



PMA/PORTS-77

**Quality Assurance Program Plan
and Quality Implementation Plan
for the
Infrastructure Support Services Contract
at the
Formerly Operating Portsmouth Gaseous Diffusion
Plant
Piketon, Ohio**

Revision 0

Approved:



Damon Detillion, Project Manager

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Date

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DEFINITIONS

- Safety Software* Safety Software. Includes the following:
1. Safety System Software. Software for a nuclear facility that performs a safety function as part of an SSC 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 (or latest version) and 48 CFR 970-5223.1.
 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 an 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 C.F.R. Parts 830 and 835, the DEAR Integrated Safety Management System clause, and 48 CFR 970-5223.1.
- Subject Matter Expert* An employee who is knowledgeable about the professional standards, requirements, and practices used within the discipline he/she represents. (Non-nuclear)

ACRONYMS

ACP	American Centrifuge Plant
AHA	Activity Hazards Analysis
ANSI	American National Standards Institute
AQL/s	Acceptable Quality Level/s
ASME	American Society of Mechanical Engineers
ASQ	American Society for Quality
BOD	Board of Directors
BWXT	Babcock and Wilcox Technologies, Inc.
CAIR	Computerized Accident/Incident Reporting Systems
CAS	Contractor Assurance System
CCR	Competence Commensurate with Responsibility
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
CO	Contracting Officer
CRD	Contractor Requirements Document
CTS	Commitment Tracking System
D&D	Decontamination and Decommissioning
DEAR	Department of Energy Acquisition Regulation
DDSI	Documents, Drawings, Sketches, and Items
DLS	Directives, Laws, and Standards
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DUF ₆	Depleted Uranium Hexafluoride
EM	Environmental Management
EEOICPA	Energy Employees Occupational Illness Compensation Program
EIC	Environmental Information Center
EMS	Environmental Management System
ERP	Enterprise Resource Planning
ES&H	Environmental, Safety, and Health
ESH&Q	Environmental, Safety, Health and Quality
FAR	Federal Acquisition Regulation
FBP	Fluor-BWXT Portsmouth LLC
FIMS	Facility Information Management System
FOIA	Freedom of Information Act
FSS	Facility Support Services
FY	Fiscal Year

G	Guide
GAO	General Accounting Office
GET	General Employee Training
GFS&I	Government Furnished Services and Items
HR	Human Resources
HVAC	Heating, Ventilation Air Conditioning
IA	Independent Conformity Assessment
IEZ	Immediate Evacuation Zone
IFR	Internal Field Review
IG	Inspector General
IOP	Integrated Oversight Program
IPABS	Integrated Planning Accountability and Budget System
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
ISP	Items, Services, and Processes
ISS	Infrastructure Support Services
IT	Information Technology
IWS	Inactive Waste Sites
JPM	Job Performance Measure
LAN	Local Area Network
M&TE	Measuring and Test Equipment
MA	Management Conformity Assessment
MBM	Metrics Based Management System
MSS	Mission Support Services
NARA	National Archives and Records Administration
NIST	National Institute of Standards and Technology
NQA	Nuclear Quality Assurance
NTS	Non-compliance Tracking System
O	Order
OA	Oversight Activities
OELL	Operating Experience Lessons Learned
OEA	Office of Enterprise Assessments
OIG	Office of the Inspector General
OJE	On-the-Job Evaluation
OJT	On-the-Job Training
ORPS	Occurrence Reporting Processing System
OSHA	Occupational Safety and Health Administration

PD	Position Descriptions
P&I	Performance and Integration
PARS	Performance Assessment Reporting System
PIDS	Property Information Database System
PM	Project Manager
PMA	Portsmouth Mission Alliance
PORTS	Portsmouth Gaseous Diffusion Plant
PPPO	Portsmouth/Paducah Project Office
PRS	Performance Requirements Summary
PTHR	Pre-Task Hazard Review
PWS	Performance Work Statement
QA	Quality Assurance
QAP	Quality Assurance Program
QAPP	Quality Assurance Program Plan
QAPP/QIP	Quality Assurance Program Plan and Quality Implementation Plan
QASP	Quality Assurance Surveillance Plan
QIP	Quality Assurance Implementation Plan
QL	Quality Level
RADWORKER	Radiation Worker
RMDC	Records Management Document Control
RRAL	Roles, Responsibilities, Authorities, and Lines of Communication
S/CI	Suspect/Counterfeit Item
S&H	Safety and Health
SME	Subject Matter Expert
SMP	Safety Management Program
SQA	Software Quality Assurance
SRB	Senior Review Board
SSC	Structure, System, or Component
T&C	Terms and Conditions
TPD	Training Position Descriptions
USW	United Steelworkers
VPP	Voluntary Protection Program
WAI	Wastren Advantage, Inc.
WIN	Worker Involvement Network
WLAN	Wireless Local Area Network
WSHP	Worker Safety and Health Protection

EXECUTIVE SUMMARY

This Quality Assurance Program Plan (QAPP) and Quality Assurance Implementation Plan (QIP) (QAPP/QIP) describes the Portsmouth Mission Alliance, LLC (PMA) Quality Assurance (QA) Program as it applies to the Infrastructure Support Services (ISS) Contract scope of work being performed at the formerly operating Portsmouth Gaseous Diffusion Plant (PORTS), which was developed in response to the U.S. Department of Energy (DOE) requirements specified in contract DE-EM0004062 (Contract) and DOE Environmental Management (EM) EM-QA-001 (Rev. 1), EM Quality Assurance Program (EM QAP).

Key elements of the scope of work include, but are not limited to (as assigned by DOE), the following:

- Environmental, Safety, Health, and Quality Program;
- Engineering;
- Project Management;
- Property Management;
- Safeguards and Security;
- Computing, Telecommunications, and Cyber Security;
- Operations and Management of Assets (e.g., Maintenance Management);
- Facility Services (e.g., Grounds Maintenance);
- Records Management and Document Control;
- Mail, Shipping, and Receiving Services;
- Environmental Information Center (EIC) Operations; and
- Training Services.

This QAPP/QIP provides the primary requirements for the integration of quality functions into all aspects of department, function, and project activities within the scope of work, with the understanding it is essential to “do work safely” in concert with “doing work correctly”.

This QAPP/QIP and PMA/PORTS-55, Integrated Safety Management System Plan (ISMS) encompass the elements of the PMA Contractor Assurance System (CAS), as shown in Appendix B, “CAS Crosswalk with ISMS, QAPP/QIP, and Voluntary Protection Program (VPP) Tenets”, and further described in PMA/PORTS/16-0756, Contractor Assurance System (CAS).

The QAPP/QIP is reviewed annually and updated, as needed, in accordance with the ISS Contract. Effectiveness is evaluated as part of the annual Integrated Safety Management System (ISMS) and QA Declaration report submitted to DOE, which demonstrates ISMS and QA implementation.

