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); QA requirements; material and component identification requirements; drawings; specifications; inspection and test requirements (including acceptance criteria); calibration, handling, storage, packaging, and shipping requirements; and special process instructions. All technical requirements shall be prepared, reviewed, and released under the requirements established by Section 7.0 of this plan.

8.1.2.B (continued)

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

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

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

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

8.1.2 (continued)

C. Procurement Document Review and Approval

The review and approval of procurement documents shall include a documented review to ensure that technical, QA, 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, NAL&F as delegated to the General Manager, MC&AS and Manager, NF is responsible for the development of a procurement document control program. The program elements in Section 8.1.2 and the related source requirements contained within the documents listed in Section 8.1.4 shall be addressed.

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 3, August 1985.

E. ANSI N45.2.9-1974, "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants" (Sections 4.2, 6.2, and 7.2), and Regulatory Guide 1.88, Revision 2, October 1976.

8.1.4 (continued)

F. 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.

G. 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.

8.2.2.C (continued)

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 receipt inspection and any combination of the following, as appropriate, based on the item's degree of complexity, uniqueness, and safety classification.

1. Source verification.

2. Preinstallation testing inspection.

3. Supplier certificate of conformance.

4. Post installation testing.

F. Receipt Inspection

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

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

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

8.2.2 (continued)

G. Maintaining Disposition of Received Items

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

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

8.2.3 Responsibilities

A. The Vice President, NAL&F as delegated to the General Manager, MC&AS; Manager, NQA; and Manager, NF is responsible for the development of programs to control purchased material, equipment, and services. The program elements in Section 8.2.2 and the related source requirements contained within the documents listed in Section 8.2.4 shall be addressed.

B. The Manager, NQA and Manager, NF (for supplier nuclear fuel-related activities) are responsible for evaluation and selection of suppliers, acceptance of procured items, periodic assessments of suppliers utilizing graded approach criteria, and maintenance of 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 3, August 1985 (Design and Construction).

8.2.4 (continued)

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. 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.

8.3.2 (continued)

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, NAL&F as delegated to the General Manager, MC&AS, and Manager, NF (for nuclear fuel and fuel-related components and services) is responsible for the development of the material management program for identification and control of materials, parts, and components. The program elements in Section 8.3.2 and the related source requirements contained within the documents listed in Section 8.3.4 shall be addressed.

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 N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 9), and Regulatory Guide 1.28, Revision 3, August 1985 (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.

8.3.4 (continued)

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. 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.

9.1.2.B (continued)

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

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

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, Completion Assurance, or other qualified individuals approved by these organizations, utilizing graded approach criteria in accordance with controlled plans or instructions which specify attributes to be verified in accordance with requirements and acceptance criteria.

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

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

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.

9.1.2.D (continued)

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, Completion Assurance as delegated to the SQM (BLN and WBN); and the Vice President, NAL&F as delegated to the Manager, NQA are responsible for including the applicable QA program elements in Section 9.1.2 and the related source requirements found in the documents listed in Section 9.1.4, within the inspection program.

B. The Vice President, NO is responsible for including the program elements in Section 9.1.2 and the related source requirements contained within the documents listed in Section 9.1.4 as applicable, within the line verification program.

C. The Vice Presidents, Nuclear Projects, NO, and Bellefonte Construction are 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."

9.1.4 (continued)

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 3, August 1985 (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" (Sections 2.4, 5.1, 6.1, and 7.0), 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 2.3, 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 2.3, 3, 4, and 5), and Regulatory Guide 1.116, Revision 0-R.

K. ANSI N45.2.13-1976, "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.

9.1.4 (continued)

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

M. 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 Quality Assurance Monitoring

9.2.1 General

Monitoring by NQA and Completion Assurance 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, NAL&F as delegated to the Manager, NQA is responsible for the development and implementation of the QA monitoring program. The Vice President, Completion Assurance, is responsible to implement the QA monitoring program at BLN and WBN.

