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Your ref:
Our ref: LTR-NRC-02-54
November 6, 2002

Subject: Westinghouse Quality Management System, Revision 5

Attached is a copy of the Westinghouse Quality Management System (QMS) document, Revision 5. It includes the NRC letter accepting the Revision 5. This copy is being provided for your retention.

If there are any questions, and to request the change-highlighted version, please call John Papai at 412-374-2434, or email at papaijs@westinghouse com.

H. A. Sepp, Manager
Regulatory & Licensing Engineering

cc: J. S. Papai

Attachment: QMS, R. 5

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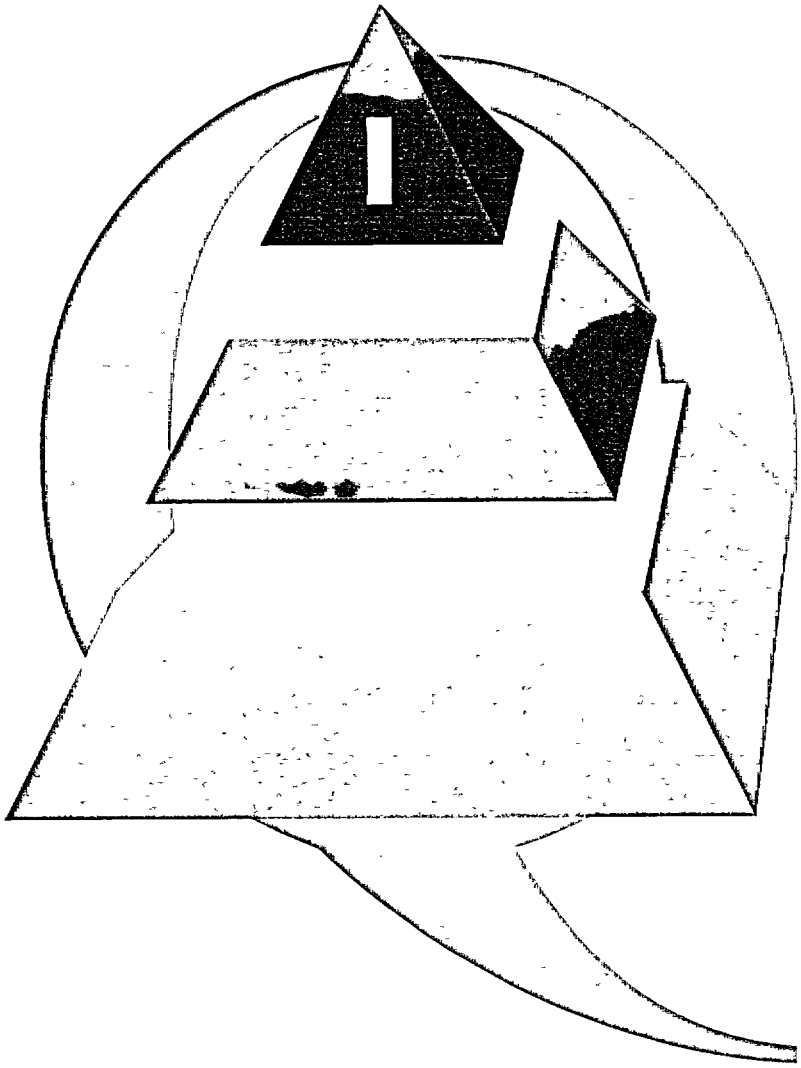

Quality Management System

Revision 5

Westinghouse

WESTINGHOUSE NON-PROPRIETARY CLASS 3

QMS
Revision 5

Westinghouse Electric Company
Quality Management System

S. R. Tritch
President and CEO
Westinghouse Electric Company

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D C. 20555-0001

September 13, 2002

Mr. H. A. Sepp, Manager
Regulatory and Licensing Engineering
Westinghouse Electric Company LLC
Post Office Box 355
Pittsburgh, PA 15230-0355

SUBJECT: WESTINGHOUSE QUALITY MANAGEMENT SYSTEM (QMS), REVISION 5 (TAC NO. MB6198)

Dear Mr. Sepp:

The staff has completed its review of the subject Westinghouse quality assurance program description that was submitted by letter dated August 1, 2002.

Revision 5 to the Westinghouse QMS addresses changes necessary to implement the requirements of the new international quality standard ISO 9001:2000. The format has been changed to align it with the major processes of the new ISO standard and to incorporate the new requirements of ISO. These changes do not affect commitments when supplying items or services to nuclear power plants in the United States. The changes do not reduce commitments as defined under the regulation 10 CFR 50 54(a)(4)

The staff finds that Revision 5 continues to meet the requirements of Appendix B to 10 CFR Part 50 and is therefore acceptable.

Any questions related to the review should be directed to Mr. Drew Holland at 415-1436. This closes the staff's actions on TAC No. MB6198.

Sincerely,

William H. Ruland

William Ruland, Director
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 700

cc: See next page

Westinghouse Electric Company

Project No. 700

cc:
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INTRODUCTION

The Westinghouse Quality Management System (hereafter known as the QMS) has been developed to comply with regulatory, industry, and customer quality requirements imposed by customers or regulatory agencies for items and services provided by Westinghouse world-wide operations. The QMS describes the Westinghouse commitments to the quality assurance requirements of ISO 9001; ISO 9000-3; 10CFR50, Appendix B; ASME NQA-1; and IAEA 50-C-QA.

Westinghouse Electric Company (headquartered in Pittsburgh, Pennsylvania, U. S. A.) has operations located throughout the world that are responsive to energy industry, utilities, and government needs. Westinghouse operations are made up of organizations that are responsible for specific business areas. These operational organizations (Figure 1) are responsible for marketing, design, procurement, manufacture, installation, inspection, testing, servicing, project management, and operation of certain nuclear power plant items, radioactive material packaging and transportation, and non-nuclear items. Westinghouse also offers engineering services such as life-extension studies, diagnostics, service analyses, and item and service testing.

APPLICABILITY

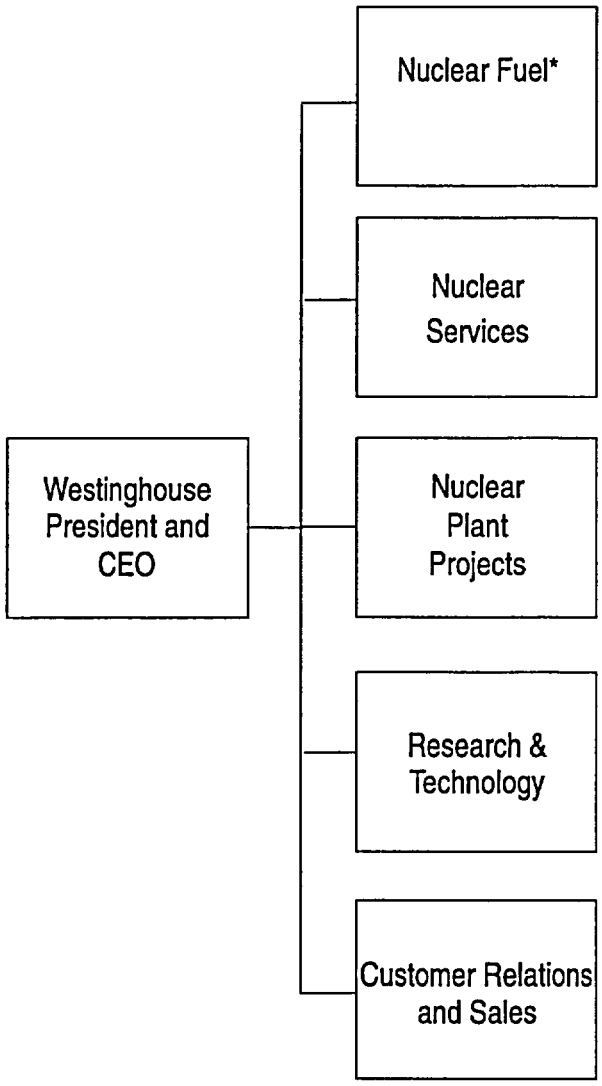
The QMS applies to activities that affect the quality of items and services supplied by Westinghouse. It defines the basic requirements applicable to customer contracts and is a commitment to our customers. It serves as a directive for all functions in establishing necessary policies and procedures that comply with the requirements of ISO 9001:2000 and ISO 9000-3:1997; and in addition, as applicable for safety-related activities, 10CFR50, Appendix B; ASME NQA-1-1994 Edition; and IAEA 50-C-QA, Revision 1.

Westinghouse implements all applicable requirements of the QMS for all safety-related items and services. Westinghouse implements those requirements of the QMS consistent with ISO 9001 for items and services that are not safety-related, as a minimum.

Safety-related items, services and activities are those that may impact those nuclear power plant structures, systems and components that are relied upon to remain functional during and following design basis events to assure: 1) the integrity of the reactor coolant pressure boundary, 2) the capability to shut down the reactor and maintain it in a safe shutdown condition; or 3) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable guideline exposures set by the governing regulatory agency, if applicable. In addition, safety-related items, services and activities may be those defined by a governing regulatory agency or contract.

Project Quality Plans may be developed to supplement the requirements of the QMS and provide for specific contractual requirements and alternate quality assurance standards when necessary.

Westinghouse complies with the regulatory requirements applicable to the items and services it provides for use in nuclear power plants, as imposed by the governing regulatory agency. For nuclear power plants subject to United States Nuclear Regulatory Commission (NRC) regulations, Westinghouse complies with the requirements of 10CFR50, Appendix B as prescribed in U.S. NRC Regulatory Guide 1.28, and applicable ASME Boiler and Pressure Vessel (B&PV) Code.



* Excludes operations in United Kingdom

FIGURE 1
WESTINGHOUSE OPERATIONAL ORGANIZATIONS THAT MEET QMS COMMITMENTS

Westinghouse positions and clarifications to the applicable U.S. NRC Regulatory Guides and ASME NQA-1 are stated in Appendix A of this document.

The QMS may be submitted to a governing regulatory agency as needed. Westinghouse submits the QMS to the United States NRC for review and approval prior to implementation of any changes that reduce its commitments for safety-related items and services under 10CFR50, Appendix B, ASME NQA-1 or applicable NRC Regulatory Guides contained herein. Westinghouse notifies the NRC for information within ninety days of any implemented QMS changes that do not reduce its commitments. NRC notification is in accordance with the requirements contained in 10CFR50.55 (f) (3).

1.0 QUALITY MANAGEMENT SYSTEM

The Westinghouse Quality Management System (QMS) incorporates quality planning, provides a framework for managing the activities that enable the company to create items and services which consistently satisfy the customer and regulatory requirements, and is a tool for achieving enhanced customer satisfaction. The QMS also provides for the continual improvement of the quality management system by monitoring processes based on their significance, measuring their effectiveness against objectives, and management selection of processes for improvement.

1.1 Quality System

Activities affecting quality are documented in accordance with written manuals, procedures, instructions, specifications, and drawings that contain appropriate criteria for determining whether prescribed activities have been satisfactorily accomplished. The documentation is established in the following three distinct levels that integrate the policies, procedures, and working documents:

Level 1. QMS
Level 2. Westinghouse and operational organization policies and procedures
Level 3. Functional/Department/Plant procedures and work instructions

The relationship between these documents is shown in Figure 2.

