6.3.3 Responsibilities

The Vice President, NA&S as delegated to the Manager, MP is responsible for the development of a QA records program. The program elements in Section 6.3.2 and the related source requirements contained within the documents listed in Section 6.3.4 shall be addressed.

6.3.4 Source Requirement Documents

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

A. 10 CFR 50, Appendix B, Criterion XVII, "Quality Assurance Records."

B. ANSI N18.7-1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Section 5.2.12), and Regulatory Guide 1.33, Appendix A, Revision 2, February 1978.

C. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 18), and Regulatory Guide 1.28, Revision 0, June 7, 1972 (Design and Construction).

D. ANSI N45.2.1-1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants" (Section 9), and Regulatory Guide 1.37, Revision 0, March 16, 1973.

E. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants (During the Construction Phase)" (Section 8), and Regulatory Guide 1.38, Revision 2, May 1977.

F. ANSI N45.2.3-1973, "Housekeeping During the Construction Phase of Nuclear Power Plants" (Section 4), and Regulatory Guide 1.39, Revision 2, September 1977.

G. ANSI N45.2.4-1972, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations" (Section 8), and Regulatory Guide 1.30, Revision 0, August 11, 1972.

H. 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" (Section 7), and Regulatory Guide 1.94, Revision 1, April 1976.

I. ANSI/ASME N45.2.6-1978, "Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants" (Section 5), and Regulatory Guide 1.58, Revision 1, September 1980.

J. 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" (Section 7), and Regulatory Guide 1.116, Revision 0-R, June 1976.

K. ANSI N45.2.9-1979, "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants."

L. Regulatory Guide 1.88, Revision 2, October 1976.

M. ANSI N45.2.13-1976, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants" (Section 11), and Regulatory Guide 1.123, Revision 1, July 1977.

N. ANSI N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities" (Section 7), and Regulatory Guide 1.54, Revision 0, June 1973.

O. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

P. Plant Technical Specifications (Section 6).

7.0 Design Control

7.1 General

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

7.2 Program Elements

7.2.1 Basic

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

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

C. Measures shall be established and implemented to ensure that design output documents appropriately identify applicable requirements to be incorporated into procedures and instructions for plant activities. This will ensure that responsible plant personnel are made aware of design changes and modifications that could affect the performance and scope of their responsibilities prior to planned maintenance or modification being implemented.

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

1. Design qualification.
2. Product acceptance.
3. Proof.
4. Preoperational.
5. Construction.
6. Start-up.
7. Surveillance.
8. Functional.
9. Postmaintenance.
10. Postmodification.

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

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

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

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

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

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

7.2.2 Design Inputs

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

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

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

7.2.3 Design Analysis

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

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

7.2.4 Interface Control

Internal and external design responsibilities and interface controls shall be established and defined to facilitate the preparation, review, approval, release, distribution, and revision of documents involving design interfaces.

7.2.5 Design Output

A. Design output documents shall appropriately identify requirements to be incorporated into procedures and instructions for plant activities.

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

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

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

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

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

7.2.6 Design Verification

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

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

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

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

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

F. When a verification test is used to verify the adequacy of a specific design feature, in lieu of other verifying processes, the test shall include suitable qualification testing of a prototype unit under the most adverse design condition.

7.2.7 Design Changes

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

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

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

D. Proposed modifications to quality-related structures, systems, and components shall be reviewed, approved, and controlled in accordance with applicable requirements of the Operating License and Plant Technical Specifications.

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

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

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

7.3 Responsibilities

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

7.4 Source Requirement Documents

The following source requirement documents, as applicable, with exceptions as noted in Appendix B of this Plan, establish mandatory controls which must be addressed in the development of programs and procedures for control of the design process:

A. 10 CFR 50, Appendix B, Criterion III, "Design Control."

B. 10 CFR 50.55A, "Codes and Standards."

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

D. 10 CFR 50.59, "Changes, Tests and Equipments."

E. ANSI N18.7-1976-ANS 3.2, "Administrative Controls and Quality Assurance Program Requirements for the Operational Phase of Nuclear Power Plants" (Section 5.2.7.2), and Regulatory Guide 1.33, Revision 2, February, 1978.

F. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 4), and Regulatory Guide 1.28, Revision 0, June 7, 1972.

G. ANSI N45.2.11-1974, "Quality Assurance Requirements for the Design of Nuclear Power Plants," and Regulatory Guide 1.64, Revision 2, 1976.

H. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

8.0 Procurement and Material Control

8.1 Procurement Document Control

8.1.1 General

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

8.1.2 Program Elements

A. Procurement Document Planning

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

1. Document preparation, review, and change control.
2. Selection of procurement sources.
3. Bid evaluations and award.
4. Purchaser control of supplier performance.
5. Verification activities of purchaser.
6. Control of nonconformances.
7. Corrective actions.
8. Acceptance of item or service.
9. QA records.
10. Audit of procurement program.

B. Procurement Document Content

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

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

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

3. As appropriate, require that suppliers have a documented QA Program that implements applicable requirements of the NQAP.

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

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

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

7. Include provisions for right of access to the facilities and records of vendors, contractors, and subtier vendors and contractors for source inspections and audits.

8. Include requirements to ensure that spare and replacement materials and components are purchased to: (1) specifications and codes equivalent to those specified for the original equipment, or (2) those specifications and codes specified by an NE-approved revision of controlling documents used for the original equipment in cases where the original item or part is found to be commercially "off the shelf," spare and replacement parts may be similarly procured but at the

very least equivalent performance is ensured), or (3) specifications and codes established by a documented NE evaluation in those cases when the original QA requirements cannot be determined.

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

C. Procurement Document Review and Approval

The review and approval of procurement documents shall include a documented technical and QA review, as appropriate, utilizing a graded approach to ensure that technical, quality, and administrative requirements are included in procurement documents prior to their use.

D. Procurement Document Change Control

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

8.1.3 Responsibilities

The Vice President, Nuclear Business Operations (NBO) and the Vice President, NE for nuclear fuels and fuel-related components and services are responsible for the development of a procurement document control program. The program elements in Section 8.1.2 and the related source requirements contained within the documents listed in Section 8.1.4 shall be addressed.

8.1.4 Source Requirement Documents

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

A. 10 CFR 50, Appendix B, Criterion IV, "Procurement Document Control."

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

C. ANSI N18.7-1976-ANS 3.2, "Administrative Controls and Quality Assurance Program Requirements for the Operational Phase of Nuclear Power Plants" (Sections 5.2.13 and 5.2.13.1), and Regulatory Guide 1.33, Revision 2, February, 1978.

D. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 5), and Regulatory Guide 1.28, Revision 0, June 7, 1972.

E. ANSI N45.2.13-1976, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants," and Regulatory Guide 1.123, (Section 3.0) Revision 1, July 1977.

F. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

8.2 Control of Purchased Material, Equipment, and Services

8.2.1 General

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

8.2.2 Program Elements

A. Evaluation and Selection of Suppliers

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

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

3. A list of approved suppliers shall be maintained.

B. Bid Evaluation and Award

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

C. Effectiveness Assessments

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

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

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

D. Acceptance of Procured Services

Procured services shall be accepted, as appropriate, by:

1. Technical verification of product/data produced.

2. Monitoring and/or audit of the activity.

3. Review of objective evidence, such as certifications.

E. Acceptance of Procured Items

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

1. Source verification.

2. Receipt inspection.

3. Supplier certificate of conformance.

4. Post installation testing.

5. Dedication.

F. Receipt Inspection

1. Receipt inspection shall be performed to ensure that material and equipment is properly identified to the purchase document and receiving documentation and meets requirements of procurement documents.

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

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

4. Items may be installed prior to final disposition of a deficiency. The item shall be tagged as nonconforming and administrative controls shall provide assurance that the affected item will not be declared operable before disposition of the deficiency.

