

# **Quality Assurance Program Plan**

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Advanced Mixed Waste Treatment Project

**Prepared By  
Bechtel BWXT Idaho, LLC**

**For:**

**U.S. Department of Energy  
Idaho Operations Office  
Contract DE-AC07-99ID13727**

**Bechtel BWXT Idaho, LLC  
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Idaho Falls, ID 83401**

**Advanced Mixed Waste Treatment Project  
Quality Assurance Program Plan**

**APPROVAL PAGE**

*(Signature on file. See DCR-6743.)*  
\_\_\_\_\_  
Jeff Mousseau  
AMWTP President and General Manager

\_\_\_\_\_  
07/10/08  
Date

*(Signature on file. See DCR-6743.)*  
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T. F. Fallon  
AMWTP Quality Assurance & Training Manager

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07/10/08  
Date

| DOE Approval reference letter: AS-CMD-AMWTP/BBWI-08-047

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**ACRONYMS**

AMWTP	Advanced Mixed Waste Treatment Project
ANSI	American National Standards Institute
AVL	Approved Vendor List
BBWI	Bechtel BWXT Idaho, LLC
CARB	Corrective Action Review Board
CBFO	Carlsbad Field Office
CFR	Code of Federal Regulation
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy, Idaho Operations Office
DSA	Documented Safety Analysis
ESS&H	Environmental, Security, Safety and Health
ISMS	Integrated Safety Management System
M&TE	Measuring & Test Equipment
ORPS	Occurrence Reporting and Processing System
PAAA	Price Anderson Amendments Act
PDC	Project Design Criteria
QA	Quality Assurance
QAP	Quality Assurance Program
QAPD	Quality Assurance Program Document
QAPP	Quality Assurance Program Plan
QAPjP	Quality Assurance Project Plan
S/CI	Suspect/Counterfeit Items
SSC	Structures, Systems, and Components
TSA-RE	TRU Storage Area Retrieval Enclosure (TSA-RE)
TRU	Transuranic
TRUPACT II	Transuranic Packaging Transporter-Model II
WIPP	Waste Isolation Pilot Plant

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**REVISION LOG**

<b>Revision Number</b>	<b>Date Approved</b>	<b>Pages Affected</b>	<b>Description of Revision</b>
0		All	Initial issue
1	January 1999	All	Annual update. Reference DOE ID approval OPE-AMWTP-01-99
2	December 1999	All	Annual update. Reference DOE ID approval OPE-AMWTP-52-99
3	April 2001	All	Annual update. Includes amended regulation issued as 10 CFR 830 Subpart A, update organizational changes, and added minor clarifications. Reference DOE ID approval EM-AMWTP-01-006
4	May 2002	All	Annual update. Includes changes related to procedure implementation matrix for transition to Phase 3. Abstract added to clarify the replacement or removal of Phase 2 Project Quality Procedures and hierarchy of Phase 3 Management procedures. Organizational updates and text added to address Phase 3 activities.
5	December 2002	All	Annual update. Added revision history log, updated organization chart and Attachment A Quality Implementing Procedures Matrix. Reference DCR 1819.
6	January 2004	All	Annual update. Added new Exhibit 1-2 for organization changes; minor corrections, updates and clarifications throughout. Reference DCR 2538.
7	April 2005	All	DCR 4062. Annual Update. Minor editorial/format changes. Incorporated NE-ID comments on QAPP-01 Rev 7A.
8	December 2006	All	DCR 4590. Complete rewrite to address contractor transition. Update to address new organizational structure, responsibilities, and applicable DOE directives identified in "List B" of DE-AC-07-99ID13727. Complete required annual review.
9	07/10/08	All	DCR 6743. Annual update. Minor editorial changes to reflect changes in organizational structures and to update references and implementing documents.

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**ABSTRACT OF CHANGES**

Revision 9 includes reflects changes in AMWTP organization structure and responsibilities and update for applicable DOE directives identified in “List B” of DE-AC-07-99ID13727 for the AMWTP.

# **Advanced Mixed Waste Treatment Project**

## **Quality Assurance Program Plan**

### **INTRODUCTION**

This Advanced Mixed Waste Treatment Project (AMWTP) Quality Assurance Program Plan (QAPP) represents the top tier document of the quality program and documents Bechtel BWXT Idaho, LLC (BBWI) management commitment and requirements for ensuring quality throughout the project. This QAPP complies with Title 10 CFR 830, Subpart A, Nuclear Safety Management, *Quality Assurance Requirements*, DOE Order 414.1C, *Quality Assurance*, and is consistent in its development and implementation, where practicable, with ASME NQA-1, *Quality Assurance Requirements for Nuclear Facility Basic Requirements*. Cross reference to this relationship is illustrated in Section 13.0, AMWTP Implementing Procedures Table 13.2. The term QAPP is intended to be used by the project interchangeably with the 10 CFR 830 term Quality Assurance Program (QAP).

This QAPP is implemented throughout the AMWTP with the *Integrated Safety Management System Program* and other programs, to establish the management processes that formulate the Contractor Assurance System required by DOE Order 226.1A, *Implementation of Department of Energy Oversight Policy* and the implementation requirements of DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*.

The relationship of this QAPP to the DOE requirements that it satisfies is illustrated in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.1.

Supporting quality plans MP-TRUW-8.1, *Certification Plan for INL Contact-Handled Transuranic Waste* and MP-TRUW-8.2, *QA Project Plan (QAPjP)*, address DOE Carlsbad Field Office (CBFO) Quality Assurance Program Document DOE/CBFO-94-1012 requirements for the characterization and certification of Transuranic (TRU) waste. Additional Quality Plans will be developed where required by Environmental Permits, Waste Analysis Plan, or as needed for specific monitoring, sampling, or characterization activities.

The *Project Management Plan* and *Project Execution Plan* describe the BBWI approach to managing the work scope and provide additional information regarding the technical and business approach, organization structure, roles and responsibilities, and project controls. The scope of work described and controlled by the Project Management Plan, the Project Execution Plan, this QAPP and supporting QAPjPs includes:

- Retrieving waste from the TRU Storage Area Retrieval Enclosure (TSA-RE) and the Type II storage modules
- Characterizing waste for treatment or direct shipment to the Waste Isolation Pilot Plant (WIPP), Nevada Test Site, or other commercial treatment or disposal facilities
- Processing waste as needed to certify the final waste form
- Receipt of Non-AMWTP Mixed Transuranic Waste
- Preparing waste for shipment to off-site treatment or disposal facilities.

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**AMWTP QUALITY POLICY**

It is BBWI policy to conduct work at the Advanced Mixed Waste Treatment Project (AMWTP) according to this Quality Assurance Program Plan (QAPP), for achieving quality, providing continuous improvement to product and service quality, while also providing for the safety of the workforce and the protection of the public and the environment.

The AMWTP is committed to implementing a Quality Assurance Program Plan that meets all appropriate requirements of Title 10, Code of Federal Regulations (CFR), Part 830, and Subpart A, including applicable Federal, State and contract List B documents applicable to quality assurance activities and the contractor assurance system.

It provides a system for planning, performing, assessing performance and obtaining feedback for process improvements by integration of and compliance with DOE P450.4, Safety Management System Policy, and DOE Order 226.1A, Contractor Assurance Program.

The Quality Assurance & Training Manager is responsible for the overall Quality Assurance program, its development, maintenance, verification and continuing improvement, and performs as the project authority for interpretation and implementation of the Quality Assurance program. Independent oversight and assessment of the QAPP may be performed by external organizations as requested by the President and General Manager or the Quality Assurance & Training Manager.

BBWI management is responsible and accountable for the scope and implementation of the quality program and for leadership and commitment to quality achievement and improvement within an envelope of public, worker, and environmental safety.

Line Managers have the direct authority and responsibility for ensuring that work is performed safely and compliantly while providing adequate protection for the workers, the public and the environment.

All personnel on the AMWTP are responsible for achieving quality through active involvement in implementing the Quality Assurance program. All personnel have sufficient organizational freedom and the responsibility to identify conditions adverse to quality; performing functions safely, identifying problems and recommending improvements.

This QAPP has my endorsement and full support.

*(Signature on file. See DCR-6743.)*

\_\_\_\_\_  
Jeff Mousseau  
AMWTP President and General Manager

07/10/08

\_\_\_\_\_  
Date

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## **1.0 QUALITY ASSURANCE PROGRAM**

### **1.1 Purpose and Scope**

- 1.1.1 This Quality Assurance Program Plan (QAPP) supports the performance of contractual requirements, and establishes requirements for management controls, work performance, and assessment processes while integrating the principles of the Integrated Safety Management System (ISMS) with quality management controls required to perform work correctly and safely and applies to all aspects of the operations essential for ensuring safe, compliant and effective operations.
- 1.1.2 This QAPP and implementing procedures conform to the requirements of Title 10 CFR 830, Subpart A, Nuclear Safety Management, *Quality Assurance Requirements*, and with DOE Order 414.1C, *Quality Assurance*. This QAPP, together with PD-ISM-01, *AMWTP Integrated Safety Management System* program, satisfies the Contractor Assurance System required by DOE Order 226.1A, *Implementation of Department of Energy Oversight Policy* and addresses implementation of DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*. DOE guidance documents identified in Section 12.0, References, was used to develop this QAPP and quality assurance implementing procedures.
- 1.1.3 The relationship of this QAPP to the DOE requirements that it satisfies is identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.1.
- 1.1.4 Elements of PD-Q&SI-01, *AMWTP Contractor Assurance System* program, are described throughout this QAPP: management assessment, self-assessment, independent assessment, surveillance, event and occurrence reporting and trending, worker feedback mechanisms, an issues management system to report and track nonconforming conditions and corrective actions, root cause analysis, lessons learned, and performance measures. Collectively, these processes support implementation of a rigorous feedback and continual improvement process.

### **1.2 Program Requirements**

- 1.2.1 BBWI management has primary responsibility and accountability for implementing this QAPP. Management and personnel are responsible for ensuring that products and services meet requirements, and that work is conducted effectively while protecting the workers, the public, and the environment. Subcontractors and specific suppliers are required to comply with this QAPP, or to implement a quality assurance program that shall include requirements for managing, performing, and assessing work adequacy. Through procurement documents, the project shall flow down QAPP requirements to its subcontractors and suppliers to the extent necessary to ensure compliance with requirements and safe performance of work.

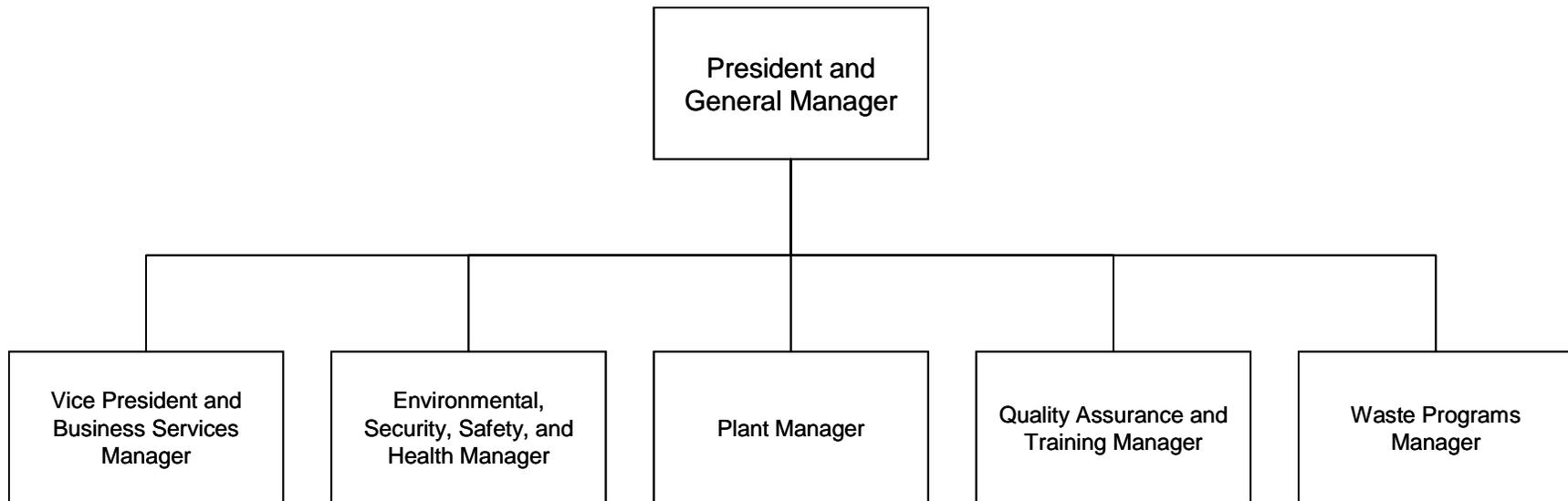
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- 1.2.2 AMWTP implements this QAPP by applying a graded approach to Systems, Structures, and Components, items, services, subcontracts, and activities according to their significance, function, risk, consequence of failure, and their importance to safe nuclear operations, worker and radiological safety, regulatory compliance, and the AMWTP mission. The graded approach determines the extent and rigor of applying QAPP requirements and management controls to items, processes, systems, services, and activities. AMWTP has established Class I, II, and III designations for Systems, Structures and Components in order to apply appropriate quality requirements and management controls consistent with the Documented Safety Analysis which identifies safety significant and defense in depth Systems, Structures and Components. These classifications are discussed in detail in the Graded Approach Procedure.
- 1.2.3 AMWTP shall apply a graded approach without compromising the safety of the workers, the public, or facilities; adversely affecting the environment; or failing to comply with DOE requirements, rules and regulations. The graded approach process shall not be used to “grade to zero” (i.e., eliminate) requirements that are necessary to ensure safe, compliant operations.

**1.3 Management Organization and Responsibilities**

- 1.3.1 BBWI management is responsible for contract implementation: developing management processes; conducting work planning, scheduling, performing, assessing, and improving work; and implementing this QAPP.
- 1.3.2 BBWI management has established an organizational structure, functional responsibilities, levels of authority, and interfaces for personnel who manage, perform or assess work. Figure 1-1 illustrates the organizational structure.
- 1.3.3 This QAPP and the Integrated Safety Management System comprise an integrated management system for achieving the objectives of the contract defined scope of work. Clear, unambiguous lines of authority and responsibility are established to ensure that safety is established and maintained at all organization levels.

