TOPICAL REPORT-TVA-TR75-1A

REVISION 4

QUALITY ASSURANCE PROGRAM DESCRIPTION

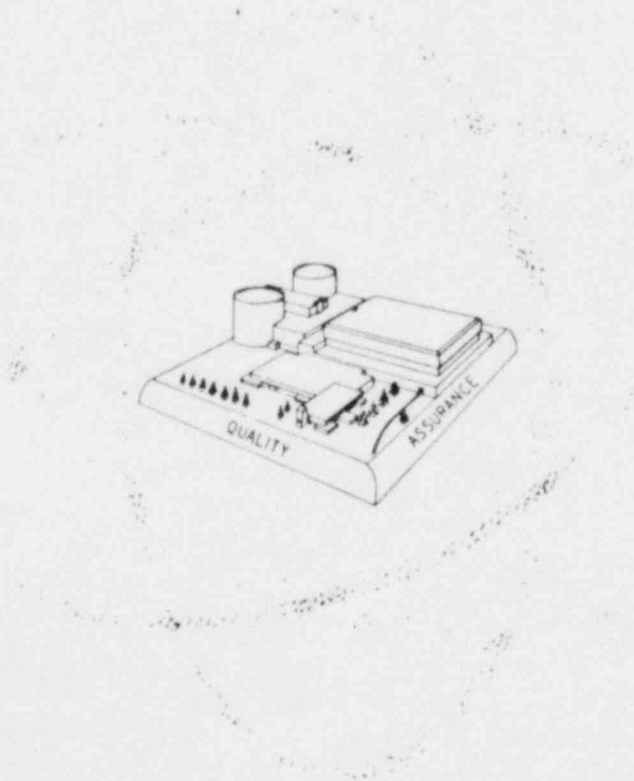
for

DESIGN, CONSTRUCTION, AND OPERATION

of

TVA NUCLEAR POWER PLANTS

CHAPTER 17 OF THE SAR



Tennessee Valley Authority

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LIST OF ABBREVIATIONS

The following abbreviations are used in this report:

ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
CASE	Coordinating Agency for Supplier Evaluation
CEO	Construction Engineering Organization
CFR	Code of Federal Regulations
CSB	Construction Services Branch
CSSC	Critical Structures, Systems, and Components
CONST	Division of Construction
DDR	Design Deficiency Report
CONST-QAP	Division of Construction Quality Assurance Procedure
CONST-QCP	Division of Construction Quality Control Procedure
DCR	Design Change Request
EN DES-QAP	Division of Engineering Design Quality Assurance Procedure
EN DES	Division of Engineering Design
FCC	Functional Configuration Control
FCR	Field Change Request
FSAR	Final Safety Analysis Report
FUELS	Division of Fuels
GSB	Geologic Services Branch
ID-QAP	Interdivisional Quality Assurance Procedure
IQT	Indefinite Quantity Term
MEDS	Management and Engineering Data System
MIQP	Manufacturing and Installation Quality Plan
NCR	Nonconformance Report
NDE	Nondestructive Examination
NEG	Nuclear Systems Engineering Group
NLS	Nuclear Licensing Section
NRC	Nuclear Regulatory Commission
NSSS	Nuclear Steam Supply System
NUC PR	Division of Nuclear Power
OEDC	Office of Engineering Design and Construction
OIE	Office of Inspection and Enforcement
ONRR	Office of Nuclear Reactor Regulation
OQAM	Operational Quality Assurance Manual
PORC	Plant Operations Review Committee
POWER	Office of Power
PSAR	Preliminary Safety Analysis Report
PSO	Division of Power System Operations
QA	Quality Assurance
QAC	OEDC Quality Assurance Committee
QAS-QAP	OEDC Quality Assurance Staff - Quality Assurance Procedure

QC	Quality Control
QCRU	Quality Control and Records Unit
QEB	Quality Engineering Branch
RG	Regulatory Guide
RPV	Reactor Pressure Vessel
SAR	Safety Analysis Report
SMEL	Singleton Materials Engineering Laboratory
SCCDL	System Configuration Control Drawing List
TVA	Tennessee Valley Authority

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TABLE 17.0-1 (sheet 1)
TVA INTERDIVISIONAL QUALITY ASSURANCE PROCEDURES

Criterion I - Organization		
ID-QAP-1.1	Preparation, Review, Revision, and Approval of Interdivisional QA Procedures	This procedure defines the responsibilities and procedures for preparing, reviewing, revising, and approving TVA interdivisional quality assurance procedures.
ID-QAP-1.2	Transfer of Construction and Engineering Design Responsibilities	This procedure covers the transfer of design and construction responsibilities at various milestones as construction is completed, systems or subsystems are transferred to NUC PR, and the unit is operated and maintained by NUC PR.
ID-QAP-1.3	Work Control	This procedure defines and implements the responsibilities and functions of EN DES, CONST, and NUC PR for controlling work on unlicensed units.
Criterion II - QA Program		
ID-QAP-2.2	EN DES-NUC PR-CONST Interfaces and Responsibilities During and Following Transition from Design and Construction to Operation	This procedure establishes the policy for interface and responsibilities of EN DES, CONST, and NUC PR during and following the transition from design and construction to operation of a nuclear power plant.
ID-QAP-2.3	Physical Interfaces Between Licensed and Unlicensed Units	This procedure defines the responsibilities and the functions of EN DES, CONST, and NUC PR in identifying and maintaining physical and functional interfaces (separation) between licensed and unlicensed units.
ID-QAP-2.4	Future Modification	This procedure defines the methods and interactions between EN DES, CONST, and NUC PR and the responsibilities for the implementation of modifications to licensed nuclear units.

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Criterion III - Design Control		
ID-QAP-3.1	OEDC Site Investigation for Design Purposes	This procedure defines the responsibilities and procedures required for OEDC site investigations for design purposes.
Criterion IV - Procurement Document Control		
ID-QAP-4.1	Responsibilities and Functions of the Division of Purchasing	This procedure defines the responsibilities and functions of the Division of Purchasing in procurement for nuclear power plants as related to quality assurance activities.
ID-QAP-4.2	Procurement Document Control by the Division of Purchasing	This procedure defines the Division of Purchasing's responsibilities and procedures for controlling the awarding and changing of contracts for nuclear power plants.
ID-QAP-4.3	Transfer of Items	This procedure defines the responsibility and procedures used for transfer of safety-related items between TVA organizations.
ID-QAP-4.4	Vendor Quality Assurance Evaluation Information Center	This procedure describes the Vendor Quality Assurance Evaluation Information Center. The information contained in the center is available for reference by any organization within TVA to assist in the preaward evaluation of potential suppliers of quality-related items or services.
Criterion VI - Document Control		
ID-QAP-6.1	Drawing Control	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 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. Rev. 3

Criterion XI - Test Control		
ID-QAP-11.1	Preoperational Testing	This procedure defines the responsibilities of EN DES CONST, and NUC PR with regard to preoperational testing activities.
Criterion XVII - QA Records		
ID-QAP-17.1	Transfer of Quality Assurance Records	This procedure establishes the method and defines the interfaces and responsibilities for the transfer of Quality Assurance Records from EN DES and CONST to NUC PR.
Criterion XVIII - Audits		
ID-QAP-18.1	Qualification, Certification and Recertification of Quality Assurance Audit Personnel	This procedure delineates the manner in which personnel performing quality assurance audits are qualified, certified, and recertified.

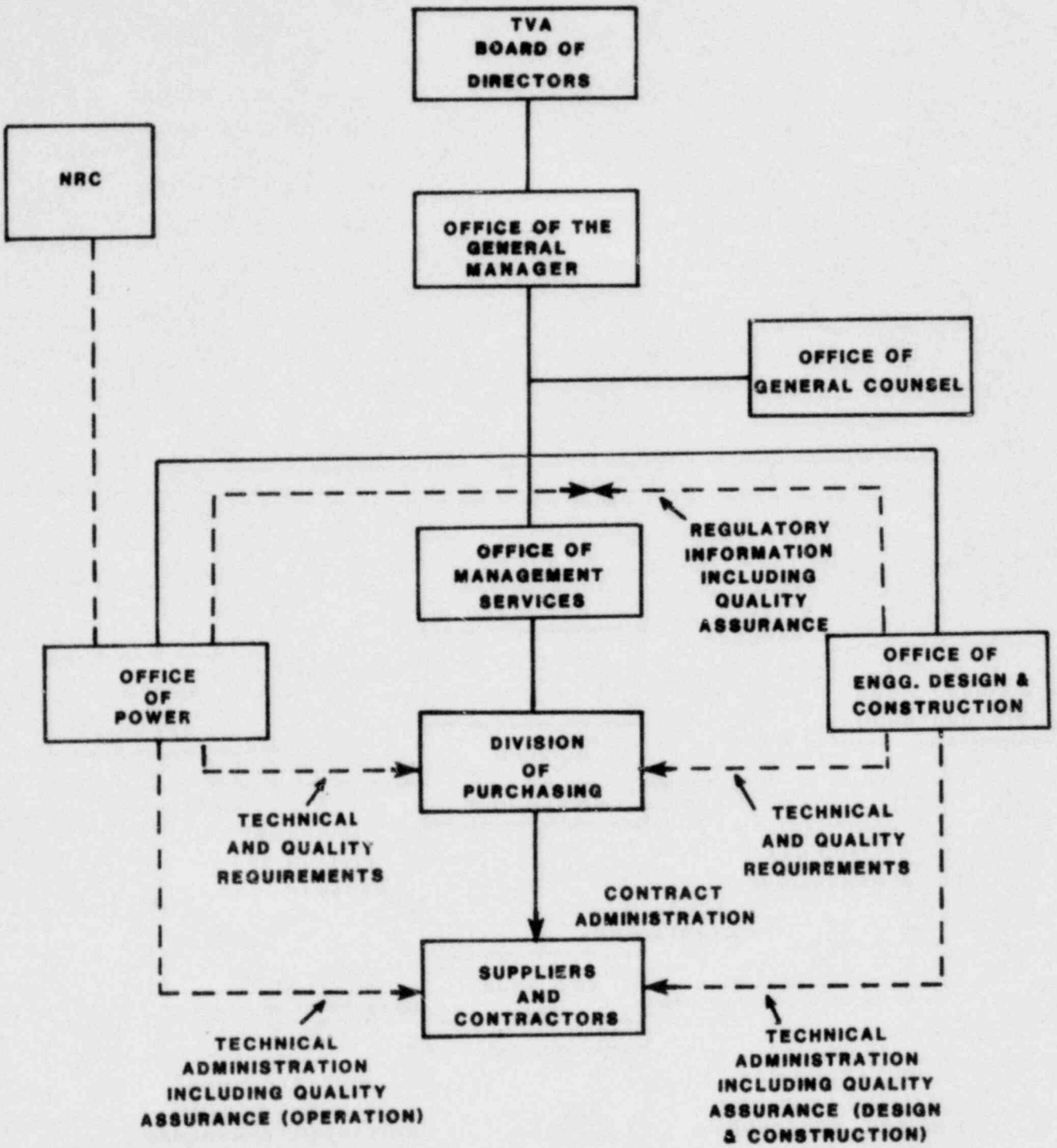

FIGURE 17.0-1 TVA ORGANIZATION
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TABLE 17.1A-1 (Sheet 1)

CROSS INDEX OF OEDC QUALITY ASSURANCE PROCEDURES AND RELATED CRITERIA OF APPENDIX B TO 10CFR50

The titles of Appendix B Quality Assurance Criteria are listed below for reference purposes.

APPENDIX B TO 10CFR50
QUALITY ASSURANCE CRITERIA

No.	Title
I	Organization
II	Quality Assurance Program
III	Design Control
IV	Procurement Document Control
V	Instructions, Procedures, and Drawings
VI	Document Control
VII	Control of Purchased Material, Equipment, and Services
VIII	Identification and Control of Materials, Parts, and Components
IX	Control of Special Processes
X	Inspection
XI	Test Control
XII	Control of Measuring and Test Equipment
XIII	Handling, Storage, and Shipping
XIV	Inspection, Test and Operating Status
XV	Nonconforming Materials, Parts, or Components
XVI	Corrective Action
XVII	Quality Assurance Records
XVIII	Audits

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TABLE 17.1A-1 (Sheet 2)

10CFR50 Appendix B Criteria No.	TVA Procedure No.	Title	Paragraph No.
I	OEDC-QAP-1.0	Organization	17.1A.1
	QAS-QAP-1.1	Division of Quality Assurance Responsibilities Between Elements of OEDC	
	QAS-QAP-1.2	Responsibilities and Functions of OEDC Quality Assurance	
	QAS-QAP-1.3	OEDC Quality Assurance Committee	
	EN DES-QAP-1.2	Quality Assurance Program Meetings	
	EN DES-QAP-1.6	Qualification Requirements for Personnel Assigned Quality Assurance Activities	
	CONST-QAP-1.01	Division of Construction Quality Assurance/Control Organization	
II	OEDC-QAP-2.0	Quality Assurance Program	17.1A.2
	QAS-QAP-4.1	Quality Assurance Indoctrination and Training	
	QAS-QAP-4.3	Qualification, Certification, and Recertification of Nondestructive Examination Personnel	
	EN DES-QAP-1.7	Certification of Nondestructive Examination (NDE) Personnel	
	CONST-QAP-2.01	CONST Quality Assurance Program Description	
	CONST-QAP-2.02.01	CONST Quality Assurance Program Description--HNP	
	CONST-QAP-2.03	Conformance to Regulatory Guides and Standards	

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TABLE 17.1A-1 (Sheet 3)

10CFR50 Appendix B Criteria No.	TVA Procedure No.	Title	Paragraph No.	
	CONST-QAP-2.04	Pre-PSAR Quality Assurance Activities	17.1A.2	
	CONST-QAP-2.05.01	Classification of Nondestructive Examination (NDE) Personnel		
	CONST-QAP-2.05.02	Qualification, Training, and Certification Requirements for Liquid Penetrant Nondestructive Examination Personnel		
	CONST-QAP-2.05.03	Qualification, Training, and Certification Requirements for Magnetic Particle Nondestructive Examination Personnel		
	CONST-QAP-2.05.04	Qualification, Training, and Certification Requirements for Radiographic Nondestructive Examination Personnel		
	CONST-QAP-2.05.05	Qualification, Training, and Certification Requirements for Ultrasonic Nondestructive Examination Personnel		
	CONST-QAP-2.07	Qualification of Inspection, Examination, and Testing Personnel		
	CONST-QAP-2.08	Qualification of Audit Personnel		
	CONST-QAP-2.09	Qualification of Welders and Welding Operators		
	CONST-QAP-2.10	Qualification of Cadweld Splicers		
	CONST-QAP-2.11	Qualification of Protective Coating Applicators		
III	OEDC-QAP-3.0	Design Control	17.1A.3	4

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TABLE 17.1A-1 (Sheet 4)

10CFR50 Appendix B Criteria No.	TVA Procedure No.	Title	Paragraph No.
	EN DES-QAP-2.1	Design Review	17.1A.3
	CONST-QAP-3.01	Field Change Requests	
IV	OEDC-QAP-4.0	Procurement Document Control	17.1A.4
	EN DES-QAP-3.1	Procurement Quality Assurance	
	CONST-QAP-4.01	Procurement Document Control	
V	OEDC-QAP-5.0	Instructions, Procedures, and Drawings	17.1A.5
	CONST-QAP-5.01	Quality Assurance Procedures	
	CONST-QAP-5.02	Site Quality Control Procedures	17.1A.5
	CONST-QAP-5.03	SMEL Quality Control Procedure	
VI	OEDC-QAP-6.0	Document Control	17.1A.6
	QAS-QAP-2.1	Preparation, Review, and Approval of Material for the OEDC Quality Assurance Manual	
	QAS-QAP-2.2	Maintenance of OEDC Quality Assurance Manual for Design and Construction	
	QAS-QAP-2.3	Quality Assurance Forms	
	QAS-QAP-2.5	Review of EN DES and CONST Purchase Requisitions and Contracts	
	EN DES-QAP-1.1	EN DES Preparation and Processing of Quality Assurance Procedures	

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TABLE 17.1A-1 (Sheet 5)

10CFR50 Appendix B Criteria No.	TVA Procedure No.	Title	Paragraph No.
	EN DES-QAP-1.3	Control of Documents Affecting Quality	
	CONST-QAP-3.02	Functional Configuration Drawing Control for Nuclear Plants	
	CONST-QAP-6.01	Document Control	
	CONST-QCP-5.6	Quality Assurance Requirements for Materials Review Reports	17.1A.6
VII	OEDC-QAP-7.0	Control of Purchased Material, Equipment, and Services	17.1A.7
	EN DES-QAP-4.1	Shop Surveillance of Pressure Containing Components - Westinghouse Procured Items (Except RPV)	
	EN DES-QAP-4.2	Surveillance of NSSS Vendor Inspection and Test Activities	
	EN DES-QAP-4.3	Shop Surveillance for Pressure Containing Systems and Components (TVA Procured)	
	EN DES-QAP-4.4	Shop Surveillance of Reactor Pressure Vessels	
	EN DES-QAP-4.5	Shop Surveillance for Steel Containment Vessels	
	EN DES-QAP-4.6	Shop Surveillance for Heavy Equipment Items	
	EN DES-QAP-4.7	Shop Surveillance for Instrumentation and Control Components for TVA Procured Items	17.1A.7
	EN DES-QAP-5.2	Release of Material and Equipment from Contractors' Shops	17.1A.7

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TABLE 17.1A-1 (Sheet 6)

10CFR50 Appendix B Criteria No.	TVA Procedure No.	Title	Paragraph No.
	CONST-QAP-7.01	Receiving Materials, Parts, and Components	
	CONST-QAP-7.02	Surveillance of Site Contractors	
	CONST-QAP-7.03	Evaluation and Selection of Suppliers	17.1A.7
	CONST-QAP-7.04	Transfer of Materials, Parts, and Components	
VIII	OEDC-QAP-8.0	Identification and Control of Materials, Parts, and Components	17.1A.8
	CONST-QAP-8.01	Identification and Marking of Materials, Parts, and Components	
	CONST-QAP-8.02	Control of Materials, Parts, and Components	
	CONST-QAP-8.03	Control of Welding Material	
IX	OEDC-QAP-9.0	Control of Special Processes	17.1A.9
	CONST-QAP-9.01	Assignment of Special Processes	
	CONST-QAP-9.02	Qualification of Wedling Procedures	
	CONST-QAP-9.03	Qualification of Cadweld Splicing Procedures	
	CONST-QAP-9.04	Release for Drilling, Chipping, Cutting of, or Welding to Permanent Structures or Components	
	CONST-QAP-9.05	Nondestructive Examination	
	CONST-QCP-5.2	Quality Assurance Requirements for Concrete Mixture Proportioning	

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TABLE 17.1A-1 (Sheet 7)

10CFR50 Appendix B Criteria No.	TVA Procedure No.	Title	Paragraph No.
X	OEDC-QAP-10.0	Inspection	17.1A.10
	CONST-QAP-10.01	Inspection	17.1A.10
	CONST-QCP-5.3	Quality Assurance Requirement for Soil Investigation Prior to Construction	
XI	OEDC-QAP-11.0	Test Control	17.1A.11
	CONST-QAP-11.01	Test Control	
	CONST-QCP-5.4	Quality Assurance Requirements for Laboratory Testing of Protective Coatings	
	CONST-QCP-5.5	Quality Assurance Requirements for Mechanical Testing of Metals	
XII	OEDC-QAP-12.0	Control of Measuring and Test Equipment	17.1A.12
	CONST-QAP-12.01	Control of Measuring and Test Equipment	
	CONST-QCP-5.1	Calibration of Laboratory Measuring and Test Equipment	
XIII	OEDC-QAP-13.0	Handling, Storage, and Shipping	17.1A.13
	CONST-QAP-13.01	Storage and Preservation of Materials, Components, and Systems	
	CONST-QAP-13.02	Handling Nuclear Components	
XIV	OEDC-QAP-14.0	Inspection, Test, and Operating Status	17.1A.14
	CONST-QAP-14.01	Inspection and Test Status	
XV	OEDC-QAP-15.0	Nonconforming Material, Parts, or Components	17.1A.15

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TABLE 17.1A-1 (Sheet 8)

10CFR50 Appendix B Criteria No.	TVA Procedure No.	Title	Paragraph No.
	QAS-QAP-4.2	Quality Problem Analysis System	
	EN DES-QAP-1.5	Reporting of Deficiencies in Design and Construction of Nuclear Power Plants	
	EN DES-QAP-1.10	Determining and Reporting NRC-OIE Reportable Conditions	
	EN DES-QAP-5.3	Handling of Contractor Nonconformances and Deviations	
	CONST-QAP-15.01	Control of Nonconforming Items	
XVI	OEDC-QAP-16.0	Corrective Action	17.1A.16
	CONST-QAP-16.02	NRC - OIE Replies	
XVII	OEDC-QAP-17.0	Quality Assurance Records	17.1A.17
	OEDC-QAP-17.1	Quality Assurance Records for Design and Construction	
	EN DES-QAP-5.1	Preparation, Review, and Distribution of Inspection Reports	
	EN DES-QAP-5.4	Quality Compliance Records and Records Control for TVA Procured Items	
	EN DES-QAP-5.5	Quality Compliance Records and Records Control for NSSS Vendor Procured Items	
	CONST-QAP-17.01	Quality Assurance Records	
XVIII	OEDC-QAP-18.0	Audits	17.1A.18
	QAS-QAP-3.1	OEDC Quality Assurance Audits	

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TABLE 17.1A-1 (Sheet 9)

10CFR50 Appendix B Criteria No.	TVA Procedure No.	Title	Paragraph No.
	QAS-QAP-3.2	NRC-Office of Inspection and Enforcement Activities	17.1A.18
	QAS-QAP-3.3	Scheduling OEDC Quality Assurance Audits	
	EN DES-QAP-1.4	Internal EN DES Quality Assurance Audit Program	
	EN DES-QAP-3.2	Vendor Quality Assurance Audit Program	
	CONST-QAP-18.01	Auditing Construction Activities	

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TABLE 17.1A-2 (Sheet 1)

PURPOSE AND SCOPE OF TVA QUALITY ASSURANCE PROCEDURES

SECTION A - OFFICE OF ENGINEERING DESIGN AND CONSTRUCTION QUALITY ASSURANCE PROCEDURES

(Criteria I through XVIII) OEDC-QAP-1 through OEDC-QAP-18 - Titled Similar to the 18 Criteria

(These are a series of 18 quality assurance procedures with each procedure defining the method TVA uses to comply with one of the 18 criteria. They assign specific responsibilities for each of the 18 criteria.)

