APPENDIX B

TABLES

TABLE 17B-1

TVA INTERFACE QUALITY ASSURANCE PROCEDURES

(Sheet 1)

Nuclear QA Manual Part, Section	Criterion	Description
	Criterion I - Organization	
I, 2.1	Transfer of Responsibility for the Plant from DNE and DNC to Nuclear Site Director (ID-QAP-1.2)	This procedure covers the transfer of design and construction responsibilities at various milestones as construction is completed and systems or subsystems are transferred to the Nuclear Site Director.
I, 2.1	Work Control (ID-QAP-1.3)	This procedure defines and implements the responsibilities and functions of DNE, DNC, and Nuclear Site Director for controlling work on unlicensed units.
	Criterion II - QA Program	
I, 2.2	DNE-Nuclear Site Director-DNC Interfaces and Responsibilities During and Following Transition from Design and Construction to Operation (ID-QAP-2.2)	This procedure establishes the requirements for interface and responsibilities of DNE, DNC, and Nuclear Site Director during and following the transition from design and construction to operation of a nuclear power plant.
I, 2.2	Physical Interfaces Between Licensed and Unlicensed Units (ID-QAP-2.3)	This procedure defines the responsibilities and the functions of DNE, DNC, and Nuclear Site Director in identifying and maintaining physical and functional interfaces (separation) between licensed and unlicensed units.
I, 2.2	Q-List (ID-QAP-2.7)	This procedure defines responsibilities and requirements for the control and application of the list of structures, systems, and components within the scope of the quality assurance program.
I, 2.2	Control of Design Requirements for Installation (ID-QAP-2.8)	This procedure defines responsibilities and requirements for control of design requirements for installation.
	Criterion III - Design Control	
I, 2.3	Nuclear Site Investigation for Design Purposes (ID-QAP-3.1)	This procedure defines the responsibilities and procedures required for site investigation for design purposes.

TABLE 17B-1

TVA INTERFACE QUALITY ASSURANCE PROCEDURES

(Sheet 2)

	Criterion IV - Procurement Document Control	
I, 2.3	Control of Protective Relay Setting Activities (ID-QAP-3.3)	This procedure defines the interfaces and responsibilities in the development of protective relay settings and associated activities.
I, 2.4	Procurement Document Control (ID-QAP-4.2)	This procedure defines the Division of Purchasing's and requistioning organization's responsibilities and procedures for controlling the awarding and changing of contracts for nuclear power plants.
I, 2.4	Transfer of Items (ID-QAP-4.3)	This procedure defines the responsibility and procedures used for transfer of safety-related items between TVA organizations.
I, 2.4	Procurement of Nuclear Fuel Assemblies and Fuel-Related Components (ID-QAP-4.5)	This procedure gives the responsibilities and outlines the procedures for procurement of nuclear fuel assemblies and fuel-related components.
	Criterion VI - Document Control	
I, 2.6	Configuration Drawing Control (ID-QAP-6.1)	This procedure applies to the control of Functional Configuration Control (FCC) drawings which represent the as-constructed functional status of a system in a nuclear plant. It covers the development and approval of the list of FCC drawings for each system which is defined as the System Configuration Control Drawing List (SCCDL). It also covers the control of FCC drawings from the time of the first transfer of equipment until licensing of the last unit. It also includes responsibilities for and a description of the Drawing Information System which maintains the status of FCC drawings.

TABLE 17B-1

TVA INTERFACE QUALITY ASSURANCE PROCEDURES

(Sheet 3)

I, 2.6	Vendor Manual Control (ID-QAP-6.2)	This procedure addresses the integrated TVA vendor manual program in that it establishes the control for flow of information among organizations and identifies the generic requirements each organization must implement internally.
	Criterion VII - Control of Purchased Material, Equipment and Services	
I, 2.7	Activities of the Division of Power System Operations (PSO) as related to the DNC Quality Assurance Program for TVA Nuclear Plants (ID-QAP-7.1)	This procedure defines the activities and and responsibilities of PSO Field Engineering Section when performing work for DNC.
	Criterion XI - Test Control	
I, 2.11	Preoperational Testing (ID-QAP-11.1)	This procedure defines the responsibilities of DNE, DNC, and Nuclear Site Director with regard to preoperational testing activities.
I, 2.11	Construction Test Control (ID-QAP-11.2)	This procedure defines organization functions, responsibilities and interfaces in support of the construction test program.
	Criterion XII - Control of Measuring and Test Equipment	
I, 2.12	Initial Calibration and Testing of Permanent Plant Instrumentation (ID-QAP-12.1)	This procedure defines the interface between DNC and Nuclear Site Director for initial calibration and testing of permanent plant instrumentation.
I, 2.12	Procurement, Calibration, and Management of Measuring and Test Equipment (ID-QAP-12.2)	This procedure defines the interface between the Division of Operations Support, Maintenance Coordination Staff, Central Laboratory Services, and DNC.

TABLE 17B-1

TVA INTERFACE QUALITY ASSURANCE PROCEDURES

(Sheet 4)

	Criterion XVII - QA Records	
I, 2.17	Transfer of Quality Assurance Records (ID-QAP-17.1)	This procedure establishes the method and defines the interfaces and responsibilities for the transfer of Quality Assurance Records from DNE and DNC to the Nuclear Site Director.
I, 2.17	Quality Assurance Records for Design and Construction (ID-QAP-17.2)	This procedure establishes the guidelines and identifies the interface responsibilities for controlling quality assurance records within DNE and DNC.

TABLE 17B-2

NUCLEAR QUALITY ASSURANCE MANUAL AS APPLICABLE TO THE OPERATIONS PHASE (TYPICAL)

(Sheet 1)

Appendix B Criterion	Nuclear Quality Assurance Manual (Part, Section)	Title
I	I, 1.1	Introduction
	I, 1.6	Definitions
	I, 2.1	Organization - The Office of Nuclear Power
II	I, 1.2	Scope of the Nuclear QA Program
	I, 1.3	Limited QA Program Requirements
	I, 1.7	CSSC Lists
	I, 2.2	QA Program
	II, 1.2	Housekeeping in Nuclear Power Plants
	II, 5.3A	Training and Certification Program for Quality Control Inspectors
	II, 5.4	Quality Assurance Surveillance
	III, 6.1	Selection and Training of Personnel for Nuclear Power Plants
III	I, 2.3	Design Control
	II, 1.4	Evaluation of Changes in Reactor Core Operation and Core Operating Transients
	II, 3.1	Plant Modifications: Before Issuance of the Operating License
	II, 3.2	Plant Modifications: After Licensing
	II, 3.2A	Core Component Design Change After Licensing
	II, 6.4	Control of Temporary Alterations
IV	I, 2.4	Procurement Document Control
	III, 2.1	Procurement of Materials, Components, Spare Parts, and Services
V	I, 2.5	Instructions, Procedures, and Drawings

TABLE 17B-2

NUCLEAR QUALITY ASSURANCE MANUAL AS APPLICABLE TO THE OPERATIONS PHASE (TYPICAL)

(Sheet 2)

Appendix B Criterion	Nuclear Quality Assurance Manual (Part, Section)	Title
	III, 1.1	Document Control
	I, 1.4	Preparation, Maintenance, and Implementation of the NQAM.
	I, 1.5	Quality Notices and Bulletins
	II, 1.1	Plant Operating Instructions
VI	I, 2.6	Document Control
	III, 1.1	Document Control
VII	I, 2.7	Control of Purchased Material, Equipment and Services
	III, 2.2	Receipt Inspection, Handling, and Storage of Materials, Components, and Spare Parts
	III, 2.3	Issuing of Materials, Components, and Spare Parts
VIII	I, 2.8	Identification and Control of Materials, Parts, and Components
	II, 2.1	Plant Maintenance
	II, 2.2	Offsite Maintenance of Plant Equipment
	II, 2.3	Repairs and Replacement of ASME Section XI Components
IX	I, 2.9	Control of Special Processes
	II, 6.1	Welding
	II, 6.2	Heat Treatment
	II, 6.3	NDE
X	I, 2.10	Inspection
	II, 5.1	Inservice Inspection - Nuclear Power Plant Components
	II, 5.3	Maintenance and Modification Inspection Program

TABLE 17B-2

NUCLEAR QUALITY ASSURANCE MANUAL AS APPLICABLE TO THE OPERATIONS PHASE (TYPICAL)

(Sheet 3)

Appendix B Criterion	Nuclear Quality Assurance Manual (Part, Section)	Title
XI	I, 2.11	Test Control
	II, 4.1	Preoperational Test Program
	II, 4.2	Plant Startup Test Program
	II, 4.5	Plant Surveillance Test Program
	II, 4.6	Special Tests
	II, 4.9	Handling of CSSC Test Deficiencies
XII	I, 2.12	Control of Measuring and Test Equipment
	III, 3.1	Control of Measuring and Test Equipment
	II, 2.4	Control of Installed Process Instrumentation
XIII	I, 2.13	Handling, Storage, and Shipping
	III, 2.2	Receipt Inspection, Handling, and Storage of Materials, Components, and Spare Parts
XIV	I, 2.14	Inspection, Test, and Operating Status
	*	
XV	I, 2.15	Nonconforming Materials, Parts, or Components
	III, 7.1	Nonconforming Materials, Parts, or Components
	III, 7.2	Corrective Action
XVI	I, 2.16	Corrective Action
	II, 4.9	Handling of CSSC Test Deficiencies

*The elements of this criteria are reflected in many individual activity procedures contained in the NQAM.

