1 (pages 1 through 8) is a matrix of the source requirement documents (e.g. Regulatory Guides and ANSI Standards) which apply to aplicable 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 20) identifies alternatives to sections of the source requirement documents listed in table 1.

TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	5.1.4 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	8.1.4 Inspection and Control of 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	
Reg. Guide 1.8 R/2 April 1987 ANSI N18.1 – 1971, "Personnel Selection & Training"																X				
Reg. Guide 1.33 R/2 February 1978 ANSI N18.7 – 1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants"	X Sect. 5	X Sect. 5.2.15	X Sect. 5.2.12	X Sect. 5.2.7.2	X Sects. 5.2.13 5.2.13.1	X Sect. 5.2.13.2	X Sect. 5.2.13.3	X Sects. 5.2.6 5.2.17	X Sects. 5.2.12 5.2.10	X Sects. 5.2.8 5.2.10	X Sect. 5.2.16	X Sect. 5.2.13.4	X Sects. 5.2.6 5.2.6 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 – 1971, "Quality Assurance Program Requirements for Nuclear Power Plants"	X Sect. 6	X Sect. 7	X Sect. 10	X Sect. 4	X Sect. 5	X Sect. 8	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. 10			
Reg. Guide 1.37 R/0 March 16, 1973 ANSI N45.2.1 – 1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nucear Power Plants"	X Sects. 2.1, 3.2		X Sect. 9					X	X Sect. 2.5	X	X Sect. 2.5	X								

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Table 1
REGULATORY GUIDE CONFORMANCE STATUS

TABLE 1

SOURCE REQUIREMENT DOCUMENT / NQA PLAN SECTION	6.1.4 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 Use Verification	9.3.4 Control of Special Processes	9.4.4 Test Control	9.5.4 Control of M&TE and Installed Sentry-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 1.38 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. 6			X Sect. 5		X		X	X	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. 2.3								
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	X			X Sect. 2.2	X	X Sects. 2.4, 5.1 6.1, 7.0		X	X Sect. 2.5	X Sect. 2.2	X						

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Table 1
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TABLE 1

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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 Sects. 2.1, 2.2	X Sect. 2.2	X Sect. 7			X Sect. 7	X	Sects. 2.3, 4, 5, 6		X	X Sect. 2.5	X							
Reg. Guide 1.58 R/1 September 1980 ANSI/ASME N45.2.6 – 1978, "Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants"			X Sect. 6				X	X								X			
Reg. Guide 1.116 R/0 – R, June 1976 ANSI N45.2.8 – 1975, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants"	X Sects. 2.1, 2.2	X Sect. 2.2	X Sect. 7			X Sect. 7	X	X Sects. 2.3, 4, 5		X	X Sect. 2.5	X Sect. 2.5	X Sect. 4.2, 5.1	X Sects. 3.1.3.5-H 4.5-B,C					

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Reg. Guide 1.88 R/2 October 1976 ANSI N45.2.9 – 1974, "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants"	X		X		X Sects. 4.2, 6.2, 7.2														
Reg. Guide 1.74 February 1974 ANSI N45.2.10 – 1973, "Quality Assurance Terms and Definitions"																			X
Reg. Guide 1.64 R/2 June 1976 ANSI N45.2.11 – 1974, "Quality Assurance Requirements for the Design of Nuclear Power Plants"	X Sects. 2.2, 7			X													X Sect. 11	X Sect. 8.1	
Reg. Guide 1.144 R/1 September 1980 ANSI N45.2.12 – 1977, "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants"																	X		

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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"	× Sect. 2		× Sect. 11		× Sect. 3.0	×		× Sects. 7, 10			× Sect. 7.4						×		
Reg. Guide 1.146 R/0 August 1980 ANSI N45.2.23 – 1978, "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants"																×	×		
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"																		× Sects. 6, 7	

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10CFR21						X								X					
10CFR50 Appendix B	X Crit. V	X Crit. V	X Crit. XVII	X Crit. III	X Crit. V	X Crit. VII	X Crit. VIII	X Crit. X	X Crit. IX	X Crit. XI	X Crit. XII	X Crit. XIII	X Crit. XIV		X Crit. XV/XVI	X Crit. II	X Crit. XVIII	X	
10CFR50.49				X	X									X					
10CFR50.55a				X															
10CFR50.55a															X				
10CFR50.59				X											X				
10CFR50.72															X				
10CFR50.73															X				
10CFR50.120																X			
10CFR73.71															X				

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

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ASNT SNT-TC-1A-1984, "Personnel Qualification and Certification in Nondestructive Testing"									×										
Plant Technical Specifications (Administrative Controls Section)	×																		
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).			×										×		×				

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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.

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

The NQAP follows this Guide with the following alternatives:

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

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

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

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

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

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

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

The NQAP follows this Guide with the following alternatives:

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

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

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

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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.F3 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 will be consistent with plant specific technical specification requirements.

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.

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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 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 Power Stores are kept for entry during times when Power 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 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.

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, NP procedures or instructions for housekeeping activities which include the applicable requirements outlined in Section 2.1 of N45.2.3 and which take into account radiation control considerations, security considerations, fire protection considerations, and personnel and equipment safety considerations are developed on a case basis.

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

The NQAP follows this Guide with the following alternatives:

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

   - Construction testing personnel are qualified to Regulatory Guide 1.28 (ANSI N45.2).

   - Operations, maintenance, and modification testing personnel are qualified to Regulatory Guide 1.8 (ANSI N18.1) as endorsed in Appendix B of this plan.

   - Quality control inspection personnel are qualified to ANSI N45.2.6.

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

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3. Qualified instructors and/or responsible supervisors in their respective areas may perform the functions identified in N45.2.6, Tables I and L-III.

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

5. 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.

6. 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.

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. Nuclear Assurance 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:

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.

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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.

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

The NQAP follows this Guide with the following alternatives:

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

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

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

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

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

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

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

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

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

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.

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Table 2
REGULATORY GUIDE CONFORMANCE STATUS

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.

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.

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Table 2
REGULATORY GUIDE CONFORMANCE STATUS

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 - Nuclear Assurance 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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Page 2 of 3

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 NP management and approved by the Senior Vice President of Nuclear Power.

4.2 Some components and systems have been identified as "non-nuclear safety" (NNS) in TVA nuclear plant FSARs. Those components and systems identified as NNS in the FSARs shall be classified as quality-related.

4.3 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.)

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

APPENDIX C
Page 3 of 3

4.5 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 Light-Water-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."

4.6 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.

4.7 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 NP management direction.

