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10 CFR 50.4

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ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

UN#06-007

Subject: UniStar Nuclear, NRC Project No. 746
Pre-application Submittal of the Quality Assurance Program Description

References:
1) Letter from Joe C. Turnage (Constellation Energy) to David B. Matthews (NRC), "Notification of Intent to Submit a Combined Construction and Operating License Application: Follow-up to November 2, 2005 Meeting," dated November 4, 2005

2) Letter from George Vanderheyden (UniStar Nuclear) to David B. Matthews (NRC), "Request for Additional Combined Construction and Operating License Pre-application Interactions: Follow-up to January 25, 2006 Meeting," dated February 10, 2006

3) Letter from R. M. Krich (UniStar Nuclear) to Director, Office of Nuclear Reactor Regulation (NRC), "NRC Project No. 746, Early Submittal of Sections of the Combined License Application," dated May 18, 2006

UniStar Nuclear formally notified the NRC in its letter of November 4, 2005 (Reference 1) of its intention to submit a Combined License (i.e., COL) application under 10 CFR 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," for a new nuclear construction project within the upcoming years. In a subsequent letter (Reference 2), UniStar Nuclear documented its plans, as agreed with the NRC during a meeting on January 25, 2006, to submit pre-application materials for early review by the NRC. Specifically, the February 10, 2006, letter identified the Quality Assurance (QA) topical area as one of a number of areas to be the focus for early submittal. On May 2, 2006, UniStar Nuclear met with the NRC to present its future plans for early submittals related to our COL application, including early submittal of the UniStar Nuclear QA Program Description (QAPD). The NRC documented its summary of this meeting in its May 25, 2006, "Summary of the May 2, 2006, Category 1 Meeting with UniStar Nuclear to Discuss Plans for a Constellation Combined License Application." By letter dated May 18, 2006 (Reference 3), UniStar Nuclear reiterated its

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schedule for submittal of pre-application material, specifying the third quarter, 2006, as the time frame for submittal of the QAPD.

Accordingly, this letter submits the proposed QAPD for NRC review as committed during the May 2, 2006, meeting and in our May 18, 2006, letter. The UniStar Nuclear proposed QAPD is enclosed and covers the activities of siting; design; construction, including pre-operational testing; operation, including testing; maintenance; and modification of a U.S. Evolutionary Power Reactor (EPR) licensed under 10 CFR 52. The general content of the enclosed QAPD was described to Ms. Joelle Starefos, NRC EPR COL Application Project Manager, during a recent telephone conversation with R. M. Krich of UniStar Nuclear.

If you have any questions or need additional information, please contact me at (410) 230-4892.

Respectfully,

R. M. Krich

Enclosure: Proposed Revision 0 of the UniStar Nuclear Quality Assurance Program Description

cc: NRC Project Manager, U.S. EPR COL Application
NRC Project Manager, U.S. EPR Design Certification Application

ENCLOSURE

Proposed Revision 0 of the UniStar Nuclear Quality Assurance Program Description

QUALITY ASSURANCE
PROGRAM DESCRIPTION

UniStar Nuclear QAPD

Revision 0

Approved by _____ Date_____

J. Traynor
Director, Quality & Performance Improvement

SUMMARY OF ALTERATIONS

Revision	Summary of Revision or Change
0	Initial Issue

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INTRODUCTION

UniStar Nuclear maintains full responsibility for ensuring that the Nuclear Power Plants are sited, designed, constructed and operated in conformance with applicable regulatory requirements, specified design requirements, applicable industry standards and good engineering practices in a manner to protect the health and safety of the employees and the public. To this end, the UniStar Nuclear Quality Assurance Program conforms to the criteria established in Title 10 of the Code of Federal Regulations 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants. UniStar Nuclear commits to implement the:

- Basic Requirements and Supplements of NQA-1-1994, "Quality Assurance Program Requirements for Nuclear Facilities as described in the QAPD."

- Specific subparts of NQA-1-1994, as described in Section U.

Exceptions or alternatives to these documents that require NRC approval are documented in Table 1.

For the purpose of this QAPD, activities occurring prior to the commencement of initial fuel loading are considered "construction phase" activities. Those activities that occur once initial fuel loading has commenced are referred to "operations and/or operational phase" activities.

The UniStar Nuclear QA Program described herein covers siting, design, construction (including pre-operational testing), operation (including testing), maintenance and modification of the facility. This Quality Assurance Program Description (QAPD) describes the requirements to be applied to those safety-related structures, systems and components, (SSCs) and related activities that have been designated Quality Assurance (QA) Level 1 and to the nonsafety-related structures, systems, and components, which are determined to be QA Level 2.

These two QA Levels have been established and will apply throughout the life of the facility from licensing and siting through design, construction, and operation. The two UniStar Nuclear Quality Assurance Program Description levels are defined as follows:

Safety Related (QA Level 1)

The QA Level 1 program shall conform to the criteria established in 10 CFR 50, Appendix B and the commitment to NQA-1-1994.

The QA Level 1 program shall be applied to those structures, systems, components, and administrative controls that have been determined to meet the definition of safety-related in 10 CFR 50.3, which states:

> Safety-related structures, systems and components means those 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 forth in 10 CFR 50.34(a)(1) or 10 CFR 100.11.

The development of the SSCs classified as QA Level 1, i.e. Q-List, occurs as part of the initial design process and is maintained by the ongoing design process implemented during the operational phase.

Additionally, this QAPD is applied to the "important to safety" activities, except for the design and fabrication, for the packing and transport of radioactive material as delineated and allowed by 10CFR71.101(f), and will be classified as QA Level 1.

NonSafety-Related SSC Quality Controls (QA Level 2)

The QA Level 2 program is an owner-defined QA program that uses the ASME NQA-1 standard as guidance. General QA Level 2 requirements are described in Section Y, "NON-SAFETY RELATED SSC CONTROLS." These requirements are implemented by UniStar Nuclear and UniStar Nuclear contractors through the use of approved QA programs and procedures. The Owner defined QA Level 2 SSCs and their associated activities are evaluated against the requirements in Section Y of this QAPD. This evaluation identifies which QA controls are needed to ensure these SSCs meet their intended functions and do not affect the function of the Safety-related SSCs. This evaluation may also include nuclear industry precedent in the application of augmented QA requirements.

For contractors, the QA Level 2 program shall be described in documents that must be approved by UniStar Nuclear. The QA Level 2 program shall be applied to Owner designated structures, systems, components, and activities. An International Organization for Standardization (ISO) 9000 series QA program may be acceptable for QA Level 2 applications provided it complies with applicable UniStar Nuclear QAPD requirements and the QAPD is reviewed and accepted by the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement.

Program Changes

The process for reviewing and approving a change to the UniStar Nuclear QAPD is described in Appendix 1.

SECION A

ORGANIZATION

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 1, Organization, of 10 CFR 50, Appendix B; and
- Basic Requirement 1 and Supplement 1S-1 of NQA-1-1994.

UniStar Nuclear employees and contractor employees representing UniStar Nuclear have full responsibility to ensure that the facility is designed, constructed, operated, and decommissioned in a manner to protect the health and safety of the public. This responsibility begins with initial design and continues throughout the life of the facility. The UniStar Nuclear QA Program is designed to ensure that the necessary quality requirements for structures, systems, components and work activities are met. This objective is attained by ensuring that the organizational structure and the responsibility assignments are such that: (a) quality is achieved and maintained by those who have been assigned responsibility for performing work and, (b) quality achievement is verified by persons or organizations not directly responsible for performing the work.

CORPORATE ORGANIZATION AND FUNCTIONS

UniStar Nuclear is the owner and operator of the UniStar Nuclear nuclear power plants. UniStar Nuclear is responsible for siting, design, construction and operation in accordance with its QA Program. The President, UniStar Nuclear reports to the Chief Executive Office, UniStar Nuclear. The President, UniStar Nuclear establishes the basic policies of the QA Program. These policies are described in this QA Program, are transmitted to all levels of management, and are implemented through approved procedures. UniStar Nuclear management is continually involved in activities affecting quality and QA requirements. The UniStar Nuclear organization is supported by the Constellation Generation Group, Supply Chain Management.

President, UniStar Nuclear

This position is responsible for overall corporate policy, overall responsibility for the implementation of the quality assurance program and provides executive direction and guidance for the corporation as well as promulgates corporate policy through the Company's senior management staff.

The position has overall responsibility for the siting, design, construction, and safe reliable operation of the UniStar nuclear stations, including management oversight and support of the day-to-day operations of the stations. This is the senior executive responsible for setting and implementing policies, objectives, expectations, and priorities to ensure activities are performed in accordance with the quality assurance program and other requirements.

Supply Chain

Supply Chain is responsible for material management, purchasing, procurement engineering and receipt inspection. This position has the authority to control further processing or installation of nonconforming materials. This authority is delegated to inspection personnel as delineated in procedures.

Information Technology

Information Technology is responsible for network infrastructure maintenance and upgrade, network and application security, network operations; automation strategy, application development and support, automation training; development and maintenance of the software control program; and oversight, maintenance, and repair of the Emergency Offsite Facility Computer System.

DESIGN AND CONSTRUCTION ORGANIZATION AND FUNCTIONS

An architect/engineering (A/E) firm has been contracted and is under the responsibility of the Executive Management position responsible for Project Management to further specify structures and systems of the facility, and ensure the reference design meets all applicable U.S. codes and standards. A contractor specializing in site evaluations has been contracted and is under the responsibility of the Executive Management position responsible for Project Management to perform the site selection evaluation. A nuclear consulting company has been contracted and is under the responsibility of the Executive Management position responsible for Project Management to conduct the site characterization, to support development of the license application including the Environmental Report. During the design and construction phases, preparation of design and construction documents and construction itself are contracted to qualified contractors. The Executive Management position responsible for Project Management is responsible for managing the design, construction and construction inspection activities, startup, including pre-operational testing and procurement activities during these phases. Contractor QA Programs will be reviewed by the UniStar Nuclear QA organization and must be approved by the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement before work can start as described in Section D, "Procurement Document Control," and Section G, "Control of Purchased Material, Equipment and Services." Project Managers reporting to the Executive Management position responsible for Project Management will be responsible for the areas of Construction, Engineering, Project Engineering, Project Controls, Procurement, and Start up. Procurement activities will be supported by Supply Chain Management. QA procedures will be developed by these Executive Management positions to implement this QAPD in their respective areas.

Section A, Figure 1, "Organizational Relationships of Key Management and Function Groups-Design and Construction Organization," delineates the levels of authority and lines of communications for activities affecting quality.

CORPORATE AND TECHNICAL SUPPORT FUNCTIONS

Support groups provide management, technical and oversight support during the operations phase for such activities as design, construction, operation, modification and decommissioning. Reporting to the President, UniStar Nuclear are the Executive Management position responsible for Technical Services, Executive Management position responsible for Operations Support, Executive Management position responsible for Facility Operations, Senior Management position responsible for Quality and Performance Improvement, and Project Management. Section A, Figure 2, "Organizational Relationships of Key Management and Functional Groups, Corporate and Technical Support for Site Operating Organization," delineates the levels of authority and lines of communications for activities affecting quality. Collectively, the organization is responsible for the following activities affecting quality: preparing, reviewing, approving, and verifying designs; qualifying suppliers; preparing, reviewing, approving, and issuing instructions, procedures, schedules, and procurement documents; purchasing; verifying supplier activities; identifying and controlling acceptable and nonconforming hardware and software; manufacturing; calibrating and controlling measuring and test equipment; qualifying and controlling special processes; constructing; inspecting; testing; startup; operating; performing maintenance; performing the audit function; and controlling records.

Operations Support

An executive management position for operations support reports to the President, UniStar Nuclear and provides direction to the nuclear security, emergency preparedness, training, and fleet procedures departments. Responsibilities for nuclear security include facility physical security, nuclear access programs, and fitness for duty programs. Emergency preparedness responsibilities include development and maintenance of the company radiological emergency plans and coordination with off-site radiological emergency response groups for the nuclear facilities. Training ensures qualified personnel operate and support the nuclear facilities and administers the fleet corrective action, self-assessment, and industry operating experience programs. The fleet procedures department ensures that fleet procedures are prepared in accordance with applicable regulatory requirements, industry quality standards, and this QAPD. Additionally, corporate oversight and support is provided in the areas of operations, maintenance, refueling services, radiation protection, chemistry, and work management. Some of these responsibilities may be assigned to Executive Management position responsible for Facility Operations at the discretion of the President, UniStar Nuclear

Technical Services

The Executive Management position for Technical Services reports to the President, UniStar Nuclear and provides direction to corporate engineering, licensing, nuclear fuel services, and probabilistic risk assessment (PRA) departments. Additionally, corporate oversight and support is provided for site engineering. This position is responsible for the engineering functions supporting design and construction activities and long-term nuclear operations, providing for regulatory compliance and licensing support through NRC communications, and activities related to safety and management of nuclear fuel. Some of these responsibilities may be assigned to the Executive Management position responsible for Facility Operations at the discretion of the President, UniStar Nuclear.

Project Management

A senior management position reporting to the President, UniStar Nuclear is responsible for the implementation of large projects for the nuclear facilities. Implementation includes development of the detailed scope, estimate, schedule, cost, design procurement, construction, testing, and closeout of each project. Focus is on defined projects separate from ongoing routine engineering projects. Some of these responsibilities may be assigned to the Executive Management position responsible for Facility Operations at the discretion of the President, UniStar Nuclear.

OPERATING ORGANIZATION AND FUNCTIONS

The overall structure of the organization described herein is applied for all facilities, however, there may be slight variations in responsibilities between facilities, but the overall reporting relationships remain. Depending on the scope of the activities, one or more individuals may be assigned the described management responsibilities.

Executive Management position responsible for Facility Operations

This position reports to the President UniStar Nuclear and is responsible for overall plant nuclear safety and implementation of the Company's quality assurance program. This position is responsible for the station's compliance with its NRC Operating License, governmental regulations, and ASME Code requirements. Areas of responsibility also include site engineering and training. This position provides day-to-day direction and management oversight of activities associated with the safe and reliable operations of a nuclear station. The Independent Review Committee (IRC) reports to the Executive Management position responsible for Facility Operations.

Management Position responsible for Facility Operations and Maintenance

This position reports to the Executive Management position responsible for Facility Operations and is responsible for plant operations and maintenance. This position assures the safe, reliable, and efficient operation of the plant within the constraints of applicable regulatory requirements, Operating License, and the quality assurance program. The Management Position responsible for Facility Operations and Maintenance, in carrying out the responsibility for overall safety of plant operations, is responsible for timely referral of appropriate plant matters to management and independent reviewers. Areas of responsibility also include chemistry activities, health physics/radiological protection, operations and support, work management, records management, maintenance and production planning, and related procedures and programs

Training

A site management position reports to the Executive Management position responsible for Facility Operations and functionally to a corporate management position (offsite), and is responsible for the training of personnel who operate or support the nuclear facilities. Training responsibilities include determining the need for training based on information provided by the various groups, developing performance-based training programs, implementing training programs to support employee and facility needs, and evaluating training programs. Certain functional groups may be assigned responsibility for the development and conduct of their own

training programs provided these groups are not required to have a systems approach to training under 10 CFR 50.120. This position is also responsible for administration of the corrective action, nonconformance, self-assessment, and industry operating experience programs.

Engineering

A site management position reports to the Executive Management position responsible for Facility Operations and functionally to the Executive Management position responsible for Technical Services (offsite), and is responsible for day-to-day engineering support activities including design engineering, engineering programs, equipment reliability, and system engineering.

Section A, Figure 3, "Organizational Relationships of Key Management and Functional Groups, Site Operating Organization," delineates the levels of authority and lines of communications for activities affecting quality. Site procedures provide detailed organizational descriptions.

Quality Assurance procedures will be developed by the respective operating organizations to implement the requirements of this QAPD.

QA ORGANIZATION AND FUNCTIONS

The UniStar Nuclear QA organization during the design, construction, and operations phases will be headed by the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement. The staffing of the QA organization will be commensurate with its duties and functions. The UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement reports directly to the President, UniStar Nuclear. This position is:

- Vested with the authority and organizational freedom to ensure that the requirements of this QAPD are properly implemented, including the imposition of "stop work." The decision to "stop work" is not influenced by costs or schedule.
- Responsible for the overall responsibility for development, management and implementation of the UniStar Nuclear QA Program during all phases of the facility and referring appropriate matters to senior management in a timely manner.
- Responsible for performance of an annual assessment of the adequacy of the QA program's implementation.
- In the UniStar Nuclear organization such that it has effective lines of communication with persons in other senior management positions.

The UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement is responsible for the following activities:

- QA Technical Support
    - Maintain the UniStar Nuclear QAPD
    - Maintain QA procedures

- QA technical reviews of procurement documents
- Administer the Corrective Action and Nonconformance Processes during construction
- Maintain the UniStar Nuclear Approved Vendors List (AVL)
- Administer the Auditor and Lead Auditor Certification Process
- Approval of contractor QA Programs
- Oversight of contractor QA Programs Implementation
- Oversight of the quality of design and construction.

- Oversight of document and records control
- QA Verification
  - Audits, surveillances and assessments
  - Contractor/supplier evaluations
  - Equipment/vendor shop inspections
  - Witness vendor acceptance testing

During the transition from construction to operations, i.e., upon commencement of the Operational phase, a position reporting to the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement will be added to the UniStar Nuclear QA Organization. During this transition period, as well as during operations, this additional position will report to the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement. The added position has the authority and responsibility to contact the Senior Management position responsible for Quality and Performance Improvement with any QA concerns during startup and plant operations. Additionally, the corporate functions reporting to the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement, i.e., QA Technical Support and QA Verification; with the exception of administering the corrective action and nonconformance processes during construction; will transition to the added position. During the operations phase the corrective action and nonconformance process will be managed by the Training organization. During the operations phase, the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement will advise the UniStar Nuclear President on quality-related matters and continue to have governance and oversight responsibilities with respect to the QA organization headed by the added position. The following additional responsibilities are included to this added position for start up testing and operations:

- QA Technical Support
  - Quality Engineering support of startup organization
  - Oversight of startup activities
  - QA selected reviews and oversight of programs developed for operations including, but not limited to, the identification of QA Level 1 SSCs and any changes thereto, their performance, and verifying and maintaining the facility design basis.

- QA selected reviews and oversight of operations, including maintenance, testing and modification procedures
- Review and concurrence of changes to the identified QA Level 1 items that could affect their function.
- QA Oversight of operations procedure implementation
- Quality Control (QC) Inspection certification process

- Applicable discipline QC inspections of modifications to QA Level 1 components

Supply Chain management is responsible for receipt inspections of UniStar Nuclear procured QA Level 1 SSCs.

Accordingly, during the transition from construction to operations and during the operations phase, the management of the QA organization, the QA staff, and the Supply Chain QC receipt inspectors have the responsibility to make quality assurance decisions and have sufficient authority, access to work areas, and organizational freedom to:

- Identify quality problems
- Initiate and recommend solutions to quality problems through designated channels
- Verify implementation of solutions
- Assure that further processing, delivery, installation, or use of items is controlled until proper disposition of nonconformances, deficiencies or unsatisfactory conditions has occurred
- Have direct access to highest levels of management
- Be sufficiently independent from cost and schedule considerations and have stop-work authority.

ORGANIZATIONAL INTERFACES

The organizational interfaces between UniStar Nuclear, contractors, and project applicable regulatory agencies are identified in the appropriate plans, contracts and implementing procedures. These documents contain the appropriate protocols, applicable roles, responsibilities and approval authorities for the specific topics for which they apply. UniStar Nuclear design interfaces shall be identified and procedurally controlled. Design efforts shall be coordinated among interfacing organizations as detailed in UniStar Nuclear procedures. Interface controls shall include the assignment of responsibility and the establishment of implementing documents among interfacing design organizations for the review, approval, release, distribution and revision of documents involving design interfaces. UniStar Nuclear design information transmitted across interfaces shall be documented and procedurally controlled. UniStar Nuclear transmittals of design information and/or documents shall reflect the status of the transmitted information and documents. Incomplete designs that require further evaluation, review or approval shall be identified. When it is necessary to initially transmit the design information

orally or by other informal means, design information shall be promptly confirmed through a controlled implementing document.

DELEGATION OF WORK

The delegation of work between UniStar Nuclear and contractors is identified in applicable plans, contracts and implementing procedures. If UniStar Nuclear delegates responsibility for planning, establishing, or implementing any part of the overall QA program, sufficient authority to accomplish the assigned responsibility is also delegated. The responsible manager formally evaluates the performance of delegated work by contractors. In all cases of delegation, UniStar Nuclear retains the overall responsibility for all work performed under the direction of UniStar Nuclear. All UniStar Nuclear QA Level 1 and Level 2 work activities shall meet the applicable requirements of this QAPD. Responsible managers have the authority to delegate tasks to another qualified individual within their organization provided the designated individual possesses the required qualifications and these qualifications are documented. All delegations shall be in writing. The responsible manager retains the ultimate responsibility and accountability for implementing the applicable requirements.

RESOLUTION OF DISPUTES

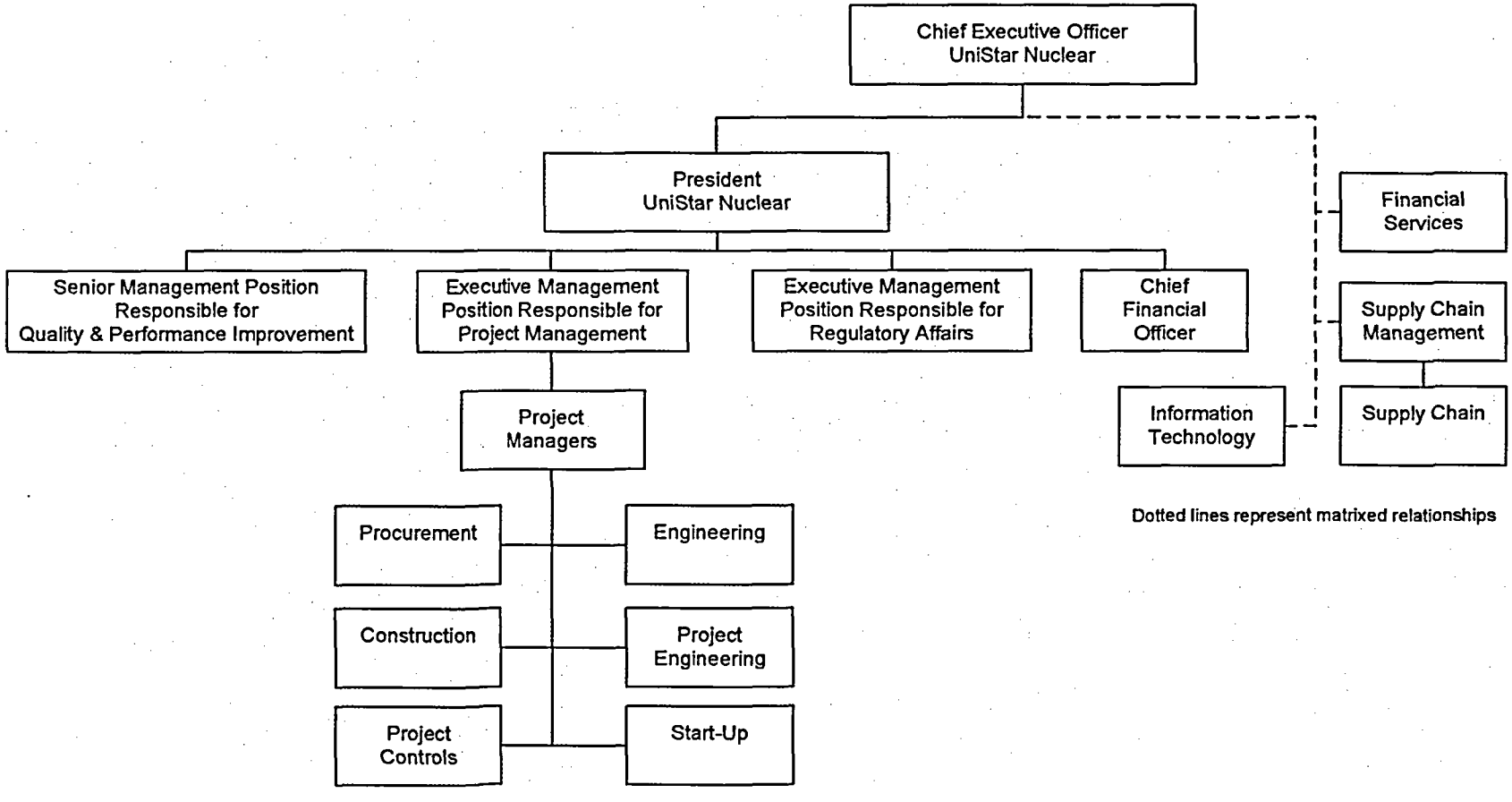
Disputes involving a difference of opinion on quality matters or issues are brought to the attention of line management, and if not resolved by the individual's manager, are elevated progressively to the Senior Management position responsible for Quality and Performance Improvement. If satisfactory resolution cannot be obtained at that level, the matter is then elevated to the UniStar Nuclear President for final resolution.