TABLE 17B-2

NUCLEAR QUALITY ASSURANCE MANUAL AS APPLICABLE TO THE OPERATIONS PHASE (TYPICAL)

(Sheet 4)

Appendix B Criterion	Nuclear Quality Assurance Manual (Part, Section)	Title
	III, 7.2	Corrective Action
XVII	I, 2.17	Quality Assurance Records
	III, 4.1	Quality Assurance Records
	III, 4.2	Transfer of Quality Assurance Records from the Division of Nuclear Engineering and the Division of Nuclear Construction
XVIII	I, 2.18	Audits
	III, 5.1	Audits
	II, 1.5	Onsite Independent Review

TABLE 17B-3

PROCEDURES OF DIVISION OF NUCLEAR ENGINEERING

(Sheet 1)

APPENDIX B CRITERION	DNE PROCEDURE OR DOCUMENT	DESCRIPTION
I	TVA-TR75-1A	The DNE organization is described in section 17.0.
II	NEP-5.1, Design Output	This procedure directs the development, review, and approval of all documents issued for the use of organizations outside of DNE. This includes the "Q-List" which is a listing of all structures, systems, and components covered by the quality assurance program.
	NEP-1.2, Training	This procedure identifies the minimum requirements for training employees in the procedures which govern their work.
III	NEP-3.2, Design Input	This procedure directs the development, review, and approval of design criteria which identify the design requirements of structures, systems, and components.
	NEP-3.1, Calculations	This procedure directs the development, review, and approval of design calculations.
	NEP-5.1, Design Output	This procedure directs the development, review, and approval of documents issued for the use of organizations outside of DNE. This includes identification that design input has been correctly translated into output documents.
	NEP-5.2, Review	This procedure describes the controls established to ensure the transfer of information necessary to accomplish engineering, design, and related services.
	NEP-3.3, Internal Interface Control NEP-5.3, External Interface Control	These procedures describe the controls established to ensure the transfer of information necessary to accomplish engineering, design, and related services.
	NEP-6.1, Change Control	This procedure describes how design changes, including field changes, are controlled to ensure the changes receive adequate review prior to issue.
IV	NEP-4.1, Procurement	This procedure directs the procurement activity of: identification of requirements, preparation of specifications and requisitions, evaluation of bids, recommendation of awards, administering the technical requirements of the contract, and surveillance of contractor shop activities.

TABLE 17B-3

PROCEDURES OF DIVISION OF NUCLEAR ENGINEERING

(Sheet 2)

APPENDIX B CRITERION	DNE PROCEDURE OR DOCUMENT	DESCRIPTION
V	NEP-1.1, Control of Nuclear Engineering Procedures	This procedure establishes the function of NEPs and the procedures for preparation, review, approval, and control of NEPs.
	NEP-5.1, Design Output	This procedure directs the development, review, and approval of documents, including drawings, issued for the use of organizations outside of DNE.
VI	NEP-1.1, Control of Nuclear Engineering Procedures	This procedure establishes the function of NEPs and the procedure for preparation, review, approval, and control of NEPs.
	NEP-1.3, Design Records Control	This procedure describes the process by which design records are created, issued, released, distributed, stored, retrieved, retained, and disposed.
VII	NEP-4.1, Procurement	This procedure directs the procurement of activities of: identification of requirements, preparation of specifications and requisitions, evaluation of bids, recommendation of awards, administering the technical requirements of the contract, and surveillance of contractor shop activities.
VIII	N/A	N/A
IX	NEP-5.1, Design Output	This procedure directs the development, review, and approval of all documents issued for the use of organizations outside of DNE. This includes the preparation of construction specifications and certified design specifications.
X	N/A	N/A
XI	NEP-10.4, Test Scoping Documents and Instructions	This procedure describes DNE's responsibilities and involvement in testing performed by DNC, ONP, contractually required tests, and special tests performed as the need arises.
XII	NEP-10.2, Control of Measuring and Test Equipment	This procedure describes DNE Operations Engineering Services responsibilities for control of M&TE.

TABLE 17B-3

PROCEDURES OF DIVISION OF NUCLEAR ENGINEERING

(Sheet 3)

APPENDIX B CRITERION	DNE PROCEDURE OR DOCUMENT	DESCRIPTION
XIII	NEP-4.1, Procurement	This procedure directs the procurement activities which requires that handling, storage, and shipping requirements be established.
XIV	N/A	N/A
XV	NEP-9.1, Corrective Action	This procedure describes the process of documenting, evaluating, and resolving conditions adverse to quality in the design of structures, systems, or components.
	NEP-4.1, Procurement	This procedure directs the procurement activities which requires that the supplier establish measures to control material, parts, or components which do not conform to requirements.
XVI	NEP-9.1, Corrective Action	This procedure describes the process of documenting, evaluating, and resolving conditions adverse to quality in the design of structures, systems, or components.
	NEP-9.2, Trending of Conditions Adverse to Quality (CAQ)	This procedure describes the DNE CAQ Trend Analysis Program for identifying and resolving adverse trends in CAQs.
XVII	NEP-1.3, Records Control	This procedure describes the process by which design records are created, issued, released, distributed, stored, retrieved, retained, and disposed.
XVIII	TVA-TR-75-1A	The DNE requirements for auditing are described in the Topical Report.

TABLE 17B-4

PROCEDURES OF NUCLEAR CONSTRUCTION

(Sheet 1)

10CFR50 APPENDIX B CRITERION	PROCEDURE NO.	TITLE	SCOPE STATEMENT
I	DNC-QAPP-1	Organization	This procedure states that the Director of DNC, has the overall responsibility for establishing and maintaining sufficient organizations to accomplish all construction activities including quality assurance and quality control.
II	DNC-QAPP-2	Quality Assurance Program	This procedure states that a formal quality assurance program, including quality control, shall be planned, documented, and executed within DNC.
II	DNC-QAP-2.5	Control of Rework	This procedure assigns responsibility and defines the sequence of actions to be accomplished for obtaining a release and for documenting satisfactory work completion for drilling, chipping, cutting of, or welding to permanent structures or components when such operations are not shown on DNE or contractor drawings.
III	DNC-QAPP-3	Design Control	This procedure states that a program shall be established, documented, and executed to provide assurance that changes from specified design requirements or quality standards initiated by DNC are identified, documented, and controlled.
III	DNC-QAP-3.1 DNC-QAP-3.3	Field Change Requests Design Change Notices	These procedures define the requirements for preparation, control, and documentation of field change requests and design change notices to be transmitted to the project engineer.
III	DNC-QAP-3.4	DNC Control of Cable Routing Design Information	This procedure describes the methods and responsibilities of DNC relating to cable-pulling information.
IV	DNC-QAPP-4	Procurement Document Control	This procedure states that a program shall be established, documented, and executed to provide assurance that applicable requirements, including quality assurance program requirements, are included or referenced in documents for procurement of material, equipment, and services.

TABLE 17B-4

PROCEDURES OF NUCLEAR CONSTRUCTION

(Sheet 2)

10CFR50 APPENDIX B CRITERION	PROCEDURE NO.	TITLE	SCOPE STATEMENT
IV	DNC-QAP-4.1	Procurement Document Control	This procedure establishes the method and assigns responsibilities for DNC in the request for and procurement of permanent and nonpermanent plant safety-related items or services. It also assigns responsibility and defines the requirements for transferring items between construction projects or from another TVA division.
V	DNC-QAPP-5	Instructions, Procedures, and Drawings	This procedure states that a program shall be established, documented, and executed to provide assurance that activities affecting quality are prescribed in a preestablished document network.
V	DNC-QAP-5.1	DNC Quality Assurance Program Procedures and Quality Assurance Procedures	This procedure establishes the method and defines responsibilities for the control of DNC procedures. The procedure addresses methods used for the identification of need for a new or revised procedure, collection and research of source information, drafting of procedures, review and approval, and procedure implementation.
V	DNC-QAP-5.2	Quality Assurance Procedure Change System	This procedure defines the procedure change system used in DNC to change DNC quality assurance procedures.
V	DNC-QAP-5.3	Tracking of Commitments and Requirements	This procedure establishes methods for identifying and tracking of commitments and regulatory requirements and for ensuring that they are implemented.
VI	DNC-QAPP-6	Document Control	This procedure states that a program shall be established, documented, and executed to provide assurance that documents including revisions thereto which prescribe activities affecting quality are controlled.
VI	DNC-QAP-6.1	Document Control	This procedure identifies and establishes controls for documents to be controlled under the quality assurance program.