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**Figure 1-1.** AMWTP organization chart.

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**NOTE:** *Tasks may be delegated to qualified personnel by the designated authority; however, the responsibility for the task may not be delegated. All personnel retain the responsibility for the quality of his or her work and reporting conditions adverse to quality that they identify.*

1.3.4 The President and General Manager is the project manager and ensures that contract deliverables meet requirements:

- Ensures the safe and compliant execution of work throughout the project
- Ensures safety and health programs are in place and integrated into all project activities
- Provides leadership, direction, and strategic management of activities
- Ensures that activities conform to the Prime Contract; leads activities that affect DOE-ID contractual issues and obligations
- Provides direction for long-term financial and overall performance strategy
- Has final authority for operating plans, management, and integration decisions
- Directs management resources
- Develops and ensures implementation of policies
- Ensures that approved work procedures are available to appropriate personnel.

1.3.5 The Plant Manager is responsible for safe and compliant waste retrieval, treatment, characterization, payload assembly, and transport loading operations for waste disposal at WIPP as well as the controls and waste tracking systems and facility/equipment maintenance.

- Ensures the safe and compliant execution of work throughout the project
- Directs resources necessary to maintain the Documented Safety Analysis
- Ensures safety and health programs are in place and integrated into all plant activities
- Leads Operations and provides operations planning and strategies
- Ensures conduct of operations for all project activities
- Hires, trains, and develops facility work teams

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- Identifying, designing, and implementing plant modifications to enhance operational efficiency, and safety
- Provides general engineering design support to operations
- Managing, planning, integration, engineering functions, production and management of process models and performance metrics
- Oversees Nuclear Safety, Maintenance, Waste Services, and CCP Integration
- Provides scheduling support to production operations and maintenance.

1.3.6 The Waste Programs Manager is responsible for:

- The planning, execution, implementation, coordination and certification of all waste for disposal at WIPP and other approved locations.
- Manages TRU Programs, including Waste Programs, Level I Validation, WIPP Certification, and Reconciliation
- Oversees the Offsite LLW/MLLW Disposition Project
- Oversees Scientific Support including Mathematics, Physics, and Flammable Gas Subject Matter Experts
- Oversees Document Control including records management, technical publications, and requirements management.

1.3.7 The Vice President and Business Services Manager is responsible for all business activities such as:

- The Prime Contract, procurement, suppliers, and subcontractors
- Providing management and administrative support to the Business Services organization including: Human Resources, Capital Projects, Six Sigma, Program Management, Acquisition Services, Accounting, Plant Automation/IT, and Labor Relations.

1.3.8 The Environmental, Security, Safety, and Health (ESS&H) Manager:

- Directs resources necessary to maintain the Worker Safety and Health Program, the Integrated Safety Management System Program, radiological controls, security, and regulatory affairs

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- Coordinates, oversees, and manages technical support functions for environmental permitting and compliance, security, fire protection, industrial safety, and industrial hygiene
- Prepares and updates ESS&H authorization basis documents and safety procedures
- Documents and integrates safety and regulatory decisions regarding the project and its design
- Provides support to design and operations teams in interpreting and applying safety and regulatory requirements
- Oversees the AMWTP Security Program, including personnel and physical security.

1.3.9 The Quality Assurance & Training Manager is responsible for:

- The overall Quality Assurance program, its development, maintenance, verification and continuing improvement, performs as the project authority for interpretation and implementation of the Quality Assurance program
- A system of performance and compliance based management assessment, independent assessment, and surveillance of quality affecting activities and those organizations performing quality designated activities
- Managing the TrackWise™ Nonconforming Conditions and Corrective Action issues management reporting system
- Evaluating conditions adverse to quality for Price-Anderson Amendments Act applicability and reportability
- Approving corrective action plans, nonconformance dispositions, and verification of actions to disposition or correct conditions adverse to quality
- Provides Quality Assurance Program oversight for the contact-handled TRU Waste Program
- Monitoring performance of subcontractors and suppliers
- Monitoring trends in conditions adverse to quality
- Oversees the Corporate Operating Experience Program
- The overall Training program and corresponding development, implementation, maintenance, and continuous improvement

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- Monitoring training objectives, lesson plans, and other training materials to ensure overall effectiveness
- Provides training support to maintain personnel proficiency.

## **2.0 PERSONNEL TRAINING AND QUALIFICATION**

### **2.1 Purpose and Scope**

- 2.1.1 Section 2.0 establishes the policy, requirements, and responsibilities for training and qualifying personnel, and applies to all aspects of the AMWTP including personnel involved in the design, development, use, and evaluation of safety software. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2.

### **2.2 Requirements**

- 2.2.1 AMWTP shall hire personnel having the education and experience required by established positions. Additional project required training and qualification shall be appropriate for specific job descriptions, job complexity, and the nature of work activities performed.
- 2.2.2 Qualification and training processes shall ensure that personnel initially achieve and thereafter maintain required capabilities consistent with their responsibilities.
- 2.2.3 Personnel shall receive indoctrination and training to this Quality Assurance Program Plan (QAPP), implementing Quality Assurance procedures, and the overall quality process. Indoctrination provides a broad overview of this QAPP and discusses applicable regulations, codes, standards, and contractual Quality Assurance requirements.
- 2.2.4 Indoctrination and training shall be accomplished as soon as practicable after individual assignment, but prior to personnel independently performing quality affecting activities. Indoctrination and training activities are documented according to established procedures.
- 2.2.5 Training shall be provided as appropriate to ensure: skill in using the correct processes and methods to accomplish assigned tasks safely; an understanding of work fundamentals; and the work context. Performance based training shall employ actual components or equipment appropriate for the work, or mock-ups or simulations. Performance based training shall identify the scope of the work, discuss the hazards associated with the work, and the controls necessary to prevent or mitigate work hazards.

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- 2.2.6 As required, training objectives, lesson plans, and other training materials are developed and used to deliver training. Training materials are controlled to ensure that correct revisions are used. Formal training is measured for effectiveness.
- 2.2.7 Training requirements for personnel will be established for the safe operation, maintenance, and technical support of the project. The objectives of the training and qualification program are:
- Assign responsibilities and provide requirements for establishing, implementing, documenting, and evaluating training programs for employees.
  - Commit to the continuing development of employees to ensure quality performance from a technically competent, multi-skilled work force.
- 2.2.8 Lessons learned from assessments, event investigations, corrective action reports, nonconformance reports, safety concerns and those from other DOE Sites are evaluated for applicability to continuing training.

**2.3 Responsibilities**

- 2.3.1 Management is responsible for ensuring that assigned personnel are sufficiently indoctrinated and trained to accomplish assigned tasks and maintain job proficiency, and that worker competence shall be commensurate with their responsibilities.
- | 2.3.2 The Quality Assurance & Training Manager is responsible for providing employees with orientation in the requirements of this QAPP.
- | 2.3.3 Management continually review qualification and training requirements to ensure that they reflect current systems, procedures, policies, and requirements applicable to assigned personnel. These reviews are documented through training plan reviews and as part of management assessments.
- | 2.3.4 The Quality Assurance & Training Manager shall periodically evaluate training and qualification program status and effectiveness.

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### **3.0 QUALITY IMPROVEMENT**

#### **3.1 Purpose and Scope**

3.1.1 Section 3.0 establishes the policy, requirements, and responsibilities for identifying, controlling, evaluating, correcting, and preventing conditions adverse to quality, and continually improving the work processes and product quality. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2.

#### **3.2 Requirements**

3.2.1 Products, work processes, and systems shall be evaluated to monitor performance and conformance to requirements. All personnel are responsible for identifying and making improvements to their work processes, systems, and products.

3.2.2 Processes and procedures shall be established to: detect and prevent conditions adverse to quality; identify, control, and correct items, services, and processes that do not meet requirements; identify the causes of conditions adverse to quality to prevent recurrence; and review quality-related data to identify items, services, and processes that need improvement. This process includes the following:

- Identification and control of noncompliant items, services, processes and other conditions adverse to quality
- Investigation and causal analysis of problems, adverse conditions, and events
- Corrective action and problem prevention
- Self-assessment, management and independent assessment, and surveillance
- PAAA and ORPS event reporting
- TrackWise™ issues management system
- Project self-assessments for readiness
- Lessons learned to improve work processes
- Analysis of data for trends of performance improvement or degradation
- Performance measures, goals, and objectives
- Worker feedback, employee involvement, recommendations, and improvement suggestions

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- Stop work authority exercised by all personnel
  - Six Sigma process improvement.
- 3.2.3 All personnel shall have sufficient freedom, authority, and responsibility to identify conditions adverse to quality or safety, take corrective action to resolve conditions adverse to quality, and to improve work processes. Internally identified conditions adverse to quality, and those identified by the DOE or other external organizations, are documented, reported, evaluated, and corrected. Personnel receive indoctrination regarding this obligation.
- 3.2.4 The requirements of this element are satisfied by ensuring that only verified conforming documents reach the customer and by transforming causes of conditions adverse to quality into corrective actions that result in resolution, prevention of recurrence, and process improvement. Corrective action is the resolution of a quality problem, while preventative action assures, through appropriate design, procurement, and other quality controls and verification that a quality problem does not occur or recur.
- 3.2.5 Nonconforming items and services shall be controlled to prevent inadvertent use. Unless directed otherwise, nonconformities shall be reviewed by the same organization that originally established requirements for the item, service, or process.
- 3.2.6 Personnel who evaluate nonconformities and other conditions adverse to quality shall have the competence necessary to evaluate those conditions.
- 3.2.7 The cause(s) of conditions adverse to quality shall be identified and corrective actions determined to prevent recurrence of the condition. Criteria for establishing conditions adverse to quality significance, (graded approach), and the extent of causal analysis are developed; actions taken to correct conditions adverse to quality are commensurate with their importance. Conditions adverse to quality are evaluated for external reporting.
- 3.2.8 The Corrective Action Review Board (CARB) shall evaluate significant conditions adverse to quality. The CARB reviews the adequacy and effectiveness of corrective action planning to resolve and prevent the recurrence of conditions adverse to quality. The CARB review process provides an avenue for communicating issues to senior managers.

### **3.3 Stop Work Authority**

- 3.3.1 AMWTP has implemented Stop-Work Authority for all employees through training and implementing procedures. All AMWTP personnel, subcontractors, and vendors have the responsibility and authority to stop work. If at any time or for any reason an employee has a concern regarding safety or technical correctness of an activity at AMWTP, the employee is empowered and obligated to stop work without fear of retribution. Areas for which stop-work authority specifically applies are:

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- Safety
- Fitness for Duty
- Environmental
- Quality
- Procedure correctness
- Conduct of Operations

3.3.2 For conditions not identified by corrective action reporting or the nonconformance identification process the immediate supervisor/manager may contact the AMWTP Quality Assurance & Training Manager to determine the need to issue a formal Stop Work Order.

3.3.3 Prior to issuing a formal Stop Work Order, the Quality Assurance & Training Manager shall evaluate the condition identified, determine if a Stop Work Order is necessary, and confer with the President and General Manager. The Quality Assurance & Training Manager will notify Project and appropriate Line Managers, and the applicable supplier or subcontractor of the condition reported. The final decision to issue a Stop Work Order is made by the Quality Assurance & Training Manager.

3.3.4 When a formal Stop Work Order is issued, the Quality Assurance & Training Manager will immediately convene the Corrective Action Review Board. Notification of the Stop Work Order shall include, as a minimum, managers as above, applicable supplier or subcontractor, DOE, and the Bechtel BWXT LLC Bechtel Systems and Infrastructure, Inc. Manager of Quality. The Quality Assurance & Training Manager will ensure the Acquisition Services Manager is notified when a formal stop work order involves a subcontractor or supplier.

3.3.5 The Quality Assurance & Training Manager is responsible for maintaining data and verifying corrective actions for conditions leading to a formal Stop Work Order. Only the Quality Assurance & Training Manager shall terminate a Stop Work Order when corrective actions have been completed. The Quality Assurance & Training Manager is responsible for evaluating conditions adverse to quality, whether or not a Stop Work Order is issued.

#### **3.4 Quality Improvement Responsibilities**

3.4.1 BBWI management is responsible for creating a culture that promotes continual improvement and resolving identified problems. Management shall gather feedback on the adequacy of its controls, identify and implement opportunities for improving work performance, and take action to correct and prevent problems.

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- 3.4.2 Personnel are responsible for identifying conditions adverse to safety or quality, stopping work when unacceptable hazards to workers, the public or the environment are identified, and implementing authorized improvements to the processes. When conditions adverse to quality, including safety issues, cannot be resolved to the satisfaction of affected personnel, the issue shall be raised to the next level of management for resolution.
- 3.4.3 Quality-related data shall be collected and analyzed to monitor performance of facilities, programs, and organizations to identify needed improvements. This data shall be both positive and negative and from internal and external sources. As a minimum, quality-related data shall be evaluated yearly. AMWTP procedures include provisions to ensure that quality related information is reviewed, analyzed, and shared with the participants and subcontractors.
- 3.4.4 The President and General Manager is responsible for establishing and implementing programs and processes for obtaining worker feedback. Employees' at all organizational levels shall participate in quality improvement, either individually or in teams, to improve process or product quality. An Employee Concerns Program, an Employee Safety and Improvement Team, pre-job briefs, job hazard walk-downs, post-job reviews, safety meetings, and other means are used to solicit feedback from workers and work activities. These processes may be used to communicate issues to senior management.
- 3.4.5 AMWTP shall implement a Lessons Learned Program to share with the workforce both adverse and positive experiences from the project work performance and others in the DOE complex. Lessons learned are communicated electronically and posted on the AMWTP home page. BBWI management encourages personnel to contribute lessons learned using established procedures.
- 3.4.6 The Quality Assurance & Training Manager is responsible for evaluating reported nonconformities and other conditions adverse to quality to determine their validity, reportability to the DOE, to evaluate proposed corrective actions, monitor progress toward disposition and closure, and to verify corrective action implementation and effectiveness.
- 3.4.7 The Quality Assurance & Training Manager is responsible for maintaining TrackWise™ as the AMWTP issues management system. The TrackWise™ system is capable of documenting, reporting, tracking, and monitoring: conditions adverse to quality significance, scope, and extent of condition adverse to quality; event reportability; root causes (applied to conditions adverse to quality using a graded approach); actions planned or taken to correct or mitigate a conditions adverse to quality and prevent its recurrence; identifying individuals and managers responsible and accountable for taking actions to correct conditions adverse to quality; establishing and tracking progress toward milestones; verifying corrective action implementation; and validating that corrective actions are effective.