WORKER RESPONSIBILITIES

Personnel performing activities affecting quality are responsible for achieving an acceptable level of quality. Each employee has an obligation to identify concerns using the corrective action process with respect to work within their scope of responsibility whenever the health and safety of our workers, the public, or the environment is involved, or when continued work will produce results that are not in compliance with the UniStar Nuclear QA Program. Provisions are implemented to assure that personnel have the opportunity to suggest, recommend, or provide solutions to the identified concern. This process is controlled by a UniStar Nuclear procedure, which applies across the entire project/facility. The authorities and responsibilities for stopping work, the criteria and documentation required to process the stop work, and the actions required before work may resume are detailed in a UniStar Nuclear procedure. This process ensures that safety related activities are controlled until the deficiency, or unsatisfactory condition, has been resolved. Worker responsibilities are further discussed in Section P, Corrective Action.

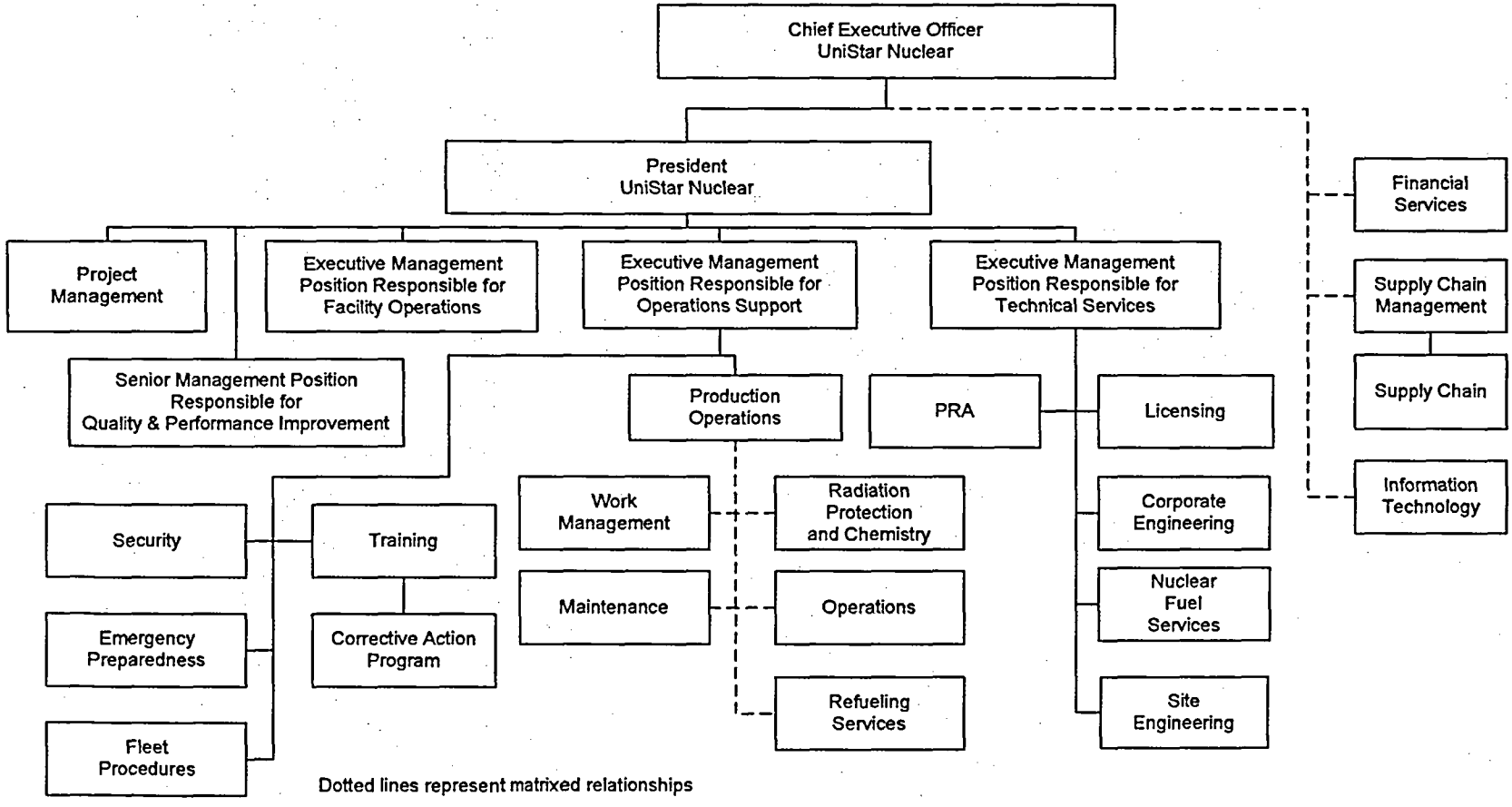
Section A, Figure 1

ORGANIZATION RELATIONSHIPS OF KEY MANAGEMENT
AND FUNCTIONAL GROUPS
DESIGN AND CONSTRUCTION ORGANIZATION



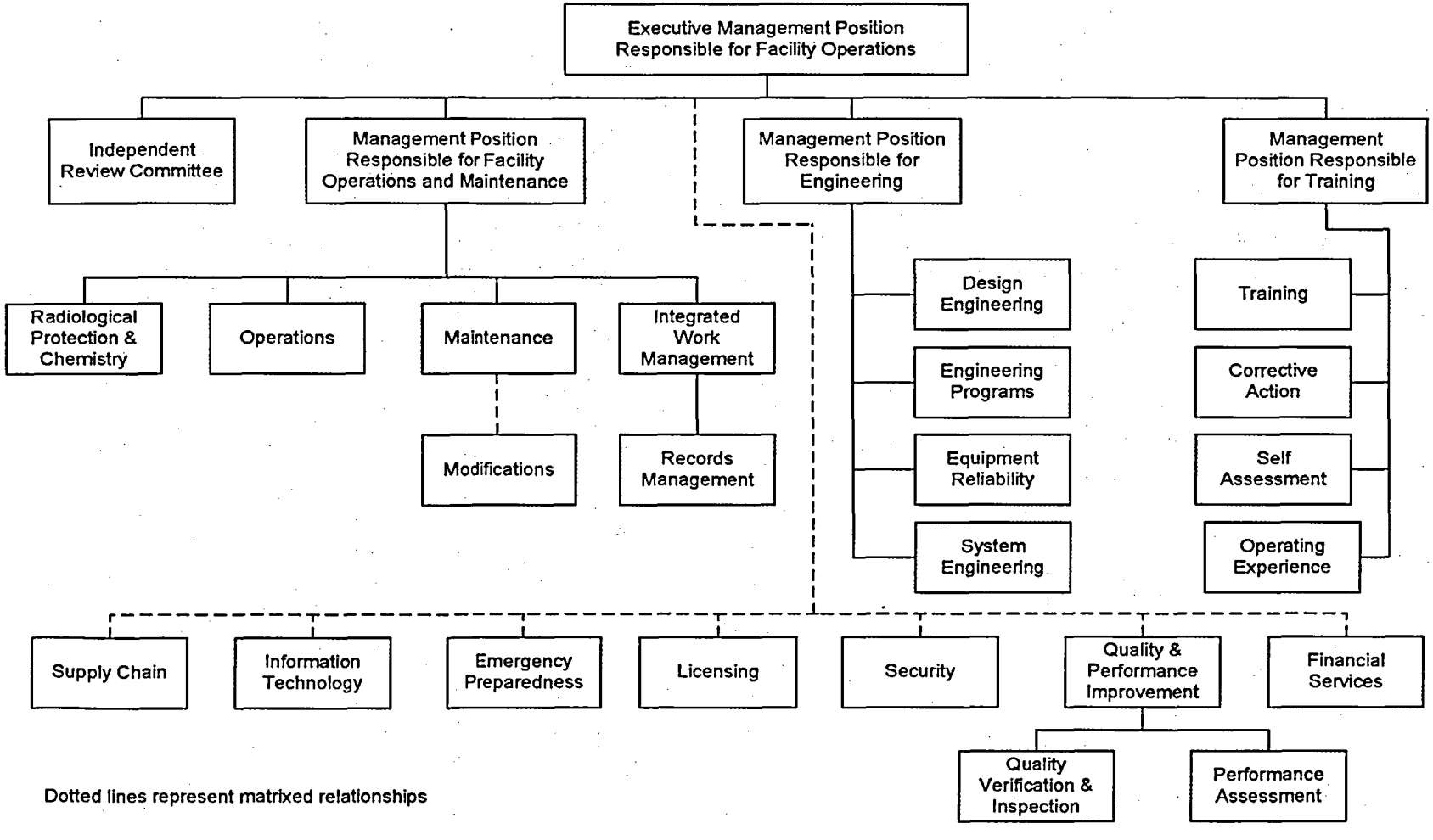
Section A, Figure 2

ORGANIZATION RELATIONSHIPS OF KEY MANAGEMENT
AND FUNCTIONAL GROUPS
CORPORATE AND TECHNICAL SUPPORT
FOR SITE OPERATING ORGANIZATION



Section A, Figure 3

ORGANIZATIONAL RELATIONSHIPS OF KEY MANAGEMENT
AND FUNCTIONAL GROUPS
SITE OPERATING ORGANIZATION



SECTION B

QUALITY ASSURANCE PROGRAM

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 2, Quality Assurance Program, of 10 CFR 50, Appendix B; and
- Basic Requirement 2 and Supplement 2S-4 of NQA-1-1994.

PROGRAM BASIS

The UniStar Nuclear Quality Assurance Program complies with 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, and applies to all levels of the organization, including contractors, who perform QA Level 1 activities. The QA program provides control over activities affecting the quality of the identified structures, systems, and components to an extent consistent with their importance to safety. ASME NQA-1-1994 Parts I and Part II, Quality Assurance Requirements for Nuclear Facility Applications are used in conjunction with 10 CFR 50, Appendix B, and provide additional detailed quality assurance guidelines which are committed to in this QAPD. The UniStar Nuclear QAPD describes the UniStar Nuclear overall compliance with 10 CFR 50, Appendix B and commitments to ASME NQA-1-1994. This document states the UniStar Nuclear policies, assigns responsibilities, and specifies requirements governing implementation of the QA Program to the siting, design, construction, and operation of the UniStar Nuclear facilities. All 18 criteria of 10 CFR 50, Appendix B have been addressed to identify the scope of the QA Program applied to UniStar Nuclear facilities. QA requirements will also apply to contractors as delineated in procurement documents controlled under Section D, "Procurement Document Control," of this QAPD. The necessary management measures to control the quality of subcontracted activities for the UniStar Nuclear design, procurement, and installation and testing of QA Level 1 components and activities have been established in this QAPD. The QAPD will be reviewed for needed revisions as described in Appendix 1, Provisions For Change.

Specific processes and controls, which implement the provisions of 10 CFR 50, Appendix B and the commitment to ASME NQA-1-1994, as specified in this QAPD, are delineated in procedures.

The QA Program provides for the planning and accomplishment of activities affecting quality under suitably controlled conditions. Controlled conditions include the use of appropriate equipment, suitable environmental conditions for accomplishing the activity, such as adequate cleanness, and assurance that all prerequisites for the given activity have satisfied. The UniStar Nuclear QA Program provides for special controls, processes, test equipment, tools and skills to attain the required quality and verification of quality. QA requirements contained in this QAPD are also invoked on UniStar Nuclear contractors for their contracted scope of work. When work cannot be accomplished as specified in implementing QA procedures, or accomplishment of such work would result in an adverse condition, work is stopped until proper corrective action is

taken. If procedures cannot be used as written, then the work is stopped until the procedures are changed. Requirements for stop work are further discussed in Section P, "Corrective Action."

In general a grace period of 90 days shall be applied to provisions that are required to be performed on a periodic basis unless otherwise noted. Annual evaluations and audits that must be performed on a triennial basis are examples where the 90 day general grace period will be applied.

Flowdown of QA Requirements to Contractors and Suppliers

QA requirements for QA Level 1 activities are imposed on UniStar Nuclear contractors and suppliers through the respective procurement documents for the particular scope of work being contracted. Determination of the specific QA requirements, supplier evaluations, and proposal/bid evaluations are in accordance with the requirements of Section D, "Procurement Document Control," and Section G, "Control of Purchased Material, Equipment and Services," of this document. Applicable QA Program elements required for the particular scope of work are identified in procurement documents. Potential contractors/suppliers are required to submit their QA Programs to the UniStar Nuclear QA organization for review in accordance with the request for proposal/procurement specification. Audits are performed at the contractor's/supplier's facility of their QA program and its implementation verifying that the contractor's/supplier's QA program meets the requirements established in the request for proposal/procurement specification. If the audit is acceptable then the contractor/supplier is added to the UniStar Nuclear Approved Vendors List (AVL) and a contract between UniStar Nuclear and the contractor/supplier may be issued. For procured items, UniStar Nuclear may also require that the UniStar Nuclear QA organization perform source inspections or witness tests at the supplier's facility prior to shipment, if the equipment/component warrants inspection due to its safety significance and/or complexity. Such requirements are also identified in the procurement documents and/or contract.

Construction contractors for UniStar Nuclear QA Program controlled construction activities are required to be placed on the AVL prior to contract award. Construction contractors are required to perform the QA activities required by their QA program, including audits of their own activities, as well as any required quality control (QC) inspections. The UniStar Nuclear QA organization will provide oversight of these contractors in the form of audits and surveillances, verifying that each contractor is properly implementing its QA program as approved by UniStar Nuclear QA. Contractually, contractors will be required to promptly correct UniStar Nuclear identified deficiencies and nonconformances.

IDENTIFICATION AND APPLICATION OF QA CONTROLS

QA Level 1 is applied exclusively to safety-related SSCs. All applicable sections of this QAPD are applied to QA Level 1 SSCs. Application of the QAPD requirements is part of the configuration management program used to verify and maintain the facility design basis and will be performed in accordance with documented procedures. Accordingly, as described in Section A, "Organization," the QA organization is responsible for oversight of these processes and programs.

The QA Level 2 program description is provided in Section Y, "Nonsafety-related SSC Quality Controls," of this QAPD, which includes Nonsafety-Related SSCs That Perform Safety Significant Functions and Nonsafety-Related SSCs Credited for Regulated Events. These requirements are implemented by UniStar Nuclear and UniStar Nuclear contractors through the use of approved QA programs and procedures. The UniStar defined QA Level 2 SSCs and their associated activities i.e., those SSCs that are not Quality Level 1 and do not affect the functions of the safety-related SSCs, are evaluated against the requirements in Section Y of this QAPD. This evaluation identifies which QA controls are needed to ensure these SSCs meet their intended functions and do not affect the functions of the safety-related SSCs. This evaluation may also include nuclear industry precedent in the application of these augmented QA requirements.

The two QA Levels have been established and apply throughout the life of the facility from licensing and siting through design, construction, testing, startup, operation, maintenance, and modification.

QA LEVEL 1 REQUIREMENTS

The QA Level 1 Program shall conform to the criteria established in 10 CFR 50, Appendix B, and the commitment to NQA-1-1994. The QA Level 1 program shall be applied to those structures, systems, components, and administrative controls that have been determined to be safety-related.

QA LEVEL 2 REQUIREMENTS

The QA Level 2 program is an owner-defined QA program that uses the ASME NQA-1 standard as guidance. The general QA Level 2 requirements are described in Section Y, "Nonsafety-Related SSC Quality Controls." For contractors, the QA Level 2 program shall be described in documents that must be approved by UniStar Nuclear. The QA Level 2 program shall be applied to Owner designated structures, systems, components, and activities. An International Organization for Standardization (ISO) 9000 series QA program may be acceptable for QA Level 2 applications provided it complies with UniStar Nuclear QAPD requirements and the QA program is reviewed and accepted by the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement.

QUALITY ASSURANCE TRAINING

UniStar Nuclear employees who perform QA Level 1 activities receive UniStar Nuclear QA Indoctrination Training. This training includes general criteria, including introduction to applicable codes, standards, QA Procedures, QA Program elements, and job responsibilities and authorities. UniStar Nuclear personnel assigned to perform QA Level 1 activities are also required to complete training in the specific UniStar Nuclear QA procedures needed to perform their job roles and responsibilities as assigned by their supervisor. Detailed QA training is provided on the UniStar Nuclear QA Program and job specific QA procedures prior to an employee beginning QA Level 1 work. Supervision is responsible for ensuring that personnel performing work under their supervision are appropriately trained and qualified to perform assigned work. Sufficient managerial depth is provided to cover absences of incumbents. When

required by code, regulation, or standard, specific qualification and selection of personnel is conducted in accordance with those requirements as established in the applicable UniStar procedures. UniStar Nuclear will also include a version of QA Indoctrination Training as part of the general employee training given to all full-time employees. The Management Position responsible for Training is responsible for coordinating QA training activities for UniStar Nuclear personnel. This position serves as a centralized training support service for supervision in coordinating training and maintaining QA training records. This responsibility is carried out as support for line management. UniStar Nuclear supervisory personnel are responsible for determining the type and extent of the training to be provided to an individual, and ensuring that the training is properly documented for personnel performing QA Level 1 activities. Training for positions identified in 10 CFR 50.120 is accomplished according to programs accredited by the National Nuclear Accrediting Board of the National Academy of Nuclear Training that implement a systematic approach to training. Retraining, when applicable, shall occur in order to maintain proficiency or when changes to work methods, technology, or job responsibilities occur. Retraining shall be documented.

MANAGEMENT ASSESSMENTS

Management of other organizations participating in the quality assurance program shall perform annual reviews of the status and adequacy of that part of the quality assurance program which they are executing. This review is to be accomplished by reviewing audit and surveillance reports in the functional area, self-assessments, corrective action reports, trend reports, NRC reports, or similar means. These reviews shall be documented

QUALITY ASSURANCE PROGRAM STATUS REPORTING TO MANAGEMENT

Management is regularly informed by the UniStar Nuclear QA organization of adverse trends and lessons learned as a result of reviews conducted on audit reports, surveillance reports, corrective action reports, management assessments, etc. Corrective action is initiated as necessary.

SECTION C

DESIGN CONTROL AND VERIFICATION

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 3, Design Control, of 10 CFR 50, Appendix B; and
- Basic Requirements 3 and Supplements 3S-1and 11S-2 of NQA-1-1994; and
- The following Subpart from NQA-1-1994, Part II
    - Subpart Part 2.7, Quality Assurance Requirements of Computer Software for Nuclear Facility Applications. This commitment also applies to computer software that is used to produce or manipulate data that is used directly in the design, analysis and operation of structures, systems and components relied on for safety.

Measures are established in procedures to assure that applicable requirements are correctly translated into design documents. Design control measures shall be applied to items such as the following: reactor physics, stress, thermal, hydraulic, and accident analyses; compatibility of materials; accessibility for inservice inspection, maintenance, and repair; and delineation of acceptance criteria for inspections and tests. Design inputs are specified on a timely basis to support UniStar Nuclear milestones. Controls are established for the selection and suitability of application of materials, parts, equipment and processes that are essential to the functions of structures, systems and components. Design interfaces to ensure completeness and efficiency of design are established in applicable procedures. Procedures detail the controls for design input, design process, design verification, design changes and approval. These procedures include appropriate quantitative and/or qualitative acceptance criteria for determining that activities have been satisfactorily accomplished. UniStar Nuclear design documents are prepared, reviewed and approved by qualified individuals. Applicable information derived for experience, as set forth in reports or other documentation, shall be made available to the design organization personnel.

Design is verified by one or more of the following verification methods: design reviews, alternate calculations or qualification tests. Design changes are governed by control measures commensurate with those applied to the original design. The design process and design verification practices and procedures shall be reviewed and modified, as necessary, when a significant design change is required because of an incorrect design. These and any other design deficiencies discovered during the design process on subsequent design related activities that affect the design of SSCs shall be entered into the Corrective Action Program (CAP) according to Section P, "Corrective Action." If these deficiencies cause constructed or partially constructed items (systems, structures or components) to be deficient, the affected items shall be controlled in accordance with Section O, "Nonconforming Material, Parts, or Components." Configuration management is maintained in accordance with the applicable procedures controlling changes to the various types of design documents.

DESIGN INPUT CONTROL

Applicable design inputs (such as design basis, conceptual design reports, performance requirements, regulatory requirements, codes and standards) shall be controlled by the UniStar Nuclear Engineering and Contracts Manager according to the following requirements:

- Design inputs shall be identified and documented, and their selection reviewed and approved.
- Design inputs shall be specified and approved in a manner to support the schedule.
- Design inputs shall provide the necessary details to permit design to be carried out in a manner that provides a consistent basis for making design decisions, accomplishing design verification, and evaluating design changes.
- Changes from approved design inputs and reasons for the changes shall be identified, approved, documented and controlled.
- Design inputs based on assumptions that require re-verification shall be identified and controlled by the appropriate procedures.

DESIGN PROCESS

The UniStar Nuclear design process shall be controlled by Executive Management position responsible for Project Management (Construction phase) or Executive Management position responsible for Technical Services (Operations phase) according to the following requirements:

- UniStar Nuclear design work shall be prescribed and documented on a timely basis and to the level of detail necessary to permit the design process to be carried out in a correct manner and to permit verification that the design meets requirements.
- Design documents shall be adequate to support design, construction and operation.
- Appropriate quality standards shall be identified and documented, and their selection reviewed and approved.
- Changes from specified standards, including the reasons for the change, shall be identified, approved, documented and controlled.
- Design methods, materials, parts, equipment and processes that are essential to the function of the structure, system, or component shall be selected and reviewed for and suitability of application.
- Applicable information derived from experience as set forth in reports or other documentation, shall be made available to cognizant design personnel.
- Final design documents (i.e., approved design output documents and approved changes thereto) shall be sufficiently detailed as to purpose, method, assumptions, design input,

references and units such that a person technically qualified in the subject/engineering discipline can understand the documents and verify their adequacy without recourse to the originator of the design document.

- Procedural controls for identifying sub-assemblies or components on final design documents that are part of the item being designed shall be established. When a commercial-grade item is modified and/or tested to new requirements that are different from the supplier's published product description, the component part shall be traceable to documentation noting that it is different from the originally approved commercial-grade item.

- UniStar Nuclear design drawings, specifications or other design output documents shall contain appropriate inspection, examination and testing acceptance criteria.

DESIGN ANALYSIS

UniStar Nuclear design analyses shall be planned, controlled and documented. Design analysis documents shall be legible, in a form suitable for reproduction, filing and retrieval, and under configuration management control. UniStar Nuclear design calculations shall be identifiable by subject (including structure, system or component to which the calculation applies), originator, reviewer and date, or by other designators in order that approved calculations are retrievable.