This QAPP/QIP is written to meet the criteria of:

- DOE EM-QA-001, EM Quality Assurance Program;

- DOE Order (O) 414.1D, Quality Assurance, Attachment 1, “Contractor Requirements Document (CRD)”, as it applies to non-nuclear facilities and activities;
- Title 10 Code of Federal Regulations (CFR), Part 830.120, Subpart A, Quality Assurance Requirements as it applies to nuclear facilities and activities;
- The criteria of American Society of Mechanical Engineers’ (ASME) NQA-1-2004 and addenda through 2007, QA Requirements for Nuclear Facility Applications (NQA-1-2004, primarily Parts I and II); and
- DOE O 226.1B, Implementation of DOE Oversight Policy (i.e. CAS), to the extent the criteria apply to the nature and scope of the work performed, and the relative importance of the items or services being produced.

The alignment of the criteria of DOE EM QAP, DOE O 414.1D, 10 CFR 830.120 Subpart A, and NQA-1-2004, including the addenda through 2007, with this QAPP/QIP, and the implementing performance documents is shown in Appendix A of this plan, which serves as the QIP. The alignment of the CAS criteria of DOE O 226.1B with the QAPP/QIP, ISMS, and VPP Tenets is shown in Appendix B.

Although the DOE EM QAP has adopted NQA-1-2008 and addenda through 2009, PMA continues to invoke NQA-1-2004 (primarily Parts I and II) in accordance with EM QAP, Sect. 3.0 Applicability: *For those sites that use NQA-1-2004 with addenda through 2007, EM has completed the required review and concluded that the differences in the standard do not result in any additional risks to the quality of EM work, products or services. As such, a variance or exemption is not required to implement NQA-1-2004 with addenda through 2007.* PMA has considered the non-mandatory guidance in Parts III and IV in development of the QAPP/QIP, and applied it where needed to clarify wording in some QAPP/QIP sections and associated performance documents.

Currently, assigned PMA facilities are non-nuclear (Other [Standard] Industrial) and activities are non-nuclear (primarily Commercial) with the exception of the nuclear-associated activities of training and qualification of personnel performing nuclear activities (i.e., radiation worker (RADWORKER) training), processing and control of nuclear related records (i.e., other contractors records associated with nuclear facilities), and certain elements of protecting information systems from unauthorized access and physical and personnel security (i.e., nuclear related information and systems) while performing the following Contract scope of work clauses:

- C.3.9, Training Services;
- C.3.6, Records Management and Document Control;
- C.3.3, Computing, Telecommunications, and Cyber Security; and
- C.3.2, Safeguards and Security, respectively.

PMA also occupies office and shop areas in two nuclear facilities, and performs roads and grounds maintenance within the Immediate Evacuation Zones (IEZ) of some nuclear facilities managed by the decontamination and decommissioning (D&D) Contractor, Fluor-Babcox Wilcox Technologies, Inc. (BWXT) Portsmouth LLC (FBP), but these activities are non-nuclear.

On this basis, this QAPP/QIP primarily implements DOE O 414.1D criteria, and applicable 10 CFR 830.120 Subpart A, and NQA-1-2004 Parts I and II criteria as aligned in Appendix A of this plan. This QAPP/QIP provides highly effective controls for PMA current, primarily non-nuclear work, and is structured to facilitate PMA to perform more complex nuclear work should it be assigned by the DOE Contracting Officer (CO) to meet changing needs.

This QAPP/QIP is the written directive of the PMA Project Manager (PM) to accomplish the ISS Contract and to implement performance documents (e.g., plans, policies, and procedures) that provide the controls and sound management practices needed to ensure that contractual obligations are met. It is designed to use training, procedures, assessments, and surveillance functions as management tools to ensure that all department, function, and project activities, including subcontract work, are executed in a manner that will protect worker and public health and safety, promote the success of PMA, and meet or exceed Contract requirements. For subcontracted work, this is accomplished through a flow-down of requirements and standards in procurement documents and subcontract terms and conditions (T&C).

Contract requirements to accomplish the scope of work are identified in the DOE Quality Assurance Surveillance Plan (QASP) (Attachment J-11 to DE-EM0004062). Appendix A, “Performance Requirements Summary (PRS) of the QASP”, identifies nineteen (19) contract line item numbers (CLINs) in the Performance Work Statement (PWS), and one hundred and ninety-five (195) performance standards to meet the CLINs, which encompass the Contract scope of work. For each performance standard, the Acceptable Quality Level (AQL) is identified. This QAPP/QIP and ISMS, as integrated into the CAS, provide the underlying program and processes to monitor, oversee, and report to DOE successful performance of the QASP.

As required in DOE O 414.1D, Sect. 1.c. and Attachment 1, “CRD”, 2nd paragraph, the QAPP/QIP implements the QA criteria defined in Attachment 2, “QA Criteria”, Attachment 3, “Suspect/Counterfeit Items (S/CI) Prevention”, and Attachment 4, “Safety Software QA Requirements for Nuclear Facilities” to the extent the criteria apply to the nature and scope of the work performed, and the relative importance of the items or services being produced. PMA currently does not utilize any computer software meeting the DOE O 414.1D definition of safety software. These criteria are implemented, using a graded approach as defined in Sect. 4.a., 6.h., and Attachment 1, “CRD”, Sect. 1 of DOE O 414.1D, Sect. 2.0 of EM QAP, and Sect. 4.1.3 of DOE Guide (G) 414.1-2B, Quality Assurance Program Guide. The graded approach is the process by which the extent (level of rigor) of application of control is determined, based on the importance of the activity or scope of work relative to public and worker safety, potential for environmental releases, working within facility performance boundaries, and achieving programmatic mission objectives. A graded approach is applied to meet customer expectations and regulatory compliance in a cost-effective manner. More rigor is applied to work where more complex and hazardous activities are identified, versus routine work. More information on the application of the graded approach is described in Sect. 1.5 of this plan.

In accordance with DOE O 414.1D, Sect. 1.b(1) and (5), and EM QAP, Sect. 1.0, QA is strongly integrated with Environmental, Safety, and Health (ES&H) through the ISMS, described in the following:

- Department of Energy Acquisition Regulation (DEAR) 970.5223-1, Integration of

Environment, Safety, and Health into Work Planning and Execution;

- DOE P 450.4A, Integrated Safety Management Policy; and
- Sect. 4.1.1.2 of DOE G 414.1-2B, Quality Assurance Program Guide.

QA and ISMS are implemented through this QAPP/QIP and PMA/PORTS-55, ISMS Plan. The ISMS Plan integrates ISMS, Worker Safety and Health Protection (WSHP), and Environmental Management System (EMS). The EMS, in accordance with DOE O 436.1, Department Sustainability; DEAR 952-223-78, Sustainable Acquisition Program; and DEAR 970.5223-2, Affirmative Procurement Program provides for managing facilities in an environmentally preferable and sustainable manner that will promote the natural environment and protect the health and wellbeing of employees and service providers. ISMS is further discussed in Sect. 1.7 of this plan, and each QA criterion section identifies the ISMS Principles and Core Functions that have been integrated.