8.2.3 Responsibilities

A. The Vice Presidents, NBO and NA&S as delegated to the Manager, NQA, and the Vice President, NE for nuclear fuels and fuel-related components and services are responsible for the development of programs to control purchased material, equipment, and services. The program elements in Section 8.2.2 and the related source requirements contained within the documents listed in Section 8.2.4 shall be addressed.

B. The Vice President, NA&S as delegated to the Manager, NQA and the Vice President, NE are responsible for evaluation and selection of suppliers, acceptance of procured items, and periodic effectiveness assessments of suppliers utilizing graded approach criteria.

C. The Vice President, NA&S as delegated to the Manager, NQA is responsible for maintaining an approved suppliers list.

8.2.4 Source Requirement Documents

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

A. 10 CFR 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment and Services."

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

C. ANSI N18.7-1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Section 5.2.13.2), and Regulatory Guide 1.33, Revision 2, February 1978.

D. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 8), and Regulatory Guide 1.28, Revision 0, June 7, 1972 (Design and Construction).

E. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants" (Section 5), and Regulatory Guide 1.38, Revision 2, May 1977.

F. ANSI N45.2.4-1972, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations" (Section 2.2), and Regulatory Guide 1.30, Revision 0, August 11, 1972.

G. 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" (Section 7), and Regulatory Guide 1.94, Revision 1, April 1976.

H. 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" (Section 7), and Regulatory Guide 1.116, Revision 0-R, June 1976.

I. ANSI N45.2.13-1976, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants," and Regulatory Guide 1.123, Revision 1, July 1977.

J. ANSI N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities" (Sections 2.3.3 and 2.3.4), and Regulatory Guide 1.54, Revision 0, June 1973.

L. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

8.3 Identification and Control of Materials, Parts, and Components

8.3.1 General

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

8.3.2 Program Elements

A. Identification

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

B. Traceability

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

8.3.3 Responsibilities

The Vice President, NBO and the Vice President, NE for nuclear fuel and fuel-related components and services are responsible for the development of the material management program for identification and control of materials, parts, and components. The program elements in Section 8.3.2 and the related source requirements contained within the documents listed in Section 8.3.4 shall be addressed.

8.3.4 Source Requirement Documents

The following source requirement documents, as applicable, with exceptions as noted in Appendix B of this Plan, establish mandatory controls which must be addressed in the development of programs and procedures for the identification and control of items:

A. 10 CFR 50, Appendix B, Criterion VIII, "Identification and Control of Materials, Parts, and Components."

B. ANSI N18.7-1976/ANS 3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Section 5.2.13.3), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N42.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 9), and Regulatory Guide 1.28, Revision 0, June 7, 1972 (Design and Construction).

D. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants (During the Construction Phase)," and Regulatory Guide 1.38, Revision 2, May 1977.

E. ANSI N45.2.4-1972, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations," and Regulatory Guide 1.30, Revision 0, August 11, 1972.

F. 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," and Regulatory Guide 1.94, Revision 1, April 1976.

G. 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," and Regulatory Guide 1.116, Revision 0-R, June 1976.

H. ANSI N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities," and Regulatory Guide 1.54, Revision 0, June 1973.

I. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

9.0 Control of Plant Activities

9.1 Inspection and Line Verification

9.1.1 General

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

9.1.2 Program Elements

A. Line Verification

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

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

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

B. Inspection Plans and Instructions

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

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

2. Inspection hold points, witness points, and notification points shall be used as required or needed to verify in-process or final achievement of quality.

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

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

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

C. Inspection Performance

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

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

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

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

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

D. Results

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

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

2. Inspection records shall contain a description of the type of inspection, the date performed, inspection or verification of corrective action results, and identification of the inspector and data recorder as well as the person approving the inspection results including the date of approval.

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

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

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

9.1.3 Responsibilities

A. The Vice President, NA&S as delegated to the Manager, NQA is responsible for including the applicable QA program elements in Section 9.1.2 and the related source requirements found in the documents listed in Section 9.1.4, within both the inspection program and the line verification program.

B. The Vice Presidents, NC and NPP are responsible for including the program elements in paragraph B of this section and the related source requirements contained within the documents listed in paragraph D of this section, as applicable, within the line verification program.