Design analysis documents are required to be legible and in a form suitable for record keeping. They are sufficiently detailed as to the purpose, method, assumptions, design input, references, and units such that a person technically qualified in the subject are can review and understand the analyses and verify the adequacy of the results without recourse to the originator.

Computer software used to perform design analyses shall be developed and/or qualified, and used according to the provisions of ASME NQA-1-1994, Part II, Subpart 2.7 and Supplement 11S-2. Computer software developed and/or qualified under the UniStar Nuclear or its contractor QA programs may also be used to perform design analyses for UniStar Nuclear, provided that the UniStar Nuclear QA organization confirms these contractor QA programs meet the provisions NQA-1-1994, Part I, Supplement 11S-2 and NQA-1-1994 Part II, Subpart 2.7. Computer programs may be utilized for design analysis without individual verification of the program for each application provided:

- The computer program has been verified to show that it produces correct solutions for the encoded mathematical model within defined limits for each parameter employed; and

- The encoded mathematical model has been shown to produce a valid solution to the physical problem associated with the particular application.

Computer programs shall be controlled to assure that changes are documented and approved by authorized personnel. Where changes to previously verified computer programs are made, verification shall be required for the change, including evaluation of the effects of these changes on the above.

UniStar Nuclear design analyses documentation shall include:

- Definition of the objective of the analyses,
- Definition of design inputs and their sources,
- Results of literature searches or other applicable background data,
- Identification of assumptions and designation of those that must be verified as the design proceeds,
- Identification of any computer calculation, including computer type, computer program (e.g., name), revision identification, inputs, outputs, evidence of reference to computer program verification and the bases (or reference thereto) supporting application of the computer program to the specific physical problem,
- Review and approval.

DESIGN VERIFICATION

The following design control requirements shall be applied to verify the adequacy of UniStar Nuclear design:

- UniStar Nuclear design verification is required for design documents, and shall be performed using one or a combination of the design review, alternate calculations and/or qualification testing methods.
- The particular design verification method used shall be documented.
- Results of design verification shall be documented and shall include the identification of the verifier(s).
- Competent individuals or groups, other than those who performed the original design (but may be from the same organization), shall perform design verification. If necessary, this verification may be performed by the originator's supervisor provided that the supervisor did not specify a singular design approach or rule out certain design considerations and did not establish the design inputs used in the design; or the supervisor is the only individual in the organization competent to perform the verification.

UniStar Nuclear design verification shall be performed in a timely manner at appropriate times during the design process. Verification shall be performed before release for procurement, manufacture or construction, or release to another organization for use in other design work. In some cases (such as when insufficient data exists) it may be necessary to release unverified designs to other engineering organizations or disciplines to support schedule requirements. Unverified portions of the design shall be clearly identified and procedurally controlled. In all cases, design verification shall be completed before relying on the item or computer program to perform its function. The extent of design verification required shall be a function of the

importance to safety, complexity of design, degree of standardization, state of the art, and similarity with previously proven designs. If the design has been subjected to the verification process in accordance with ASME NQA-1-1994, it need not be duplicated for identical designs.

- UniStar Nuclear's use of previously standardized designs shall be controlled according to the following requirements:
  - The applicability of standardized or previously proven designs shall be verified with respect to meeting pertinent design inputs for each application.
  - Known problems affecting standard or previously proven designs and their effects on other features shall be considered.
  - The "Americanization" of previously proven European designs shall be documented in accordance with the applicable QA procedure.
  - The original design and associated verification measures shall be adequately documented and referenced in the files for subsequent application of the design.
  - Changes in previously verified designs shall require re-verification. Such verifications shall include the evaluation of the effects of those changes on the overall previously verified design and on any design analyses upon which the design is based.

DESIGN VERIFICATION METHODS

Acceptable verification methods include, but are not limited to, any one of the following, or a combination of the following:

- Design Reviews
- Alternate Calculations
- Qualification Testing

The design organization is required to identify and document the particular design verification method(s) that were used.

DESIGN REVIEWS

Design reviews are critical reviews to provide assurance that the final design is correct and satisfactory. The following items shall be addressed, as applicable during the review:

- Were the design inputs correctly selected and incorporated into the design?
- Are assumptions necessary to perform the design activity adequately described and reasonable? Are the assumptions adequately identified to enable subsequent reverifications after detailed design activities are completed?

- Was an appropriate design method used?
- Is the design output reasonable compared to the design inputs?
- Are the necessary design input and verification requirements for interfacing organizations specified in the design documents or in supporting procedures and instructions?

ALTERNATE CALCULATIONS

The appropriateness of assumptions, input data, and the computer program or other calculation methods used, shall be evaluated and the results shall be checked through the use of alternate calculation methods to verify the correctness of the original calculations or analyses.

QUALIFICATION TESTS

If design adequacy is to be verified by qualification testing, the tests shall be identified, procedurally controlled and documented according to the following:

- The test configuration shall be defined and documented.
- Testing shall demonstrate the adequacy of performance under conditions that simulate the most adverse design conditions. Operating modes and environmental conditions in which the item must perform satisfactorily shall be considered in determining the most adverse design conditions.
- If the tests verify only specific design features, then the other features of the design shall be verified by other means.
- Test results shall be documented and evaluated to ensure that test requirements have been met.
- If qualification testing indicates that a modification to an item is necessary to obtain acceptable performance, then the modification shall be documented and the item modified and re-tested or otherwise verified to ensure satisfactory performance.
- Scaling laws shall be established, verified and documented when tests are being performed on models or mockups.
- The results of model test work shall be subject to error analysis, where applicable, before using the results in final design work.

DESIGN CHANGE CONTROL

Design changes during the initial design phase and the operational phase shall be controlled according to the following requirements:

- Changes to final designs, field changes, modifications to the operating facility, and nonconforming items dispositioned as "use-as-is" or "repair," as described in Section O,

"Nonconforming Materials, Parts, and Components," shall have documented justification for use and are subject to the same design control measures and reviews as those applied to the original design.

- Design control measures for changes shall include provisions to ensure that the design analyses for the item are still valid.

- Changes shall be reviewed and approved by the affected groups or organizations that reviewed and approved the original design documents, with the following clarifications:

  - If the organization that originally was responsible for approving a particular design document is no longer responsible, then a new responsible organization shall be designated.

  - The designated organization shall have demonstrated competence in the specific design area of interest and have an adequate understanding of the requirements and intent of the original design.

- The interface between the design organization responsible for finalizing a design change and other organizations either involved in the review of the change, such as the QA and configuration management organizations, and those affected by the change, such as the operations and maintenance organizations, described in the next subsection, "Design Interface Control," shall be maintained.

- The design process and design verification practices and procedures shall be reviewed and modified, as necessary, when a significant design change is required because of an incorrect design. These design deficiencies shall be documented according to Section P, "Corrective Action." If these deficiencies cause constructed or partially constructed items (systems, structures or components) to be deficient, the affected items shall be controlled in accordance with Section O, "Nonconforming Materials, Parts, and Components."

- When a design change is approved other than revision to the affected design documents, field changes shall be incorporated into affected design documents when such incorporation is appropriate.

DESIGN INTERFACE CONTROL

UniStar Nuclear design interfaces shall be identified and procedurally controlled. Design efforts shall be coordinated among interfacing organizations as detailed in UniStar Nuclear procedures. Interface controls shall include the assignment of responsibility and the establishment of procedures among interfacing design organizations for the review, approval, release, distribution and revision of documents involving design interfaces. UniStar Nuclear design information transmitted across interfaces shall be documented and procedurally controlled. UniStar Nuclear transmittals of design information and/or documents shall reflect the status of the transmitted information and documents. Incomplete designs that require further evaluation, review or approval shall be identified. When it is necessary to initially transmit the design information

orally or by other informal means, design information shall be promptly confirmed through a controlled document.

During the operational phase, the Executive Management position responsible for Facility Operations is responsible for ensuring the facility complies with all applicable regulatory requirements including the requirements of this QA Program. In the discharge of these responsibilities, the Executive Management position responsible for Facility Operations directs the activities of the Engineering, Operations, Maintenance and Training organizations through the applicable management. Procedures for controlling the interfaces and configuration management ensure that changes and modifications are properly managed and disseminated to those responsible personnel or organizations whose duties may be affected by the design change or modification and that they do not adversely impact the safe operation of the plant.

COMPUTER SOFTWARE CONTROLS

If UniStar Nuclear uses software to produce or manipulate data that is used directly in the design, analysis and operation of structures, systems, and components relied on for safety, the provisions provided in ASME NQA-1-1994 Subpart Part 2.7, Quality Assurance Requirements of Computer Software for Nuclear Facility Applications, and ASME NQA-1-1994 Supplement 11S-2, Supplementary Requirements for Computer Program Testing, shall apply. Procedures will be developed to implement these provisions as applicable.

DOCUMENTATION AND RECORDS

Design documentation which provide evidence that the design and design verification were performed in accordance with this QAPD shall be collected and maintained in accordance with the requirements of Section Q, "Records." The documentation shall include not only final design documents such as drawings, specifications and revision thereto; but also documentation, which identifies the important steps, including sources of design inputs that support the final design.

QA OVERSIGHT

The QA role in the design and analysis activities is described in Section R, "Audits."

SECTION D

PROCUREMENT DOCUMENT CONTROL

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 4, Procurement Document Control, of 10 CFR 50, Appendix B; and
- Basic Requirement 4 and Supplement 4S-1 of NQA-1- 1994, except for commercial-grade items which are addressed in Section W, "Commercial-Grade Dedication" and supplier quality assurance program requirements (subsection 2.3) which are addressed here.

UniStar Nuclear procurements shall be issued only to those suppliers that have been evaluated and qualified as acceptable for the particular scope of material, equipment and services to be procured. The material, equipment and services shall be procured from approved suppliers by procurement documents, approved by management of the UniStar Nuclear Supply Chain and Senior Management position responsible for Quality and Performance Improvement or their qualified designees. Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services. This program is applied to all phases of procurement including, as necessary, verification of activities of suppliers below the first tier. The requirements of 10 CFR 21, Reporting of Defects and Noncompliance is invoked during siting, design, construction, and testing for QA Level 1 procurement or dedication of items and services including the dedication of items or services used to satisfy the requirements of 10 CFR 50, Appendix B.

During operations the requirements of 10 CFR 21 are continued for QA Level 1 procurement or dedication of items and services including the dedication of items or services used to satisfy the requirements of 10 CFR 50, Appendix B.

Additional description of the UniStar Nuclear 10 CFR 21 program is delineated in Section V.

PROCUREMENT DOCUMENT CONTENT

UniStar Nuclear procurement documents issued for QA Level 1 items or services shall include the following provisions, as applicable to the procured material, equipment or service:

- Statement of the scope of work to be performed by the supplier.
- Technical requirements including:
    - Design bases, identified or referenced in the procurement documents.
    - Specific documents (such as drawings, codes, standards, regulations, procedures or instructions) describing the technical requirements of the material, equipment

or services to be furnished, shall be specified along with their revision level or change status.

- Tests, inspections or acceptance requirements that UniStar Nuclear will use to monitor and evaluate the performance of the supplier shall be specified.

- Quality Assurance Program requirements including:
  - A requirement for the supplier to have a documented quality assurance program that implements the applicable requirements of 10CFR50 Appendix B and this QAPD, as appropriate to the circumstances of procurement (or the supplier may work under this QAPD). The extent of the quality assurance program shall depend on the scope, nature or complexity of the material, equipment or service to be procured. The supplier shall also incorporate the appropriate requirements into any subtier supplier issued procurement documents.
- Right of access to supplier, including subtier, facilities and records for inspection or audit by UniStar Nuclear, or other designee authorized by UniStar Nuclear.

- Provisions for establishing witness/inspection hold points beyond which work cannot proceed by the supplier without UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement authorization. The UniStar Nuclear Executive Management position responsible for Project Management (Construction phase) or Executive Management position responsible for Technical Services (Operations phase) is responsible to establish hold points, as necessary, indicating work that cannot proceed without authorization by the applicable management.

- Documentation required to be submitted to UniStar Nuclear for information, review or acceptance shall be identified along with a document submittal schedule. Record retention times, disposition requirements and record maintenance responsibilities shall be identified for documentation that will become quality assurance records.

- Requirements for the supplier to report to UniStar Nuclear in writing adverse quality conditions resulting in work stoppages and nonconformances. UniStar Nuclear approval of partial and full work releases and disposition of nonconformances is required.

- Identification of any spare and replacement parts or assemblies and the appropriate delineation of technical and quality assurance data required for ordering these parts or assemblies. Commercial-grade procurements shall also be identified in procurement documents.

- A requirement invoking NRC reporting requirements of 10 CFR 21 for QA Level 1 procurements.

PROCUREMENT DOCUMENT REVIEW AND APPROVAL

Procurement document reviews shall be performed and documented before issuing the procurement documents to the supplier. A review of the procurement documents and any changes thereto shall be made to verify that documents include all applicable requirements specified under Procurement Document Content above, and contain appropriate provisions to ensure that material, equipment or services will meet the governing requirements. Reviews shall be performed and documented to provide objective evidence of satisfactory accomplishment of such review prior to contract award. Changes made as a result of the bid evaluation or precontract negotiations shall be incorporated into the procurement documents. The review of such changes and their effects shall be completed prior to contract award. This review shall include the following considerations: 1) appropriate requirements specified in Procurement Document Content above, 2) a determination of any additional or modified design criteria, and 3) an analysis of exceptions or changes requested by the supplier and a determination on the impacts such changes may have on the intent of the procurement documents or quality of the item or service to be provided and shall be performed by the UniStar Nuclear organization initiating the procurement. Reviews of procurement documents shall be performed by personnel who have access to pertinent information and have an adequate understanding of the requirements and scope of the procurement.

PROCUREMENT DOCUMENT CHANGE

Changes to the scope of work, technical requirements, quality assurance program requirements, right of access, documentation requirements, work stoppage and nonconformance, hold points and lists of spare and replacement parts delineated in procurement documents, shall be subject to the same degree of control as used in the preparation of the original procurement document.

SECTION E

INSTRUCTIONS, PROCEDURES, AND DRAWINGS

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 5, Instructions, Procedures, and Drawings, of 10 CFR 50, Appendix B; and
- Basic Requirement 5 of NQA-1-1994

Activities affecting quality shall be prescribed by and conducted in accordance with approved procedures and other implementing documents (drawings, specifications, etc.) appropriate to the circumstances. Those procedures that delineate the responsibilities and functions of the QA organization, the QA procedures, are approved by the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement to ensure compliance with this QAPD. During the Operations phase, the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement, the Management positions responsible for Facility Operations and Maintenance, Engineering, and Training have the responsibility to review and approve the procedures that cover activities under their organizational purview that relate to the QAPD and the safe operation of the plant. Procedures approved by the Management positions responsible for Facility Operations and Maintenance, Engineering, and Training will be subject to selected review and oversight by the QA organization.

TYPES OF DOCUMENTS

The type of document to be used to perform work shall be appropriate to the nature and circumstances of the work being performed. Documents include procedures, drawings and specifications. Work controlling procedures may also utilize approved checklists, travelers or other means to assure process requirements are met, including prerequisite requirements prior to starting work. Procedures provide a consistent method for process performance and documentation of completion as well as ensure specified safety and environmental conditions are maintained.

CONTENT OF DOCUMENTS

Documents shall include or reference the following information as appropriate to the work to be performed:

- Responsibilities of the organizations affected by the document,
- Quality, technical and regulatory requirements,
- A sequential description of the work to be performed including controls for altering the sequence of required inspections, tests and other operations,
- Quantitative or qualitative acceptance criteria sufficient for determining that prescribed activities have been satisfactorily accomplished,

- Prerequisites, limits, precautions, process parameters and environmental conditions,
- Quality verification points and hold points,
- Methods for demonstrating that the work was performed as required,
- Identification of the lifetime or nonpermanent quality assurance records generated by the implementing document, and
- Identification of associated QA Levels, as appropriate.

REVIEW, APPROVAL, AND CONTROL OF DOCUMENTS

Procedures and implementing documents shall be reviewed, approved and controlled, according to the requirements of Section F, "Document Control," of this QAPD.

SECTION F

DOCUMENT CONTROL

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 6, Document Control, of 10 CFR 50, Appendix B; and
- Basic Requirement 6 and Supplement 6S-1 of NQA-1-1994.

Procedures are established which control the preparation, issuance and changes of documents that specify quality requirements or prescribe activities affecting quality. Measures are established to ensure that documents, including revisions are adequately reviewed, approved, and released for use by authorized personnel. Controlled documents are transmitted to the appropriate locations where the prescribed activity is being performed. Superseded documents are destroyed or retained only when they have been properly marked.

TYPES OF DOCUMENTS

QA procedures, other administrative procedures and implementing documents, and documents specifying quality requirements or prescribing activities affecting quality shall be controlled in accordance with this section. UniStar Nuclear documents controlled under the UniStar Nuclear QA Program will be specified by procedures and include, but are not limited to, design drawings, as-built drawings, engineering calculations, design specifications, purchase orders and related documents, vendor-supplied documents, audit and surveillance procedures, operating procedures, emergency operating procedures, technical specifications, nonconformance reports, corrective action reports, work instructions and procedures, calibration procedures, quality verification procedures, and inspection and test reports, and all such documents made electronically available.

PREPARING AND REVIEWING DOCUMENTS

The document control system shall ensure that the identification of documents to be controlled and their specified distribution are proceduralized. The system shall further ensure that the responsibility for preparing, reviewing, approving and issuing documents shall be assigned by procedure to the appropriate UniStar Nuclear functional area manager. Implementing documents and documents specifying quality requirements or prescribing activities affecting quality, shall be reviewed in accordance with applicable procedures for adequacy, correctness and completeness, prior to approval and issuance. The organizational position(s) responsible for approving the document(s) for release shall be identified in the applicable procedures. During the Design and Construction phase, personnel from the QA organization shall review and concur with quality related procedures associated with design, construction and installation.

During the Operations phase, temporary procedures may be used to direct operations during testing, refueling, maintenance and modifications; to provide guidance in unusual situations not within the scope of normal procedures; and to insure orderly and uniform operations for short periods when the plant, a system, or a component of a system is performing in a manner not

covered by existing detailed procedures, or has been modified or affected in such manner that portions of existing procedures do not apply. Temporary Procedures include designation of the period of time during which they may be used.

CONTROLLING THE DISTRIBUTION AND USE OF DOCUMENTS

Documents needing to be placed under the document control system are transmitted to the Document Control organization with the distribution list for document holders. The Document Control organization shall enter the document into the Document Control electronic database and master list of controlled documents, assign document control numbers, complete transmittal forms and distribute the documents and transmittal form to the document holders. Document holders shall acknowledge receipt on the transmittal and send the acknowledgement to the Document Control organization. The up-to-date master listing of controlled documents will be made continuously available to personnel to verify that they have the current revision(s) for the performance of the activity affecting quality. The document control process will be periodically audited in accordance with the requirements of Section R, "QA Audits," to verify implementation effectiveness.

CHANGES TO DOCUMENTS

Changes to documents other than minor changes shall be reviewed for adequacy, correctness and completeness, prior to approval and issuance. Major changes shall be reviewed and approved by the same organization that performed the original review and approval unless other organizations are specifically designated. The reviewing organization shall have access to the applicable background data or information upon which to base their approval. A temporary procedure change that does not change the intent of the procedure may be made at the work location by two members of the staff knowledgeable in the areas affected by the procedures. The applicable procedure shall control the process, documentation and approval of the temporary changes.

MINOR CHANGES

Minor changes, such as inconsequential editorial corrections, may be made to documents without being subject to the review and approval requirements specified above. The applicable procedure shall define the organizational positions authorized and criteria acceptable for making minor changes.

PERIODIC PROCEDURE REVIEWS

Procedures used during the Operations phase will be reviewed by an individual knowledgeable in the area affected by the procedure no less frequently than every 2 years to determine if changes are necessary or desirable. Procedures are not required to be reviewed every 2 years provided that all of the following are met:

a. Applicable procedures are reviewed following any modification to a system.

b. Applicable procedures are reviewed following an unusual incident, such as an accident, significant operator error, or equipment malfunction.

c. Procedures are updated during use when discrepancies are found.

d. Procedures are reviewed prior to use if not used in the previous 2 years.

e. A QA program audit of procedures is conducted every 2 years.

PROCEDURE IMPROVEMENT

A process shall be in place to continually improve work instructions through reviews and incorporation of feedback from users.

SECTION G

CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 7, Control of Purchased Material, Equipment and Services, of 10 CFR 50, Appendix B; and
- Basic Requirement 7 and Supplement 7S-1 of NQA-1-1994, except for commercial-grade items which are addressed in Section W, "Commercial-Grade Dedication."

UniStar Nuclear procurement of material, equipment and services is controlled to assure conformance with specified requirements. These controls include requirements for pre-award evaluations of suppliers' QA programs, annual evaluations, periodic audits/source inspections, and surveillances. Suppliers with a UniStar Nuclear approved QA program are placed on the UniStar Nuclear Approved Vendors List (AVL) prior to award of contract. Source inspections and surveillances, evaluation of objective evidence of quality furnished by the supplier and maintaining the AVL are the responsibility of UniStar Nuclear QA organization and are performed, as necessary, upon delivery or completion to ensure requirements specified in procurement documents are met. Inspection of received items and services is the responsibility of Supply Chain management. Supplier evaluations, annual evaluations, audits, surveillances, source inspections and receipt inspections shall be documented.

PROCUREMENT PLANNING

UniStar Nuclear procurements shall be planned and documented to ensure a systematic approach to the procurement process exists and supports the schedule. Procurement planning shall:

- Identify procurement methods and organizational responsibilities, including what is to be accomplished, who is to accomplish it, how it is to be accomplished, and when it is to be accomplished.
- Identify and document the sequence of actions and milestones needed to effectively complete the procurement.
- Provide for the integration of the following activities:
  - Procurement document preparation, review and change control according to the requirements of Section D, "Procurement Document Control"
  - Selection of procurement sources, proposal/bid evaluation, and award
  - UniStar Nuclear evaluation of supplier performance
  - UniStar Nuclear verifications including any hold and witness point notifications

- Control of nonconformances
- Corrective action
- Acceptance of the material, equipment or service
- Identification of quality assurance records to be provided to UniStar Nuclear

- Be accomplished as early as possible, and no later than at the start of those procurement activities that are required to be controlled, to assure interface compatibility and a uniform approach to the procurement process.

- Be performed relative to the level of importance, complexity and quantity of the item or service being procured and the supplier's quality performance.

SOURCE EVALUATION AND SELECTION

Supplier selection shall be based on an evaluation, performed before the contract and/or purchase order is awarded, of the supplier's capability to provide the items or services in accordance with procurement document (technical and quality) requirements. The functional area needing the procurement shall request that the UniStar Nuclear QA organization evaluate the potential supplier for placement on the UniStar Nuclear AVL. Responsibilities and measures for evaluating and selecting procurement sources are detailed in the applicable QA procedure and include one or more of the following methods for evaluating potential suppliers:

- Evaluation of the supplier's history for providing an identical or similar product that performs satisfactorily in actual use. The supplier's history shall reflect current capability.

- Evaluation of supplier's current quality assurance records supported by any documented qualitative and quantitative information which can be objectively evaluated.

- Evaluation of the supplier's technical and quality capability based on an evaluation of supplier facilities, personnel, and quality assurance program implementation.

The results of procurement source evaluation and selection shall be documented in accordance with the applicable QA procedure.

PROPOSAL/BID EVALUATION

For proposals and bids, technically qualified personnel from the Supply Chain shall perform an evaluation to determine if the proposal/bid meets procurement document requirements. As a minimum, this evaluation shall review the following subjects consistent with the importance, complexity and quantity of items or services being procured:

- Technical considerations

- QA program requirements

- Supplier personnel qualifications
- Supplier production capability and past performance
- Alternatives and exceptions

Before the contract is awarded, Supply Chain management shall resolve, or obtain commitments to resolve, unacceptable quality conditions identified during the proposal/bid evaluation.