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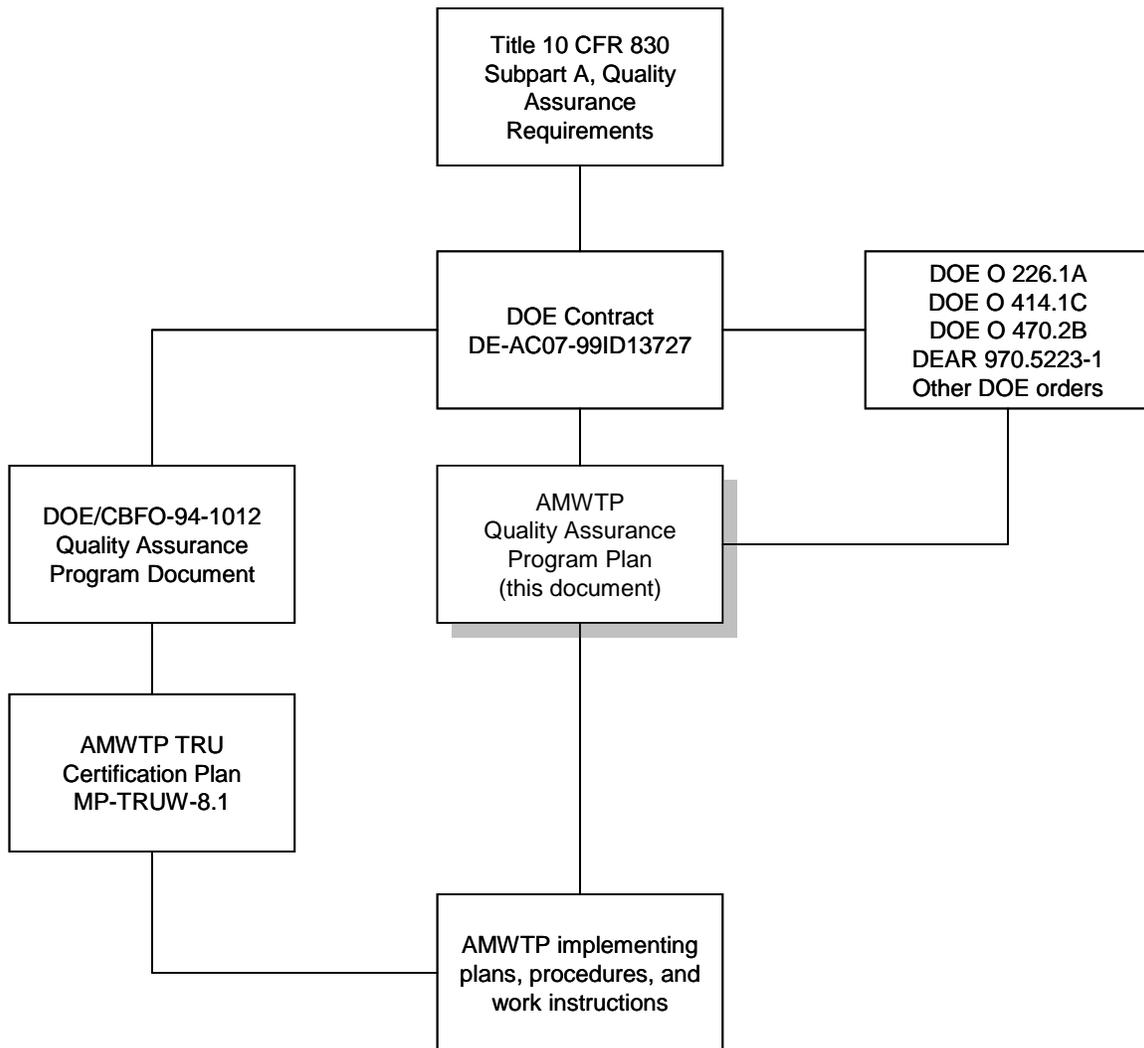
- 3.4.8 AMWTP shall implement an event reporting program, i.e., the Occurrence Reporting and Processing System (ORPS), to identify occurrences that meet reporting thresholds as required by DOE directives. The Quality Assurance & Training Manager shall evaluate conditions adverse to quality reported in TrackWise™ from all sources (events, nonconformities, deviations, assessments, audits, surveillances, reports, etc.) to determine Price Anderson Amendments Act (PAAA) applicability, identify potential noncompliance issues, and determine the need to report identified conditions adverse to quality to the DOE.
- 3.4.9 Depending on significance and risk, applying a graded approach, the Responsible Manager shall determine the cause(s) of a condition adverse to quality, and plan and implement corrective actions that address all causes in order to prevent their recurrence.
- 3.4.10 The Quality Assurance & Training Manager shall manage the corrective action system used to resolve conditions adverse to quality, and shall evaluate trends and programmatic weaknesses. The Quality Assurance & Training Manager shall evaluate repetitive conditions adverse to quality for which corrective actions have been ineffective. Evaluations shall consider the following:
- Conditions adverse to quality, which may not be repetitive but are related and represent a programmatic or systemic breakdown or loss of confidence in the integrity or effectiveness of a required Quality Assurance program control activity
  - Failure to adequately respond to previous conditions adverse to quality
  - A condition adverse to quality that results in a substantial re-evaluation effort, re-design, or rework
- 3.4.11 At least semi-annually, the Quality Assurance & Training Manager shall provide trend analysis reports on conditions adverse to quality that originated from internal management assessments, independent assessments, external assessments, or as found conditions. This report is provided to the CARB for evaluation and identification of corrective measures.

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**4.0 DOCUMENTS AND RECORDS**

**4.1 Purpose and Scope**

4.1.1 Section 4.0 establishes the policy, requirements, and responsibilities to control the development, review, revision, distribution, use, maintenance, storage, and disposition of the documents and records. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2. Figure 4-1 depicts the Quality Assurance Requirements Document Hierarchy.



**Figure 4-1.** Quality Assurance requirements document hierarchy.

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**4.2 Document Requirements**

- 4.2.1 AMWTP shall implement approved procedures to control the development, preparation, review, approval, release, distribution, use, revision, maintenance, storage, and disposition of documents and records required to prescribe processes, specify requirements, establish design and perform and document performance of work.
- 4.2.2 Document control procedures shall establish requirements for the development, review, approval, revision, release, and use of procedures and instructions necessary to perform work correctly and safely. Such documents shall be available to the workforce where the work is performed.
- 4.2.3 Document control processes shall provide work instructions or procedures, as appropriate for the activity performed, that describe work scope, identification of any hazards in performing the work scope, methods to prevent or mitigate those hazards, and instructions for performing work safely.
- 4.2.4 Document control procedures shall provide for review and comment resolution to ensure adequacy of the instructions prior to its release for use. Documents must be approved by authorized personnel.
- 4.2.5 Changes to approved documents shall be controlled. Changes shall be reviewed and approved by the same organization that performed the original document review and approval. The document control process shall provide controlled review, comment resolution and positive identification of document revisions.
- 4.2.6 The document control system requires both hardcopy and electronic documents. The document control system shall provide for the controlled distribution of hardcopy documents, identification of recipients, and actions required when hardcopy documents are revised, canceled, withdrawn, or superseded.
- 4.2.7 The document control system shall require that end-users verify that documents are the current revision, and that only the currently approved documents are in use at the location where work is performed. Provisions shall be established for the retrieval, control, or destruction of superseded documents.

**4.3 Records Management**

- 4.3.1 AMWTP shall implement approved procedures to control the creation, review, approval, revision, maintenance, storage, and disposition of records generated.
- 4.3.2 Records shall be legible, accurate, dated (including revision), readily identifiable to the product or service provided, complete, and maintained in an orderly manner. Record media may include electronic, hardcopy, microfilm, photographs, radiographs, laser disks or any other method that provides a process of detailing information to support how the project activities were performed. Records shall be readily retrievable.

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- 4.3.3 Procedures and work instructions shall specify the records to be generated, supplied, or maintained as a result of activities prescribed by those documents.
- 4.3.4 Corrections to completed records shall be made by a single strike-through of incorrect information. Personnel correcting information shall initial and date the correct information. Obliteration of original information by using "whiteout" or other means so that original information becomes illegible is prohibited.
- 4.3.5 Records shall be maintained for the duration of the project until transfer to the DOE. Procedures shall require that records shall not be damaged, lost, or deteriorate while in storage. Records turnover shall be in accordance with the DOE direction.

#### **4.4 Responsibilities**

- 4.4.1 Responsible Managers shall ensure that all work activities are performed as prescribed by approved procedures, instructions, or documents, and that records that provide objective evidence of completed work are processed according to the records management procedures.
- 4.4.2 The Responsible Manager or Document Owner shall ensure that workers performing a work instruction have the opportunity to offer feedback, or participate in the development, review, validation, or improvement of work instructions or implementing procedures. Feedback on the adequacy of controls is gathered from the workforce, and improvements are made to work processes and work instructions.
- 4.4.3 The Quality Assurance & Training Manager is responsible for the following:
- Preparing and revising Quality Assurance Plans and quality procedures, including this QAPP
  - Monitoring document control and records management systems to verify compliance with applicable procedures, contractual and regulatory requirements
  - Monitoring through assessments and reviews that appropriate procedures are prepared, issued, and implemented.

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## **5.0 WORK PROCESSES**

### **5.1 Purpose and Scope**

- 5.1.1 Section 5.0 establishes the policy, requirements, and responsibilities for controlling work processes that affect the quality of the project's services and products. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2.

### **5.2 Requirements**

- 5.2.1 Responsible Managers shall ensure that work processes are communicated to the workforce through documented work instructions and implementing procedures; ensure that assigned personnel have the requisite skills and resources needed to accomplish work processes, and have knowledge of the hazards and risks of work processes they conduct, and how to prevent or mitigate those hazards.
- 5.2.2 All work performed by the AMWTP and its subcontractors shall be accomplished using procedures, instructions, or documents that are approved prior to commencing work.
- 5.2.3 The scope and detail of documentation shall be commensurate with the complexity, hazards, and risk of the work and the skills required for performing the work safely. Control of processes, skills, hazards, and equipment should be clearly specified, understood, and fully documented. Approved procedures shall include the authorities, responsibilities, and internal and external interfaces necessary for ensuring that products meet specified requirements. Approved procedures shall be readily accessible to personnel responsible for the work.
- 5.2.4 Systems are established and implemented for identifying and controlling quality affecting items. Such items shall be controlled by suitable means, such as tagging, segregation, unique part, lot, heat, model, or serial numbers on the item, or by records traceable to the item.
- 5.2.5 Processes are established and implemented for the identification, control, disposition and reporting of suspect/counterfeit items (S/CI), or indeterminate items. These processes include developing appropriate procurement specifications, conducting receiving inspection, controlling items that have been identified as S/CI, and reporting S/CIs as per DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, and DOE O 221.1, *Reporting Fraud, Waste, and Abuse to the Office of Inspector General*.
- 5.2.6 Quality affecting items shall be protected according to documented procedures and administrative controls to prevent damage, loss, or deterioration. Protective methods shall be specified for sensitive or perishable items, such as special handling, shipping, or storage. Controls may include protective environmental requirements, such as temperature and humidity controls to prevent damage, loss, or deterioration.

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- 5.2.7 Management shall ensure that approved work instructions and procedures address requirements affecting; worker safety or health; the environment; quality; and the technical basis and are available for performance of work.
- 5.2.8 The Quality Assurance & Training Manager shall monitor through management assessment, independent assessment, and surveillance, that work processes are controlled by documented and approved instructions or procedures.
- 5.2.9 Responsible Managers shall ensure that work processes are self-assessed where the work is being performed e.g., management walk-arounds, workplace inspections, post-job reviews, etc. Work process self-assessments should emphasize hands-on work, involve workers, supervisors and managers, and address facilities, systems, and organizational elements. Self-assessment results shall be documented in a manner commensurate with the significance and risks of the activities being evaluated, and used to improve work processes.
- 5.2.10 Integral to process improvement, Responsible Managers shall obtain worker feedback, for example, from the following sources: pre-job briefs, job hazard walk-downs, post-job reviews, employee suggestions, AMWTP Safety Committee, etc.
- 5.2.11 The experienced workforce is best suited for contributing ideas for improving the safety and quality of work processes. Responsible Managers shall provide the workforce with opportunities for participating in defining and describing work processes, and providing feedback necessary for improvement. Worker feedback can:
- Help identify and analyze job hazards
  - Help identify controls to prevent or mitigate hazards
  - Contribute to the definition of safety standards needed to mitigate or prevent work hazards
  - Assists in the development or application of administrative and engineering controls tailored to the hazard
  - Suggest ways in which work instructions can be improved
  - Suggest revisions to work instructions when hazard controls are inadequate, or when instructions cannot be performed as written
  - Describe methods to improve the performance of work processes
  - Help establish the conditions and requirements to be satisfied before work can commence safely.

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- 5.2.12 All personnel shall perform work according to requirements specified in established procedures or work instructions. Personnel shall perform work within the defined work scope and established controls described by procedures and work instructions.
- 5.2.13 Responsible Managers ensure personnel training and qualification, documented work instructions and procedures, or other appropriate means address the following:
- Customer and data requirements for the work and final product
  - Acceptance criteria applicable to work and final product
  - Hazards associated with the work and methods to prevent or mitigate them
  - Technical standards applicable to work and final product
  - Safety, administrative, technical, and environmental controls to be employed during the work
  - Processes for verifying the completed work using established criteria.