9.2.4 Source Requirement Documents

None applicable.

9.3 Control of Special Processes

9.3.1 General

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

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

9.3.2 Program Elements

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

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

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

D. Procedure, Equipment, and Personnel Qualification and Certification

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

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

9.3.2 (continued)

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

E. Results

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

9.3.3 Responsibilities

A. The Vice President, Nuclear Projects is responsible for development of programs for control of special processes except NDE. 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 Presidents, Nuclear Projects, NO, and Bellefonte Construction are responsible for coordinating with appropriate organizations and determining which processes are to be controlled as special processes and for developing engineering requirements for NDE.

C. The Vice President, NAL&F, as delegated to the Manager, NQA is responsible for the development of upper-tier QA requirements for the NDE program.

D. The Vice President, Completion Assurance, is responsible to develop and implement NDE methods and procedures. He is also responsible for the qualification or certification of procedures, equipment, and personnel

E. The Vice Presidents, Nuclear Projects, NO, and Bellefonte Construction are responsible for the qualification or certification of special process procedures, equipment, and personnel for all areas other than NDE.

9.3.4 Source Requirement Documents

The 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.

9.3.4 (continued)

B. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 10), and Regulatory Guide 1.28, Revision 3, August 1985 (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. 10 CFR 50, Appendix B, Criterion IX.

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

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

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

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

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

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

L. American Society for Nondestructive Testing (ASNT) Recommended Practice, SNT-TC-1A-1984.

9.4 Test Control

9.4.1 General

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

9.4.2 Program Elements

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

1. Design qualification tests.

2. Product acceptance (proof) tests prior to installation.

3. Preoperational tests.

4. Construction tests.

5. Start-up tests.

6. Surveillance tests.

7. Functional tests.

8. Postmaintenance tests.

9. Postmodification tests.

10. Special tests.

B. Test Performance

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

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

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

a. Description of test objectives.

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.

9.4.2.B.3 (continued)

d. Provisions to assure test prerequisites have been met.

e. Mandatory inspection hold points.

f. Acceptance or rejection criteria.

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

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

C. Test Results

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

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

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

3. Pertinent inspection and test data.

4. Significant dates and times.

5. Signature of inspector or tester.

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

D. Results Evaluation

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

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

9.4.3 Responsibilities

A. The Vice Presidents, Nuclear Projects, NO, and Bellefonte Construction 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.

9.4.3 (continued)

B. The Vice Presidents, Nuclear Projects, NO, and Bellefonte Construction are responsible for reviewing test results and specifying through design output documents the acceptance criteria for tests necessary to demonstrate an item's compliance with design parameters for initial acceptance and major modifications.

C. The Vice Presidents, Nuclear Projects and Bellefonte Construction are responsible for the development and conduct of installation tests (construction phase) which incorporate engineering requirements.

D. The Vice President, NO is responsible for the development of tests (operations phase) which incorporate engineering requirements and for the conduct of tests, including leak tests (operations phase).

E. The Vice President, Completion Assurance, as delegated to the SQM (BLN and WBN); and the Vice President, NAL&F, as delegated to the Manager, NQA, are 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 3, August 1985 (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.

9.4.4 (continued)

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

9.5.1 General

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

9.5.2 Program Elements

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

1. Procedures or instructions for administrative controls shall establish:

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

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

9.5.2.A.1 (continued)

c. The types of equipment to be controlled.

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

a. The identity of the item to be calibrated.

b. Calibration equipment and reference standards to be used.

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

d. Sequence of operations.

e. Special instructions, when necessary.

f. Recording of performer and applicable procedure or instruction.

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

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

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

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

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

B. Unique Requirements for M&TE

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

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

9.5.2.B (continued)

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

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

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

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

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

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

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

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

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

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

9.5.2.C (continued)

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

D. Unique Requirements for Installed Compliance I&C Devices

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

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

9.5.3 Responsibilities

A. The Vice President, NO is responsible for the development of controls for M&TE and installed safety related I&C devices. The program elements in Section 9.5.2 and the related source requirements contained within the documents listed in Section 9.5.4 shall be addressed.