Supplier quality assurance programs shall be evaluated by the QA organization before contract placement, and any deficiencies that would affect quality shall be corrected before starting work subject to these requirements. Supplier QA programs shall be accepted by the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement before the supplier starts work.

SUPPLIER PERFORMANCE EVALUATION

The UniStar Nuclear Supply Chain management shall establish measures to routinely interface with the supplier and to verify supplier performance. The measures shall include:

- Establishing an understanding between UniStar Nuclear and the supplier of the requirements and specifications identified in procurement documents.
- Requiring the supplier to identify planning techniques and processes to be used in fulfilling procurement document requirements.
- Reviewing supplier documents that are prepared or processed during work performed to fulfill procurement requirements.
- Identifying and processing necessary change information.
- Establishing the method to be used to document information exchanges between UniStar Nuclear and supplier.
- Establishing the extent of source surveillance and inspection.
- Ensuring that the UniStar verification activities do not relieve the supplier of its responsibilities for verification of quality achievement.

The extent of UniStar Nuclear verifications shall be a function of the relative importance, complexity/quantity of items or services being procured and the supplier's quality performance. Verification activities shall be accomplished by qualified personnel assigned to check, inspect, audit, or witness the activities of the suppliers. UniStar Nuclear verifications shall be conducted as early as practical and shall not relieve the supplier of the responsibility for the verification of quality achievement. Verifications shall include supplier audits, surveillances or source inspections (or combinations) used as a method of evaluating the supplier's performance, and evaluation of purchaser's documentation to aid in the determination of the effectiveness of the supplier's quality assurance program. Records, including source surveillances and inspections,

audits, receiving inspections, nonconformances, dispositions, waivers, and corrective actions shall be maintained in accordance with the requirements of Section Q, "Records."

CONTROL OF SUPPLIER GENERATED DOCUMENTS

Supplier generated documents shall be controlled, processed and accepted by UniStar Nuclear in accordance with the requirements established in the applicable QA procedures. Measures shall be implemented to ensure that the submittal of supplier generated documents is accomplished in accordance with the procurement document requirements. These measures shall also provide for the acquisition, processing and recorded evaluation of technical, inspection and test data compared against the acceptance criteria. When the supplier is required to maintain specific records, the retention and disposition requirements are established.

CONTROL OF CHANGES IN ITEMS OR SERVICES

UniStar Nuclear shall establish contractual controls with suppliers to ensure that changes in procurement documents are controlled and documented in accordance with this QAPD.

ACCEPTANCE OF ITEMS OR SERVICES (other than calibration services).

Methods for accepting supplier furnished material, equipment or services shall include one or more of the following, as appropriate to the items or services being procured:

- Evaluating the supplier certificate of conformance,
- Performing either source verification, receiving inspection, post installation test, or a combination thereof,
- Technical verification of the data produced (services only),
- Surveillance or audit of the activities (services only),
- Review of objective evidence for conformance to procurement requirements (services only).

The supplier shall verify that furnished material, equipment or services comply with UniStar Nuclear procurement requirements before offering the material, equipment or services for acceptance and shall provide to UniStar Nuclear objective evidence that material, equipment or services conform to the procurement documents. Where required by code, regulations or contract provisions, documentary evidence that items conform to procurement documents shall be available at the site prior to installation or use, i.e., prior to placing reliance on the item for its intended safety function.

QUALIFICATION AND ACCEPTANCE OF CALIBRATION SERVICES

For procurement of commercial-grade calibration services for safety-related applications, laboratory accreditation programs administered by the National Institute of Standards and Technology and by the American Association for Laboratory Accreditation, as recognized

through the mutual recognition arrangement of the International Laboratory Accreditation Program (ILAC), are acceptable in lieu of a supplier audit, commercial-grade survey, or in-process surveillance provided that all of the following conditions are met:

- Accreditation is to ANSI/ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories."
- Use of this method is limited to the National Voluntary Accreditation Program and the American Association for Laboratory Accreditation, as recognized by ILAC signatories.
- The scope of the accreditation covers the contracted services.
- Purchase documents impose additional technical and administrative requirements to satisfy necessary QA program and technical requirements.
- Purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.
- Purchase documents require identification of the laboratory equipment/standards used.
- This method is limited to the domestic calibration service suppliers.
- This method is applicable to subsuppliers of calibration service suppliers, provided the above conditions are met.

CERTIFICATE OF CONFORMANCE

When a certificate of conformance is used to accept material, equipment or service:

- The certificate shall identify the purchased material, equipment or service to the specific procurement document.
- The certificate shall identify the specific procurement requirements met by the purchased material, equipment or service, such as codes, standards, pre-installation tests, and other specifications. This may be accomplished by including a list of the specific requirements or by providing, onsite, a copy of the purchase order and the procurement specifications or drawings, together with a suitable certificate.
- The procurement requirements identified shall include any approved changes, waivers or deviations applicable to the material, equipment or service.
- The certificate shall identify any procurement requirements that have not been met, together with an explanation and the means for resolving nonconformances.
- The certificate shall be signed and dated or otherwise authenticated by an individual who is responsible for the supplier's quality assurance function and whose responsibilities and position are described in the supplier's quality assurance program.

- The certification process, including the implementing documents to be followed in filling out a certificate and the administrative implementing documents for review and approval of the certificates, shall be described in the supplier's quality assurance program.

- Measures shall be identified to verify the validity of supplier certificates and the effectiveness of the certification process (such as by audit of the supplier or by an independent inspection or test of the item). Verifications shall be conducted by UniStar Nuclear at intervals commensurate with the past quality performance of the supplier.

SOURCE VERIFICATION

UniStar Nuclear may accept material, equipment or service by monitoring, witnessing or observing activities performed by the supplier. This method of acceptance is called source verification. Source verification shall be implemented consistent with the supplier's planned inspections, examinations or tests at predetermined points and performed at intervals consistent with the importance and complexity of the item. Documented evidence of acceptance of source verified material, equipment or services shall be furnished to the receiving destination of the item, to UniStar Nuclear, and to the supplier. Personnel qualified in accordance with the applicable requirements for the material, equipment or service being procured shall perform source verification.

RECEIVING INSPECTION

When receiving inspection is used to accept an item:

- The inspection shall consider any source verifications/audits and the demonstrated quality performance of the supplier.

- The inspection shall be performed in accordance with established inspection procedures.

- The inspection shall verify, as applicable, proper configuration; identification; dimensional, physical and other characteristics; freedom from shipping damage; and cleanliness.

- The inspection shall be planned and executed according to the requirements of Section J, "Inspection."

- Receiving inspection shall be coordinated with a review for adequacy and completeness of any required supplier documentation submittals.

POST-INSTALLATION TESTING

When post-installation testing is used as a method of acceptance, the UniStar Nuclear Supply Chain management and/or the affected/involved UniStar Nuclear organization manager establishes post-installation test and acceptance documentation giving due consideration to supplier recommendations. The UniStar Nuclear Supply Chain management is ultimately responsible for ensuring appropriate test requirements and acceptance documentation are established.

CONTROL OF SUPPLIER NONCONFORMANCES

UniStar Nuclear Supply Chain management and the supplier shall establish and document the process for disposition of items that do not meet procurement document requirements. The supplier shall evaluate nonconforming items according to the applicable requirements of Section O, "Nonconforming Materials, Parts, or Components," and submit a report of the nonconformance to UniStar Nuclear Supply Chain management, including the supplier recommended disposition (for example, use-as-is or repair) and technical justification. Reports of nonconformances to procurement document requirements, or documents approved by UniStar Nuclear, shall be submitted to the UniStar Nuclear Engineering organization for approval of the recommended disposition whenever one of the following conditions exists:

- Technical or material requirements are violated.
- A requirement in supplier documents, which have been approved by UniStar Nuclear, is violated.
- The nonconformance cannot be corrected by continuation of the original manufacturing process or by re-work.
- The item does not conform to the original requirement, even though the item can be restored to a condition such that the capability of the item to function is unimpaired.

UniStar Nuclear Engineering shall disposition the supplier's recommendation and verify implementation of the disposition. UniStar Nuclear will maintain records of the supplier-submitted nonconformances.

APPROVED SUPPLIER LIST

The UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement is responsible for the development and maintenance of the UniStar Nuclear AVL. The AVL contains those suppliers with acceptable QA Programs that have been evaluated and accepted by UniStar Nuclear QA in accordance with approved procedures. The UniStar Nuclear QA organization is responsible for the procurement audit program. Satisfactory results will allow the supplier to remain on the AVL. Suppliers that have unacceptable evaluations or that have not had a procurement placed with them in three years will be removed from the AVL.

COMMERCIAL-GRADE ITEMS

The description of the UniStar Nuclear Commercial-Grade Program is provided in Section W.

SECTION H

IDENTIFICATION AND CONTROL MATERIALS, PARTS AND COMPONENTS

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 8, Identification and Control of Materials, Parts and Components, of 10 CFR 50, Appendix B; and
- Basic Requirement 8 and Supplement 8S-1 of NQA-1-1994.

The controls necessary to ensure that only correct and accepted items (consumables, items with limited shelf life, materials, parts, and components, including partially fabricated assemblies) are used or installed will be required by the appropriate QA procedure. These identification and control measures are designed to prevent the use of incorrect or defective material, parts and components. Identification requirements for materials, parts and components are stated in design specifications, drawings, and procurement documents. Specific identification requirements are as follows.

- Items of production (batch, lot, component, part) are identified from the initial receipt and fabrication of the items up to and including installation and use. This identification relates an item to an applicable design or other pertinent specifying document.
- Physical identification is used to the maximum extent possible. Where physical identification on the item is either impractical or insufficient, physical separation, procedural control, or other appropriate means are employed.
- Identification markings, when used, are applied using materials and methods which provide a clear and legible identification and do not detrimentally affect the function or service life of the item. Markings are transferred to each part of an identified item when subdivided, and cannot be obliterated or hidden by surface treatment or coatings unless other means of identification are substituted. Sufficient precautions shall be taken to preclude identifying materials in a manner that degrades the function or quality of the item being identified.
- When required by specifications or codes and standards, that include specific identification or traceability requirements (such as identification or traceability of the item to applicable specification and grade of material; heat, batch, lot, part, or serial number; or specified inspection, test, or other records) the program shall be designed to such identification and traceability control.

Where specified, items having limited calendar or operating life or cycles shall be identified and controlled to preclude use of items whose shelf life or operating life has expired.

Provisions are made for the control of item identification consistent with the planned duration and conditions of storage, such as the following:

- Provisions for maintenance or replacement of markings and identification records from damage during handling or aging
- Protection of identifications on items subject to excessive deterioration from environmental exposure
- Provisions for updating existing plant records

SECTION I

CONTROL OF SPECIAL PROCESSES

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 9, Control of Special Processes, of 10 CFR 50, Appendix B; and
- Basic Requirement 9 and Supplement 9S-1 of NQA-1994.

Processes affecting the quality of items or services shall be controlled by written procedures using drawings, checklists, travelers or other appropriate means. These means shall ensure that the process parameters are controlled and that specified environmental conditions are maintained. Special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive examination, shall be performed by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

SPECIAL PROCESSES

For the purpose of this section, a special process is a process, the results of which are highly dependent on the control of the process or the skill of the operators, or both, and in which the specified quality cannot be readily determined by inspection or test of the product.

Special processes that control or verify quality shall be controlled according to the requirements of this section whether or not they are covered by existing codes and standards, or whether or not the quality requirements specified for an item exceed those of existing codes or standards

PERSONNEL, IMPLEMENTING DOCUMENTS, AND EQUIPMENT QUALIFICATIONS

Implementing UniStar Nuclear documents shall be used to ensure that process parameters are controlled and that the specified environmental conditions are maintained. Each special process shall be performed in accordance with appropriate implementing documents and these implementing documents shall include or reference:

- The responsibility of the organization performing the special process to adhere to the approved procedures and processes,
- Qualification requirements for personnel, implementing documents and equipment,
- Conditions necessary for accomplishment of the special process. These conditions shall include proper equipment, controlled parameters of the process and calibration requirements, and/or
- Requirements of applicable codes and standards, including acceptance criteria for the special process.

For special processes not covered by existing codes and standards or where quality requirements specified for an item exceed those of existing codes or standards, the necessary requirements for qualifications of personnel, procedures, or equipment shall be specified or referenced in the procedures or instructions.

QUALIFICATION/CERTIFICATION OF NONDESTRUCTIVE EXAMINATION (NDE) PERSONNEL

Nondestructive Examination (NDE) personnel performing QA Level 1 activities shall be certified in accordance with specified requirements.

This certification shall include the applicable versions of the standards referenced in Section XI of the ASME code, as permitted for use by 10 CFR Part 50.55a, for performing nondestructive examinations required by ASME Code Sections III or Section XI, or design specifications, provided that other applicable rules contained in Section XI of the ASME Code are met

DOCUMENTATION

Records shall be maintained as appropriate in accordance with Section Q, "Records," for currently qualified personnel, processes and equipment of each special process.

SECTION J

INSPECTION

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 10, Inspection, of 10 CFR 50, Appendix B; and
- Basic Requirement 10 and Supplement 10S-1 of NQA-1-1994; and
- The following Subparts from NQA-1-1994:
  - Subpart 2.4, "Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities," with the exceptions noted in Section U, and
  - Subpart 2.5, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations for Nuclear Power Plants," with the exception noted in Section U, and
  - Subpart 2.8, "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for Nuclear Power Plants"

Inspections required to verify conformance of an item or activity to specified requirements are planned and executed. Characteristics to be inspected and inspection methods to be employed are specified in procedures. Inspection results are documented. Inspection requirements and acceptance criteria shall include specified requirements contained in the applicable design documents or other pertinent technical documents approved by the responsible design organization. Inspection activities are documented and controlled by instructions, procedures, drawings, checklists, travelers or other appropriate means.

INSPECTION PLANNING

Inspection planning shall be performed, documented and include:

- Identification of each work operation where inspection is necessary to ensure quality and implementing documents that shall be used to perform the inspections;
- Identification of the characteristics to be inspected and the identification of when, during the work process, inspections are to be performed;
- Identification of inspection or process monitoring methods to be employed;
- The final inspection shall be planned to arrive at a conclusion regarding conformance of the item to specified requirements;

- Identification of the functional qualification level (category or class) of personnel performing inspections;
- Identification of acceptance criteria;
- Methods to record objective evidence of inspection results; and
- Selection and identification of the measuring and test equipment to be used to perform the inspection.

SELECTING INSPECTION PERSONNEL TO PERFORM INSPECTION

The individual who performs an inspection to verify conformance of an item to specified acceptance criteria shall be qualified to perform the assigned inspection tasks in accordance with the requirements of Section T, "Training and Qualification-Inspection and Test." Data recorders, equipment operators or other inspection team members who are supervised by a qualified inspector shall not be required to be a qualified inspector. Verification of conformance shall be by a qualified person.

Inspections are performed by individuals other than those who performed the activity being inspected. Inspection personnel do not report directly to the immediate supervisors who are responsible for performing the work being inspected.

Inspections required for construction phase activities and modifications during the operational phase will be performed by inspection personnel who are certified in accordance with Section T. With the exception of receipt inspectors, inspection personnel for construction phase activities and operational phase modifications will be members of the QA organization. Receipt inspectors, given the nature of the receipt inspection activities are independent from those responsible for performing the function, i.e., the supplier. Receipt inspectors are certified in accordance with Section T.

INSPECTION HOLD POINTS

When mandatory hold points are used to control work that shall not proceed without the specific consent of the organization placing the hold point, the specific hold points shall be indicated in implementing documents. Consent to waive specified hold points shall be documented and approved before continuing work beyond the designated hold point.

STATISTICAL SAMPLING

When statistical sampling is used to verify the acceptability of a group of items, the statistical sampling method used shall be based on recognized standard practices and these practices shall be implemented through applicable approved procedures.

IN-PROCESS INSPECTIONS AND MONITORING

Items shall be inspected when necessary to verify quality. If inspection of processed items is impossible or disadvantageous, indirect control by monitoring of processing methods, equipment and personnel shall be provided. Inspection and process monitoring shall be conducted when

control is inadequate with only one method. A combination of inspection and process monitoring methods, when used, shall be performed in a systematic manner to ensure that the specified requirements for control of the process and the quality of the item are met throughout the duration of the process. Controls shall be established and documented for the coordination and sequencing of inspections and monitoring at established inspection points during successive stages of the process or construction.

FINAL INSPECTION

Finished items shall be inspected for completeness, markings, calibration, adjustments, protection from damage or other characteristics as required in order to verify the quality and conformance of the item to specified requirements. Documentation not previously examined shall be examined for adequacy and completeness. The final inspection shall be planned to arrive at a conclusion regarding conformance of the item to specified requirements. Final inspections shall include a review of the results and resolution of any nonconformances identified by earlier inspections. Modifications, repairs or replacements of items performed subsequent to final inspection shall require re-inspection or retest, as appropriate, to verify acceptability.

ACCEPTING ITEMS

The acceptance of an item shall be documented and approved by qualified and authorized personnel. The inspection status of an item shall be identified in accordance with Section N, "Inspection, Test and Operating Status."

INSPECTION DOCUMENTATION

Inspection documentation shall identify:

- The item inspected, date of inspection, the name of the inspector who documented, evaluated and determined acceptability;
- Name of data recorder, as applicable, and type of observation or method of inspection;
- The inspection criteria, sampling plan or reference documents (including revision levels) used to determine acceptance;
- Results or acceptability of characteristics inspected;
- Measuring and test equipment used during the inspection including the identification number and the most recent calibration date; and
- Reference to information on actions taken in connection with nonconformances, as applicable.

SECTION K

TEST CONTROL

The elements of the UniStar Nuclear QA Program described in this section and Section T, "Training And Qualification - Inspection And Test," and associated procedures implement the requirements of:

- Criterion 11, Test Control, of 10 CFR 50, Appendix B; and
- Basic Requirement 11 and Supplements 11S-1 and 11S-2 of NQA-1-1994; and
- The following Subparts of NQA-1-1994:
  - Subpart 2.4, "Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities," with the exceptions noted in Section U, and
  - Subpart 2.8, "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for Nuclear Power Plants"

Tests required to verify conformance of an item or computer program to specified requirements and to demonstrate satisfactory performance for service are planned and executed. Characteristics to be tested and test methods to be employed are specified. Test results are documented and their conformance with acceptance criteria is evaluated. Tests required to collect data, such as for siting or design input, shall be planned, executed, documented and evaluated.

TEST REQUIREMENTS

Test requirements and acceptance criteria shall be provided or approved by the organization responsible for the design of the item to be tested unless otherwise designated. Required tests including, as appropriate, prototype qualification tests, production tests, proof tests prior to installation, construction tests, pre-operational tests, and operational tests are controlled. Test requirements and acceptance criteria are based upon specified requirements contained in applicable design or other pertinent technical documents.

TEST PROCEDURES

Test procedures shall include:

- Test objectives and the identification of any implementing documents to be developed to control and perform tests as appropriate
- Identification of items to be tested, test requirements and acceptance limits, including required levels of precision and accuracy;
- Identification of test methods to be employed and instructions for performing the test;

- Test prerequisites that address calibrated instrumentation, appropriate and adequate test equipment/instrumentation, trained personnel, condition of test equipment and the item to be tested, suitably controlled environmental conditions and provisions for data acquisition;

- Mandatory test hold points and methods to record data and results;

- Provisions for ensuring that prerequisites for the given test have been met;

- Selection and identification of the measuring and test equipment to be used to perform the test to ensure that the equipment is of the proper type, range, accuracy, and tolerance to accomplish the intended function; and

- Identification of the functional qualification level of personnel performing tests.

PERFORMING TESTS

Tests shall be performed in accordance with procedures that address the following requirements as applicable:

- Provisions for determining when a test is required, describing how tests are performed, and ensuring that testing is conducted by trained and appropriately qualified personnel.

- Include or reference test objectives and provisions for ensuring that prerequisites for the given test have been met, adequate calibrated instrumentation is available and used, necessary monitoring is performed and suitable environmental conditions are maintained.

- Test requirements and acceptance criteria provided or approved by the organization responsible for the design of the item to be tested, unless otherwise designated.

- Test requirements and acceptance criteria based upon specified requirements contained in applicable design or other pertinent technical documents.

- Potential sources of uncertainty and error. Test parameters affected by potential sources of uncertainty and error shall be identified and controlled.

USE OF OTHER TESTING DOCUMENTS

Other testing documents (e.g., American Society for Testing and Materials (ASTM)) specifications, supplier manuals or other related documents containing acceptance criteria may be used instead of preparing special test procedures. If used, the information shall be incorporated by reference in the approved test procedure. Implementing documents shall include adequate supplemental instructions as required to ensure the required quality of the testing work.

TEST RESULTS

Test results shall be documented and their conformance with acceptance criteria shall be evaluated by a qualified individual within the responsible organization to ensure that test requirements have been satisfied.

TEST DOCUMENTATION

Test documentation shall include:

- Item or work product tested, date of test, names of tester and data recorders, type of observation and method of testing;
- Identification of test criteria or reference documents used to determine acceptance;
- Results and acceptability of the test;
- Actions taken in connection with any nonconformances or deviations noted;
- Name of the person evaluating the test results; and
- Identification of the measuring and test equipment (M&TE) used during the test.

Training and Qualification of Test personnel shall be in accordance with Section T, "Training and Qualification - Inspection and Test."

SECTION L

CONTROL OF MEASURING AND TEST EQUIPMENT

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 12, Control of Measuring and Test Equipment, of 10 CFR 50, Appendix B; and
- Basic Requirement 12 and Supplement 12S-1 of NQA-1-1994.

This section establishes UniStar Nuclear control for tools, gages, instruments, reference and transfer standards, non destructive examination equipment, and other measuring and test equipment (M&TE) used for activities affecting quality, including design activities where applicable, construction, and operation. M&TE is controlled and at specified periods calibrated and adjusted to maintain accuracy within necessary limits. Selection of M&TE shall be controlled to ensure that such items are of proper type, range, accuracy, and tolerance to accomplish the functions of determining conformance to specified requirements.

Measuring and test equipment is labeled, tagged, or otherwise controlled to indicate its calibration status and to ensure its traceability to calibration test data.

CALIBRATION

The method and interval of calibration for each item shall be defined, based on the type of equipment stability characteristics, required accuracy, intended use, and other conditions affecting measurement control.

M&TE shall be calibrated, adjusted and maintained at prescribed intervals or, prior to use, against certified equipment having known valid relationships to nationally recognized standards. If no nationally recognized standards or physical constants exist, the basis for calibration shall be documented.

For M&TE used in one-time-only applications, the calibration shall be performed both before and after use.

A calibration shall be performed when the accuracy of calibrated M&TE is suspect.

DOCUMENTING THE USE OF M&TE

The use of M&TE shall be documented. As appropriate to equipment use and its calibration schedule, the documentation shall identify the processes monitored, data collected and items inspected or tested since the last calibration.

OUT OF CALIBRATION M&TE

M&TE shall be considered to be out-of-calibration and not be used until calibrated. Out-of-calibration M&TE shall be tagged, segregated or otherwise controlled to prevent use until they have been recalibrated.

When M&TE is found out-of-calibration, the validity of results obtained using that equipment since its last valid calibration shall be evaluated to verify the acceptability of previously collected data or processes monitored for items previously inspected or tested. The evaluation shall be documented.

If any M&TE is consistently found out-of-calibration during the re-calibration process, it shall be repaired or replaced.

LOST M&TE

When M&TE is lost, the validity of results obtained using that equipment since its last valid calibration shall be evaluated to determine the acceptability of previously collected data or processes monitored for items previously inspected or tested. The evaluation shall be documented.

HANDLING AND STORAGE

M&TE shall be properly handled and stored to maintain accuracy.

COMMERCIAL DEVICES

Calibration and control shall not be required for rulers, tape measures, levels and other normal commercial equipment that provides adequate accuracy

M&TE DOCUMENTATION

Records of calibration status and the capability of measuring and test equipment to perform its intended function are maintained.