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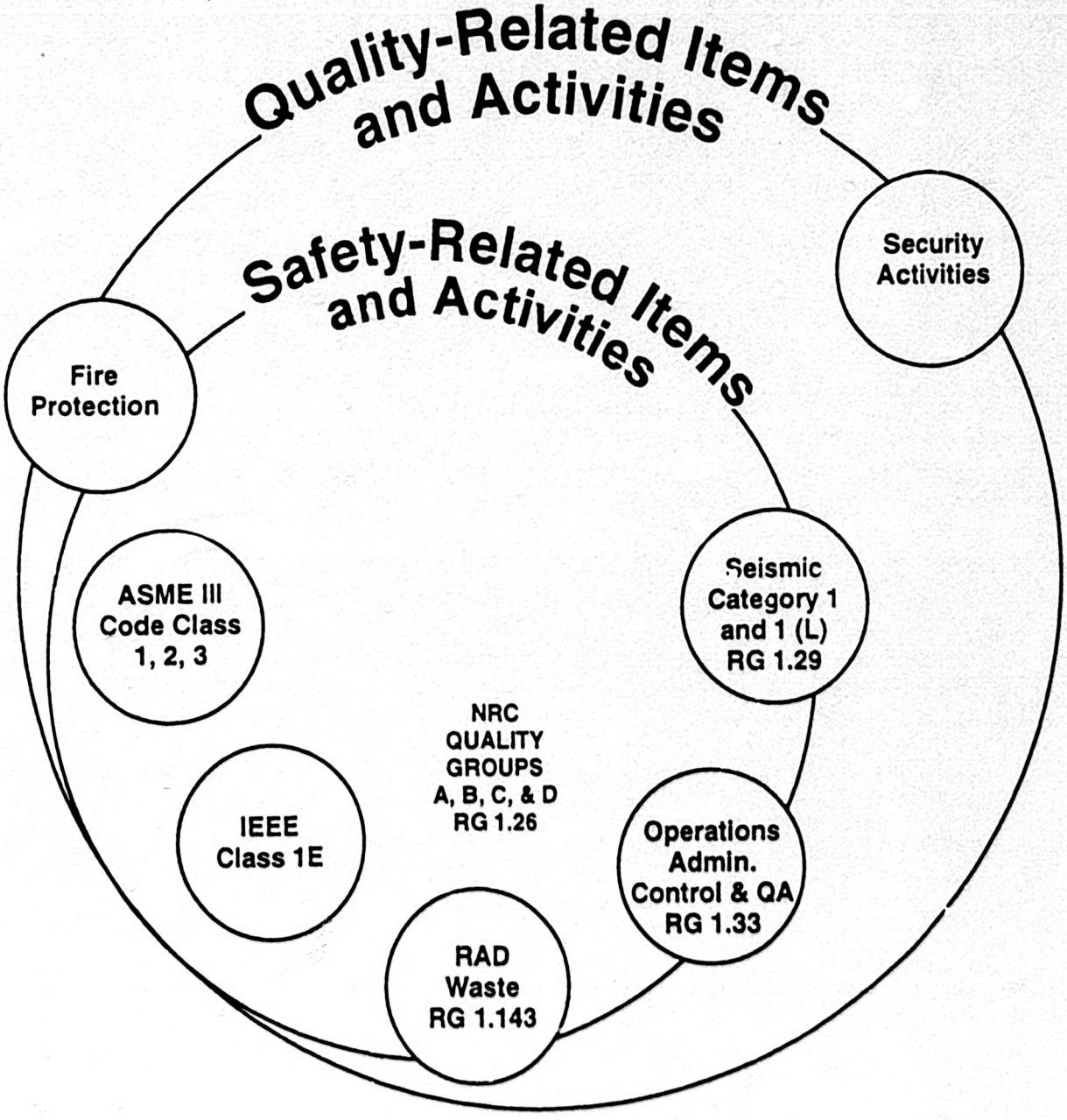
SCOPE OF NUCLEAR QUALITY ASSURANCE PROGRAM



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 affecting 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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DEFERRED PLANT QUALITY ASSURANCE PROGRAM

During the period of plant deferral, a QA program will be implemented which concentrates on the activities being performed and ensuring that the quality and licensability of the deferred plant are maintained.

The program which will be implemented is based on the guidance provided in NRC Generic Letter 87-15 dated November 4, 1987, and the NRC Policy Statement on "Deferred Plants" published in the Federal Register, Volume 52, No. 198, dated October 14, 1987. This program does not reduce 10 CFR 50, Appendix B requirements but focuses efforts where they are deemed necessary. A description of this program was submitted to the NRC on July 29, 1988.

Program Implementation

During the period of plant deferral, implementation of the following QA programmatic elements will be accomplished through written, reviewed, and approved procedures. These procedures will include as a minimum:

1. A description of the organizational structure for the plant showing functional relationships of personnel.

2. An indoctrination and training program, including the qualifications, responsibilities, and duties of personnel performing quality-related activities. The range of training will be structured to that needed for ongoing activities during deferral.

3. A construction status when work was suspended, including control of deviations from the established status which occur during the deferral period.

4. Control of Measuring and Test Equipment (M&TE) used during deferral, including identification, calibration, and evaluation of out-of-calibration equipment.

5. Control of work, including verification by the line organizations.

6. Program for inspection by Quality Control/Quality Assurance personnel using a graded approach.

7. Program for operation of equipment and systems which continue in operation or must be operated periodically.

8. Program for maintenance and lay-up of systems including:

   a. Establishment of acceptable conditions, periodic testing, and restoration of acceptable conditions during lay-up.

APPENDIX F
Page 2 of 2

b. A listing identifying the location, storage level, and/or preventive maintenance requirement for all permanent plant equipment and materials important to safety.

9. Identification, reporting, and correction of adverse conditions, including 10 CFR 21 and 10 CFR 50.55(e) items.

10. Collection, retention, and protection of records, including procedures, drawings, and controlled documents.

11. Scheduling and performance of audits and assessments, concentrating on activities being performed and programs in place.

12. Program for plant security and access control.

13. Identification of the program for activities during the deferral that are associated with reactivation.

Nuclear Assurance is responsible to ensure that the methods utilized by each organization responsible for the deferred QA program meet applicable QA program requirements.

Existing site procedures which are not being utilized during the period of deferral will be placed in an inactive status. Should an activity be required during deferral, the applicable procedure will be activated, reissued, and reviewed prior to the conduct of the activity.

At the end of the deferral period, the respective plant will be subject to the QA program described in this plan.