SECTION B - OEDC MANAGER'S OFFICE QUALITY ASSURANCE STAFF QUALITY ASSURANCE PROCEDURES

(Criterion I) QAS-QAP-1.1 - Division of Quality Assurance Responsibilities Between Elements of OEDC

(This procedure defines the responsibilities among the OEDC Quality Assurance Staff, QEB, and the Project Construction Engineer.)

(Criterion I) QAS-QAP-1.2 - Responsibilities and Functions of OEDC Quality Assurance

(This procedure outlines the responsibilities and function of each unit of the OEDC QA Staff.)

(Criterion I) QAS-QAP-1.3 - OEDC Quality Assurance Committee

(This procedure describes the purpose of the meeting, method used to select members, schedule of meetings, and the preparation of the agenda and the minutes of the meetings.)

TABLE 17.1A-2 (Sheet 2)

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(Criterion VI)
QAS-QAP-2.1

- Preparation, Review, and Approval of Material for the OEDC Quality Assurance Manual (DCM)

(This procedure defines the responsibilities for preparation, review, and approval of all material which is part of the OEDC Quality Assurance Manual.)

(Criterion VI)
QAS-QAP-2.2

- Maintenance of OEDC Quality Assurance Manual for Design and Construction

(This procedure defines the responsibility and procedures for the maintenance and distribution of the OEDC Quality Assurance Manual for Design and Construction.)

(Criterion II)
QAS-QAP-2.3

- Quality Assurance Form

(This procedure defines the method for the development and control of forms and documents used by Quality Assurance and Quality Control groups of OEDC.)

(Criterion VI)
QAS-QAP-2.5

- Review of EN DES and CONST Purchase Requisitions and Contracts

(This procedure describes OEDC QA Staff responsibilities for reviewing EN DES and CONST purchase requisitions and contracts for nuclear safety-related items or services to ensure that they contain the necessary quality assurance requirements.)

(Criterion XVIII)
QAS-QAP-3.1

- OEDC Quality Assurance Audits

(This procedure defines the responsibilities and procedures for planning, conducting, reporting, and follow-up of audits by the OEDC Quality Assurance Program of the Divisions of Engineering Design and Construction.)

TABLE 17.1A-2 (Sheet 3) | 4

(Criterion XVIII) QAS-QAP-3.2	- NRC-Office of Inspection and Enforcement Activities (This procedure defines the responsibilities and procedure for the coordination of NRC-OIE inspections and reports in accordance with Title 10, Code of Federal Regulations, Part 2, Subpart B.)
(Criterion XVIII) QAS-QAP-3.3	- Scheduling OEDC Quality Assurance Audits (This procedure defines the responsibilities and procedure for developing OEDC Quality Audit Schedules and assures that audits will be performed in a timely manner and are associated with the implementation or enactment of important activities that affect quality.)
(Criterion II) QAS-QAP-4.1	- Quality Assurance Indoctrination and Training (This procedure establishes a guide for the training and certification of OEDC personnel engaged in quality assurance activities. The procedure defines the overall plan of action for assuring that qualifications and responsibilities are properly matched. Guidelines necessary to implement this plan are detailed.)
(Criterion XV) QAS-QAP-4.2	- Quality Problem Analysis System (This procedure assures that a unified, controlled plan of action is followed in rectifying quality problems in areas of OEDC activities related to nuclear safety. This procedure defines such a plan of action and describes methods and techniques to be followed in implementing it.)

TABLE 17.1A-2 (Sheet 4) |4

(Criterion II)
QAS-QAP-4.3

- Qualification, Certification, and Recertification of Nondestructive Examination Personnel

(This procedure specifies the manner in which personnel performing nondestructive examination shall be qualified, certified, and recertified.)

SECTION C - DIVISION OF ENGINEERING DESIGN

QUALITY ASSURANCE PROCEDURES

(Criterion VI)
EN DES-QAP-1.1

- EN DES Preparation and Processing of Quality Assurance Procedures

(This procedure defines the responsibilities and methods for preparation, review, distribution, and maintenance of EN DES procedures which prescribe quality assurance activities. It establishes the format to be followed in producing procedures and review and approval responsibilities.)

(Criterion I)
EN DES-QAP-1.2

- Quality Assurance Program Meetings

(This procedure defines the general requirements for periodic meetings to disseminate quality assurance information and to discuss related problems.)

(Criterion VI)
EN DES-QAP-1.3

- Control of Documents Affecting Quality

(This procedure defines the general methods for the control of design documents issued formally by the Division of Engineering Design to define requirements that are used in design, procurement, fabrication, installation, erection, construction, quality assurance, operation, and maintenance of those structures, systems, and components that must meet requirements of the Quality Assurance

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TABLE 17.1A-2 (Sheet 5)

Plan of the Preliminary and Final Safety Analysis Reports for nuclear plants. This procedure applies to the identification, preparation, review, approval, issue, distribution, and revision of design criteria documents, design drawings, requisitions (including specifications), formal written procedures, and EN DES construction specifications.)

(Criterion XVIII)
EN DES-QAP-1.4

- Internal EN DES Quality Assurance Audit Program

(This procedure defines the general requirements for auditing the quality assurance activities of EN DES for compliance with the requirements of the Quality Assurance Program of the Office of Engineering Design and Construction. It includes the requirements for checklists, schedules, reports, and follow-up audits where corrective action is required.)

(Criterion XV
50.55(e) of 10CFR50)
EN DES-QAP-1.5

- Reporting and Handling of Nonconformances in EN DES

(This procedure applies to the reporting of nonconformances by EN DES personnel. It also describes the handling of nonconformance reports that are generated by EN DES, CONST, or suppliers.)

TABLE 17.1A-2 (Sheet 6) | 4

(Criterion I) EN DES-QAP-1.6	- Qualification Requirements for Personnel Assigned Quality Assurance Activities (This procedure defines the minimum acceptable requirements for personnel assigned quality assurance activities such as checking, auditing, or otherwise verifying to provide adequate confidence that specify quality requirements are sufficient, will be achieved, and are verified. This establishes a minimum base line standard for the qualifications of personnel engaged in quality assurance activities within the branches, design projects, and division staff.)
(Criterion II) EN DES-QAP-1.7	- Certification of Nondestructive Examination (NDE) Personnel (This procedure specifies the manner in which personnel associated with nondestructive testing and examination shall be qualified and certified. It is applicable to qualification and certification of personnel associated with nondestructive testing and examination to fulfill the requirements of the Division of Engineering Design (EN DES) and applicable codes and standards.)
(Criterion XV 50.55e of 10CFR50) EN DES-QAP-1.10	- Determining and Reporting NRC-OIE Reportable Conditions (This procedure applies to the determination of reportability to the Nuclear Regulatory Commission - Office of Inspection and Enforcement (NRC-OIE) of those nonconformances identified in the design and construction of nuclear power plants which have been determined to be "significant conditions." This procedure also applies to the reporting of those conditions which have been determined to be reportable to NRC-OIE).
(Criterion III) EN DES-QAP-2.1	- Design Review (This procedure defines design reviews within EN DES which are performed during

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TABLE 17.1A-2 (Sheet 7)

two phases. Phase I comprises the preliminary design, definition of plant and equipment parameters, establishing basic design criteria, identification of regulatory requirements, codes, and standards and preparation and submittal of the Preliminary Safety Analysis Report. Phase II is the detail design effort of preparing construction documents and drawings and procurement of equipment not completed during Phase I.)

(Criterion IV)
EN DES-QAP-3.1

- Procurement Quality Assurance

(This procedure delineates the procedures used by EN DES to procure safety-related items.)

(Criterion XVIII)
EN DES-QAP-3.2

- Vendor Quality Assurance Audit Program

[This procedure establishes a EN DES program of quality assurance audits of vendors in compliance with the requirements of Appendix B 10CFR50 and NRC Regulatory Guide 1.28 (ANSI-N45.2).]

(Criterion VII)
EN DES-QAP-4.1

- Shop Surveillance of Pressure Containing Components - Westinghouse Procured Items (Except RPV)

(This procedure defines the general methods and requirements for shop surveillance by TVA inspectors of pressure containing components which are procured by Westinghouse for the Sequoyah and Watts Bar Nuclear Plants and which are within the scope of the Quality Assurance Plan.)

TABLE 17.1A-2 (Sheet 8) 4

(Criterion VII)
EN DES-QAP-
4.2

- Surveillance of NSSS Vendor Inspection and Test Activities

(These procedures define the general methods and requirements for shop surveillance by TVA inspectors of primary system components which are procured by the NSSS (Nuclear Steam Supply System) vendor for a TVA nuclear plant and which could prevent or mitigate the consequences of a postulated accident that could cause undue risk to the health and safety of the public.

These procedures are also guides and contain minimum requirements to be used by the TVA inspectors to provide necessary assurance to TVA that the NSSS vendor and the third party inspection agency (where applicable) are performing shop surveillance as described in the NSSS vendor's quality assurance plan and as required by the purchase order.)

(Criterion VII)
EN DES-QAP-
4.3

- Shop Surveillance for Pressure Containing Systems and Components (TVA Procured)

(This procedure defines the general methods and requirements for shop surveillance of safety-related pressure containing components which are procured by TVA for nuclear plants.)

(Criterion VII)
EN DES-QAP-
4.4

- Shop Surveillance of Reactor Pressure Vessels

(This procedure defines the general methods and requirements for shop surveillance by TVA inspectors of reactor pressure vessels which are procured by the NSSS vendor.)

TABLE 17.1A-2 (Sheet 9) 4

(This procedure is a guide and contains minimum requirements to be used by the TVA inspectors to provide necessary assurance to TVA that the NSSS vendor and the third party inspection agency are performing shop surveillance as required by the Code.)

(Criterion VII)
EN DES-QAP-4.5

- Shop Surveillance for Steel Containment Vessels

(This procedure defines the methods and requirements for shop surveillance of the structural steel containment vessels for all nuclear plants.)

(This procedure elaborates on the requirements of the Quality Assurance Plan and is a guide to be used by the Inspection and Testing Branch for surveillance at vendor plants where any component of each vessel is being manufactured.)

(Criterion VII)
EN DES-QAP-4.6

- Shop Surveillance for Heavy Equipment Items

(This procedure assists the TVA Inspector in his surveillance of heavy equipment items at contractors' plants.)

(Criterion VII)
EN DES-QAP-4.7

- Shop Surveillance for Instrumentation and Control Components for TVA Procured Items

(This procedure defines the general methods and requirements for shop surveillance of instruments and control components or systems for nuclear plants which are within the scope of the TVA Quality Assurance Plan. This procedure is a guide to be used by the inspector for his surveillance of vendor plants where applicable components or systems are being manufactured or assembled.)

TABLE 17.1A-2 (Sheet 10)

(Criterion XVII) EN DES-QAP- 5.1	- Preparation, Review, and Distribution of Inspection Reports (This procedure outlines the more significant considerations and actions required of the inspector in preparing a comprehensive inspection report for nuclear plant materials and equipment requiring quality assurance documentation.)
(Criterion VII) EN DES-QAP- 5.2	- Release of Material and Equipment from Contractors' Shops (This procedure defines the method for release of material and equipment from contractors' shops subject to source inspection. Provisions apply equally to the contractors' suppliers.)
(Criterion XV) EN DES-QAP- 5.3	- Handling of Contractor Nonconformances and Deviations (This procedure defines the method for handling deviations and nonconformances in vendors' and subvendors' plants to assure that they are identified and reported and that adequate corrective action is taken.)
(Criterion XVII) EN DES-QAP- 5.4	- Quality Compliance Records and Records Control for TVA Procured Items (This procedure defines the methods by which records are controlled for TVA procured material which must meet the requirements of the Quality Assurance Plan as contained in Safety Analysis Reports.)

TABLE 17.1A-2 (Sheet 11)

(Criterion XVII)
EN DES-QAP-
5.5

- Quality Compliance Records and Records Control for NSSS Vendor Procured Material

(This procedure defines the methods by which records are handled for safety-related items furnished by the Nuclear Steam Supply Systems vendor. This procedure applies to all records required to furnish proof of compliance with procurement documents. This procedure applies to all TVA nuclear plants except Browns Ferry.)

SECTION D - DIVISION OF CONSTRUCTION

QUALITY ASSURANCE PROCEDURES

(Criterion I)
CONST-QAP-
1.01

- Division of Construction Quality
- Assurance/Control Organization

(This procedure delineates the authority, responsibilities, and qualifications of the management structure charged with the development and implementation of the Division of Construction Quality Assurance Program. The procedure further defines channels of communication between interfacing QA organizations. The procedure applies only to Hartsville Nuclear Plant.)

(Criterion II)
CONST-QAP-2.01

- CONST Quality Assurance Program Description

(This procedure describes the Division of Construction Quality Assurance Program and how the Program is structured to satisfy Appendix B to 10CFR50 and the Office of Engineering Design and Construction Quality Assurance Program. The Division of

Construction Quality Assurance Program applies to those construction quality-affecting activities involving those structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to

TABLE 17.1A-2 (Sheet 12) |4

the health and safety of the public. The procedure applies to all TVA Nuclear Plants except Browns Ferry.)

(Criterion II) CONST-QAP-2.02.01

- CONST Quality Assurance Program Description - HNP

(This procedure lists the "Quality Assurance Items" of those structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. The procedure applies only to Hartsville Nuclear Plant.)

(Criterion II) CONST-QAP-2.03

- Conformance to Regulatory Guides and Standards

[This procedure describes the functions performed by the Division of Construction (CONST) in the review of Division 1 Nuclear Regulatory Commission (NRC) Regulatory Guides (RG's) and the establishment of the CONST position concerning the degree of conformance of each TVA nuclear power plant to any applicable RG. The procedure further defines the obligations of CONST in complying with the Office of Engineering Design and Construction (OEDC) positions as contained in the controlled sets of RG's maintained by the Division of Engineering Design (EN DES) Nuclear Licensing Section (NLS). This procedure applies to all TVA nuclear plants except Browns Ferry.]

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TABLE 17.1A-2 (Sheet 13)

(Criterion II)
CONST-QAP-2.04

- Pre-PSAR Quality Assurance Activities

(This procedure delineates the quality assurance activities performed by the Division of Construction (CONST) prior to the submittal of the Preliminary Safety Analysis Report (PSAR) to the Nuclear Regulatory Commission (NRC) for proposed TVA nuclear power plants. Procedures that govern these quality assurance activities are identified in this procedure. The procedure applies only to pre-PSAR activities performed by CONST elements such as early requisitioning of both reinforcing steel and site soil investigations. This procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion II)
CONST-QAP-2.05.01

- Classification of Nondestructive Examination (NDE) Personnel

(This procedure defines the various levels of classification for nondestructive examination personnel. It applies to those CONST personnel engaged in performing nondestructive examination during the construction phase of TVA Nuclear Plants except Browns Ferry.)

(Criterion II)
CONST-QAP-2.05.02

- Qualification, Training, and Certification Requirements for Liquid Penetrant Nondestructive Examination Personnel

(This procedure defines the qualification and training requirements for Liquid Penetrant Examination personnel certification. The procedure applies to all TVA nuclear plants except Browns Ferry.)

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TABLE 17.1A-2 (Sheet 14)

(Criterion II) CONST-QAP-2.05.03	- Qualification, Training, and Certification Requirements for Magnetic Particle Nondestructive Examination Personnel (This procedure defines the qualification and training requirements for Magnetic Particle Nondestructive Examination personnel certification. The procedure applies to all TVA nuclear plants except Browns Ferry.)
(Criterion II) CONST-QAP-2.05.04	- Qualification, Training, and Certification Requirements for Radiographic Nondestructive Examination Personnel (This procedure defines the qualification requirements for Radiographic Nondestructive Examination personnel certification. The procedure applies to all TVA Nuclear Plants except Browns Ferry.)
10CFR50 (Criterion II) CONST-QAP-2.05.05	- Qualification, Training, and Certification Requirements for Ultrasonic Nondestructive Examination Personnel (This procedure defines the qualification and training requirements for Ultrasonic Nondestructive personnel certification. The procedure applies to all TVA nuclear plants except Browns Ferry.)
(Criterion II) CONST-QAP- 2.07	- Qualification of Inspection, Examination, and Testing *Personnel (This procedure defines the qualification and training program for certifying Inspection, Examination, and Testing Personnel. The procedure is applicable to those personnel performing quality control functions during the construction phase of TVA nuclear plants except for Browns Ferry.)