The directives, laws, and standards (DLS) as promulgated in the PMA Contract through DEAR 970.5204-2, Laws, Regulations, and DOE Directives establish basic QA requirements for non-nuclear and nuclear facilities and activities with the potential to cause harm, to ensure that risks and environmental impacts are minimized, and that safety, reliability, and performance are maximized through the use of effective management systems. They also outline contemporary principles for managing, achieving, and assessing quality in an integrated and cost-effective manner. In addition to the DLS, the requirements and non-mandatory guidelines of the documents listed below were also used to develop this QAPP/QIP. A crosswalk showing the relationship between key DLS and PMA implementing procedures is provided in Appendix A of this plan.

- IAEA-TECDOC-1169, Managing Suspect and Counterfeit Items (S/CIs) in the Nuclear Industry.
- DOE G 414.1-1C, Management and Independent Assessments Guide.
- DOE G 414.1-2B, Quality Assurance Program Guide.
- DOE G 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 P 450.4A, Integrated Safety Management Policy.
- DOE G 450.4-1C, Integrated Safety Management System Guide.

1. PROGRAM

1.1 Quality Policy

Portsmouth Mission Alliance (PMA) is committed to developing, implementing, and maintaining a formal Quality Assurance (QA) Program (QAP) for the U.S. DOE ISS contract DE-EM0004062 (Contract) at the formerly operating Portsmouth Gaseous Diffusion Plant (PORTS) that ensures the highest standards of performance by empowering employees in their respective areas of responsibility to “do work safely” in concert with “doing work correctly”, and fostering

a “no fault” attitude toward the identification and reporting of safety and quality deficiencies. The quality requirements defined in this Quality Assurance Program Plan/Quality Implementation Plan (QAPP/QIP) provide the framework for a results-oriented management system that focuses on performing work safely and meeting mission and customer expectations while allowing PMA to become more efficient through process improvement.

1.2 Quality Assurance Program

This QAPP/QIP provides the primary requirements for the integration of quality functions into all aspects of PMA activities at PORTS to successfully accomplish the Contract scope of work.

Key elements of the scope of work include, but are not limited to (as assigned by DOE), the following:

- Environmental, Safety, Health, and Quality (ESH&Q) Program;
- Engineering;
- Project Management;
- Property Management;
- Safeguards and Security;
- Computing, Telecommunications, and Cyber Security (CTCS);
- Operations and Management of Assets (e.g., Maintenance Management);
- Facility Services (e.g., Grounds Maintenance);
- Records Management and Document Control (RMDC);
- Mail, Shipping, and Receiving Services;
- EIC Operations; and
- Training Services.

Currently, assigned PMA facilities are non-nuclear (Other [Standard] Industrial), and activities are non-nuclear (primarily Commercial) with the exception of the nuclear-associated activities of training and qualification of personnel performing nuclear activities, processing and control of nuclear related records, and certain elements of protecting information systems from unauthorized access and physical and personnel security while performing the following Contract scope of work clauses:

- C.3.9, Training Services,
- C.3.6, Records Management and Document Control,
- C.3.3, Computing, Telecommunications, and Cyber Security, and
- C.3.2, Safeguards and Security, respectively.

PMA also occupies office and shop areas in two nuclear facilities, and performs roads and grounds maintenance within the IEZ of some nuclear facilities managed by Fluor-B&W

Portsmouth LLC (FBP), but these activities are non-nuclear. This QAPP/QIP provides highly effective controls for the current, primarily non-nuclear work, and is structured to facilitate PMA to perform more complex nuclear work in the future should it be assigned by the CO to meet changing DOE needs.

The QAP includes implementing policies, plans, and procedures (i.e., performance documents). The performance documents that implement the elements of the QAPP/QIP are included in a flow-down matrix (see Appendix A of this plan), which serves as the Quality Assurance Implementation Plan (QIP). The matrix documents a crosswalk between the sections in this QAPP/QIP, the DOE Environmental Management (EM) EM-QA-001 (Rev. 1), EM Quality Assurance Program (QAP) sections, the QA criteria prescribed in DOE Order (O) 414.1D, Quality Assurance, as it applies to non-nuclear facilities and activities, the QA criteria in 10 CFR 830.120, Subpart A, Quality Assurance Requirements, as it applies to nuclear facilities and activities, the applicable QA criteria in ASME, Nuclear Quality Assurance (NQA)-1-2004 and addenda through 2007, QA Requirements for Nuclear Facility Applications (NQA-1-2004), and the PMA implementing performance documents.

The alignment of Contractor Assurance System (CAS) criteria of DOE O 226.1B, Implementation of DOE Oversight Policy, requirements with the QAPP/QIP, PMA/PORTS-55, Integrated Safety Management System (ISMS) Plan and Voluntary Protection Program (VPP) Tenets is shown in Appendix B of this plan, and is further described in PMA/PORTS/16-0756, CAS. This QAPP/QIP primarily implements DOE O 414.1D, and applicable 10 CFR 830.120 Subpart A and NQA-1-2004 Parts I and II criteria as aligned in Appendix A of this plan, and serves as the “prime” QA plan for implementing the QA Program for ISS. Although the DOE EM QAP has adopted NQA-1-2008 and addenda through 2009, PMA continues to invoke NQA-1-2004 in accordance with EM QAP, Sect. 3.0. Applicability: “For those sites that use NQA-1-2004 with addenda through 2007, EM has completed the required review and concluded that the differences in the standard do not result in any additional risks to the quality of EM work, or services. As such, a variance or exemption is not required to implement NQA-1-2004 with addenda through 2007.”

PMA has considered the non-mandatory guidance in NQA-1-2004 Parts III and IV in development of the QAPP/QIP, but since the PMA scope of work is primarily non-nuclear (including non-nuclear work in nuclear facilities), this guidance has only been applied where needed to clarify wording in some QAPP/QIP sections and associated performance documents (e.g., Appendix 2A-3, “Guidance on the Education and Experience of Lead Auditors” and 2A-4, “Guidance on Surveillance for Use in Assessment of Processes and Activities” in QAPP/QIP Sections 1.2. QA Program, 9. Management Assessment, and 10. Independent Assessment, and associated Performance Documents: PMA-2601, Oversight Activity – Independent Conformity Assessment; PMA-2602, Oversight Activity – Management Conformity Assessment; and PMA-2620, Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments).

If conflicts occur between this QAPP/QIP, other QA Plans, and lower-tier documents, the requirements of this QAPP/QIP shall govern. Any conflicts involving interpretation of the requirements in this QAPP/QIP shall be resolved by the PMA Quality Manager.

Selected programs or projects may impose unique QA requirements on their activities. Such special QAP requirements are added to, and integrated where possible with, the basic PMA QAP requirements for the affected facilities and activities. These special QA requirements will be applicable to a specific work scope and will be followed by PMA and/or subcontractor personnel. Depending on QA requirements for specific programs, projects, and functions, additional QA plans may be required and developed to provide the guidance for those specific activities. An example of this is the Facility Information Management System (FIMS) QA Plan, developed to cover the Deferred Maintenance Program required by DOE O 430.1B, Real Property Asset Management. Any project or program specific QA plan will be prepared according to DOE requirements and guidance documents under the direction and approval of the Quality Manager. A list of these PMA sub-tier QA plans will be maintained by the Quality function.