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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

APPENDIX H
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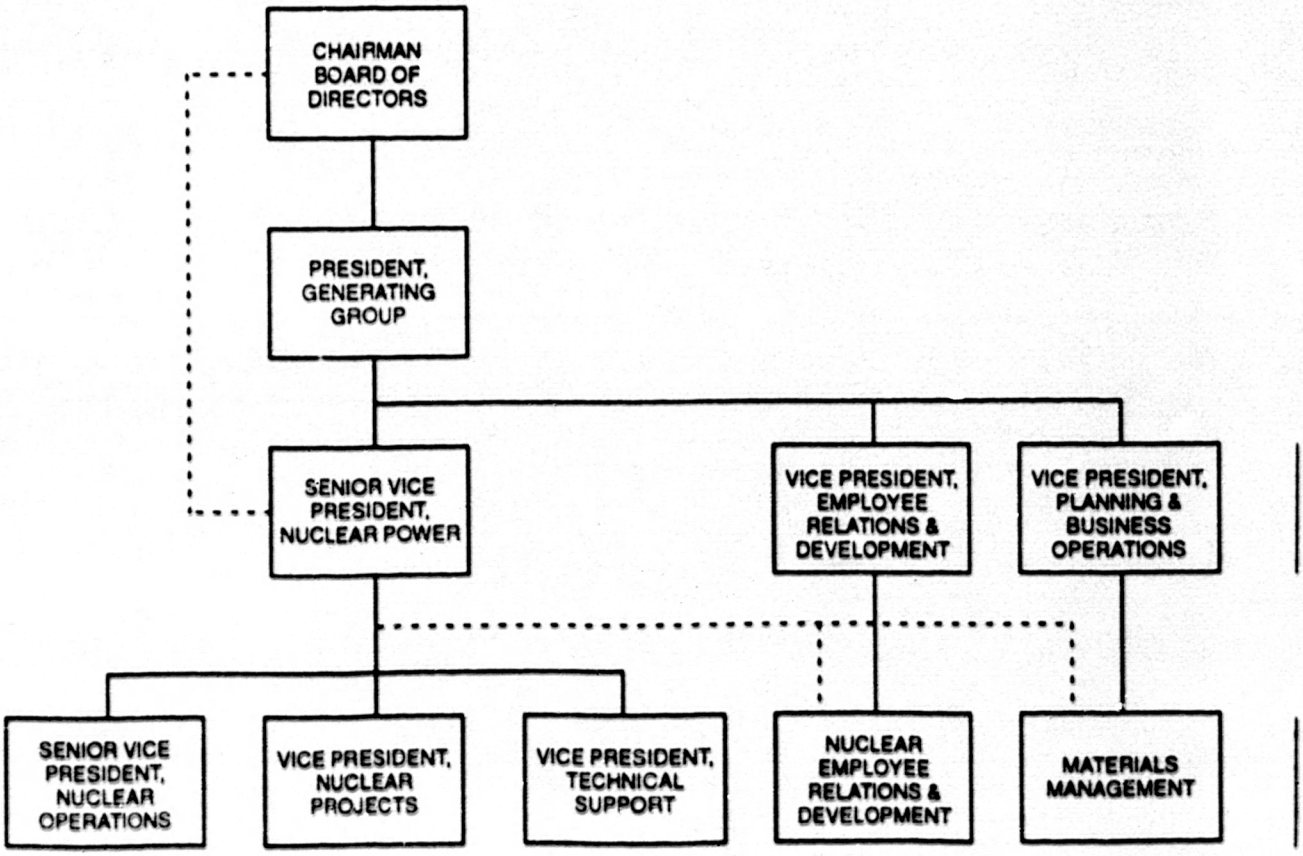
TVA NQAP
ORGANIZATION CHARTS



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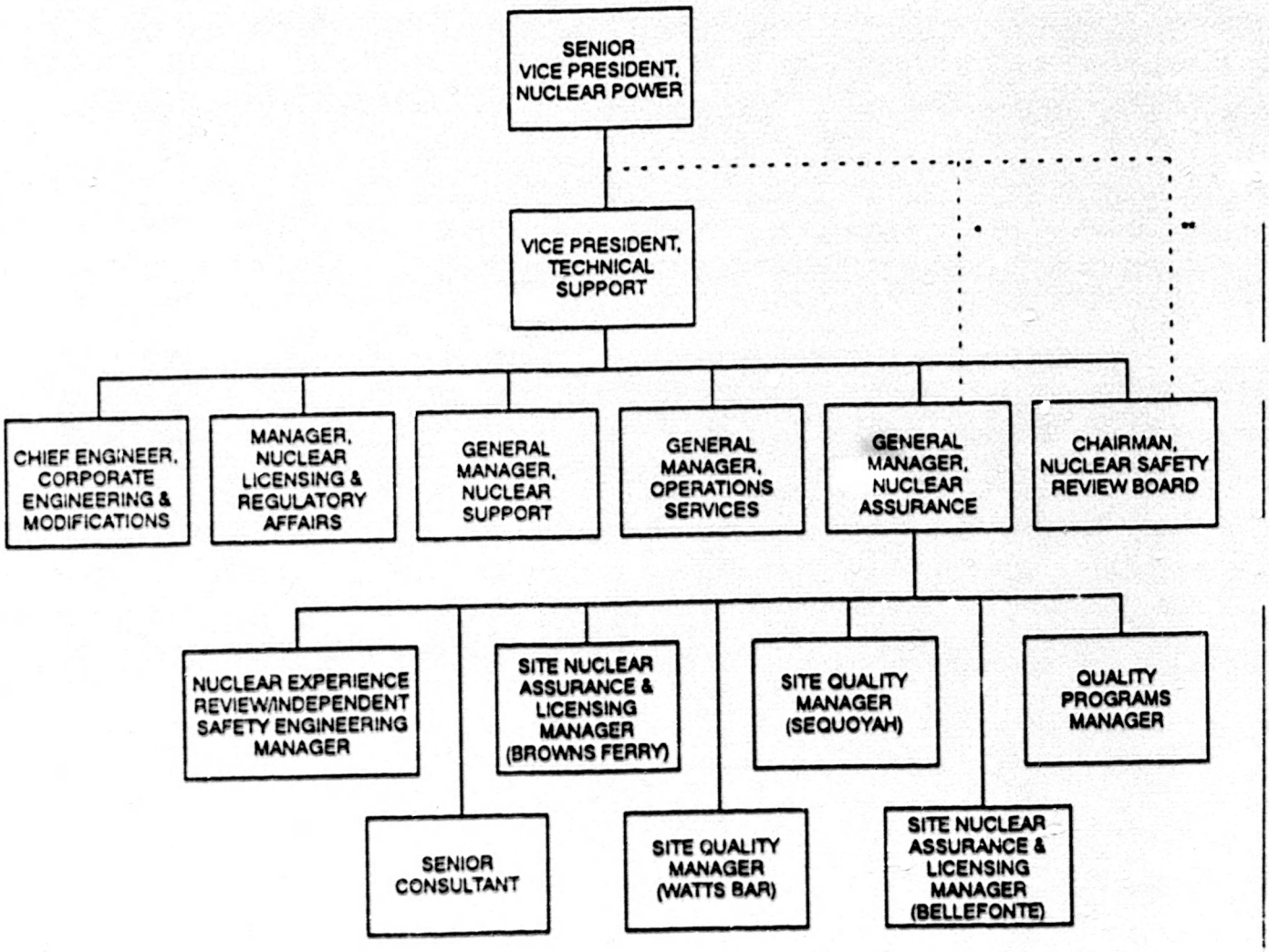
TVA NQAP
ORGANIZATION CHARTS

NUCLEAR POWER
TECHNICAL SUPPORT



* INDEPENDENT REPORTING TO THE SENIOR VICE PRESIDENT ON QUALITY STATUS & ISSUES
** INDEPENDENT REPORTING TO THE SENIOR VICE PRESIDENT ON SAFETY MATTERS