1.1.1 Quality Management System (Level 1)

The QMS is structured around interlinked processes that provide the necessary implementation controls to ensure customer and regulatory requirements are met and continual process improvement. It provides the basis for policies and procedures that implement a comprehensive quality management system. These processes are those that define activities that are directly necessary to create the item or service, and those that provide the supporting infrastructure to enable the direct processes to operate under the required controls, and continually improve. Figure 3 is a graphical depiction of this process relationship. Implementing policies and procedures (Levels 2 and 3) provide the details of interaction and sequence for the processes.

The QMS includes commitments to address quality standards and regulatory requirements as indicated in the Applicability section. For safety-related activities affecting quality, the QMS provides for, and organizations comply with, applicable quality assurance requirements imposed by the governing regulatory agency.

The QMS and changes thereto are reviewed and approved by Westinghouse management. The control of the QMS is the responsibility of the Management Representative, or designee.

1.1.1.1 10CFR50.55a/Criterion 1 of 10CFR50 APP.A

All organizations performing safety-related activities subject to United States NRC regulatory requirements comply with the requirements of 10CFR50.55a, with the specific editions of the Codes and Standards identified in the applicable Safety Analysis Reports (SAR), and Criterion 1 of 10CFR50, App. A.

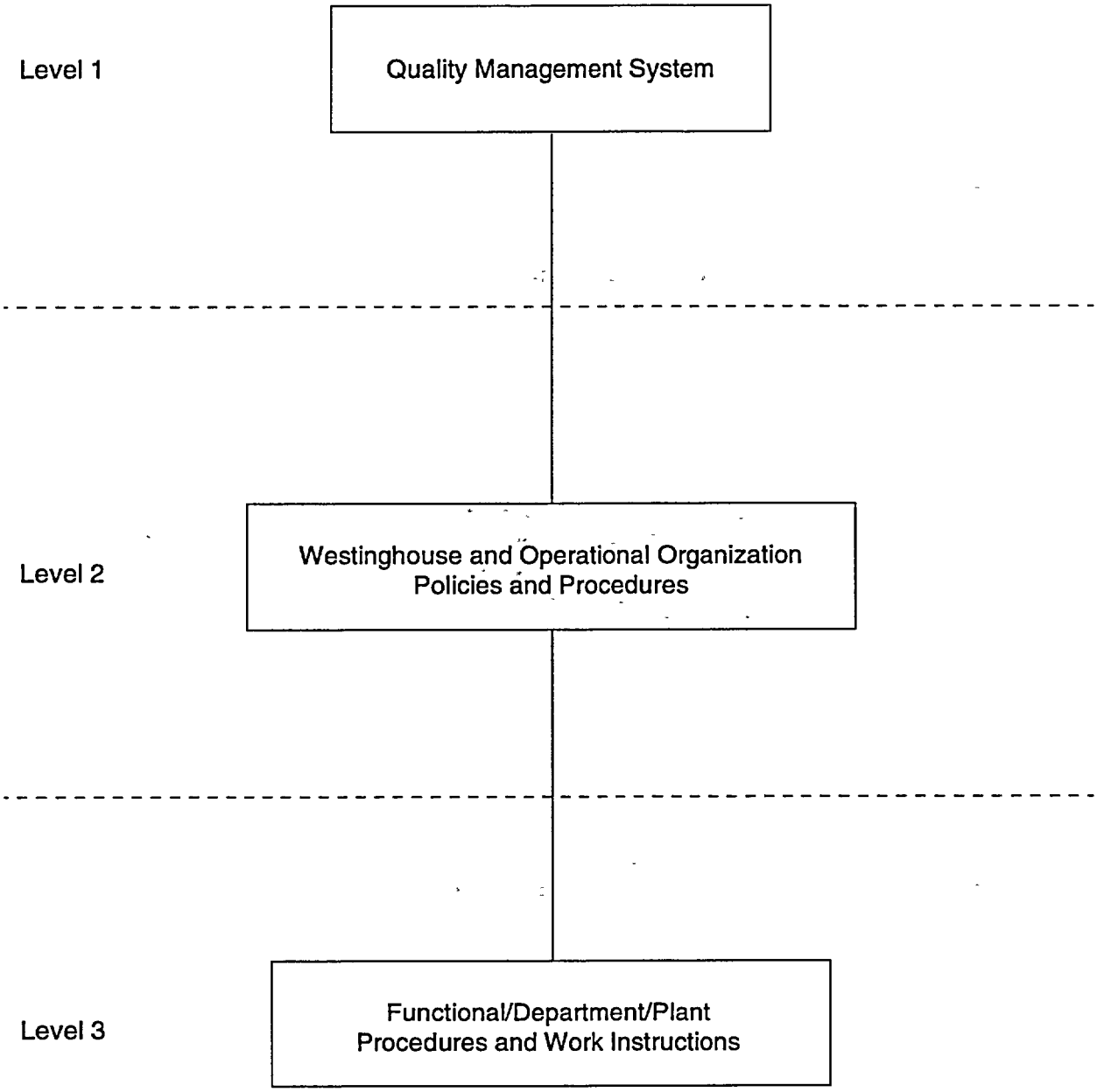


FIGURE 2

POLICY AND PROCEDURE STRUCTURE

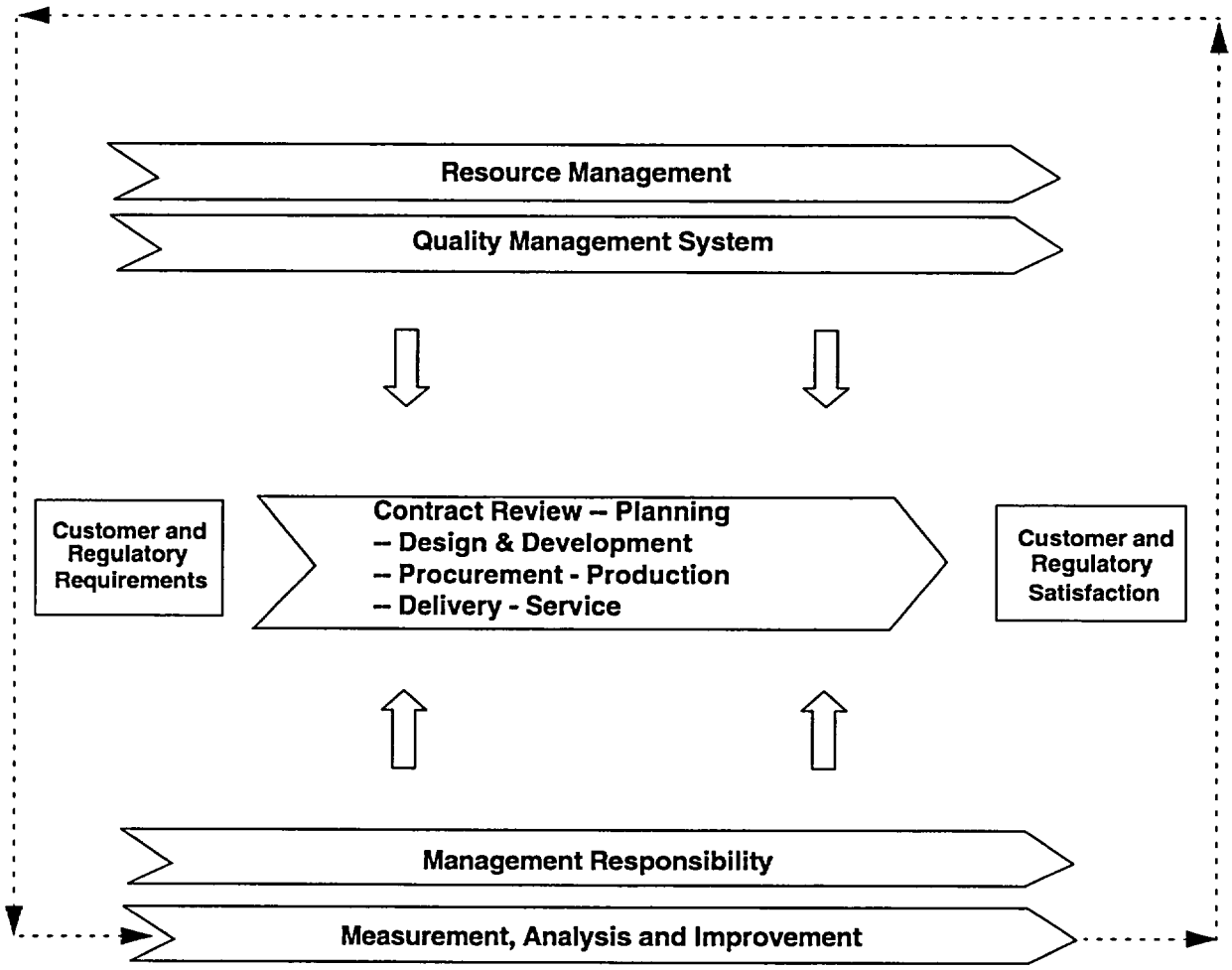


FIGURE 3
QUALITY MANAGEMENT SYSTEM
PROCESS INTERACTION

1.1.1.2 10CFR21/10CFR50.55

Requirements imposed by a governing regulatory agency, law, or contract for reporting defects and noncompliance are addressed when applicable. Westinghouse maintains procedures that provide for the evaluation of reported conditions that may require NRC notification under United States law in accordance with the requirements of 10CFR21, Reporting of Defects & Noncompliance, and 10CFR50.55(e), Conditions of Construction Permits.

1.1.2 Westinghouse and Operational Organization Policies and Procedures (Level 2)

1.1.2.1 Policies and Procedures

Organizations with impact on customer contractual or regulatory commitments are responsible for establishing procedures that comply with the requirements of the QMS. They are responsible for ensuring that lower-tier procedures are established as necessary to implement applicable requirements.

The Level 2 procedures governing quality-related activities are contained in a Westinghouse Policy/Procedures Manual. These procedures address regulatory requirements and QMS policies, as applicable. These procedures are reviewed and approved by Executive Management, or designee, of each applicable organization. Adoption of these policies and procedures by other organizations for implementation will be subjected to review by those organizations.

1.1.2.2 Project Quality Plans

The quality requirements contained in the QMS may not address all quality system requirements invoked by customer contracts, or required by a governing regulatory agency, for each Westinghouse project. To define and implement an alternate quality system for specific projects, it may be necessary to create a Project Quality Plan (PQP) to specify supplemental quality requirements, identify supplemental/revised procedures, or provide recognition and compliance with alternative quality standards. When a PQP is necessary to address these needs, or to provide more detailed information required for specific customer or market acceptance, the PQP may take the form of a complete quality assurance program manual based on the commitments of this document. For the project to which it is applicable, a PQP, in the language it is written, is the definitive quality system description and applies to activities that affect the quality of items and services supplied by Westinghouse.

A PQP is developed, issued, revised and controlled in accordance with established procedures; it is reviewed and approved by the responsible functional organization or project management with Quality concurrence.

1.1.2.3 Graded Quality

Requirements are applied as necessary to achieve the level of quality specified. Procedures identify control requirements for items and services based on the complexity of the work and safety-related function of the item or service. To ensure consistency the classification process, including safety classes, is documented in procedures. The safety class of items is documented and approved by responsible management.

1.1.3 Functional/Department/Plant Procedures and Work Instructions (Level 3)

1.1.3.1 Functional/Department/Plant Procedures

Procedures are established to implement local responsibilities in accordance with Level 2 policies and procedures or the QMS. Responsible managers ensure the preparation, approval, distribution, and revision of these procedures.

1.1.3.2 Work Instructions

Work instructions provide detailed steps to conduct specific work activities. Work instructions are prepared as needed to supplement procedure requirements and to ensure that critical work scopes are carried out in a consistent manner. Managers are responsible for determining where work instructions are required in their areas of responsibility and for establishing systems for the generation, review, distribution, revision, and control of work instructions.