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TABLE 17.1A-2 (Sheet 15)

(Criterion V)
CONST-QAP-2.08

- Qualification of Audit Personnel

(This procedure defines the system by which personnel performing Quality Assurance Audits shall be qualified, certified, and recertified. The procedure is applicable to personnel performing audits within their respective responsibilities of the Quality Assurance Program and to the Division Auditor Examiner appointed certify auditor qualificatons. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion II)
CONST-QAP-2.09

- Qualification of Welders and Welding Operators

(This procedure assigns the responsibility and defines the sequence of actions to be accomplished in the qualification, certification, and recertification of welders and welding operators. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion II)
CONST-QAP-2.10

- Qualification of Cadweld Splicers

(This procedure assigns the responsibilities and defines the sequence of actions to be accomplished in the qualification or requalification of Cadweld splicers utilizing the Cadweld process on Category I concrete structures. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion II)
CONST-QAP-2.11

- Qualification of Protective Coating Applicators

(This procedure assigns the responsibilities and defines the sequence of actions to be accomplished in the qualification or requalification of Protective Coating Applicators for Class I service levels. The procedure applies to all TVA nuclear plants except Browns Ferry.)

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TABLE 17.1A-2 (Sheet 16)

(Criterion III)
CONST-QAP-3.01

- Field Change Requests

(This procedure defines the system by which Field Change Requests (FCR's) to the Division of Engineering Design (EN DES) are prepared, controlled, and documented. This procedure is applicable to TVA and manufacturers' drawings which have been approved by EN DES and are used in the construction of a nuclear power plant. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion VI)
CONST-QAP-3.02

- Functional Configuration Drawing Control for Nuclear Plants

(This procedure assigns the responsibilities and defines the program for the systematic control of functional configuration drawings. The procedure applies to the Control of Functional Configuration Control (FCC) drawings which represent the as-constructed status of nuclear plant systems. It defines the responsibilities of the Construction Engineer's Organization (CEO) in the development of the Systems Drawing Certification List (SDCL) and control of FCC drawings from a time at or just before tentative transfer of a system until capitalization accounts are closed. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion IV)
CONST-QAP-4.01

- Procurement Document Control

(This procedure assigns the responsibility and defines the sequence of actions to be accomplished by the Division of Construction (CONST) in the preparation, review, approval, and control of procurement documents.

This procedure applies to all procurement initiated by CONST for any of the following categories of items:

TABLE 17.1A-2 (Sheet 17) | 4

A. Permanent plant material and equipment,
B. Contractor services, and
C. Controlled construction material.

The requirements of this procedure apply to initial or replacement purchases by CONST. The initial preparation of Indefinite Quantity Term Contracts (IQT) and requests for delivery on IQT Contracts are within the scope of this procedure. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion V)
CONST-QAP-5.01

- Quality Assurance Procedures

(This procedure defines the system for uniform preparation, revision, review, and approval of CONST Quality Assurance Procedure (CONST-QAP). The procedure is applicable to all CONST Quality Assurance Procedures (CONST-QAP's) prepared for use by the Division of Construction. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion V)
CONST-QAP--5.02

- Site Quality Control Procedures

(This procedure assigns the responsibility and defines the sequence of actions to be accomplsihed in the preparation, review, approval, revision, and control of Site Quality Control Procedures (QCP's). This procedure applies to QCP's prepared by the Division of Construction (CONST) for use at nuclear sites. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion V)
CONST-QAP-5.03

- SMEL Quality Control Procedures

(This procedure assigns the responsibility and defines the sequence of actions to be accomplsihed in the preparation, review, approval, and control of quality control procedures

TABLE 17.1A-2 (Sheet 18) | 4

for use at the Singleton Materials Engineering Laboratory (SMEL QCP's). This procedure applies to QCP's prepared by the SMEL).

(Criterion VI)
CONST-QAP-6.01

- Document Control

(This procedure assigns the responsibility and specifies the quality assurance requirements for the control of Engineering Documents at the construction sites to assure the use of current information at the location where the activity is to be performed. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion VII)
CONST-QAP-7.01

- Receiving Materials, Parts, and Components

(This procedure establishes the receiving program for supplier-provided materials, components, parts, and appurtenances (items). This procedure applies to all items within the scope of the quality assurance program received at the project. Contractor items within the scope of the quality assurance program are handled in accordance with contractor procedures approved by the Division of Engineering Design. This procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion VII)
CONST-QAP-7.02

- Surveillance of Site Contractors

(This procedure assigns the responsibilities and identifies the program requirements for surveillance of quality control activities on quality assurance items at the construction site. The procedure applies to all TVA nuclear plants except Browns Ferry.)

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TABLE 17.1A-2 (Sheet 19)

(Criterion VII)
CONST-QAP-7.03)

- Evaluation and Selection of Suppliers

(This procedure assigns the responsibility and defines the sequence of actions to be accomplished for the evaluation and selection of suppliers furnishing quality assurance items who have not been previously identified by the Division of Engineering Design. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion VII)
CONST-QAP-7.04

- Transfer of Materials, Parts, and Components

(This procedure assigns the responsibility and defines the sequence of actions to be accomplished when transferring quality assurance items within the scope of the Quality Assurance Program from one project (nuclear site) to another, or from another TVA division to the construction project (nuclear site) during construction. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion VIII)
CONST-QAP-
8.01

- Identification and Marking of Materials, Parts, and Components

(This procedure assigns the responsibility and defines the quality assurance requirements for the identification and marking of materials, parts, and components (items) at nuclear power plants.
This procedure applies to the identification and marking of TVA-purchased quality assurance items, including partially fabricated subassemblies at nuclear plants. It does not apply to supplier-purchased items which are identified and marked in accordance with Division of Engineering Design (EN DES) requirements and to welding materials which are identified and marked in accordance with CONST-QAP-8.03. The procedure applies to all TVA nuclear plants except

TABLE 17.1A-2 (Sheet 20) | 4

Browns Ferry.)

(Criterion VIII)
CONST-QAP-8.02

- Control of Materials, Parts, and Components

(This procedure assigns the responsibility and defines the program for the systematic control of materials, parts, and components (items) at nuclear plants. The procedure applies to the requisition and return of items covered by the Division of Construction (CONST) Quality Assurance (QA) Program at nuclear plants. It does not apply to contractor-installed items which are controlled in accordance with contractor procedures approved by the Division of Engineering Design (EN DES), and to the control of welding materials and the control of materials during field fabrication which are controlled in accordance with the requirements of CONST-QAP-8.03 and CONST-QAP-8.04 respectively. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion VIII)
CONST-QAP-8.03

- Control of Welding Material

(This procedure assigns the responsibility and defines the quality assurance requirements for the control of welding material. It applies to the receipt, identification, storage, issue, drying, and redake requirements of welding material and, if applicable, to the use of portable ovens for onsite fabrication and erection of permanent material. The procedure does not apply to site-contractor-controlled welding material which is controlled in accordance with contractor procedures approved by the Division of Engineering Design. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion IX)
CONST-QAP-9.01

- Assignment of Special Processes

(This procedure defines the responsi-

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TABLE 17.1A-2 (Sheet 21)

bility and methods for assignment of design specifications governing special processes. The procedure applies to a welding, heat treatment, nondestructive examination, and allied field fabrication operations required during the construction of nuclear power plants. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion IX)
CONST-QAP-9.02

- Qualification of Welding Procedures

(This procedure assigns the responsibility and defines the quality assurance requirements for the qualification of welding procedures of the following: Section IX of the ASME Code or AWS Code D1.1. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion IX)
CONST-QAP-9.03

- Qualification of Cadweld Splicing Procedure

(This procedure assigns the responsibility and defines the sequence of action to be accomplished in the qualification or requalification of Cadweld splicing procedures for splicing concrete reinforcing steel using the cadweld process. The procedure applies to all TVA nuclear plants except Browns Ferry.)

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TABLE 17.1A-2 (Sheet 22)

(Criterion IX) CONST-QAP-9.04	- Release for Drilling, Chipping, Cutting of, or Welding to Permanent Structures or Components (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 Division of Engineering Design (EN DES) or contractor drawings. The procedure applies to permanent concrete and steel features of safety-related items. The procedure applies to all TVA nuclear plants except Browns Ferry.)
(Criterion IX) CONST-QAP-9.05	- Nondestructive Examination (This procedure establishes the general requirements for Nondestructive Examination performed in the construction of nuclear power plants. The procedure applies to all TVA nuclear plants except Browns Ferry.)
(Criterion X) CONST-QAP-10.01	- Inspection (This procedure assigns the responsibility and specifies the various characteristics governing inspection (quality control) activities. The procedure applies to those inspection activities, excluding nondestructive examinations, required to verify conformance with the documented instructions, procedures, and drawings for accomplishing activities affecting quality during construction. The procedure applies to all TVA nuclear plants except Browns Ferry.)
(Criterion XI) CONST-QAP-11.01	- Test Control (This procedure assigns the responsibility and specifies the various characteristics governing test

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TABLE 17.1A-2 (Sheet 23)

(quality control) activities. The procedure applies to those tests performed during construction required to demonstrate that systems, components, and structures will perform satisfactorily in service. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion XII)
CONST-QAP-12.01

- Control of Measuring and Test Equipment

(This procedure assigns the responsibility and defines the requirements for procedures which describe the calibration technique and frequency, and the maintenance and control of all tools, gauges, instruments, and other measuring and testing devices used at a construction site.

This procedure applies to measuring and test equipment such as instruments, tools, gauges, fixtures, and nondestructive test equipment used during the acceptance and documentation activities of safety-related structures, components, or systems of a nuclear power plant.

It also includes requirements for reference and transfer standards, outside calibration laboratories, and capabilities of personnel using or handling measuring and test equipment. The procedure applies to all TVA nuclear plants except Browns Ferry.)

TABLE 17.1A-2 (Sheet 24) | 4

(Criterion XIII)
CONST-QAP-13.01

- Storage and Preservation of Materials, Components, and Systems

(This describes the quality assurance requirements necessary for inclusion in the quality control procedure for storage and preservation of materials, components, and systems to preclude damage, loss, or deterioration by environmental conditions. Contractor material and equipment within the scope of the quality assurance program is handled in accordance with contractor's procedures which have been approved by the Division of Engineering Design. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion XIII)
CONST-QAP-13.02

- Handling of Nuclear Components

(This procedure defines the CONST quality assurance requirements for handling nuclear safety-related components during fabrication, preventive maintenance, inspection, and usage at the construction site. The procedure applies to testing and inspection of major nuclear safety-related comnents that require special handling instructions due to their weight, size, susceptibility to shock damage, high nil ductility transition temperatures, or any other conditions that warrant special instructions. The procedure applies to all TVA nuclear plants Browns Ferry.)

(Criterion XIV)
CONST-QAP-14.01

- Inspection and Test Status

(This procedure assigns the responsibility and defines the requirements to indicate current installation, inspection, and test status of quality assurance items.

This procedure applies to those inspections and tests performed on quality assurance structures, systems, and components (items) during tne construction phase of nuclear power plants. The procedure applies to all TVA nuclear plants except Browns Ferry.)

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TABLE 17.1A-2 (Sheet 25)

(Criterion XV)
CONST-QAP-15.01

- Control of Nonconforming Items

(This procedure assigns the responsibility and defines the sequence of actions for the systematic control (identification, segregation, and disposition) of nonconforming items and verification of corrective action to resolve nonconformances. The procedure applies to all activities, materials, structures, components, or systems, (items) within the scope of the Division of Construction (CONST) Quality Assurance Program. The procedure applies to all TVA nuclear plants except Browns Ferry.)

(Criterion XVI)
CONST-QAP-16.02

- NRC-OIE Replies

(This procedure defines the system of control by which responses to Nuclear Regulatory Commission - Office of Inspection and Enforcement (NRC-OIE) Bulletins and NRC-OIE Inspection Report "Enforcement Items" are prepared by responsible elements of CONST and transmitted to the appropriate elements of EN DES. The procedure applies to all formal requests for information made by the Design Project Managers to the Construction Project Managers for use in responding to NRC-OIE Bulletins and NRC-OIE Inspection Reports. The procedure applies to all TVA nuclear plants except Browns Ferry.)

TABLE 17.1A-2 (Sheet 26) 4

(Criterion XVII)
CONST-QAP-17.01 - Quality Assurance Records

(This procedure assigns the responsibility and defines the program for the identification, retrievability, and retention of quality assurance records. The procedure applies to quality assurance records generated by or in the possession of the Division of Construction and specifies the program for the preparation, collection, filing, storage, maintenance, and disposition of quality assurance records during the construction phases of nuclear plants. The procedure applies to all nuclear plants except browns Ferry.)

(Criterion XVIII)
CONST-QAP-18.01 - Auditing Construction Activities

(This procedure describes the process for conducting comprehensive audits of construction activity to verify that applicable elements of the quality assurance program have been developed, documented, and effectively implemented in accordance with specified requirements. This procedure applies to the auditing of those CONST (internal), contracting, and/or service (external) organizations at the construction site that perform safety-related activities. When directed by the Chief, QA Staff, CONST, this procedure applies to the auditing of offsite organizations that support construction activities. This procedure also applies to audit deficiencies at the construction site for which EN DES has responsibility and provides to reporting these deficiencies to the Chief, QA Staff, CONST, for his resolution in coordination with the Chief, QA Staff, EN DES. The procedure applies to all TVA nuclear plants except Browns Ferry.)

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TABLE 17.1A-2 (Sheet 27)

SECTION E - DIVISION OF CONSTRUCTION

QUALITY CONTROL PROCEDURES

(Criterion XII)
CONST-QCP-5.1 - Calibration of Laboratory Measuring and Test Equipment

(This procedure describes the methods to be utilized to ensure that the accuracy of laboratory measuring and test equipment is maintained.)

(Criterion IX)
CONST-QCP-5.2 - Quality Assurance Requirements for Concrete Mixture Proportioning

(This procedure describes the responsibility of the Materials Engineering Laboratory to provide the necessary resources in terms of personnel, equipment, and services to implement mixture design programs.)

(Criterion X)
CONST-QCP-5.3 - Quality Assurance Requirements for Soil Investigation Prior to Construction

(This procedure describes the responsibility of the Materials Engineering Laboratory to provide the necessary resources in terms of personnel, equipment, and services in order to implement these requirements in compliance with requests issued by the Division of Engineering Design.)

(Criterion XI)
CONST-QCP-5.4 - Quality Assurance Requirements for Laboratory Testing of Protective Coatings

(This procedure specifies methods and procedures for the laboratory inspection, testing, and verification of protective coating materials applied surfaces for nuclear facilities of Class I and II Service Levels.)

(Criterion XI)
CONST-QCP-5.5 - Quality Assurance Requirements for Mechanical Testing of Metals

(This procedure specifies the methods and procedures for laboratory testing, inspection, and verification of metals. The procedure applies to all

TABLE 17.1A-2 (Sheet 28) 4

TVA nuclear plants except Browns Ferry.)

(Criterion VI)
CONST-QAP-5.6 - Quality Assurance Requirements for Materials Review Reports

(This procedure assigns the responsibility and defines the sequence of actions to be accomplished in the preparation, review, and control of Materials Review Reports of all materials tested by Singleton Materials Engineering Laboratory. The procedure applies to all TVA nuclear plants except Browns Ferry.)

17.2 QUALITY ASSURANCE PROGRAM FOR STATION OPERATION

The Manager of Power has authorized the establishment of a comprehensive program for quality assurance during the operating phase of TVA's nuclear power plants. This program shall be applied to any activity affecting the quality of those items of TVA's nuclear plants which prevent or mitigate the consequences of postulated accidents which could cause undue risk to public health and safety. The operational Quality Assurance Program as described in this section relates to those activities conducted by the Office of Power. These activities include:

a. Procurement of nuclear fuel and fuel-related components, | 4
b. Turnover of the plant equipment and systems from the construction organization,
c. Preoperational testing,
d. Startup testing,
e. Operation, maintenance, repair, inspection, testing, and refueling, and
f. Distribution and control of safety analysis reports.

The Office of Power Quality Assurance Program complies with the NRC regulatory requirements in 10 CFR 50, Appendix B, and the NRC guidance provided by other regulatory documents described in Table 17.2-5.

17.2.1 Organization

The organization chart in Figure 17.2-1 shows the Office of Power organizations having responsibilities in the implementation of the quality assurance program for the operations phase of nuclear power plants. TVA's organization is discussed in section 17.0.1. | 4

17.2.1.1 Office of Power. The Office of Power has overall responsibility for the TVA power program, including power system planning, plant and site selection, plant and system operation, and transmission system design and construction. In the case of nuclear plants, it has overall responsibility of coordinating the safety analyses and licensing arrangements and for preparing and submitting safety analysis reports. Correspondence with NRC and with the nuclear steam supply system (NSSS) vendor relating to licensing is handled through the Office of Power. The role of the "applicant" is filled by the Office of Power. | 4

Within the Office of Power there are full-time quality assurance staffs at several organizational levels. These quality assurance personnel have organizational freedom to work horizontally to identify problems, provide solutions, and verify implementation of solutions. They report vertically to appropriate management on these activities. Figure 17.2-1 is an organization chart showing these lines for operation.

17.2.1.1.1 Manager of Power. The Manager of Power has overall responsibility for quality assurance during startup and operations of TVA's nuclear plants and for establishing quality policies, goals, and objectives for the operations phase of TVA's nuclear plants.

An excerpt from the Manager of Power's policy memorandum which is contained in the Office of Power Quality Assurance Manual is given below:

"The quality assurance program has been documented in the Office of Power Quality Assurance Manual. This document delineates the policy and procedures upon which the program is based and the responsibilities of the participating organizations. The controls established by this manual have my unqualified support." 4

17.2.1.1.2 Assistant Manager of Power. The Assistant Manager of Power has administrative responsibilities for the Quality Assurance and Audit Staff and the Regulatory Staff.

17.2.1.1.3 Manager, Nuclear Regulation and Safety. The Office of Power Quality Assurance Program is implemented under the direction of the Manager, Nuclear Regulation and Safety. This responsibility is carried out through the Office of Power Quality Assurance Manager and the Directors of the various TVA divisions.

The Manager, Nuclear Regulation and Safety delegates to the Quality Assurance Manager the responsibility to audit and evaluate the operational quality assurance program against the criteria of Appendix B to 10 CFR 50 and licensing commitments. It is the responsibility of the Quality Assurance Manager to document and report to the Manager, Nuclear Regulation and Safety any deficiencies found in implementation of the program and to verify the effectiveness of resultant corrective actions. Figure 17.2-3 shows the quality assurance lines of audit.

17.2.1.1.4 Quality Assurance and Audit Staff. Figure 17.2-4 shows the organization of the Office of Power Quality Assurance and Audit Staff. Functions and responsibilities of the Quality Assurance Manager are as follows: | 4

a. Reports to the Manager, Nuclear Regulation and Safety and acts as his representative on all quality assurance matters. In the absence of the Manager, Nuclear Regulation and Safety, or when quality problems cannot be resolved to the satisfaction of the Quality Assurance Manager, he shall report directly to the Manager of Power. | 4

b. Coordinates with the OEDC Quality Assurance Manager to assure an effective interface between the quality assurance programs of OEDC and the Office of Power in meeting the requirements for plant operation.

c. Supervises and directs the Quality Assurance and Audit Staff (QA&AS) activities in the Office of Power.

d. Is responsible for the development of an adequate quality assurance program to meet the requirements of the Office of Power and to meet the criteria established in Appendix B to 10 CFR 50.

e. Is responsible, as the quality assurance representative of the Office of Power, to assure the implementation, measure the effectiveness, and monitor the maintenance of the Office of Power Quality Assurance Program and shall, through periodic written and oral reports, keep the Manager, Nuclear Regulation and Safety apprised of the program status. | 4

f. Provides the Manager, Nuclear Regulation and Safety with recommendations relative to the adequacy of the quality assurance organization in terms of numbers, qualifications, and efficiency through reports and periodic briefings.

g. Directs the execution by his staff of quality assurance program audits of operating nuclear plants, support activities, subcontractors, and suppliers, including identification of deficiencies and followup to assure effective corrective action.

h. Monitors regulatory compliance actions and commitments, maintains records, and keeps the Manager, Nuclear Regulation and Safety informed regarding status. | 4

i. Reports on significant safety-related problems and the quality assurance program status.

j. Develops, coordinates, and arranges quality assurance training programs and seminars for central office QA personnel in the Office of Power. 4

k. Develops, coordinates, and maintains the Office of Power Quality Assurance Manual.

l. Represents the Office of Power on internal and external quality assurance committees.

m. Provides representatives in each operating nuclear plant to evaluate implementation and effectiveness of plant quality assurance programs.

n. Reviews and concurs with Nuclear Fuels QA Manual procedures and NUC PR Operational QA Manual (OQAM) procedures. 4

o. Develops and approves Section 17.2 of TVA-TR75-1A (QA Topical Report).