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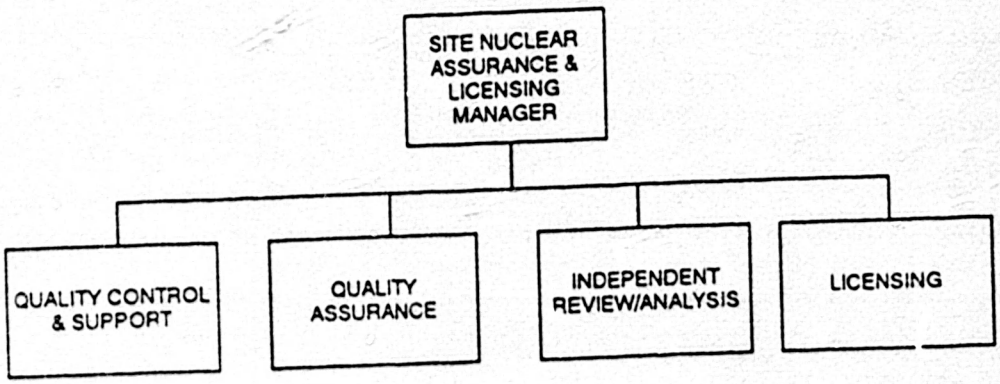
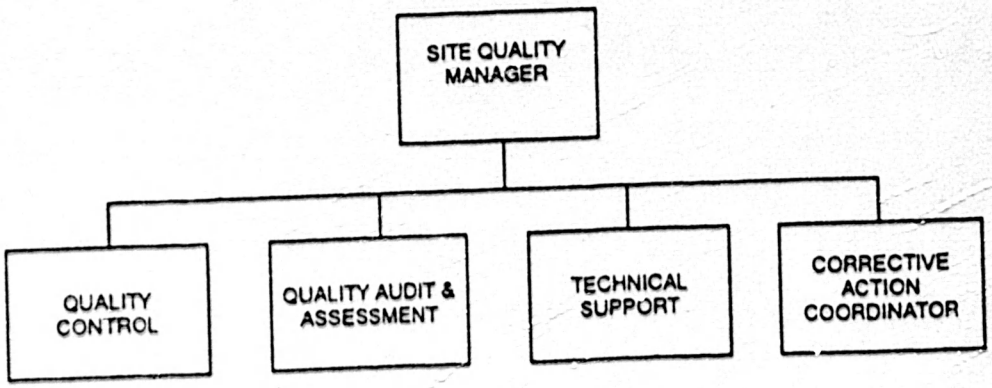
TVA NQAP
ORGANIZATION CHARTS

NUCLEAR POWER SITE QUALITY

BROWNS FERRY



SEQUOYAH



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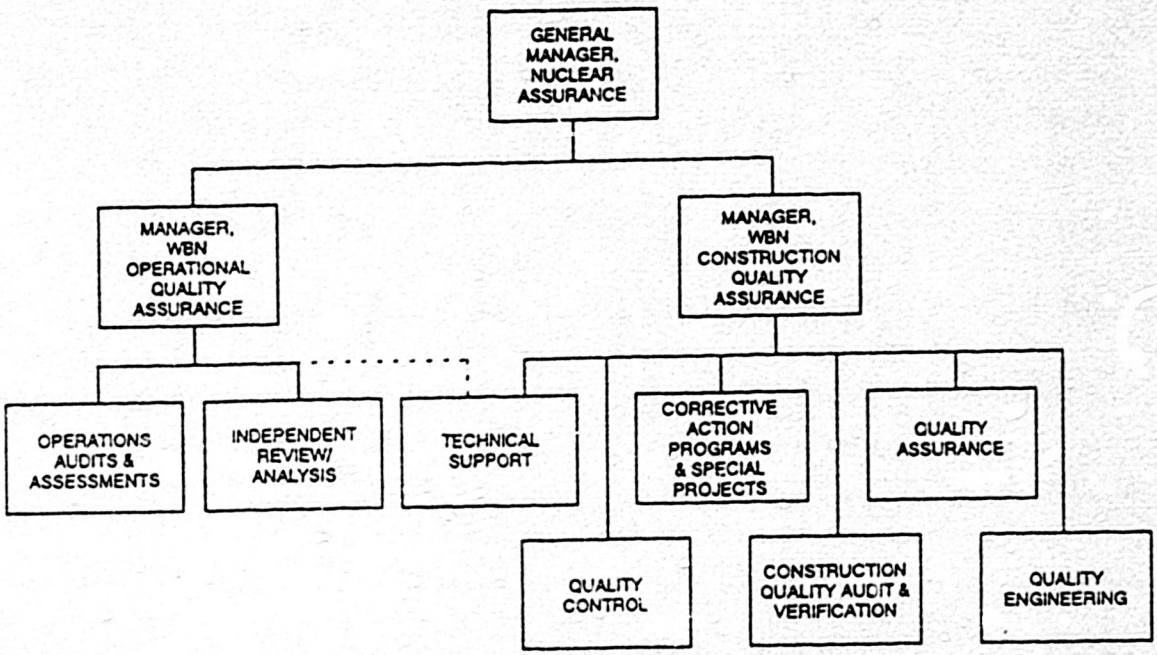
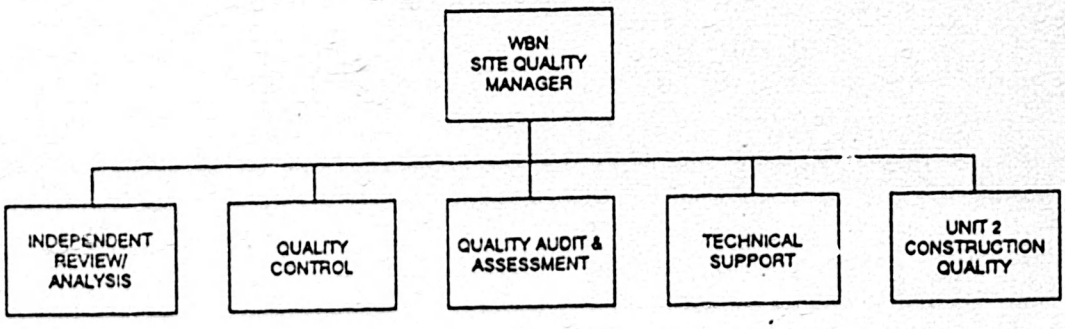
TVA NQAP
ORGANIZATION CHARTS

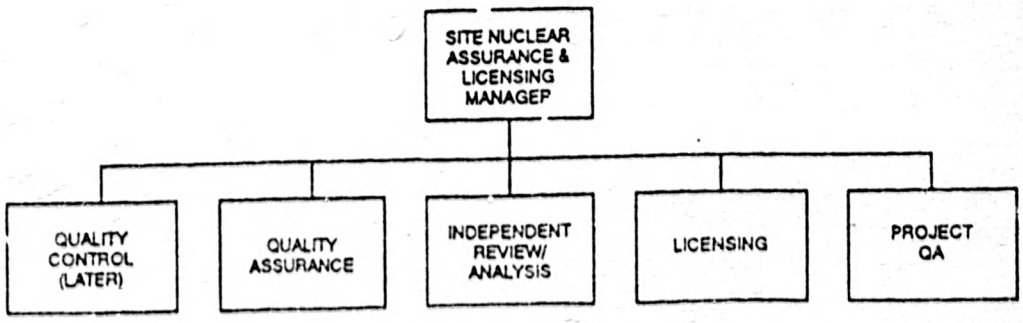
WATTS BAR



EFFECTIVE AFTER UNIT 1 FUEL LOAD



BELLEFONTE



ENCLOSURE 2

Note: The majority of the changes and justifications were previously submitted to the NRC in the following correspondence:

1. M. J. Burzynski's letter to the NRC dated April 8, 1993, "TVA Nuclear Quality Assurance (NQA) Plan (TVA-NQA-PLN89-A) Revision 3 - Changes." Accepted by NRC June 9, 1993.