TABLE 17B-4

PROCEDURES OF NUCLEAR CONSTRUCTION

(Sheet 3)

10CFR50 APPENDIX B CRITERION	PROCEDURE NO.	TITLE	SCOPE STATEMENT
VI	DNC-QAP-6.2	Vendor Manual Control	The procedure establishes methods and defines responsibilities for handling and controlling vendor manual information
VII	DNC-QAPP-7	Control of Purchased Items and Sevices	This procedure states that a program shall be established, documented, and executed to provide assurance that purchased material, equipment, and services conform to the procurement documents.
VII	DNC-QAP-7.2	Surveillance of Onsite Contractors	This procedure establishes methods for surveillance of onsite contractors to provide assurance that they are fulfilling their contractural requirements.
VII	DNC-QAP-7.3	Determining Acceptability of Suppliers	This procedure assigns the responsibility and defines the sequence of actions to be accomplished for determining supplier acceptability and the review of and concurrence with supplier, acceptability for suppliers furnishing safety-related items, engineering controlled items, and contractor services for safety-related items.
VIII	DNC-QAPP-8	Identification and Control of Items	This procedure states that a program shall be established, documented, and executed to provide assurance that materials, parts, and components including partially fabricated assemblies are identified and controlled.
IX	DNC-QAPP-9	Control of Special Processes	This procedure states that a program shall be established, documented, and executed to provide assurance that special processes including welding, heat treating, nondestructive testing, cleaning, and protective coating are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

TABLE 17B-4

PROCEDURES OF NUCLEAR CONSTRUCTION

(Sheet 4)

10CFR50 APPENDIX B CRITERION	PROCEDURE NO.	TITLE	SCOPE STATEMENT
IX	DNC-QAP-9.2	Standard Weld Repair for Surface and Edge Defects in P#1 and P#8 Materials	This procedure establishes the method for repairing surface and edge defects in P#1 and P#8 materials which are discovered during fabrication or erection.
X	DNC-QAPP-10	Inspection	This procedure states that a program shall be established, documented, and executed to provide verification that items/activities affecting quality are in conformance with the documented instructions, procedures, and drawings for accomplishing the activity.
XI	DNC-QAPP-11	Test Control	This procedure states that a program shall be established, documented, and executed to assure and demonstrate that structures, systems, and components (items) will perform satisfactorily in service. Prerequisites shall be provided in written test procedures for the test program and provisions for documenting and evaluating test results shall be identified.
XI	DNC-QAP-11.1	Construction Testing	This procedure assigns responsibilities and identifies the DNC QA program requirements for construction testing of safety-related structures, systems, and components (items) of unlicensed nuclear units.
XII	DNC-QAPP-12	Control of Measuring and Test Equipment	This procedure states that a program shall be established, documented, and executed to provide assurance that tools, gauges, instruments, and other inspection, measuring, and testing equipment and devices used in activities affecting or evaluating quality are of proper range and type with accuracy necessary to verify conformance to established requirements. Control measures shall not be employed for rulers, tape measures, levels, and other such devices if commercial quality equipment provides adequate accuracy.

TABLE 17B-4

PROCEDURES OF NUCLEAR CONSTRUCTION

(Sheet 5)

10CFR50 APPENDIX B CRITERION	PROCEDURE NO.	TITLE	SCOPE STATEMENT
XIII	DNC-QAPP-13	Handling, Storage, and Shipping	This procedure states that a program shall be established, documented, and executed to control the handling, storage, and shipping of material and equipment to prevent damage and deterioration.
XIV	DNC-QAPP-14	Inspection, Test, and Operating Status	This procedure states that a program shall be established, documented, and executed to identify the status of inspections and tests performed on items and the operating status of structures, systems, and components during construction.
XV	DNC-QAPP-15	Nonconforming Materials, Parts or Components	This procedure delineates the responsibilities and requirements to be contained in procedures to assure that items which do not conform to requirements are prevented from inadvertent use or installation. The identification, segregation, and disposition of nonconforming items is documented and controlled.
XV	DNC-QAP-15.1	Reporting and Correcting Nonconformances	This procedure assigns the responsibility and defines the sequence of actions for the systematic control (identification, segregation, and disposition) of nonconformances and verification of corrective action to resolve nonconformances. This procedure applies to all activities, services, and items within the scope of the DNC quality assurance program.
XVI	DNC-QAPP-16	Corrective Action	This program procedure delineates the responsibilities and requirements to be contained in procedures to assure that the corrective action program for conditions adverse to quality (CAQ), provides for the evaluation of CAQs for significance and notification to the licensing organization and, where indicated; for root cause, generic implication, and action required to prevent recurrence. This program procedure also delineates the responsibilities and requirements for performing trend analysis.

TABLE 17B-4

PROCEDURES OF NUCLEAR CONSTRUCTION

(Sheet 6)

10CFR50 APPENDIX B CRITERION	PROCEDURE NO.	TITLE	SCOPE STATEMENT
XVI	DNC-QAP-16.1	Evaluation of Conditions Adverse to Quality for Significance	This procedure is applicable to evaluation of Nonconforming Condition Report (NCR) to determine if they represent a significant condition adverse to quality (CAQ). For those NCRs which do represent asignificant CAQ, the procedure requires the determination of root cause, generic implication, and action required to prevent recurrence. It further has provision for distributing, revising, and closing of NCRs.
XVII	DNC-QAPP-17	Quality Assurance Records	This procedure states that a program shall be established, documented, and executed to provide for the maintenance of sufficient records that furnish objective evidence to assure that activities affecting quality have been properly completed and the quality assurance requirements have been met. Measures shall be provided for identification, and classification, accumulation, review, storage accountability, and transfer of records.
XVII	DNC-QAP-17.1	Quality Assurance Records	This procedure assigns responsibilities and defines the requirements for the control of quality assurance records. The procedure addresses the preparation of indexes and assigning of types of records; the classification of records; the collection of records including processing offsite records and handling of revised records, records review including the preparation of checklist; storage control of records; statusing of records in Records Accountability Program; and transfer of records to ONP.
XVII	DNC-QAP-17.2	Records Retrieval Instructions	This procedure defines the requirements and assigns responsibilities for development and maintenance of Records Retrieval Instructions.
XVIII	DNC-QAPP-18	Audits	This procedure states that a program shall be established, documented, and executed to provide an audit system to verify compliance with applicable aspects of the Quality Assurance Program.

TABLE 17B-5

Controlled Documents

1. Design Specifications and Drawings
2. Procurement Documents
3. Nuclear Quality Assurance Manual
4. Topical Reports
5. Safety Analysis Reports
6. Program Manuals
7. Plant Instructions
8. Test Procedures
9. Design Change Request
10. Nuclear Fuel Procedures Manual
11. Materials Management Services Quality Assurance Manual
12. Power Stores Quality Assurance Manual
13. Radiological Protection Plan
14. Division of Power System Operations QA Manual
15. Safety-Related Computer Programs
16. Purchasing QA Manual
17. Nuclear Engineering Procedures Manual
18. Construction QA Manual
19. DNE Site Engineering Project Manuals
20. QA Manual for ASME Section III Power Plant Components (NCM)

APPENDIX C

TABLES

TABLE 17C-1
ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR BELLEFONTE NUCLEAR PLANT

(Sheet 1)

Structure, System, or Component	Design Criteria		Preliminary Design			Procurement Specification			Final Design Computations		Final Design Drawings		
	Produce	Design Review	Produce	T-BW Interface Review	Design Review	Produce	T-BW Interface Review	Design Review	Produce	Design Review	Produce	T-BW Interface Review	Design Review
Category I (Seismic structures)	T	T	T	T	T	T	--	T	T	T	T	T	T
Reactor Building													
Secondary Containment including main steam feedwater valve room	T	T	T	--	T	T	--	T	T	T	T	--	T
Containment vessel	T	T	T	T-BW	T	T	--	T	T-V	T	T-V	T	T
Reactor Building Purge System	T	T	T	--	T	T	--	T	T	T	T	--	T
Reactor and Reactor Coolant System													
Reactor pressure vessel	BW	BW	BW	--	BW	BW	T	BW-T	BW	BW	BW	T	BW-T
Reactor vessel internals	BW	BW	BW	--	BW	BW	T	BW-T	BW	BW	BW	T	BW
Control rod drives and CR assemblies	BW	BW	BW	--	BW	BW	T	BW	BW	BW	BW	T	BW
Reactor coolant pumps	BW	BW	BW	--	BW-T	BW	T	BW-T	BW	BW	BW	T	BW-T
Reactor coolant piping	BW	BW	BW	T	BW	BW	T	BW-T	BW	BW	BW	T	BW
Steam generators	BW	BW	BW	--	BW-T	BW	T	BW-T	BW	BW	BW	T	BW-T
Pressurizer	BW	BW	BW	--	BW-T	BW	T	BW-T	BW	BW	BW	T	BW

Note: Key and definitions at end of table.