PMA flows down requirements of this QAPP/QIP to subcontractors through subcontract language in procurement documents, specifying work scopes subject to DOE O 414.1D, 10 CFR 830.120, Subpart A, and NQA-1-2004 criteria, as applicable. Subcontractors must address all applicable criteria in their project specific QA Plans when required by subcontract language. If any of the criteria do not apply to the Scope of Work, the Subcontractor shall provide justification in their QA Plan. QA Plans submitted by subcontractors are reviewed and approved by PMA prior to starting work. Companies performing limited scopes of work may be allowed to follow applicable sections of the PMA QAP in executing work scope.

The QAPP/QIP is reviewed and updated annually in accordance with the ISS Contract. Effectiveness is evaluated as part of the annual ISMS and QA Declaration report submitted to DOE, which demonstrates ISMS and QA implementation.

The PMA QAP is a management system that addresses three major elements: managing, performing, and assessing the adequacy of work. The management element includes establishing the work organizational structure, responsibilities, levels of authorities, interfaces, personnel training and qualifications, continuous improvement, documents and records, planning, scheduling, and resource considerations. The performance element includes work processes, design, procurement, and inspection and acceptance testing. The assessment element includes management conformity assessments (MA) and independent conformity assessments (IA) of self-performed and subcontractor programs, processes, and activities.

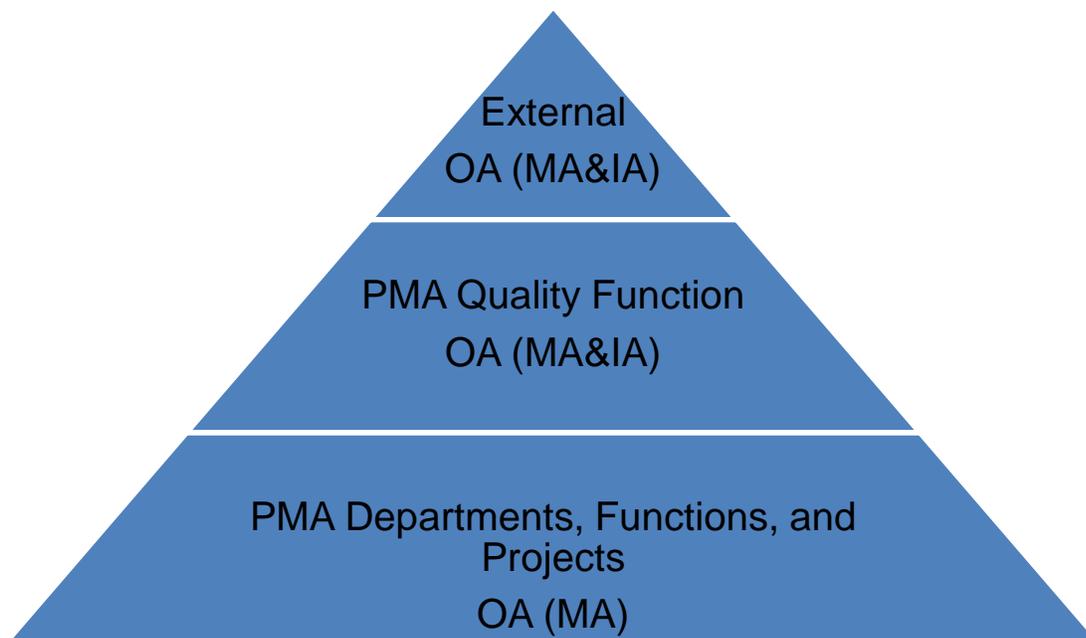
This QAP applies to all PMA personnel, in accordance with contract requirements, including those responsible for planning and scheduling activities. The PM ensures, through General Employee Training (GET), quality employee orientation, and other processes that the fundamentals and integration of the QAP are understood. PMA may provide additional orientation training to meet facility or project-specific needs as appropriate.

Contract requirements to accomplish the scope of work are identified in the DOE Quality Assurance Surveillance Plan (QASP) (Attachment J-11 to DE-EM0004062). Appendix A, "Performance Requirements Summary (PRS) of the QASP", identifies nineteen (19) CLINs in the PWS, and one hundred and ninety-five (195) performance standards to meet the CLINs, which encompass the Contract scope of work. The AQL is identified for each performance standard. This QAPP/QIP and ISMS, as integrated into the CAS, provide the underlying

programs and processes to monitor, oversee, and report to DOE successful performance of the QASP.

Assessment of the Contract and underlying quality programs (QAPP/QIP, ISMS, CAS, and QASP) are accomplished through an Integrated Oversight Program (IOP) that integrates the requirements of this QAPP/QIP and the ISMS Plan to provide an overarching framework for ensuring compliance with contractual and regulatory requirements, while providing performance feedback for the continuous improvement of PMA and subcontracted work activities (see Fig. 1).

Figure 1. Integrated Oversight Program (IOP) Tiers



The IOP applies a graded (risk based - probability and consequence) approach to oversight through three tiers of internal and external oversight activities (OA). Stronger emphasis is placed on OA for facilities, processes and products with regulatory drivers (environmental, etc.), and significant risks to worker safety and health (S&H). OAs include walkthroughs, walkdowns, walkarounds, inspections, surveillances, reviews, evaluations, and other types of OA, which generally evaluate processes, products, and facilities over varying time intervals. Collectively, these OAs are designated internal, external, graded, MAs, and IAs. Graded assessments (GAs) are generally MAs of limited extent, level or degree, rate activity (i.e., acceptable, other), and generally include walkthroughs, walkdowns, walkarounds, and inspections. Generally, MAs have shorter time intervals from start to completion than IAs.

MAs, performed in accordance with Sect. 9 of this plan, are conducted by Line Management to assess their department, function, and project to determine how well they meet customer and performance expectations and mission objectives, identify strengths or improvement

opportunities, and correct problems. Emphasis is placed on evaluating performance in the field. Supervisory and other daily oversight, inspections, and interfaces with the workers are evaluated along with worker performance and training.

IAs, performed in accordance with Sect. 10 of this plan, are generally overall programmatic reviews performed by qualified lead assessors. They are established by the PM to evaluate compliance and performance of work processes, project readiness, subcontractors and suppliers, MAs with regard to requirements, expectations of customers, and efforts required to achieve the mission and goals of the organization. The degree of independence of the assessment team (free of direct responsibility in the area assessed and carried out without a vested interest in the result) is the primary differentiator from MAs. Third party reviews, although commonly associated with independent assessments and discussed in Sect. 10 of this plan, are performed by external organizations not associated with DOE or PMA and may be performed as IAs or MAs.

External assessments (EAs) are generally overall programmatic reviews performed by organizations external to PMA [e.g., parent companies, DOE field offices and headquarters, Enforcement, Inspector General (IG), General Accounting Office (GAO), Defense Nuclear Facilities Safety Board (DNFSB), and State regulatory agencies], and may include MA or IA.

The first (lowermost) tier of the IOP consists of department, function, and project OA conducted or led by Line Management, or by personnel on behalf of Line Management. The second tier consists of OA conducted or led by the Quality function and other personnel not associated with the department, function, or project being assessed. The third tier consists of external OA conducted by organizations external to PMA (e.g., parent companies, DOE project and field office, IG, GAO, DNFSB, state regulatory agencies), including those addressed in the QA Plan in accordance with contract clause E1, “Inspection of Services – Fixed Price”; E2, “Inspection of Services – Cost-Reimbursement”; and C.2.2, “Environmental, Safety, Health, and Quality Program”.