C. The Vice President, NE is responsible for providing qualitative/quantitative criteria in design output documents which are incorporated in implementing procedures.

9.1.4 Source Requirement Documents

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

A. 10 CFR 50, Appendix B, Criteria X, "Inspection."

B. ANSI N18.7-1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Sections 5.2.8 and 5.2.17), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 11), and Regulatory Guide 1.28, Revision 0, June 7, 1972 (Design and Construction).

D. ANSI N45.2.1-1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants," and Regulatory Guide 1.37, Revision 0, March 16, 1973.

E. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants" (Sections 5.2 and 7.4), and Regulatory Guide 1.38, Revision 2, May 1977.

F. ANSI N45.2.3-1973, "Housekeeping During the Construction Phase of Nuclear Power Plants," and Regulatory Guide 1.39, Revision 2, September 1977.

G. ANSI N45.2.4-1972/IEEE Standard 336-1971, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations" (Section 5.1), and Regulatory Guide 1.30, Revision 0, August 11, 1972.

H. 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," (Sections 4, 5 and 6), and Regulatory Guide 1.94, Revision 1, April 1976.

I. ANSI N45.2.6-1978, "Qualification of Inspection, Examination, and Testing Personnel," and Regulatory Guide 1.58, Revision 1, September 1980.

J. 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" (Sections 3, 4, and 5), and Regulatory Guide 1.116, Revision 0-R.

K. ANSI N45.2.13-1 6, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants" (Sections 7 and 10), and Regulatory Guide 1.123, Revision 1, July 1977.

L. ANSI N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities" (Sections 4, 5, and 6), and Regulatory Guide 1.54, Revision 0, June 1973.

M. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, "Rules For In-Service Inspection of Nuclear Power Plants."

N. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

9.2 Nuclear Quality Assurance (NQA) Monitoring

9.2.1 General

Monitoring by NQA or EA is performed as a type of verification which supplements the quality program's assessment process in ensuring that observed quality-related activities are performed in accordance with requirements and desired results are achieved.

9.2.2 Program Elements

A. Monitoring procedures and instructions shall address monitoring techniques.

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

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

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

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

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

9.2.3 Responsibilities

The Vice President, NA&S as delegated to the Manager, NQA is responsible for the development and implementation of the QA monitoring program.

9.2.4 Source Requirement Documents

None applicable.

9.3 Control of Special Processes

9.3.1 General

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

9.3.2 Program Elements

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

B. Measures shall be established, documented, and implemented, as appropriate, using specifications, procedures, and instructions to ensure that special processes are accomplished under controlled conditions and in accordance with applicable codes, standards, specifications, manufacturer instructions, or other special requirements. These measures shall include requirements for procedures, equipment, personnel, specifications, and control of consumable materials.

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

D. Procedure, Equipment, and Personnel Qualification and Certification

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

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

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

E. Results

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

9.3.3 Responsibilities

A. The Vice Presidents, NE, NC, and NA&S as delegated to the Manager, NQA are responsible for development of programs for control of special processes. The program elements in Section 9.3.2 and the related source requirements contained within the documents listed in Section 9.3.4 shall be addressed.

B. The Vice President, NE is responsible for coordinating with appropriate organizations and determining which processes are to be controlled as special processes.

C. The Vice President, NA&S as delegated to the Manager, NQA is responsible for the qualification or certification of special process procedures, equipment, and NQA personnel related to NDE.

D. The Vice President, NC is responsible for the qualification or certification of special process procedures, equipment and personnel for all areas other than NDE.

9.3.4 Source Requirement Documents

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

A. ANSI N18.7-1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Sections 5.2.12 and 5.2.18), and Regulatory Guide 1.33, Revision 2, February 1978.

B. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 10), and Regulatory Guide 1.28, Revision 0, June 7, 1972 (Design and Construction).

C. ANSI N45.2.1-1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants" (Section 2.5), and Regulatory Guide 1.37, Revision 0, March 16, 1973.

D. ANSI N45.2.6-1978, "Qualification of Inspection, Examination, and Testing Personnel," and Regulatory Guide 1.58, Revision 1, September 1980.