When quality assurance problems occur, the Quality Assurance Manager has the responsibility to recommend corrective action, which can include termination of an activity through appropriate managerial action. Such action will be arranged through the appropriate administrative channels.

The Quality Assurance Manager is required to be a graduate engineer or equivalent with at least five years' experience in nuclear power plant design, construction, operation, or quality assurance, or combination thereof. Experience in the development, implementation, and evaluation of quality assurance programs is also required. He will be assisted in carrying out his responsibilities by an Assistant Quality Assurance Manager and a staff of quality assurance supervisors, engineers, evaluators, and in-plant coordinators.

The Assistant Quality Assurance Manager is required to be a graduate engineer or equivalent with extensive knowledge and understanding of quality assurance requirements, practices, and procedures for nuclear plants.

Quality Assurance and Audit Staff Supervisors

1. Quality Audit Section

The Quality Audit Section shall be responsible for the planning, conducting, reporting, and followup of audits of the Office of Power Quality Assurance Program. For activities performed by other TVA divisions where interfaces exist, this may be accomplished through an overview of or participation in their internal audit program. The Quality Audit Section is also responsible for conducting audits of vendors and contractors when performing activities "onsite" at TVA nuclear plants. 4

The Supervisor of the Quality Audit Section is required to be a graduate engineer or equivalent with at least 5 years of experience in power plant design, construction or operation, including several years of quality assurance related work. 2

2. Quality Planning and Engineering Section

The Quality Planning and Engineering Section shall be responsible for:

a. Coordinating, maintaining, and distributing the TVA Office of Power Quality Assurance Manual;

b. Providing specialist advice to Office of Power organizations and audit teams regarding quality assurance-related codes, standards, procedures, and regulations;

c. Providing audit team member expertise in technical specialty areas;

d. Providing quality assurance training and indoctrination as required by this quality assurance program; and 4

e. Reviewing quality assurance plans, procedures, and manuals as required by this quality assurance program.

The Supervisor of the Quality Planning and Engineering Section is required to be a graduate engineer or equivalent with at least 5 years experience in power plant design, construction or operation, including several years of quality assurance related work.

3. In-Plant Quality Assurance Coordinators

The in-plant quality assurance coordinators shall be resident at the nuclear plants, reporting independent of plant supervision to the Quality Assurance Manager. Their primary responsibility is that of monitoring the plant quality assurance program, with an independent line of communication to top management. Other responsibilities include:

a. Representing the Quality Assurance Manager in quality assurance-related matters at the plants;

b. Monitoring NRC-OIE inspections;

c. Monitoring corrective actions and commitments resulting from reportable occurrences, regulatory violations, and quality assurance audits.

d. Submitting regular reports on status of plant quality assurance programs to the Quality Assurance Manager.

In reporting quality problems to plant management, the in-plant coordinator may recommend corrective action which can include termination of an activity. Should plant management fail to follow the recommendations of the coordinator, the coordinator shall report to the Quality Assurance Manager.

In-plant quality assurance coordinators are required to be graduate engineers or equivalent with several years of experience in nuclear power plant work and experience or training in quality assurance.

17.2.1.1.5 Regulatory Staff (RS)

The Regulatory Staff has the following functions and responsibilities:

(1) Obtains construction permits, nuclear material and fuel licenses, reload licenses, special project licenses, and operating licenses for nuclear facilities.

(2) Coordinates the preparation of those licensing documents supporting the license applications described in item (1), including safety analysis reports, technical specifications, license applications and amendments, etc.

(3) Performs technical reviews for compliance with regulatory requirements of those licensing documents supporting the license applications described in item (1).

(4) Acts as liaison with the NRC and coordinates representation in meetings with the NRC, licensing hearings, public meetings, and other discussions of proposed licensing actions with other organizations participating as required.

(5) Coordinates for the Office of Power correspondence related to compliance with regulatory requirements or in the case of operating nuclear generating facilities, reviews such correspondence to ensure compliance requirements are met.

17.2.1.1.6 Manager of Power Engineering. The Manager of Power Engineering supervises the activities of the Division of Fuels. He reports directly to the Manager of Power as shown on Figure 17.2-1.

17.2.1.1.7 Division of Fuels (FUELS). The Division of Fuels plans the supply of fuel resources to serve TVA's power demand forecasts. It defines requirements for nuclear fuels and fuel-related components, participates with the Division of Purchasing in preparing and negotiating contracts for the procurement and processing of nuclear fuel materials and fuel-related component (i.e., all the components of the fuel and control rod assemblies and the fuel channels) 4

Nuclear Fuel Branch (NFB)

The Nuclear Fuel Branch of the Division of Fuels is responsible for:

(1) Developing and maintaining the Nuclear Fuel Quality Assurance Program,

(2) Reviewing changes to fuel designs, and

(3) Providing technical management of nuclear fuel including review or preparation of core and fuel specifications, surveillance of related vendor quality assurance programs and fabrication facilities, and evaluation of core and fuel performance.

(4) Qualifying vendors for supplying nuclear fuel and fuel-related components. 4

The status and adequacy of the Nuclear Fuel Quality Assurance Program shall be reported to the Director of Fuels and the Quality Assurance Manager through surveillance reports written at the completion of each surveillance trip. 4

17.2.1.1.8 Manager, Power Operations. The Manager, Power Operations, supervises the Division of Nuclear Power, the Maintenance Coordinator, and the Project Engineering Staff. He reports directly to the Manager of Power as shown on Figure 17.2-1.

17.2.1.1.9 Division of Nuclear Power (NUC PR). The Division of Nuclear Power operates and maintains all TVA nuclear electric generating plants. 4

Director of Nuclear Power

The Director of Nuclear Power is responsible for quality assurance in plant operation and maintenance and determines the area of responsibility assigned to each branch in the division. He is responsible for maintaining the Operational Quality Assurance Manual for each operating plant. He assures that responsibilities for quality assurance are clearly defined and understood by the respective branch chiefs and that each organization is adequate to accomplish its task. He is informed of significant problems or occurrences relating to safety or quality assurance and participates directly in their resolution as required.

Assistant Director of Nuclear Power (Operations)

The Assistant Director (Operations) is responsible for the overall operation of the nuclear generating plants and the nuclear training facilities within the TVA power system. He is responsible for ensuring that the planning, organization, and control of division activities related to operation of the nuclear generating plants is adequate to provide plant safety. He provides direct supervision of the Nuclear Plant Superintendents, the Nuclear Training Branch, the Nuclear Operations Staff, and Preoperational Test Staff. 4

Assistant Director of Nuclear Power (Maintenance and Engineering Services)

The Assistant Director (Maintenance and Engineering Services) is responsible for the overall planning, organization, control, and implementation of division support activities related to

nuclear generating plant maintenance, engineering, and outage management. He provides direct supervision of the Nuclear Maintenance Branch, the Controls and Test Branch, the Reactor Engineering Branch, and the Outage Management Branch.

Nuclear Maintenance Branch

The Nuclear Maintenance Branch develops programs, standards, and procedures for the maintenance of electrical and mechanical nuclear plant equipment. The branch provides technical assistance and guidance within the division on difficult maintenance engineering problems.

Outage Management Branch

The Outage Management Branch is responsible for planning, scheduling, and implementing refueling outages, modifications, and forced unit or equipment outages. Other maintenance, testing, or inspections requiring expertise or resources beyond those contained within the normal plant staff may be assigned to the Outage Management Branch. 4

Reactor Engineering Branch

The Reactor Engineering Branch assures the adequacy of engineering plans and methods used in the operation of TVA's reactors and reactor-related systems. The branch develops requirements for fuel accountability and has responsibility for TVA's low-level radioactive waste management program. The branch coordinates the division's safety analysis report review; performs operational safety analyses; and evaluates the adequacy of design and operation of safety-related systems. The Reactor Engineering Branch provides safety-related systems engineering expertise to the plants.

Controls and Test Branch

The Controls and Test Branch develops engineering standards and provides a variety of mechanical, chemical, controls, instrumentation, environmental, and metallurgical engineering services for the division. The branch recommends desirable changes indicated by engineering studies, furnishes technical assistance, and acts in an advisory capacity within the division on the more difficult systems engineering problems.

Nuclear Training Branch

The Nuclear Training Branch is responsible for the development, implementation, and administration of division training activities. The branch is responsible for interpretation of TVA and outside regulatory agency requirements pertaining to training and for ensuring that division training programs are in compliance with these requirements.

The Branch is also responsible for the preparation and updating of operational QA procedures, division procedures, technical specifications, and final safety analysis reports in the area of training. Responsible for the review of sections of the preliminary and final safety analysis reports in the area of training.

Preoperational Test Staff

The Preoperational Test Staff has overall responsibility within the division for the planning and implementation of nuclear plant preoperational test programs. The Staff represents the division in working with other TVA organizations and outside regulatory agencies.

Nuclear Operations Staff

The Nuclear Operations Staff provides division-level support and expertise in the area of operations. In cooperation with other appropriate organizations, it jointly administers the nuclear student generating plant operator training program and associated examinations. In meeting these responsibilities the staff:

1. provides assistance to plants in development and improvement of operating methods and procedures;

2. provides assistance and coordination for matters concerning nuclear plant operation;

3. assists in preparation and revising safety analysis reports and technical specifications for existing and future plants;

4. reviews plant operating reports and analyzes license violations, unit trips, and nonroutine plant problems;

5. attends Nuclear Experience Review Panel and investigates selected items for the panel;

6. reviews and revises operational QA procedures that relate to operations; and

7. reviews designated NRC regulatory guides to determine applicability and implementation.

Nuclear Power Quality Assurance Staff

The Quality Assurance Staff reports to the Director of Nuclear Power and is responsible for developing and administering a comprehensive quality assurance program for the division's activities and for providing staff assistance to branch chiefs within the division and to the nuclear plant staffs. In addition, the Staff has responsibility for implementation of a materials quality program, a compliance systems program, and a nondestructive test and surveillance program. The Chief, Quality Assurance Staff shall annually review the status and adequacy of the operational quality assurance program and shall report the results of these reviews to the Director of NUC PR and the Quality Assurance Manager. His primary responsibility is to assure that NUC PR quality assurance program for operation and maintenance of TVA's nuclear plants fulfills the NRC and the Office of Power requirement for quality assurance. He also reviews and concurs with plant standard practices which implement the reqirements of the OQAM. 4

The Chief, Quality Assurance Staff is required to be a graduate engineer or equivalent with at least seven years' experience in nuclear plant maintenance, operation, or quality assurance, or a combination thereof. Experience in the development, implementation, and evaluation of quality assurance programs is also required. He will be assisted in carrying out his responsibilities as follows:

1. Quality Programs Section

The Quality Programs Section is responsible for:

a. developing programs and procedures for implementing quality assurance program requirements established by the Office of Power.

b. monitoring Office of Power audit findings, NRC inspection findings, and corrective action reports to identify trends and problems indicative of QA program weaknesses;

c. providing QA engineering support to central office and plant staffs during peak work load periods or for performance of special projects or studies.

2. Quality Control Section

The Quality Control Section is responsible for performing division level quality control activities required by the Division of Nuclear Power quality assurance programs and procedures pertaining to quality control inspection, material quality control, pre-awarded surveys, and vendor evaluation. The Quality Control Section is also responsible for conducting audits of vendors and contractors when performing activities "offsite." 4

3. Baseline and Inservice Inspection Section

The Baseline and Inservice Inspection Section is responsible for developing programs and procedures to implement the NDE portion of the baseline and inservice inspection requirements as defined by the Final Safety Analysis Report (FSAR) and technical specifications for each nuclear plant. This section is also responsible for directing quality control inspection personnel in the performance of NDE inspections.

Nuclear Plant Superintendent

The primary responsibility and authority for reactor operation and safety at each plant is vested in the superintendent. It is the responsibility of the superintendent to assure that construction has been satisfactorily completed and that established acceptance criteria are satisfied before accepting plant systems and components for operation. It is also his responsibility to verify that modifications or revisions made subsequent to the original design and construction of the project are authorized and carried out in accordance with established procedures and are reflected in the as-built drawings and specifications, and that objectives and performance defined during the design and construction phase are not degraded during subsequent phases of the project.

Plant quality assurance and quality control are direct responsibilities of the superintendent. Through assignments to his section supervisors he assures that operational instructions, work instructions, and checklists are prepared in accordance with established quality assurance policies and requirements; that work is performed in accordance with these approved documents;

and that results are documented and proper records maintained. The superintendent is also responsible for the adequacy and completeness of operating and maintenance logs, and the training and qualification of plant personnel.

Plant Operations Review Committee (PORC)

The PORC serves in an advisory capacity to the superintendent in matters related to safety in plant operation.

It meets at regular monthly intervals and for special meetings called by the superintendent. Membership includes the superintendent (chairman) or assistant superintendent (alternate chairman) and applicable plant section supervisors. The minutes of each meeting are recorded. Responsibilities of the PORC include the review of activities affecting plant safety. These activities are described in the administrative section of the appropriate technical specifications. In addition, PORC reviews the adequacy of the plant quality assurance program and recommends appropriate changes. 4

Plant Quality Assurance Staff

The plant quality assurance staff assists the plant superintendent in developing, planning, initiating, and directing a comprehensive nuclear plant quality assurance/quality control program which implements the Division of Nuclear Power quality assurance program as detailed in the procedures of the plant Operational Quality Assurance Manual. The quality assurance staff performs quality assurance functions relative to plant operations and provides quality control inspections and verification of those activities. It evaluates the effectiveness of the program and makes recommendations to the plant superintendent regarding its implementation. It verifies that operational instructions contain applicable quality assurance requirements and that employees are following the approved instructions. The quality assurance staff reviews and recommends approval of plant instructions concerning the CSSC (such as inspection plans; test, calibration, special process, maintenance, modification, and repair procedures and instructions; drawings; specifications; and changes thereto) and shall sign off prior to their use attesting to the fact that the format and content are in compliance with quality assurance requirements for the plant. The staff will also be responsible for the in-plant QA/QC training program, certifying plant receiving inspectors (or verifying that they are certified by 4 4

other QA organizations), and verifying qualifications of other personnel performing QC functions. 4

The plant quality assurance staff shall review all purchase requisitions for CSSC items and services prepared by the plant staff to ensure they have been prepared, reviewed, and approved in accordance with quality assurance program requirements. Personnel who perform this review shall be trained in procurement document control requirements in the in-plant QA/QC training program.

The plant quality assurance staff is also responsible for developing and implementing a QC inspection or surveillance program covering operations, maintenance, repairs, and testing of CSSC items and for reviewing plant activities and keeping the plant superintendent advised of any known failure of plant equipment to meet technical specification requirements or other nonconforming aspects of operations. 4

The plant quality assurance staff supervisor is a member of the PORC. He represents the plant superintendent in meetings with TVA auditors and NRC inspectors and is responsible for coordinating the preparation of all reports to NRC required by the radiological and nonradiological technical specifications and for responses to plant audits.

When quality assurance problems occur, the plant quality assurance staff supervisor has the responsibility and authority to take the necessary corrective action, including termination of an activity through the plant superintendent, when manufacturing, maintenance, repair, refueling, operation, or modification work fails to comply with approved specifications and plans.

Should the plant superintendent fail to follow the recommendation of the plant quality assurance staff supervisor, the supervisor has the authority to report directly to the Assistant Director of Nuclear Power (Operations).

The supervisor of the plant quality assurance staff shall have seven years of responsible power plant experience or applicable quality assurance experience of which a minimum of two years shall be nuclear power plant experience. He should be a graduate with a degree in engineering. A maximum of two years of the remaining five years of power plant or quality assurance experience may be fulfilled by satisfactory completion of academic or related training on a one-for-one basis.

17.2.1.1.10 Maintenace Coordinator. The Maintenance Coordinator supervises the activities of the Power Service Shops. He reports to the Manager, Power Operations as shown in Figure 17.2-1.

17.2.1.1.11 Project Engineering Staff. The Project Engineering Staff supervises the activities of the Central Calibration Laboratory. The Central Calibration Laboratory is responsible for maintaining laboratory standards and calibrating safety-related plant instrumentation. The Project Engineering Staff reports to the Manager, Power Operations as shown on Figure 17.2-1. 4

17.2.2 Operational Quality Assurance Program

This quality assurance program contains the Office of Power's quality assurance requirements. This program shall be contained in the Office of Power Quality Assurance Manual which shall be maintained and distributed to all responsible organizations by the Quality Assurance Manager.

The Manager of Power has established a Quality Assurance and Audit Staff which is sufficiently independent of operational pressures and has assigned to it the responsibility for defining and monitoring the quality assurance program. The Quality Assurance Manager shall be responsible for the development of the Office of Power Quality Assurance Program and the Manager of Power shall have the final approval.

This program shall include procedural controls for assuring the operation of TVA's nuclear plants without undue risk to the health and safety of the public or employees. It is directed at providing the appropriate control or quality in relation to the importance of the activity or item.

Technical interfaces, such as transfer of equipment and records between organizations, are covered by interdivisional quality assurance procedures which are approved by the division directors and the quality assurance managers. | 4

Each of the 18 criteria of 10 CFR 50, Appendix B, is addressed in this quality assurance program. The requirements of these criteria shall be implemented throughout the operating life of each TVA nuclear plant and shall be implemented through written procedures and instructions. The quality assurance requirements during operation shall be at least equal to those during original design and construction.

The Manager, Nuclear Regulation and Safety shall be regularly advised on the status and effectiveness of the quality assurance program by the Quality Assurance Manager. The implementation and effectiveness of this program shall be regularly assessed through audits. These audits shall be reported to the Manager of Power, plant superintendents, and other appropriate levels of management. | 4

Critical structures, systems, and components (CSSC) covered by the operational quality assurance program are identified in the Final Safety Analysis Report for the plant. The CSSC list shall include the safety-related structures, systems, and

components identified during the design and construction phases and may be expanded in detail as required by operations.

The Quality Assurance Manager shall develop, maintain, and document a quality assurance indoctrination and training program for the QA&AS, FUELS, and NUC PR central office ("offsite") quality assurance staff personnel. This program shall cover the following areas: 4

QA history and indoctrination
Regulations and industry standards
TVA requirements
ASME codes

The Quality Assurance and Audit Staff is responsible for establishing the overall requirements and criteria for the FUELS and NUC PR QA training programs and auditing these programs to verify compliance. 4

The Director of Nuclear Power shall develop, maintain and document a training and retraining program for plant staff personnel ("onsite") performing quality-affecting- activities.

These training and indoctrination programs will assure that:

(a) Personnel responsible for performing quality-affecting activities are instructed as to the purpose, scope, and implementation of the quality assurance program.

(b) Personnel performing quality-affecting activities are trained and qualified in the principles and techniques of the activity being performed.

(c) The scope, the objective, and the method of implementing the indoctrination and training program are documented.

(d) Proficiency of personnel performing quality-affecting activities is maintained by retraining, reexamining, and/or recertifying.

(e) Methods are provided for documenting training sessions describing content; who attended; when attended; and the results of the training session.