The upward tapering shape of the IOP diagram generally depicts the broad foundation and responsibility for OA manifested in departments, functions, and projects, overlain by focused levels of OA performed by the Quality function and external organizations.

Additional oversight is performed by subcontractors and suppliers as required in their contract language. The IOP is implemented through the issuance of a Fiscal Year (FY) IOP Plan. The purpose of the IOP Plan is to provide reasonable assurance that PMA and its subcontractors perform work in a safe and compliant manner consistent with the DLS, and QASP requirements. The plan incorporates requirements to determine if comprehensive systems or processes are in place to assure work can be completed in a safe, controlled manner, including requirements to determine if work is being performed in accordance with the established systems and overlying specifications.

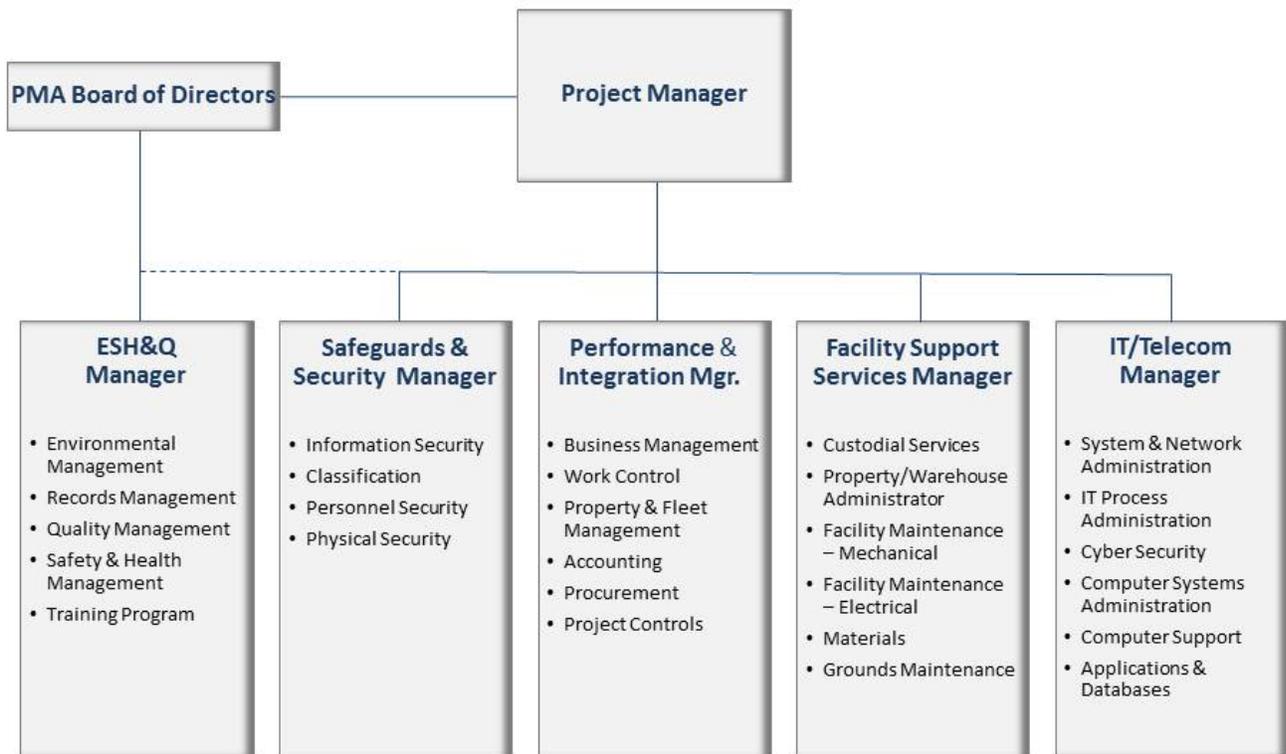
All deficiencies associated with the requirements of 10 CFR 820, Procedural Rules for DOE Nuclear Activities; 10 CFR 830, Nuclear Safety Management; 10 CFR 835, Occupational Radiation Protection; 10 CFR 851, Worker Safety and Health Program; and 10 CFR 824, Procedural Rules for the Assessment of Civil Penalties for Classified Information Security Violations, are evaluated for potential reportability in accordance with the DOE Office of Enterprise Assessments (OEA), Non-compliance Reporting Thresholds. The reporting thresholds

encompass regulatory requirements pertaining to worker S&H, nuclear safety, and classified information security programs, and provide assurance that workers are protected from hazards in the workplace, the potential danger to life and property from the operation of DOE nuclear facilities is minimized, and classified matter is protected from disclosure to sustain national security. Corrective actions are tracked through closure in the PMA Commitment Tracking System (CTS).

1.3 Organization and Responsibilities

The organizational structure, responsibilities, levels of authority, and interfaces for those planning, managing, performing, and assessing the work are defined in company plans, policies, procedures, and subcontracts, as appropriate. The company documents, which describe the quality management system, are prepared in accordance with the DLS, which prescribe a comprehensive management system for DOE work. The quality management system is fully integrated with and complements the DOE ISMS. Work organizational interrelationships are included in the PMA Organization Chart (see Fig. 2).

Figure 2. PMA Department and Functional Organizational Chart



The Organization Chart shows the Board of Directors (BOD), PM, Departmental Manager, and Functional levels of the organization. Roles, responsibilities, authorities, and lines of communication (RRAL) are identified in an RRAL Matrix maintained separately from this

QAPP/QIP by the Quality function, and in the listed documents and implementing procedures discussed in each section of this plan. Appendix A of this plan shows a crosswalk of DLS quality requirements and PMA implementing procedures.

In the PMA organization, Line Management [including the PM, Departmental Managers, and Functional Managers, leads, coordinators, and supervisors] has the responsibility and accountability for the scope and implementation of the QAP as it applies to their department, function, and project responsibilities. Line management delegates responsible and accountable backup personnel for their positions when they are not on plant-site in accordance with PMA-56005, Delegation of Authority. Line management is responsible and accountable for flowing down and implementing the company structure and objectives set forth by the PM, or Designee, and BOD, through DLS compliant programs, processes, associated deliverables, staffing, direction, training, mentoring, oversight, planning, budgeting, scheduling, and providing resources for effective project execution. Departmental managers' report directly to the PM, or Designee, with the exception of the ESH&Q Manager who has dotted line reporting to the PM, or Designee, and direct line reporting to the BOD for independence. Functional Managers, leads, coordinators, and supervisors report directly to departmental managers. Other organizational personnel report directly to Functional Managers, leads, coordinators and supervisors.