1.2 Document and Data Control

Managers are responsible for ensuring that all activities affecting the quality of items and services are accomplished in accordance with controlled documents such as quality system manuals, procedures, work instructions, and controlled data such as customer order requirements. These documents contain appropriate criteria for determining whether prescribed activities have been completed satisfactorily. Procedures are established which provide for document review, approval, issue, and changes to ensure inclusion of customer technical and quality requirements prior to implementation. All personnel are responsible for ensuring that the correct revisions of applicable industry codes and standards are used, in accordance with customer requirements.

1.2.1 Document Approval and Issue

Each manager with lead responsibility for a document or document series is responsible for establishing controls that define responsibility, authority, issue, use, and revision and control of the document or document series. Document control procedures identify (as applicable):

- Format and content guidelines;
- Requirements to ensure that documents are complete, correct, current, and in compliance with all applicable technical, quality, and administrative requirements; Individuals or organizations responsible for review and approval of documents, and revisions thereto;
- Requirements for the release and issue of approved documents to ensure that responsible personnel are promptly provided with current document revisions at the location where the document is used;
- Requirements for document effective and/or issue dates;
- Requirements for identifying what has been revised;
- Requirements for maintaining document master lists and controlled distribution lists; and
- Provisions for reissuing drawings after a practical number of changes have been identified/approved for inclusion.

During the document preparation and review cycle, designated personnel review documents to ensure that the requirements can be met within a timely manner once the document is formally issued. Review and approval of changes are performed by the same organizations that reviewed and approved the original documents, or by designated alternate organizations who have access to the original data.

Change to procedures, instructions, and drawings are approved and documented prior to implementation and are made available at the location where the activity will be performed prior to commencing work.

1.2.2 Quality Management System Document Control

All levels of management are responsible for assigning responsibilities to ensure that documents and data are controlled in accordance with established procedures and resolving issues pertaining to policy and procedure content, application, and use.

1.2.3 Computer Software Control

Documented procedures are established to control changes to the approved configuration of computer software used on product-related applications. The development and maintenance of computer software include documentation describing computer software requirements, computer software design, verification and validation (testing), configuration control, and error reporting and resolution. Organizations developing or supplying computer software are required to use policies and procedures that comply with the applicable requirements of the QMS.

1.2.4 Translation of Documents

Translations of documents from, or to, a language other than English, which could have an effect on safety-related items or services, will be translated by a qualified translator. These translations will be verified and certified in accordance with established procedures.

1.2.5 Specifications and Drawings

Specifications and drawings are prepared to define design and process characteristics of items and services. The organization responsible for the design or process is responsible for determining the specification and drawings necessary to ensure compliance with customer and regulatory requirements. The organization that initiates specifications or drawings is responsible for ensuring that these documents are maintained and controlled.

1.3 Control of Quality Records

Quality records are completed documents that furnish evidence of the quality of items, services, and/or activities affecting quality and compliance with the QMS. Quality records may also include articles such as materials or test specimens when required. Quality records are retained, reviewed, and provided to the customer in accordance with applicable contractual and regulatory requirements. In manufacturing and service organizations, product-related records are not considered complete until the time of shipment.

These quality records will be controlled in accordance with established procedures. These procedures identify the requirements and responsibilities for records classification, legibility, identification, collection, filing, indexing, storage, distribution, retention, retrieval, and disposition. Documents are considered valid records when they are validated by stamp, initialed, or signed and dated, by authorized personnel. Handwritten signatures are not required if the document is clearly certified or otherwise authenticated as a statement by the reporting individual or organization. Correction of quality records is in accordance with established procedures.

Records requirements for suppliers of items and services are specified in procurement documents, as required. Suppliers' records systems are verified and monitored during surveillance and audits.

Quality records are protected against deterioration, damage, and/or loss in accordance with established procedures, and safety-related records requiring long-term storage are maintained either at an approved single storage facility or by storage of duplicate copies at separate geographical locations.

1.3.1 Classification of Nuclear Records

Records are generated in accordance with the QMS for items and services supplied to nuclear power plants. Westinghouse classifies these records as lifetime or nonpermanent in accordance with United States Regulatory Guide 1.28 and retains them in accordance with ASME NQA-1, Supplement 17S-1. For nuclear power plants subject to a governing regulatory agency other than the United States NRC, Westinghouse may classify and retain nuclear records in accordance with the applicable regulatory requirements.

1.3.1.1 Lifetime Records

Quality records are classified as lifetime if they meet one or more of the following:

- Records that would be of significant value in demonstrating capability for safe operation of a nuclear power plant.
- Records that would be of significant value in maintaining, reworking, repairing, replacing, or modifying a safety-related item.
- Records that would be of significant value in determining the cause of an accident or malfunction of a safety-related item.
- Records that provide required baseline data for in-service inspection of a nuclear power plant.

1.3.1.2 Nonpermanent Records

Quality records are classified as nonpermanent when they show evidence that an activity was performed in accordance with applicable requirements, but do not meet any of the criteria for lifetime records.

2.0 MANAGEMENT RESPONSIBILITY

2.1 Quality Policy

The Westinghouse Quality Policy is: To provide products and services that fully satisfy customer and regulatory requirements.

Management is responsible for ensuring that this policy is communicated, understood, and implemented at all levels of the organization. All employees are expected to perform their responsibilities in accordance with applicable quality requirements, and to strive for customer satisfaction and continual improvement. Maintaining an atmosphere of integrity and responsiveness is one of the most important attributes of the work environment. All employees are encouraged to openly express all concerns for the safety and quality of Westinghouse items and services.

2.2 Westinghouse President and CEO

The Westinghouse President and CEO defines the overall quality policy and promotes a culture of conformance to requirements, customer satisfaction and continual improvement. The Westinghouse President and CEO authorizes and endorses the QMS, and appoints and supports a Management Representative to coordinate development, implementation, and maintenance of the QMS. Figure 1 identifies the Westinghouse operational organizations that meet the requirements and commitments of this QMS.

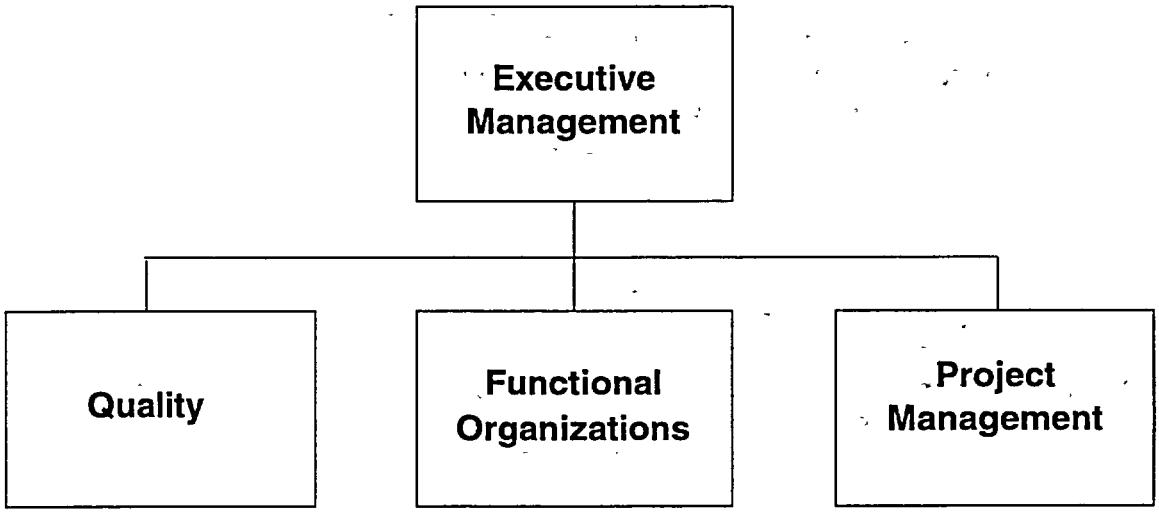
2.3 Operational Organization

Organizations reporting to the Westinghouse President and CEO are assigned responsibilities to ensure contractual requirements are identified and met, a focal point for assuring customer satisfaction, and the quality of items and services. These organizations include functions such as Engineering, Manufacturing, Project Management, Quality, Marketing, and Purchasing. Figure 4 shows a typical operational organization reporting structure designed to satisfy the commitments of the QMS. Specific organizational details, including authority, responsibilities and interfaces are established. Achievement of quality is the responsibility of each individual performing work. Verification of the achievement of quality is accomplished by individuals or groups not directly responsible for performing the work.

The management of each operational organization is responsible for the quality program activities described throughout this document and ensuring that appropriate systems, processes, procedures, and work instructions are implemented. Management is also responsible for ensuring that instances of noncompliances and opportunities for improvement are addressed in a timely manner and that personnel are indoctrinated and trained in the applicable quality system requirements.

2.3.1 Executive Management

Executive Management, normally Senior Vice Presidents, is assigned responsibility for operational organizations. They are responsible for establishing and implementing a quality assurance program that complies with the commitments of the QMS, and for appointing a Quality Manager(s). This Senior Vice President has overall responsibility and is accountable for 1) the quality of items and services supplied, 2) the effective implementation of the QMS for



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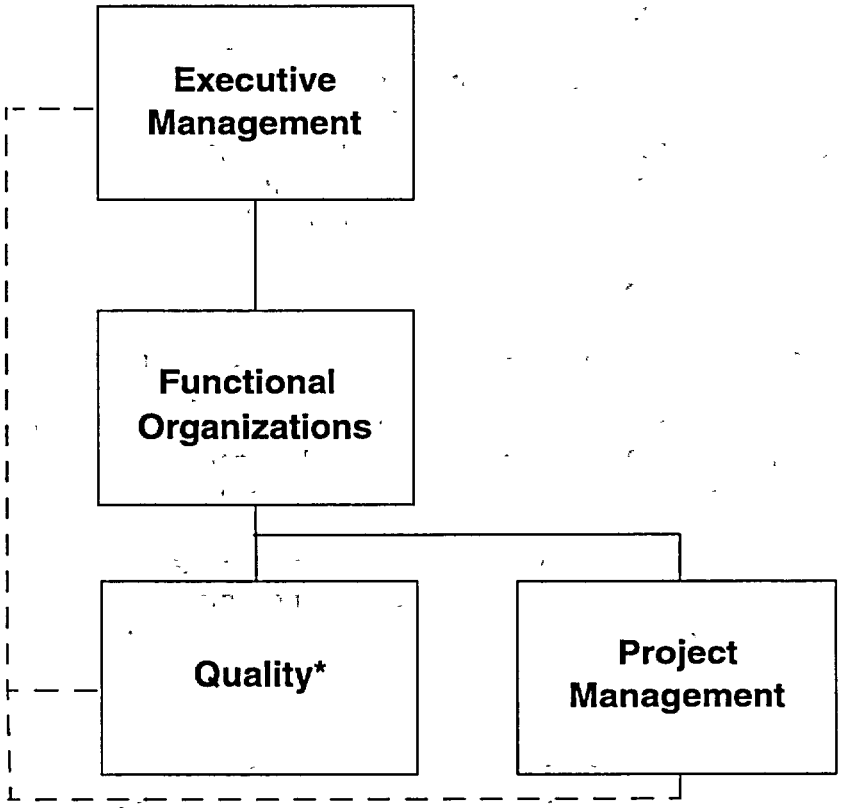

***Quality has direct access for quality related issues.**

FIGURE 4
TYPICAL OPERATIONAL ORGANIZATION REPORTING STRUCTURES

applicable activities, 3) ensuring the allocation of appropriate resources to satisfy quality requirements, 4) identification of measurable quality objectives, 5) availability of information necessary to monitor, measure and analyze selected processes and 6) continual improvement of selected significant processes. Lower levels of executive management responsible for specific operational organization business areas may share these responsibilities.