PROCUREMENT OF COMMERCIAL GRADE-CALIBRATION SERVICES

Section G, "Control Of Purchased Material, Equipment and Services," provides the details on the procurement of commercial-grade calibration services.

SECTION M

HANDLING, STORAGE, AND SHIPPING

The elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 13, Handling, Storage and Shipping, of 10 CFR 50, Appendix B; and
- Basic Requirement 13 and Supplement 13S-1 of NQA-1- 1994; and
- The following from NQA-1- 1994, (Construction Phase only)
    - o Subpart 2.1, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components for Nuclear Power Plants,"
    - o Subpart 2.2, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants,"
    - o Subpart 2.15, "Quality Assurance Requirements for Hoisting, Rigging, and Transporting Items for Nuclear Power Plants."

Handling, storage, cleaning, packaging, shipping and preservation of items are controlled in accordance with requirements of this section to prevent damage or loss and to minimize deterioration.

CONTROLS

Handling, storage, and shipping of items shall be conducted in accordance with established work and inspection instructions, drawings, specifications, shipment instructions, or other pertinent documents or procedures specified for use in conducting the activity.

When required for particular items, special equipment (such as containers, shock absorbers, and accelerometers) and special protective environments (such as inert gas atmosphere, specific moisture content levels, and temperature levels) shall be specified, provided, and their existence verified.

When required for critical, sensitive, perishable, or high-value articles, specific procedures for handling, storage, packaging, shipping, and preservation shall be used.

During the operations phase the following are applicable:

- Prior to installation or use, items are inspected and serviced as necessary to ensure that no damage or deterioration exists which could effect their function.
- Controls for hoisting, rigging, and transport activities are established that protect the integrity of the item involved as well as potentially affected nearby structures and components. Applicable hoisting, rigging, and transportation regulations and codes shall be followed.

- Cleanliness controls for work on safety–related systems and components are required to be established that minimize the introduction of foreign material and maintain system/component cleanliness throughout maintenance or modification activities. Procedures require documented verification of absence of foreign material prior to system closure.

SPECIAL HANDLING TOOLS AND EQUIPMENT

Special handling tools and equipment shall be used and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment shall be inspected and tested at specified time intervals and in accordance with procedures to verify that the tools and equipment are adequately maintained.

Operators of special handling and lifting equipment shall be experienced or trained in the use the equipment.

MARKING AND LABELING

Measures shall be established for marking and labeling for the packaging, shipping, handling and storage of items as necessary to adequately identify, maintain and preserve the item. Markings and labels shall indicate the presence of special environments or the need for special controls if necessary.

SECTION N

INSPECTION, TEST, AND OPERATING STATUS

During the operations phase, the elements of the UniStar Nuclear QA Program described in this section and associated procedures implement the requirements of:

- Criterion 14, Inspection, Test and Operating Status, of 10 CFR 50, Appendix B; and
- Basic Requirement 14 of NQA-1-1994.

This section establishes requirements for UniStar Nuclear to identify the status of inspection and test activities. Status is indicated either on the items or in documents traceable to the items where it is necessary to assure that required inspections and tests are performed and to assure that items which have not passed the required inspections and tests are not inadvertently installed, used or operated.

Status is maintained through indicators (i.e., physical location and tags, markings, shop travelers, stamps, inspection records or other suitable means). The authority for application and removal of tags, markings, labels and stamps are specified in procedures. Procedures require independent verifications, where appropriate, to ensure that necessary measures such as tagging equipment have been implemented correctly.

During operation, in order to ensure that equipment status is clearly evident, and to prevent inadvertent operation, the UniStar Nuclear QA Program requires structures, systems and components that are inoperable to be identified as such. This identification may be by means of tags, labels, stamps or other suitable methods. When tags, labels, or stamps are utilized for the identification of equipment status, the issuance and removal thereof is documented to ensure proper control of such identification measures.

Process control procedures, test and inspection procedures, nonconforming item control procedures, installation records and checklists are used as applicable to control the installation of structures, system and components. These documents contain hold points, activity checklists, and in many cases, step-by-step signoffs which indicate the status of fabrication, installation, inspections, and test. This system is used to prevent inadvertent use of nonconforming items or bypassing of inspections and tests and prevent inadvertent operation.

Temporary modifications, such as temporary bypass lines, electrical jumpers, lifted electrical leads, and temporary trip point settings, are controlled by approved procedures, which include a requirement for independent verification.

Changing the sequence of inspections, tests, and other activities involving safety requires the same controls as the original review and approval

SECTION O

NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

The elements of the UniStar Nuclear QA Program described in this section and associated QA procedures implement the requirements of:

- Criterion 15, Nonconforming Items, of 10 CFR 50, Appendix B; and
- Basic Requirement 15 and Supplement 15S-1 of NQA-1-1994.

This section provides the process for controlling items that do not conform to specified requirements (i.e., a nonconforming item is a deficiency in characteristic, documentation, or procedure that renders the quality of an item unacceptable or indeterminate) to prevent its inadvertent test, installation, or use. For the purposes of this QAPD, items referenced to in this section means materials, parts, or components. The control of nonconforming activities and services is described in Section P, "Corrective Action." Procedures are used, as appropriate, to provide for identification, documentation, evaluation, segregation when practical, disposition of nonconforming items, and for notification to affected organizations.

DOCUMENTING AND EVALUATING NONCONFORMING ITEMS

Nonconformance documentation shall clearly identify and describe the characteristics that do not conform to specified criteria. Nonconformance documentation shall be reviewed by the responsible affected organization and recommended dispositions of nonconforming items shall be proposed in accordance with procedures. The review shall include determining the need for additional corrective actions according to the requirements of Section P, "Corrective Action." In addition, nonconformances shall be screened as required by Section V, "10 CFR Part 21 and 10 CFR 50.55(e) Programs For Reporting Defects And Noncompliance." Organizations affected by the nonconformance shall be notified. Recommended dispositions shall be evaluated and approved in accordance with procedures. Personnel performing evaluations of recommended dispositions shall have demonstrated competence in the specific area they are evaluating, have an adequate understanding of the requirements, and have access to pertinent background information. The responsibility and authority for reviewing, evaluating, approving the disposition and closing nonconformances shall be specified in procedures. The UniStar Nuclear Supply Chain organization is responsible for administering the nonconformance process for external agencies, e.g., suppliers. The UniStar Nuclear Engineering organization is responsible for the internal organizations. Further processing, delivery, installation or use of a nonconforming item shall be controlled pending the evaluation and approval of the disposition by authorized personnel.

IDENTIFYING NONCONFORMING ITEMS

Employees of UniStar Nuclear and UniStar Nuclear contractors have a procedural obligation to identify and document nonconformances. Nonconforming items shall be identified by marking, tagging or other methods that do not adversely affect their end use. The identification shall be legible and easily recognizable. If the identification of a nonconforming item is not practical, the container, package or segregated storage area, as appropriate, shall be identified.

SEGREGATING NONCONFORMING ITEMS

Nonconforming items shall be segregated, when practical, by placing them in a clearly identified and designated hold area until properly dispositioned. If segregation is impractical or impossible due to physical conditions, then other precautions shall be employed to preclude inadvertent use.

DISPOSITION OF NONCONFORMING ITEMS

The disposition, such as "use-as-is," "reject," "repair," or "rework," of nonconforming items shall be identified and documented. The technical justification for the acceptability of a nonconforming item that has been dispositioned "repair" or "use-as-is" shall be documented.

Items that do not meet original design requirements that are dispositioned "use-as-is" or "repair" shall be subject to design control measures commensurate with those applied to the original design. If changes to the specifying document are required to reflect the as-built condition, the disposition shall require action to change the specifying document to reflect the accepted nonconformance. Any document or record change required by the disposition of the nonconformance shall be identified in the nonconformance documentation; and, when each document or record is changed, the justification for the change shall identify the nonconformance documentation. The disposition of an item to be reworked or repaired shall contain a requirement to reexamine (inspect, test, or nondestructive examination) the item to verify acceptability.

Reworked, repaired or replacement items shall be reexamined in accordance with applicable procedures using the original process and acceptance criteria unless the nonconforming item disposition has established alternate acceptance criteria.

SECTION P

CORRECTIVE ACTION

The elements of the UniStar Nuclear QA Program described in this section and associated QA procedures implement the requirements of:

- Criterion 16, Corrective Action, of 10 CFR 50, Appendix B, and
- Basic Requirement 16 of NQA-1-1994.

Conditions adverse to quality, including activities and services, shall be identified promptly and corrected as soon as practical. Conditions adverse to quality is an all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, and nonconformances. Conditions adverse to quality shall be documented.

UniStar Nuclear procedure(s) shall be issued to establish the Corrective Action Program (CAP), which includes the following processes, including closure:

- Prompt identification and correction of conditions adverse to quality by all personnel;
- Determining cause and corrective actions, including action to preclude recurrence, for significant conditions adverse to quality;
- Provision to ensure that corrective actions are not nullified by subsequent action;
- Follow-up actions to verify implementation of corrective actions taken for significant conditions adverse to quality.

Personnel performing evaluations to determine a corrective action/disposition have demonstrated competence in the specific area they are evaluating, have an adequate understanding of the requirements, and have access to pertinent background information.

IDENTIFYING AND CLASSIFYING CONDITIONS ADVERSE TO QUALITY

Conditions adverse to quality shall be classified in one of two categories in regard to their significance, and corrective actions shall be taken accordingly. The two categories of significance include:

- Conditions adverse to quality
- Significant conditions adverse to quality

Responsible management shall investigate and fully identify the condition and document the results. Responsible management shall then utilize investigation results to determine and document corrective action (including remedial action and if appropriate, actions to prevent recurrence). Responsible management shall complete remedial action and document completion of actions in a timely manner.

Significant condition adverse to quality is defined as

- A deficiency that would seriously impact an item, activity or service from meeting or performing its intended function or output of assuring public health and safety;
- A deficiency in design that has been approved for fabrication or construction where the design deviates extensively from design criteria and bases;
- A deficiency in the fabrication or construction of, or significant damage to, structures, systems or components that require extensive evaluation, re-design or repair in order to establish the adequacy of the structure, system or component to perform its intended function of assuring public health and safety
- A deviation from performance specifications that shall require extensive evaluation, redesign, or repair to establish the adequacy of the structure, system or component to perform its intended function;
- A significant error in a computer program used to support activities affecting quality after it has been released for use;
- A deficiency, repetitive in nature, related to an activity or item subject to the UniStar Nuclear QA Program; and
- A condition that, if left uncorrected, has the potential to have a serious negative impact on activities or items subject to the UniStar Nuclear QA Program controls.

For significant conditions adverse to quality, the cause of the condition shall be determined and corrective action taken to preclude recurrence. The identification, cause, and corrective action for significant conditions adverse to quality shall be documented and reported to appropriate levels of management. Follow-up action shall be taken to verify implementation of the corrective action.

Significant conditions adverse to quality shall be evaluated for reportability to the NRC (when required) in accordance with Section V, "10 CFR Part 21 and 10 CFR 50.55(e) Programs For Reporting Defects and Noncompliance," or other applicable reporting requirements, and reporting such conditions when warranted.

Significant conditions adverse to quality shall be evaluated for a stop work condition to determine if stopping work is warranted. If a stop work condition is identified, management shall issue stop work in accordance with the applicable procedure. Upon resolution of the related significant condition adverse to quality, management shall take appropriate action to lift and close (in part or total) the stop work order.

FOLLOW-UP ACTION

The procedure(s) establishing the CAP shall include a requirement for management to take follow-up action to verify implementation of corrective action taken to address significant conditions adverse to quality. The QA organization shall be responsible for conducting periodic assessments of these follow-up actions.

TRENDING

The procedure(s) establishing the CAP shall assign organizational responsibility for trending conditions adverse to quality and the criteria for determining adverse trends. Trend evaluation shall be performed in a manner and at a frequency that provides for prompt identification of adverse quality trends. Identified adverse trends shall be handled in accordance with the CAP described here and reported to the appropriate level of management.

SECTION Q

RECORDS

The elements of the UniStar Nuclear QA Program described in this section and associated QA procedures implement the requirements of:

- Criterion 17, Quality Assurance Records, of 10 CFR 50, Appendix B; and
- Basic Requirement 17 and Supplement 17S-1 of NQA-1- 1994, except for the storage of hard copy records (subsection 4.2(b)) which is addressed here; and
- Generic Letter 88-18, "Plant Record Storage on Optical Disks;" and
- The following Industry Standards:
    - Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guide (TG) 11-1998, "Authentication of Records and Media"
    - NIRMA TG 15-1998, "Management of Electronic Records"
    - NIRMA TG 16-1998, "Software Configuration Management and Quality Assurance"
    - NIRMA TG 21-1998, "Electronic Records Protection and Restoration"

Measures have been established that ensure that sufficient records of completed items and activities affecting quality are appropriately stored.

The records system(s) is defined, implemented, and enforced in accordance with written procedures, instructions, or other documentation. Records may be hard copy or electronic records. The term "record(s)" used throughout this section is to be interpreted as "Quality Assurance Record(s)," unless otherwise specified.

For records in electronic media, the program includes provisions for the generation, distribution, use, maintenance, storage, and disposition of electronic records. The plan provides for all acceptable media on which electronic records are created and stored. Also, the program includes provisions to verify that the media is appropriate, suitable for the capture or storage of records, and error/defect free. The UniStar Nuclear records management program implements Generic Letter 88-18,"Plant Record Storage on Optical Disks."

The records management program provide provisions for the administration, receipt, storage, preservation, safekeeping, retrieval, and disposition of all records. All electronic records are retrievable, maintained in a readable format, and safeguarded against equipment malfunction or human error. Document access controls, user privileges, and other appropriate security controls have been established. Periodic inspections of systems, software applications, and media are performed to ensure electronic records retrievability, integrity, and retention period.

Records shall include at least the following: Operating logs and the results of reviews, inspections, tests, audits, monitoring of work performance, materials analyses, training and qualification. Design documentation and records, which provide evidence that the design and design verification processes were properly performed are collected, stored, and maintained in accordance with documented procedures. The documentation includes not only final design documents, such as drawings and specifications, and revisions thereto but also documentation which identifies the important steps, including sources of design inputs that support the final design.

The program requires that records be examined for adequacy, legibility and completeness.

Requirements and responsibilities for record transmittal, location, distribution, retention, maintenance, and disposition have been described. Training is provided for individuals or organizations in charge of electronic records generation, data/media storage, implementation of security measures, migration/regeneration, and recovery.

The applicable design specifications, procurement documents, test procedures, operational procedures, or other documents specify the records generated, supplied, or maintained.

AUTHENTICATION

Documents are considered valid records only if stamped, initialed, authenticated, or signed and dated by authorized personnel. This authentication may take the form of a statement by the responsible individual or organization. Handwritten signatures are not required if the document is clearly identified as a statement by the reporting individual or organization. These records may be originals or reproduced copies. For electronic records, authentication is accomplished by manually affixing seal, signature, an electronic representation (user ID/password combination, digital signature) or other acceptable process control that ensures genuineness, validity, or reliability. Authorized personnel with access to electronic records and information systems should have a unique user ID/password for access. The system provides controls for users who enter or alter information in electronic records to ensure its data integrity and prevent unauthorized alteration or erasure. Transfer of authentication authority is documented and controlled in accordance with written procedures.

The records and/or indexing system(s) provides sufficient information to permit identification between the record and the item(s) or activity(ies) to which they apply. For electronic records, in addition to the minimum indexing information requirements, the software name, version, and equipment (hardware) used to produce and maintain the electronic media shall be provided.

RECORDS CLASSIFICATION

Records are classified as Lifetime or Nonpermanent. Lifetime records are those that meet one or more of the following criteria:

a. Significant value in demonstrating capability for safe operation

b. Significant value in maintaining, reworking, repairing, replacing, or modifying an item

c. Significant value in determining the cause of an accident or malfunction of an item

d. Provision of required baseline data for inservice inspections and inservice tests

Lifetime records are required to be maintained for the life of the particular item while it is installed in the plant or stored for future use.

Nonpermanent records are those required to show evidence that an activity was performed in accordance with the applicable requirements, but need not be retained for the life of the item because they do not meet the criteria for lifetime records. The retention period for nonpermanent records is established in writing.

Electronic records classified as lifetime or nonpermanent are subject to the same retention requirements prescribed for paper records/hardcopies. Retention requirements for electronic records also identify and maintain the information system (software/hardware), the documentation that describes the information system operation and use, and the record standard it produces.

ELECTRONIC RECORD MIGRATION

An electronic record migration/regeneration program is implemented for electronic records stored in media with a standard life expectancy that fails to meet the specific retention period. This program is implemented in accordance with documented procedures that provide for appropriate record authentication, quality verification of the completion, and accuracy of the data transferred.

STORAGE

Electronic media shall be stored in a dust-free environment, away from electronic devices and demagnetizing equipment. Media shall be maintained at the constant temperature of 40 to 80 degrees Fahrenheit, with a constant relative humidity of 30 to 50 percent. Magnetic and optical media shall be tested periodically to identify any loss of data, to ensure that they are free of permanent errors, and that the record system hardware/software still supports the retrieval of the records.

Non-electronic records shall be stored in facilities that minimize the risk of damage or destruction from the following:

- Natural disasters (i.e., winds, floods or fires);
- Environmental conditions (i.e., high and low temperatures and humidity);
- Infestation of insects, mold or rodents.

Originating organizations shall store records in temporary storage while active and required for use; subsequently the records shall be transmitted for permanent storage.

Temporary storage of records during processing, review or use, until turnover to the records management organization is controlled according to implementing procedures and the following requirements:

- Records shall be temporarily stored in a container or facility with a fire rating of one (1) hour. The temporary storage container or facility shall bear an Underwriters' Laboratories label (UL) (or equivalent) certifying one (1) hour fire protection, or be certified by a person competent in the technical field of fire protection.

- The maximum time limit for keeping records in temporary storage shall be specified by implementing procedures consistent with the nature or scope of work

RECORDS CORRECTION

Records are corrected in accordance with procedures which provide for appropriate review or approval by the originating organization. The correction includes the date and the identification of the person authorized to issue such correction. For records stored in electronic media, a new record is generated when substantial corrections or changes to previous electronic records are required.

RECEIPT CONTROL

The UniStar Records Management organization has been designated as the organization responsible for receiving the records. This organization is responsible for organizing and implementing a system of receipt control of records for permanent and temporary storage, and for providing protection from damage or loss during the time that the records are in his/her possession. For electronic records, in addition to the requirements described above, the organization is also responsible for organizing and implementing an inventory of system applications, record formats, and programs required to process and retrieve electronic records.

At a minimum, a receipt control system includes the following:

a. A method for designating the required records

b. A method for identifying records received

c. Procedures for receipt and inspection of incoming records

d. A method for submittal of completed records to the storage facility without unnecessary delay

Each receipt control system is structured to permit a current and accurate assessment of the status of records during the receiving process.

SECTION R

AUDITS

The elements of the UniStar Nuclear QA Program described in this section and associated QA procedures implement the requirements of:

- Criterion 18, Audits, of 10 CFR 50, Appendix B; and
- Basic Requirement 18 and Supplement 18S-1 of NQA-1-1994 Part 1.

Section S describes the Training and Qualification Criteria-Quality Assurance.

In accordance with the description of the QA organization during the various phases of design, construction, and operation provided in Section A, "Organization," the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement shall verify UniStar Nuclear compliance with all aspects of the UniStar Nuclear QA Program and determine QA Program effectiveness by ensuring that planned and scheduled audits are conducted. The UniStar Nuclear audit program is designed to provide a comprehensive independent evaluation of activities and procedures.

Elements that have been selected for audit shall be evaluated against specified requirements. An auditing function reports to the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement and has the organizational independence and authority to execute an effective audit process to meet all requirements of the QA Program. Objective evidence shall be examined to the depth necessary to determine if these elements are being implemented effectively. UniStar Nuclear audits are performed in accordance with written procedures or checklists by appropriately trained and qualified personnel who do not have direct responsibility for performing the activities being audited. Audit results are documented and provided to the appropriate management for review and corrective action as applicable. Follow-up actions, including re-audit of deficient areas, are taken where indicated.

AUDIT SCHEDULES

Internal or external audits shall be scheduled in a manner to provide coverage, consistency and coordination with ongoing work, and at a frequency commensurate with the status and importance of the work. Internal or external audits shall be scheduled to begin as early in the life of the work as practical and shall be scheduled to continue at intervals consistent with the schedule for accomplishing the work. As a minimum,

- Internal audits of organization and facility activities, conducted prior to placing a UniStar Nuclear facility in operation, shall be performed in such a manner as to assure that an audit of all applicable QA program elements is completed for each functional area at least once each year or at least once during the life of the activity, whichever is shorter. Internal audits of activities, conducted after placing the facility in operation, shall be performed in such a manner as to assure that an audit of all applicable QA program elements is completed for each functional area within a

period of two years. These audits include oversight of the design and analysis activities, the purpose of which will be to detect design errors.

- Internal audit frequencies of well established activities, excluding the audit of procedures, conducted after placing a UniStar Nuclear facility in operation, may be extended one year at a time beyond the above two-year interval based on the results of an annual evaluation of the applicable functional area and objective evidence that the functional area activities are being satisfactorily accomplished. The evaluation shall include a detailed performance analysis of the functional area based upon applicable internal and external source data and due consideration of the impact of any function area changes in responsibility, resources or management. However, the internal audit frequency interval shall not exceed a maximum of four years. If an adverse trend is identified in the applicable functional area, the extension of the internal audit frequency interval shall be rescinded and an audit scheduled as soon as practicable.

- Functional areas of the UniStar Nuclear QA program for auditing include as a minimum verification of compliance and effectiveness of implementation of internal rules, procedures (e.g., operating, design, procurement, maintenance, modification, refueling, surveillance, test, security, radiation control procedures, and the emergency plan), Technical Specifications, regulations and license conditions, programs for training, retraining, qualification and performance of operating staff, corrective actions, and observation of performance of operating, refueling, maintenance and modification activities, including associated record keeping.

- Regularly scheduled internal audits shall be supplemented by additional audits of specific subjects when necessary to provide an adequate assessment of compliance or effectiveness.

An audit schedule shall be developed annually and revised as necessary to ensure that coverage is maintained current. When any work carried out under the requirements of the QA program is delegated to others, the QA audit program shall assess the work.

PROCUREMENT AUDITS

Procurement audits are accomplished as follows:

- Audits are not necessary for procuring the following items:
    - Those that are relatively simple and standard in design, manufacturing, and testing
    - Those that are adaptable to standard or automated inspections or tests of the end product to verify quality characteristics after delivery
- Audits are conducted as follows for procurement of items not covered by the exceptions listed above:

- The supplier's QA program is audited on a triennial basis.
- The triennial period begins when the first audit is performed.
- An audit is initially performed after the supplier has completed sufficient work to demonstrate that its organization is implementing a QA program.
- If a subsequent contract or a contract modification significantly enlarges the scope of or changes the methods or controls for activities performed by the same supplier, an audit of the modified requirements is conducted, thus starting a new triennial period.
- If the supplier is implementing the same QA program for other customers that is proposed for use on the auditing party's contract, the preaward survey may serve as the first triennial audit. Therefore, when such preaward surveys are employed as the first triennial audits, they must satisfy the same audit elements and criteria as those used on other triennial audits.
- If more than one purchaser buys from a single supplier, a purchaser may either perform or arrange for an audit of the supplier on behalf of itself and other purchasers to reduce the number of external audits of the supplier. The scope of this audit should satisfy the needs of all of the purchasers, and the audit report should be distributed to all the purchasers for whom the audit was conducted. When UniStar Nuclear relies on the results of an audit performed on behalf of several purchasers, UniStar Nuclear remains individually responsible for the adequacy of the audit.