Selected personnel may be recognized as a Subject Matter Expert (SME), (i.e. knowledgeable person) by their Line Manager and listed on Safety and/or Business Management Systems SMEs lists maintained by the Quality function. In accordance with a graded approach as described in Sect. 1.5 of this plan, the term SME is defined by PMA in a non-nuclear context as: an employee who is knowledgeable about the professional standards, requirements, and practices used within the discipline he/she represents. The recognition of an SME is solely based on line manager discretion and recorded through concurrence with the SME lists maintained by the Quality function. SMEs are points of contact for exchanging information, coordinating activities, answering questions, reviewing documents, screening lessons learned, etc.

All personnel are held directly responsible and accountable for the safety and quality of their work, with Line Management having final responsibility and accountability for the achievement of safety and quality.

All personnel have the responsibility to immediately pause/suspend/stop work if an activity seriously jeopardizes safety, health, the environment, or quality, as defined in PMA procedures. These responsibilities are passed down to subcontractors through subcontract language. The PMA contracts/procurement staff is responsible for pausing/suspending/stopping subcontracted work to ensure that planning or scheduling considerations do not override safety or quality considerations. Prior to the restart of subcontracted or PMA self-performed work after a work pause/suspension/stoppage, appropriate reviews or assessments shall be planned, performed, and documented, as required by PMA procedures, to verify that conditions, which warranted the work pause/suspension/stoppage are resolved and corrective actions are completed.

PMA external business organizational interfaces are primarily through parallel alignment with the RRAL of the external organizations and a declared need for interface. The PM and departmental and functional managers generally interface directly with their counterparts in external organizations, including Government Furnished Services and Items (GFS&I) providers, as required to perform the PMA contract scope of work. The Performance and Integration (P&I)

Manager is the primary interface point of contact for awareness, tracking, and facilitating the resolution of external quality issues. This provides for optimum exchange of business information and customer service. Although direct business interface is encouraged, human, equipment and material resources, sensitive and proprietary documents, purchasing, and other support needs with potential cost, schedule, technical, and security impact to PMA must be reviewed and approved by the departmental managers, PM, and/or P&I Manager, as applicable.

PMA purchasing authority levels for the PM or Designee, departmental and functional managers, and other selected personnel are established by the PM, or Designee, and the BOD through the Business Management Department.

Formal work agreements with external business organizations are established by Business Management and may include master agreement/task order, work authorization, or other service type contracts. These contracts are written to ensure organizational roles and responsibilities are defined, and ESH&Q and other requirements are effectively flowed down.

1.3.1 Board of Directors

The PMA BOD is comprised of corporate officials from North Wind Group and Swift & Staley Inc. The BOD is responsible and accountable to:

- Fully, execute the contract scope of work and ensure performance;
- Engage directly with PORTS contractors' senior management teams to resolve issues and solicit feedback;
- Oversee performance work standards, monthly and quarterly reviews of safety, quality, cost and schedule, financial performance, resource management, deliverables, and milestone status;
- Ensure the performance of the PM; and
- Resolve any issues with DOE beyond the authority of the PM.

1.3.2 Project Manager

The PMA PM reports directly to the BOD and to DOE/Portsmouth/Paducah Project Office (PPPO) for effective performance of all work under this project. The PM is responsible and accountable for day-to-day leadership, management, administration, and technical oversight for effective project execution within a framework of worker, public, environmental safety, and quality in accordance with the PMA contract federal, state, local DLS, and associated deliverables. The PM is responsible and accountable for the mission, vision and values, safety and quality cultures, organizational structure, roles and responsibilities, levels of authority, business systems, training, and performance objectives.

1.3.3 Environmental, Safety, Health, & Quality Department

The PMA ESH&Q Departmental Manager reports directly to the BOD and indirectly to the PM or Designee. The ESH&Q Manager is responsible and accountable for the Quality (including Performance Documents), Safety & Health, Environmental, Training, and RMDC functions.

The ESH&Q Manager facilitates Emergency Management through the D&D Contractor Emergency Management Manager. Key programs and processes include, but are not limited to: QAPP/QIP, ISMS Plan, ISMS and QA Declaration, VPP, EMS, Training (plans, modules, instructors, and databases), Performance Documents (policies, procedures, forms, configuration management), the Joint Emergency Plan, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Administrative Record (AR), Energy Employees Occupational Illness Compensation Program Act (EEOICPA) and Freedom of Information Act (FOIA) requests, Records Processing and Document Control, and Mail.

The PMA Quality Functional Manager reports directly to the ESH&Q Manager, with an independent line of reporting to the PM or Designee and BOD. The Quality Manager is responsible and accountable for processes and products including, but not limited to: DOE and Other Prime Contractor primary interface on quality issues, quality management and assurance program development and direction, QAPP/QIP, ISMS and QA Declaration, Integrated Oversight Plan (management and independent assessment), occurrence and other reporting (incident, non-conformance, enforcement, etc.), Operating Experience/Lessons Learned, CTS, Suspect/Counterfeit Items (S/CI) support, Software Quality Assurance (SQA) support, Senior Review Board (SRB), performance documents (policies and procedures, configuration management, controlled access, and history files), document quality review, and media (cost reduction tracking and reporting, customer satisfaction survey, and process and data analysis and graphics presentation).

The PMA Records Management Functional Manager reports directly to the ESH&Q Manager. The Records Management Manager is responsible and accountable for processes and products including, but not limited to: records management plan, non-classified and classified records processing, storage, maintenance, preservation, disposition, and retrieval, document control, EEOICPA/FOIA documents support, Administrative Record, Environmental Information Center, and non-classified and classified mail, and document reproduction services.

The PMA Environmental Functional Manager reports directly to the ESH&Q Manager. The Environmental Manager is responsible and accountable for processes and products including, but not limited to: EMS, regulatory compliance, waste management/minimization, pollution prevention, recyclables, environmentally friendly purchasing, chemical inventory, and sustainability.

The PMA Training Program Lead reports directly to the ESH&Q Manager. The Training Program Lead is responsible and accountable for processes and products including, but not limited to: training plans, modules, instructors' qualifications, classroom and computer based training, records and databases.

The PMA S&H Functional Manager reports directly to the ESH&Q Manager. The S&H Manager is responsible and accountable for processes and products including, but not limited to: ISMS Plan, ISMS and QA Declaration, and S&H [hazard review, Activity Hazard Analysis (AHA), hearing conservation, respiratory protection, lockout/tagout, electrical, fall protection, excavation/penetration, welding and burning, hoisting and rigging, confined space, construction, motor vehicle, pressure vessel, etc.].

The PMA Senior Safety Engineer reports directly to the S&H Functional Manager. The Senior Safety Engineer is responsible and accountable for processes and products including, but not limited to: ISMS Plan, ISMS and QA Declaration, VPP, medical service, and safety training.

1.3.4 Business Management Department

To maximize effective implementation of the fixed-price contract, the Human Resource, Business Management, and Quality Assurance Surveillance Plan (QASP) Customer Service functions report directly to the P&I Manager. Key programs and processes include MBM reporting, Human Resource functions, Work Control, Property and Fleet Management, and Business Management. The P&I Department facilitates monthly performance self-assessment and reporting of successful accomplishment the DOE Quality Assurance Surveillance Plan (QASP) (Attachment J-11 to DE-EM0004062), which through nineteen (19) CLINS and one hundred and ninety-five (195) performance standards and associated Acceptable Quality Levels (AQLs), encompasses the Contract scope of work.