TABLE 17C-1
ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR BELLEFONTE NUCLEAR PLANT

(Sheet 2)

Structure, System, or Component	Design Criteria		Preliminary Design			Procurement Specification			Final Design Computations		Final Design Drawings		
	Produce	Design Review	Produce	T-BW Interface Review	Design Review	Produce	T-BW Interface Review	Design Review	Produce	Design Review	Produce	T-BW Interface Review	Design Review
Relief valves, safety valves	BW	BW	BW	T	BW-T	BW	T	BW-T	V	BW	V	T	BW
Instrumentation and controls	BW	BW	BW	T	BW-T	BW	--	BW	--	--	V	T	BW-T
Reactor protection and control systems	BW	BW	BW	T	BW-T	BW	--	BW	--	--	V	T	BW-T
Systems involved in emergency core and reactor bldg cooling													
Core Flooding System	BW	BW-T	BW	T	BW-T	BW	T	BW-T	BW-V	BW	BW-V	T	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T	BW	T
Decay Heat Removal System (Low-Pressure Injection System)	BW	BW-T	BW	T	BW-T	BW	T	BW-T	BW-V	BW	BW-V	T	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T	BW	T
Makeup (High-Pressure Injection System)	BW	BW-T	BW	T	BW-T	BW	T	BW-T	BW-V	BW	BW-V	T	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T	BW	T
Reactor Building Spray System	BW	BW-T	BW	T	BW-T	BW	T	BW-T	BW-V	BW	BW-V	T	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T	BW	T
Reactor Bldg Cooling (RBC) System	BW	BW-T	BW	T	BW-T	BW	T	BW-T	BW-V	BW	BW-V	T	BW-T

TABLE 17C-1
ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR BELLEFONTE NUCLEAR PLANT

(Sheet 3)

Structure, System, or Component	Design Criteria		Preliminary Design			Procurement Specification			Final Design Computations		Final Design Drawings		
	Produce	Design Review	Produce	T-BW Interface Review	Design Review	Produce	T-BW Interface Review	Design Review	Produce	Design Review	Produce	T-BW Interface Review	Design Review
Piping	T	T	T	BW	T	T	--	T	T	T	T	BW	T
Postaccident Hydrogen Removal System	T-BW	T	BW-T	--	T	T-BW	--	T	T	T	T	--	T
Secondary plant ANS Safety classed portion													
Main steam from steam generator through isolation valve	T-BW	T	T	BW	T	T	--	T	T	T	T	--	T
Feedwater from steam generator through second isolation valve	T-BW	T	T	BW	T	T	--	T	T	T	T	--	T
Anxiliary and Emergency systems													
Chemical Addition and Boron Recovery System (Seismic Category I parts except piping)	BW	BW-T	BW	T	BW-T	BW	T	BW-T	BW-V	BW	BW-V	T	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T-V	BW	T
Component Cooling Water System	BW	BW-T	BW	T	BW-T	BW	T	BW-T	BW-V	BW	BW-V	T	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T	BW	T
Essential Raw Cooling Water System	T	T	T	BW	T	T	--	T	T-V	T	T-V	BW	T

TABLE 17C-1
ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR BELLEFONTE NUCLEAR PLANT

(Sheet 4)

Structure, System, or Component	Design Criteria		Preliminary Design			Procurement Specification			Final Design Computations		Final Design Drawings		
	Produce	Design Review	Produce	T-BW Interface Review	Design Review	Produce	T-BW Interface Review	Design Review	Produce	Design Review	Produce	T-BW Interface Review	Design Review
Fire Protection Systems (Seismic Category I Parts)	T	T	T	--	T	T	--	T	T-V	T	T-V	--	T
Auxiliary Feedwater System	BW	BW-T	BW	T	BW-T	BW-T	T	BW-T	BW-V-T	BW-T	BW-V-T	T	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T	BW	T
Spent Fuel Cooling System	BW	BW-T	T	BW	T	BW	T	BW	BW-V	BW	BW-V	--	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T	BW	T
Control Building Air Conditioning System	T	T	T	--	T	T	--	T	T-V	T	T	--	T
Auxiliary Building Ventilation System	T	T	T	--	T	T	--	T	T-V	T	T	--	T
Waste Disposal System													
Radioactive waste systems (Seismic Class I parts except piping)	BW-T	BW-T	BW	T	BW-T	BW	T	BW-T	BW-V	BW	BW-V	T	BW-T
Piping	T	T	T	BW	T	T	--	T	T	T	T-V	BW	T
Radiation Monitoring System	T	T	T	T	T	T	--	T	--	--	T-V	BW	T
Electrical and control equipment	BW-T	BW-T	T	BW	T	T	--	T	V	T	V-T	--	T
Power Systems													

TABLE 17C-1
ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR BELLEFONTE NUCLEAR PLANT

(Sheet 5)

Structure, System, or Component	Design Criteria		Preliminary Design			Procurement Specification			Final Design Computations		Final Design Drawings		
	Produce	Design Review	Produce	T-BW Interface Review	Design Review	Produce	T-BW Interface Review	Design Review	Produce	Design Review	Produce	T-BW Interface Review	Design Review
Diesel generator system	BW-T	BW-T	T	BW	T	T	--	T	V	T	V-T	BW	T
DC power supply system	BW-T	BW-T	T	--	T	T	--	T	V	T	T	--	T
Power distribution cables and busses	T	T	T	--	T	T	--	T	--	--	V-T	--	T
Transformers	T	T	T	--	T	T	--	T	V	T	V	--	T
Shutdown boards and switchgear	T	T	T	--	T	T	--	T	V	T	V	--	T
Vital AC instrumentation and control supply system	BW-T	BW-T	T	BW	T	T	--	T	V	T	V-T	BW	T

TABLE 17C-1
ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR BELLEFONTE NUCLEAR PLANT

(Sheet 6)

Key: BW - Babcock & Wilcox
T - TVA (no branch or division identified)
V - Vendor of component

DEFINITIONS:

Design Criteria	- The basic criteria and requirements which form the basis for the detailed design, fabrication, and construction. They include such things as functional and general performance requirements, safety relationship and importance, seismic classification, identification of applicable codes, standards, and regulations, preliminary sizing, design temperature and pressure, computational methods and stress criteria, general level of quality, etc. Design criteria may be first defined in studies, reports, letters, system descriptions, specifications, or memoranda. The design criteria as defined herein appear in the PSAR and associated referenced documents.
Preliminary Design	- The initial design, including such things as layout and arrangement drawings, preliminary stress and seismic calculations, preliminary process, flow elementary and control diagrams, definition of component performance requirements, and preliminary design drawings.
Procurement Specification	- The specification which is used to procure parts for components from vendors.
Final Design Computations	- The final computations necessary to assure adequacy of structural or pressure containing parts and components. Includes code required calculations such as design reports and stress analyses and includes specified seismic calculations.
Final Design Drawings	- Those design drawings for systems, parts, and components which are used for fabrication, construction, and erection.
Design Review	- The design review performed as designed in the TVA and Babcock & Wilcox Quality Assurance Program Description.
T-BW Interface Review	- This review is made by the indicated organization (Babcock & Wilcox or TVA) to assure that portions of the design furnished by each organization are compatible with portions of the design being furnished by the other. Does not include any review by TVA, for Babcock & Wilcox, of its own design.