E. ANSI N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities," and Regulatory Guide 1.54, Revision 0, June 1973.

F. 10 CFR 50, Appendix B, Criterion IX.

G. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section V, "Nondestructive Examination."

H. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section IX, "Welding and Brazing Qualifications."

I. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plants."

J. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

K. American Welding Society (AWS), "Structural Welding Code D1.1."

L. American Institute of Steel Construction (AISC), "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings."

M. American Society for Nondestructive Testing (ASNT) Recommended Practice, SNT-TC-1A-1980.

9.4 Test Control

9.4.1 General

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

9.4.2 Program Elements

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

1. Design qualification tests.

2. Product acceptance tests.

3. Proof tests (prior to installation).

4. Preoperational tests.

5. Construction tests.

6. Start-up tests.

7. Surveillance tests.

8. Functional tests.

9. Postmaintenance tests.

10. Postmodification tests.

11. Special tests.

B. Test Performance

1. Tests shall be accomplished in accordance with written and approved test procedures which include the requirements and acceptance criteria of technical specifications, drawings, specifications, codes, standards, regulatory requirements, and scoping documents as applicable.

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

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

   a. Description of test objective.

   b. Instructions for performing the test.

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

d. Provisions to assure test prerequisites have been met.

e. Mandatory inspection hold points.

f. Acceptance or rejection criteria.

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

C. Test Results

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

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

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

3. Pertinent inspection and test data.

4. Significant dates and times.

5. Signature of inspector and test director.

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

D. Results Evaluation

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

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

9.4.3 Responsibilities

A. The Vice Presidents, NE, NC, NPP, and NA&S as delegated to the Manager, NQA are responsible for the development of test control programs. The program elements in Section 9.4.2 and the related source requirements contained within the documents listed in Section 9.4.4 shall be addressed.

B. The Vice President, NE is responsible for specifying through design output documents the acceptance criteria for tests necessary to demonstrate an item's compliance with design parameters.

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

D. The Vice President, NPP is responsible for the development of tests (operation phase) which incorporate engineering requirements and for the conduct of tests, including leak tests (operations phase).

E. The Vice President, NA&S as delegated to the Manager, NQA is responsible for monitoring tests and test results, utilizing graded approach criteria attesting to the acceptability of inspection and tests.

9.4.4 Source Requirement Documents

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

A. 10 CFR 50, Appendix B, Criterion XI, "Test Control."

B. ANSI N18.7-1976/ANS 3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Section 5.2.8 and Section 5.2.19 and subparagraphs), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 12), and Regulatory Guide 1.28, Revision 0, June 7, 1972 (Design and Construction).

D. ANSI N45.2.1-1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants," and Regulatory Guide 1.37, Revision 0, March 16, 1973.

E. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants" (Sections 2.3 and 2.5), and Regulatory Guide 1.38, Revision 2, May 1977.

F. ANSI N45.2.4-1972, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations (IEEE-336-1971)," and Regulatory Guide 1.30, Revision 0, August 11, 1972.

G. 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," and Regulatory Guide 1.94, Revision 1, April 1976.

H. 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," and Regulatory Guide 1.116, Revision 0, June 1976.

I. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components."

9.5 Control M&TE and Installed I&C Devices

9.5.1 General

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

9.5.2 Program Elements

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

1. Procedures or instructions for administrative controls shall establish:

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

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

   c. The types of equipment to be controlled.

2. M&TE and installed I&C devices shall be conspicuously labeled, tagged or otherwise controlled to ensure performance of required calibrations on or before the established due date.

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

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

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

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

7. Reference standards shall be traceable to nationally recognized standards or physical constants. When national standards do not exist, the basis for calibration shall be documented and approved by designated responsible management.

B. Unique Requirements for M&TE

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

1. M&TE, after requisition from designated storage locations but prior to use, shall be identifiable and traceable to applicable calibration records.

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

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

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

C. Unique Requirements for Installed I&C Devices

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

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

2. Environmental controls for I&C devices shall be established in applicable design documents. These controls shall be maintained when I&C devices are opened in place or removed for calibration in a laboratory.