2.3.2 Quality

The responsibility for documenting the quality program is assigned to a Quality Manager(s) (or similar title). The Quality Manager is sufficiently free from direct pressure for cost/schedule and has the authority to stop work and delivery or installation of nonconforming items and services. The Quality Manager has access to higher management levels, including the Senior Vice President, for all quality related issues. This access ensures the authority of the Quality Manager to identify quality problems, initiate actions, make recommendations and verify implementation of solutions. Quality is responsible for providing quality assurance program management and support, monitoring QMS performance, and coordinating quality assurance activities.

2.3.3 Functional Organizations

Functional organizations, such as Manufacturing and Engineering, are responsible for performing and controlling activities to ensure that items and services supplied meet specified quality requirements. Engineering is responsible for performing the various technical functions associated with the specification, design, servicing and replacement of items. Manufacturing is responsible for the manufacture, fabrication, construction, testing, and/or servicing of items. Each functional organization is responsible for ensuring, to the degree necessary, that its personnel are aware of organizational quality objectives that their activities may support.

2.3.4 Project Management

For accomplishment of a specific project or task, management may assign an individual to be responsible for all aspects of the job and to manage the efforts of personnel working on the project, whether they report directly or through a functional organization. The title of such an individual may be Project Manager, Task Manager, Site Manager, Project Coordinator, Task Leader, Lead Engineer, Job Superintendent, or other similar titles.

The organizational structure for a project may vary depending upon the nature, scale and complexity of the work, and assigned personnel may be located at a headquarters location, regional facility, supplier facility or remote site location, wherever the work is to be performed.

2.3.5 Support

Support functions such as procurement and marketing are integrated into the operational organizations and provide support in accordance with the requirements of this QMS. Purchasing is responsible for all procurement services and serves as the primary interface with suppliers. Marketing is responsible for the preparation of offers and for managing customer communications.

2.3.6 Interfaces

Westinghouse organizational interface agreements are implemented, as necessary, to reflect agreed upon responsibilities. They are documented and controlled in accordance with approved procedures.

2.4 Management Review

Executive Management and staff are responsible for reviewing the implementation of the requirements set forth in the QMS. This review is conducted at defined intervals to communicate the continuing process effectiveness and suitability in satisfying the applicable quality and regulatory standards, continual improvement by attaining specific, measurable quality objectives, and assessment of potential opportunities for improvement.

Review input includes information on audit performance, customer satisfaction, performance of selected processes, delivered item and service conformance, the status of corrective and preventive actions, supplier performance, prior review's action items, known changes that may significantly affect the QMS, and any substantial recommendations for improvement.

Review output includes any decisions and actions related to improving quality management system and process effectiveness, significant product improvements to address customer requirements, and resource needs.

Records of the management review are maintained.

2.5 Management Representative

The Quality Manager designated as the Management Representative has direct access to the Westinghouse President and CEO for all appropriate quality issues. This Quality Manager has responsibility for 1) the Quality Management System, including quality policy, assessment of QMS effectiveness, and supplier quality, and 2) monitoring the overall QMS performance, and assuring that the QMS provides for awareness of customer requirements. The Quality Managers of all other organizations report on a matrix basis to the Management Representative for quality policy matters. This role is also established as a focal point for any employee to report issues concerning the QMS and for coordinating action for changes and improvements.

3.0 RESOURCE MANAGEMENT

Necessary resources are provided to implement, maintain, and continually improve the effectiveness of the quality management system, and to satisfy customer and regulatory requirements. Competent, properly trained and/or qualified personnel are provided to accomplish work activities. Personnel are aware how their activities support achievement of their organization's quality objectives. Adequate facilities, equipment, services, information and work environment are provided and managed to support the delivery of items and services in compliance with customer and regulatory requirements.

Managers of activities affecting quality are responsible for 1) determining the personnel competencies necessary for the assigned activities and assessing associated needs, 2) ensuring necessary actions (e.g., training) are taken to satisfy these needs and 3) evaluating these actions to confirm that personnel are adequately trained, competent and qualified to manage and perform assigned work activities. These actions include indoctrination to and familiarization with applicable quality assurance program and procedure requirements, and any special skills training required for the performance of job activities. The extent of such actions is commensurate with the scope, nature, and complexity of the activity, as well as the education, experience, and proficiency of the individual. Historical records of personnel education and experience may serve as documentation of competency, when supplemented by applicable training records. Actions to build or maintain necessary competencies are documented, and records are maintained in accordance with applicable records procedures.

Personnel performing inspection, test, NDE examination, and audit activities are qualified in accordance with applicable requirements, including specific provisions for education and experience. Qualification programs include documentation of capability through either written tests or physical demonstrations of skill, as well as evidence of maintenance of proficiency based on retraining or continued satisfactory performance. Documentation in the form of certificates of qualification, or other similar records, specifies activities for which the individual is qualified, the basis for certification, and the period for which the certification is valid.

4.0 PRODUCT REALIZATION

4.1 Contract Review

Marketing and/or contract administration organizations are responsible for coordinating negotiation and contract review activities.

4.1.1 Negotiation

Marketing and/or contract administration organizations distribute copies of customer specifications and subsequent changes regarding technical, administrative, and quality requirements to appropriate functional groups for review and comment prior to proposal submittal. This review is performed to ensure that customer requirements are adequately defined and understood, and that the capability exists to meet these requirements. During the review, marketing and/or contract administration organizations coordinate all communication with the customer. A record of the review is maintained.

4.1.2 Contract Review

All customer orders and amendments received are formally reviewed by marketing and/or contract administration organizations and other designated functional organizations at the time of entry. This review is performed to enhance customer satisfaction by ensuring that 1) all stated customer requirements are adequately defined and documented, 2) that other requirements necessary for the application (e.g. regulatory) are determined and considered, and 3) that the capability exists to meet all customer requirements. Requirements that differ from those in the final proposal are communicated to the customer and resolved. Documentation of this review is maintained in accordance with established procedures. After acceptance, the customer order and subsequent amendments are distributed to appropriate functional organizations.

4.2 Design Control

4.2.1 General

Engineering controls the design process to ensure that the design and associated documentation meet applicable requirements and that design changes are properly evaluated prior to implementation.

Activities are performed by engineering organizations in support of new or modified items, services and/or specific customer projects. Engineering organizations are responsible for developing and maintaining procedures that comply with the requirements of the QMS. These engineering organizations are also responsible for complying with the applicable design-related requirements in established procedures.

Engineering organizations are responsible for performing design activities in accordance with established requirements and for preparing, reviewing, and approving design specifications, drawings, and other design documentation. These documents define and communicate requirements for procurement, manufacturing, installation, servicing, quality, and other activities. Quality requirements are specified by engineering and are reviewed by an independent organization to ensure that inspection, test, acceptance, and documentation

requirements are incorporated. Professional engineers performing national industry code certification activities are qualified in accordance with appropriate code section requirements (e.g., ASME B&PV Code Section III, Appendix XXIII) when applicable according to governing regulatory requirements or contractual requirements.

4.2.2 Design and Development Planning

Engineering organizations are responsible for establishing and documenting a plan for a specific development or design activity. The plan shall provide a description of the design scope, verification and validation methodology, the identification of qualified personnel responsible for the design activity, key milestones, and design interfaces necessary to accomplish the design activity. Plans shall be maintained and implemented throughout the design activity.

Westinghouse may subcontract the performance of design work to a supplier approved for such services. For example, such subcontracted services may include preparation of Design Specifications and Design Reports for ASME B&PV Code Section III components. Westinghouse responsibilities as the Owner's Designee, or similar designation under other national industry codes, when assigned by the contract, shall not be subcontracted.

4.2.2.1 Activity Assignment

Engineering management is responsible for ensuring and documenting that personnel are qualified to perform assigned design work, including consideration for new capabilities that may be required as work scopes expand and/or change.

4.2.2.2 Organizational and Technical Interfaces

Engineering organizations are responsible for establishing design interfaces with other organizations necessary to accomplish design project objectives and for documenting the identified interfaces. Design interfaces for safety-related items are identified, documented and controlled. These interface controls include the assignment of responsibility and the procedures to be used for the review, approval, release, distribution and revision of documents involving safety-related design interfaces. Transmittal of design information is documented and controlled, and the status of the information is identified.

Design interface considerations may include:

- Customers, to ensure understanding of requirements
- Marketing and/or contracts administration organizations, to address contractual requirements and changes
- Other internal and external engineering organizations, to identify technical support, review, approval, release, and distribution of documents and changes thereto
- Purchasing, to ensure the availability of suppliers to meet design requirements
- Manufacturing, to assess manufacturing capability to meet design needs

- Quality, to ensure inspection capability and understanding of acceptance criteria

4.2.3 Design Input

Engineering organizations are responsible for identifying and documenting the design inputs to specified design projects. Engineering organizations are responsible for the resolution of incomplete, ambiguous, or conflicting design inputs. Sources of design input may include, as applicable:

- Customer specifications
- Performance requirements
- Functional requirements
- Industry codes and standards
- Regulatory and statutory requirements
- Technical requirements

Engineering organizations are responsible for reviewing and approving the selected design inputs for adequacy.

4.2.4 Design Analysis

Design analysis documents are legible, reproducible, and describe the purpose, method, assumptions, design input, and references such that the analysis can be reviewed and verified by a person technically qualified in the subject without recourse to the preparer. Computer software is controlled, verified, and validated in accordance with established procedures.

Documentation of design analyses for safety-related items includes, either directly or by reference, the objective of the analysis; design inputs and their sources; results of literature searches or other applicable background data; assumptions and identification of those that require verification as the design proceeds; identification of computer calculations, including computer type, computer program name, revision, inputs, outputs, evidence of, or reference to, computer program verification, and the bases or reference to supporting application of the computer program to the specific physical problem; and review and approval.

4.2.5 Design Output

Engineering organizations are responsible for design output, including computer software, in the form that meets contract requirements. Typical design output includes analyses, design reports, drawings, and specifications. Engineering is responsible for ensuring that the design output complies with design input requirements, customer and regulatory requirements, and considers the safe and proper functioning of the designed items.

A commercial-grade item that is modified, inspected, and/or tested to demonstrate compliance to requirements more restrictive than the manufacturer's original specifications is identified as different from the commercial-grade item and traceable to the documented difference.

4.2.6 Design Verification

4.2.6.1 Verification Process

Engineering organizations are responsible for ensuring that design verification is performed and documented. Design verification is conducted by individuals, not directly responsible for the design scope, with expertise in various aspects of the design scope. Verification by the originator's supervisor may be permitted if the supervisor did not specify a single design approach or establish specific design inputs. Design verification activities for projects are based on such factors as the complexity of the design, effects of failure or malfunction, regulatory requirements, similarity to previous designs, and contractual requirements. Design validation, such as qualification or final product testing, is performed to ensure that the product conforms to the specified user requirements. When it is appropriate to do so, validation is performed during earlier stages of the design process such as the use of in-process testing, validated software or independent review. The methods of design verification used are documented and include one or more of the following:

- Tests or demonstrations
- Alternate calculations
- Design reviews

4.2.6.2 Verification Documentation

Engineering is responsible for ensuring that design verification, including any software used in the design verification process, is performed in accordance with written procedures. Engineering is responsible for providing evidence that the design and design verification were performed in accordance with procedural requirements and ensuring that records are collected, stored, and maintained.