### **5.3 Measurement and Test Equipment**

- 5.3.1 Procedures are developed and implemented to ensure that measuring and test equipment (M&TE) used for process monitoring and data collection are of the proper type, range, and accuracy. Such M&TE shall be calibrated according to the requirements of ISO/IEC 17025:1999, or ANSI/NCSL Z540-1 or other recognized standards and maintained to ensure continuing data quality and process capability. Procedures describe reporting calibration results, and methods for evaluating the consequences of M&TE found out-of-calibration, and for taking action when such conditions are identified.
- 5.3.2 Work processes shall be considered special processes if they meet one or more of the following criteria:
- Results are highly dependent on the control of the process
  - Results are highly dependent on the skill of the operator
  - Quality of results cannot be readily determined by inspection or test.
- 5.3.3 Procedures for special processes are controlled to ensure that specified environmental conditions are maintained. Special process procedures specify or reference:
- Requirements for training and qualification of personnel and quality processes and equipment

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- Conditions necessary for completion of the special process, including equipment, controlled parameters of the process, and calibration requirements.

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## **6.0 DESIGN**

### **6.1 Purpose and Scope**

- 6.1.1 Section 6.0 establishes the policy, requirements, and responsibilities to control design activities including design inputs, outputs, configuration and design changes; hardware and software design review; documentation; records; and technical interfaces consistent with the results of the graded approach. These requirements apply to design activities performed for or by the project. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2.

### **6.2 Requirements**

- 6.2.1 Design activities, documents, and interfaces shall be controlled to ensure that applicable inputs such as design bases, engineering principles, technical and functional requirements, regulatory requirements, and codes or standards are correctly translated into final designs. Appropriate safety standards and requirements shall be identified in design inputs to provide adequate assurance that the public, the workers, and the environment are protected from adverse consequences.
- 6.2.2 Design scope and input requirements shall be documented, reviewed and approved. Design inputs, including project design criteria, performance requirements, regulatory requirements, and codes or standards will be identified by the design authority. As appropriate for the design, hazards associated with the design shall be identified and analyzed. Design inputs, such as applicable standards and requirements, shall be identified and agreed-upon, controls to prevent or mitigate hazards shall be identified, a safety envelope established, and designs to control the hazard implemented. Engineering controls to prevent and mitigate hazards shall be tailored to the design and its associated hazards. Design inputs shall be specified and approved promptly and to a level that permits the design processes to be carried out correctly.
- 6.2.3 Changes to approved design inputs and the reasons for those changes shall be identified, approved, documented, and controlled in the same manner as the original inputs.
- 6.2.4 Design documents shall specify the quality and safety requirements that are essential to the system or component including appropriate quality and safety standards. Design documents shall contain, when required, acceptance criteria for inspections and tests and quality level classifications.
- 6.2.5 Design control measures shall be applied to engineering analyses (stress, seismic, accident, etc.) as well as associated computer programs, as they apply to the development of design inputs, or as they are employed to analyze the design. Design changes shall be controlled to requirements commensurate with the controls for the original design.

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- 6.2.6 Computer programs used to originate or analyze design solutions shall be verified prior to use and that verification shall be documented.
- 6.2.7 Plans and procedures for management of software and software development activities shall include provisions and controls for requirements identification, verification of software design, and validation testing, to ensure that software in use performs its intended function.
- 6.2.8 Configuration control processes and systems shall be established to ensure positive baseline identification control of software. Software process controls shall be applied using a graded approach applicable to the scope, risk, complexity, and categorization of the software.
- 6.2.9 Software used at the project is categorized based on safety significance, regulatory requirements, and mission critical impact on project operations.
- 6.2.10 The technical adequacy of designs shall be verified through independent design verifications performed by technically knowledgeable persons separate from those who performed the design, although they may be from the same organization. Implementing procedures shall address verification of design prior to approval for implementation. These reviews/verifications may include the use of one or more of the following:
- Design reviews
  - Alternate calculations
  - Qualification testing.
- 6.2.11 Design interfaces, including those with the DOE, shall be identified and controlled when a design is accomplished through component designs or individual work packages. Design activities conducted by different organizations shall be coordinated to ensure that only approved data is used in the design, and that preliminary data is adequately identified and controlled.
- 6.2.12 Changes to approved designs shall be justified and subject to design controls commensurate with the original design. Measures shall ensure that the design and safety analyses of the items are still valid. Changes shall be approved by the design authority.
- 6.2.13 Sufficient documentation shall be generated and maintained to support the design process. This documentation shall include not only final design documents, such as drawings and specifications and their revisions, but also documentation of important steps in the process such as the design inputs which support the final design.

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**6.3 Responsibilities**

- 6.3.1 The Engineering Manager (or designee) is responsible for review and approval of design documents and shall ensure that all design activities are properly controlled and performed according to approved procedures.
- 6.3.2 The Quality Assurance & Training Manager shall monitor the implementation of design requirements described herein, and in the design procedures.
- 6.3.3 Line Managers having design responsibilities shall ensure that their design activities are conducted according to requirements of approved procedures.

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## **7.0 PROCUREMENT**

### **7.1 Purpose and Scope**

- 7.1.1 Section 7.0 establishes the policy, requirements, and responsibilities for ensuring that purchased items and services (hardware and software) conform to established requirements and perform as specified. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2.

### **7.2 Requirements**

- 7.2.1 The Contractor Assurance Program and Integrated Safety Management System requirements shall be flowed down to subcontractors and suppliers at any tier to the extent necessary to ensure compliance with the Quality Assurance Program Plan (QAPP) requirements and safe performance of work. Lower-tier suppliers shall meet the same requirements as those imposed on the prime supplier.
- 7.2.2 A graded approach shall be applied to requirements established in subcontracts. The level of management controls shall be commensurate with subcontract duration, significance, function, risk, consequence of failure, and importance to safe nuclear operations, regulatory compliance, and the AMWTP mission. Throughout the subcontracting process, a subcontractor's mission will be translated into specific work scope; subcontractor expectations and tasks will be identified and prioritized; resources to accomplish the work are allocated.
- 7.2.3 Subcontractor personnel shall possess the experience, knowledge, skills, and abilities that are necessary to perform their contractual responsibilities.
- 7.2.4 Before a subcontractor performs any activities on the project, work hazards shall be evaluated. Safety standards and requirements will be established by the project and agreed upon with the subcontractor. Established requirements shall provide adequate assurance that the workers, the public, and the environment are protected from adverse consequences of subcontractor's work.
- 7.2.5 AMWTP shall establish with a subcontractor the conditions and requirements that must be satisfied in order to commence work at the project.
- 7.2.6 Design, item, or service criteria shall be specified in procurement documents, especially as they relate to analysis of safety codes and standards. Applicable codes, standards, regulatory requirements, and necessary quality, safety, environment, and health requirements shall be specified in procurement documents.

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7.2.7 Procurement documents shall include provisions for the following, as applicable:

- Access to the supplier's facilities by the AMWTP and the DOE
- The scope of work to be performed by the supplier or subcontractor
- Specifications for environmental, safety, and health requirements pertinent to the work scope
- Provisions for pertinent health, safety, security, and environmental training for subcontractor's personnel
- Oversight by AMWTP quality, safety, security, and health representatives
- AMWTP review and approval of subcontractor's quality, safety and health plans
- Design basis including regulatory and industry codes and standards
- Controls necessary for safe operations
- Inspection and testing requirements
- Prevention of receiving defective, suspect or counterfeit items (S/CI) or materials by specifying technical and quality requirements that describe acceptance and rejection criteria
- Notification that suppliers are subject to 10 CFR 830.120, and the supplier's regulatory liability under the Price Anderson Amendments Act
- Nonconformance reporting requirements
- Suppliers of safety software shall be required to provide a notification process relating to information on identified defects and new releases, and a point of contact for reporting defects, difficulties, and of training assistance in any other areas relating to the operation of the software.
- The application of procurement quality clauses.

7.2.8 Procurement documents, and any changes to them, shall be reviewed and approved by the appropriate disciplines to ensure that corresponding technical, environmental, safety, and quality requirements are specified. Reviews and approvals shall be documented prior to contract award. Procurement documents shall specify requirements for identifying and reporting S/CIs.

7.2.9 Purchase Card (P-Card or credit card) acquisitions shall be restricted to non-safety related, non-quality affecting, commercial grade items or services.

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- 7.2.10 The Quality Assurance & Training Manager shall approve Class I and Class II suppliers of non-commercial grade items and services affecting quality, and shall review and approve such supplier's Quality Assurance program prior to a purchase order award. Review and approval of a supplier's Quality Assurance program is not required in cases where other DOE facilities (e.g. CBFO) maintain oversight responsibility for supply of non-commercial grade items and services affecting quality. Suppliers of commercial grade and Class III items and services will be evaluated using a graded approach, or as directed by the Quality Assurance & Training Manager, to ensure that only acceptable items and services are provided.
- 7.2.11 When approved by the Quality Assurance & Training Manager, Class I and Class II suppliers of non-commercial grade items or services affecting quality shall be identified on the Approved Vendor List (AVL). Procurement of Class I and Class II non-commercial grade items and services shall be placed only with suppliers who are listed on the AVL, except as indicated above. Bids may be solicited from suppliers not listed on the AVL; however, prior to purchase order award, the supplier's Quality Assurance program shall be evaluated as described above.
- 7.2.12 Supplier-generated documents shall be controlled, and provided by suppliers according to procurement requirements. As appropriate for the item or service received, the supplier's documentation shall include an evaluation of inspection and test data against acceptance criteria.
- 7.2.13 Acceptance of items and services shall be based on one or more of the following methods:
- Technical verification of data produced
  - Surveillance or audit
  - Review of objective evidence for conformance to procurement documents
  - Source inspection
  - Receipt inspection
  - Acceptance tests.
- 7.2.14 All items and services received which do not meet specified requirements shall be identified, controlled, dispositioned/corrected according to established nonconformance identification procedures.

### **7.3 Responsibilities**

- 7.3.1 The Quality Assurance & Training Manager is responsible for the review of all procurement documents for Class I and Class II items and services to assure compliance

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with this QAPP and established procedures. Class III procurements will be evaluated through periodic Quality Assurance assessments or surveillances.

7.3.2 The Quality Assurance & Training Manager shall:

- Evaluate applicable suppliers' Quality Assurance programs and maintain the AVL current
- Ensure approved suppliers continue to provide acceptable items and services
- Maintain qualified personnel necessary for evaluating suppliers, and item or service acceptance, and providing continuing reviews of suppliers on a periodic basis
- Witness, surveil, or assess supplier's activities as required
- Review and approve Quality Assurance programs of perspective suppliers and vendor's documents
- Conduct Quality Assurance oversight of the procurement process
- Review nonconformance and corrective action reports issued as part of the procurement process.

7.3.3 The Acquisition Services Manager is responsible for procurement processes and shall:

- Ensure that all procurement documents for Class I and Class II items and services are reviewed and approved by Quality Assurance personnel for applicable Quality Assurance requirements
- Develop and implement procedures that control credit card (P-card) purchases
- Develop and implement procedures for evaluating supplier performance
- Establish provision and resources for conducting receipt inspections.

7.3.4 The Engineering Manager shall review and approve procurement documents that specify engineering or technical requirements affecting safety significance or that impact design requirements.

7.3.5 Responsible Managers shall monitor work performed by subcontractors. Responsible Managers shall conduct management assessments of their subcontractor's activities that are important to the AMWTP mission success. Assessment of subcontractor's activities shall be commensurate with their risk to the AMWTP quality, safety, cost, and schedule.

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## **8.0 INSPECTION AND ACCEPTANCE TESTING**

### **8.1 Purpose and Scope**

8.1.1 Section 8.0 establishes the policy, requirements, and responsibilities for planning and performing inspection and acceptance testing to verify conformance of an item, service, process, or activity to specified requirements and performance criteria and calibration and maintenance of equipment used for inspections and tests. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2.

### **8.2 Requirements**

8.2.1 Inspection requirements, item and process test requirements, and acceptance criteria shall be defined by the responsible organization in approved documents, procedures, or instructions. Inspection requirements for subcontracted or purchased items or services shall be specified in procurement requirements and documents.

8.2.2 Inspections shall be carried out by the organization identified as responsible for performance in an approved work document, procedure, or instruction. The inspection process shall describe, as appropriate, provisions for the following:

- Identification of when, how, and what types of inspections (source, in-process, Quality Assurance, final, receipt, maintenance, or in-service, etc.) are required
- Administrative controls and status indicators necessary to preclude inadvertent omission of required inspections and to prevent inadvertent use of an item or process
- Qualification requirements of inspection personnel
- Provisions for inspection planning
- Level of inspection shall be based on risk and complexity. Personnel may not inspect their own work for acceptance
- Interface requirements when third parties perform inspections
- When items are tested for acceptability using Lot Acceptance Sampling, specified sampling plans shall be based on recognized standards, e.g., ANSI/ASQC Z1.4-1993
- Methods for re-inspection and re-testing non-compliant systems, structures, or components

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- Requirements that personnel should verify supplied items to ensure that items are correct and suitable for their intended purpose
  - Specified actions that must be taken whenever equipment used to perform tests or inspections is found out-of-calibration
  - Requiring receipt inspection to identify, control, disposition, and report items that are suspect, counterfeit, or indeterminate.
- 8.2.3 Other personnel may perform inspections that require specialized expertise provided that the independence of the inspection function is maintained. Personnel performing inspections while receiving on-the-job training shall do so under the direct observation of a qualified individual. Verification for conformance to requirements shall be completed by the qualified individual.
- 8.2.4 Inspection and test personnel shall be trained/qualified/certified to a competence level commensurate with their responsibilities.
- 8.2.5 Whenever mandatory inspection hold points are specified, the hold points shall be identified in appropriate documents. Consent to waive specified hold points shall be recorded and include documented concurrence from the Quality Assurance & Training Manager.
- 8.2.6 Inspection planning should include provisions for:
- Identifying characteristics or activities to be inspected
  - A description of the inspection method
  - Identifying the individuals or functions responsible for performing the inspection
  - Acceptance criteria
  - Identifying hazards and required safety measures to prevent or mitigate the hazards
  - Required hold points
  - Identifying required procedures, drawings, and specifications
  - Identifying the inspector or data recorder and inspection results
  - Specifying any necessary M&TE including range and accuracy requirements
  - Resolving deficiencies and re-inspection when acceptance criteria are not met.