2. B. S. Schofield's letter to the NRC dated August 20, 1993, "TVA Nuclear Quality Assurance (NQA) Plan (TVA-NQA-PLN89-A) Revision 3 - Changes." Accepted by NRC October 12, 1993.

3. B. S. Schofield's letter to the NRC dated December 2, 1993, "TVA Nuclear Quality Assurance (NQA) Plan (TVA-NQA-PLN89-A) Revision 3 - Changes."

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Policy (page 2)	Third paragraph, second sentence, changed "Nuclear Assurance and Completion Assurance" to "Nuclear Assurance." Also in the third and fourth paragraph, made minor editorial change from "QA" to "quality assurance."	The Completion Assurance change was discussed in the August 20, 1993, submittal to the NRC. The Watts Bar Nuclear Plant Quality Assurance organization which previously reported to the Vice President, Completion Assurance now reports to the General Manager, Nuclear Assurance (NA). See NQA Plan Section 4.1.3.C.7. This aligns the Watts Bar Nuclear Assurance organization with the same reporting relationship as other Nuclear Assurance organizations at TVA nuclear plants. NOTE: Throughout the NQA Plan, Completion Assurance responsibilities have been changed to indicate they are the responsibilities of Technical Support as delegated to Nuclear Assurance.
	Signature line at the bottom of page, changed "Nuclear Assurance, Licensing and Fuels" to "Technical Support".	This was discussed in the August 20, 1993, submittal to the NRC. Corporate technical functions have been consolidated under the Vice President, Technical Support which was formerly the Vice President, Nuclear Assurance, Licensing and Fuels. NOTE: Throughout the Nuclear Quality Assurance Plan the position of Vice President, Nuclear Assurance, Licensing and Fuels has been changed to the Vice President, Technical Support.
	Signature line at the bottom of page, changed the name of the General Manager, Nuclear Assurance from "John P. Maciejewski" to "Raul R. Baron".	R. R. Baron is the present General Manager of Nuclear Assurance.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Table of Contents (pages 3-5)	Revised page numbers as necessary.	Due to NQA Plan revisions, page numbers changed for most sections.
List of Abbreviations (page 6)	Added "AISC - American Institute of Steel Construction" and "AWS - American Welding Society."	These abbreviations are used in Appendix B, Regulatory Guide Conformance Status.
	Added NA&LM - Nuclear Assurance and Licensing Manager.	Submitted to the NRC April 8, 1993, and accepted by the NRC June 9, 1993. Consolidation of the BFN independent oversight functions under one manager, Site Nuclear Assurance and Licensing. Subsequent to this submittal, BLN has also been similarly reorganized. These organizational changes at BFN and BLN are realignments of responsibilities. Refer to the organizational charts in Appendix H.
	Deleted "NAL&F - Nuclear Assurance, Licensing and Fuels."	The position of Vice President, Nuclear Assurance, Licensing and Fuels no longer exists. Refer to Policy Section justification, page 1 of 13.
	Deleted "NF - Nuclear Fuels."	Nuclear Fuels is not abbreviated in the NQA Plan.
Section 3.0 (page 7)	Second paragraph changed from "Within each QA activity area, source requirement documents are listed." to "The source requirement documents for QA activities are listed in Appendix B."	For simplification purposes, references to the Source Requirement Documents sections have been removed from various locations throughout the NQA Plan and placed in the new Appendix B, Table 1 section and presented in a matrix format.
Section 3.3.3 (page 9)	Changed to read "nuclear plant sites" to reflect addition of WBN to BFN, SQN and BLN. Deleted the second sentence "The Vice President, Completion Assurance,shall assessthe overall effectiveness of the NQAP for WBN."	Site Nuclear Assurance organizations, including Watts Bar, report to the General Manager, Nuclear Assurance. Refer to Policy Section justification.
	Second paragraph changed from "Nuclear Assurance and Completion Assurance" to "the quality assurance organizations."	To clarify responsibilities for performance of external audits of the quality organization.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Sections 3.3.3 (page 9), 4.0 (page 10), 4.1.1 (page 10), 4.1.3 (page 11), 4.1.3.A (page 11 - appears twice), 4.1.3.B (page 12), 4.1.3.B.1 (page 12 - appears twice), 4.1.3.B.2 (page 13), 4.1.3.B.4 (page 14), 4.1.3.B.5 (page 14), 4.1.3.C.7.d (page 19), 5.0 (page 22), 6.1.3.A (page 29), 6.1.3.B (page 29), 6.2.3 (page 32), 6.3.3 (page 34), 8.1.3.A (page 43), 8.2.3.A (page 46), 8.3.3 (page 48), 9.1.3.A (page 51), 9.2.3 (page 53), 9.4.3.E (page 59), 9.6.3.A (page 66), 9.6.3.B (page 66), 10.3.A (page 74), 12.3.A (page 79),13.3 (page 81)	Changed "NAL&F" or "Nuclear Assurance, Licensing and Fuels" to "Technical Support"	The Technical Support organization replaces NAL&F. Refer to Policy Section justification.
Section 4.0 (page 10)	First paragraph, fifth sentence changed to read "nuclear plant sites" to reflect addition of WBN. Deleted the next sentence "The Completion Assurance organization is responsible for implementing QA functions at WBN and within the Inspection Services Organization."	The Watts Bar Nuclear Plant Nuclear Assurance organization reports to the General Manager of Nuclear Assurance. In addition, the Inspection Services Organization (ISO) reports directly to the Chief Engineer, Corporate "Engineering and Modifications. The consolidation of ISO and Engineering will enhance the normal working relationship between the two organizations, combine organizational expertise, and ultimately strengthen the group. See NQA Plan Section 4.1.3.B.6. Refer to Policy Section justification.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Sections 4.0 (page 10 -appears three times), 6.1.2.B.3 (page 28), 6.1.2.E.2 (page 28) and 9.1.2.B.2 (page 50)	Changed "QA" organization/staff to "NA".	Editorial change. Inadvertently omitted from previous annual update (Revision 3). This organization is called Nuclear Assurance (NA).
Section 4.1.1 (page 10)	Deleted "Vice President, Completion Assurance"	The WBN NA organization reports to the General Manager, Nuclear Assurance. Refer to Policy Section justification.
	Changed "Vice President, Nuclear Operations" to "Senior Vice President, Nuclear Operations".	Title change only. The Vice President, Nuclear Operations position title is now the Senior Vice President, Nuclear Operations.
Section 4.1.3.A (pages 11 & 12)	Deleted "Nuclear Fuel" and added "Nuclear Support, Nuclear Licensing and Regulatory Affairs, Operations Services, . . . and Corporate Engineering and Modifications."	The Nuclear Fuels organization reports to the Manager, Nuclear Support. The Nuclear Support, Nuclear Licensing and Regulatory Affairs, Operations Services, and Corporate Engineering and Modifications organizations report to the Vice President, Technical Support. Refer to Policy Section justification.
	Added "Design control; Procurement document control; Control of purchased material, equipment, and services; Identification and control of materials, parts and components; Test control; Control of M&TE and installed safety-related I&C devices; Handling, storing and shipping; Inspection, test and operating status; Control of Maintenance." Renumbered this list of activity areas.	Program development for these activity areas are the responsibility of Technical Support. Refer to the preceding justification and the Policy Section justifications.
Section 4.1.3.B (page 12)	Deleted "Manager, Nuclear Fuels" and added "General Manager, Operations Services" and "Chief Engineer, Corporate Engineering and Modifications".	The Nuclear Fuels organization reports to the General Manager, Nuclear Support. The General Manager, Operations Services and Chief Engineer, Corporate Engineering and Modifications report to the Vice President, Technical Support. Refer to Policy Section justification.
Section 4.1.3.B.3 (page 13)	Transferred the responsibilities of Nuclear Fuels to the "General Manager, Nuclear Support" Section 4.1.3.B.1.	The Nuclear Fuels organization reports to Nuclear Support. Nuclear Fuels functions are performed under Nuclear Support.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Not applicable	Added the "General Manager, Operations Services" Section 4.1.3.B.3.	The General Manager, Operations Services reports to the Vice President, Technical Support. His functions are as shown in this new NQA Plan section. Refer to Policy Section justification.