4.2.6.3 Design Verification of Safety-Related Items

Verification is accomplished using design reviews, alternate calculations, or qualification tests as described in procedures.

Engineering managers determine the extent of design verification required as a function of the importance to safety, the complexity of the design, the degree of standardization, the state of the art, and the similarity with proven designs. Designs and changes are verified prior to release of design documents for procurement, manufacture, construction, and/or service. If a schedule conflict should exist, procedures require that in all cases design verification is completed prior to relying on the item to perform its intended function and before its installation becomes practically irreversible. Unverified design documentation is identified and controlled.

4.2.6.4 Design Verification by Design Review for Safety-Related Items

Design reviews are performed on safety-related items by individuals or multi-disciplined design review teams. Engineering is responsible for specifying in written procedures when design reviews using multi-disciplined teams are required. These reviews are performed by competent personnel and address the following, as applicable:

- Design input selection correct
- Design output reasonable compared to design input
- Design input and verification requirements for interfacing organizations specified
- Design methods appropriate
- Design inputs correctly incorporated into the design
- Adequately described, reasonable, and identified assumptions

4.2.6.5 Design Verification by Alternate Calculations for Safety-Related Items

The requirements for verification by alternate calculations are described in procedures that include the review of appropriateness of assumptions, input data, and computer program or other calculation method used.

4.2.6.6 Design Verification by Qualification Tests for Safety-Related Items

Qualification testing is performed to ensure that items conform to defined user needs and/or requirements. Qualification tests of safety-related items validate and demonstrate the adequacy of performance under conditions that simulate the most severe design conditions in accordance with written test procedures and test specifications. Test specifications are reviewed and approved by the responsible engineering group. Results of the qualification tests are approved by the engineering group responsible for the design. For tests performed on models or mockups, scaling laws are established and verified. Test results obtained for model or mockup test work are subject to error analysis, where applicable, prior to use in final design work. Information regarding verification that is incomplete, including incomplete qualification tests, is available to the customer prior to installation of equipment.

4.2.7 Design Changes

The need for changes to designs and design documentation may originate from many sources, including customers, suppliers, manufacturing and quality organizations. Design changes are evaluated to determine their effect on the overall design and on any analysis upon which the design is based.

The engineering organization responsible for the original design is responsible for controlling design changes, unless another organization has been designated in writing. Changes to approved design documents, including field changes, are subject to the same review and approval process as the original design. Unless specifically authorized by procedures, changes are performed and verified by the same process or by a similar process with the same degree of discipline.

Engineering organizations are responsible for maintaining records of changes, including the reasons for the change and effects on existing items. Design changes are initiated and documented in accordance with written procedures.

4.2.8 Technical Information

4.2.8.1 Bulletins

Notification to customers of problems or issues that relate to supplied items or services are communicated via technical bulletins in accordance with an established procedure.

4.2.8.2 Instruction Manuals

Instruction manuals that are used for proper and safe installation, operation, maintenance or repair of original safety-related items are provided as specified by engineering organizations.

4.2.9 Computer Software

Computer software developed as a deliverable safety-related product or used in the design, analysis, or operation of safety-related components, structures, and systems, is developed, controlled, and maintained in accordance with procedures and instructions that comply with ASME NQA-1, (i.e., Part I Supplement 11S-2; Part II, Subpart 2.7) and ISO 9001 (using the guidelines described in ISO 9000-3). These procedures include provisions for the validation and acceptance of software obtained from external sources. Engineering organizations developing or utilizing computer software are responsible for establishing these procedures. Computer software developed for other than safety-related applications will be processed in accordance with procedures that meet specific contract and other requirements, including ISO 9000-3, as appropriate.

4.2.9.1 Computer Software Development

Any suitable software life cycle model may be adopted, provided that it encompasses the activities associated with requirements definition, design, code implementation and testing, installation, operation and maintenance, and retirement. Functional requirements, design documents, test requirements, and test results are verified in accordance with written procedures. Verification is performed at the completion of each phase to ensure that the output of a given phase fulfills the requirements established by previous phases. Validation is performed upon completion of software development to ensure that the code satisfies all identified requirements and produces correct results.

4.2.9.2 Computer Software Change Control

Changes to software are documented, approved, and controlled by authorized personnel in accordance with established procedures.

4.2.9.3 Computer Software Testing

Computer software is tested for all intended applications. The degree of testing is dependent on the importance of the computer software to safety, complexity of the program, and prior documented performance. Acceptance criteria may be based on hand calculations, documented results from other validated computer programs, empirical data, published data in technical literature, or performance standards established through use. Testing is conducted in accordance with written procedures, and the results are documented. For nuclear applications, testing is independently verified.

4.2.10 Computer Hardware Systems

In-use test problems will be run whenever the computer program is installed on a different computer, or when significant hardware or operating system configuration changes are made. Periodic in-use manual or automatic self-check routines will be prescribed and performed for those applications where computer failures or drift can affect required performance. Procedures will be established that identify the controls for non-nuclear hardware systems based on specific customer and other requirements.

4.3 Procurement

4.3.1 General

Controls of purchased items and services are established to ensure that applicable technical and quality requirements are met. Procurement activities are controlled through documented procedures and instructions that include requirements for bid evaluation, selection of suppliers, communication of requirements to suppliers, evaluation of supplier performance, and resolution of nonconformances. Commitments to resolve unacceptable conditions are obtained from the supplier prior to contract award. Spare or replacement parts are procured to requirements which are equivalent to or exceed the original requirements.

Suppliers of safety-related items and services are evaluated and approved by Quality prior to their designation as a qualified supplier, or placement of a purchase order. Active qualified suppliers (including suppliers accredited under national industry codes such as ASME) of safety-related items are evaluated annually and audited at least every 3 years except as described below.

For safety-related items and services, Quality determines the need to conduct supplier audits based on an evaluation that is conducted and documented in accordance with ASME NQA-1, Appendix 4A-1, Section 5.1. Audit programs for suppliers of items and services for nuclear power plants that are not subject to United States NRC regulations comply with requirements imposed by the governing regulatory agency or contract.

Supplier audits need not be conducted for suppliers of safety-related items which are:

1. Relatively simple and standard in design, manufacturing, and testing, and
2. Adaptable to standard or automated inspections or tests of the end product to verify quality characteristics upon receipt.

4.3.2 Supplier Selection

The purchasing organization is responsible for placing orders only with suppliers that have been found acceptable in accordance with established procedures. Documentation of the acceptability of suppliers is maintained and identifies the items and/or services to be supplied. This documentation is maintained and is available to organizations as defined in established procedures.

Suppliers are evaluated and selected considering the historical quality performance data and audit/survey reports to the extent applicable to the item or service being procured. Procedures

describe requirements for the evaluation and selection of suppliers, as well as monitoring of supplier performance, in accordance with quality requirements. Procedures are established to describe methods for evaluating supplier performance and for initiating corrective action. Failure of suppliers to correct problems contributing to unacceptable performance constitutes a basis for disqualification.

Suppliers of safety-related items and services are evaluated and selected prior to their designation as a qualified supplier. These methods include one or more of the following: (a) evaluation of the supplier's history (including current capability) of providing the same or similar item in accordance with specified requirements; (b) review of the supplier's current quality records supported by documented qualitative and quantitative information which can be objectively evaluated; and/or (c) the supplier's technical and quality capability determined by a source evaluation of their facilities, personnel, and the content and implementation of their quality program. Suppliers of safety-related items and services for nuclear power plants not subject to United States NRC regulations are evaluated and qualified in accordance with the requirements of the governing regulatory agency or contract.

4.3.3 Surveillance

Quality conducts surveillance of suppliers during fabrication, inspection, testing, and release of items, as appropriate, and as specified in procurement documents. Surveillance planning for complex items is performed by Quality, and special emphasis is placed on aspects of manufacture and inspection that could affect equipment performance and reliability. The frequency and scope of surveillance vary with the importance to safety, complexity of an item or service, and supplier performance.

In addition to item verification, the surveillance representative verifies supplier activities such as the following:

- Written instructions are maintained current.
- Supplier certificates are correct and based upon objective evidence.
- Corrective action is implemented, when required.

Supplier management is informed of problems, and commitments for corrective action are obtained. Reports are provided to management, as appropriate, for information and resolution of significant problems. Nonconformances and/or deviations are documented by the supplier and are reported and dispositioned in accordance with requirements of the procurement document.

4.3.4 Procurement Documents

Procurement documents (for example, purchase requisitions, purchase orders, supplier quality requirements, engineering drawings, specifications) are controlled to ensure that applicable technical and quality requirements are communicated to suppliers.

Engineering organizations define technical and quality requirements for purchased items and services. Quality requirements are incorporated into procurement documents in accordance with the QMS, regulatory, and customer contractual requirements. Organizations responsible for original requirements documentation submitted to Purchasing are also responsible for processing changes to that information, submitting the changes to Purchasing and revising

standard documents, as appropriate, to incorporate the changes. Purchasing organizations are responsible for formally communicating changes to suppliers.

Procurement documents for safety-related procurements require qualified suppliers to have a quality program consistent with the quality standards required by the governing regulatory agency or alternate requirements invoked by customer contracts. Westinghouse requires the applicable portions of 10CFR50, Appendix B as evaluated in accordance with ASME NQA-1 for items and services provided to nuclear power plants subject to United States NRC regulations.

4.3.4.1 Supplier Design Controls

Design controls required of suppliers include:

- Measures to ensure that design bases are correctly translated into drawings, specifications, procedures, and instructions
- Documented review of designs to ensure that appropriate quality standards are specified
- Control of design changes commensurate with those applied to the original design
- Review and approval of changes to quality documents by the group responsible for originating the documents
- Independent verification of designs by review, testing, or alternate calculations
- Design-related computer software control

4.3.4.2 Customer Access to Suppliers

Customers may require access to suppliers' locations for surveillance, audit, and/or verification purposes. Such requirements specified in customer contracts are identified during the contract review process and communicated to the applicable quality and purchasing organizations for coordination with the customer and supplier. Records of customer involvement are maintained in accordance with established procedures.

4.3.4.3 Document Submittal

When suppliers are required to submit documents such as drawings, specifications, and procedures for review, approval, or other informational purposes, these requirements are specified in procurement documents.

4.3.5 Computer Software Procurement

Westinghouse organizations responsible for developing or supplying software, or providing software services, utilize established policies and procedures that meet the applicable requirements of the QMS. Procured software that has not been developed in accordance with the requirements of the QMS shall be controlled, evaluated, and tested prior to use, as described in documented procedures.

4.3.6 Documentation

Supplier submittals of documents are evaluated against approved acceptance criteria for technical correctness, adequacy of inspection methods, and completeness of test data. Items with contingent conditions that require additional action after delivery are documented and monitored until resolution is complete and documented.

4.3.7 Acceptance

4.3.7.1 Receiving Inspection and Testing

Procedures are established to ensure:

- Incoming items are not used or processed until they have been accepted for use, except in those cases in which a subsequent test or inspection will verify acceptability. Methods of acceptance include source verification, receiving inspection, and review of source documents attesting to acceptability.
- Acceptance is performed in accordance with written checklists, plans, or procedures.
- Items released for urgent production purposes are identified, documented, and controlled to permit recall until acceptance is completed.

4.3.7.2 Engineering Services

When engineering services are procured for safety-related items, they will be subject to technical verification, audit of the activity, or other objective evidence reviewed to ensure conformance with procurement requirements.