TABLE 17C-2

ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR WATTS BAR NUCLEAR PLANT

(Sheet 1)

Structure, System, or Component	Design Criteria		Preliminary Design		Procurement Specification		Final Design Documents	
	Produce	QA Review	Produce	QA Review	Produce	QA Review	Produce	QA Review
Class I (Seismic) Structures	T	T	T	T	T	T	T	T
Reactor Building	T	T	T	T	T	T	T	T
Shield Building including Steam and Feedwater Compartment	T	T	T	T	T	T	T	T
Containment Vessel	N	T	T	T	T	T	V	T
Ice Condenser	N	N	N	N	N	N	V	N
Emergency Gas Treatment System	T	T	T	T	T	T	T	T
Reactor and Reactor Coolant System								
Reactor Pressure Vessel	N	N	N	N	N	N	V	N
Reactor Vessel Internals	N	N	N	N	N	N	V	N
Control Rod Drives and RCC Assemblies	N	N	N	N	N	N	V	N
Reactor Coolant Pumps	N	N	N	N	N	N	V	N
Reactor Coolant Piping	N	N	N	N	N	N	V	N
Steam Generators	N	N	N	N	N	N	V	N
Pressurizer	N	N	N	N	N	N	V	N
Relief Valves, Safety Valves	N	N	N	N	N	N	V	N
Instrumentation and Controls	N/T	N/T	N/T	N/T	N/T	N/T	V	N/T

TABLE 17C-2

ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR WATTS BAR NUCLEAR PLANT

(Sheet 2)

Structure, System, or Component	Design Criteria		Preliminary Design		Procurement Specification		Final Design Documents	
	Produce	QA Review	Produce	QA Review	Produce	QA Review	Produce	QA Review
Reactor Protection and Control System	N	N	N	N	N	N	V	N
Engineered Safety Features								
Emergency Core Cooling System (except piping)	N	N	N	N	N	N	N	N
Piping System	T	T	T	T	T	T	T	T
Containment Spray System (except piping)	N	N	N	N	N	N	N	N
Piping System	T	T	T	T	T	T	T	T
Containment Air Return System	T	T	T	T	T	T	T	T
Auxiliary and Emergency Systems								
Chemical and Volume Control System (Seismic Class I Parts except piping)	N	N	N	N	N	N	N	N
Piping System	T	T	T	T	T	T	T	T
Component Cooling System (except piping)	T	T	T	T	T	T	T	T
Piping System	T	T	T	T	T	T	T	T
Essential Raw Cooling Water System	T	T	T	T	T	T	T	T

TABLE 17C-2

ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR WATTS BAR NUCLEAR PLANT

(Sheet 3)

Structure, System, or Component	Design Criteria		Preliminary Design		Procurement Specification		Final Design Documents	
	Produce	QA Review	Produce	QA Review	Produce	QA Review	Produce	QA Review
Fire Protection Systems (Seismic Class I Parts)	T	T	T	T	T	T	T	T
Auxiliary Feedwater Systems	T	T	T	T	T	T	T	T
Air Conditioning Systems (Seismic Class I Parts)	T	T	T	T	T	T	T	T
Waste Disposal								
Radioactive Liquid Waste System (Seismic Class I Parts except piping,	N	N	N	N	N	N	V	N
Piping System	T	T	T	T	T	T	T	T
Radiation Monitoring Systems	T	T	T	T	T	T	T	T
Electrical and Control Equipment	T	T	T	T	T	T	T	T
Emergency Power System								
Diesel Generator System	T	T	T	T	T	T	V	T
D.C. Power Supply System	T	T	T	T	T	T	T	T
Power Control, Signal Cables, and Busses	T	T	T	T	T	T	T	T
A.C. Auxiliary Power System	T	T	T	T	T	T	V	T

TABLE 17C-2

ASSIGNMENT OF DESIGN AND PROCUREMENT RESPONSIBILITIES
FOR WATTS BAR NUCLEAR PLANT

(Sheet 4)

	Design Criteria		Preliminary Design		Procurement Specification		Final Design Documents	
Structure, System, or Component	Produce	QA Review	Produce	QA Review	Produce	QA Review	Produce	QA Review
Vital A.C. Instrumentation and Control Supply System	T	T	T	T	T	T	V	T

1. Incluues valves in the scope of supply of the NSSS supplier.

2. Includes valves in the scope of supply of TVA.

Key: T- TVA (no branch or division identified)
N- Westinghouse
V- Vendor of component

APPENDIX D

REGULATORY GUIDES AND STANDARDS

TABLE 17D-1

QUALITY ASSURANCE STANDARDS FOR DESIGN AND CONSTRUCTION
(REGULATORY GUIDANCE)
APPLICABLE TO THE BELLEFONTE AND WATTS BAR NUCLEAR PLANTS

(Sheet 1)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
Appendix B to 10 CFR 50 - Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants	Conforms fully.
Regulatory Guide 1.28 (Revision 0), June 7, 1972 - Quality Assurance Program Requirements (Design and Construction) (endorses ANSI N45.2-1971)	Conforms fully.
Regulatory Guide 1.37 (Revision 0), March 16, 1973 - Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants. (endorses N45.2.1-1973)	Conforms fully.
Regulatory Guide 1.38 (Revision 2) May 1977 - Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants, (endorses N45.2.2-1972)	Conforms fully except as noted: 1. DNE and DNC provide necessary storage at the site as determined by the responsible engineering unit. This determination involves an evaluation of the complexity of the item and its importance to safety. The various types of storage are provided (yard, warehouse, humidity controlled, etc.) but the classification levels of N45.2.2 are not necessarily employed. 2. In accordance with ASME QA Case 78-N45.2.2-01-0, welding electrodes hermetically sealed in metal containers may be stored under conditions described for level c items unless other storage requirements are specified by the manufacturer. 3. Austenitic stainless steel and nickel alloy items may have markings applied directly to the bare metal surfaces, provided the requirements of TVA internal procedures which control the chemical content of the marking materials, are met.

TABLE 17D-1

QUALITY ASSURANCE STANDARDS FOR DESIGN AND CONSTRUCTION
(REGULATORY GUIDANCE)
APPLICABLE TO THE BELLEFONTE AND WATTS BAR NUCLEAR PLANTS

(Sheet 2)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	4. TVA takes exception to ANSI N45.2.2, Section 5.2.1. TVA's alternative is that shipping damage inspection shall be done before unloading where evidences of possible shipping damage would be lost in unloading, such as when the item is secured to the carrier, covered by tarpouline, accompanied by a visible impact recorder, or when the contract requires any of the above. 5. TVA takes exception to the requirement (ANSI N45.2.2, Section 6.4.2(8)) that other maintenance requirements specified by the manufacturer's instruction for an item shall be performed. TVA's alternative shall be to follow the manufacturer's maintenance instructions unless the TVA standard maintenance program is approved by the manufacturer with respect to the equipment in question.
Regulatory Guide 1.39 (Revision 2), September 1977 - Housekeeping Requirements for Water-Cooled Nuclear Power Plants (endorses N45.2.3-1973)	Conforms fully.
Regulatory Guide 1.30 (Revision 0), August 11, 1972 - Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment (endorses N45.2.4-1972)	Conforms fully except as noted: 1. ANSI N45.2.4 states that the Appendices are not a part of the standard therefore, DNE and DNC do not consider the Appendices to be mandatory.
Regulatory Guide 1.94 (Revision 1), April 1976 - Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants (endorses N45.2.5-1974)	Conforms fully except as noted: 1. Does not conform to qualification levels of inspection. The qualification requirements for QC inspectors are stated in our position on RG 1.58 in this table. 2. Testing frequency and QC acceptance criteria for concrete construction is described in

TABLE 17D-1

QUALITY ASSURANCE STANDARDS FOR DESIGN AND CONSTRUCTION
(REGULATORY GUIDANCE)
APPLICABLE TO THE BELLEFONTE AND WATTS BAR NUCLEAR PLANTS

(Sheet 3)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	Chapter 3 of the Safety Analysis Report for each plant.
	3. The installation method for high strength bolting may be either the automatic cut-off impact wrench method, turn-of-nut method, or direct tension indicator method.
	4. Torque wrench inspection of completed bearing connections is not required regardless of the installation method used. The sides of bolt heads and nuts tightened with an impact wrench will appear slightly peened and thus indicate that the wrench has been applied to the fastner. Generally, no further inspection is necessary for bolts in bearing-type connections, because the performance of the bolts in bearing is not dependent upon high tension. Visual evidence of wrench impacting is adequate indication that the nut has been tightened sufficiently to prevent it from loosening and falling off accidentally.
	5. Torque wrench inspection of completed connections installed by the turn-of-nut method shall not be required but may serve to resolve disagreements concerning the results of inspection of bolt tension.
	6. Torque wrench inspection of the load indicator washer type of direct tension indicator shall not be required.
	7. Bolts shall be considered long enough if the bolt point is flush with or outside the face of the nut.
	8. When specified by the DNE in design output documents, TVA's alternative for visual welding acceptance criteria will be NCIG-01,