Section 4.1.3.B.4 (page 14) and Section 4.1.3.B.5 (page 14)	Changed "Senior Vice President" to "Senior Vice President, Nuclear Power".	Changed to avoid confusion with Senior Vice President, Nuclear Operations position versus the Senior Vice President, Nuclear Power.
Section 4.1.3.B.4 (page 14), 4.1.3.C.7 (page 15), 4.1.3.C.7.b (page 17 and 19 - appears three times)	Added "WBN" after "Site Quality Managers" or "SQMs".	The WBN NA organization reports to the General Manager, Nuclear Assurance. Refer to Policy Section justification.
Sections 4.1.3.B.4 (page 14), 4.1.3.C.7 (page 15), 4.1.3.C.7.b (pages 17 and 19)	Deleted "BFN and BLN" after "Site Quality Managers" for Sections 4.1.3.B.4, 4.1.3.C.7 and page 17 of 4.1.3.C.7.b. Added "SQN and WBN" after SQM in Section 4.1.3.C.7.b, page 19 (two entries). Added "Site Nuclear Assurance and Licensing Manager (BFN and BLN)". Also changed "SQM" to "they" in second from last paragraph of Section 4.1.3.C.7.b.	Submitted to the NRC April 8, 1993, and accepted by the NRC June 9, 1993. Consolidation of the BFN independent oversight functions under one manager, Site Nuclear Assurance and Licensing. Subsequent to this submittal, BLN has also been similarly reorganized. These organizational changes at BFN and BLN are realignments of responsibilities. Refer to the organizational charts in Appendix H.
Not applicable	Added Section 4.1.3.B.6, "Chief Engineer, Corporate Engineering and Modifications" section.	The Chief Engineer, Corporate Engineering and Modifications reports to the Vice President, Technical Support. His functions are as shown in this new NQA Plan section. Refer to Policy Section justification.
Section 4.1.3.C.2 (page 14), 4.1.3.C.4 (page 15), 4.1.3.C.5 (page 15)	Changed to read "nuclear plant sites" to reflect addition of WBN.	The WBN NA organization reports to the General Manager, Nuclear Assurance. Refer to Policy Section justification.
Section 4.1.3.C.7.a.2 (page 16)	Deleted "2. Develop and maintain upper-tier QA requirements for receipt inspection at each plant site." Moved to Section 4.1.3.B.6.d. Renumbered the subsequent list of responsibilities.	The ISO organization reports to Corporate Engineering and Modifications and is responsible for this activity.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Section 4.1.3.C.7.a.3 (page 16)	Changed from "Develop, review, and maintain upper-tier nuclear QA program requirement documents that include the Nuclear Quality Assurance Plan and the ASME III Quality Assurance Manual" to "Develop, review, and maintain the Nuclear Quality Assurance Plan." Renumbered Sections 4.1.3.C.7.a.3 - .19 to to 4.1.3.C.7.a.2 - .18.	Submitted to the NRC April 8, 1993, and accepted June 9, 1993. Realignment of responsibilities. The development and maintenance of the ASME Section III Quality Assurance Manual (ASME III QAM) is the responsibility of the Chief Engineer, Corporate Engineering and Modifications (see new NQA Plan Section 4.1.3.B.6.b) under the Vice President, Technical Support. The Chief Engineer was formerly under the Vice President, Nuclear Projects. Review of the ASME Section III QAM is performed by the WBN Site Quality Manager. Refer to NQA Plan Section 4.1.3.C.7.b.17.
Section 4.1.3.C.7.a.6 (page 16)	Deleted "QC and NDE" activities, and moved responsibilities to new Section 4.1.3.B.6.d.	The ISO organization is responsible for establishing the program for QC and NDE activities and reports to the Chief Engineer, Corporate Engineering and Modifications. Refer to Sections 4.0 and 4.1.3.C.7.a.2 justifications.
Section 4.1.3.C.7.b.11 (page 18)	Changed to read "Implementing inspection activities associated with the ASME Section III Program at applicable Sites and assisting the responsible organization at the Sites in the performance of ASME Section XI NDE."	Responsibility for inspection activities associated with the ASME Section XI NDE inspection program and planning inspection activities associated with the ASME Section III Program has been transfered from Nuclear Assurance to Corporate Engineering and Modifications. See new NQA Plan, Section 4.1.3.B.6. Refer to Section 4.0 justification.
Not applicable	Added Section 4.1.3.C.7.b.15 "Establishing and maintaining a Site Licensing Program (BFN and BLN) and performing Nuclear Experience Review activities (BLN and WBN)."	The BFN change was submitted to the NRC April 8, 1993, and accepted by the NRC June 9, 1993. The BFN and BLN independent oversight functions were consolidated under one manager, Site Nuclear Assurance and Licensing. In addition, the Nuclear Experience Review function is now the responsibility of BLN and WBN Nuclear Assurance and Licensing. Refer to Section 4.0 justification.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Not applicable.	Added Section 4.1.3.C.7.b.16 "Performing Nuclear Experience Review and Independent Safety Engineering activities (BLN)."	This was submitted to the NRC April 8, 1993, and accepted by the NRC June 9, 1993. Refer to Section 4.1.3.B.4 justification.
Not applicable	Added Section 4.1.3.C.7.b.17 "Reviewing the ASME III QAM (WBN and BLN)."	The WBN and BLN Site Quality Managers are responsible for reviewing the ASME III QAM.
Section 4.1.4 (page 19)	Deleted the Completion Assurance section. Renumbered Sections 4.1.4, 4.1.5, 4.1.6, and 4.1.7.	The WBN QA organization reports to General Manager of Nuclear Assurance. Also, the Inspection Services Organization reports to the Chief Engineer, Corporate Engineering and Modifications. Refer to Section 4.0 justification.
Section 4.1.5.A (page 21)	Changed..."Nuclear Projects sponsored upper-tier Corporate program documents" to..."upper-tier program documents".	Technical Support has assumed the sponsor role of programs previously assigned to Nuclear Projects. See NQA Plan Section 4.1.3.A. Nuclear Projects has the responsibility to ensure the program documents contain the proper QA requirements. See NQA Plan Section 4.1.4.A and .B.
	Added "Procurement Document Control; Control of purchased material, equipment, and services; Identification and control of materials, parts, and components; Inspection and line verification; Control of special processses (deleted "other then NDE"); Control of M&TE and installed safety-related I&C devices; Inspection, test, and operating status; Control of maintenance; Indoctrination, training, qualification, and certification." Renumbered these responsibilities.	Added to clarify specific responsibilities of Nuclear Projects.
Section 4.1.5.B & C (page 21)	Switched these two sections and renumbered to 4.1.4.B and 4.1.4.C. Changed "BLN" to "unlicensed units".	Exchanged these sections for consistency with new NQA Plan Sections 4.1.6.A and 4.1.6.B. Nuclear Projects' functions apply to unlicensed units.
Section 4.1.5.B (page 21)	Deleted "for Bellefonte Nuclear Plant (BLN)" and added "as applicable" Renumbered to 4.1.4.C.	BLN is no longer in deferred status. Therefore, this section does not apply to BLN.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Section 4.1.5.D (page 21)	Deleted "D. Developing, reviewing, and maintaining the ASME III QAM."	Submitted to the NRC April 8, 1993, and accepted June 9, 1993. Refer to Section 4.1.3.C.7.a.3 justification.
Section 4.1.7 (page 21), Section 5.0 (page 22), Section 5.1.C (page 24) Section 9.1.3.B and C (page 51), Section 9.3.3.B (page 55), Section 9.4.3.B and D (page 59), Section 9.5.3.B (page 63), Section 9.6.3.D (page 66), Section 9.7.3.B (page 68), Section 9.8.3.C (page 71)	Changed "Vice President, Nuclear Operations" to "Senior Vice President, Nuclear Operations."	Title change only. The Vice President, Nuclear Operations position title is now the Senior Vice President, Nuclear Operations."
Section 4.1.7.A (page 21)	Changed first paragraph to read "Ensuring that the QA requirements established by this plan in the following technical programs and operations activity areas are either included or referenced (as appropriate) in related upper-tier program documents."	Technical Support has assumed the sponsor role of programs previously assigned to Nuclear Operations. Nuclear Operations has the responsibility to ensure the program documents contain proper QA requirements.
	Added Activity Areas, "Design Control; Procurement document control; Control of purchased material, equipment, and services; Identification and control of materials, parts, and components; Control of special processes; Handling, storage, and shipping." Reformatted previous Section 4.1.7.B and placed in Section 4.1.6.A.2.	Added to clarify specific responsibilities of Nuclear Operations.
Not applicable	Added Section 4.1.6.B to the NQA Plan.	Added to clarify responsibilities of Nuclear Operations.