Evaluations of suppliers are documented and take into account the following, where applicable:

- Receipt inspection, operating experience, and supplier evaluation programs are reviewed on an ongoing basis as the information becomes available. The results of the review are promptly considered for effect on a supplier's continued qualification and adjustments made as necessary (including corrective actions, adjustments of supplier audit plans, and input to third party auditing entities, as warranted).
- Additionally, results are reviewed periodically to determine if, as a whole, they constitute a significant condition adverse to quality requiring additional action.
- If there is no ongoing receipt inspection or operating experience with which to analyze the supplier for a period of twelve months, an annual evaluation shall be performed as follows:
  - Review of supplier-furnished documents and records such as certificates of conformance, nonconformance notices, and corrective actions
  - Results of previous source verifications, audits, and receiving inspections
  - Operating experience of identical or similar products furnished by the same supplier

- Results of audits from other sources (e.g., customer, NUPIC, ASME, or NRC audits)

The results of the evaluation shall be reviewed by Supply Chain management and appropriate corrective action shall be taken be taken. Adverse findings resulting from these evaluations shall be periodically reviewed in order to determine if, as a whole, they result in a significant condition adverse to quality and to provide input to the supplier audit program. Adverse findings shall be documented in accordance with Section P, "Corrective Action."

AUDIT PLANS

A documented audit plan shall be developed for each audit. This plan shall identify the audit scope, requirements for performing the audit, type of audit personnel needed, work to be audited, organizations to be notified, applicable documents, audit schedule, and implementing documents or checklists to be used.

AUDIT TEAMS

The UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement shall select and assign auditors who are independent of any direct responsibility for performing the work being audited. Audit personnel shall have sufficient authority and organizational freedom to make the audit process meaningful and effective. The audit team shall include one or more auditors comprised of representatives from the UniStar Nuclear QA organization and any applicable technical organizations. A lead auditor shall be appointed to supervise the team, organize and direct the audit, prepare and coordinate issuance of the audit report and evaluate responses. Technical specialists may be used to assist in assessing the adequacy of technical processes. Before commencing the audit, the lead auditor shall ensure the personnel assigned to the audit team are prepared and collectively have experience and/or training commensurate with the scope, complexity or special nature of the work to be audited. Lead auditors, auditors and technical specialists shall be trained and qualified according to the requirements of Section S, "Training and Qualification Criteria-Quality Assurance."

PERFORMING AUDITS

The UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement shall provide written notification of a planned audit to the affected organizations at a reasonable time before the audit is to be performed. The notification shall include all relevant information pertaining to the audit, such as schedule, scope and names of audit lead and team members, if known. In addition, the audit team leader shall ensure the following is performed:

- The audit team shall be adequately prepared before starting the audit.
- Audits shall be performed in accordance with written procedures or checklists.
- Elements that have been selected for the audit shall be evaluated against specified requirements.

- Objective evidence shall be examined to the depth necessary to determine if the selected elements are being implemented effectively.

- Audit results shall be documented by auditing personnel, and reported to/reviewed by management having responsibility for the area audited. Conditions requiring prompt corrective action shall be reported immediately to management of the audited organization.

- Identified audit findings shall be documented and the audited organization shall correct the findings according to the requirements of Section P, "Corrective Action." Minor audit findings can be corrected during the conduct of the audit.

REPORTING AUDIT RESULTS

The audit report shall be prepared and signed by the audit team leader and issued to the management of the audited organization in a timely manner after completion of the audit. The audit report shall include the following information:

- A description of the audit scope.

- Identification of the auditors.

- Identification of persons contacted during the audit.

- A summary of audit results and the documents reviewed, persons interviewed and the specific results of the reviews and interviews (i.e., a summary of the checklist contents).

- Statement as to the effectiveness of the implementation of the QA Program elements audited.

- A description of each reported adverse audit finding in sufficient detail to enable corrective action to be taken by the audited organization.

- A requested date for response by the audited organization.

RESPONDING TO AUDITS

Management of the audited organization or activity shall:

- Investigate adverse audit findings in a timely manner;

- Determine and schedule corrective action, including measures to prevent recurrence;

- Prior to or by the requested response date, notify the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement in writing of the actions taken or scheduled.

EVALUATING AUDIT RESPONSES

The UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement or designee is responsible for evaluating audit responses.

FOLLOW-UP ACTION

Follow-up action shall be taken by the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement to verify that corrective actions are completed as scheduled according to the requirements of Section P, "Corrective Action."

RECORDS

- Audit records include audit plans and audit reports.
- Written replies and the record of completion of any required corrective actions.

These documents are QA records and shall be submitted as delineated in Section Q, "Records."

SECTION S

TRAINING AND QUALIFICATION CRITERIA - QUALITY ASSURANCE

The elements of the UniStar Nuclear QA Program described in this section and associated QA procedures implement the requirements of:

- Criterion 2, Quality Assurance Program, of 10 CFR 50, Appendix B; and
- Basic Requirement 2 and Supplement 2S-2 of NQA-1-1994, except for qualification of lead auditors (subsection 3.3) which is addressed here.

Management of the Training and Qualification-Quality Assurance is the responsibility of the Senior Management position responsible for Quality and Performance Improvement.

QUALIFICATION OF AUDITORS

The Senior Management position responsible for Quality and Performance Improvement shall establish the audit personnel qualifications and the requirements for the use of technical specialists to accomplish the auditing of quality assurance programs. Personnel selected for quality assurance auditing assignments shall have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited. Auditors shall have, or be given, appropriate training or orientation to develop their competence for performing required audits. Competence of personnel for performance of the various auditing functions shall be developed by one or more of the following methods:

- Orientation to provide a working knowledge and understanding of this NQA-1-1994 and the UniStar Nuclear procedures for implementing audits and reporting results.
- Training programs to provide general and specialized training in audit performance. General training shall include fundamentals, objectives, characteristics, organization, performance, and results of quality auditing. Specialized training shall include methods of examining, questioning, evaluating, and documenting specific audit items and methods of closing out audit findings.
- On-the-job training, guidance, and counseling under the direct supervision of a Lead Auditor. Such training shall include planning, performing, reporting, and follow-up action involved in conducting audits.

The prospective Lead Auditor shall have the capability to communicate effectively, both in writing and orally. These skills shall be attested to in writing by the Senior Management position responsible for Quality and Performance Improvement.

Prospective Lead Auditors shall have training to the extent necessary to assure their competence in auditing skills. Training in the following areas shall be given based upon management evaluation of the particular needs of each prospective Lead Auditor:

- Knowledge and understanding of this QAPD, NQA-1-1994 and other nuclear-related codes, standards, regulations, and regulatory guides, as applicable.
- General structure of quality assurance programs as a whole and applicable elements as defined in NQA-1-1994.
- Auditing techniques of examining, questioning, evaluating, and reporting; methods of identifying and following up on corrective action items; and closing out audit findings.
- Audit planning in the quality-related functions for the following activities: siting, designing, purchasing, fabricating, handling, shipping, receiving, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, modifying, and decommissioning of nuclear facilities or associated components, and safety aspects of the nuclear facility.
- On-the-job training to include applicable elements of the audit program.

The prospective lead auditor shall have participated in a minimum of five QA audits within a period of time not to exceed 3 years prior to the date of qualification, one audit of which is a nuclear QA audit within the year prior to qualification or for individuals with related industry experience, demonstrated ability to properly implement the audit process, to effectively organize and report results, including participation in at least one nuclear audit within the year preceding the date of qualification.

The prospective Lead Auditor shall pass an examination which shall evaluate his comprehension of and ability to apply the body of knowledge identified above. The examination may be oral, written, practical, or any combination of the three types. The development and administration of the examination shall be the responsibility of UniStar Nuclear. UniStar Nuclear may delegate this activity to an independent certifying agency, but shall retain responsibility for conformance of the examination and its administration to NQA-1-1994. Integrity of the examination shall be maintained by UniStar Nuclear or certifying agency through appropriate confidentiality of files and, where applicable, proctoring of examinations. Copies of the objective evidence regarding the type(s) and content of the examination(s) shall be retained by UniStar Nuclear in accordance with the requirements of Section Q, "Records."

Lead Auditors who fail to maintain their proficiency for a period of 2 years or more shall require requalification. Requalification shall include retraining in accordance with the above requirements, including reexamination, and participation as an Auditor in at least one nuclear quality assurance audit.

Each Lead Auditor shall be certified by the Senior Management position responsible for Quality and Performance Improvement as being qualified to lead audits. This certification shall, as a minimum, document the following:

- Employer's name
- Lead Auditor's name
- Date of certification or recertification;
- Basis of qualification (i.e., education, experience, communication skills, training, examination, etc.);
- Signature of the Senior Management position responsible for Quality and Performance Improvement

Records of personnel qualifications for Auditors and Lead Auditors performing audits shall be established and maintained. Records for each Lead Auditor shall be maintained and updated annually.

Non-UniStar Nuclear Auditor Qualifications

Non-UniStar Nuclear certified auditors may be used to perform audits provided the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement confirms and documents applicable QAPD requirements have been met and the individual has been certified in accordance with the QA procedure on auditor qualification and certification.

Qualification- Other QA Personnel

The UniStar Nuclear management positions responsible for management of the implementation of the QA program shall be qualified as follows:

- Education: baccalaureate in engineering or related science; and
- Minimum experience for the position: 4 years of related experience (3 of the 4 years must include 2 years of nuclear power plant experience and 1 year of supervisory or management experience); and
- Special Requirements: management and supervisory skills and experience or training, including leadership, interpersonal communication, management responsibilities, motivation of personnel, problem analysis and decision making, and administrative policies and procedures; and
- 1 year of experience performing quality verification activities

Individuals who do not possess these formal education and minimum experience requirements shall not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by the incumbent's management.

Other individuals responsible for planning, implementing, and maintaining the QA plan shall be qualified as follows:

- Education: high school diploma
- Minimum experience: 1 year related experience

Individuals who do not possess these formal education and minimum experience requirements shall not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by the incumbent's management.

SECTION T

TRAINING AND QUALIFICATION – INSPECTION AND TEST

The elements of the UniStar Nuclear QA Program described in this section and associated QA procedures implement the requirements of:

- Criterion 2, Quality Assurance Program, of 10 CFR 50, Appendix B; and
- Basic Requirement 2 and Supplements 2S-1 of NQA-1-1994.

Management of the Training And Qualification-Inspection and Test is the responsibility of the Senior Management position responsible for Quality and Performance Improvement.

Qualification/Certification Of Inspection And Test Personnel

Inspection and test personnel initial qualification requirements are based on education, training, experience and demonstration of capability in performing the type of inspection or test commensurate with the job.

Inspection and test personnel performing QA Level 1 activities shall be certified in accordance with NQA-1-1994 Supplement 2S-1, Supplementary Requirements for the Qualification of Inspection and Test Personnel. Written procedures are established for the qualification of inspection and test personnel, and for the assurance that only those personnel who perform inspection and test activities are required to be established.

The job performance of inspection and test personnel shall be reevaluated at periodic intervals not to exceed 3 years.

Any person who has not performed inspection or testing activities in his/her qualified area for a period of 1 year shall be reevaluated prior to performing inspection or test activities.

Inspections by persons during on-the-job training for qualification are performed under the direct observation and supervision of a qualified person and verification of the conformance is by the qualified person until certification is achieved.

TRAINING AND CERTIFICATION RECORDS

Training and certification records for inspection and test personnel shall be maintained as follows:

- Employer's name
- Identification of person being certified
- Activities certified to perform
- Basis used for certification which includes such factors as education, experience, indoctrination, and training test results, where applicable

- Results of periodic evaluation
- Results of physical examinations, when required
- Signature of employer's designated representative who is responsible for such certification
- Examination results
- Date of certification or recertification and date of certification expiration
- Results of capability demonstration

SECTION U

QA PROGRAM COMMITMENTS

Through this QAPD, UniStar Nuclear commits to compliance with the regulatory guidance and industry standards governing quality assurance as described below along with any exceptions or alternatives described within this QAPD.

Regulatory Guides (RG)

a. RG 1.26, Revision 3, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants"

b. RG 1.29, Revision 3, "Seismic Design Classification"

c. RG 1.54, Revision 1, "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants"

d. RG 1.97, Revision 3, "Instrumentation for Light-Water Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident"

e. RG 1.143, Revision 2, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants"

f. RG 1.152, Revision 2, "Criteria for Digital Computers in Safety Systems of Nuclear Power Plants"

g. RG 1.168, Revision 1, "Verification, Validation, Reviews, and Audits for Digital Computer Software Uses in Safety Systems of Nuclear Power Plants"

h. RG 1.169, September 1997 "Configuration Management Plans for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"

i. RG 1.170, September 1997 "Software Test Documentation for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"

j. RG 1.171, September 1997 "Software Unit Testing for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"

k. RG 1.172, September 1997 "Software Requirements Specifications for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"

l. RG 1.173, September 1997 "Developing Software Live Cycle Processes for Digital Computer Software Used in Safety Systems of Nuclear Power Plants"

m. RG 4.15, Revision 1, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) – Effluent Streams and the Environment" – UniStar Nuclear commits to Regulatory Guide 4.15, Revision 1, with the alternatives identified in Table 1, Exception #1.

n. RG 7.10, Revision 2, "Establishing Quality Assurance Programs for Packaging Used in Transport of Radioactive Material"

Standards

a. Subpart 2.1, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components for Nuclear Power Plants," ASME, NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications" – UniStar Nuclear commits to implement this subpart during the Construction Phase.

b. Subpart 2.2, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants," ASME NQA-1-1994 – UniStar Nuclear commits to implement this subpart during the Construction Phase.

c. Subpart 2.4, "Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities," ASME NQA-1-1994 – UniStar Nuclear commits to this subpart as addressed in Sections J and K of this QAPD, with the alternatives as identified in Table 1, Exception #2

d. Subpart 2.5, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations for Nuclear Power Plants," ASME NQA-1-1994 – UniStar Nuclear commits to implementing this subpart with the alternative identified in Table 1, Exception #3

e. Subpart 2.7, "Quality Assurance Requirements of Computer Software for Nuclear Facility Applications," ASME NQA-1-1994 – UniStar Nuclear commits to this subpart as addressed in Section C of this QAPD.

f. Subpart 2.8, "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for Nuclear Power Plants," ASME NQA-1-1994 – UniStar Nuclear commits to this subpart as addressed in Sections J and K of this QAPD.

g. Subpart 2.15, "Quality Assurance Requirements for Hoisting, Rigging, and Transporting Items for Nuclear Power Plants," ASME NQA-1-1994 – UniStar Nuclear commits to implement this subpart during the Construction Phase.

h. Subpart 2.20, "Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants," ASME NQA-1-1994 – UniStar Nuclear commits to this subpart for subsurface investigation activities.

i. Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guide (TG) 11-1998, "Authentication of Records and Media" – UniStar Nuclear commits to this TG as addressed in Section Q of this QAPD.

j. NIRMA TG 15-1998, "Management of Electronic Records" – UniStar Nuclear commits to this TG as addressed in Section Q of this QAPD.

k. NIRMA TG 16-1998, "Software Configuration Management and Quality Assurance" – UniStar Nuclear commits to this TG as addressed in Section Q of this QAPD.

l. NIRMA TG 21-1998, "Electronic Records Protection and Restoration" – UniStar Nuclear commits to this TG as addressed in Section Q of this QAPD.

SECTION V

10 CFR PART 21 AND 10 CFR 50.55(e) PROGRAMS FOR REPORTING DEFECTS AND NONCOMPLIANCE

The program for evaluation, notification, reporting, posting, procurement documents, and maintaining records for the implementation of 10 CFR 50.55(e) and 10 CFR 21 will use the definitions in these NRC Regulations.

Procedures will be established to require nonconforming materials, parts and components identified during siting, design, construction, and operations as required by Section O, and identified significant conditions adverse to quality as required by Section P, to be screened to determine if there is a potential of causing a Substantial Safety Hazard which is reportable under the provisions of 10 CFR 55(e) during the Construction Phase or 10 CFR 21. The screening will consider:

1. Whether the nonconformance involves anything that is a basic component in the facility or anything that has been delivered or offered for use in a NRC-licensed facility as a basic component;

2. Whether the nonconformance or the significant conditions adverse to quality constitutes a deviation or failure to comply with the potential for creating a substantial safety hazard; and

3. Whether the nonconformance should have been corrected prior to the goods or services being installed, used, delivered, or offered for use.

   The term "offered for use" is to consider whether the nonconformance is in a portion of a facility subject to the construction permit requirements of 10 CFR Part 50 and the portion of the facility containing the nonconformance has been offered by the supplier to UniStar Nuclear for acceptance.

4. Did the nonconforming material, part or component, or the significant condition adverse to quality indicate a failure to comply with the Atomic Energy Act of 1954, as amended, or any applicable rule, regulation, order, or license of the Commission.

The evaluation process, notification, reporting, and maintenance of records process will be described in procedures. Key elements of these requirements are:

- Evaluation, i.e., the process of determining whether a particular deviation could create a substantial hazard or determining whether a failure to comply is associated with a substantial safety hazard, is to determine:
    - Whether the construction of a UniStar Nuclear facility or activity has undergone any significant breakdown in any portion of the quality assurance program conducted pursuant to the requirements of 10 CFR 50, Appendix B, which could have produced a defect in a basic component, i.e., whether or not the breakdown actually resulted in a defect in a design approved and is to be released used for construction or installation. Such breakdowns in the quality assurance program

are reportable whether or not the breakdown actually resulted in a defect in a design approved and released for construction or installation. (Construction phase)

- Could the deviation constitute a Substantial Safety Hazard (SSH), i.e. a defect, or does the failure to comply relate to a SSH if it were to remain uncorrected.

Completion of the evaluation is to be within 60 days of discovery of the defect, failure to comply, or determination that a significant breakdown of the quality assurance program could have produced a SSH. If the evaluation cannot be completed within 60 days, an interim report will describe the deviation or failure to comply that is being evaluated and shall also state when the evaluation will be completed. This interim report must be submitted in writing within 60 days of discovery of the deviation or failure to comply.

- Notification

  - Within 5 working days after completion of the evaluation that indicates a defect or a failure to comply is related to a SSH, a director or responsible officer is to be informed. This notification includes those significant breakdowns in the quality assurance program whether or not the breakdown actually resulted in a defect in a design approved and released for construction or installation.

  - Within two days following receipt of information by the director or responsible corporate officer, the NRC Operation Center is to be notified. The director or responsible officer may authorize an individual to provide the notification required. This provision shall not relieve the director or responsible officer of his or her responsibility.

  - Within 30 days following receipt of information by the director or responsible corporate officer, a written notification submitted to the Document Control Desk, U.S. Nuclear Regulatory Commission, with copies to the appropriate Regional Administrator and NRC resident inspector.

    Note: The director or responsible officer may authorize an individual to provide the notification required, provided that, this shall not relieve the director or responsible officer of his or her responsibility.

During the construction phase the evaluation of potential defects and failures to comply and reporting of defects and failures to comply under 10 CFR 50.55(e) satisfies the UniStar Nuclear's evaluation, notification, and reporting obligation to report defects and failures to comply under 10 CFR 21 and the responsibility of individual directors and responsible officers of such licensees to report defects under section 206 of the Energy Reorganization Act of 1974.

During the operations phase the evaluation of potential defects and appropriate reporting of defects under 10 CFR 50.72, 10 CFR 50.73, or 10 CFR 73.71 satisfies UniStar Nuclear's evaluation, notification, and reporting obligation to report defects under 10 CFR 21 and the responsibility of individual directors and responsible officers of UniStar Nuclear to report defects under section 206 of the Energy Reorganization Act of 1974.

The written notification will clearly indicate that the written notification is being submitted under 10 CFR 50.55(e) and/or 10 CFR 21, as appropriate, and include the information required by 10 CFR 50.55(e)(8) or 10 CFR 21.21(d)(4).

Records

- Records of evaluations of all deviations and failures to comply for a minimum of five years after the date of the evaluation shall be retained.

- Records of procurement documents, which define the requirements that facilities or basic components must meet in order to be considered acceptable, shall be maintained for the lifetime of the basic component.

Procedures for the procurement of basic components will require the inclusion of a phrase that the procurement is subject to the provisions of 10 CFR 21. Supply Chain management is responsible for these procedure(s).

Procedures will require that the posting requirements of 10 CFR 21.6 are met. The program specifies that the Part 21 posting is to be at all locations where there are UniStar Nuclear activities involving basic components being conducted.

SECTION W

COMMERCIAL- GRADE DEDICATION

The dedication process is to provide reasonable assurance that a commercial-grade item to be used as a basic component will perform its intended safety function and, in this respect, is deemed equivalent to an item designed and manufactured under a 10 CFR 50, Appendix B, quality assurance program

The UniStar Nuclear dedication program is implemented by elements of Sections A through R of this QAPD. The elements of this program implemented include:

- The dedication program is documented by written procedures or instructions and shall be carried out in accordance with those procedures or instructions.
- The dedication program provides for any special controls, processes, test equipment, tools, and skills to attain the required quality and for verification of that quality.
- The dedication program provides for training, such as, indoctrination, training, qualification, continuing training, and periodic refresher training of personnel.
- Engineering personnel specify regulatory and design requirements (which may reference the original design basis) and translate these requirements into instructions, procedures, and drawings. Some of the requirements may need to be included on the purchase documents for replacement components. Design control measures are applied to the delineation of critical characteristics and the acceptance criteria for inspections and tests.
- The dedication program provides for the review of materials, parts, equipment, and processes for suitability of application.
- The commercial-grade dedication process includes engineering involvement commensurate with the nature, complexity, and application of the items to be dedicated.
- Procurement documents specify the technical and quality requirements and may also specify the acceptance methods and criteria consistent with the technical evaluation.
- Procurement documents invoke the commercial-grade supplier's commercial quality program documents by revision and/or date, and also establish requirements for documented traceability.
- Instructions, procedures, and drawings containing qualitative and quantitative acceptance criteria must be relevant to the specific item or service and to the specific plant application.
- The dedication program elements, including receipt inspection, commercial-grade surveys, source verification, surveillances (including witness/hold points as appropriate),

special tests and inspections, use of supplier and product performance history, and post-installation tests are prescribed by documented procedures.

- Documents that specify or prescribe the dedication process must be appropriately controlled. Controls shall provide for the review of documents for adequacy, approval of changes by authorized personnel, and their adequate use.

- Measures are established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents.

- Measures are established to evaluate the effectiveness of the control of quality by contractors and subcontractors at intervals consistent with the importance, complexity, and quality of the product or service.

- Measures are established for the examination of products upon delivery or prior to delivery if necessary to verify critical characteristics.

- Measures are established to control the identification or traceability of a commercial-grade item to its original manufacturer and to the results of dedication inspections and tests. Unique identifiers are to be maintained either on the item or on records traceable to the item.

- Measures are established to assure that special processes, including welding, heat treating, and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures.

- The requirements of applicable codes, standards, specifications, acceptance criteria, and other special requirements are to be included or referenced in procedures or instructions utilized in the dedication process.

- Measures are established for the planning and execution of inspections required to verify conformance of an item or activity.

- Inspection requirements (e.g., characteristics subject to inspection, inspection methods, and mandatory hold points) and acceptance criteria are to be included in the dedication plan.

- Measures are established for the control of all testing required to verify conformance of an item to specified requirements, or to demonstrate satisfactory performance for service.

- Test procedures include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions.

- Test results are to be documented and evaluated to assure that test requirements have been satisfied.

- A procedure is required to be established to control the calibration and adjustment of measuring and test equipment.

- Measures are established to control the handling, storage, shipping, cleaning, and preservation of material and equipment in accordance with work and inspection instructions, specifications, or procedures.

- Measures are established to indicate, by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, the status of inspections and tests performed upon individual items.

- A procedure is established to provide feedback of deficiencies identified in any phase of the commercial-grade dedication process and also screening for 10 CFR Part 21 applicability.