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**8.3 In-Process Inspection**

- 8.3.1 Inspection of in-process items or items under construction shall be performed for work activities where necessary to verify quality. If inspection of processed items is not possible or disadvantageous, indirect control by process monitoring, equipment, or personnel shall be provided. Both inspection and process monitoring shall be provided when control is inadequate without both.
- 8.3.2 When used, the combination of inspection and process monitoring methods shall be performed so that specified requirements for control of the process and quality of the item are being achieved.
- 8.3.3 When in-process inspection is required, controls shall be established and documented to coordinate and sequence activities at established inspection points.

**8.4 Final Inspections**

- 8.4.1 Final inspections shall include a recorded review of the results and resolution of nonconformities identified by prior inspections. Final inspection shall be planned to determine acceptance of the item according to specified requirements.
- 8.4.2 Finished items shall be inspected according to the requirements of an approved inspection plan or procedure. Inspection results shall be documented in accordance with approved procedures. Inspection results shall be evaluated, and acceptability based on approved acceptance criteria. Product inspection records shall be examined for adequacy and completeness if not previously so examined.
- 8.4.3 By applying a graded approach, re-inspection or re-test is required to verify acceptability whenever modifications, repairs, or replacements of items are made.

**8.5 Inspection, Test, and Operating Status**

- 8.5.1 The status of inspections or tests conducted on items shall be maintained through indicators such as physical location, tags, markings, or other suitable means. Status indicators shall be traceable to the item.
- 8.5.2 Status indicators shall also provide for indicating the operating status of structures, systems, and components of a facility.
- 8.5.3 The authority to apply or remove tags, markings, and other item status indicators shall be specified in documented procedures.

**8.6 Acceptance Testing**

- 8.6.1 Test requirements and acceptance criteria shall be defined in design/procurement documents.

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8.6.2 Acceptance tests shall be performed according to specifications or documented procedures. Test procedures developed by the project and subcontractors shall be reviewed and approved prior to use.

8.6.3 Test procedures shall include the following, as applicable:

- Reference test requirements, objectives, configurations, characteristics to be tested, and test acceptance criteria
- Provisions for ensuring that prerequisites for tests are identified and achieved.

8.6.4 Deficiencies identified during acceptance testing shall be documented in accordance with the project nonconformance procedure.

### **8.7 In-Service Inspection**

8.7.1 When required, in-service inspections will be performed to support operations or maintenance activities and processes according to documented procedures or instructions. These inspections may be approved as maintenance task work orders according to applicable implementing procedures.

8.7.2 Inspection methods shall be utilized to verify that the characteristics of an item or process continue to remain within specified limits and include the following, as appropriate.

- Performance capability of identified emergency and safety systems and equipment
- Verification of calibration and integrity of instruments and instrumentation systems
- Verification of maintenance.

### **8.8 Inspection Records**

8.8.1 As a minimum, inspection records shall include the following:

- Item inspected
- Date of inspection
- Inspector
- Type of observation
- Results or acceptability

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- Information related to Condition Adverse to Quality, (if applicable)
- Action taken to resolve any discrepancies or nonconformities (if applicable)
- Identification of M&TE used during inspection, and its calibration status.

## **8.9 Responsibilities**

8.9.1 AMWTP and subcontractor management shall ensure that inspection and acceptance testing activities are controlled and performed according to approved procedures.

8.9.2 The Quality Assurance & Training Manager shall monitor the AMWTP and subcontractor inspection and test activities to ensure that they include the following, as appropriate:

- Reviewing design, procurement, installation, and testing documents to verify that quality requirements are correctly identified, and that adequate acceptance and rejection criteria are specified
- Planning for inspection and surveillance of quality-related activities, equipment, and hazardous waste handling
- Conduct of inspections and performance tests by qualified/certified personnel
- Performance of required surveillances
- Verifying that activities involving receipt and maintenance of waste transportation containers and packaging include, as a minimum, inspection of surface conditions for damage and cleanliness; weld and structural integrity; condition of flange faces and sealing areas and related components; and labeling, marking, and other documented packaging requirements prior to being returned to services
- Reviewing M&TE control procedures for compliance with QAPP requirements
- Verifying the effectiveness of calibration programs through inspections, surveillances, and assessments
- Reviewing dispositions of previously inspected items when M&TE is found to be out-of-tolerance at the time of calibration
- Verifying that inspection, test, and operating status requirements are specified as required during the review of purchase requisitions and changes thereto
- Applying and removing status indicators identifying nonconforming items

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- Verification through inspections, surveillances, and assessments that inspection and test status of items are properly and effectively maintained.
- 8.9.3 The Environmental, Security, Safety & Health (ESS&H) Manager shall ensure that specialized calibration programs for ESS&H activities such as analytical laboratory activities, Industrial Safety and Hygiene instruments, air and groundwater chemical monitoring programs are established.
- 8.9.4 The Plant Manager is responsible for:
- Engineering review of test documentation for compliance with specified requirements
  - Engineering review of design, procurement, and testing documents to ensure that specifications are adequate and appropriate, and that components and systems meet established requirements.
- 8.9.5 The Acquisition Services Manager is responsible for:
- Ensuring that incoming procured items are available for inspection
  - Receiving and documenting items other than those requiring receipt inspection
  - Notifying appropriate personnel upon receipt of items requiring receipt inspection
  - Storing, maintaining, and issuing traceability documents for items subsequent to final acceptance
  - Ensuring that testing requirements specified by purchase requisitions and changes thereto are included in Purchase Orders
  - Ensuring that inspection, test, and operating status requirements specified by purchase requisitions and changes thereto are included in Purchase Orders.

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## **9.0 MANAGEMENT ASSESSMENT**

### **9.1 Purpose and Scope**

- 9.1.1 Section 9.0 establishes the policy, requirements, and responsibilities for conducting management assessments. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2.

### **9.2 Requirements**

- 9.2.1 Managers at all levels shall periodically assess their organization and its performance to identify and correct problems that hinder their organization from achieving its objectives, and to improve processes, systems, and products.
- 9.2.2 Managers shall determine the schedule and scope of management assessments. Department Managers shall schedule management assessments of their processes, systems, services, or programs at a frequency commensurate with their hazards, risk, status, and importance. Those processes, systems, services, or programs that contribute the greatest risk to quality, safety, health, environment, security, emergency management, business processes, and mission success are evaluated with the greatest frequency, depth, and rigor.
- 9.2.3 Managers shall perform assessments to evaluate activities that affect organizational performance, such as: strategic planning, project interfaces, cost controls, use and results of performance indicators, staff training and qualification, quality improvement, supervisory oversight and support. Managers evaluate the adequacy of resources to achieve management objectives, and determine if work activities are being conducted safely and in compliance with project requirements, procedures, and instructions. Managers evaluate performance at all levels to determine the effectiveness of policies, requirements, standards, and the status of their implementation.
- 9.2.4 Management assessments are expected to determine whether an integrated management system exists (quality, environment, safety, health, cost, and schedule), and whether it is focused on meeting regulatory and contract performance requirements and strategic goals.
- 9.2.5 Department Managers shall schedule management assessments of their subcontractors' activities that are important to the AMWTP mission success. Assessment of subcontractors' activities shall be commensurate with their risk to the quality, environment, safety, health, cost, and schedule.
- 9.2.6 Management assessment scope may be based on specific deliverables, results of independent assessments, results of project reviews, readiness reviews, lessons learned reports, oversight reports issued by management, or contract performance results issued by the DOE.

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9.2.7 Managers perform effective assessments by:

- Interviewing the workforce where work is being performed
- Listening and learning from one-on-one discussions to identify problems that hinder the workforce
- Determining by what methods work processes can be improved
- Observing work being performed
- Conducting data analysis and reviewing records, documents, and work procedures.

9.2.8 Managers shall report assessment results according to approved management assessment procedures. Identified conditions adverse to quality shall be documented and corrected according to approved procedures. Assessment results that identify deficiencies shall be evaluated for trends and programmatic weaknesses.

9.2.9 Managers shall communicate lessons learned from management assessments according to established procedures. Feedback from management assessment results is used for continual improvement.

### **9.3 Responsibilities**

9.3.1 Department Managers are responsible for planning, scheduling, performing, and reporting management assessments at all levels in their area of responsibility and accountability.

9.3.2 Management responsible for the assessed activities shall review assessment reports and implement effective corrective actions for conditions adverse to quality identified.

| 9.3.3 The Quality Assurance & Training Manager is responsible for verifying implementation and evaluating the effectiveness of actions taken to correct conditions adverse to quality reported through management assessments and assesses the effectiveness of the management assessment program on an ongoing basis.

| 9.3.4 The Quality Assurance & Training Manager shall support management assessments of the AMWTP conducted by the Bechtel Systems and Infrastructure Inc. Manager of Quality Assurance.

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## **10.0 INDEPENDENT ASSESSMENT**

### **10.1 Purpose and Scope**

10.1.1 Section 10.0 establishes the policy, requirements, and responsibilities for conducting independent assessments and surveillances. Implementing procedures are identified in Section 13.0, AMWTP Implementing Procedures Requirements Matrix - Table 13.2.

### **10.2 Requirements**

10.2.1 AMWTP shall conduct independent assessments according to established procedures to evaluate the adequacy of work performance, to measure item and service quality, and to promote improvement.

10.2.2 Independent assessments shall be conducted at a frequency commensurate with the hazards, risk, status, and importance of the assessed activities. Processes, systems, services, or programs that contribute the greatest risk to quality, safety, health, environment, security, emergency management, business processes, and mission success are evaluated with the greatest frequency, depth, and rigor.

10.2.3 The Quality Assurance & Training Manager shall formally plan and schedule independent assessments, and ensures that qualified personnel are available to perform them.

10.2.4 Personnel who conduct independent assessments shall be trained as necessary, qualified according to established procedures, and knowledgeable of the items and activities they assess. Independent Assessment personnel shall maintain their proficiency by conducting assessments, or through additional training, or by other means.

10.2.5 Personnel who conduct independent assessments shall not be directly responsible for the work processes, systems, or activities they assess. Assessment personnel shall have sufficient authority and freedom from line organizations to carry out their responsibilities.

10.2.6 According to established procedures, assessment results shall be documented, presented to the assessed organization, and provided to appropriate levels of management for review. Strengths and weaknesses affecting quality; environment, safety, and health; safeguards and security; emergency management; cyber security; or business practices, should be identified so that meaningful improvement actions can be taken.

10.2.7 Conditions adverse to quality identified during assessments shall be documented and reported according to established procedures. Assessment results that identify deficiencies in activities shall be evaluated for trends and programmatic weaknesses.

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- 10.2.8 Independent assessments which confirm acceptable performance may result in a reduction in the frequency and depth of future assessments. Areas of poor or weak performance should receive increased attention.
- 10.2.9 Scheduled and unscheduled surveillances of activities are conducted to verify whether an item, activity, system, or process conforms to specified requirements. Selection of surveillance personnel is based upon their experience and technical knowledge. Surveillance results are documented and reported according to established procedures. Conditions adverse to quality identified are documented, reported, and assigned to a Responsible Manager for correction according to established procedures.
- 10.2.10 Lessons learned identified from assessments are communicated using established procedures. Corrective actions shall be tracked to closure and evaluated to determine if similar conditions exist elsewhere. Results of investigation and causal analysis (as required) and trend analysis data shall be transmitted to management according to established procedures.

### **10.3 Responsibilities**

10.3.1 The Quality Assurance & Training Manager:

- Establishes the independent assessment program and implementing procedures; schedules assessments; and assigns qualified personnel to perform them
- Defines assessment scope considering effectiveness of implemented corrective actions
- Qualifies auditors and lead auditors
- Reviews and approves assessment, surveillance, and audit reports
- Provides the support resources needed for the independent assessment process
- Communicates assessments results to appropriate levels of management
- Evaluates the adequacy of responses to conditions adverse to quality effectively, and conducts follow-up evaluations to verify that corrective actions have been accomplished
- Supports independent assessments conducted by Bechtel Systems and Infrastructure Inc. Quality Assurance personnel
- Supports external assessments and audits
- Ensures that surveillance results are documented, evaluated, and that actions are taken to correct conditions adverse to quality.

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10.3.2 Management, responsible for the assessed activities, is responsible for taking timely action to correct conditions adverse to quality.

10.3.3 Assessors:

- Evaluate work performance, process, and system implementation and effectiveness
- Identify conditions adverse to quality and potential problems
- Identify opportunities for improvement
- Document and report results
- Verify satisfactory resolutions of reported conditions adverse to quality.

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## 11.0 DEFINITIONS

**NOTE:** *This glossary standardizes definitions to be used when developing quality assurance procedures that implement this Quality Assurance Program Plan.*

**Activities Affecting Quality** – All activities associated with structures, systems, and components, including but not limited to, design, procurement, inspection, testing, commissioning, operation, maintenance and installation that are subject to the requirements of this QAPP.

**Administrative Controls**<sup>1</sup> – Provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ensure safe operation of a facility.

**Assessment**<sup>2</sup> – A review, evaluation, inspection, test, check, surveillance, or audit to determine and document whether items, processes, systems, or services meet specified requirements and perform effectively.

**Audit**<sup>3</sup> – [As used in this QAPP, audit is synonymous with independent assessment] A planned and documented activity performed to determine by investigation, examination, or evaluation of objective evidence the adequacy of and compliance with, established procedures, instructions, drawings, and other applicable documents, and the effectiveness of implementation. An audit should not be confused with surveillance or inspection activities performed for the sole purpose of process control or product acceptance.

**Auditor** – [As used in this QAPP, auditor is synonymous with assessor] Qualified to participate on internal and external assessment teams. Conducts interviews, observes operations, reviews data and documents, gathers and evaluates objective evidence to determine conformance to established requirements and adequacy of work performance.

**Cause (Causal Factor)**<sup>4</sup> – A condition or an event that results in an effect (anything that shapes or influences the outcome). This may be anything from noise in an instrument channel, a pipe break, an operator error, or a weakness or deficiency in management or administration. ...