B. The Vice Presidents, NO, Nuclear Projects, and Bellefonte Construction are 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 safety related 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 3, August 1985.

9.5.4 (continued)

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. 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 determined to be applicable by the responsible engineer.

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

C. Shipping and Handling

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

D. Storage

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

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

3. Periodic 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 President, NAL&F, as delegated to the General Manager, MC&AS and Manager, NF (for nuclear fuels and fuel-related components) is responsible for the development of program controls for handling, storing, and shipping. The program elements in Section 9.6.2 and the related source requirements contained within the documents listed in Section 9.6.4 shall be addressed.

B. The Vice President, NAL&F as delegated to the General Manager, MC&AS and Manager, NF (for nuclear fuels and fuel-related components) is responsible for developing and defining implementation responsibilities to control the receipt, storage, shipping, and issuance of materials.

C. The Vice Presidents, Nuclear Projects and Bellefonte Construction are responsible for developing programs for controlling material in support of construction phase activities.

D. The Vice Presidents, Nuclear Projects, NO, and Bellefonte Construction are 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 3, August 1985 (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.

9.6.4 (continued)

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. 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.

9.7.2.A (continued)

4. Deletions or alterations of required inspections, tests, and other critical operations shall be controlled through appropriate changes to applicable procedures. These changes shall be handled in accordance with Section 6.1.2F 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, NO and NAL&F 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 9.7.4 shall be addressed.

B. The Vice Presidents, Nuclear Projects, NO, and Bellefonte Construction are responsible for establishing applicable inspection and test acceptance criteria to ensure the acceptability of items is maintained.

C. The Vice Presidents, Nuclear Projects and Bellefonte Construction are responsible for the implementation of programs for maintaining inspection, test, and operating status at unlicensed units.

D. The Vice President, NO 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.

9.7.4 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 the control of inspection, test, and operating status.

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

9.7.4 (continued)

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 3, August 1985 (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 (Administrative Controls Section).

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.

9.8.2 (continued)

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, NO, 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 Presidents, Nuclear Projects and Bellefonte Construction are responsible for the implementation of the Nuclear Maintenance Program during construction phase activities.

C. The Vice President, NO 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) "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants"

10.0 ADVERSE CONDITIONS

10.1 General

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

10.2 Program Elements

10.2.1 Control of Nonconforming Items

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

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

10.2.2 Corrective Action For Adverse Conditions

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

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

10.2.2 (continued)

D. Disposition actions for nonconforming items may be accept-as-is, repair, rework, scrap, or return to vendor. Dispositions of accept-as-is or repair shall be independently reviewed and approved. Reworked or repaired, and replaced items shall satisfy the original inspection and test requirements or acceptable alternatives.

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

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

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

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

10.2.3 Escalation of Adverse Conditions

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

10.2.4 Tracking

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

10.2.5 QA Trending

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

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

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

10.2.5 (continued)

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

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

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

10.2.6 Stop Work

Work shall be stopped under any of the following conditions:

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

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

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

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

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

10.3 Responsibilities

A. The Vice President, NAL&F as delegated to the Manager, NQA is responsible for the development of the Corrective Action Program. The program elements in Section 10.2 and the related source requirements contained within the documents listed in Section 10.4 shall be addressed.

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

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

D. NQA and Completion Assurance are responsible to establish and maintain trend analysis procedures for adverse conditions and the quality indicators generated by QA verification activities such as audits, monitoring, inspection, and vendor audits and surveillances.

10.4 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 corrective action program.

A. 10 CFR 50, Appendix B, Criterion XV, "Nonconforming Materials, Parts, and Components," and Criterion XVI, "Corrective Action."