- Section V, "10 CFR Part 21 and 10 CFR 50.55(e) Programs for Reporting Defects and Noncompliance," provides the process for screening of deficiencies and evaluating applicability to 10 CFR Part 21.

- Auditable dedication-related documentation, including dedication plans and results, are retained by the licensee or the dedicating entity as a quality assurance record for the life of the dedicated commercial-grade item in the nuclear power plant.

- Dedication program audits shall be performed to determine its effectiveness. Audits are prescribed by written procedures or checklists and conducted by appropriately trained personnel. Audit results are documented and reviewed by responsible management. Follow-up actions shall be taken where indicated.

Technical Evaluations

Technical evaluations are conducted and documented by the responsible engineering organization. Technical evaluations identify the necessary technical and quality requirements that ensure the item will meet the intended design conditions. These requirements shall include, as applicable:

1. Determination of the item's safety function, performance requirements, component/part functional classification, and application requirements (e.g., service conditions).

2. Review of the manufacturer's technical data as well as industry operating experience, including feedback from previous dedication activities, NRC bulletins and information notices, supplier information letters, and available industry data, to identify relevant technical information that may affect the suitability of the item.

3. Performance of a Failure Modes and Effects Analyses (FMEA) to identify the credible failure mechanisms of the item in the specific application under consideration.

4. The identification of the item's critical characteristics based on the information developed above that will assure the suitability of all parts, materials, and services for their intended safety-related applications. Factors that shall be considered include:

    a The important design, material, and performance characteristics that have a direct effect on the item's ability to accomplish its intended safety function.

    b Active/passive safety-related functions, long-term reliability/durability, system safety/non-safety interfaces, and system compatibility under all design basis conditions.

    c Any changes in design, material, or manufacturing process that could impact the functional characteristics of the item.

    d Appropriate interface with manufacturer to identify and characterize the design and functional parameters of specific parts.

    e The number and nature of the critical characteristics are to be based on the intended safety function, application requirements, complexity, credible failure modes and effects, and performance requirements of the item.

    f Those critical characteristics that cannot be effectively verified during post-receipt dedication inspection and testing shall be identified in order to apply an appropriate verification method during the manufacturing process.

    All critical characteristics, i.e., those that are important for the item to perform its safety function (as determined in the technical evaluation), are to be verified. Not all design requirements need to be considered critical characteristics; however, licensees must assure the suitability of all parts, materials, and services for their intended safety-related applications. This may involve the performance of surveys, special tests and/or inspections, or source verification on commercial-grade suppliers as part of the supplier selection process to verify the adequacy of the supplier controls (see Acceptance Methods section below).

5. Determination of the appropriate verification methods for each critical characteristic.

6. Identification of the acceptance criteria for the verification method used for the identified critical characteristics consistent with the plant-specific application.

Additional considerations for dedication of commercial-grade items for applications requiring environmental or seismic qualification:

1. Utilization of non-destructive methods to verify the critical characteristics of the item to provide reasonable assurance that each individual production commercial-grade item will perform in the design-basis accident/event harsh environment (e.g., LOCA, HELB, OBE, SSE). Like-for-like replacements shall demonstrate performance at least as well as the qualified prototype.

2. The commercial-grade item's safety function(s), functional performance requirements, and success criteria determinations shall include:

    a. Detailed analysis of vulnerabilities/sensitivities to environmental stressors,

    b. Detailed material and durability analysis, and

    c. Required operating/mission times (including post-accident),

    d. Design service conditions (harsh environment, seismic)

3. Seismic and environmental qualification shall be treated as critical characteristics to be verified.

Acceptance Methods

The following are the four acceptance methods that shall be included in the dedication program and may be used to accept commercial-grade items. The most appropriate acceptance method(s) shall be selected for each critical characteristic.

Method 1: Special Test and Inspections

1. Special test and inspections shall be used after the commercial-grade item is received or during manufacture to assure that the purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, meet the technical and quality requirements.

2. Tests and inspections specified for acceptance shall be verified by developing a documented plan or checklist that shall include:

    - The test and inspections to be performed
    - The test methods and inspection techniques to be utilized
    - Verification of the identified critical characteristics consistent with the acceptance criteria determined in the technical evaluation
    - Documentation of the inspection and test results

3. Receipt inspection activities establish and maintain traceability of commercial-grade items.

4. Post-installation testing, functional tests before installation, and/or operational tests after installation may be performed to verify critical characteristics of the commercial-grade item.

5. Measuring and test equipment shall be calibrated properly, approved vendors shall be used to perform tests, and qualified personnel shall be used to perform the tests.

6. Sampling plans for testing shall be used in accordance with nationally recognized industry standards, appropriately controlled, and have adequate technical basis, considering lot traceability and homogeneity, complexity of the item, and adequacy of the supplier's controls. These controls shall include acceptable commercial quality controls as confirmed by survey. The commercial-grade item sampling process shall be documented to develop the necessary objective evidence of the supplier's ability to consistently provide acceptable items.

7. Inspections shall include verification of objective quality evidence and performance of visual, dimensional, electrical and mechanical inspections, or tests (as necessary) to assure product and material quality.

8. When the verification of one or more critical characteristics is based on vendor certified material test reports or certificates of conformance, the validity of these documents shall be ensured (see Method 2 below). Acceptance of an item using this method will be completed by performing a receipt inspection with the accompanying supplier's certificate of conformance or certified material test report.

9. Reliance on part number verification and certification documentation alone on receipt is insufficient to ensure the quality and suitability of commercially procured products.

Method 2: Commercial-grade Survey of Supplier

1. Commercial-grade surveys shall be used when the purchaser desires to verify one or more critical characteristics based on the merits of a vendor/supplier's commercial quality controls.

2. The vendor/supplier shall have a documented and effectively implemented program and/or procedures to control the critical characteristics of the item or items being procured.

3. The survey shall be conducted by an individual(s) that is also trained in auditing and knowledgeable in the operation of the item(s) and the associated critical characteristics to be verified.

4. The verification is accomplished by reviewing the vendor's program/procedures controlling these characteristics and observing the actual implementation of these controls in the manufacture of items identical or similar to the items being purchased.

5. Critical characteristics that are not adequately controlled shall be addressed by the contract requiring the vendor to institute additional controls or by utilizing other verification methods.

6. If the vendor's controls are determined to be satisfactory, purchase orders for these items shall invoke these controls as contract requirements by referencing the applicable program/procedure(s) and revision. Specific controls reviewed and accepted during the survey shall be implemented during the manufacturing process.

7. Commercial-grade survey plans shall include the identification of the item or items for which the vendor is being surveyed, identification of the critical characteristics of these items that the vendor is expected to control, identification of the controls to be applied (program/procedure and revision), and a description of the verification activities performed.

8. For survey reports prepared by third parties (e.g., a NUPIC joint or member survey), the following factors shall be considered:

    a. Review and acceptance of the surveyors' procedure(s), checklists, and personnel (e.g., the NUPIC commercial-grade survey procedure and checklist).

    b. Ensure that the survey is pertinent to the item(s) being procured and to the plant application.

    c. The survey report shall demonstrate that the critical characteristics required for the purchaser's own application are in fact verified to be controlled by the supplier.

9. Actual handling of the item by a distributor shall be addressed in terms of the distributor's controls (e.g., segregation of customer returns). However, other factors may be taken into account that may warrant the need for a distributor survey, such as:

    a. The need for documented, verifiable traceability to the original equipment manufacturer.

    b. Presence and integrity of original equipment manufacturer packaging/markings, etc.

    c. The susceptibility of the item to undetectable damage or tampering.

    d. History or experience with the particular vendor and distributor(s).

    A survey of the distributor may not be necessary if there is a low probability of a distributor being able to have any material effect on an item merely by having it in its physical possession, and where the distributor has rigorous controls on items during possession.

10. Commercial-grade surveys shall be conducted at sufficient frequency to ensure that the process controls applicable to the critical characteristics of the item procured continue to be effectively implemented. Such verifications shall be conducted at intervals commensurate with the vendor's past performance. Factors to be considered in determining the frequency of commercial-grade surveys include the complexity of the item, frequency of procurement, receipt inspection, item performance history, and knowledge of changes in the vendor's controls.

11. The dedicating entity is responsible for the control of subsuppliers of parts, materials, or services. The dedicating entity is required to impose the necessary controls on

subsuppliers consistent with the importance of the subcontracted item or service. Control of subsuppliers shall also be adequately addressed by survey so that the supplier has an adequate basis to accept test results and certifications.

12. A certificate of conformance or certified material test report by the original equipment manufacturer/vendor or material supplier may be acceptable, provided:

    a. Documented, verified traceability to the original equipment manufacturer/vendor has been established, and

    b. The purchaser has verified that the original equipment manufacturer or material supplier has implemented adequate quality controls for the activity being certified.

13. Acceptance Method 2 shall not be employed as the sole basis for accepting items from suppliers with undocumented commercial quality control programs or with programs that do not effectively implement their own necessary controls. Likewise, Method 2 shall not be employed as the basis for accepting items from distributors unless the survey includes the part manufacturer(s) and the survey confirms adequate controls by both the distributor and the part manufacturer(s).

Method 3: Source Verification

1. Method 3 involves witnessing quality-related activities before releasing the commercial-grade item from the supplier or test laboratory facility to directly confirm that the selected critical characteristics of the item being procured are met when specialized tests and/or inspections are required to verify selected critical characteristics, and the equipment to perform these tests is available only at the supplier's facilities.

2. Source verifications shall be controlled by a plan. Factors to be considered in the plan include:

    a. The identification of a specific process of interest that may be correlated with a manufacturing or testing phase.

    b. The verification method utilized to verify the critical characteristics for acceptance.

    c. Appropriate hold points to verify design, material, and performance characteristics during manufacture and/or testing relevant to the safety function of the item when those characteristics cannot be verified after the item has been completely manufactured.

    d. A dedicating entity inspector(s) who performs direct observations of the verification of commercial-grade item's critical characteristics and manufacture at the supplier facility. The inspector(s) shall be a technical specialist skilled in audit practice and knowledgeable in operation of the item(s) and the associated critical characteristics to be verified.

e. Documentation of the source verification results. This includes the critical characteristics for acceptance and the actual results obtained during verification. Deficiencies observed shall be corrected by the supplier before shipping.

3. The dedicating entity inspector authorizes shipping and establishes initial traceability.

Method 4: Acceptable Supplier/Item Performance Record

1. This method could be used to accept one or more critical characteristics based upon a confidence in the supplied item achieved through proven performance of the item. The purchaser can also take credit for item performance based upon historical verification, acceptable quality control of critical characteristics, or acceptable industry-wide performance.

2. Information pertinent to the commercial-grade item's quality of performance obtained from outside sources (e.g., operational event reports, NRC, vendor equipment technical information program, and Institute of Nuclear Power Operations) and from commercial-grade surveys, source verifications, receipt inspections, previous dedication or qualification, and operational history is factored into the dedication process.

3. The established historical record is based on acceptable industry-wide performance data that is directly applicable to the item's critical characteristics and the intended safety-related application.

4. This method shall not be employed alone unless the established historical record is based on industry-wide performance data that is directly applicable to the item's critical characteristics and the intended safety-related application.

5. This method shall be used in combination with one or more of the methods explained above to collect the objective evidence necessary to ensure acceptable historical performance of the supplier.

6. This method is more suited to providing a basis for sampling plans.

Like-for-like Commercial-Grade Item Replacements

1. A like-for-like replacement is a replacement of an item with one that is identical. A replacement may be considered identical if:

   - The item was purchased from the same manufacturer (successor companies may be accepted provided all product changes can be identified, analyzed, and verified acceptable for the specific application), and

   - The item has the same model or part number (number changes where no product change is verified may be accepted, considering drawing revision and/or date as drawings may change without an associated change in part number), and

- The item has the same manufacturing time frame as determined by, for example, date purchased or date shipped from factory, date code, same batch or lot number.

2. Equivalency evaluations shall demonstrate that a like-for-like replacement is identical in form, fit, function process and material to the item it is replacing, and that it will function under all design conditions (including design basis event conditions).

3. A like-for-like determination shall not be based solely on the selection of a commercial-grade supplier with items manufactured to meet the same industry standards of the item that was originally supplied. Meeting the same industry standards may be a necessary condition, but is not a sufficient condition for a like-for-like determination.

4. If the dedicating entity can demonstrate that the replacement item is identical, then the safety function, design requirements and critical characteristics need not be redetermined. However, qualification of suppliers and examination of products is still required.

5. If differences from the original item are identified in the replacement item, then the item is not identical, but similar to the item being replaced, and additional evaluation is necessary to determine if any changes in design, material, manufacturing process, safety, form, fit, or interchangeability could impact the functional characteristics and ultimately the component's ability to perform its required safety function.

6. Equivalency evaluations shall not be used as the sole basis to accept a commercial-grade item for safety-related use. All critical characteristics shall still be verified as part of the acceptance process.

Acceptance Phase

Verification activities are to be performed at various stages of the dedication process to verify critical characteristics identified in the technical evaluation. Verification activities shall contain provisions for the following:

1. Source verifications, commercial-grade surveys, manufacturing/post-manufacturing tests and inspections, post-installation tests and inspections, receiving inspections, and post-storage inspections. These activities are to be prescribed by documented procedures and the supplier's commercial quality program.

2. For items with critical characteristics that can be verified for the most severe or limiting plant application, the purchaser must identify and verify the item's critical characteristics to qualify the item for that application. However, if the item will not be used in the most limiting application, the item may be dedicated for its specific application.

10 CFR Part 21 Requirements

1. Entities performing dedication activities are responsible for the identification, evaluation of deviations, reporting of defects or failures to comply, and to maintain auditable records of the dedication process.

2. Nonconforming conditions identified before the basic component or dedicated commercial-grade item is delivered to a purchaser for use would not be deviations, as defined in Part 21 (see deviation, defect, definitions in 21.3).

3. When nonconformances are corrected before delivery, evaluation per 21.21(a)(1) is not applicable. If a basic component or a dedicated commercial-grade item has been delivered to the purchaser for use, nonconformances identified and uncorrected become deviations or failures to comply, and evaluation is required per 21.21(a)(1) by the dedicating entity or if the dedicating entity is not capable of performing the 21.21(a)(1) evaluation, then 21.21(b) is followed.

4. Suppliers of basic components, or entities providing services associated with basic components (except NSSS suppliers, Architects/Engineers, and NPP licensees) are not expected to be capable of performing an adequate evaluation per 21.21(a)(1) because they would not necessarily be expected to know the plant application and/or the effect(s) of the deficiencies in their product on the affected plant(s). It is preferred that they notify affected licensees and/or purchasers in accordance with 21.21(b). However, suppliers are expected to perform evaluations to analyze the extent of condition (i.e., the potential or actual applicability of the deficiencies to exist in other basic components, activities, or projects for generic applicability) and inform purchasers or affected licensees.

5. An individual, manufacturer, or supplier of commercial-grade items not subject to the regulations in Part 21 may still report to the Commission any known or suspected defect or failure to comply that could create a substantial safety hazard.

Definitions- For the purpose of the UniStar Nuclear Commercial Grade-Dedication Program, the following terms are defined:

Basic component: As defined in 10 CFR 21.

Certificate of Compliance: A document attesting that the materials are in accordance with specified requirements.

Certified Material Test Report: A document attesting that the material is in accordance with specified requirements, including the actual results of all required chemical analyses, treatments, tests, and examinations.

Commercial-grade item: As defined in 10 CFR 21.

Commercial-grade survey: Activities conducted by the purchaser or its agent to verify that a supplier of commercial-grade items controls, through quality activities, some or all of the critical characteristics of the specifically designated commercial-grade items to be purchased, as a method to accept those characteristics. The commercial-grade survey shall include verification of the supplementary documentation and the effective implementation of the commercial-grade quality program.

Commercial-grade dedication package: An auditable collection of documents that is the result of the commercial-grade dedication process for a specific item and specific safety

function. These documents contain the technical and quality basis for satisfying the commercial-grade item dedication process, and provide the objective evidence to reasonably assure that the dedicated commercial-grade item will perform its required safety function.

Critical characteristics: As defined in 10 CFR 21.

Dedicating entity: As defined in 10 CFR 21.

Dedication: As defined in 10 CFR 21.

Engineering Judgment: A process of logical reasoning that leads from stated premises to a conclusion. This process shall be supported by sufficient documentation to permit verification by a qualified individual.

Like-for-like Replacement: Replacement of an item with one that is identical.

Procurement document: As defined in 10 CFR 21.

Source Verification: Activities witnessed at the supplier's facilities by the purchaser or its agent for specific items to verify that a supplier of a commercial-grade item controls some or all the critical characteristics of that item, as a method to accept those characteristics only.

Traceability: Is the ability to verify the history, location, or application of an item by means of recorded identification. Traceability to the manufacturer is required when the manufacturer is relied upon to verify one or more critical characteristics.

SECTION X

DIGITAL EQUIPMENT SOFTWARE VERIFICATION AND VALIDATION QUALITY CONTROLS

Sections A-D, K, P, and R of the QAPD provide the controls necessary to assure the quality of the software verification and validation process for digital equipment software. Essential elements of this program are:

- The design of digital equipment, supplier's processes and software QA program implementation are required to be monitored. This includes evaluating the supplier's program for software/hardware configuration control, documented procedures, failure analyses, verification, validation, testing activities, and documented evidence of operating history data. UniStar Nuclear assumes ultimate responsibility for the adequacy of the supplier's digital equipment software development process, documentation, quality and reliability of the final product.

  Personnel working in digital equipment verification, validation, review, and audit activities are qualified in accordance with written procedures. These personnel have sufficient authority to observe, participate as needed, identify and report problems at a management level sufficiently high to ensure that cost and schedule considerations do not unduly influence decision making.

  There is independence between persons and organizations executing performance activities and those executing verification and audit activities. A separate or dedicated QA organization is not required.

- Procedures describe the quality controls and verification and validation activities applied to digital equipment. Suppliers shall work under an Appendix B QAP that includes a software QA plan and a software verification and validation plan. For suppliers not working under an Appendix B QA program, detailed procedures and guidance shall be included for the evaluation and acceptance of commercial-grade digital equipment used in nuclear safety applications.

- UniStar Nuclear assures that the supplier implements the Institute of Electrical and Electronics Engineers (IEEE) Std 1012-1998, "IEEE Standard for Software Verification and Validation," endorsed by RG 1.168, to establish the appropriate software integrity level based on its intended use and application. Software used in nuclear power plant safety systems shall be assigned integrity level 4 or equivalent, as stated in the IEEE standard.

- UniStar Nuclear monitors the life cycle phases of the software development process. As defined in IEEE Std 1012-1998, the life cycle process is the set of activities that results in the development or assessment of software products. Strict compliance with IEEE Std 1012-1998 is not required provided the appropriate activities are encompassed.

- UniStar Nuclear ensures that the supplier conducts appropriate risk and failure analyses to identify functional and performance requirements, system configurations, interfaces, safety and security requirements, and vulnerabilities. These analyses are used to establish the minimum security requirements for the system (hardware and/or software).

- UniStar Nuclear establishes measures to ensure the contractually established design requirements are included in the design and correctly translated into design documents. Design changes are subject to design control measures commensurate with those applied to the original design.

- Training and qualification requirements, human factors engineering, software and hardware documentation, installation, acceptance, operation, execution, and maintenance activities are properly defined and documented.

- Verification and validation tasks are performed during all the life cycles of the software development process to verify conformance of an activity to specified requirements, or to verify that activities are satisfactorily accomplished. Personnel performing inspections must be knowledgeable and proficient in software engineering.

- Applicable design bases and other requirements necessary to ensure component performance, including design requirements, hardware, software, and system configuration aspects, are included or referenced in documents for procurement of items and services, and deviations therefrom are controlled.

- Analyses for commercial off-the-shelf digital equipment must include the identification of the critical characteristics that provide reasonable assurance that the item will perform its intended function. Also, equipment documentation, security vulnerabilities, and documented operating experience are identified and reviewed.

- Dedication activities for digital equipment include, but are not limited to the following:

    1. Technical evaluation to define the requirements for the device

    2. Selection of the digital equipment's critical characteristics for acceptance

    3. Identification of additional verification activities such as special tests, inspections, source verification, or performance records to verify such characteristics

- Measures are established to ensure that system security requirements are validated by execution of integration, system, and acceptance tests where practical and necessary. Testing includes hardware configuration including all external connectivity, software integration testing, software qualification testing, system integration testing, system qualification testing, and system factory acceptance testing. Tests are performed in accordance with written test procedures, properly recorded, and evaluated to ensure that test requirements are met and that the final product conforms to identified and documented QA requirements.

- An independent acceptance review and safety system test shall be performed prior to the installation of the equipment to ensure that installation of the digital system will not compromise the security of the digital system, other systems, or the plant.

- UniStar Nuclear ensures that the system features allow post-installation testing of the system to verify that the security requirements have been incorporated into the system appropriately.

- UniStar Nuclear performs periodic monitoring of digital equipment performance in its operational environment. Maintenance activities include software modifications, migration, or replacement. UniStar Nuclear tracks software/hardware revisions and is responsible for maintaining the validity of the digital equipment for as long as the device remains in service. Software and hardware upgrades require appropriate technical evaluation and testing in accordance with written procedures.

- UniStar Nuclear establishes measures to ensure that failures, malfunctions, deficiencies, deviations, defective components, and nonconformances are properly identified, reported, and corrected using the corrective action process. Contractual agreements or other suitable method must be established as a reporting mechanism between the UniStar Nuclear and the supplier.

- Periodic audits shall be conducted to verify compliance with design and procurement documents, instructions, procedures, drawings, and inspection and test activities. The software verification and validation plan provides for audits in each phase of the life cycle process, including functional audits, in-process audits, and physical audits of software.

SECTION Y

NONSAFETY-RELATED SSC QUALITY CONTROLS

This section outlines the owner defined Quality Assurance Program for QA Level 2 activities, including, Nonsafety-Related SSCs Credited for Regulated Events. For contractors, the QA Level 2 program shall be described in documents that must be approved by UniStar Nuclear. The QA Level 2 program shall be applied to owner designated structures, systems, components, and activities. An International Organization for Standardization (ISO) 9000 series QA program is acceptable for QA Level 2 applications provided it complies with UniStar Nuclear QAPD requirements and the ISO program is reviewed and approved by the UniStar Nuclear Director, Quality and Performance Improvement. Requirements for QA Level 2 are defined below. QA Level 2 requirements shall not be applied to safety-related SSCs or items that may affect the functions of the safety-related SSCs.

A. Nonsafety-Related SSCs That Perform Safety Significant Functions

The quality control criteria under subsection B apply to the Quality Assurance Program requirements for SSCs that are not safety related and perform safety significant functions.

B. Nonsafety-Related SSCs Credited for Regulated Events

- UniStar Nuclear commits to implement quality requirements to the fire protection system in accordance with Regulatory Position 1.7, "Quality Assurance," in RG 1.189, April 2001, "Fire Protection for Operating Nuclear Power Plants,"

- UniStar Nuclear to implement the quality requirements to anticipated transients without scram (ATWS) equipment in accordance with Generic Letter 85-06, April 1985,"Quality Assurance Guidance for ATWS Equipment That Is Not Safety Related."

- UniStar Nuclear commits to implement quality requirements to station blackout (SBO) equipment in accordance with Regulatory Position 3.5, "Quality Assurance and Specific Guidance for SBO Equipment That Is Not Safety Related," and Appendix A, "Quality Assurance Guidance for Non-Safety Systems and Equipment," in RG 1.155, August 1988, "Station Blackout."

The following criteria apply to Quality Assurance Program requirements for non safety-related SSCs that perform safety significant functions or are credited for regulated events. This Quality Assurance program provides assurance that these nonsafety-related SSCs are designed, fabricated, erected, tested, maintained, and operated so that they will function as intended. Those SSCs that are safety-related shall be controlled in accordance with QAPD Sections A through X and Z, including Appendices 1-2.

Organization

The organization structure and related responsibilities described in B, "Organization," of the UniStar QAPD apply.