Certain quality assurance-related activities and records become the responsibility of the Office of Power with the

issuance of a formal operating license and shall be controlled with procedures.

Table 17.2-1 shows the structure, scope, and responsibility for the QA manuals required for this quality assurance program.

Table 17.2-2 is a listing of controlled implementing procedures and instructions. These manuals and procedures contain the mandatory requirements which must be implemented by responsible organizations and individuals.

Table 17.2-3 lists the Office of Power QA procedures which implement this quality assurance program and cross-references 10 CFR 50, Appendix B, requirements. 4

The Director of Fuels shall develop and maintain a quality assurance program for nuclear fuel and fuel-related components. The design, fabrication, and associated quality assurance requirements are generally delegated to qualified fuel suppliers. However, the Office of Power has overall responsibility for assuring that nuclear fuel installed in TVA reactors meets applicable criteria to assure safe and reliable operation. This responsibility is executed through a planned and systematic program of quality surveillance of nuclear fuel suppliers.

Disputes arising between QA/QC personnel and personnel in organizations (such as operations, procurement, or maintenance) which cannot be resolved locally are referred to the appropriate level of higher management for resolution. If disputes cannot be resolved at this level, they would utlimately be resolved by the Manager of Power.

17.2.3 Modification Control

17.2.3.1 General. Modifications, additions, and replacements to the CSSC after issuance of an operating license shall be controlled to assure that "as-built" quality is not degraded.

NUC PR is responsible for control of modifications to safety-related systems and components after the receipt of an operating license. This includes: specifying or making provision for quality assurance requirements in design documents; providing control of deviations from these requirements; specifying or reviewing materials, parts, equipment, and processes; and specifying or reviewing verification inspection and testing. 4

17.2.3.2 As-Built Verification. Before accepting plant systems or equipment for operation, the plant superintendent assures that construction is complete and meets established acceptance criteria. This is accomplished through a formal transfer procedure involving inspection and testing to verify conformance to drawings and specifications. The plant superintendent verifies that modifications or revisions to original designs are reflected in as-built drawings and that objectives and performance criteria are not degraded during subsequent phases of the project.

17.2.3.3 Modification. Proposed modifications to the safety-related CSSC (except nuclear fuel and fuel-related components) shall be forwarded to EN DES for review and approval. EN DES has a design control system covered by written procedures which complies with the requirements of 10 CFR 50, Appendix B (see 17.1A.3). Proposed modifications to fuel related components shall be reviewed by both the Division of Fuels and the Division of Nuclear Power. Proposed modifications to nuclear fuel shall be approved by the Division of Fuels and proposed modifications to fuel related components shall be approved by the Division of Nuclear Power. After receipt of the operating license, CSSC modifications shall be reviewed by the PORC and approved by the plant superincendent before implementation. 4

Modification proposals which involve the revision of TVA drawings or approved documents require the issuance of a numbered Design Change Request (DCR) or Field Change Request (FCR) as shown in Figures 17.2-5 and 17.2-7. Modifications to fuel-related components are processed as shown in Figure 17.2-6.

Procedures and instructions shall be developed and implemented to assure that the design, construction, installation, inspection, and testing of modifications to the CSSC meet quality assurance standards at least equal to those of the original installation. The testing assures system integrity and provides for evaluation of performance prior to system operation. Procedures and instructions related to equipment or systems that are modified shall be reviewed and updated to reflect the modification.

Modification work will normally be performed by NUC PR personnel in accordance with Office of Power quality assurance requirements. In cases involving major modifications or requiring specialized personnel or equipment, the TVA Division of Construction (CONST) or an outside contractor may be used. When major modifications are performed by CONST, they may be accomplished in accordance with the Office of Engineering Design and Construction QA program. NUC PR retains ultimate responsibility for ensuring appropriate quality assurance standards of materials, equipment, and workmanship. Material to be used in modification work may be purchased by EN DES in accordance with OEDC QA requirements. Modification material shall be receipt inspected by NUC PR to ensure conformance with contract requirements and segregated from plant stock. 4

The plant superintendent shall approve all design change requests before performance of the work. The Plant Operations Review Committee has the final responsibility to verify that:

1. All requirements of the review and approval process have been satisfied.

2. All prerequisites to safety have been met.

3. Required drawings and installation instructions are approved and available.

4. Quality assurance controls have been incorporated in the modification.

17.2.4 Procurement Document Control

Procurement document control applies to documents used to obtain materials, parts, components, and services required to modify, maintain, repair, test, inspect, or operate nuclear generating facilities. The quality of purchased replacement materials, components, and spare parts shall be equal to or better than the original item.

Control of procurements shall be accomplished primarily through the purchase requisition. The originating organization shall be responsible for including or referencing regulations, codes, standards, design bases, or other provisions necessary to assure adequate quality assurance requirements in the documents for procurement of materials, parts, components, and services. Purchase requisitions shall include the following as applicable:

1. Basic technical requirements, including drawings, test and specification requirements, special instructions, applicable codes, and industrial standards.

2. Requirements for supplier surveillance and inspection, including provisions for TVA's access to its plant and records.

3. Requirements that the supplier provide a description of his quality assurance program including a discussion of how applicable requirements of 10 CFR 50, Appendix B, will be satisfied.

4. Documentation requirements, including records to be prepared, maintained, submitted, or made available for review, such as drawings, specifications, procedures, procurement documents, inspection and test records, qualifications, chemical and physical test results, and instructions for ultimate disposition of the records.

TVA utilizes recognized standards for the purchase of standardized items such as bearings, V-belts, capacitors, resistors, transistors, lubricating oils. Other items are purchased by part number or recommendations supplied by the original manufacturer or vendor. Items which are covered by industry codes or standards (e.g., welding rod, pressure boundary materials, etc.) are purchased in accordance with the applicable codes and standards.

The plant quality assurance staff shall review all purchase requisitions for materials, components, spare parts, and services to ensure they have been prepared, reviewed, and approved in accordance with quality assurance program requirements. 3

The NUC PR QA Staff shall review purchase requisitions for safety-related services and CSSC items not purchased by part number or specific standard to ensure that quality assurance requirements are correctly stated, inspectable, and controllable and that there are adequate acceptance criteria. 4 2

Procurement documents shall include all quality-related purchase requisition requirements and these shall not be changed without the review and approval of the responsible originating organization and the responsible quality assurance organizations. Changes to procurement documents such as typo's, changes in quantity and attachments to procurement documents need not be routed to the originating organization and responsible QA organization provided that the NUC PR QA Staff reviews and approves such changes and a revised copy of the procurement document sent to the affected plant. 4

17.2.5 Instructions, Procedures, and Drawings

Procedures, instructions, and drawings for internal use by the Office of Power shall be developed to prescribe those activities that affect the safety-related functions of the CSSC. (Requirements for suppliers and contractors to develop and implement procedures, instructions, and drawings to meet the pertinent requirements of 10 CFR 50, Appendix B, are included under subsection 17.2.4, "Procurement Document Control.")

Procedures shall be written to provide a controlled method within the Office of Power for preparing, reviewing, changing, and approving procedures and instructions. Procedures and instructions prescribing operational activities that affect the safety-related functions of the CSSC shall identify any special equipment and environmental conditions required to perform the activity, provide applicable quantitative and qualitative acceptance criteria and include provisions for documenting that activities were accomplished in accordance with these instructions. 4

NUC PR provides written procedures, instructions, and drawings as required for the administration, operation, maintenance, and modification of nuclear plants. Approval, issuance, and control of plant-level instructions and drawings and changes thereto are the responsibility of the plant superintendent. 4

After issuance of the operating license, the plant superintendent has final review and approval authority for procedures, instructions, and drawings used by contractors performing work on safety-related structures, systems, and components.

PORC shall review plant-level instructions affecting the safety-related functions of CSSC for inclusion of appropriate acceptance criteria, technical adequacy, Standard practices that implement OQAM requirements (as described in Table 17.2-2) shall be reviewed by NUC PR QA Staff. 4

The plant quality assurance staff supervisor prepares and implements site quality assurance instructions for the performance of his assigned functions.

Table 17.2-2 specifies those types of procedures, instructions, and drawings which are controlled by nuclear plant site organizations and those controlled by central office

(offsite) organizations. The term procedure shall designate documents used to describe or specify how an offsite activity is performed or to provide uniform methods for the performance of certain activities, such as the control of documents. The term instruction shall designate documents used to describe or specify how activities at the nuclear plant site, such as operating, maintaining, refueling, modifying, testing, and inspecting, are performed.

Any supervisor may propose procedures or instructions as necessary to meet requirements. Procedures or instructions shall be prepared, reviewed, and approved within the organization responsible for the activities involved. Whenever the procedure affects the actions of another organization, the affected organization shall concur with the proposed procedure or instruction. 4

Procedures, instructions, and drawings that affect the safety-related functions of the CSSC shall be controlled in accordance with subsection 17.2.6, "Document Control."

17.2.6 Document Control

Documents and revisions which control activities affecting the CSSC shall be prepared, reviewed by qualified individuals, and approved for issuance by authorized personnel prior to release or issuance in accordance with written procedures. Preparation, review, approval and issue of controlled documents shall be accomplished in accordance with written approved procedures. These procedures shall identify the organization responsible for the actions and assure that changes to these documents will be reviewed and approved by the same group. Table 17.2-4 shows the major categories of controlled documents. | 4

Controls shall be established to provide for: an identification of documents to be controlled and the level of control required, provisions for distinguishing between controlled and uncontrolled copies of the same document, and provisions for periodic issuance of a status list of current revisions.

The responsibility for document control shall be shared by the originating organization of the document and the receiving organization of the document. The originating organization is responsible for assuring that documents are prepared, reviewed, approved by management, and distributed under controlled conditions. The originating organization is responsible for maintaining a current distribution list for holders of controlled copies of their controlled document. The recipient of revised documents shall discard obsolete copies and replace with the current revision. | 4

The Division of Nuclear Power Operational Quality Assurance Manual requires that changes to documents be reviewed and approved by the same organization that performed the original review and approval or by other qualified responsible organizations delegated; that approved changes are included in instructions, procedures, drawings, and other documents prior to implementing the change; and that documents will be at the location where the activity will be performed prior to commencing the work. The plants have implementing instructions and standard practices that carry out these requirements. | 4

Drawings reflecting the as-built status of the plant are received as master reproducibles from CONST upon receipt of operating license. After receipt of operating license, NUC PR shall be responsible for incorporating changes or revisions to drawings as required to maintain them in a current as-built | 4

status. EN DES issued Engineering Change Notices (ECN's) delineate which drawings will be modified by the modification. The plant superintendent shall implement and maintain administrative controls which assure that as-built drawings are updated upon completion of the related modification. The plant QA staff performs surveys and/or inspections of modification and drawing control activities. The QA and AS performs audits of these controls.

Field drawings and sketches may be prepared by the plant to clarify or provide additional details for operation, maintenance, or testing, and these shall be controlled in accordance with written instructions which specify requirements for identifying, reviewing, and filing. They shall be reviewed for accuracy by at least one person other than the originator. They shall be reviewed and approved for use by the originating section supervisor and the plant superintendent prior to issuance. Revisions to field drawings shall be handled in the same manner as the original issue.

4

17.2.7 Control of Purchased Material, Equipment, and Services

17.2.7.1 General. Materials, equipment, and services, whether purchased directly or through others, shall conform to procurement document specifications as established in subsection 17.2.4. Provisions shall be made, as appropriate, for source evaluation and selection, review for objective evidence of quality, inspection at source, and examination upon delivery. Quality control measures of suppliers shall be assessed at periodic intervals commensurate with the importance, quantity, and complexity of the product or services being purchased. This assessment shall employ audit, independent inspection or test to verify that documentation such as inspection records and certificates of conformance are valid. Where failures occur, the cause shall be evaluated to determine if the original equipment or the original design is appropriate for replacement or repair. Proposals (bids or quotations) by suppliers are reviewed to ensure that no exceptions are taken which would violate safety or quality requirements. 2

17.2.7.2 Source Evaluation and Selection. The evaluation of suppliers is based on one or more of the following. 4

A. An assessment of the supplier's capability to comply with the elements of 10 CFR 50, Appendix B, that are applicable to the type of material, equipment, or service being procured. NRC's Licensee Contractor and Vendor Inspection Program reports, ASME Certificates of Authorization, and CASE Register listings may be used in this assessment.

B. A review of previous records and performance of suppliers who have provided similar articles of the type being procured.

C. A survey of the supplier's facilities and quality assurance program to determine his capability to supply a product which meets the design, manufacturing, and quality requirements.

The requisitioning organization shall determine the type and extent of supplier evaluation required. The Nuclear Fuel Branch is responsible for the evaluation of suppliers of nuclear fuel and fuel-related components. The Division of Nuclear Power QA Staff is responsible for the evaluation of suppliers of other components and services. Supplier evaluations shall be conducted prior to the placement of an order by qualified personnel and the results shall be documented. 4 2

For CSSC items except nuclear fuel and fuel-related components, the Division of Engineering Design maintains the basic file of vendor evaluations. These files contain bid and contract information, quality assurance programs, results of vendor surveys conducted by TVA, correspondence on contract performance, reports of inspections and quality assurance document information. These files are maintained for the use of all requisitioning organizations. During plant operation, the Division of Nuclear Power is responsible for vendor surveys. Vendor files not covered by the OEDC or Division of Fuels files will be maintained by NUC PR. These files may be utilized in determining the acceptability of vendor QA programs. If inadequate vendor information is available from this source, NUC PR will use other techniques in evaluating the vendor as described in 17.2.7.2. The results of such QA program evaluations will be maintained by NUC PR. 4

The Division of Fuels maintains the files of vendor capability for nuclear fuel and fuel-related components. These files contain bid and contract information, quality assurance programs, results of vendor surveys conducted by TVA and quality assurance document information. Fuels is responsible for establishment of a planned and systematic program for vendor survey of nuclear fuel, including designation of qualified personnel to conduct surveys.

17.2.7.3 Inspection and Surveillance at Vendor Plants. The division initiating the purchase of material or equipment is responsible for identifying any required inprocess supplier inspections or surveillance. Surveillance of suppliers of safety-related equipment shall be accomplished consistent with the importance to nuclear safety of the equipment. The originator of a purchase request is responsible for delineating quality assurance requirements and determining if source inspections, including mandatory hold-points, are required. 2

All inspections and surveys are conducted using written instructions and procedures 4

The Division of Fuels shall be responsible for the program for surveillance of suppliers of nuclear fuel and fuel-related components. The Nuclear Fuels Quality Assurance Manual documents the requirements for surveillance inspections at vendor facilities during fuel procurement. This program shall include:

1. Requirements for monitoring fuel fabrication and reprocessing,

2. Requirements for reporting manufacturing deficiencies to designated TVA management, and

3. A system for ensuring that deficiencies are corrected and resolved.

17.2.7.4 Receiving Inspection. Examination upon delivery shall be performed in accordance with general written instructions which contain measures to assure:

A. The material, component, or equipment is properly identified and corresponds with the receiving documentation.

B. Inspection of the material, component or equipment, and acceptance records is performed and judged acceptable in accordance with predetermined inspection instructions, before use or installation and declaring component or system operable.

C. Documentation such as inspection records and certificates of conformance attesting to the acceptance of materials, components, and equipment shall be available at the nuclear power plant before use or installation. In special circumstances, such items may be installed before receipt of associated documentation with PORC review and plant superintendent approval. The item will be tagged as nonconforming and additional administrative controls will provide assurance that the affected system will not be declared operable before disposition of the nonconformance.. 4

D. Items shall not be accepted for stock or released for installation or further work until inspection is complete or inspection status identified.

E. Nonconforming items are segregated where practical, controlled, and clearly identified until proper disposition is made. 4

The Power Stores Unit Supervisor at TVA's nuclear plants is responsible for the receipt, identification, inspection, and storage of materials, components, and spare parts. Assistance shall be provided by the originating supervisor of the purchase request to verify acceptability of the shipment. General written instructions shall be prepared by the Power Stores Unit and utilized for verifying conformance of materials and equipment to procurement documents. Personnel performing receiving

inspections shall receive quality assurance training and be certified by the plant or NUC PR quality assurance staff. | 4

Plant quality assurance personnel shall verify that inspections are made in accordance with approved instructions. Required documentation shall be available and correct for the items being received and all damage shall be documented and corrected or resolved before items are issued for plant use or installation and declaring components or system operable. Damaged, deficient, or nonconforming items shall be identified and handled in accordance with the requirements of subsection 17.2.15. | 4

17.2.8 Identification and Control of Materials, Parts, and Components

The identification and control of materials, parts, and components shall be accomplished in accordance with written requirements and apply to materials, parts, or components in any stage of fabrication, storage, installation, or use. Materials, parts, and components identified as nonconforming shall be handled in accordance with subsection 17.2.15 of this plan.

Identification and control requirements cover such items as traceability to associated documents (except for standardized, commerical-grade items); specification of the degree of identification and control necessary; location and method of identification to preclude a degradation of the item's functional capability or quality; and the proper identification of materials, parts, and components before release for manufacturing, shipping, construction, and installation. Materials, parts and components manufactured or modified by TVA shall be similarly identified, documented, and controlled. 4

The Director of Nuclear Power shall provide procedures for identification and control of items of CSSC received, stored, installed, used at the plant site, permanently transferred to or purchased by the Division of Nuclear Power, or transferred between operating plants. 4

The plant superintendent shall provide instructions for identification and control of materials, parts, or components received, stored, installed, modified, and used at the plant site.

The plant quality assurance staff shall ensure that proper documentation accompanies safety-related materials, parts, and components by surveillance of receipt activities and documentation maintained by the Power Stores Unit. 4

In the event traceability is lost for a specific item, it will be handled as nonconforming material and treated in accordance with subsection 17.2.15.

17.2.9 Control of Special Processes

Special processes, including welding, heat treating, and nondestructive testing, shall be identified and controlled to ensure they are accomplished according to approved written qualified procedures. Procedures are qualified in accordance with applicable codes and standards or, where no appropriate standards exist, to TVA requirements. As required by applicable codes and standards, personnel performing these special processes shall be qualified and their qualifications shall be documented. Applicable codes, standards, specifications, criteria, and other special requirements shall be identified and used in qualifying procedures and personnel used to accomplish special processes.

The Division of Nuclear Power shall ensure that personnel (both internal and external to TVA) performing special processes under their cognizance are qualified and are using procedures qualified to meet applicable codes, specifications, and standards. 4

Special process procedures submitted by outside contractors in accordance with procurement documents and all TVA special process procedures shall be reviewed and approved by NUC PR. Instructions for performing special processes shall be prepared when it becomes necessary to apply a specific special process in the maintenance, repair, or modification of some portion of the CSSC. 4

The plant quality assurance staff shall review procedures and instructions controlling special processes to verify that quality assurance requirements and acceptance criteria are incorporated. They shall verify that the special processes are performed by qualified personnel. The current qualification records of any plant special process instructions and plant equipment shall be maintained by the responsible plant supervisor or the NUC PR QA Staff and reviewed by the plant quality assurance staff. 4

Evidence of the qualification of plant personnel performing special processes will be maintained by the responsible plant supervisor. The records of special process procedures controlled by central office (offsite) organizations and the records of central office personnel performing special processes at the plant shall be maintained by the responsible central office supervisor(s). 3

17.2.10 Inspection

Inspection shall be performed during maintenance, modification, repair, material receiving, and storage activities affecting the quality of CSSC items at TVA plants to verify conformance with applicable requirements. Instructions covering these activities shall contain appropriate inspection requirements, including mandatory holdpoints, which shall be in accordance with the original design and inspection requirements or acceptable alternatives.