The PMA Performance and Integration (P&I) Manager reports directly to the PM and is responsible and accountable to the PM for project integration functions for the contract. Primary responsibilities include implementing a metrics based management (MBM) system focused on collecting and evaluating data to keep the PM and entire team informed on work progress. The P&I Manager will lead separate, independent reviews of work activities and oversight support, reporting results directly to the PM. A primary responsibility of the P&I Manager is to facilitate and maintain the culture change necessary to transition the existing work force from work under a cost-reimbursable to a fixed-price contract. The P&I Manager will also facilitate communications with all site tenants to minimize the impact of contract changes on services provided and to address concerns before they are elevated to DOE as complaints.

The PMA HR Functional Manager reports directly to the P&I Manager. The HR Manager is responsible and accountable for processes and products including, but not limited to: employee postings, Mission Support Services Department

The PMA Work Control Functional Manager reports directly to the P&I Manager. The Work Control Manager is responsible and accountable for processes and products including, but not limited to: Daily Activities List, planners, Operating Experience Lessons Learned (OELL) facilitation, pre-job walkdown coordination, pre-task hazard review and AHA coordination, work packages development, completion, and closeout coordination. Additionally, the Work Control Manager is responsible for planning and scheduling work for the Facility Support Services (FSS) department, maintaining the computerized maintenance management system (SOMAX) work control database, developing and tracking work packages for FSS work, developing and tracking metrics for QASP elements and reporting to the P&I Manager, training department interface for equipment job performance measures (JPM) and on-the-job training (OJT), and relief to other supervisors.

The PMA Property and Fleet Manager reports directly to the P&I Manager. The Property and Fleet Manager is responsible and accountable for processes and products including, but not limited to: administer the Personal Property Management System, maintain FIMS and Property Information Database System (PIDS), disposition surplus property, administer the vehicle and equipment fleet program, and fuel management.

The PMA Project Controls Functional Manager reports directly to the P&I Manager. The Project Controls Manager is responsible and accountable for processes and products including, but not limited to: Work Breakdown Structure dictionary and basis of estimate, Performance Measurement Baseline, Risk Management Plan, Monthly Progress Report, Invoice Performance Report (including QASP self-assessment), Baseline Change Proposal, Annual Work Plans, and information requests and audit support.

The PMA Business Management Functional Manager reports to the P&I Manager. The Business Manager is responsible and accountable for the Accounting and Procurement functions. Key programs and processes include, but are not limited to: Payroll, Accounts Receivable/Payable, Standards Management, Purchasing and Prime and Subcontract Management.

The PMA Accounting Functional Manager reports directly to the Business Manager. The Accounting Manager is responsible and accountable for processes and products including, but are not limited to: accounts receivable/payable, timesheets, payroll, financial statements, and internal audit.

The PMA Procurement Functional Manager reports directly to the Business Manager. The Procurement Manager is responsible and accountable for processes and products including, but are not limited to: purchasing, work authorizations, estimates, subcontracts, warranties, and claims.

1.3.5 Mission Support Services Department

The Mission Support Services Department is headed by the PMA Security Departmental Manager, who reports directly to the PM or Designee. The Security Manager is responsible and accountable for the Information Security, Personnel Security, and Physical Security functions. Key programs and processes include, but are not limited to: Information, Physical, and Personnel Security, and Classification and Declassification.

The Security Manager is responsible and accountable for programs and processes including, but not limited to: badging, facility registration, operations security, information security, export control, personnel security, computer security, technical surveillance countermeasures, classification/declassification, classified matter protection and control, and lock and key control.

1.3.6 Facility Support Services Department

The PMA FSS Departmental Manager reports directly to the PM or Designee. The FSS Manager is responsible and accountable for the Construction Engineer, Facility Management, Custodial Services, Facility Maintenance Mechanical, Grounds Maintenance, Facility Maintenance Electrical, Materials, and Work Control functions. Key programs and processes include, but are not limited to: project supervision, facility life and safety, janitorial services, mechanical and mobile equipment preventive and corrective maintenance, grounds, roads, culverts, bridges, fences, and signs maintenance, electrical and instrumentation preventive and corrective maintenance, material shipping and receiving, and work packages development, completion, and closeout.

With the Facility Manager, the FSS Manager is responsible for project determination, planning and development, execution plan, readiness, implementation, supervision, and closeout,

engineering evaluations, estimating, design, configuration management (e.g., sketches and drawings), Pre-Task Hazard Review (PTHR) and AHA development liaison, conduct of operations, and hoisting and rigging and pressure vessels inspection.

The PMA Facility Manager reports directly to the FSS Manager, and may double as the Construction Engineer when otherwise not assigned. The Facility Manager is responsible and accountable to the FSS Manager in implementing his role, responsibilities and authority for effective department execution. The Facility Manager assumes authority and directs functional management as delegated by the FSS Manager to effectively accomplish department execution. Primary responsibilities include, but not limited to: facility work authorization, interface and coordination, project supervision, Shared Site Committee, safety basis adherence, office assignment, facility general life and safety inspection, and as-built drawings.

The PMA Custodial Services Functional Supervisors report directly to the FSS Manager. The Custodial Supervisors are responsible and accountable for processes and products including, but not limited to: facility cleaning, trash collection, collecting recyclables, and tool-less re-lamping.

The PMA Facility Maintenance - Mechanical Functional Supervisor reports directly to the FSS Manager. The Mechanical Supervisor is responsible and accountable for processes and products including, but not limited to: building renovation and repair (structural), pipe fitting, welding, and sheet metal working, Heating, Ventilation and Air Conditioning (HVAC), vehicles and mobile equipment, preventive and corrective maintenance, and painting.

The PMA Grounds Maintenance Functional Supervisors report directly to the FSS Manager. The Grounds Supervisors are responsible and accountable for processes and products including, but not limited to: grass mowing and weed trimming, tree and brush cutting, trash removal, pest control, snow/ice removal, road grading, pothole repair, striping, culvert and ditch maintenance, road signage, bridge inspection and repair, and boundary and other fence maintenance.

The PMA Facility Maintenance - Electrical Functional Supervisor reports directly to the FSS Manager. The Electrical Supervisor is responsible and accountable for processes and products including, but not limited to: building renovation and repair (electrical component and system troubleshooting), preventive and corrective maintenance, Measuring and Test Equipment (M&TE) calibration and repair, and computer maintenance.

The PMA Materials Supervisor reports directly to the FSS Manager. The Materials Supervisor is responsible and accountable for processes and products including, but not limited to: material receipt and delivery, and material storage and shipments.

The PMA Property/Warehouse Administrator reports directly to the FSS Manager. The Property/Warehouse Administrator is responsible and accountable for processes and products including, but not limited to: administer the Personal Property Management System, maintain FIMS and PIDS, disposition surplus property, administer the vehicle and equipment fleet program, and fuel management.