TABLE 17D-1

QUALITY ASSURANCE STANDARDS FOR DESIGN AND CONSTRUCTION
(REGULATORY GUIDANCE)
APPLICABLE TO THE BELLEFONTE AND WATTS BAR NUCLEAR PLANTS

(Sheet 4)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	May 7, 1985, Rev. 2, "Visual Weld Acceptance Criteria for Structural Welding at Nuclear Power Plants."
	9. Verification of pre-weld activities, including fit-up, will be verified through selective QC inspection, unless 100% inspection is specified by DNE in design output documents.
Regulatory Guide 1.58 (Revision 1), September 1980 - Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel (endorses N45.2.6-1978)	Conforms fully except as noted: 1. Personnel performing preoperational testing or survey pa ty chiefs are not within the scope of this Regulatory Guide. 2. We determine initial capability from the following criteria as defined in our procedure: candidate's education, experience, training, examination, and/or capability demonstration. On-the-job participation in the work discipline is required for all candidates. 3. Certifications do not correspond to the levels established in N45.2.6. Inspection, examination, and testing personnel are classified by disciplines (mechanical, civil, electrical, instrumentation, hanger, etc.) and certified by procedure to perform the functions identified in N45.2.6, Table I, and L-I and L-II. 4. Qualified instructors and/or responsible supervisors in their respective areas perform the functions identified in N45.2.6, Table I, and L-III. 5. Medical eye examinations for inspection, testing, and examination personnel (other than NDE personnel) are made in accordance

TABLE 17D-1

QUALITY ASSURANCE STANDARDS FOR DESIGN AND CONSTRUCTION
(REGULATORY GUIDANCE)
APPLICABLE TO THE BELLEFONTE AND WATTS BAR NUCLEAR PLANTS

(Sheet 5)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	with TVA medical examination polices rather than annually. 6. ASNT recommended practice SNT-TC-1A-1980 will be used to qualify and certify nondestructive examination personnel except level III recertification which will be required every five years per Code Case N-341 as approved by Regulatory Guide 1.84.
Regulatory Guide 1.116 (Revision 0), June 1976 - Quality Assurance Requirements for the Installation, Inspection, and Testing of Mechanical Equipment and Systems (endorses N45.2.8-1975)	Conforms fully.
Regulatory Guide 1.88 (Revision 2), October 1976 - Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records (endorses N45.2.9-1974)	Conforms fully except as noted: DNC classifies records as "Life of Plant" (LOP) and "Duration of Construction" (DOC). LOP records include all "Lifetime" records and those "Nonpermanent" records with retention period of other than zero. DOC records are those "Nonpermanent" records with retention of zero years. "Lifetime" and "Nonpermanent" records are defined by DNC in accordance with ANSI N45.2.9-1974. BLN: DNE and DNC will utilize one hour rated filing cabinets for temporary storage of records. (Authorized in Draft 11 of ANSI N45.2.9). Three hour fire-rated doors will be provided for the permanent record storage facility. WBN: DNE and DNC will utilize a two-hour fire-rated facility. (Authorized in Draft 11 of ANSI N45.2.9) Permanent record storage will conform to paragraph 5.6 of ANSI N45.2.9-1979.
Regulatory Guide 1.64 (Revision 2), June 1976 - Quality Assurance Requirements	Conforms fully.

TABLE 17D-1

QUALITY ASSURANCE STANDARDS FOR DESIGN AND CONSTRUCTION
(REGULATORY GUIDANCE)
APPLICABLE TO THE BELLEFONTE AND WATTS BAR NUCLEAR PLANTS

(Sheet 6)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
for the Design of Nuclear Power Plants (endorses ANSI N45.2.11-1974)	
Regulatory Guide 1.144 (Revision 1), Sept. 1980 - Auditing of Quality Assurance Programs for Nuclear Power Plants (endorses ANSI N45.2.12-1977)	Conforms fully.
Regulatory Guide 1.123 (Revision 1), July 1977 - Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants (endorses ANSI N45.2.13-1976)	Conforms fully.
Regulatory Guide 1.146 (Revision 0), Aug. 1980 - Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (endorses ANSI N45.2.23-1978)	Conforms fully.
Regulatory Guide 1.54 (Revision 0), June 1973 - Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants (endorses ANSI 101.4-1972)	Conforms fully except as noted. The quality assurance program for protective coatings used inside the primary containment controls the following activities: 1. Control of both the manufacturing process of the coating material and the qualification of the coating system by imposing the applicable portions of ANSI standards N101.2 and N512. 2. Control of the preparation of surfaces to which coatings are applied. 3. Control of the application of the coatings systems. 4. Control of the inspection process. By controlling these activities, the requirements of 10 CFR 50, Appendix B are met.

TABLE 17D-2

REGULATORY GUIDANCE FOR QUALITY ASSURANCE
DURING STATION OPERATION

(Sheet 1)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
Appendix B to 10 CFR 50 - Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants	No exceptions.
10 CFR Part 55 - Operators' Licenses	No exceptions.
Regulatory Guide 1.8, (Revision 1), September 1975 "Personnel Selection and Training" (endorses ANSI N18.1-1971)	No exceptions.
Regulatory Guide 1.30, August 11, 1972 - "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment" (endorses ANSI N45.2.4-1972)	TVA will formally concur with major vendor's instruction manuals but will not necessarily apply a signature of approval (ANSI N45.2.4, Section 3(2)). TVA's alternative to the tagging of in-plant process instruments for calibration status (ANSI N45.2.4, Section 6.2.1) is as described below: Each CSSC item of process control instrumentation is uniquely identified with an instrument number. This number is utilized in an instrument maintenance record system so that the current calibration status and data attesting to the status of each item is documented along with the identification of the person performing the calibration. In addition, this record system provides a mechanism for evaluating equipment performance and adjusting calibration frequencies to assure quality performance.
Regulatory Guide 1.33, (Revision 2), February 1978, "Quality Assurance Program Requirements (Operations)" (Endorses ANSI N18.7-1976)	1. ANSI N18.7-1976 references certain other standards to which TVA takes exception. TVA's exception and appropriate alternatives to the following standards are listed in this table in the appropriate location: ANSI N45.2.2 ANSI N45.2.3 ANSI N45.2.4 ANSI N45.2.5 ANSI N45.2.6 ANSI N45.2.9

TABLE 17D-2

REGULATORY GUIDANCE FOR QUALITY ASSURANCE
DURING STATION OPERATION

(Sheet 2)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	2. TVA's alternative to the requirement of Regulatory Guide 1.33, section C.3 is as follows: Proposed changes to technical specifications shall be reviewed by the independent review body before submittal to the NRC for approval. However, when TVA believes a need for prompt submittal of proposed changes to the technical specifications or license amendment is required, the independent body review may be done concurrent with submittal to NRC. When a proposed change to the license is submitted on an emergency basis, TVA will state in the transmittal letter that the proposed change is requested on an emergency basis and that the independent body review is being conducted concurrently. 3. The following interpretation of the referenced standard ANSI N18.7 is made: A. Section 5.2.2: The requirements of this section are accepted with the following interpretations: Temporary changes which clearly do not change the intent of the approved procedure, shall as a minimum be approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator License on the unit affected. For facilities holding a construction permit where system(s) and/or components have been turned over to the operations organization, temporary changes to

TABLE 17D-2

REGULATORY GUIDANCE FOR QUALITY ASSURANCE
DURING STATION OPERATION

(Sheet 3)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	procedures, as described above, shall as a minimum be approved by two members of the plant management staff, at least one of whom shall be a designated member of the plant operations management staff.
Regulatory Guide 1.37, March 16, 1973 - "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants" (endorses N45.2.1-1973)	Conforms when applicable. The phase "when applicable" used in Regulatory Guide 1.37, paragraph C2, leaves open to interpretation, which specific requirements and recommendations contained in ANSI N45.2.1-1973 are applicable to and achievable during the operation phase. The interpretation of "when applicable" will be made with appropriate concurrence in a written procedure before its application.
Regulatory Guide 1.38, (Revision 2), May 1977 - "Quality Assurance Requirements for Packaging, Shipping, Receiving Storage, and Handling of Items for Water-Cooled Nuclear Power Plants" (endorses N45.2.2-1972)	1. TVA does not utilize specific levels of classification for purposes of packaging, shipping, receiving, storage and handling (ANSI N45.2.2, Section 2.7). All purchased items undergo receiving inspection. This inspection verifies that items have been properly packaged for shipment and will assure that any special protective measures specified in the standard to prevent damage, deterioration, or contamination will be imposed until the item or component is issued for use. Austenitic stainless steel and nickel alloy items may have markings applied directly to the bare metal surfaces, provided the requirements of TVA internal procedures which control the chemical content of the marking materials and the method of marking, are met. 2. TVA takes exception to ANSI N45.2.2, Section 5.2.1. TVA's alternative is that shipping damage inspection shall be done before