The inspection program at TVA's licensed plants shall be developed by the Director of Nuclear Power. This program shall be conducted by qualified personnel reporting independently of the organization performing the work. Monitoring of inspection activities shall be performed by plant QA staff when they do not have direct inspection responsibility. The superintendent shall implement the program. Inspections requiring expertise in a particular area such as preservice and inservice inspection, certain nondestructive testing, containment vessel leak rate tests and inspections, and inspection of nuclear fuel at the vendor plant are the responsibility of central office, or "offsite" personnel. | 4

This program shall be conducted in accordance with written approved instructions which specify, as appropriate, inspection scope; personnel qualification requirements; necessary drawings and specifications; inspection method description; inspection equipment requirements (current calibration, pressure limitations, cleanliness, etc.); limiting conditions; environmental conditions; prerequisite conditions; acceptance and rejection criteria; data collection requirements; and documentation approval, retention, and storage requirements. These instructions shall be reviewed by PORC and approved by the plant superintendent. | 4

When direct inspection is impossible or disadvantageous, indirect control by monitoring processing methods, equipment, and personnel shall be provided by in-plant quality assurance surveillance, on a selective basis. Areas to be controlled may include: | 4

1. The training program for qualification and certification of personnel.

2. A program for control and calibration of measuring and test equipment.

3. Completed instructions for a comparison of results with acceptance criteria or rejection criteria. | 4

Personnel performing inspection activities shall be qualified in accordance with applicable codes, standards, and TVA training programs. The immediate supervisor of personnel requiring qualification shall be responsible for assuring that the qualifications are maintained current.

The Supervisor, Plant Quality Assurance Staff is responsible for inspection activities. Employees assigned inspection functions are assigned to him on either a temporary or permanent basis and report inspection results directly to him.

The Director of Nuclear Power shall develop and maintain an inservice inspection program and establish a method for assuring that quality assurance requirements are included in procurement specifications if the inservice inspection is contracted to a service organization. | 4

17.2.11 Test Control

Testing shall be performed to demonstrate that CSSC will perform satisfactorily in service and malfuctions are identified in a timely manner. The following tests shall be conducted by POWER in accordance with the controls of the Office of Power QA program:

(1) Preoperational tests
(2) Startup tests
(3) Surveillance tests
(4) Functional tests
(5) Special tests

All such testing shall be accomplished in accordance with written and approved procedures or instructions which shall include the requirements of technical specifications, drawings, specifications, codes, standards, and regulatory requirements. Modifications, repairs, and replacements shall be tested in accordance with the original design and testing requirements or acceptable alternatives identified through review of original testing requirements. Test programs shall be developed for identifying, controlling, evaluating, approving, documenting, and retaining test instructions and/or test results. Written test instructions and/or checklists shall include as necessary: test equipment and calibration requirements, material requirements, prerequisite conditions, environmental conditions, limiting conditions, precautions, detailed performance instructions for the testing, inspection holdpoints, acceptance or rejection criteria, and data collection requirements.

The plant superintendents shall implement the test programs identified by the Director of Nuclear Power. Test instructions shall be prepared by or under the supervision of the plant staff, reviewed by qualified personnel including the plant QA Staff, and approved by the superintendent. | 4 | 2

Where contractors are utilized for plant or plant-related tests, they shall be required to have testing programs in accordance with this quality assurance program or a quality assurance program approved by NUC PR QA staff. | 4

Results of tests performed on CSSC shall be documented, evaluated, and their acceptability determined by qualified individuals.

The plant quality assurance staff shall ensure that tests of CSSC at the plant are specified and conducted by qualified personnel. The plant quality assurance staff shall ensure that required tests of the CSSC at the plant are performed in accordance with approved instructions, which contain or reference appropriate acceptance criteria. 4

17.2.12 Control of Measuring and Test Equipment

Measuring and test equipment utilized in or related to operation of CSSC equipment shall be controlled in accordance with written procedures or instructions. Procedures or instructions for calibrating and controlling measuring and test equipment shall include identification of the test equipment, calibration techniques, calibration frequencies, maintenance control, and storage requirements. Equipment to be included in this program shall include measuring instruments, test instruments, tools, gauges, reference standards, transfer standards, and nondestructive test equipment which are to be used in the measurement, inspection, and monitoring items on the CSSC list for TVA's plants. Permanently installed plant process instrumentation is not to be included in this category. 4 4

Control of measuring and test equipment shall require:

1. That each item of measuring and test equipment be assigned a specific interval for recalibration. Interval selection shall depend on past experience, inherent stability of equipment, its intended purpose or use, and the accuracy required. Historical records shall be maintained which contain sufficient experience data for evaluating calibration intervals.

2. Unique identification of each item of test equipment.

3. Traceability to calibration test data and tagging (when practical) to show due date of calibration. 4

4. Traceability of reference standards to national standard and periodic revalidation of reference standards.

5. Records to be maintained which indicate the complete status of each item of test equipment, including its maintenance history, calibration results, abnormalities, and last and future calibration dates.

6. Control of the purchase requirements and acceptance tests for new or replacement test equipment.

7. M&TE shall be calibrated against a working standard having a tolerance not greater than 1/4 the specified tolerance of the M&TE. Tolerances greater than 1/4 will be acceptable when equipment to meet these requirements is not commercially available.

8. The reference standards used to calibrate the working standards shall have a closer tolerance than that of the working standard and shall be calibrated against higher level reference standards of closer tolerance.

Measuring and test equipment found out-of-calibration shall be conspicuously tagged, segregated, and an investigation shall be initiated to determine the validity of previous measurements and any corrective action to be taken. 4

Tools, gauges, and instruments necessary for maintenance, inspections, and tests shall be calibrated and controlled in accordance with written instructions.

Test instrumentation is maintained by various organizations within TVA and is used at the nuclear plants as required to perform tests or other special operations. Each organization shall be responsible for assuring that test equipment used by that organization has been properly calibrated and documented.

17.2.13 Handling, Storage, and Shipping

All items under the scope of the quality assurance program shall be handled, stored, cleaned, and shipped in a manner to prevent deterioration, contamination, damage, or loss of identification. General procedures shall be prepared for application to these activities. As appropriate, detailed instructions shall be issued for handling, cleaning, storing, maintaining while stored, or shipping specific items or types of equipment or material. Under normal circumstances the manufacturer's instructions or recommendations shall be followed and shall be implemented to maintain material integrity and protection. Personnel performing these activities shall be knowledgeable of the work to be performed and procedures employed. 4

Material-handling equipment such as cranes, forklifts, and cables shall be checked or tested in accordance with established procedures before handling important items.

Periodic surveillance shall be conducted by the plant quality assurance staff of areas where materials are being handled or stored and deficiencies shall be reported to responsible management.

17.2.14 Inspection, Test, and Operating Status

Inspection, test, and operating status of items covered by the quality assurance program shall be controlled and the status indicated in accordance with written procedures. 4

Individual items received at or installed in the plant shall be identified by suitable means as to their status with respect to required inspections and tests to be performed before the items are issued or operated. Before storage or installation, items shall be specifically identified by means of stamps, tags, labels, routing cards, or other suitable means and shall be traceable to manufacturer and receipt inspection documentation. In the event that traceability is lost or destroyed on any item, the items shall be considered nonconforming and handled in accordance with subsection 17.2.15.

The plant superintendents shall develop plant instructions relating to the operational status of the plant. These instructions shall:

1. Require the status (inoperative, test, or operational) of CSSC be indicated, and

2. Require the status of inspections and tests performed on the CSSC be indicated.

The status of CSSC shall be indicated by stamps, tags, labels, status boards, routing cards, logs, schedules, or computerized printouts or a combination thereof. The technical specifications establish the status of CSSC required for the safe operation of the plant, including provisions for periodic and nonperiodic tests and inspections of various instruments, structures, components, systems, or parts of systems.

Periodic tests may be operational tests or tests following maintenance; nonperiodic tests may be following repairs or modifications. Each cognizant plant supervisor, contractor, or supplier shall assure that necessary inspections or tests are conducted in his area of responsibility and that the status of these inspections or tests is maintained current. Any bypassing of these required activities shall be reviewed by qualified individuals and approved by the plant superintendent before proceeding. All such bypassing shall be documented. Retest or inspection shall be performed as required. 4

Required inspections, tests, and operations are performed in accordance with plant level instructions which are reviewed by PORC and approved by the plant superintendent. Temporary changes or bypassing a requirement of an approved procedure is administratively controlled. These deviations, except non-intent changes, shall be documented, reviewed by PORC, and approved by the plant superintendent. The plant Quality Assurance Staff Supervisor reviews these deviations as a member of PORC. 2

All systems or components at the plant shall be controlled to prevent their inadvertent operation in accordance with the Office of Power Clearance Procedure which specifies the control of status indicators and the authority for application and removal. Plant instructions that require equipment to be removed from service for maintenance, testing, or modification shall specify the equipment associated with these activities so the appropriate type of clearance described in the Office of Power Clearance Procedure may be issued.

17.2.15 Nonconforming Materials, Parts, or Components

Nonconforming materials, parts, or components discovered during receipt inspection or plant maintenance activities shall be controlled to prevent their inadvertent use or installation. Control of nonconforming items shall include:

1. Conspicuous markings to identify the item as nonconforming.

2. Reporting of nonconformance to responsible supervision.

3. Segregation of items from acceptable material, when practical. | 4

4. Review and disposition of nonconforming items by designated supervision. Disposition action for nonconforming materials, spare parts, or components during receipt inspection or maintenance activities shall be one of the following actions:

   (1) Accept the item as is,

   (2) Reject the item and return to vendor,

   (3) Accept the item and repair or rework in accordance with instructions to be provided, or

   (4) Scrap the item.

5. Documentation of the above actions including preparation of a nonconforming material report. Nonconforming material reports identify affected equipment and the type of nonconformance. They shall be reviewed by the plant QA staff to identify generic problems and trends. Unsatisfactory trends will be reported to the plant superintendent. | 2 | 4

Recommendations to use material "as-is", or to "repair", shall be reviewed by the Plant Operations Review Committee. Such recommendations as well as those for "rework", or "scrap" the material shall be approved by plant superintendent or his designee. | 4

Any decision to reduce requirements to permit the use of nonconforming parts, materials, or components in the CSSC shall be treated as a design modification and shall be subject to the same review and approval process.

Specific repair or rework procedures are prepared for CSSC and such work shall be documented, including quality control activities, to assure conformance with requirements of the specifications, procedures, and other controlling documents. Whenever a nonconforming item requires rework or modification, the rework or modification must be verified as satisfactory by an inspection or test of the affected item which is the same or at least equal to the original inspection or test method. This inspection or test shall be documented. In the case of an outside contractor, he shall be required to formally report the disposition of all nonconforming items to designated TVA personnel. 4 4

17.2.16 Adverse Conditions and Corrective Action

Adverse conditions include nonconforming materials, parts, or components; failures; malfunctions; deficiencies; deviations; hardware problems involving systems which do not comply with licensing, codes, specifications, or drawing requirements; and nonhardware problems such as failure to comply with the operating license, technical specifications, procedures, instructions, or regulations. Significant conditions adverse to quality are those which are reportable to the NRC within 24 hours or within 30 days in accordance with the plant technical specifications; which represent gross or widespread noncompliance with procedural requirements which negates the effectiveness of quality assurance controls; or any condition which has recurred with such a frequency that it indicates past corrective action (if any) has been ineffective.

Adverse conditions shall be evaluated, reported to supervision, and corrected in a manner consistent with their safety. Those adverse conditions determined to be significant shall be documented, the cause of the condition identified, and the corrective action taken to prevent recurrences.

Procedures and instructions for corrective action of adverse conditions shall include provisions for (1) each person employed by TVA to identify and report to his immediate supervisor conditions suspected to be adverse to quality within his area of responsibility, (2) supervisory review and classification of reported adverse conditions, (3) correction of adverse conditions, and (4) documenting significant adverse conditions and initiating corrective action to preclude repetition. These corrective action reports shall become part of the plant quality assurance records. The plant Quality Assurance Staff Supervisor shall make followup reviews for implementation of the corrective action and shall review any reports generated by the action before the corrective action report is closed. 4

The corrective action for significant conditions adverse to quality shall be reviewed by the members of PORC and approved by the plant superintendent. Those not considered significant shall be reviewed and approved by the plant superintendent. He has the authority to cause immediate temporary corrective action to be taken. 4

Contractors performing modifications to the nuclear safety-related portions of the plant shall be required to comply with

TVA approved procedures which require conditions adverse to quality to be identified, corrected, and reported.

17.2.17 Quality Assurance Records

Quality assurance records are those completed records which furnish documentary evidence of the quality of items or of activities affecting quality and those records required by the administrative section of each nuclear plant's technical specifications. Quality assurance records include but are not limited to the following: 4

1. Records compiled during the design and construction of the plant, including design drawings, construction logs and results of reviews, inspections, tests, audits, monitoring of work performance, materials analyses, and other similar documents.

2. Documents and records compiled during operation, including operating logs; maintenance and modification records; reportable occurrences; results of reviews, inspections, test audits, and material analyses; monitoring of work performance; qualification of personnel, procedures, and equipment; specifications; procurement documents; calibration records; and nonconformance reports and corrective action.

The OEDC Quality Assurance Manager shall establish procedures specifying the collection, classification, and storage of design and procurement records and the transfer of construction records and required design records. The Office of Power Quality Assurance Manager shall establish procedures which are compatible with OEDC procedures, for the collection and classification of operation records and for retention and storage of construction and design quality assurance records transferred from OEDC.

The Director of Nuclear Power shall establish a records control system which includes (1) a records checklist designating the required quality assurance records, (2) a record of quality assurance records received, (3) procedures for receipt and inspection of incoming quality assurance records, (4) provisions for a current and accurate assessment of the status of quality assurance records, and (5) establishment of records storage facilities to ensure records availability and protection. NUC PR shall coordinate the transfer of required quality assurance records from OEDC to the Office of Power. 4 4

The plant superintendent shall provide storage, preservation, and safekeeping of the required quality assurance records in accordance with TVA-established requirements and regulatory requirements. He shall delineate plant personnel who have access

to the files, implement a retrieval method, establish an index before receipt of the records, and provide written instruction for distribution, transfer, and handling of quality assurance records.

17.2.18 Audits

The Quality Assurance Manager is responsible for a system of planned and periodic audits of the Office of Power's assigned responsibilities. These audits shall be conducted on both a scheduled and unscheduled basis. Objectives of the audit system are: (1) to ensure that the Office of Power Quality Assurance Program is defined and documented; (2) to verify on a regular basis by examination and evaluation of objective evidence that established requirements, methods, procedures, and instructions are being implemented; (3) to assess the effectiveness of the Office of Power Quality Assurance Program; (4) to identify program weaknesses and nonconformances; and (5) to verify correction of identified unsatisfactory conditions.

This audit system, shall be designed to satisfy the audit requirements of 10 CFR 50, Appendix B, and TVA nuclear plant technical specifications. In regard to audit function, the Manager, Nuclear Regulation and Safety, has delegated to the Quality Assurance Manager the responsibility to conduct audits of activities of the Office of Power and activities of interfacing organizations associated with safety-related systems. 4

The Quality Assurance Manager has the authority and organizational freedom (see Section 17.2.1) to schedule and perform both internal and external audits to ensure proper corrective action. As a minimum, the audit system under his direction shall be designed to comply with regulatory requirements.

Audits shall be conducted by the Quality Audit Section as scheduled. Special audits shall be conducted when a need is indicated. The Quality Audit Supervisor, who reports to the Quality Assurance Manager, is responsible for planning, scheduling, and implementing the audits and analyzing audit data for quality trends and effectiveness of quality assurance. He is responsible for generating the required audit records, which include the audit plans, reports, associated correspondence, open item status reports, and other supporting documentation. He is also responsible for providing teams comprised of qualified auditors and for preparation of audit reports, within 30 working days of audit completion.

Audits shall be conducted in accordance with a formal audit schedule which shall be updated at least every six months. The schedule for audits of the Office of Power Quality Assurance Program shall comply with the requirements of regulatory position 3

C.4 of Regulatory Guide 1.33. Functions which are performed on a routine schedule basis, such as preventive maintenance, surveillance testing, and calibration, shall be audited for compliance on a frequency determined by their schedule. One-of-a-kind projects, such as major modifications, shall be audited as required. Unscheduled audits may be conducted in any area at any time on a randomly selected aspect of the program or to document conditions related to an abnormal or unscheduled event. 3

Within the scope of the Office of Power Quality Assurance Program, both TVA and supplier/subcontractor organizations shall be subject to audit under this system. Audits conducted on organizations within TVA are designated internal audits, and audits of suppliers and subcontractors are designated external audits.

Audits shall be conducted using written plans and checklists prepared in accordance with audit procedures which require evaluation of work areas, activities, processes, hardware and equipment, services, and the review of documents and records for quality-related practices, procedures, and instructions to determine the effectiveness of the implementation of the Office of Power Quality Assurance Program and compliance with 10 CFR 50, Appendix B. In preparing for audits, the Quality Audit Section shall review applicable procedures, instructions, and manuals (see Table 17.2-2) in the area to be audited. Any conflicts in requirements identified in this review shall be reported as audit findings to the Quality Assurance Manager. 4

For the performance of audits, an audit team consisting of one or more qualified persons shall be selected by the Quality Audit Supervisor. A designated leader shall be assigned in advance to be responsible for the written plans, checklists, team orientation, audit notification, preaudit conference, audit performance, postaudit conference, reporting, records, and followup audits to assure that unsatisfactory conditions are resolved. The audit team will be comprised of personnel from the Quality Assurance and Audit Staff, but specialists may be assigned from other TVA organizations. In no case shall a team member be assigned to audit an area in which he has work responsibility.

Audit procedures require that upon completion of an audit findings shall be reported to responsible management of the organization being audited. Any audit finding which requires immediate resolution shall be reported without delay to appropriate supervision. Other findings may be reported in an

exit interview or by submitting a written summary of audit findings to responsible supervision.

Formal audit reports shall be transmitted by the Quality Assurance Manager to the responsible TVA supervisor or outside organization. Correspondence with suppliers is normally through TVA procurement channels. It is the responsibility of the cognizant supervisor, or the person in the outside organization specifically designated as responsible, to review the audit report and to ensure that corrective action is accomplished in a timely manner. The audit team leader is responsible for followup action (including reaudits) as required to ensure that corrective action has been taken. Audit findings shall be documented in the audit report, and corrective actions and reaudits shall be documented with reference to the original audit. 4

Audit records shall be maintained which indicate audits, organizations audited, subject, and number of noncompliances identified during the audit. These records shall be periodically reviewed for quality trends and overall program effectiveness. Results of these reviews shall be reported to appropriate management in periodic summary reports of audit activities.

Regular audit team members (normally from the Quality Assurance and Audit Staff) shall be trained in accordance with the quality assurance training program. Members of audit teams who are not regular auditors shall be indoctrinated or trained sufficiently to perform the specific audits to which they are assigned.