**Characteristic**<sup>3</sup> – Any property or attribute of an item, process, or service that is distinct, desirable, and measurable.

**Class I Equipment**– Equipment identified by the Documented Safety Analysis (DSA) as Safety Class or Safety Significant. Class I Systems, Structures and Components (SSCs) are those items whose failure presents the highest potential safety consequence and project risk.

**Class II Equipment**– Equipment controlled or designated by the DSA as “Other Items Important to Safety” by statutory requirements, by WIPP requirements, or certain Safety Equipment required by permit, or where failure could directly cause injury to personnel, through a conventional or radiological means.

**Class III Equipment** – All process equipment not considered Class I or Class II.

**Condition**<sup>5</sup> – Any as-found state, whether or not resulting from an event that may have adverse safety, health, quality assurance, operational or environmental implications. A condition is usually programmatic in nature; for example, errors in analysis or calculation; anomalies associated with design or performance; or items indicating a weakness in the management process are all conditions.

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**Condition Adverse to Quality (CAQ)**<sup>3</sup> – An all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, and nonconformances. A significant condition adverse to quality is one that, if uncorrected, could have a serious effect on safety or operability.

**Contractor Assurance Systems (CAS)**<sup>6</sup> – Encompass all aspects of the activities designed to identify deficiencies and opportunities for improvement, report deficiencies to the responsible managers, and complete corrective actions effectively.

**Corrective Action**<sup>3</sup> – Measures taken to rectify conditions adverse to quality and, where necessary, to preclude repetition.

**Design, Final**<sup>3</sup> – Approved design output documents and approved changes thereto.

**Design Authority**<sup>3</sup> – The organization having the responsibility and authority for approving the design bases, the configuration, and changes thereto.

**Design Basis**<sup>3</sup> – The information which identifies specific functions to be performed by structures, systems, or components of the facility and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. ...

**Document**<sup>1</sup> – Recorded information that describes, specifies, reports, certifies, requires, or provides data or results.

**Document Control**<sup>3</sup> – The act of assuring that documents are reviewed for adequacy, approved for release by authorized personnel, and distributed to (or made available) and used at the location where the prescribed activity is performed.

**Documented Safety Analysis (DSA)**<sup>1</sup> – A documented analysis of the extent to which a nuclear facility can be operated safely with respect to workers, the public, and the environment, including a description of the conditions, safe boundaries, and hazard controls that provide the basis for ensuring safety.

**Facility**<sup>5</sup> – Those buildings and equipment directed to a common purpose and those activities and supporting elements occurring at a single location.

**Graded Approach**<sup>1</sup> – The process of ensuring that the level of analysis, documentation, and actions used to comply with a requirement in this part are commensurate with: (1) The relative importance to safety, safeguards, and security; (2) The magnitude of any hazard involved; (3) The life cycle stage of a facility; (4) The programmatic mission of a facility; (5) The particular characteristics of a facility; (6) The relative importance of radiological and non-radiological hazards; and (7) Any other relevant factor.

**Hazard**<sup>1</sup> – A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to a person, or damage to a facility or to the environment (without regard to the likelihood or credibility of accident scenarios or consequence mitigation.)

**Hazard Controls**<sup>1</sup> – Measures to eliminate, limit, or mitigate hazards to workers, the public, or the environment, including: (1) Physical, design, structural, and engineering features; (2) Safety structures, systems, and components; (3) Safety management program; (4) Technical safety requirements; and (5) Other control necessary to provide adequate protection from hazards.

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**Independent Assessment**<sup>7</sup> – [As used in this QAPP, independent assessment is synonymous with audit] Conduct independent assessments to measure item and service quality, to measure the adequacy of work performance, and to promote improvement. Independent assessments evaluate the performance of work processes with regard to requirements, compliance, and expectations for safely performing the work and achieving the goals of the organization. The focus of independent assessments should be the items and services produced and their associated processes. The purpose is to improve product/service performance and process effectiveness.

**Inspection**<sup>3</sup> – Examination or measurement to verify whether an item or activity conforms to specified requirements.

**Integrated Safety Management System (ISMS)**<sup>8</sup> – A DOE management system that provides a formal, organized process whereby people plan, perform, assess, and improve the safe conduct of work efficiently and in a manner that ensures protection of workers, the public, and the environment. This management system shall be used to systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment.

**Item** – [For the purposes of this QAPP, item includes data.] An all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, product, structure, software, subassembly, subsystem, system, unit, or support systems.

**Lead Auditor** – [As used in this QAPP, lead auditor is synonymous with lead assessor] Qualified to lead internal and external audit (assessment) teams. Organizes, conducts, reports assessments, and directs audit (assessment) personnel. Requests assessed organization's management to correct conditions adverse to quality.

**Lessons Learned**<sup>5</sup> – A “good work practice” or innovative approach that is identified and shared, or an adverse work practice or experience that is shared to avoid recurrence.

**Management Assessment**<sup>7</sup> – A scheduled, planned, and reported evaluation conducted by management of that management's systems and processes. The objective is to identify and improve systemic weaknesses. From the senior management perspective, the primary focus of management assessments should be at the program level and concerned with strategic issues. From the first-line management perspective, the primary focus of assessments should be the capability of systems and the processes that support them.

**Measuring & Test Equipment**<sup>9</sup> – M&TE includes all devices or systems used to calibrate, certify, measure, gauge, troubleshoot, test, or inspect in order to control data or to acquire data to verify conformance to specified requirements. M&TE does not include permanently installed plant instrumentation, nor does it include test equipment used for preliminary checks where data obtained is not used to determine acceptability or verify conformance to established criteria.

**Nonconformance**<sup>3</sup> – A deficiency in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate.

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**Nonreactor Nuclear Facility**<sup>1</sup> – Those facilities, activities or operations that involve, or will involve, radioactive and/or fissionable materials in such form and quantity that a nuclear or a nuclear explosive hazard potentially exists to workers, the public, or the environment, but does not include accelerators and their operation and does not include activities involving only incidental use and generation of radioactive materials or radiation such as check and calibration sources, use of radioactive sources in research and experimental and analytical laboratory activities, electron microscopes, and X-ray machines.

**Nuclear Facility**<sup>1</sup> – A reactor and nonreactor nuclear facility where an activity is conducted for or on behalf of DOE and includes any related area, structure, facility, or activity to the extent necessary to ensure proper implementation of the requirements established by this Part.

**Objective Evidence**<sup>3</sup> – Any documented statement of fact, other information, or record, quantitative or qualitative, pertaining to the quality of an item or activity, based on observations, measurements, or tests which can be verified.

**Occurrence**<sup>5</sup> – One or more (i.e., recurring) events or conditions that adversely affect, or may adversely affect, DOE (National Nuclear Security Administration) or contractor personnel, the public, property, the environment, or the DOE mission. Events or conditions meeting the criteria thresholds identified in this Manual or determined to be recurring through performance analysis are occurrences.

**Occurrence Report**<sup>4</sup> – An occurrence report is a written evaluation of an event or condition that is prepared in sufficient detail to enable the reader to assess its significance, consequences, or implications and evaluate actions being employed to correct the condition or to avoid recurrence.

**Price Anderson Amendments Act (PAAA)**<sup>1</sup> – The Act provides indemnification to DOE contractors who manage and operate nuclear facilities in the DOE complex. The Act subjects DOE indemnified contractors, subcontractors, and suppliers to potential civil and criminal penalties for violations of DOE rules, regulations and compliance orders relating to nuclear safety requirements.

**Process**<sup>1</sup> – A series of actions that achieve an end result.

**Procurement Document**<sup>3</sup> – Purchase requisitions, purchase orders, drawings, contracts, specifications, or instructions used to define requirements for purchase.

**Quality**<sup>1</sup> – The condition achieved when an item, service, or process meets or exceeds the user's requirements and expectations.

**Quality Assurance**<sup>1</sup> – All those actions that provide confidence that quality is achieved.

**Quality (Assurance) Plan**<sup>10</sup> – A document or set of documents that describe the standards, quality practices, resources and processes pertinent to a specific product, service or project.

**Quality Assurance Program (QAP)**<sup>1</sup> – The overall program or management system established to assign responsibilities and authorities, define policies and requirements, and provide for the performance and assessment of work.

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**Quality Assurance Program Plan (QAPP)**<sup>11</sup> – A document that describes a quality system in terms of the organizational structure, policy and procedures, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, documenting, and assessing all activities conducted. (A QAPP specifies the organization's Quality Policy).

**Quality Assurance Project Plan (QAPjP)**<sup>12</sup> – A document describing in comprehensive detail the necessary Quality Assurance, Quality Control and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria.

**Quality Assurance (QA) Record**<sup>3</sup> – A completed document that furnishes evidence of the quality of items, and/or activities affecting quality. Records may include specially processed records such as radiographs, photographs, negatives, microforms, and magnetic and electronic media.

**Record**<sup>1</sup> – A completed document or other media that provides objective evidence of an item, service, or process.

**Safety**<sup>2</sup> – An all-inclusive term used synonymously with environment, safety, and health to encompass protection of the public, the workers, and the environment.

**Safety Basis**<sup>1</sup> – [For this QAPP, the Safety Basis is comprised of the Documented Safety Analysis, including changes, conditions or hazard controls directed by DOE between successive revisions, Technical Safety Requirements, and Unreviewed Safety Questions screens and determinations] The documented safety analysis and hazard controls that provide reasonable assurance that a DOE nuclear facility can be operated in a safe manner that adequately protects workers, the public, and the environment.

**Safety Class Structures, Systems, and Components**<sup>1</sup> – The structures, systems, or components including portions of process systems whose preventative or mitigative function is necessary to limit radioactive hazardous material exposure to the public, as determined from safety analysis.

**Safety Significant Structures, Systems and Components**<sup>1</sup> – Structures, systems and components which are not designated as safety-class SSCs but whose preventive or mitigative function is a major contributor to defense in depth and/or worker safety as determined from safety analysis.

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**Safety Software**<sup>2</sup> – Includes the following:

1. **Safety System Software.** Software for a nuclear facility that performs a safety function as part of a structure, system, or component and is cited in either (a) a DOE approved documented safety analysis or (b) an approved hazard analysis per DOE P 450.4, *Safety Management System Policy*, dated 10-15-96, and the DEAR clause.
2. **Safety and Hazard Analysis Software and Design Software.** Software that is used to classify, design, or analyze nuclear facilities. This software is not part of a structure, system, or component (SSC) but helps to ensure the proper accident or hazards analysis of nuclear facilities or an SSC that performs a safety function.
3. **Safety Management and Administrative Controls Software.** Software that performs a hazard control function in support of nuclear facility or radiological safety management programs or technical safety requirements or other software that performs a control function necessary to provide adequate protection from nuclear facility or radiological hazards. This software supports eliminating, limiting, or mitigating nuclear hazards to workers, the public, or the environment as addressed in 10 CFR 830, 10 CFR 835, and the DEAR ISMS clause.

**Service**<sup>1</sup> – The performance of work, such as design, manufacturing, construction, fabrication, assembly, decontamination, environmental restoration, waste management, laboratory sample analyses, inspection, nondestructive examination/testing, environmental qualification, equipment qualification, repair, installation, or the like.

**Six Sigma**<sup>10</sup> – A methodology that provides businesses with the tools to improve the capability of their business processes. This increase in performance and decrease in process variation lead to defect reduction and improvement in profits, employee morale and quality of product.

**Software**<sup>2</sup> – Computer programs, procedures, and associated documentation and data pertaining to the operation of a computer system.

**Standards** – The expressed expectation for the performance of work.

**Stop Work Authority** – The authority of all AMWTP and supplier personnel to stop work until effective corrective action is taken, when in their judgment the continuation of such work would expose workers to unacceptable hazardous conditions, and will not meet project objectives, and/or will have unacceptable impacts to the environment, safety, health, and/or quality.

**Stop Work Order** – A formal directive issued by Quality Assurance Management to stop work on a process or task determined to be an actual or potential noncompliance with governing requirements or where environmental protection, human health, and/or safety is in jeopardy.

**Subcontractor** – As used in this QAPP, any of the team members working on the AMWTP. These subcontractors are subcontracted directly to AMWTP

**Supplier**<sup>3</sup> – Any individual or organization who furnishes items or services in accordance with a procurement document. An all-inclusive term used in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, consultant, and their sub-tier levels.

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**Surveillance**<sup>13</sup> – The act of monitoring or observing to verify whether an item, activity, system, or process conforms to specified requirements. Surveillance of a technical work activity is normally done in real time (i.e., the surveillance is accomplished as the work is being performed).

**Suspect/Counterfeit Items (S/CI)s**<sup>2</sup> – An item is suspect when inspections or testing indicates that it may not conform to established Government or industry-accepted specification or national consensus standards or whose documentation, appearance, performance, material, or other characteristics may have been misrepresented by the supplier or manufacturer. A counterfeit item is one that has been copied or substituted without legal right or authority or whose material, performance, or characteristics have been misrepresented by the supplier or manufacturer. Items that do not conform to established requirements are not normally considered S/CI)s if nonconformity results from one or more of the following conditions (which must be controlled by site procedures as nonconforming items): (1) defects resulting from inadequate design or production quality control; (2) damage during shipping, handling, or storage; (3) improper installation; (4) deterioration during service; (5) degradation during removal; (6) failure resulting from aging or misapplication; or (7) other controllable factors.

**Technical Safety Requirements (TSRs)**<sup>1</sup> – The limits, controls, and related actions that establish the specific parameters and requisite actions for the safe operation of a nuclear facility and include, as appropriate for the work and the hazards identified in the documented safety analysis for the facility: Safety limits, operating limits, surveillance requirements, administrative and management controls, use and application provisions, and design features, as well as a bases appendix.

**Traceability**<sup>3</sup> – The ability to trace the history, application, or location of an item and like items or activities by means of recorded identification.