TABLE 17D-2

REGULATORY GUIDANCE FOR QUALITY ASSURANCE
DURING STATION OPERATION

(Sheet 4)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	unloading where evidences of possible shipping damage would be lost in unloading, such as when the item is secured to the carrier, covered by tarpouline, accompanied by a visible impact recorder, or when the contract requires any of the above.
	3. TVA takes exception to the requirement (ANSI N45.2.2, Section 6.2.4) that salt-tablet dispenser in any storage area shall not be permitted. TVA Power Stores Unit stores salt-tablet dispensers in sealed containers for use outside of the storage area only.
	4. TVA takes exception to the requirement (ANSI N45.2.2, Section 6.4.2(8)) that other maintenance requirements specified by the manufacturer's instruction for an item shall be performed. TVA's alternative shall be to follow the manufacturer's maintenance instructions unless the TVA standard maintenance program is approved by the manufacturer with respect to the equipment in question.
	5. TVA takes exception to the requirement (ANSI N45.2.2, Section 6.5, last sentence) due to the relatively short time between installation and use during the operations phase. TVA's alternative to this exception is as follows: TVA develops, issues, and implements procedure(s) which cover(s) the removal of items from storage. Such procedure(s) will ensure that items released from storage and awaiting installation will be stored in a manner to minimize the possibility of damage or lowering of quality due to corrosion, contamination, deterioration, or physical damage.

TABLE 17D-2

REGULATORY GUIDANCE FOR QUALITY ASSURANCE
DURING STATION OPERATION

(Sheet 5)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	6. TVA's alternative to the requirements of Section 6.6 of ANSI N45.2.2 is as follows: Power Stores will maintain written records of pertinent information such as storage location and receipt inspection results and will take necessary action to provide packaging for items not suitably packaged for storage. Written records of personnel access to Power Stores are kept for entry during times when Power Stores personnel are not on duty. All other times, the storeroom is locked and admittance is controlled by stores personnel.
Regulatory Guide 1.39, (Revision 2), September 1977 "Housekeeping Requirements for Water-Cooled Nuclear Power Plants" (endorses N45.2.3-1973)	The applicable portions of N45.2.3-1973 are followed at TVA plants within the guidelines of the Nuclear Quality Assurance Manual. The zone designations of Section 2.1 of N45.2.3 and the requirements associated with each zone are not consistent with the requirements for an operating plant. Instead, procedures or instructions for housekeeping activities, which include the applicable requirements outlined in Section 2.1 of N45.2.3 and which take into account radiation control considerations, security considerations, fire protection considerations, and personnel and equipment safety considerations are developed on a case basis.
Regulatory Guide 1.58, (Revision 1), September 1980 - "Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel" (endorses N45.2.6-1978)	TVA's alternative to qualifying personnel using the levels of capabilities outlined in Section 3 of N45.2.6 will be to qualify them to internal TVA levels of capability. Qualifications requirements are established and listed in the TVA job description for inspection, examination, and testing positions. Only personnel satisfying these requirements are selected to fill these positions. Any additional training received by personnel will be documented.

TABLE 17D-2

REGULATORY GUIDANCE FOR QUALITY ASSURANCE
DURING STATION OPERATION

(Sheet 6)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	Appropriate quality assurance groups will provide certificates for documenting this training. ANST recommended practice SNT-TC-1A-1980 will be used to qualify and certify nondestructive examination personnel except level III recertification which will be required every five years as allowed in Code Case N-356. Personnel currently certified to SNT-TC-1A-1975 are not required to recertify to SNT-TC-1A-1980.
Regulatory Guide 1.64, (Revision 2), June 1976 - "Quality Assurance Requirements for the Design of Nuclear Power Plants" - (Endorses N45.2.11-1974)	Changes in plant design resulting from modifications or repairs during the operating phase are referred to the responsible TVA division to be handled in accordance with the normal design control system as described in Section 17.1.3 and 17.2.3. TVA takes no exceptions.
Regulatory Guide 1.70, (Revision 2) September 1975 - "Standard Format and Contents of Safety Analysis Reports for Nuclear Power Plants," Revision 2	No exceptions for Quality Assurance Topical Report.
Regulatory Guide 1.74, February 1974 - "Quality Assurance Terms and Definitions" (endorses N45.2.10-1973)	No Exceptions.
Regulatory Guide 1.116, (Revision 0-R), June 1976 - "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems" (Endorses N45.2.8-1975)	TVA takes no exceptions to those requirements of N45.2.8 that are applicable to plant modifications or repairs during the operating phase.
Regulatory Guide 1.144 (Revision 1) September 1980 - Auditing of Quality Assurance Programs for Nuclear Power Plants (endorses ANSI N45.2.12-1977)	Conforms fully, with exceptions or interpretations to the following paragraphs: 2.3. Training - Technical specialists who assist in performing audits in their area of special expertise will not be trained in auditing techniques; however, they will always be accompanied by a trained, qualified auditor.

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REGULATORY GUIDANCE FOR QUALITY ASSURANCE
DURING STATION OPERATION

(Sheet 7)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	3.5.2 Scheduling - The applicable elements of the operational quality assurance program will be audited in accordance with the requirements of position C.4 of Regulatory Guide 1.33.
	4.5.2 By Auditing Organization - DNQA will have a certified lead auditor or a manager of the auditor either conduct required follow-up or attest to the acceptability of the follow-up conducted by certified auditors.
Regulatory Guide 1.123, (Revision 1), July 1977 - "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants" (Endorses N45.2.13-1976)	Conforms fully.
Regulatory Guide 1.88, (Revision 2), October 1976 - "Collection, Storage and Maintenance of Nuclear Power Plant Quality Assurance Records" (Endorses N45.2.9-1974)	Storage of records will meet the requirements of Regulatory Guide 1.88 for protection of records from fire by storing records in containers or facilities which meet the applicable requirements of ANSI N45.2.9-1974 or NFPA 232-1975 with exceptions as follows: 1. When fire-rated storage equipment is used, worst case fuel load analyses in accordance with NFPA-232-1980 will be performed. Surveys will be performed annually to verify that the fuel load analysis has not been invalidated. When records are stored in areas protected by an automatic fire suppression system, one-hour fire-rated storage equipment may be used without performing fuel load analyses. 2. QA records may be temporarily stored for 60 days or less in steel file cabinets or drawers if: the records are recreatable, or are in a facility of fire resistive construction with adequately designed smoke

TABLE 17D-2

REGULATORY GUIDANCE FOR QUALITY ASSURANCE
DURING STATION OPERATION

(Sheet 8)

TOPIC	CONFORMANCE STATUS AND/OR REMARKS
	detection and fire supression systems, or are in a facility of fire resistive construction with adequately designed smoke detection systems with a fuel loading less than 25 lbs./ft. as defined by NFPA 232-1980.
Regulatory Guide 1.94, (Revision 1), April 1976 - "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants" (Endorses N45.2.5-1974)	1. For modifications or repairs to structures within the scope of N45.2.5-1974, NSD would refer back to DNE for any design analyses. 2. When specified by DNE in design output documents, TVA's alternative for visual welding acceptance criteria will be NCIG-01, May 7, 1985, Rev. 2, "Visual Weld Acceptance Criteria for Structural Welding at Nuclear Power Plants." 3. Verification of pre-weld activities, including fit-up, will be verified through selective QC inspection, unless 100% inspection is specified by DNE in design output documents.
Regulatory Guide 1.146, August 1980 - Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (Endorses N45.2.23 - 1978)	Conforms fully except that in addition to the state agencies and national professional and technical societies recognized by ANSI N45.2.23, section 2.3.1.3, TVA may grant two points for professional competency to those individuals licensed as either an RO or SRO by the NRC.

APPENDIX E

MANUALS COVERING QUALITY-RELATED ACTIVITIES

TABLE 17E-1

MANUALS COVERING QUALITY RELATED ACTIVITIES
DURING DESIGN AND CONSTRUCTION OF NUCLEAR POWER PLANTS

(Sheet 1)

MANUAL	SCOPE	PREPARED AND CONTROLLED BY	REVIEWED BY	APPROVED AND ISSUED BY
Nuclear Quality Assurance Manual (NQAM)	The NQAM delineates responsibilities, requirements, and commitments for the quality assurance program to be applied during the design, procurement, and construction of TVA nuclear power plants. Contains procedures covering interface areas. The QA Program requirements and commitments contained or referenced therein include quality-related regulations, codes, standards, and TVA documents.	DNQA	Affected organizations as appropriate.	Director, DNQA
TVA Quality Assurance Manual for ASME Section III Nuclear Power Plant Components (NCM)	The Quality Assurance Program for the design, procurement, manufacture, and installation of components, parts, appurtenances, and component supports and the design, procurements, and installation, of components in conformance with the requirements of the Code, is detailed in the NCM.	DNQA	DNE/DNC	Director, DNQA
DNE Nuclear Engineering Procedures (NEP) Manual	This manual delineates DNE procedures to control all activities related to the DNE role in the quality assurance program and delineates responsibilities related thereto.	DNE Engineering Assurance	Affected Engineering organizations and DNQA*	Director of DNE

*Procedures within this manual and revisions thereto are reviewed and concurred with by DNQA prior to issuance.