Sections 5.1.B (page 23) and 7.3 (page 39)	Changed "Nuclear Projects" to "Technical Support."	Technical Support is responsible for this activity.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Sections 6.1.4 (page 29), 6.2.4 (page 32), 6.3.4 (page 34), 7.4 (page 40), 8.1.4 (page 43), 8.2.4 (page 46), 8.3.4 (page 48), 9.1.4 (page 51), 9.3.4 (page 55), 9.4.4 (page 59), 9.5.4 (page 63), 9.6.4 (page 66), 9.7.4 (page 68), 9.8.4 (page 71), 10.4 (page 75), 11.4 (page 77), 12.4 (page 79), and 13.4 (page 81).	Deleted source information listed under the Source Requirement Document sections.	References to the Source Requirement Documents sections have been transfered to Appendix B, Table 1 and presented in a matrix format.
Not applicable	Added Sections 7.3.B and 7.3.C; 8.1.3.B and 8.1.3.C; 8.2.3.B and 8.2.3.C (previous Section 8.2.3.B is now 8.2.3.D); 8.3.3.B and 8.3.3.C.	Implementing these programs at licensed and unlicensed units are the responsibilities of Nuclear Operations (NO) and Nuclear Projects, respectively.
Sections 8.1.3 (page 43), 8.2.3.A (page 46), 8.3.3 (page 48), 9.6.3.A (page 66), 9.6.3.B (page 56)	Deleted..."to the Manager, Nuclear Fuels" and added..."to the General Manager, Nuclear Support."	The Manager, Nuclear Fuels, reports to the General Manager, Nuclear Support, who reports to the Vice President, Technical Support. Refer to Policy Section justification.
Section 9.1.2.B.3 (page 50)	Deleted "monitoring" and added "assessment."	Monitoring activities are included in the assessment process.
Section 9.1.2.C (page 50); 9.1.2.C.2 (page 50); 9.1.3.A (page 51); 9.2.C (page 53); 9.2.3 (page 53); 10.3.C (page 74) 10.3.D (page 74); 15.0 (page 86 - definition of Inspection); Appendix B, NRC Reg. Guide 1.64, para. 3 (page 100); Appendix B, NRC Reg. Guide 1.144, para. 3 (page 104)	Removed reference to Completion Assurance.	The Completion Assurance QA responsibilities are now the responsibility of the General Manager, Nuclear Assurance. Refer to Policy Section justification.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Sections 9.1.3.A (page 51).	Added..."and the Chief Engineer, Corporate Engineering and Modifications."	This program is the responsibility of the Chief Engineer.
	Added "The General Manager, Nuclear Assurance reviews and approves the inspection program to ensure inclusion of QA requirements."	Added to ensure independence in the inspection program.
Section 9.1.3.B (page 51)	Added "Nuclear Projects".	Implementing the line verification program at unlicensed units is also the responsibility of Nuclear Projects.
Not applicable	Added Section 9.1.3.D "The Vice President, Technical Support as delegated to the Chief Engineer, Corporate Engineering and Modifications is responsible for establishing and implementing programs for training and certification of personnel performing QC activities. The General Manager, Nuclear Assurance is responsible for concurring with inspector certifications."	ISO functions are now the responsibility of the Chief Engineer. Refer to Section 4.0 justification. Added Nuclear Assurance concurrence responsibility to ensure independence of inspector certification program.
Section 9.3.3.A (page 55)	Changed "Nuclear Projects" to "Technical Support" and added "as delegated to the Chief Engineer, Corporate Engineering and Modifications."	Development of programs for control of special processes are the responsibility of the Chief Engineer under Technical Support.
Section 9.3.3 (page 55)	Reworded Sections 9.3.3.A, 9.3.3.C, and 9.3.3.D and renumbered these sections to 9.3.3.A.1, A.2, and A.3. Also added "and interpretation of NDE results when not achievable at the site level."	These functions are the responsibility of the Chief Engineer.
Section 9.3.3.E	Renumbered this section to 9.3.3.C. Added "Technical Support."	In addition to Nuclear Projects and NO, Technical Support also has special process qualification or certification responsibility.
Sections 9.4.3.A (page 58), 9.5.3.A (page 63), 9.7.3.A (page 68), 9.8.3.A (page 71), 11.3.A (page 77)	Changed responsibilities to "The Vice President, Technical Support as delegated to the General Manager, Operations Services..."	These programs/functions are the responsibility of the General Manager, Operations Services.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Section 9.7.3.D (page 68)	Changed to read "The Senior Vice President, NO, is responsible for implementation of the programs for maintaining inspection, test, and operating status of licensed units.	Technical Support is responsible for development of controls to maintain this program. NO is responsible for implementing the program.
Section 10.2.2.B (page 72)	Deleted "identified during the course of QA verifications."	Reworded to allow organizations other than QA to also use the corrected on the spot program.
Section 10.2.2.D (page 73)	Changed the last portion of the second sentence to read "... shall be reviewed and approved by Corporate or Site Engineering or, for Nuclear Fuel-related items, Nuclear Support."	This independent review is performed by Corporate or Site Engineering or, for Nuclear Fuel-related items, Nuclear Support.
Section 11.3.B (page 77)	Deleted "NO" and added "Technical Support."	Technical Support is responsible for developing this program. See new NQA Plan Section 11.3.A.
Section 12.3.C (page 79)	Deleted "C. The Vice President, Completion Assurance is responsible to conduct audits at WBN.	Nuclear Assurance is responsible to conduct audits at all sites. See new NQA Plan Section 12.3.B.
Section 13.2.B (page 80)	Deleted "approved."	"Approved" application software is already implied.
Section 13.2.F (page 81)	Added..."which meets the criteria of Appendix E of this plan." Changed "contents" to "intent and purpose."	Revised wording for clarification purposes and to ensure more meaningful training to involved personnel.
Section 14.1 (page 81 & 82)	Added references to 10 CFR 55, 10 CFR 70, 10 CFR 74, 10 CFR 75 and 10 CFR 100.	These references already appear elsewhere in the NQA Plan in Appendix B, Table 2.
	Added reference to 10 CFR 50.120.	10 CFR 50.120 is the new training and qualification rule that is in effect at TVA. Reference Appendix B, Table 2, Reg. Guide 1.8 change. 10 CFR 50.120 is also referenced in Appendix B, Table 1.
Section 14.3 (page 82)	Added "Watts Bar Nuclear Plant Technical Specifications, Administrative Controls Section."	Added reference to this new TVA Licensing Submittal document.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 15, 1993	JUSTIFICATION
Appendix B, (pages 93-104)	Added Appendix B, Table 1. Redesignated old Appendix B to Appendix B, Table 2.	For simplification purposes, references to the Source Requirement Documents sections have been transferred to the new Appendix B, Table 1 section and presented in a matrix format.
Appendix B, (page 93)	Added the following to the Regulatory Guide 1.8 section, "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."	10 CFR 50.120 is the new training and qualification rule that is in effect at TVA.
Appendix B, (page 100)	Added the following alternative to the Regulatory Guide 1.58 section, "6. 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."	This alternative was submitted to the NRC on December 2, 1993. As discussed in that submittal, TVA conducted a survey of several utilities to determine implementation of SNT-TC-1A for containment leak rate testing personnel. Results of the survey revealed that is was an industry practice to impose SNT-TC-1A qualification requirements for this activity. This alternative will align TVA's practice with prevailing industry practices.
Appendix E (page 109)	Reworded the first paragraph and Sections 2 and 3 through 7.	To better clarify what application software is applicable to Appendix E. These changes expand the scope of software coverered by the NQA Plan to include applications which distribute information used in an unverified manner for the procurement, design, operation, and maintenance of quality-related structures, systems and components.
Appendix H, page 1 of 3 (page 113)	Revised organization charts as follows: deleted Vice President (VP), Completion Assurance; and changed VP, Nuclear Assurance, Licensing, and Fuels to VP, Technical Support. Also changed VP, Business Operations to VP, Planning & Business Operations and changed Vice President, Nuclear Operations to Senior Vice President, Nuclear Operations.	Except for reflecting new name of Planning & Business Operations, revised charts to reflect current organization as discussed in this matrix.