**TrackWise™ Corrective Action Database, Forms and Reports** – This database provides the capability to create different documents requiring unique information fields and different notifications for approval or action and creates unique tracking/trending records. Typical documents types are: Quality Assurance Program Nonconformance Reports, Corrective Action Reports, Management Assessment Reports, Action Items and Characterization Nonconformance Reports

**Unreviewed Safety Question (USQ)**<sup>1</sup> – A situation where (1) The probability of the occurrence or the consequences of an accident or the malfunction of equipment important to safety previously evaluated in the documented safety analysis could be increased; (2) The possibility of an accident or malfunction of a different type than any evaluated previously in the documented safety analysis could be created; (3) A margin of safety could be reduced; or (4) The documented safety analysis may not be bounding or may be otherwise inadequate.

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<sup>1</sup> 10 CFR Part 830, *Nuclear Safety Management*, Subpart 830.3, Definitions

<sup>2</sup> DOE Order 414.1C, *Quality Assurance*, Part 7, Definitions

<sup>3</sup> ASME NQA-1-1997 Edition, *Quality Assurance Requirements for Nuclear Facility Applications*, Part I, Introduction, Part 400, Terms and Definitions

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<sup>4</sup> DOE-NE-STD-1004-92, *Root Cause Analysis Guidance Documents*

<sup>5</sup> DOE Manual 231.1-2, *Occurrence Reporting and Processing of Operations Information*

<sup>6</sup> DOE Order 226.1A, *Implementation of Department of Energy Oversight Policy*

<sup>7</sup> DOE Guide 414.1-1A, *Management Assessment and Independent Assessment Guide for Use with 10 CFR, Part 830, Subpart A, and DOE 414.1A, Quality Assurance*

<sup>8</sup> DOE Guide 450.1-2, *Implementation Guide for Integrating Environmental Management Systems into Integrated Safety Management Systems*

<sup>9</sup> DOE-STD-1054-93, *Guideline to Good Practices for Control and Calibration of Measuring and Test Equipment (M&TE) at DOE Nuclear Facilities*

<sup>10</sup> Quality Progress, July 2002, *Quality Assurance Glossary*, pp. 43-61

<sup>11</sup> U.S. EPA/240/R-02/008, EPA QA/G, *Guidance for Developing Quality Systems for Environmental Programs*, November 2002

<sup>12</sup> U.S. EPA Order 5360.1, May 2005, *Policy and Program Requirements for the Mandatory Agency-Wide Quality System*

<sup>13</sup> DOE/CBFO-94-1012, *Quality Assurance Program Description, Appendix A Glossary*

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## **12.0 REFERENCES**

### **I Code of Federal Regulations**

- Title 10 CFR Part 830, *Nuclear Safety Management*, Subpart 830.3, Definitions

### **II U. S. Department of Energy Directives, Standards, and Guides**

- DOE Guide 231.1-2, *Occurrence Reporting Causal Analysis Guide*
- DOE Guide 414-1A, *Management Assessment and Independent Assessment Guide for Use with 10 CFR Part 830, Subpart A, and DOE O 414.1A, Quality Assurance*
- DOE Guide 414.1-1a *Guide for Management and Independent Assessment*
- DOE Guide 414.1-2A, *Quality Assurance Management System Guide for Use with 10 CFR Part 830 Subpart A, Quality Assurance Requirements and DOE O 414.1C, Quality Assurance*
- DOE Guide 414.1-3, *Suspect/Counterfeit Items Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1B, Quality Assurance*
- DOE Guide 414.1-4, *Safety Software Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1C, Quality Assurance*
- DOE Guide 414.1-5 *Corrective Action Program Guide*
- DOE Manual 231.1-2, *Occurrence Reporting and Processing of Operations Information*
- DOE Order 221.1, *Reporting Fraud, Waste, and Abuse To The Office of Inspector General*
- DOE Order 226.1A, *Implementation of Department of Energy Oversight Policy*
- DOE Order 231.1A, Change 1, *Environment, Safety, and Health Reporting*
- DOE Order 414.1C, *Quality Assurance*
- DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*
- DOE Policy 450.4, *Safety Management System Policy*
- DOE-NE-STD-1004-92, *Root Cause Analysis Guidance Document*

### **III U. S. Department of Energy Carlsbad Field Office Documents**

- DOE/CBFO-94-1012, *Quality Assurance Program Description*, Appendix A Glossary

### **IV Other Standards**

- ANSI/ASQC Z1.4-1993, *Sampling Procedures and Tables for Inspection by Attributes*
- ANSI/NCSL Z540-1-1994: *Calibration Laboratories and Measuring and Test Equipment - General Requirements*
- ASME NQA-1-1997 Edition, *Quality Assurance Requirements for Nuclear Facility Applications*, Part I Introduction, Part 400, Terms and Definitions

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- ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*

### **V AMWTP References**

- MP-TRUW-8.1, *Certification Plan for INL Contact-Handled Transuranic Waste*
- MP-TRUW-8.2, *Quality Assurance Project Plan (QAPjP)*
- PD-ISM-01, *Integrated Safety Management System Description Document*
- PD-Q&SI-01, *Contractor Assurance Program Description*
- RPT-DSA-02, *AMWTP Documented Safety Analysis (DSA)*
- RPT-PEP-01, *AMWTP Project Execution Plan*
- RPT-PMP-01, *AMWTP Project Management Plan*

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**13.0 AMWTP Implementing Procedures**

Table 13.1. AMWTP requirements matrix.

AMWTP QAPP Section	10 CFR 830.122 and DOE Order 414.1C Quality Assurance Criteria	DOE Order 226.1A, Appendix A to the Contractor Requirements Document, Contractor Assurance Program	DOE Policy 450.4, Safety Management System Policy (ISMS): Guiding Principles and Core Functions	DOE Order 470.2B, Independent Oversight and Performance Assurance Program
	<p>(a) Contractors conducting activities, including providing items or services, that affect, or may affect, the nuclear safety of DOE nuclear facilities must conduct work in accordance with the Quality Assurance Criteria in §830.122.</p> <p>(b) The contractor responsible for a DOE nuclear facility must:</p> <p>(1) Submit a Quality Assurance Plan (QAP) to DOE for approval and regard the QAP as approved 90 days after submittal, unless it is approved or rejected by the DOE at an earlier date.</p> <p>(2) Modify the QAP as directed by DOE.</p> <p>(3) Annually submit any changes to the DOE-approved QAP to DOE for approval. Justify in the submittal why the changes continue to satisfy the quality assurance requirements.</p> <p>(4) Conduct work in accordance with the QAP.</p> <p>(c) The QAP must:</p> <p>(1) Describe how the quality assurance criteria of §830.122 are satisfied.</p> <p>(2) Integrate the quality assurance criteria with the Integrated Safety Management System, or describe how the quality assurance criteria apply to the Integrated Safety Management System.</p> <p>(3) Use voluntary consensus standards in its development and implementations, where practical and consistent with contractual and regulatory requirements, and identify the standards used.</p> <p>(4) Describe how the contractor responsible for the nuclear facility ensures that subcontractors and suppliers satisfy the criteria.</p>			<p>1. The contractor shall support the conduct of Independent Oversight and Performance Assurance Program appraisals (e.g., inspection, follow-up reviews, focused reviews, and special studies) at sites under their cognizance. This support includes, but is not limited to, the following:</p> <p>(a) Timely identification of points of contact to provide information and support during appraisals;</p> <p>(b) Documentation and information concerning safeguards and security; cyber security; emergency management; and environment, safety and health programs under their jurisdictions;</p> <p>(c) Access to contractor facilities and personnel, as required; and</p> <p>(d) Provision of work space and administrative support for the appraisal team</p>
1.0 Quality Assurance Program	<p>(a) Criterion 1- Management/Program</p> <p>(1) Establish an organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing the work</p> <p>(2) Establish management processes, including planning, scheduling, and providing resources for the work</p>		<p>Principle 1: Line Management Responsible for Safety</p> <p>Principle 2: Clear Roles and Responsibilities</p> <p>Principle 4: Balanced Priorities</p>	
2.0 Personnel Training and Qualification	<p>(b) Criterion 2-Management/Personnel Training and Qualification</p> <p>(1) Train and qualify personnel to be capable of performing their assigned work</p> <p>(2) Provide continuing training to personnel to maintain their job proficiency</p>		<p>Principle 3: Competence Commensurate with Responsibility</p> <p>Function 1: Define the Scope of Work</p> <p>Function 2: Analyze the Hazards</p> <p>Function 3: Develop and Implement Hazards Controls</p>	

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3.0 Quality Improvement	<p>(c) Criterion 3-Mangement/Quality Improvement</p> <p>(1) Establish and implement process to detect and prevent quality problems</p> <p>(2) Identify, control, and correct items, services, and processes that do not meet established requirements</p> <p>(3) Identify the causes of problems, and work to prevent recurrence as part of correcting the problem</p> <p>(4) ...identify items, services, and processes needing improvement</p>	<p>3. EVENT REPORTING            ...programs will be...implemented...to identify issues and report, analyze, and address operational events, accidents, and injuries.</p> <p>4. WORKER FEEDBACK            ...contractors will...implement processes to solicit feedback from workers and work activities. ...feedback mechanisms are described in site plans/program documents...</p> <p>5. ISSUES MANAGEMENT            Contractors must ensure that a(n) issues management system is in place. ...for the...resolution of deficiencies and be an integral part of... (the) contractor assurance system.</p> <p>6.LESSONS LEARNED            ...programs must be established to communicate lessons learned...Contractors must identify, apply, and exchange lessons learned...Contractors must review and apply lessons learned by other...organizations and external sources...</p> <p>7. PERFORMANCE MEASURES            Contractors must...measure the performance of facilities, programs, and organizations. ,,data must be used to demonstrate performance improvement or deterioration relative to identified goals. ...contractors must suggest further improvements and identify good practices and lessons learned. ...contractors must identify, gather, verify, analyze, trend, disseminate, and make use of performance indicators.</p>	<p>*Principle 8: Worker Involvement</p> <p>Function 5: Provide Feedback and Continuous Improvement</p>	<p>5. The contractor shall prepare, implement, and track to completion approved corrective action plans that address findings identified during the appraisals on the effectiveness of safeguards and security; cyber security; emergency management; or environment, safety and health programs. Final corrective action plans are to be based on an analysis of underlying causal factors to determine whether a systemic program weakness exists.</p> <p>(a) The contractor shall provide timely input to the DOE field element in support of the development of the interim corrective action plan (which DOE line management shall submit within 30 calendar days of the issuance of the final report) to address safeguards and security, cyber security, and emergency management findings. The plan should identify any compensatory measures taken, determine the cause(s) of the finding(s) which will serve as the basis for actions planned to prevent recurrence of the finding (s), describe the ongoing and planned corrective actions (including milestones) for each of the identified deficiencies, and where possible, identify individuals accountable for each action.</p> <p>(b) The contractor shall provide timely input to the DOE field element in support of the development of the final corrective action plan (which DOE line management shall submit within 60 calendar days of the issuance of the final appraisal report) to address the safeguards and security, cyber security, emergency management, and environment, safety and health findings. The contractor shall consider all comments provided on the interim plan when developing the final corrective action. In addition to describing compensatory measures and action taken, the final corrective action plan should indicate the following for each finding:</p> <ul style="list-style-type: none"> <li>• A thorough analysis of the underlying causal factors to determine whether systemic program weaknesses exist,</li> <li>• Steps to address the cause(s) of the finding,</li> <li>• Actions planned that will prevent a recurrence of the finding,</li> <li>• Responsible individuals and organizations</li> <li>• Date actions will be initiated</li> <li>• Date actions are expected to be completed</li> <li>• How actions will be tracked to completion, and</li> <li>• Mechanisms for verifying closure to ensure that actions are appropriate to prevent recurrence of the finding.</li> </ul>

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4.0 Documents and Records	(d) Criterion 4-Mangement/Documents and Records (1) Prepare, review, approve, issue, use and revise documents to prescribe processes, specify requirements, or establish design (2) Specify, prepare, review, approve, and maintain records ...	4. <u>WORKER FEEDBACK</u>  ...contractors will...implement processes to solicit feedback from workers and work activities. ...feedback mechanisms are described in site plans/program documents	Principle 2: Clear Roles and Responsibilities Principle 3: Competence Commensurate with Responsibility Principle 5 Identification of Safety Standards and Requirements Principle 6: Hazard Controls Tailored to Work Being Performed *Principle 8: Worker Involvement Function 1: Define the Scope of Work Function 2: Analyze the Analyze Function 3: Develop and Implement Hazard Controls Function 4: Perform Work Within Controls Function 5: Provide Feedback and Continuous Improvement	
5.0 Work Processes	(e) Criterion 5-Performance/Work Processes (1) Perform work consistent with technical standards, administrative controls, and other hazard controls...using approved instructions, procedures... (2) Identify and control items to ensure their proper use (3) Maintain items to prevent their damage, loss, or deterioration (4) Calibrate and maintain equipment used for process monitoring or data collection	2. ASSESSMENTS 2.a.(2) Self-assessments, which focus on hands-on work and...administrative processes, involve workers, supervisors, and managers to... identify and resolve deficiencies at the lowest level practicable (e.g., workplace inspection and post-job-reviews). 4. <u>WORKER FEEDBACK</u> ...contractors will...implement processes to solicit feedback from workers and work activities. ...feedback mechanisms are described in site plans/program documents...	Principle 3: Competence Commensurate with Responsibility Principle 4: Balanced Priorities Principle 5: Identification of Safety Standards and Requirements Principle 6: Hazard Controls Tailored to Work Being Performed Principle 7: Operations Authorization *Principle 8: Worker Involvement Function 1: Define the Scope of Work Function 2: Analyze the Hazards Function 3: Develop and Implement Hazards Controls Function 4: Perform Work Within Controls Function 5: Provide Feedback and Continuous Improvement	
6.0 Design	(f) Criterion 6-Performance/Design (1) Design items and processes using sound engineering/scientific principles... (2) Incorporate applicable requirements and design bases in design work and changes (3) Identify and control design interfaces (4) Verify or validate the adequacy of design products using individuals or groups other than those who performed the work (5) Verify or validate work before approval and implementation of the design		Principle 5: Identification of Safety Standards and Requirements Principle 6: Hazard Controls Tailored to Work Being Performed Function 1: Define the Scope of Work Function 2: Analyze the Hazards Function 3: Develop and Implement Hazards Controls	
7.0 Procurement	(g) Criterion 7-Performance/Procurement (1) Procure items and services that meet established requirements and perform as specified (2) Evaluate and select prospective suppliers on the basis of specified criteria (3) Establish and implement processes to ensure that approve suppliers continue to provide acceptable items and services		Principle 3: Competence Commensurate with Responsibilities Principle 5: Identification of Safety Standards and Requirements Principle 7: Operations Authorization Function 1: Define the Scope of Work	