4.3.7.3 Post-Installation Testing

When post-installation testing is required for acceptance of safety-related components, the responsible organization and the applicant/licensee or agent will mutually establish the test requirements and acceptance documentation.

4.3.7.4 Quality Releases

Quality releases are prepared and issued for items that will not otherwise have their acceptance documented by Westinghouse prior to being shipped to the customer, based on the item's

importance to safety and/or complexity of the item, in accordance with established procedures. The quality release is a document that provides for:

- The specific identification of the procured item by purchase order number, appropriate item designation, and serial number.
- Certification that the equipment meets requirements of the purchase order, drawings, and specifications.
- Identification of any deviations to the procurement requirements, including requirements that have been deferred and are to be accomplished at the site. Approved deviation notices are listed on the quality release.

Audits, surveillance, inspections and document review are performed, as appropriate, to verify the supplier's compliance with procurement documents.

4.3.7.5 Statement of Conformance

A statement of conformance is documented for items and services in accordance with customer requirements and applicable procedures. These documents are authenticated by designated personnel based on documented acceptance records. Examples of these include Certificate of Compliance, Inspection Certificate, or Certified Material Test Report (CMTR).

4.3.8 Industry Code-Supplied Items

Items required to meet national industry code (e.g., ASME B&PV Code Section III, Division 1) requirements are supplied as follows:

- Obtained from suppliers holding the proper industry code certificates of authorization, or
- Supplied under an independent Westinghouse quality program accredited by the national code agency.

No repair, replacement, modification, or alteration activities are performed on items procured under the QMS when supplied in accordance with a national code (e.g., ASME B&PV Code Section III stamped items).

4.3.9 Commercial-Grade Items

Commercial-grade items, items not originally intended for safety-related applications, are subjected to a dedication process that is defined and authorized by Engineering in accordance with procedures that meet the requirements of the governing regulatory agency, before the items are supplied for safety-related applications.

For nuclear power plants subject to United States NRC regulatory requirements, Westinghouse may utilize commercial-grade items in compliance with Generic Letter 89-02 [NRC endorsement of EPRI NP-5652, "Guideline for the Utilization of Commercial-Grade Items in Nuclear Safety Related Applications" (NCIG-07)]. For radioactive materials transport packaging subject to United States regulatory NRC requirements, commercial-grade items are utilized in accordance

with U. S. NRC Regulatory Guide 7.10, "Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Materials," as appropriate.

4.4 Control of Customer-Supplied Product

When customer items and material are supplied in accordance with contractual requirements, the applicable marketing and/or contract administration organization communicates the appropriate customer requirements to the responsible organizations.

Procedures provide for the identification, inspection, and protection of customer-supplied items and material and for the application of such material in the manufactured item or service. Any customer-supplied item or material that is lost, damaged, or otherwise unsuitable for use is documented and reported to the customer.

4.5 Product Identification and Traceability

Procedures are established to specify the methods and extent of identification and traceability of items to ensure that only correct and acceptable items are installed or used in items and services.

4.5.1 Identification Requirements

Engineering is responsible for specifying identification requirements of items. The identification may be on the item itself, on documents attached to the item, or on containers in which the items are handled.

4.5.2 Identification of Items

Identification of items is maintained, as necessary, to provide confidence that the correct items are used. Suppliers are required to identify all supplied items in accordance with the requirements of procurement documents.

4.5.3 Traceability of Items

When regulatory or customer requirements include traceability of items, procedures are established to provide identification, traceability, and records. Engineering organizations define the traceability requirements in drawings or specifications and provide specific instructions for accomplishing the required identification. If the requirements impact suppliers, appropriate requirements are included in the procurement documentation. Items including consumable materials and items identified as having limited calendar, shelf, or operating lives or cycles are traceable and controlled. Procedures identify the organization responsible for storing and controlling these items in a manner that precludes use after the shelf life or operating life has expired.

The loss of identification on traceable items is documented and the items dispositioned in accordance with established procedures.

Records of item traceability are maintained in accordance with established procedures.

4.6 Process Control

4.6.1 General

Manufacturing, service, and installation activities are planned and performed under controlled conditions that ensure conformance to customer requirements, quality system requirements, and applicable standards and regulations. Management is responsible for ensuring that only properly trained and/or qualified personnel are assigned to accomplish work activities and that they are provided adequate facilities, equipment, tools, and information to perform their work in compliance with requirements.

Processes affecting the quality of items and services are controlled by instructions, procedures, drawings, checklists, process control documents, computer software, and/or other appropriate methods. When required, process parameters and environmental conditions are specified and maintained. Typical elements of process control include but are not limited to:

- Work instructions
- Quality workmanship standards
- Routings
- Acceptance criteria
- Process monitoring
- Process and equipment approval as appropriate
- Checklists
- Process control documents
- Validation and control of computer software used for process control
- Maintenance of equipment

4.6.2 Special Processes

Special processes are those processes in which the results are highly dependent on the control of the process or the skill of the operator, or both. Special processes include, but are not limited to, nondestructive examination (NDE), welding, brazing, cleaning and heat treating. Special processes that could affect the quality of items or services shall be performed by qualified personnel using qualified written procedures in accordance with applicable industry codes, standards and regulatory requirements.

Qualification of process controls is performed, as appropriate, to ensure that the special process will yield acceptable results. Personnel, equipment, and procedures used to perform special processes are qualified in accordance with established procedures. Documentation of personnel, equipment, and process qualifications is maintained.

Qualification of processes and personnel for welding and NDE are in accordance with the applicable national industry code (e.g. ASME Boiler and Pressure Vessel Code) or other specified requirements. Welding and NDE are performed in accordance with written procedures, utilizing personnel of the organization who are qualified and certified in accordance with the organization's approved quality program. The organization utilizing the applicable procedures or personnel is responsible for reviewing certifications for compliance with the specific job requirements prior to use. In addition, organizations/subsidiaries may utilize procedures and personnel qualified by other Westinghouse organizations if the procedures and

personnel have been qualified and certified in accordance with a quality program that has been approved by the user organization.

Subcontractors performing special processes at operating nuclear plant sites and other locations are managed by the responsible Westinghouse organization in accordance with approved procedures.

4.7 Control of Inspection, Measuring, and Test Equipment

Inspection, measuring, and test equipment are calibrated and controlled in accordance with established procedures to ensure the accuracy of measurements. Each device is properly controlled, calibrated, and adjusted at specified intervals to maintain its accuracy within the necessary limits. Jigs, fixtures, templates, inspection software, and test software are also controlled to ensure accuracy. Inspection and test software is validated prior to use. Process controllers, microprocessors, and software, when used as an integral part of the measuring and test equipment system, are not interchanged without recalibration of the test system. Personnel using measuring and test equipment are responsible for ensuring that the equipment is calibrated.

Procedures have been established for control of inspection, measuring, and test equipment, including tools, as appropriate, to ensure that such devices fit the purpose and are of the proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to specified requirements. Selection of equipment type takes into account factors that may affect the known measurement uncertainty, including equipment accuracy, environmental effects, skills of personnel using the equipment, and condition of the item being verified. Handling and storage of measuring and test equipment are controlled to ensure that the accuracy of the equipment is maintained.

Inspection, measuring, and test equipment utilization is controlled. A record system, including a description of the device, the unique device identifier, calibration intervals, next due date, the calibration standard used, and results of the calibration, is maintained. Calibration is performed at specified intervals in accordance with written procedures using standards traceable to national recognized standards. Calibration standards have a higher accuracy level than the equipment being calibrated. Where no national standards exist, the basis used for calibration shall be documented. Each inspection, measuring, and test device is given a calibration status indicator based upon the latest calibration records. Out-of-calibration devices are tagged or segregated until repaired and recalibrated, or replaced. Systems and practices provide for the safeguarding of inspection, measuring, and test equipment from adjustments that would invalidate the calibration settings.

Documentation is maintained to support an evaluation of the validity of previous measurements when measuring and test equipment is found to be out of calibration.

4.8 Handling, Storage, Packaging, Preservation and Delivery

4.8.1 General

Systems are established to ensure that parts and material are received, handled, stored, packaged, and delivered in accordance with codes, standards, regulations, designs, and customer requirements. Procedures require that items shipped from suppliers, items processed internally, and items shipped directly to customers are received in acceptable condition. Procedures also provide for:

- Storage requirements, such as shelf life and environmental control;
- Special material handling requirements; and
- Standard and nonstandard shipping requirements.

4.8.2 Handling

Engineering and user organizations are responsible for specifications and procedures for the use of handling equipment. Periodic equipment examinations verify conformance to required codes and/or standards. Procedures also provide for the handling of items to prevent damage or deterioration.

When items are shipped to a nuclear power plant site or storage facility, special handling, storage, and shipping instructions will be provided in accordance with the requirements of the customer.

4.8.3 Storage

All stored items are properly identified and located in areas that provide adequate control of access. When necessary, special coverings, equipment, and protective environments are specified for storage by engineering organizations. Engineering organizations are also responsible for identifying shelf-life characteristics and preservation and storage requirements, and systems are established to protect against deterioration or expiration of shelf life.

Purchasing organizations are responsible for transmitting storage requirements to suppliers and determining their capability to meet them.

Storage areas are monitored at planned frequencies to ensure adequacy of the storage system and the status of stored items.

4.8.4 Packaging and Preservation

Cleaning, packaging, and preservation for shipment and delivery are performed in accordance with documented instructions, procedures, or drawings, as specified by the responsible engineering organization. These requirements include packaging and preservation provisions for both long-term and short-term storage and are implemented by the organization responsible for accomplishing the work, including cleaning, packaging, marking, labeling, and preserving.

4.8.5 Delivery

Each organization is responsible for defining transportation requirements to ensure integrity of items during delivery to their destination and for monitoring conformance to established methods. Purchasing is responsible for transmitting shipping requirements to suppliers and determining their capability to meet them.

4.8.6 Shipment of Hazardous Goods

Assigned organizations are responsible to ensure that the packaging and shipment of hazardous goods and materials, such as radioactive contaminated field service tooling, are performed according to national and international regulations, and contractual requirements, as applicable.

4.9 Servicing

Organizations have engineering and service capabilities that ensure proper installation, on-line start-up testing, and acceptance of supplied systems and items, as well as other similar systems. Organizations involved in maintenance programs, reliability, and field test programs provide training on systems, items and services to customers upon request. Interfaces are identified and maintained to provide support as necessary to meet servicing work scopes.

4.9.1 Servicing Requirements

Engineering organizations responsible for field services determine the applicable requirements by reviewing customer contracts and technical documentation that define the system, items or service in the service work scope. Responsible organizations provide technical direction to customer personnel, customer subcontractors, or specific planned services provided to the customer.

4.9.2 Performing Services

Services (including repair services) are performed by each organization in a controlled manner that ensures conformance to the organizations' procedures, and customer and regulatory requirements. Procedures and work instructions are used to ensure that the servicing work is performed under a degree of control consistent with the original manufacture and/or installation of the systems and items.

Engineers from appropriate organizations participate in the process for returning components, materials, or assemblies to the manufacturing plant for either warranty repair or regular repair and for service in the field when appropriate.

5.0 MEASUREMENT, ANALYSIS AND IMPROVEMENT

The quality management system provides control over a system of interlinked individual processes. These processes are monitored and the resulting data is used to demonstrate conformance to specified requirements, and support corrective, preventive or continual improvement actions. The management review process identifies the significant processes that were targeted for improvement and the associated quality objectives. This monitoring, measuring and analysis is used to support the management review process in which executive management participates.