A representative list of the areas to be audited to ensure compliance with the Office of Power Quality Assurance Program is presented below: 4

1. DIVISION OF NUCLEAR POWER
   - 1.1 Central Offices
     - 1.1.1 Design Control
     - 1.1.2 Procurement Document Control
     - 1.1.3 Training
     - 1.1.4 Document Control
     - 1.1.5 Corrective Action
     - 1.1.6 Modification Control
     - 1.1.7 Records Control
     - 1.1.8 Maintenance Control
     - 1.1.9 Control of Special Processes
     - 1.1.10 Inservice Inspection
     - 1.1.11 Instructions, Procedures, and

Drawings
1.1.12 Control of Purchased Material, Equipment, and Services

1.2 Nuclear Plants
1.2.1 Procedure/Technical Specifications Compliance with respect to:
1.2.1.1 Fuel Handling
1.2.1.2 Operations
1.2.1.3 Maintenance, Rework, Repair, Modifications
1.2.1.4 Design
1.2.1.5 Chemistry
1.2.1.6 Surveillance Testing
1.2.2 Document Control
1.2.3 Training
1.2.4 Corrective Action
1.2.5 Procurement Control
1.2.6 Material Handling, Storing, Issuing, Cleaning, Preserving, etc.
1.2.7 Calibration of Measuring and Test Equipment
1.2.8 Fire Protection Program
1.2.9 Inspection Program
1.2.10 Site Contractor Surveillance Control
1.2.11 PORC Activities

2. DIVISION OF FUELS
2.1 Nuclear Fuel Quality Assurance Program
2.2 Document Control

3. DIVISION OF PURCHASING (Joint Audit with OEDC QA Staff)
3.1 Procurement Control

4. REGULATORY STAFF
4.1 Document Control

5. MAJOR CONTRACTORS AND SUPPLIERS

6. MAINTENANCE COORDINATOR
6.1 Power Service Shops QA Program
6.1.1 Procurement Document Control
6.1.2 Instructions, Procedures, and Drawings
6.1.3 Document Control
6.1.4 Control of Purchased Material, Equipment, and Services

6.1.5 Identification and Control of Materials, Parts, and Components
6.1.6 Control of Special Processes
6.1.7 Inspection
6.1.8 Test Control
6.1.9 Control of Measuring and Test Equipment
6.1.10 Handling, storage, and Shipping
6.1.11 Noncomforming Materials, Parts, or Components
6.1.12 Corrective Action
6.1.13 Quality Assurance Records

7. Project Engineering Staff
7.1 Central Calibration Laboratory
7.1.1 Procurement Document Control
7.1.2 Instructions, Procedures, and Drawings
7.1.3 Control of Purchased Material, Equipment, and Services
7.1.4 Handling, Storage, and Shipping
7.1.5 Nonconforming Materials, Parts, or Components
7.1.6 Control of Measuring and Test Equipment
7.1.7 Document Control
7.1.8 Corrective Action
7.1.9 Identification and Control of Materials, Parts, and Components

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TABLE 17.2-1

OFFICE OF POWER - QA MANUALS CHART

	Identification	Description	Approval	
1.	Quality Assurance Program Description, Topical Report TVA-TR75-1A	A description of the Office of Power Quality Assurance Program	Affected Organizations.	4
2.	Office of Power Quality Assurance Manual	A manual consisting of a set of controlled procedures, issued by the Office of Power to control QA-related activities throughout the Office of Power. These procedures assign responsibilities to various segments within the Office of Power and to other organizations within TVA and specify the required actions to be taken for activities affecting quality.	All Office of Power QA Procedures and all revisions thereto shall be approved by the Manager of Power or his designated representative.	4
3.	Quality Assurance and Audit Staff Procedures	A set of procedures prepared, controlled, and issued by the Quality Assurance and Audit Staff. These procedures are the governing documents for the internal activities of the Quality Assurance and Audit Staff with respect to the QA responsibilities that it has been assigned.	Quality Assurance and Audit Staff Procedures and revisions thereto shall be approved by Quality Assurance Manager or his designated representative.	4

TABLE 17.2-1 (Continued)

Identification	Description	Approval	
4. Operational Quality Assurance Manual	A manual consisting of a set of procedures prepared, controlled, and issued by the Division of Nuclear Power. This manual implements the requirements of the Office of Power Quality Assurance Program for the activities associated with the operation of TVA's nuclear power plants.	Procedures within this manual and all revisions thereto shall be reviewed and concurred with by the Quality Assurance Manager or his designated representative. In addition, procedures and revisions involving the assistance of other TVA offices or divisions shall be reviewed and concurred to by that office or division . Final approval of all procedures and revisions to this manual is by the Director of Nuclear Power or his designated representative.	4 4 4
5. Nuclear Fuel Quality Assurance Manual	A manual consisting of a set of procedures prepared, controlled, and maintained by the Nuclear Fuels Planning Branch of the Division of Fuels. This manual serves as the governing document for implementing the Office of Power Quality Assurance Program with respect to the design, fabrication, and other related activities associated with the production of nuclear fuel for TVA's nuclear power plants.	All procedures within this manual and all revisions thereto shall be reviewed and concurred with by the Quality Assurance Manager or his designated representative. In addition, procedures and revisions involving the assistance of other TVA offices or divisions shall be reviewed and and concurred to by that office or division that is involved. Final approval of all procedures and revisions to this manual is by the Director of Fuels or his delegate.	4
6. Interdivisional QA Procedures Manual (See Table 17.0.1)	A manual consisting of policy agreements and QA procedures covering interdivisional interface areas.	All QA procedures within this manual and all revisions thereto shall be reviewed and approved by affected organizations, the OEDC QA Manager, and the POWER QA Manager.	4 3

TABLE 17.2-2

CONTROLLED PROCEDURES AND INSTRUCTIONS

	Procedure	Subjects Covered	Prepared and Controlled By	Reviewed and Concurred By	Approved and Issued By	
I.	Office of Power QA Procedures	Office of Power QA Activities	QA&A Staff	NUC PR, Fuels, others as appropriate	Manager of Power	4
II.	Quality Assurance and Audit Staff Procedures	Quality Assurance and Audit Staff Activities	QA&A Staff	QA&A Staff	Quality Assurance Manager	
III.	Operational Quality Assurance Manual Procedures	Implements the Office of Power QA Requirements with Respect to Plant Operations	NUC PR personnel	NUC PR, QA&A Staff, others as appropriate	Director NUC PR or his designated representative	4
IV.	Nuclear Fuel Quality Assurance Manual Procedures	Implements the Office of Power QA Requirements with Respect to Nuclear Fuel and Fuel Components	NFPB personnel	NFPB, QA&A Staff, others as appropriate	Director of Fuels	2 4
V.	Standard Practice Manual	Implements the OQAM, Includes Administrative, Engineering Operating Instructions	NUC PR, site personnel	NUC PR, Plant Superintendent. Portions that implement OQAM are reviewed and concurred with by NUC PR QA staff.	NUC PR, Plant Superintendent	4

TABLE 17.2-3

OFFICE OF POWER PROCEDURES WHICH IMPLEMENT 10 CFR 50, APP. B

Appendix B Criterion	Office of Power QA Procedures	Title
I	OPQAP-1.1	Organization
II	OPQAP-2.1	Quality Assurance Program
	OPQAP-2.2	Quality Assurance Training
III	OPQAP-3.1	Modification Control
IV	OPQAP-4.1	Procurement Document Control
V	OPQAP-5.1	Instructions, Procedures, and Drawings
VI	OPQAP-6.1	Control of Procedures and Instructions
	OPQAP-6.2	Instruction Manual and Drawing Control
VII	OPQAP-7.1	Control of Purchased Materials, Equipment, and Services 4
VIII	OPQAP-8.1	Identification and Control of Materials, Parts, and Components
IX	OPQAP-9.1	Control of Special Processes
X	OPQAP-10.1	Inspection
XI	OPQAP-11.1	Test Control
XII	OPQAP-12.1	Control of Measuring and Test Equipment
XIII	OPQAP-13.1	Handling, Storage, and Shipping
XIV	OPQAP-14.1	Inspection, Test, and Operating Status
XV	OPQAP-15.1	Nonconforming Materials, Parts, or Components
XVI	OPQAP-16.1	Corrective Action
XVII	OPQAP-17.1	Quality Assurance Records
XVIII	OPQAP-18.1	Audits

4

TABLE 17.2-4

Controlled Documents

1. Design Specifications and Drawings
2. Procurement Documents
3. Office of Power QA Manual
4. Operational Quality Assurance Manual
5. Safety Analysis Reports
6. NUC PR Division Procedures Manual 4
7. Plant Instructions
8. Test Procedures
9. Design Change Request
10. Nonconformance Reports
11. FUELS Nuclear Fuels QA Manual 4

TABLE 17.2-5 (Sheet 1)

REGULATORY GUIDANCE FOR QUALITY ASSURANCE

DURING STATION OPERATION

	TOPIC	COMMENT
A.	Appendix B to 10 CFR 50 - Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants	No exceptions.
B.	10 CFR Part 55 - Operators' Licenses	No exceptions.
C.	Regulatory Guide 1.8, (Revision 1), "Personnel Selection and Training"	No exceptions.
D.	Regulatory Guide 1.28, (Revision 1), March 1978 "Quality Assurance Program Requirements (Design and Construction)"	Not applicable to the operation phase.
E.	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 6.2.2) 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.

TABLE 17.2-5 (Sheet 2)

TOPIC	COMMENT
F. Regulatory Guide 1.33, (Revision 2), February 1978, "Quality Assurance Program Requirements (Operations)" (Endorses ANSI N18.7-1976)	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
G. 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)	No exceptions.
H. 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. 2. 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. 3. TVA's alternative to the requirements of Section 6.6 of ANSI N45.2.2 is as follows: Power Stores will maintain

TABLE 17.2-5 (Sheet 3)

TOPIC	COMMENT
	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.
I. 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 Operational 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.
J. Regulatory Guide 1.58, August 1973 - "Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel" (endorses N45.2.6-1973)	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

TABLE 17.2-5 (Sheet 4)

TOPIC	COMMENT
	requirements are selected to fill these positions. Any additional training received by personnel will be documented. Appropriate quality assurance groups will provide certificates for documenting this training. ASNT recommended practice SNT-TC-1A will be used to qualify and certify nondestructive examination personnel.
K. Regulatory Guide 1.64 (Revision 2), June 1976 - "Quality Assurance Requirements for the Design of Nuclear Power Plants" - (Endorses N45.2.11)	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 17.1A.3 and 17.2.3. TVA takes no exceptions.
L. 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.
M. Regulatory Guide 1.74, February 1974 - "Quality Assurance Terms and Definitions" (endorses N45.2.10-1973)	No Exceptions.

TABLE 17.2-5 (Sheet 5)

TOPIC	COMMENT	
N. Regulatory Guide 1.116, Revision O-R - "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants" (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.	
O. ANSI N45.2.12 (Draft 3, Rev. 4 - February 1974) "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants"	TVA takes exception 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 accompanied by a trained, qualified auditor.	
	3.4.2, Scheduling - The applicable elements of the operational quality assurance program will be audited in accordance with the requirement of position C.4 of Regulatory Guide 1.33.	3
	4.3.3, Post Audit Conference - When it is not possible to hold a post audit conference, a written summary of the audit will be left with the audited organization. POWER does not require that mutual understanding of findings be documented in the post audit conference. The written response to audit findings serves to document the understanding of audit findings.	4
	4.4, Reporting - Audit reports will be issued within 30 working days from the close of of the audit.	
	4.5, Followup - The TVA audit system categorizes findings according to the level of severity. Written responses by the audited organization are required only for those noncompliances which are a violation of established requirements to the extent that the effectiveness of the quality assurance program is negated.	
	5.2 Audit Records - Audit Records will be maintained in accordance with Section 5 of ANSOI N45.2.12-1977.	3

TABLE 17.2-5 (Sheet 6)

TOPIC	COMMENT	
P. Regulatory Guide 1.123, (Revision 1), July 1977 - "Quality Assurance Requirements for Control of Procurement of Equipment, Materials and Services for Nuclear Power Plants" (Endorses N45.2.13-1976)	No exceptions	2
Q. Regulatory Guide 1.88 (Revision 2), October 1976 - "Collection, Storage and Maintenance of Nuclear Power Plant Quality Assurance Records" (Endorses N45.2.9)	TVA takes exception to the requirement (ANSI N45.2.9, Section 5.6) that temporary record storage facilities shall be a four hour minimum rated facility. Active records will be stored in one-hour fire rated file cabinets. In general, records shall not be maintained in temporary storage for more than 3 months after completion. Any exceptions to this requirement will be listed by record type in OQAM. Exception may include records needed on a continuing basis for an extended period of time (i.e., personnel qualification records, equipment history records) and records which are cumulative in nature (i.e., nonconforming item logs).	4
R. 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)	For modifications or repairs to structures within the scope of N45.2.5-1974, the TVA operations division would refer back to the design division for any design analyses. TVA will comply with N45.2.5-1974 except as indicated in Section 3.8.3.6.1 of the Yellow Creek PSAR.	2