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AMWTP QAPP Section	10 CFR 830.122 and DOE Order 414.1C Quality Assurance Criteria	DOE Order 226.1A, Appendix A to the Contractor Requirements Document, Contractor Assurance Program	DOE Policy 450.4, Safety Management System Policy (ISMS): Guiding Principles and Core Functions	DOE Order 470.2B, Independent Oversight and Performance Assurance Program
8.0 Inspection and Acceptance Testing	(h) Criterion 8-Performance/Inspection and Acceptance Testing (1) Inspect and test specified items, services using established acceptance and performance criteria (2) Calibrate and maintain equipment used for inspections and tests		Principle 3: Competence Commensurate with Responsibilities Function 1: Define the Scope of Work Function 2: Analyze the Hazards Function 3: Develop and Implement Hazard Controls Function 5: Provide Feedback and Continuous Improvement	
9.0 Management Assessments	(i) Criterion 9-Assessment/Management Assessment Ensure managers assess their management processes and identify and correct problems...	2. ASSESSMENTS 2.a. Self-assessment is used to evaluate performance at all levels...to determine the effectiveness of policies, requirements, and standards and...implementation. 2.a.(1) Management self-assessments...are performed by contractor management... 2.a.(3) Support organizations will perform self-assessments of their performance and the adequacy of their processes. 2.a.(4) Contractor, at all levels, will assess the...adequacy of their processes... 2.a.(5) Self-assessment results will be documented...Deficiencies will be...documented for evaluation...using ...issues management processes.	*Principle 8: Worker Involvement Function 5: Provide Feedback and Continuous Improvement	
10.0 Independent Assessments	(j) Criterion 10-Assessment/Independent Assessment (1) Plan and conduct independent assessments to measure item and service quality, to measure the adequacy of work performance, and to promote improvement (2) Establish sufficient authority, and freedom from line management, for the group performing independent assessments (3) Ensure persons who perform independent assessments are technically qualified and knowledgeable in the areas to be assessed	2. ASSESSMENTS 2.b. Internal independent assessments will be performed... 2.b.(1)...assessments will be formally planned and scheduled... 2.b.(2)...evaluators will be appropriately trained and qualified... 2.b.(3)Reviewers will be...staff, members of external organizations, or both. 2.b.(4)...assessments...will focus on...facilities or projects, and programs and management processes...used by multiple organizations. 2.b.(5)...assessments...will concentrate on...work activities and the results of process implementation.	Principle 3: Competence Commensurate with Responsibilities Function 5: Provide Feedback and Continuous Improvement	

\*Principle 8: Worker Involvement is an AMWTP ISMS Guiding Principle

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Table 13.2. Quality Assurance cross reference table.

AMWTP QAPP Section	ASME NQA-1, Quality Assurance Basic Requirements for Nuclear Facility	AMWTP Implementing Procedure
1.0 Quality Assurance Program	<p>Basic Requirement 1 – Organization: The organizational structure, functional responsibilities, levels of authority, and lines of communication for activities affecting quality shall be documented.</p> <p>Basic Requirement 2 – QA Program: A documented QA Program shall be planned, implemented and maintained.</p>	<p>MP-ADMN-1.19, AMWTP Organization Charts  MP-Q&amp;SI-01-IM, QA Program Requirements Matrix  MP-Q&amp;SI-5.6, Graded Approach  PD-Q&amp;SI-01, Contractor Assurance Program Description</p>
2.0 Personnel Training and Qualification	<p>Basic Requirement 2 – QA Program: A documented QA Program shall be planned, implemented and maintained.</p>	<p>MP-Q&amp;SI-5.8, Qualifying Supply Chain Inspectors, Auditors, Lead Auditors, and Technical Specialists  MP-RTQP-14.1, Preparation and Administration of Individual Training Plans  MP-RTQP-14.4, Personnel Qualification and Certification  MP-RTQP-14.6, Job Analysis  MP-RTQP-14.20, Training Implementation Matrix  PD-RTQP-02, Training Program Description</p>
3.0 Quality Improvement	<p>Basic Requirement 15 – Control of Nonconforming Items: Items that do not conform to specified requirements shall be controlled to prevent inadvertent installation or use</p> <p>Basic Requirement 16 – Corrective Action: Conditions adverse to quality shall be identified promptly and corrected as soon as practical.</p>	<p>INST-COPS-9.6.1, Fact Finding Procedure  INST-Q&amp;SI-5.1.1, Trending  MP-COPS-01-IM, Conduct of Operations and Occurrence Reporting Requirements Matrix  MP-COPS-9.6, Occurrence Reporting  MP-ISIH-2.10, Recording and Reporting Occupational Injuries and Illness  MP-ISIH-2.43, Lessons Learned  MP-M&amp;IA-17.1, Management Assessment  MP-M&amp;IA-17.2, Independent Assessment  MP-M&amp;IA-17.3, Quality Assurance Surveillance  MP-Q&amp;SI-5.1, Investigations and Root Cause Analysis  MP-Q&amp;SI-5.2, Price Anderson Amendment Act Reporting  MP-Q&amp;SI-5.3, Corrective Action  MP-Q&amp;SI-5.4, Identification of Nonconforming Conditions  MP-Q&amp;SI-5.10, Corrective Action Review Board Charter  MP-RTQP-14.16, Training Program Evaluation  MP-RTQP-14.17, Incorporating Change Actions and Lessons Learned into Training  PD-Q&amp;SI-01, Contractor Assurance Program Description  PD-Q&amp;SI-02, Corporate Operating Experience Program Description  PD-COPS-9.18, Work Control  MP-COPS-9.29, Workers Rights and Responsibilities</p>
4.0 Documents and Records	<p>Basic Requirement 6 – Document Control: The preparation, issue, and change of documents that specify quality requirements or prescribe activities affecting quality shall be controlled to ensure that correct documents are being employed.</p> <p>Basic Requirement 17 – Quality Assurance Records: Records that furnish documentary evidence of quality shall be specified, prepared, and maintained.</p>	<p>MP-CD&amp;M-11.5, Drawing Control  MP-DOCS-18.1, Developing Written Work Instructions  MP-CMNT-10.1, Maintenance Management  MP-DOCS-18.2, Records Management  MP-DOCS-18.3, Developing Management Procedures  MP-DOCS-18.4, Document Control  PD-Q&amp;SI-01, Contractor Assurance Program Description</p>

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AMWTP QAPP Section	ASME NQA-1, Quality Assurance Basic Requirements for Nuclear Facility	AMWTP Implementing Procedure
5.0 Work Processes	<p>Basic Requirement 5 – Instructions, Procedures, and Drawings            Activities affecting quality shall be prescribed in accordance with documented instructions, procedures, or drawings of a type appropriate to the circumstances.</p> <p>Basic Requirement 9 – Control of Processes:            Processes affecting quality of items or services shall be controlled.</p> <p>Basic Requirement 12 – Control of Measuring and Test Equipment:            Tools, gages, instruments, and other measuring and test equipment used for activities affecting quality shall be controlled, and at specified periods calibrated and adjusted to maintain accuracy within necessary limits</p> <p>Basic Requirement 13 – Handling and Storage            Handling, storage, cleaning, packaging, and preservation of items shall be controlled to prevent damage or loss and to minimize deterioration.</p>	<p>CTR-005, Employee Safety and Improvement Team Charter            INST-CMNT-10.1.4, Maintenance Instructions            INST-CMNT-10.1.5, Job Plan            INST-CMNT-10.3.1, Tool Crib Operations and Controls            INST-CMNT-10.5.1, Calibration and Control of Measuring and Test Equipment            INST-CMNT-10.14.1, Testing In-Plant and Process Instrumentation            INST-COPS-9.18.1, Approved Method of Work            INST-COPS-9.18.2, Permit to Work            INST-COPS-9.18.3, Lockout/Tagout            INST-COPS-9.18.4, Hazard Assessment            MP-ADMN-1.8, AMWTP Employee Concerns Program            MP-CMNT-01-1M, Conduct of Maintenance Requirements Implementation Matrix            MP-CMNT-10.1, Maintenance Management            MP-CMNT-10.5, Calibration of Measuring and Test Equipment Program            MP-CMNT-10.11, Welding            MP-CMNT-10.14, In-Plant and Process Instrumentation Testing Program            MP-COPS-9.3.3, Conduct of Operations – Performing Independent Verifications            MP-COPS-9.7, Conduct of Operations - Control of Equipment &amp; System Status            MP-COPS-9.11, Conduct of Operations - Control of Safety Related Systems, Structures, and Components and Operational Limits            MP-COPS-9.14, Operations Procedures            MP-ISIH-2.5, Hazard Communication Program            MP-M&amp;IA-17.3, Quality Assurance Surveillance            MP-PCMT-15.21, Materials Management            PD-COPS-9.18, Work Control            PD-Q&amp;SI-01, Contractor Assurance Program Description            PD-Q&amp;SI-02, Corporate Operating Experience Program Description            RPT-CMNT-01, Maintenance Implementation Plan</p>
6.0 Design	<p>Basic Requirement 3 – Design Control:            The design shall be defined, controlled, and verified.</p>	<p>INST-CD&amp;M-11.1.2, Facility Modification Proposal Preparation            INST-CD&amp;M-11.1.3, Approved Equivalent Parts            INST-CD&amp;M-11.2.1, Software Version Control            INST-CD&amp;M-11.2.2, Software Inventory Classification            INST-CD&amp;M-11.2.3, System Data Change Requests            INST-CD&amp;M-11.2.5, Integrated Control System Software Modifications            INST-CD&amp;M-11.2.6, Temporary Software Override            MP-CD&amp;M-11.1, Change Control            MP-CD&amp;M-11.2, Software Quality Assurance            MP-CD&amp;M-11.3, Design Control            MP-CD&amp;M-11.5, Drawing Control            MP-CD&amp;M-11.6, Engineering Design Files            MP-CD&amp;M-11.7, Documenting Engineering Specifications            MP-CD&amp;M-11.8, Equipment and Process Tests and Investigations            MP-DOCS-18.2, Records Management            MP-DOCS-18.4, Document Control            MP-Q&amp;SI-5.6, Graded Approach</p>

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AMWTP QAPP Section	ASME NQA-1, Quality Assurance Basic Requirements for Nuclear Facility	AMWTP Implementing Procedure
7.0 Procurement	<p>Basic Requirement 4 – Procurement Document Control:            Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services.</p> <p>Basic Requirement 7 – Control of Purchased Items and Services            The procurement of items and services shall be controlled to assure conformance with specified requirements.</p>	<p>MP-DOCS-18.2, Records Management            MP-PCMT-15.1, Acquisition of Material and Services            MP-PCMT-15.7, Vendor Qualification and Performance Evaluation            MP-PCMT-15.21, Materials Management</p>
8.0 Inspection and Acceptance Testing	<p>Basic Requirement 8 – Identification and Control of Items:            Controls shall be established to assure that only correct and accepted items are used or installed.</p> <p>Basic Requirement 11 – Test Control:            Tests required to verify conformance of an item or computer program to specified requirements and to demonstrate satisfactory performance for service shall be planned and executed.</p> <p>Basic Requirement 14 – Inspection, Test and Operating Status:            The status of inspection and test activities shall be identified 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 inspections and tests are not inadvertently installed, used, or operated.</p>	<p>INST-CMNT-10.2.1, Pressurized System Inspection            INST-CMNT-10.5.1, Calibration and Control of Measuring and Test Equipment            INST-CMNT-10.14.1, Testing In-Plant and Process Instrumentation            MP-DOCS-18.1, Developing Written Work Instructions            MP-RTQP-14.4, Personnel Qualification and Certification            MP-PCMT-15.21, Materials Management            MP-CMNT-10.5, Calibration of Measuring and Test Equipment Program            MP-CMNT-10.14, In-Plant and Process Instrumentation Testing program            MP-M&amp;IA-17.3, Quality Assurance Surveillance            MP-PCMT-15.8, Property Management Program Procedure            MP-Q&amp;SI-5.11, Suspect/Counterfeit Item Identification and Control</p>
9.0 Management Assessments		<p>MP-COPS-9.27, Management Self Assessment for Readiness            MP-ISIH-2.43, Lessons Learned            MP-M&amp;IA-17.1, Management Assessment            MP-Q&amp;SI-5.1, Investigation and Root Cause Analysis            MP-Q&amp;SI-5.2, Price Anderson Amendment Act Reporting            MP-Q&amp;SI-5.3, Corrective Action            MP-Q&amp;SI-5.4, Identification of Nonconforming Conditions            MP-Q&amp;SI-5.10, Corrective Action Review Board Charter            PD-Q&amp;SI-01, Contractor Assurance Program Description            PD-Q&amp;SI-02, Corporate Operating Experience Program Description</p>
10.0 Independent Assessments	<p>Basic Requirement 18 – Audits:            Planned and scheduled audits shall be performed to verify compliance with all aspects of the quality assurance program, and to determine its effectiveness.</p>	<p>MP-ISIH-2.43, Lessons Learned            MP-M&amp;IA-17.2, Independent Assessment            MP-M&amp;IA-17.3, Quality Assurance Surveillance            MP-Q&amp;SI-5.1, Investigations and Root Cause Analysis            MP-Q&amp;SI-5.2, Price Anderson Amendment Act Reporting            MP-Q&amp;SI-5.3, Corrective Action            MP-Q&amp;SI-5.4, Identification of Nonconforming Conditions            MP-Q&amp;SI-5.8, Qualifying Supply Chain Inspectors, Auditors, Lead Auditors, and Technical Specialists            PD-Q&amp;SI-01, Contractor Assurance Program Description            PD-Q&amp;SI-02, Corporate Operating Experience Program Description</p>