D. Calibration Procedures and Instructions

Calibration procedures and instructions as a minimum shall include:

1. The identity of the item to be calibrated.

2. Calibration equipment and reference standards to be used.

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

4. Sequence of operations.

5. Special instructions, when necessary.

6. Means for traceability between M&TE and calibration records.

7. Recording of performer and applicable procedure or instruction.

8. Recording of as-found and as-left accuracy.

9.5.3 Responsibilities

A. The Vice President, NPP is responsible for the development of controls for M&TE and installed I&C devices. The program elements in Section 9.5.2 and the related source requirements contained within the documents listed in Section 9.5.4 shall be addressed.

B. The Vice President, NE is responsible for providing qualitative/quantitative criteria in design output documents.

9.5.4 Source Requirement Documents

The following source requirement documents, as applicable, with exceptions as noted in Appendix B of this Plan, establish mandatory controls which must be addressed in the development of programs and procedures for the control of M&TE and installed I&C devices.

A. 10 CFR 50, Appendix B, Criterion XII, "Control of Measuring and Test Equipment."

B. ANSI N18.7-1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Section 5.2.16), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 13), and Regulatory Guide 1.28, Revision 0, June 7, 1972.

D. ANSI N45.2.1-1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants" (Section 2.5), and Regulatory Guide 1.37, Revision 0, March 16, 1973.

E. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants" (Section 2.5), and Regulatory Guide 1.38, Revision 2, May 1977.

F. ANSI N45.2.4-1972, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations" (Section 2.5), and Regulatory Guide 1.30, August 11, 1972.

G. 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" (Section 2.5), and Regulatory Guide 1.94, Revision 1, April 1976.

H. 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" (Section 2.8), and Regulatory Guide 1.116, Revision 0-R.

I. ANSI N45.2.13-1976, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants" (Sections 7.4), and Regulatory Guide 1.123, Revision 1, July 1977.

J. ANSI N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities," and Regulatory Guide 1.54, Revision 0, June 1973.

K. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

9.6 Handling, Storage, and Shipping

9.6.1 General

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

9.6.2 Program Elements

A. Marking

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

B. Packaging and Cleaning

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

2. Special coverings, special equipment, and special protective environments shall be provided and maintained as required by procurement documents and vendor instructions.

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

C. Shipping and Handling

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

D. Storage

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

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

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

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

9.6.3 Responsibilities

A. The Vice Presidents of NBO, NC, NE, and are responsible for the development of controls for handling, storing, and shipping. The program elements in Section 9.6.2 and the related source requirements contained within the documents listed in Section 9.6.4 shall be addressed.

B. The Vice President, NBO and the Vice President, NE for nuclear fuels and fuel-related components are responsible for developing and defining implementation responsibilities to control the receipt, storage, shipping, and issuance of materials.

C. The Vice President, NC is responsible for developing programs for controlling material in support of construction phase activities.

D. The Vice President, NE is responsible for establishing storage, handling, and shipping requirements and preventive maintenance requirements during storage.

9.6.4 Source Requirement Documents

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

A. 10 CFR 50, Appendix B, Criterion XIII, "Handling, Storage, and Shipping."

B. ANSI N18.7-1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Section 5.2.13.4), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 14), and Regulatory Guide 1.28, Revision 0, June 7, 1972 (Design and Construction).

D. ANSI N45.2.1-1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants," and Regulatory Guide 1.37, Revision 0, March 16, 1973.

E. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants," and Regulatory Guide 1.38, Revision 2, May 1977.

F. ANSI N45.2.3-1973, "Housekeeping During the Construction Phase of Nuclear Power Plants" (Section 3.3), and Regulatory Guide 1.39, Revision 2, September 1977.

G. ANSI N45.2.4-1972/IEEE Standard 336-1971, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations" (Section 2.2), and Regulatory Guide 1.30, Revision 0, August 11, 1972.