5.1 Statistical Techniques

Organizations are responsible for incorporating statistical techniques into operations to the extent necessary to ensure that acceptable items and services are provided in an acceptable manner. Each organization identifies the statistical techniques that are adequate to ensure that quality and technical requirements are achieved. The procedures that describe this application are implemented when specified requirements, process capability, or item performance characteristics can be evaluated using statistical techniques to determine item or service acceptability or to identify improvement opportunities.

Each organization identifies the responsibilities for approving the application of statistical techniques and evaluation of results. Organizations utilizing statistical techniques in activities establish procedures for analyzing the results of the statistical information and initiating changes to controls when appropriate.

5.2 Inspection and Testing

Inspection and testing are performed on both purchased and manufactured items, as applicable, to verify compliance with acceptance criteria. Tests for safety-related items may include proof tests before installation, post-modification tests, prototype qualification tests, production tests, construction tests, and pre-operational tests. Sources of criteria include drawings, specifications, industry codes and standards, and contractual requirements that are provided or approved by the organization responsible for the design.

Inspections and tests are performed by personnel checking their own work or by qualified inspection and test personnel other than those performing the work, when required by contractual or regulatory requirements. For safety-related items and services, inspections or tests will be performed by qualified personnel who are independent of those performing the work.

Inspections are performed in accordance with written procedures or inspection plans. These may include checklists, forms, steps integrated into other process control documents, or work instructions. If hold points are required, they are identified in applicable documents. Work shall not proceed beyond hold points without authorization from the organization that established the hold point(s). This authorization is documented. Inspection procedures/plans include, as a minimum:

- Organization performing the inspection
- Characteristics being inspected
- Specification of inspection method on safety-related items

- Acceptance criteria
- Sampling plans, if applicable
- Records to be maintained

Tests are performed in accordance with written procedures or instructions which include, as a minimum:

- Identification of item being tested
- Prerequisites
- Acceptance criteria
- Calibration requirements
- Mandatory hold points
- Test conditions
- Test equipment
- Test personnel requirements
- Requirements for recording test data
- Records to be maintained

Procedures provide for identifying nonconforming items and for identifying, documenting, and controlling unverified items to permit recall and replacement in the event of a nonconformance to specified requirements.

5.2.1 In-Process Inspection and Testing

Items in process are inspected commensurate with their complexity and importance to nuclear safety.

Procedures are established to ensure:

- Identification and disposition of nonconforming items;

- Items are held until completion of required in-process inspections and testing;

- Positive recall measures are applied to ensure that the required inspections and tests are satisfied if process inspection and test points are bypassed; and

- Process monitoring and control methods are employed using qualified processes and people. Process monitoring and inspections may be used in combination to ensure that specified requirements for control of the process and quality of the item are being achieved. These activities are documented when required, for acceptance of safety-related items.

5.2.2 Final Inspection and Testing

Procedures are established to ensure that required final inspections and tests, including associated documentation, have been completed and results accepted before items are released. Final inspection and testing include the resolution of any nonconformances.

5.2.3 Inspection and Test Records

Procedures establish provisions for generation of quality records of planned inspection and test activities, as appropriate, to document that items satisfy established criteria.

Inspection and test records for safety-related items shall, as a minimum, identify: item, date, inspector/tester or data recorder, type of observation, results and acceptability, action taken for deviations noted, and person(s) evaluating test results.

5.3 Inspection and Test Status

The organization responsible for a work scope ensures that the status of inspections, tests, and operations can be determined at any point throughout the process. Altering the sequence of tests, inspections or other operations requires the authorization of personnel responsible for the function being altered. Status indicators are used on items or in documents traceable to the item to ensure that required inspections, tests, and operations have been performed before release in accordance with established procedures and instructions. Procedures are established to ensure that an item has satisfactorily passed required inspection and tests, and to prevent the use of defective material in production.

Some examples of status indicators include:

- Color-coded markings
- Tags
- Authorized inspection stamps
- Nonconformance reports/tags
- Labels
- Routings
- Bar codes on worksheet routings
- Inspection records
- Test records
- Physical location
- Labeling of software

Authorized personnel are responsible for ensuring that only items conforming to specified requirements is released for shipment. The authority for applying and removing status indicators is specified.

5.4 Control of Nonconforming Product

Nonconforming items and services are controlled to ensure proper disposition. A nonconformance is defined as a deficiency in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate.

All personnel are responsible for reporting nonconformances in accordance with established procedures.

Procedures are established for the identification, documentation, evaluation, segregation (if practical), review, corrective action, and notification to affected organizations. Disposition may include rework, accept as-is, repair, or reject and scrap. Repaired and reworked items are

reverified in accordance with the original criteria or as specified in the disposition. In the disposition of a safety-related item, technical justification for the acceptability of a nonconforming item that is to be repaired or used as-is will be documented. Nonconformances of these items will be subject to control measures commensurate with those applied to the original design. When required by contract, customer approval of the final disposition is obtained.

5.5 Corrective and Preventive Action

5.5.1 General

Conditions adverse to the quality of items and services are identified, documented, analyzed, and corrected in accordance with established procedures. For significant conditions adverse to quality, these procedures provide for identification; assignment of responsibility for corrective action; documentation of the cause and corrective action taken; implementation, evaluation, and verification of corrective action to prevent recurrence; and reporting to the appropriate levels of management.

5.5.2 Corrective Action

The need for corrective action is identified through sources such as nonconformances, failures, malfunctions, audits, inspections, surveillance, and customer complaints. Organizations performing quality/product assurance functions participate in evaluating and verifying corrective action implementation. They have the authority to stop work or ensure adequate controls are in place until effective corrective action has been taken and any applicable changes have been incorporated in procedures and communicated to appropriate personnel.

Provisions are contained in procedures to ensure that corrective actions are reviewed and not inadvertently nullified by subsequent actions. For significant conditions adverse to quality, the causes are determined and documented and the impact on items and services is evaluated. Reports, including actions to prevent recurrence, are provided to the appropriate level of management.

5.5.3 Preventive Action

Quality data is analyzed for trends in items, services, processes, and systems that may require action to eliminate causes of potential conditions adverse to quality. The results of these analyses are provided to management to determine the preventive action required to prevent occurrence. When necessary, this action will include the application of controls to ensure that it is effective.

Action to prevent adverse impact on customer satisfaction is based on information that comes from direct customer discussions, survey feedback on delivered items and services, and information captured in nonconformance tracking systems.

5.6 Internal Quality Audits

5.6.1 Internal Audits

The quality organization is responsible for implementing and maintaining an internal audit program to examine and evaluate objective evidence for compliance with the QMS and evaluating the effectiveness of implementation. Internal audits of activities affecting the quality of items and services are scheduled, planned, and conducted in accordance with established procedures.

Audit frequency is based on the status and importance of an activity, results of external audits, and internal quality performance monitoring and indicators. Schedules are updated as necessary to ensure that adequate oversight is maintained. Quality retains responsibility for the validity of external audits used as input to audit schedules. Supplemental audits are performed when necessary to verify specific activities, processes, and/or implementation of corrective actions.

Audits are performed by qualified personnel, independent of the activity being assessed, using written procedures and/or checklists, as appropriate. Reports documenting results are prepared upon completion of the audit and distributed to appropriate management. Audit reports require the assessed organizations to provide a response within a specified time period to identify planned corrective actions and a schedule for completion thereof, when applicable. Quality is responsible for evaluating, following, and verifying corrective action implementation. Reported conditions that become overdue are escalated to higher management for resolution, as necessary.

Auditors are trained on quality standards, regulatory requirements, and internal practices. Lead auditors are qualified in accordance with applicable standards. Westinghouse qualifies lead auditors in accordance with ASME NQA-1, Supplement 2S-3 and applicable procedures. For organizations subject to governing regulatory agencies other than the United States NRC, Westinghouse may also qualify lead auditors in accordance with regulatory or contractual requirements applicable to those organizations. Qualification records are maintained by Quality.

Audit records include audit plans, checklists, audit reports, written replies, and documentation of completed corrective actions.

5.6.2 Audits at Field Locations

Field services are conducted and controlled in accordance with specific contractual requirements. Audits will be conducted on service activities at customer sites when specifically identified in the contractual agreements and will be scheduled with the following considerations, when contractually required:

- As early in the life of the activity as practical
- At intervals consistent with the schedule for accomplishing the activity
- Commensurate with the status and importance of the activity

5.6.3 Self-Assessments

Self-assessments are performed for nuclear projects when an organization is a licensee or participates as an applicant for new plant design/construction and implements 10CFR50, Appendix B quality program requirements. Procedures for implementing the self-assessment process are developed in detail commensurate with the complexity of the activity and importance to safety. Results of self-assessments are communicated to responsible management.

APPENDIX A
POSITIONS ON U. S. NRC REGULATORY GUIDES AND ASME NQA-1

Westinghouse organizations comply with the regulatory and ASME NQA-1 positions listed below, when applicable, with the following clarifications, alternatives, and exceptions. Additional positions on Regulatory Guides and ASME NQA-1 may be given in individual Safety Analysis Reports (SARs).

1.0 REGULATORY GUIDES

1.1 Reg. Guide 1.8, Rev 2, "Qualification and Training of Personnel for Nuclear Power Plants" - Not applicable to scope of work.

1.2 Reg. Guide 1.26, Rev 3, "Quality Group Classifications and Standards for Water - Steam - and Radioactive-Waste - Containing Components of Nuclear Power Plants" - See specific SAR.

1.3 Reg. Guide 1.28, Rev 3, "Quality Assurance Program Requirements (Design and Construction)" - Westinghouse follows NRC Regulatory positions with the following clarifications:

Section C.1, Appendix 2A-1, "Nonmandatory Guidance on the Qualification of Inspection and Test Personnel" provides guidance on the qualification of inspection and test personnel.

Position (Alternate) - Where high school graduation is specified in (Appendix 2A-1), paragraph 3.0, a General Education Development (GED) equivalent of a high school diploma is considered acceptable.

Where three levels of qualification are to be utilized depending on the complexity of the function involved, specific level designations for personnel involved in inspection, examination, and testing activities may not necessarily be used. A combination of position descriptions and pre-determined qualification requirements for a position define the level of capability required to perform the function. These methods are used to identify levels of capability that include the comparable requirements of the levels identified in Appendix 2A-1.

Section C.3, "Audits"

Position (Clarification)

The regulatory position in Section C.3 along with alternatives to NQA-1, which are compatible with Reg. Guide 1.28, Rev. 3 will be followed.

1.4 Reg. Guide 1.29, Rev 3, "Seismic Design Classification" - See specific SAR.

1.5 Reg. Guide 1.33, Rev 2, "Quality Assurance Program Requirements (Operation)" - Not applicable to scope of work.

1.6 Reg. Guide 1.36, Rev -, "Nonmetallic Thermal Insulation for Austenitic Stainless Steel" - Quality Assurance controls are applicable, see specific SAR.

1.7 Reg. Guide 1.54, Rev -, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants - See specific SAR.

1.8 Reg. Guide 1.143, Rev 1, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants" - See specific SAR.

1.9 Reg. Guide 1.152, Rev -, "Criteria for Programmable Digital Computer Systems Software in Safety-Related Systems of Nuclear Power Plants" - Westinghouse organizations follow NRC regulatory positions.

1.10 Reg. Guide 2.5, Rev -, "Quality Assurance Program Requirements for Research Reactors" - Not applicable to scope of work.