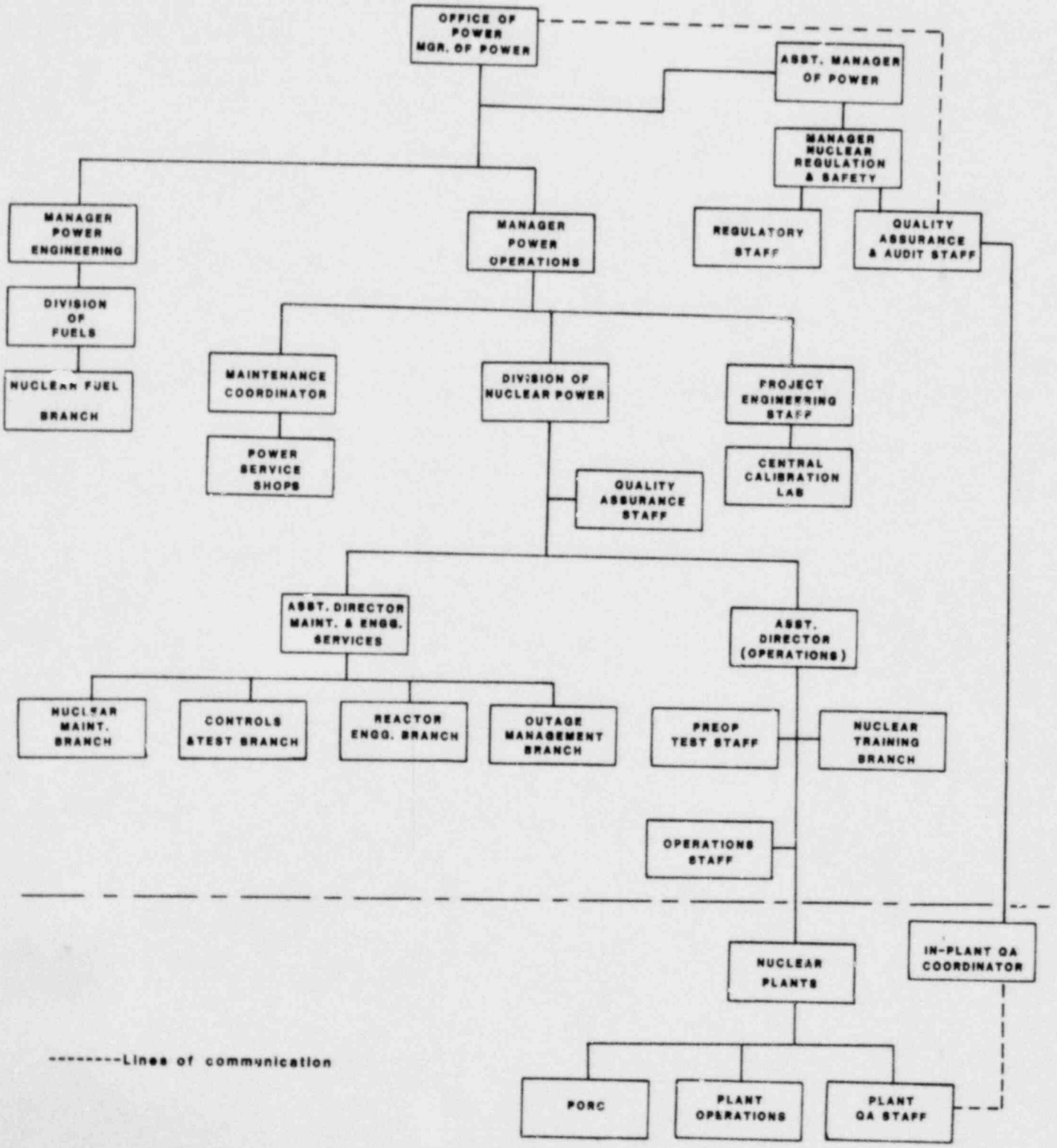

FIGURE 17.2-1 OFFICE OF POWER FOR OPERATIONAL QUALITY ASSURANCE
Rev. 4

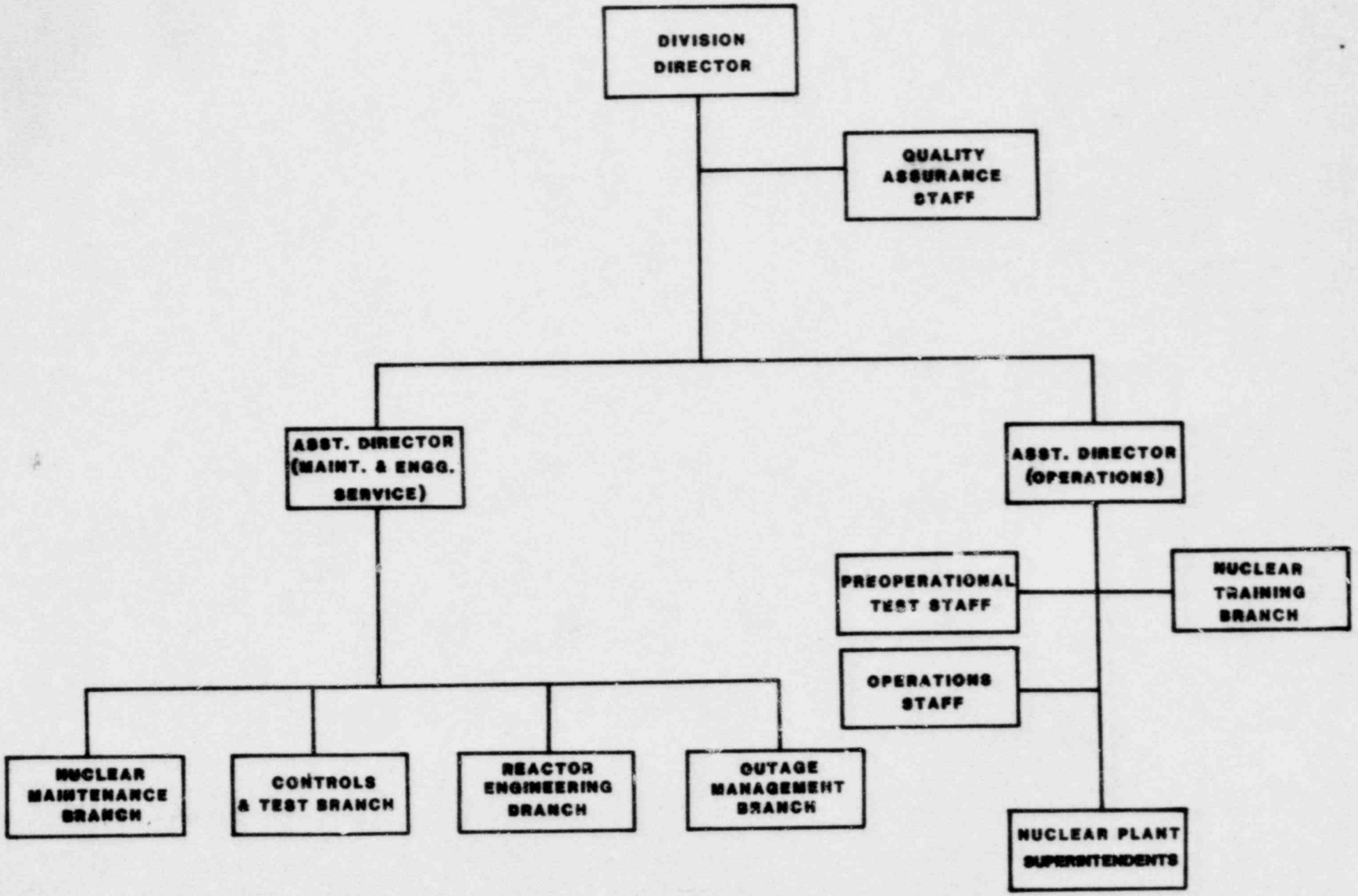

FIGURE 17.2-2 DIVISION OF NUCLEAR POWER ORGANIZATION
Rev. 4

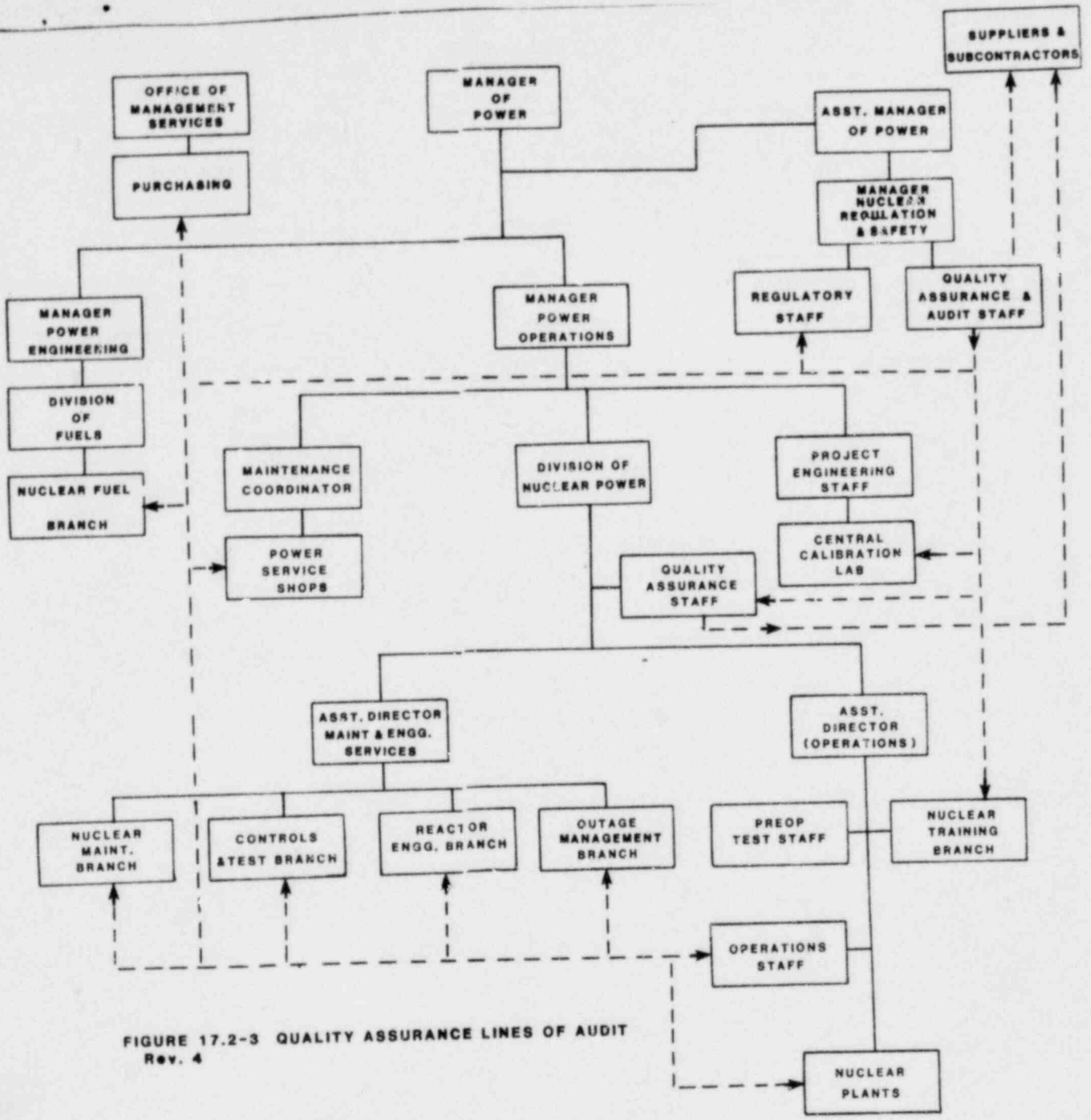

FIGURE 17.2-3 QUALITY ASSURANCE LINES OF AUDIT
Rev. 4

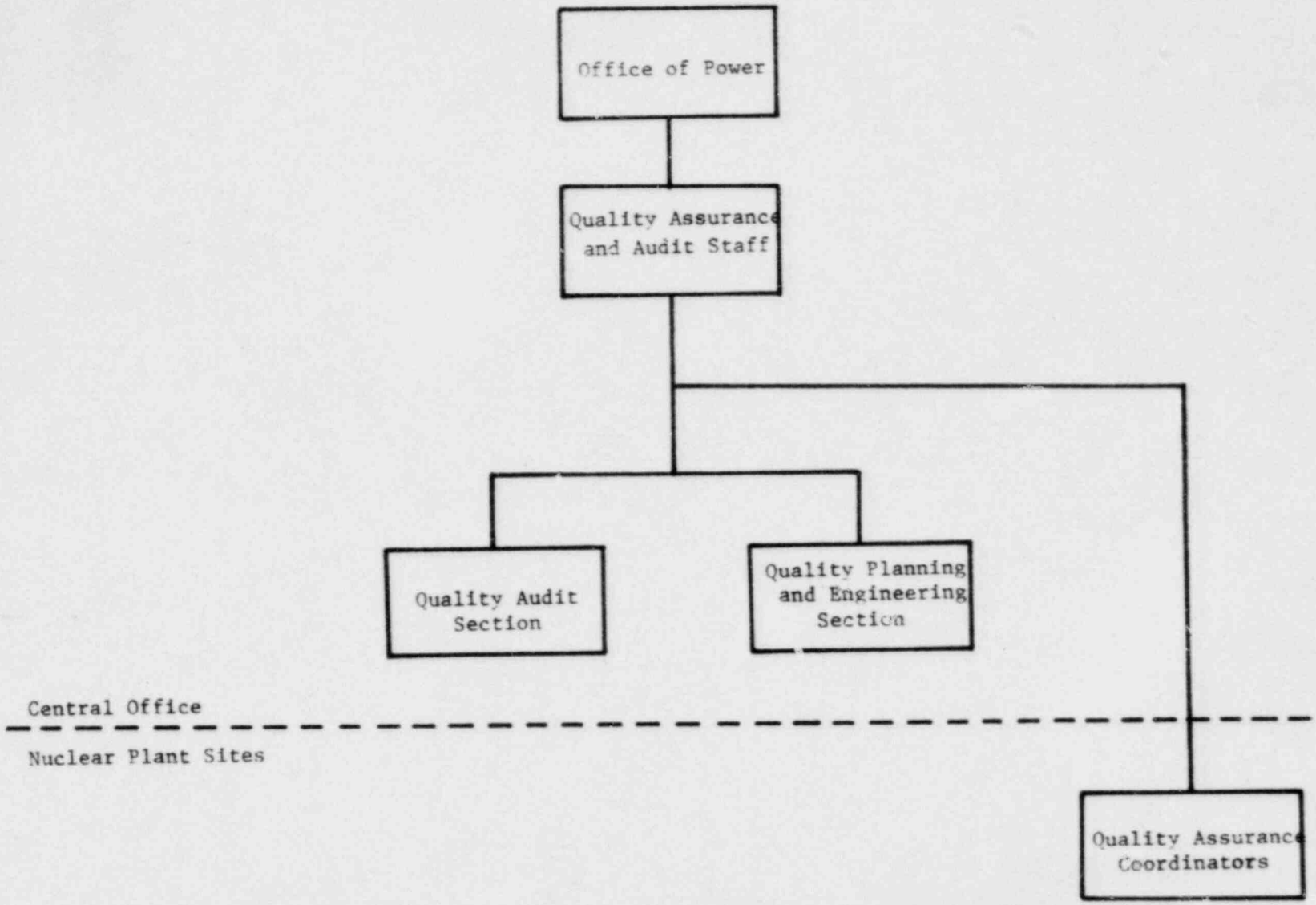

FIGURE 17.2-4 Office of Power Quality Assurance and Audit Staff Organization Chart
Revision 2

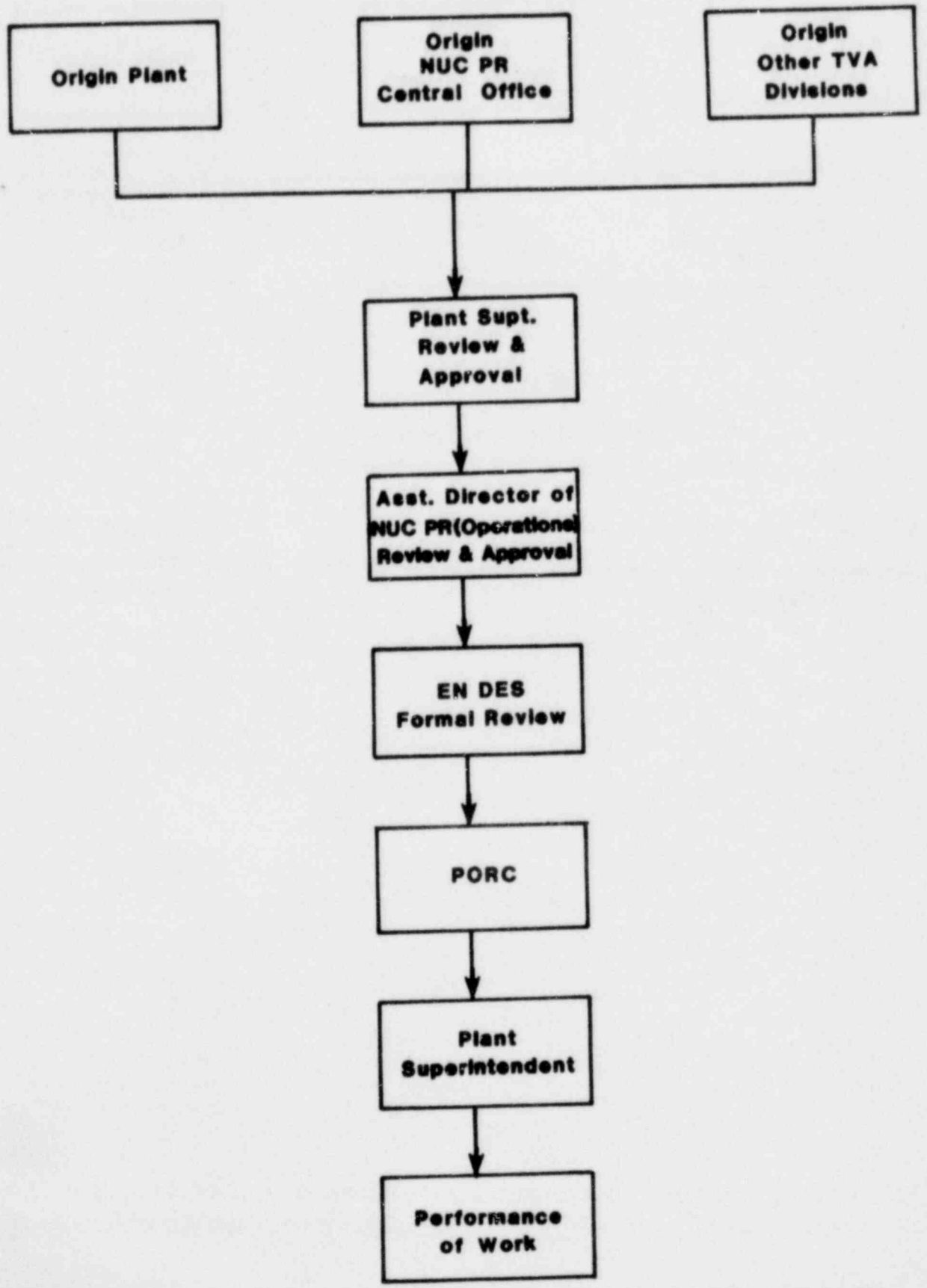

FIGURE 17.2-5 FLOW DIAGRAM - DESIGN CHANGE REQUEST
Rev. 4

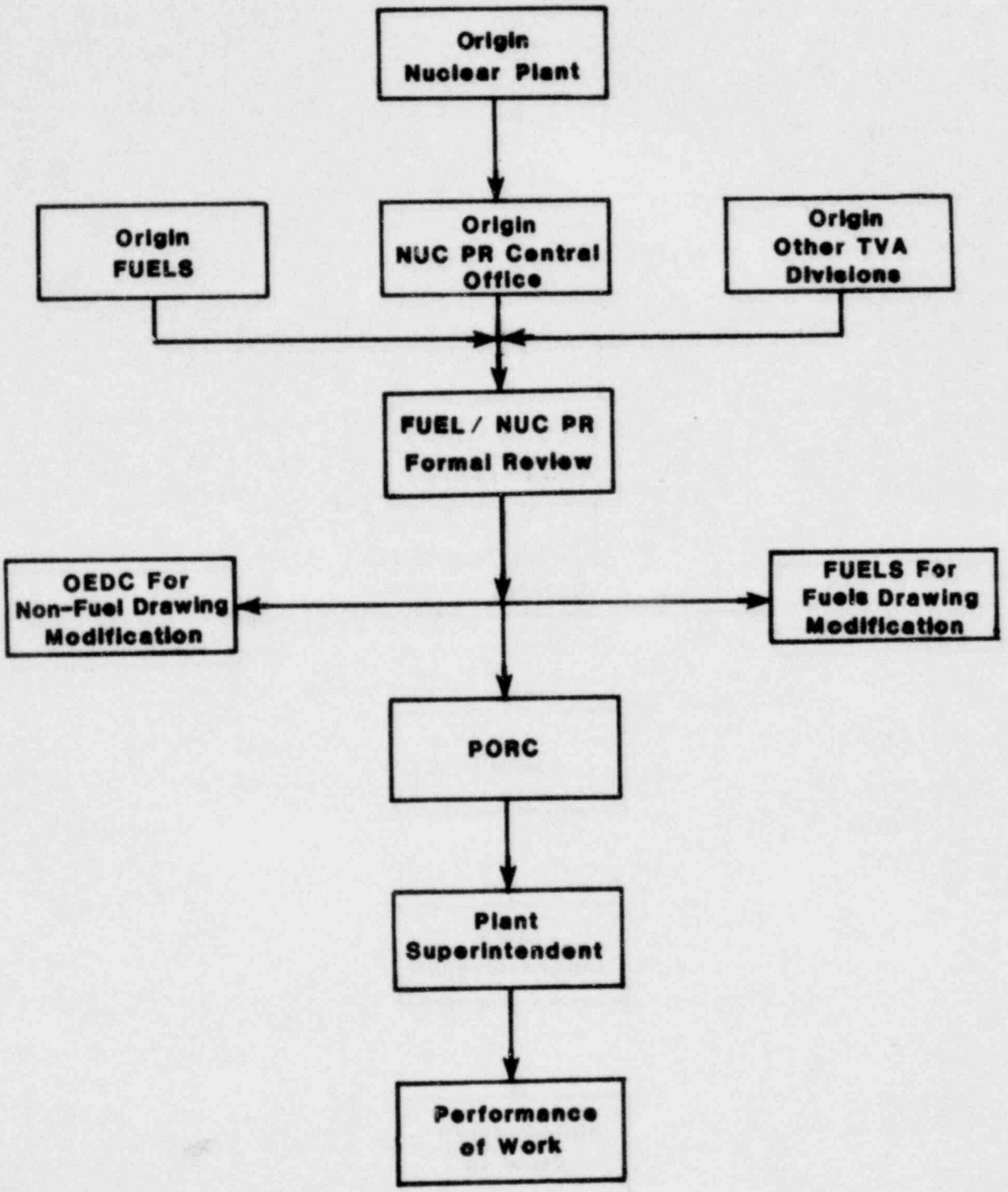

FIGURE 17.2-6 FLOW DIAGRAM - DESIGN CHANGES REQUEST FOR CORE COMPONENT
Rev. 4

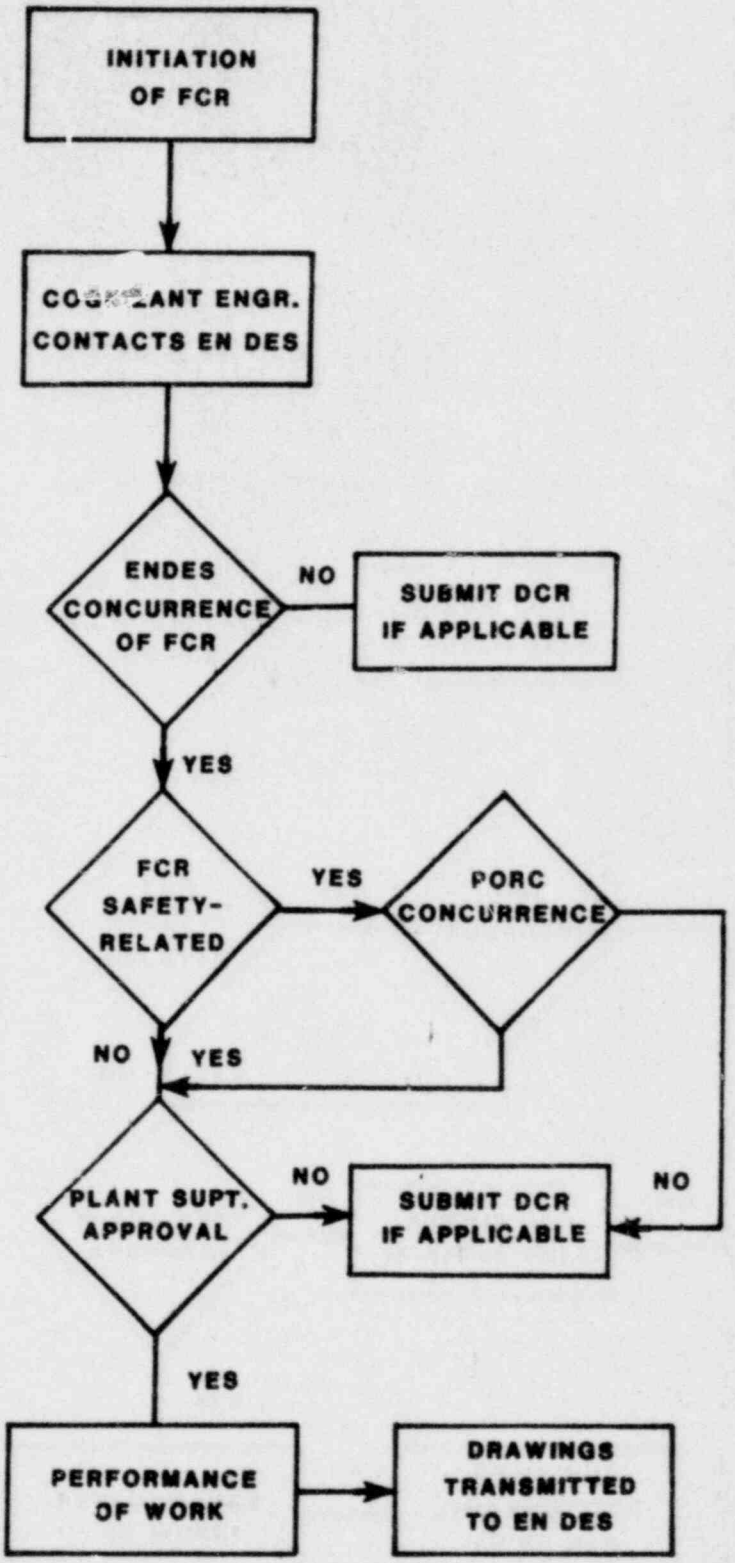

FIGURE 17.2-7 FLOW DIAGRAM - FIELD CHANGE REQUEST

Rev. 4