H. 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," and Regulatory Guide 1.94, Revision 1, April 1976.

I. 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" (Section 2.5), and Regulatory Guide 1.116, Revision 0-R.

J. ANSI N101.4-1972, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities" (Section 3), and Regulatory Guide 1.54, Revision 0, June 1973.

K. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

9.7 Inspection, Test, and Operating Status

9.7.1 General

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

9.7.2 Program Elements

A. Inspection and Test Status

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

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

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

4. Deletions or alterations of required inspections, tests, and other critical operations shall be controlled through appropriate changes to applicable procedures. These changes shall be handled in accordance with Section 7.2.1 of this Plan.

B. Operating Status

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

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

9.7.3 Responsibilities

A. The Vice Presidents, NE, NC, NQA, NPP, and NA&S as delegated to the Manager, NQA are responsible for the development of controls to maintain inspection, test, and operating status. The program elements in Section 9.7.2 and the related source requirements contained within the documents listed in Section 7.3.4 shall be addressed.

B. The Vice President, NE is responsible for establishing applicable inspection and test acceptance criteria to ensure the acceptability of items is maintained.

C. The Vice President, NA&S as delegated to the Manager, NQA is responsible for ensuring the inspection, test, and operating status requirements are properly implemented.

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

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

7.3.4 Source Requirement Documents

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

A. 10 CFR 50, Appendix B, Criterion XIV, "Inspection, Test, and Operating Status."

B. ANSI N18.7-1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Sections 5.2.6, 5.2.8, and 5.2.14), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 15), and Regulatory Guide 1.28, Revision 0, June 7, 1972 (Design and Construction).

D. ANSI N45.2.4-1972, "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment," and Regulatory Guide 1.30, Revision 0, August 11, 1972.

E. 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" (Sections 3, 4, and 5), and Regulatory Guide 1.94, Revision 1, April 1976.

F. 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" (Sections 4.2 and 5.1), and Regulatory Guide 1.116, Revision 0-R.

G. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

H. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components."

I. Plant Technical Specifications (Section 6).

9.8 Control of Maintenance

9.8.1 General

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

9.8.2 Program Elements

A. Preventive Maintenance

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

B. Procedures and Instructions

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

C. Maintenance Preplanning

Maintenance shall be preplanned to include as appropriate:

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

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

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

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

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

D. Malfunctions

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

E. Trending

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

9.8.3 Responsibilities

A. The Vice President, NPP is responsible for the development of the Nuclear Maintenance Program. The program elements in Section 9.8.2 and the related source requirements contained within the documents listed in Section 9.8.4 shall be addressed.

B. The Vice President, NC is responsible for the implementation of the Nuclear Maintenance Program during construction phase activities.

C. The Vice President, NPP is responsible for the implementation of the Nuclear Maintenance Program during operations phase activities.

9.8.4 Source Requirement Documents

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

A. 10 CFR 50.49(j) and (l).

B. ANSI N18.7-1976/ANS 3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Sections 5.2.7 and 5.3.5), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants" (Section 6), and Regulatory Guide 1.38, Revision 2, May 1977.

D. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, Division 1, "Nuclear Power Plant Components," Article NCA-4000, "Quality Assurance."

E. ANSI N45.2.8-1975 (Sections 3.1, 3.5(h), and 4.5-b,c).

10.0 Conditions Adverse to Quality

10.1 General

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

10.2 Program Elements

10.2.1 Control of Nonconforming Items

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

B. Disposition actions for nonconforming items may be accept-as-is, repair, rework, scrap, or return to vendor. Dispositions of accept-as-is or repair shall be independently reviewed and approved. Rework or repair dispositioned items shall be verified by inspection or test.

10.2.2 Corrective Action For CAQs

A. NP organizations and onsite non-NP service organizations performing quality-related activities at nuclear facilities shall promptly identify and resolve CAQs.

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

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

D. Items which are nonconforming may be dispositioned accept-as-is, scrapping, return to vendor, repairing, or reworking.

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

F. Significant CAQs shall be reported to appropriate levels of management.

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

10.2.3 Escalation of CAQs

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

10.2.4 Tracking

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