TABLE 17E-1

MANUALS COVERING QUALITY RELATED ACTIVITIES
DURING DESIGN AND CONSTRUCTION OF NUCLEAR POWER PLANTS

(Sheet 2)

MANUAL	SCOPE	PREPARED AND CONTROLLED BY	REVIEWED BY	APPROVED AND ISSUED BY
Purchasing QA Manual	Covers QA procedures used by Division of Purchasing for procuring materials, equipment, and services.	Procurement Support Staff of the Division of Purchasing	Division of Purchasing, QSB*, and where applicable, any other division or office involved.	Director of the Division of Purchasing
DNC QA Program Manual	This manual contains DNC QA Program Procedures (QAPP) and CONST QA Procedures (QAP).	DNQA	DNC	Director, DNQA
DNC Quality Training Program Manual	DNC Indoctrination, Training, and Certification Program.	DNC	DNQA	Director, DNC
Construction Quality Manuals	Defines the construction organization interface with and implementation of the DNC Quality Assurance Program. Covers construction inspections, examinations and tests to be conducted during quality-related activities as fabrication, erection, and installation.	DNC/DNQA	DNQA/DNC	DNC Project Manager and Site Quality Manager
Construction Test Manuals	Defines how to conduct tests and references supporting information such as drawings, diagrams, instrument tabulations, and specifications.	DNC	DNC, DNE, DNQA, and the Nuclear Site Director for selected tests	Construction Manager
Quality Assurance Program Description for the Design, Construction, and Operation of TVA Nuclear Power Plants, Topical Report TVA-TR75-1A	A description of the TVA Quality Assurance Program	DNQA	Organizations Involved	Director, DNQA

TABLE 17E-1

MANUALS COVERING QUALITY RELATED ACTIVITIES
DURING DESIGN AND CONSTRUCTION OF NUCLEAR POWER PLANTS

(Sheet 3)

MANUAL	SCOPE	PREPARED AND CONTROLLED BY	REVIEWED BY	APPROVED AND ISSUED BY
DNE-Nuclear Plant Project Manual	Site level DNE procedures that implement the NQAM and NEPs	DNE Project Engineer's Organization	Organizations involved, including DNQA	DNE Project Manager

TABLE 17E-2

MANUALS COVERING QUALITY RELATED ACTIVITIES DURING OPERATIONS

(Sheet 1)

Identification	Description	Approval
1. Nuclear Quality Assurance Manual	The NQAM delineates responsibilities, requirements, and commitments for the quality assurance program to be applied during the operations phase of TVA's nuclear power plants. Contains procedures covering interface areas.	Procedures in this manual and revisions thereto are approved by the Director, DNQA. Affected organizations concur with the procedures prior to approval.
2. Nuclear Power Program Procedures Manual	A set of procedures establishing office-level requirements for various activities within the nuclear program.	Procedures identified as implementing regulatory requirements and revisions thereto are reviewed and concurred with by the Division of Nuclear Quality Assurance. Whenever these procedures specify actions for another organization, the procedures are reviewed by the affected organizations and all comments are resolved or referred to higher management for resolution. Final approval of all procedures and revisions thereto is by the Manager of Nuclear Power or his designee.
3. Power Stores QA Manual	This manual consists of controlled procedures prepared and maintained by PS. It implements the NQAM as applied to offsite activities of PS which affect or may affect the CSSC.	Procedures within this manual and revisions thereto are reviewed and concurred with, normally after issuance, by the Division of Quality Assurance. Whenever these procedures specify action for another organization, the affected organization concurs with the procedure prior to approval, unless concurrence has been made

TABLE 17C-2

MANUALS COVERING QUALITY RELATED ACTIVITIES DURING OPERATIONS

(Sheet 2)

Identification	Description	Approval
		in a higher level document. Final approval is by the Materials Manager.
4. Division of Power System Operations QA Manual	A manual consisting of controlled procedures prepared and maintained by the Division of Power System Operations (PSO). This manual implements the NQAM as applied to PSO activities affecting the quality of CSSC of TVA's nuclear plants.	Procedures within this manual and revisions thereto are reviewed and concurred with, normally after issuance, by the Division of Quality Assurance. Whenever these procedures specify actions for another organization, the affected organization concurs with the procedure prior to approval, unless concurrence has been made in a higher level document. Final approval is by the Director, PSO, or his delegate.
5. Purchasing QA Manual	A manual consisting of controlled quality assurance procedures prepared and maintained by the Division of Purchasing. These procedures cover such activities as procurement of materials, equipment and services.	Procedures within this manual and revisions thereto are reviewed and concurred with, normally after issuance, by the Division of Nuclear Quality Assurance. Whenever these procedures specify actions for another organization, the affected organization concurs with the procedure prior to approval, unless concurrence has been made in a higher level document. Final approval is made by the Director of the Division of Purchasing.

TABLE 17E-2

MANUALS COVERING QUALITY RELATED ACTIVITIES DURING OPERATIONS

(Sheet 3)

Identification	Description	Approval
6. Quality Assurance Program Description for the Design, Construction, and Operation of TVA Nuclear Power Plants, Topical Report TVA-TR75-1A	A description of the TVA Quality Assurance Program.	Reviewed by affected organizations and approved by the Director of DNQA
7. DNQA Quality Methods Manual	Instructions for DNQA activities.	Responsible DNQA Branch Chief, Site Quality Manager, or Director of DNQA, as appropriate.
8. Standard Practice/Administrative Instruction Manual	Site procedures that implement the NQAM, includes Administrative, Operations, Maintenance, and Modification instructions.	Portions of the manual which are quality assurance program related (NQAM) are reviewed by the Site Quality Manager's organization and approved by the Nuclear Site Director/Plant Manager or designee, as appropriate.
9. DNE Nuclear Engineering Procedures Manual	DNE procedures to control all activities related to the DNE role in the quality assurance program and delineates responsibilities related thereto.	Prepared by DNE Engineering Assurance, reviewed and concurred with by DNQA, and affected engineering organizations, and approved by the Director of DNE.
10. DNE-Nuclear Plant Project Manual	Site-level DNE procedures that implement the NQAM and NEPs.	Prepared by DNE Project Engineer's Organization, reviewed by affected organizations, including DNQA, and approved by the DNE Project Engineer.
11. Radiological Protection Plan	A manual consisting of controlled procedures prepared and maintained by Radiological Control of ONP. This document details ONP specific requirements and management controls for radiation protection.	This document and revisions thereto are reviewed and concurred with, normally after issuance, by the Division of Nuclear Quality Assurance. Whenever this document specifies action for another organization,

TABLE 17E-2

MANUALS COVERING QUALITY RELATED ACTIVITIES DURING OPERATIONS

(Sheet 4)

Identification	Description	Approval
		the affected organization concurs with the document prior to approval, unless concurrence has been made in a higher level document. Final approval is made by the Manager of ONP.
12. Materials Information Systems Branch QA Manual	A manual consisting of controlled quality assurance procedures prepared and maintained by the Materials Information Systems Branch (MISB). These procedures implement the NQAM as applied to MISB activities involving procurement of CSSC through the automated procurement process.	Procedures within this manual and revisions thereto are reviewed and concurred with, normally after issuance, by the Division of Nuclear Quality Assurance. Whenever these procedures specify actions for another organization, the affected organization concurs with the procedure prior to approval, unless concurrence has been made in a higher level document. Final approval is made by the Materials Manager.
13. Nuclear Fuel Procedures Manual	A manual consisting of a set of procedures prepared, controlled and maintained by the Reactor Fuel and Analysis organization of ONP. This manual serves as the governing document for implementing the nuclear power quality assurance program with respect to the design, fabrication, and other related activities associated with the production of nuclear fuel and for TVA's nuclear power plant.	Procedures within this manual and revisions thereto are reviewed and concurred with, normally after issuance, by the Division of Nuclear Quality Assurance. Whenever these procedures specify actions for another organization, the affected organization concurs with the procedure prior to approval, unless concurrence has been made in a higher level document. Final approval is made by the Manager, Reactor Fuel and Analysis.