1.11 Reg. Guide 3.3, Rev 1, "Quality Assurance Program Requirements for Fuel Reprocessing Plants and for Plutonium Processing and Fuel Fabrication Plants" - Not applicable to scope of work.

1.12 Reg. Guide 3.21, Rev -, "Quality Assurance Requirements for Protective Coatings Applied to Fuel Reprocessing and to Plutonium Processing and Fuel Fabrication Plants" - Not applicable to scope of work.

1.13 Reg. Guide 4.15, Rev 1, "Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment" - Not applicable to scope of work.

1.14 Reg. Guide 7.10, Rev 1, "Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Materials" - Westinghouse organizations follow the NRC regulatory positions.

1.15 ASME Boiler & Pressure Vessel Code, Section III - For safety class items covered by Section III of the ASME B&PV Code the quality assurance requirements (NCA 4000) are supplemented by Reg. Guides 1.8, 1.26, 1.28, 1.29, 1.33, 1.152 and Generic Letter 89-02, as applicable.

1.16 Generic Letter 89-02 endorsement of EPRI NP-5652, "Guideline for the Utilization of Commercial-Grade Items in Nuclear Safety-Related Applications (NCIG-07)" - Westinghouse organizations follow these guidelines.

1.17 Regulatory Positions 2 and 4 of Branch Technical Position CMEG 9.5-1 as given in SRP Section 9.5.1 - Fire protection QA controls are to be in accordance with this position.

1.18 Regulatory Position 6 of Reg. Guide 1.143, Rev 1, - Radioactive waste QA controls are to be in accordance with this position.

2.0 ASME NQA-1, Part I

2.1 Introduction -Terms and Definitions - Quality Assurance Record: "A completed document that furnishes evidence of the quality of items and/or activities affecting quality."

Position - Prior to their delivery to the long-term storage facility, records are protected by normal office procedures, including either duplicate copies or the capability to reconstruct records lost during this period. In manufacturing and service organizations, product-related records are not considered complete until the time of product shipment.

2.2 Supplement 2S-2, Section 2.1 - "The American Society of Nondestructive Testing Recommended Practice No. SNT-TC-1A, June 1980 Edition and its applicable supplements shall apply as requirements to NDE personnel covered by this Supplement.

Position - Alternative

Organizations holding an ASME Certificate of Authorization may qualify nondestructive examination personnel as required by the ASME B&PV code.

2.3 Supplement 2S-4, Section 4, Standard Paragraph

"Training shall be provided, if needed, to: (a) achieve initial proficiency; (b) maintain proficiency; and (c) adopt to changes in technology, methods, or job responsibilities."

Position - Clarification

Manufacturing organizations have programs for training personnel performing fabricating, handling, shipping, storing and cleaning activities to achieve initial proficiency. Maintenance of proficiency is accomplished through continued assignments in that activity. Additional training is performed, as needed, when the job function/responsibility is changed.

2.4 Supplement 2S-4, Section 5, Standard Paragraph

"Records of the implementation of indoctrination and training may take the form of: (a) attendance sheets; (b) training logs; or (c) personnel training records.

Position - Clarification

In manufacturing organizations training records for personnel performing fabricating, handling, shipping, storing and cleaning activities are available for review, however, they are not maintained as nonpermanent quality assurance records.

2.5 Supplement 3S-1, Section 6.0, Standard Paragraph

Interface Control: "Interface controls shall include the assignment of responsibility and the establishment of procedures among participating design organizations for the review, approval, release, distribution and revision of documents involving design interfaces."

Position - Clarification

The responsibilities and authority of persons involved in the design process are defined by organization charts, management appointment letters and internal procedures. These documents are available for audit but are not transmitted to external organizations. Various interface agreements are established among the design departments, suppliers, customers and architect-engineers to ensure the proper flow and control of design information among the participants, and are documented by correspondence procedures, memoranda of understanding or contract documents.

2.6 Supplement 7S-1, Section 2, Standard Paragraph

Procurement Planning: "Planning shall provide for the integration of;...(3) verification (surveillance, inspection or audits) activities by Purchaser, including notification of hold and witness points;"

Position - Alternative

Organizations routinely identify notification points in procurement documents when applicable. Such points are not always identified in pre- and post-award meetings. However, the required notification/hold points are specified by changes to the procurement documents in a reasonable time prior to their being accomplished to allow the Purchaser the opportunity to witness the event.

2.7 Supplement 7S-1, Section 3.1, Standard Paragraph

Source Evaluation and Selection: "Measures for evaluation and selection of procurement sources, and the results therefrom, shall be documented and shall include one or more of (a) through (c) below:"

Position - Clarification

In addition to methods (a), (b) and (c) for the evaluation and selection of procurement sources, ASME accredited certificate holders may be selected for the supply of ASME Section III code items and services as identified within the scope of their ASME certificates, based upon ASME acceptance of their Quality Assurance Program. Audits and annual evaluations are performed in accordance with the commitments and requirements of this Plan.

2.8 Supplement 7S-1, Section 9, Standard Paragraph

Control of Supplier Nonconformances: "Nonconformances to the procurement requirements or Purchaser-approved documents, which consist of one or more of the following, shall be submitted to the Purchaser for approval of the recommended disposition: (2) requirement in Supplier documents which has been approved by the Purchaser, is violated."

Position - Clarification

Suppliers are required to submit deviations from technical procurement requirements for approval. When suppliers are required to submit selected process or manufacturing procedures for approval, the term approval means a review to assure that the supplier understands the procurement requirements and is applying appropriate measures to assure compliance with these requirements. The approval action does not relieve the supplier of responsibility for assuring the acceptability of the item or service. Thus, suppliers are not required to submit nonconformance reports on deviations from these procedures, unless they constitute deviations from the Westinghouse procurement requirements.

2.9 Supplement 17S-1, Section 3.2, Standard Paragraph

Receipt Control: "As a Minimum, a receipt control system shall include the following:...(b) a method for identifying records received."

Position - Alternative

Receipt control systems are maintained to fit individual organizations' needs and requirements. Each system is defined in procedures and identifies the types of records to be processed. Files are established in accordance with these procedures establishing a separate file location for each category of record. When a record is received, it is filed in its pre-assigned location. The large volume of records and the diverse nature of the activities being performed preclude keeping a running inventory of each record received into an in-process/working file. The presence of the document itself serves as the record of what has been received. When action is completed for a particular activity or component, the in-process information is checked to assure that all appropriate records are available.

2.10 Supplement 17S-1, Section 4.4.1)

Position - 1

The CBS Records Services Center in Boyers, PA is utilized as a permanent records storage facility for inactive records which are stored in duplicate and/or single records as accepted by the U.S. Nuclear Regulatory Commission (6/02/80 and 3/08/79 letters from Mr. W. P. Haass and 4/23/81 letter from Mr. U. Potapovs). This facility is located in an underground limestone mine that is no longer being worked and is approximately 200 feet beneath the surface. Entry is made down a gradual graded hard surface roadway to a 24-hour guarded steel gate. This records storage facility provides an alternate to the construction criteria for a permanent records storage facility (as described below) which adequately protects records from possible destruction.

Position - 2

The walls which constitute the perimeter of this storage facility are limestone ribs, 15-20 feet thick with eight inch heavy duty concrete blocks constructed between the ribs from floor to ceiling with sealed expansion joints. Where there are doors in the perimeter to permit access, these doors are locked and monitored by video camera 24 hours a day.

Position - 3

The limestone mine, approximately 200 feet below ground level, is impervious to water and is 38 feet above the water table. Additionally, the entrance to the (CRC) is located approximately five miles away and 100 feet above the nearest stream. Floor and roof drains are not necessary.

Position - 4

All doors, frames and hardware are constructed of non-flammable materials such as steel or brass.

Position - 5

Aluminum enamel paint is applied to the walls and ceiling as a sealant.

Position - 6

Floors in the storage area are constructed of either asphalt or concrete over four feet of limestone. The asphalt floors are coated with a sealant. Concrete floors are coated with a hard wearing deck enamel.

Position - 7

The foundation consists of four-foot thick limestone base covered with concrete or asphalt acting as the foundation sealant. Because of the underground location and the fact that limestone is impervious to water, no foundation draining is necessary.

Position - 8

A natural draft of air flows through the mine and passes through forced-air circulation fans when entering and existing the storage areas. This air is also filtered as it enters the storage facility. This system assures adequate air circulation through the storage areas. The ventilation openings are equipped with fire rated dampers that close in guillotine fashion upon sensing heat.

Position - 9

A series of smoke detectors are located at strategic locations throughout the storage facility which would alert the fire crew at the first sign of a fire. This alarm system is tied into a central fire alarm board at the guard station located at the mine entrance. A volunteer fire crew with equipment is located at the storage facility. Additionally, fire extinguishers are located throughout the storage areas. A guard makes a tour inside the area every four hours during non-working hours. A volunteer fire department in a neighboring town is located within 1-1/2 miles of the mine entrance.

Position - 10

A single waterline is located within the storage facility to provide service water for sanitation and kitchen facilities. This line is equipped with shut-off valves both inside and outside the storage area. A drainage line is also located in the storage area to remove the discharge.

3.0 ASME NQA-1, PART II

3.1 Subpart 2.1 "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components for Nuclear Power Plants"

Organizations follow the requirements of Subpart 2.1 for those portions of the construction site work within their scope.

3.2 Subpart 2.2 "Quality Assurance Requirements for Packaging, Shipping, Receiving Storage, and Handling of Items for Nuclear Power Plants"

Subsection 4.2.3 Special Shipments

Position - Exception

For special shipments, Westinghouse implements requirements for bracing and tie down, identification of the shipment, use of impact recording meters and escorts, and investigation of the carrier and transportation route when appropriate. However, Westinghouse does not consider it desirable or feasible to implement subsection 4.2.3 in all situations. For example it may not always be desirable to identify special shipments with large letters or it may not always be possible to install impact recording meters prior to handling. In summary, Westinghouse implements controls for special shipments based upon engineering judgement and experience to assure proper transportation of the special shipment.

Subsection 3.6.2 Vaporproof Barrier Material

"Vaporproof barrier material should be colored to contrast with the material on which it is used."

Position - Alternate

Westinghouse utilizes vapor barriers in packaging processes that contrast with the material being packaged when such packaging materials are commercially available. A variety of colors for these packaging materials is not readily available because of the limited supply of material which meet other physical and chemical requirements.

Section 5 Receiving (Requirements for receiving contained in Section 5)

Position - Clarification

Organizations follow this section for those portions of the construction site work within their scope.

Section 6 Storage (Requirements for storage contained in Section 6.)

Organizations follow this section for those portions of the construction site work within their scope.

Section 7 Handling (Requirements for handling contained in Section 7.)

Position - Alternate

Organizations and suppliers use conservative industrial engineering practices for controlling the lifting and moving of completed components during packaging and shipping operations.

3.3 Subpart 2.3 "Quality Assurance Requirements for Housekeeping for Nuclear Power Plants"

Organizations follow the requirements of Subpart 2.3 for those portions of the construction site work within their scope.

3.4 Subpart 2.4 "Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities"

Organizations follow the requirements of Subpart 2.4 for those portions of the construction site work within their scope.

3.5 Subpart 2.5 "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and foundations for Nuclear Power Plants"

Not applicable to the scope of work.

3.6 Subpart 2.7 "Quality Assurance Requirements of Computer Software for Nuclear Power Plants"

Organizations follow the requirements contained in Subpart 2.7

3.7 Subpart 2.8 "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for Nuclear Power Plants"

Organizations follow the requirements of Subpart 2.8 to the extent specified in the contract for those portions of the site work within their scope.