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

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

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

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

F. 10 CFR 50.73, "Licensee Event Report System."

G. 10 CFR 73.71, "Reporting of Safeguards Events."

H. ANSI N18.7-1976/ANS 3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Sections 5.2.11 and 5.2.14), and Regulatory Guide 1.33, Revision 2, February 1978.

I. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Sections 16 and 17), and Regulatory Guide 1.28, Revision 3, August 1985.

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

L. Plant Technical Specifications (Administrative Controls Section).

11.0 INDOCTRINATION, TRAINING, QUALIFICATION, AND CERTIFICATION

11.1 General

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

11.2 Program Elements

11.2.1 Indoctrination and Training

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

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

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

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

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

11.2.2 Qualification and Certification

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

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

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

C. A method to monitor 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, NO 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, NO.

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 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 indoctrination, training, qualification, and certification program.

A. 10 CFR 50, Appendix B, Criterion II

B. ANSI N18.7-1976/ANS 3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Section 3.3), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N45.2-1971, "Quality Assurance Requirements for Nuclear Power Plants (Construction)" (Section 2), and Regulatory Guide 1.28, Revision 3, August 1985.

D. ANSI N45.2.6-1978, "Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants," and Regulatory Guide 1.58, Revision 1, September 1980.

E. ANSI N45.2.23-1978, "Qualifications of Quality Assurance Program Audit Personnel for Nuclear Power Plants," and Regulatory Guide 1.146, Revision 0, August 1980.

F. ANSI N18.1-1971, Personnel Selection and Training," and Regulatory Guide 1.8, Revision 2, April 1987.

11.4 (continued)

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

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.

12.2 (continued)

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, NAL&F as delegated to the Manager, NQA and the Manager, NF (for nuclear fuel-related activities) 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. NQA and NF (for nuclear fuel-related activities) are responsible to conduct audits, including audits of selected suppliers to verify implementation and adequacy of specified QA requirements.

C. The Vice President, Completion Assurance, is responsible to conduct audits at BLN and WBN.

12.4 Source Requirement Documents

The following source requirements 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 audits.

A. 10 CFR 50, Appendix B, Criterion XVIII, "Audits."

B. ANSI N18.7-1976-ANS 3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Section 4.5), and Regulatory Guide 1.33, Revision 2, February 1978.

C. ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants" (Section 19), and Regulatory Guide 1.28, Revision 3, August 1985.

12.4 (continued)

D. ANSI N45.2.11-1974, "Quality Assurance Requirements for the Design of Nuclear Power Plants," (Section 11) and Regulatory Guide 1.64, Revision 2, June 1976.

E. ANSI N45.2.12-1977, "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants," and Regulatory Guide 1.144, Revision 1, September 1980 (Design and Construction).

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

G. ANSI N45.2.23-1978, "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants," and Regulatory Guide 1.146, Revision 0, August 1980.

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

I. Plant Technical Specifications (Administrative Controls Section).

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 convent[illegible] and user manuals.

B. Controls shall be established for changes to approved 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.

13.2 (continued)

F. A central list of application software with appropriate levels of classification shall be established and maintained. Involved personnel shall be trained on the contents 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 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, NAL&F as delegated to the General Manager, MC&AS 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

A. ANSI/IEEE-ANS-7-4.3.2 1982, "Application Criteria for Programmable Digital Computer Systems in Safety Systems of Nuclear Power Generating Stations," (Sections 6 and 7) and Regulatory Guide 1.152, November 1985.

B. ANSI N45.2.11 1974, "Quality Assurance Requirements for the Design of Nuclear Power Plants" (Section 6.1).

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."

14.1 (continued)

10 CFR 50.55a, "Codes and Standards."

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

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

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

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

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

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

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

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

10 CFR 50.73, "Licensee Event Report System."

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."

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.

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 effectiveness of quality programs, processes, 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 monitoring 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 shut down 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 5.1B 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.