Quality Assurance Program

The QA program shall be under the management control of the UniStar Nuclear Senior Management position responsible for Quality and Performance Improvement. This control consists of (1) formulating and/or verifying that the QA program incorporates suitable requirements and is acceptable to the management responsible for these programs and (2) verifying the effectiveness of the QA program through review, surveillance, and audits.

Performance of other QA program functions may be performed by personnel outside of the QA organization.

The Quality Assurance Program requirements for fire protection, anticipated transients without scram (ATWS), station blackout (SBO) and SSCs that are not safety-related shall meet specified criteria. These criteria apply to items within the scope of the fire protection, e.g., such as fire protection systems and features, emergency lighting, communication and self-contained breathing apparatus, as well as the fire protection requirements of applicable equipment important to safety.

Design and Procurement Document Control

Measures shall be established to include these requirements in design and procurement documents and that deviations therefrom are controlled such that:

a. Design and procurement document changes, including field changes and design deviations, are subject to the same level of controls, reviews, and approvals that were applicable to the original document.

b. Quality standards are specified in the design documents, such as appropriate fire protection, ATWS, and SBO codes and standards, and deviations and changes from these quality standards are controlled

c. New designs and plant modifications, including fire protection systems, ATWS systems, and SBO systems are reviewed by qualified personnel to ensure inclusion of appropriate requirements. These reviews should include items such as:

    - Design reviews to verify adequacy of wiring isolation and cable separation criteria.

    - Design reviews to verify appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers).

    - Design related guidelines used in complying with 10 CFR 50.63 are included in design and procurement documents.

    - Design requirements of 10 CFR 50.62 shall be translated into design and procurement documents.

d. A review and approval of the adequacy of fire protection, ATWS, and SBO requirements and quality requirements stated in procurement documents are performed and documented by qualified personnel. This review shall determine that fire protection ATWS, and SBO requirements and quality requirements are correctly stated, inspectable, and controllable; there are adequate acceptance and rejection criteria; and the procurement document has been prepared, reviewed, and approved in accordance with applicable QA program requirements.

Instructions, Procedures, and Drawings

Section E, "Instructions, Procedures, and Drawings," of the UniStar QAPD shall be used to provide the overall program for instructions, procedures, and drawings.

Specific requirement that apply to fire protection ATWS, and SBO activities are:

- Fire Protection: Inspections, tests, administrative controls, fire drills, and training that govern the fire protection program shall be prescribed by documented instructions, procedures, or drawings and shall be accomplished in accordance with these documents such that:

  i. Indoctrination and training programs for fire prevention and fire fighting are implemented in accordance with documented procedures.

  ii. Activities such as design, installation, inspection, test, maintenance, and modification of fire protection systems are prescribed and accomplished in accordance with documented instructions, procedures, and drawings.

  iii. Instructions and procedures for design, installation, inspection, test, maintenance, modification, and administrative controls are reviewed to ensure that the proper fire protection requirements are addressed, such as control of ignition sources and combustibles, provisions for backup fire protection capability, disabling a fire protection system, and the restriction on material substitution unless specifically evaluated.

  iv. The installation or application of penetration seals, fire barrier systems, and fire retardant coatings is performed by trained personnel using approved procedures.

- ATWS – Maintenance on the equipment shall be based on the appropriate use of vendor information. Any departure from the vendor guidance shall be based on a documented evaluation conducted by the Engineering Organization.

- SBO –Inspections, tests, administrative controls, and training shall be in compliance with 10 CFR 50.63

Document Control

Section F, "Document Control," of the UniStar QAPD shall be used to provide the overall program for document control.

Control of Purchased Material, Equipment, and Services

" G, Control of Purchased Material, Equipment, and Services," of the UniStar QAPD shall be used to provide the overall program for control of purchased material, equipment, and services. These measures are established to ensure that purchased material, equipment, and services conform to the procurement documents. These measures should include: 1) Provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor, inspections at suppliers, or receipt inspections. 2) Source or receipt inspection, as a minimum, for those items whose quality cannot be verified after installation.

Identification and Control of Purchased Items

Section H, "Identification and Control of Materials, Parts, and Components," of the UniStar Nuclear QAPD shall be used to provide the overall program for identification and control of materials, parts, and components. These controls include storage of environmentally sensitive equipment or material and the storage of material that has a limited shelf-life.

Special Processes

Section I, "Special Processes," of the UniStar Nuclear QAPD shall be used to provide the overall program for special processes.

Inspection

Section J, "Inspection," of the UniStar Nuclear QAPD shall be used to provide the overall program for inspection activities. Personnel conducting these inspections are independent from the individuals performing the activity being inspected and are knowledgeable of the requirements.

This program shall include:

a. Inspections of:

   - Installation, maintenance, and modification of fire protection systems or features.
   - Emergency lighting and communication equipment to ensure conformance to design and installation requirements.

b. Inspection of penetration seals, fire barriers, and fire retardant coating installations to verify the activity is satisfactorily completed.

c. Inspections of cable routing to verify conformance with design requirements.

d. Inspections to verify that appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers) are accomplished during construction.

e. Inspection procedures, instructions, and check lists that provide for:

- Identification of characteristics and activities to be inspected.
- Identification of the individuals or groups responsible for performing the inspection operation.
- Acceptance and rejection criteria.
- A description of the method of inspection.
- Recording evidence of completing and verifying a manufacturing, inspection, or test operation.
- Recording inspector or data recorder and the results of the inspection operation.

f. Periodic inspections of fire protection systems, emergency breathing and auxiliary equipment, emergency lighting, and communication equipment to ensure the acceptable condition of these items.

g. Periodic inspection of materials subject to degradation such as fire barriers, stops, seals, and fire retardant coatings to ensure these items have not deteriorated or been damaged.

Test and Test Control

Section K, "Test Control," of the UniStar QAPD shall be used to provide the overall program for test and test control activities.

A test program shall be established and implemented to ensure that testing is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. The tests shall be performed in accordance with written test procedures; test results shall be properly evaluated and acted on. This test program shall include:

a. Installation Testing- following construction, modification, repair or replacement, sufficient testing should be performed to demonstrate that fire protection systems, emergency lighting, and communication equipment will perform satisfactorily in service and that design criteria are met. Written test procedures for installation tests incorporate the requirements and acceptance limits contained in applicable design documents.

b. Periodic testing- the schedules and methods for periodic testing are developed and documented. Fire protection equipment, emergency lighting, and communication equipment are tested periodically to ensure that the equipment will function properly and continue to meet the design criteria.

c. Programs are established for QA/QC to verify testing of fire protection systems and features and to verify that test personnel are effectively trained.

d. Test results are documented, evaluated, and their acceptability determined by a qualified responsible individual or group.

e. ATWS SSCs are tested, as appropriate, prior to installation and operation and periodically.

Control of Measuring and Test Equipment

Measuring and test equipment (M&TE) control measures include provisions to control, calibrate, and adjust M&TE at specified intervals.

Handling, Storage, and Shipping

The handling, storage, and shipping of items shall include provisions for handling, storage, shipping, cleaning, packaging, and preservation in accordance with practices established by UniStar Nuclear and the manufacture's recommendations.

Inspection, Test, and Operating Status

Section N, "Inspection, Test, and Operating Status," of the UniStar Nuclear QAPD shall be used to provide the overall program for Inspection, Test, and Operating Status. This program includes measures for the 1) documentation or identification of items that have satisfactorily passed required tests and inspections, and 2) The identification by means of tags, labels, or similar temporary markings to indicate completion of required inspections and tests and operating status.

Nonconforming Items

Section O, "Nonconforming Materials, Parts, and Components," of the UniStar Nuclear QAPD shall be used to provide the overall program for the control of nonconforming materials, parts, and components.

This program ensures that nonconforming material, parts or components are controlled to prevent inadvertent use or installation. These measures include provisions to ensure that:

a. Nonconforming, inoperative, or malfunctioning fire protection systems, emergency lighting, and communication equipment are appropriately tagged or labeled.

b. The identification, documentation, segregation, review disposition, and notification to the affected organization of nonconforming materials, parts, components, or services are procedurally controlled.

c. Documentation identifies the nonconforming item, describes the nonconformance and the disposition of the nonconforming item and includes signature approval of the disposition.

d. Provisions are established to identify those individuals or groups delegated the responsibility and authority for the disposition and approval of nonconforming items.

Corrective Action

Section P, "Corrective Action," of the UniStar Nuclear QAPD shall be used to ensure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, and

uncontrolled combustible materials are promptly identified, reported, and corrected. These measures ensure that:

a. Procedures are established for evaluation of conditions adverse to fire protection (such as nonconformance, failures, malfunctions, deficiencies, deviations, and defective material and equipment) to determine the necessary corrective action.

b. In the case of significant or repetitive conditions adverse to AWTS, SBO, and fire protection, including fire incidents, the cause of the conditions is determined and analyzed, and prompt corrective actions are taken to preclude recurrence. The cause of the condition and the corrective action taken are promptly reported to cognizant levels of management for review and assessment.

Records

Section Q, "Records," of the UniStar Nuclear QAPD shall be used to ensure that required records are maintained and controlled. This program includes processes that ensure the following:

a. Records are identifiable and retrievable and shall demonstrate conformance to fire protection requirements. The records include results of inspections, tests, reviews, and audits; non-conformance and corrective action reports; construction, maintenance, and modification records; and certified manufacturers' data.

b. Record retention requirements are established.

c. ATWS records delineated in 49 FR 26036 (pages 26042-26043) shall be maintained and controlled.

Audits

In lieu of independent audits, line management may periodically review and document the adequacy of the quality controls and take any necessary corrective action. Line management is responsible for determining whether reviews conduced by line management or audits conducted by any organization independent of line management are appropriate. If performed, audits are conducted and documented to verify compliance with design and procurement documents, instructions, procedures, drawings, and inspection and test activities.

Audits shall be conducted and documented in accordance with Section R, "Audits," of the UniStar Nuclear QAPD to verify compliance with the fire protection program such that:

- Audits are performed to verify compliance with the administrative controls and implementation of quality assurance criteria, including design and procurement documents, instructions, procedures, drawings, and inspection and test activities as they apply to fire protection features and safe shutdown capability.

b. Additionally, fire protection audits shall be performed by a qualified audit team. The team shall include at least a lead auditor from the licensee's QA organization, a systems

engineer, and a fire protection engineer. The lead auditor shall be qualified, for example, per ASME NQA-1-1994, "Quality Assurance Program Requirements for Nuclear Facilities." The systems engineer shall be knowledgeable in safety systems, operating procedures, and emergency procedures. The fire protection engineers (or engineering consultant) shall meet the qualifications for membership in the Society of Fire Protection Engineers at the grade of member. The fire protection engineer can be a licensee employee who is not directly responsible for the site fire protection program for two of three years, but shall be an outside independent fire protection consultant every third year. This audit team approach will ensure that the technical requirements as well as the QA requirements are adequately assessed.

c. Insurance company inspections shall not be used to satisfy any of the fire protection audit requirement. However, if the insurance company develops an inspection that has the proper scope and the inspection team includes a person knowledgeable in nuclear safety, an insurance company may perform these audits in conjunction with a lead auditor from the licensee's QA organization.

Two distinct fire protection audits are specified below:

1. **24 months (maximum interval of) Fire Protection Audit.** UniStar Nuclear has developed performance based schedule for fire protection. This program requires periodic performance reviews. The audit frequency shall not exceed 24 months.

   The elements that are incorporated in the 24-month audit are:

   a. Purpose – The purpose of the 24-month audit of the fire protection program and implementing procedures is to ensure that the requirements for design, procurement, fabrication, installation, testing, maintenance, and administrative controls for the respective programs continue to be included in the plant QA program for fire protection and meet the criteria of the QA/QC program established by the UniStar Nuclear. The 24-month audit shall be performed by qualified UniStar Nuclear personnel who are not directly responsible for the site fire protection program or by an outside independent fire protection consultant. These audits shall normally encompass an evaluation of existing programmatic documents to verify continued adherence to NRC requirements.

   b. Scope – Each audit shall verify that the commitments of the Safety Analysis Report (SAR) and that the requirements of the Technical Specifications and license conditions have been met and that modifications to systems and structures or changes in operating procedures have not decreased the level of safety in the plant. The audit shall include inspection of all plant areas for which fire protection is provided and, in particular, examination of fire barriers, fire detection systems, and fire extinguishing systems provided for equipment important to safety. The audit shall verify that:

      - The installed fire protection systems and barriers are appropriate for the objects protected by comparing them to NRC guidelines and SER-approved alternatives and noting any deviations.

- The fire hazard in each fire area has not increased above that which was specified in the SAR.
- Regularly scheduled maintenance is performed on plant fire protection systems.
- Identified deficiencies have been promptly and adequately corrected.
- Special permit procedures (hot work, valve positioning) are being followed.
- Plant personnel are receiving appropriate training in fire prevention and firefighting procedures and the training program is consistent with approved standards. (The audit team should witness a typical training session.)
- Plant response to fire emergencies is adequate by analyzing incident records and witnessing an unplanned fire drill.
- Administrative controls are limiting transient combustibles in areas important to safety.
- Problem areas identified in previous audits have been corrected.
- The audit shall analyze all problem areas identified by the audit and recommend appropriate fire protection measures to provide a level of safety consistent with NRC guidelines.

2. **Triennial Fire Protection Audit.** The triennial audit is basically the same as the 24-month fire protection audit; the difference lies in the source of the auditors. The triennial audit shall be performed by an outside independent fire protection consultant. These audits shall normally encompass an evaluation of existing documents (other than those addressed under the 24-month audit) plus an inspection of fire protection system operability, inspection of the integrity of fire barriers, and witnessing the performance of procedures to verify that the fire protection program has been fully implemented and is adequate for the objects protected. Duplicate audits are not required.

SECTION Z

INDEPENDENT REVIEW

During the Operation phase, an Independent Review Committee (IRC), reporting to the Executive Management position responsible for Facility Operations will perform the following:

- Reviews changes to the facility as described in the SAR, which are completed without prior NRC approval. The IRC review verifies that such changes do not adversely effect safety and if a technical specification change or NRC review is required.

- Reviews proposed tests and experiments not described in the SAR. These tests and experiments are reviewed prior to implementation. The IRC also verifies that tests or experiments do not require a technical specification change or NRC review.

- Reviews proposed technical specification changes and license amendments relating to nuclear safety prior to implementation, except in those cases where the change is identical to a previously approved change.

- Reviews violations, deviations, and reportable events that are required to be reported to the NRC in writing within 24 hours. This review includes the results of investigations and recommendations resulting from such investigations to prevent or reduce the probability of recurrence of the event.

- Reviews any matter related to nuclear safety that is requested by the President, UniStar Nuclear, Executive Management position responsible for Facility Operations, Management Position Responsible for Facility Operations and Maintenance, or any IRC member,

- Reviews corrective actions for significant conditions adverse to quality.

- Reviews the adequacy of the audit program on a yearly basis.

The IRC serves in an advisory capacity to the Executive Management position responsible for Facility Operations on all matters related to nuclear safety for their assigned UniStar Nuclear facilities.

Composition

The IRC shall be composed of a minimum of five members. No more than a minority of members are from the onsite operating organization, e.g., at least 3 of the 5 members must be from offsite if there are 5 members on the committee. A minimum of the chairman or alternative chairman and 2 members must be present for all meetings. The Executive Management position responsible for Facility Operation shall appoint, in writing, the members of IRC, including the IRC Chairperson and the Vice Chairperson drawn from the IRC members.

Consultants and contractors shall be used for the review of complex problems beyond the expertise of the IRC.

Alternates

Alternate members shall be appointed in writing by the IRC Chairperson to serve on a temporary basis. Each alternate shall meet the minimum qualifications described above for IRC, and shall have the same area of expertise as the member being replaced.

Meeting Frequency

The IRC shall meet at least once per calendar quarter until 30 days of continuous full power operation is achieved. Afterwards meetings are conducted no less than twice a year. Meetings may also be convened by the IRC Chairperson.

Persons on the IRC are qualified as follows:

- Supervisor or Chairman of the IRC
    - Education: baccalaureate in engineering or related science.
    - Minimum experience: 6 years combined managerial and technical support.
- IRC members
    - Education:

      Baccalaureate in engineering or related science for those IRC review personnel who are required to review problems in nuclear power plant operations, nuclear engineering, chemistry and radiochemistry, metallurgy, nondestructive testing, instrumentation and control, radiological safety, mechanical engineering, and electrical engineering.

      High school diploma for those independent review personnel who are required to review problems in administrative control and quality assurance practices, training, and emergency plans and related procedures and equipment.

    - Minimum experience: 5 years experience in their own area of responsibility (nuclear power plant operations, nuclear engineering, chemistry and radiochemistry, metallurgy, nondestructive testing, instrumentation and control, radiological safety, mechanical engineering, and electrical engineering, administrative control and quality assurance practices, training, and emergency plans and related procedures and equipment)

Records

Results of the meeting are documented and recorded.

APPENDIX

APPENDIX 1

PROVISIONS FOR CHANGE

This QAPD is reviewed and revised as necessary to reflect any changes that occur during the siting, design, construction, operation, including maintenance and modifications. In addition, this QAPD is revised when corrective actions, regulatory, organizational, or work scope changes warrant changes to the UniStar Nuclear QA Program. The UniStar Nuclear QAPD is maintained current through design, construction, and operation. The UniStar Nuclear QAPD is kept current as the design, construction, and operation activities progress, and appropriate changes are made based on any of the following:

- UniStar Nuclear lessons learned from audit and assessment findings,
- Program improvements identified from analysis of trends, and
- Changes due to regulations, commitments, reorganizations, revised project schedule, or program improvements from continuous review of assessment results and process improvement initiatives.

Any changes that reduce commitments in the approved QAPD, including those commitments that affect the QA Level requirements in this QAPD, will be submitted to the NRC for review and approval prior to implementation as required by 10 CFR 50.54(a)(3) and 10 CFR 50.55(f)(3). Changes that do not reduce commitments will be submitted in accordance with 10 CFR 50.54 and 10 CFR 50.55(f)(3), as applicable.

For the purposes of 10 CFR 50.54(a)(3) and 10 CFR 50.55(f)(3) the following are not considered a reduction in commitment.

- Quality assurance program changes involving administrative improvements and clarifications, spelling corrections, punctuation, or editorial items,
- The use of a QA standard approved by the NRC which is more recent than the QA standard in the licensee's current QA program at the time of the change;
- The use of a quality assurance alternative or exception approved by an NRC safety evaluation, provided that the bases of the NRC approval are applicable to the licensee's facility;
- The use of generic organizational position titles that clearly denote the position function, supplemented as necessary by descriptive text, rather than specific titles;
- The use of generic organizational charts to indicate functional relationships, authorities, and responsibilities, or, alternately, the use of descriptive text;
- The elimination of quality assurance program information that duplicates language in quality assurance regulatory guides and quality assurance standards to which the licensee is committed; and

- Organizational revisions that ensure that persons and organizations performing quality assurance functions continue to have the requisite authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations.

TABLE

Table 1 UniStar Nuclear Exceptions/Alternatives with Basis

	UNISTAR NUCLEAR EXCEPTIONS/ALTERNATIVES	SOURCE/BASIS FOR ACCEPTANCE
1	Section U – UniStar Nuclear commits to Regulatory Guide 4.15, Revision 1, February 1979, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) – Effluent Streams and the Environment," with the following alternatives/exceptions:	UniStar Nuclear establishes a commitment to Regulatory Guide 4.15 in the QAPD. Three exceptions are taken consistent with existing QA programs for radiological Monitoring Programs for effluent streams and the environment:
	• In lieu of plotting background parameters and setting predetermined control values for gamma spectroscopy instrumentation as described in Regulatory Position C.6.2, background results may be logged and evaluated to ensure the background does not bias reported results.	Counting room procedures are based on industry best practices. UniStar Nuclear plots (i.e., graph paper) and trends backgrounds on all laboratory instrumentation with the exception that an alternate method may be used for gamma spectroscopy. In this case, an alternate but equally effective method may be implemented: Gamma isotopic backgrounds are counted routinely, and all nuclides are checked for the presence of contamination (i.e. a peak) to ensure each background for each nuclide does not impact any analysis result. If contamination is detected (i.e., a peak is identified), remedial action is taken. Adequacy and accuracy of results are checked in an Interlaboratory test program. Interlaboratory and Intralaboratory test data are carefully evaluated to determine bias. The NRC has previously evaluated this method of counting room performance for gamma spectroscopy and found it acceptable.
	• The NRC's independent sampling and analysis program described in Regulatory Position C.6.3.2 may not be performed.	The exception from the NRC's independent sampling and analysis program reflects the discontinuance of their Confirmatory Measurements Program.
	• In lieu of performing source check calibrations at least once per 18 months as described in Regulatory Position C.7, UniStar Nuclear may perform these calibrations at	Regulatory Position C.7, "Quality Control for Continuous Effluent Monitoring Systems," states that sources that have been related to initial calibration should be used to check this initial calibration at least

Table 1 UniStar Nuclear Exceptions/Alternatives with Basis

	UNISTAR NUCLEAR EXCEPTIONS/ALTERNATIVES	SOURCE/BASIS FOR ACCEPTANCE
	least once per refueling interval.	once per 18 months (normally during refueling outages). The typical industry refueling outage today is at a 24-month frequency. This change of frequency allows source check calibrations consistent with Technical Specification amendments such as the "Twenty Four Month Cycle Technical Specification Amendments for Calvert Cliffs Nuclear Power Plants Units 1 and 2," issued November 3, 1987 in the Safety Evaluation by the Office on Nuclear Reactor Regulation, and the intent of this Regulatory Guide.
2	Section U – NQA-1-1994, Subpart 2.4, "Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities" (ANSI/IEEE Std. 336-1985), will be implemented with the following alternatives:	These alternatives are consistent with the provisions approved by the NRC in Safety Evaluation of Proposed Changes to the Quality Assurance Program, Quality Assurance Program Consolidation for Dominion Nuclear Connecticut, Inc. and Virginia Electric and Power Company, dated September 9, 2005.
	• All references to ANSI/ASME NQA-1, ANSI/ASME NQA-2, and ANSI/ANS-3.2 are changed to refer to the appropriate sections of ANSI/ASME NQA-1-1994 and this QAPD	This alternative is acceptable because it provides consistency with this QAPD to implement UniStar Nuclear's commitment to 10 CFR 50, Appendix B.
	• With regard to subsection 3.3, "Procedures and Instructions," as an alternative to the requirement to utilize a checklist and mark as required or not appropriate the listed items during preparation of procedures or instructions, UniStar Nuclear utilizes administrative controls to ensure the appropriateness and correctness of procedures and instructions including reviews against standards that may not require a checklist to be marked.	This alternative is acceptable because it allow for a consistent method of preparing procedures and instructions in accordance with company administrative controls.

Table 1 UniStar Nuclear Exceptions/Alternatives with Basis

	UNISTAR NUCLEAR EXCEPTIONS/ALTERNATIVES	SOURCE/BASIS FOR ACCEPTANCE
	• Instrumentation and control devices installed in operating facilities are not required to be labeled as described in subsection 7.2.1, provided the information is maintained in suitable documentation traceable to the device.	This alternative is acceptable based on providing an equivalent level of control over information related to the calibration of these devices.
3	Section U – NQA-1-1994, Subpart 2.5, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations for Nuclear Power Plants," will be implemented with the following alternative:	This alternative is consistent with the provisions approved by the NRC in Safety Evaluation of Proposed Changes to the Quality Assurance Program, Quality Assurance Program Consolidation for Dominion Nuclear Connecticut, Inc. and Virginia Electric and Power Company, dated September 9, 2005.
	• With regard to subsection 7.7, "Curing," ASTM C 1315 is added to the first paragraph as another applicable standard for test methods for curing compounds.	This alternative is acceptable based on a later approved standard that is comparable for meeting the requirements of subsection 7.7.