SECTION NO. IN REV. 3	CHANGE REFLECTED IN REV. 4 DATED - DECEMBER 5, 1993	JUSTIFICATION
Appendix H, page 2 of 3 (page 114)	Changed VP, Nuclear Assurance, Licensing, and Fuels to VP, Technical Support. Deleted Manager, Nuclear Fuels and added Chief Engineer, Corporate Engineering and Modifications; and General Manager, Operations Services. Deleted Site Quality Manager for Bellefonte and Browns Ferry; and added Site Nuclear Assurance & Licensing Manager for Browns Ferry. Deleted Nuclear Power Completion Assurance organization chart.	Revised charts to reflect current organization as discussed in this matrix.
Appendix H, page 3 of 3 (page 115)	Browns Ferry - deleted Site Quality Manager, and Quality Audit and Assessment. Added Site Nuclear Assurance & Licensing Manager, Quality Assurance, Independent Review & Analysis, and Licensing. Sequoyah - changed Quality Audit and Monitoring to Quality Audit and Assessment; and added Licensing. Transferred Watts Bar and Bellefonte organization charts to new page 4 of Appendix H.	BFN - Submitted to the NRC April 8, 1993, and accepted by the NRC June 9, 1993. SQN - submitted to the NRC August 20, 1993, and accepted by the NRC October 12, 1993.
Not applicable	Added page 4 of 4 to Appendix H. Watts Bar and Bellefonte - complete reorganization.	Submitted WBN changes to the NRC August 20, 1993, and accepted by the NRC October 12, 1993. Additional WBN changes since that submittal are: added Independent Review/Analysis to both WBN charts; and show Technical Support reporting administratively to the Operational QA Manager and functionally to the Construction QA Manager; and added Corrective Action Programs & Special Projects, and Quality Assurance. Submitted BLN changes to the NRC August 20, 1993, and accpeted by the NRC October 12, 1993, to remove N-5 section. Additional BLN changes since that submittal are: changed Site Quality Manager to Site Nuclear Assurance & Licensing Manager, deleted Technical Support, and Quality Audit and Assessment. Added Licensing, Quality Assurance, and Quality control (later).