1.3.7 Information Technology/Telecommunications Department

The PMA Information Technology (IT)/Telecommunications (IT/Telecommunications) Departmental Manager reports directly to the PM or Designee. The IT/Telecommunications

Manager is responsible and accountable for the Cyber Security, System and Network Administration, Computer Support, and Applications and Databases functions. Key programs and processes include, but are not limited to: computing infrastructure (computers, monitors, printers, servers, data storage, switches, routers, scanners and installation, maintenance, repair, upgrade, and customer service of related components), telephone, cell, personal digital assistant, radio, pager, video/web conferencing access and support, copiers and faxes, computer network (Local Area Network (LAN) administration), software, maintenance, repair, upgrade, and customer service, access to DOE systems and databases, software application administration, configuration management, SQA, and Cyber Security Asset Classification and Control.

The PMA Cyber Security Functional Manager reports directly to the IT/Telecom Manager. The Cyber Security Manager is responsible and accountable for processes and products including, but not limited to: asset classification and control, access control, systems development, communications and operations management, and business continuity.

The PMA System and Network Technical Lead reports directly to the IT/Telecommunications Manager. The System and Network Technical Lead is responsible and accountable for processes and products including, but not limited to: computer infrastructure, helpdesk and applications projects involving software, maintenance, repair, and upgrades, and other special IT projects.

The PMA IT Process Administrator is responsible for all administrative tasks related to various IT processes. These duties include but are not limited to: self-assessments on IT processes and system administration, IT process and budget input to monthly DOE project execution reporting, monitoring and reporting on organization performance and metrics, the primary IT procurement interface, IT administration, tracking and general administration of IT equipment, software and supplies, and participation in the design and implementation of policies and procedures.

The PMA Computer Support Coordinator reports directly to the IT/Telecommunications Manager. The Computer Support Coordinator is responsible and accountable for processes and products including, but not limited to: Help Desk operations to identify and resolve IT/Telecommunications issues, coordination of Instrument and Electrical Technicians and Computer User Support personnel to install and maintain equipment, perform upgrades, and respond to Help Desk issues, and coordination of vendors for installation and maintenance of copiers and printers.

The PMA Computer System Administrators Coordinator (currently in dual role as IT/Telecommunications Manager) reports directly to the IT/Telecommunications Manager. The Computer Support Administrators are responsible for development, monitoring, configuration control, and maintenance of IT network.

The PMA Database Administrator reports directly to the IT/Telecommunications Manager. The Applications and Database Supervisor is responsible and accountable for processes and products including, but not limited to: Enterprise Resource Planning (ERP) Applications (Deltek GCS, Time Entry, SOMAX, PMCP, Primavera, etc.), specific D&D project applications (e.g., Documentum, PIDS), system database administration for all site shared databases hosted for the D&D project and PMA databases, and SQA. The PMA Cyber Security Functional Manager reports directly to the mission support services (MSS) Manager. The Cyber Security Manager is responsible and accountable for processes and products including, but not limited to: asset

classification and control, access control, systems development, communications and operations management, and business continuity.

1.4 Management Processes

The QA Program describes management processes which include: planning, scheduling, resource allocation, training and verifying qualifications of personnel, identifying opportunities for improvement, and controlling documents and records. Line management has ultimate responsibility for these elements that are defined in implementing procedures, and are prepared in accordance with the DLS. In the planning process, the basis for initial identification of quality requirements, and the controls necessary to ensure their achievement are established. This includes having a sound basis for decisions, assumptions, and methods selection relating to personnel, material/service costs, availability, productivity, and scheduling of all aspects of the work. PMA uses a project controls system that accurately reflects the project status, relative to cost and schedule and tracks changes to the baseline. The baseline for this system is in accordance with DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets.

For work assigned to organizations outside PMA, management controls are established, responsibilities are assigned, and lines of communication are identified in accordance with the controls for procured items and services. Interfaces with the other PORTS contractors, American Centrifuge Plant (ACP), D&D, and Depleted Uranium Hexafluoride (DUF6) conversion plant, are documented in DOE contracts, GFS&I agreements, and in PMA work authorization agreements or subcontracting agreements through the procurement process. In addition, provisions are included in the work authorization or subcontract for oversight of these activities based on a graded approach as described in Sect. 1.5 of this plan.

1.5 Graded Approach

Consistent with Sect. 4.a., 6.h., and Attachment 1, “Contractor Requirements Document (CRD)”; Sect. 1 of DOE O 414.1D; Sect. 2.0 of EM QAP; Sect. 4.1.3 of DOE G 414.1-2B, Quality Assurance Program Guide; and 10 CFR 830.7, Graded Approach, PMA applies the QA requirements of the DLS and associated guidance documents using a graded approach. The graded approach is designed to select the controls and verifications to be applied to various items and activities consistent with their importance to safety, cost, schedule, and success of the program, and grading provides the flexibility to design controls that best suit the facility or activity. The grading process is used to determine the appropriate controls to address and mitigate hazards and/or risks. This process is accomplished by deliberate quality planning and is based on activity-specific or facility-specific factors, such as:

- DOE EM mission;
- The relative importance to safety, safeguards, and security;
- The magnitude of any hazard involved;
- The life cycle stage of a facility or project;
- Impact/consequences on programmatic mission of the facility/activity or project;

- Particular characteristics of the facility, project or activity;
- The nuclear safety classification or hazard category of the item or activity;
- Adequacy of existing safety documentation;
- The relative importance of radiological and non-radiological hazards;
- Complexity of products or services involved;
- Performance history problems at a site, facility, activity, or project; and
- Any other relevant factors.

The implementing procedure PMA-2615, Graded Approach Application, describes in detail how the graded approach is applied. This procedure describes the application of a graded approach to facilities, activities, and programs. The four steps in the grading process are: (1) identify the hazards, and for the facility level their consequences and probability of a failure, before work begins, (2) identify the specific requirements and controls to be applied, (3) determine the depth, extent, and degree of rigor necessary in the application of the requirements and controls, and (4) communicate and implement the selected requirements, controls, and their degree of rigor by means of documented work processes.

PMA has identified seven criteria to consider in establishing and applying grading. The grading information and guidance is applied to facilities, activities, and programs through implementing documents, procedures, and instructions.

Assigning a Facility Grade Level to facilities based on facility hazard category, remaining life, and the importance of certain facility structure, system, or component (SSCs) important to safety.

- Implementing a graded approach of 10 CFR 830.120, Subpart A, and NQA-1-2004 requirements for Facility Grade Levels.
- Providing guidelines to grade Safety Management Program (SMP) elements and other program requirements applied to facilities and activities
- Assigning a Quality Level (QL) to work and activities.
- Facility Grade Levels and grading are mandatory for Hazard Category 2 and Hazard Category 3 Nuclear Facilities and Radiological Facilities and activities.
- Facility Grade Levels should be applied to high and moderate chemical hazard category facilities and activities, and permitted environmental facilities and activities.
- Facility Grade Levels may be applied to other industrial and low chemical hazard facilities depending on programmatic and project needs.

QLs are used to grade Work and Procurement activities, and take precedence over Facility Grade Levels for activities in these areas. QLs generally apply as follows:

- QL-1 – Work on Facility Grade A Safety Class SSCs, Active Safety System, Defense-in-Depth, and credited Design Features SSCs;
- QL-2 – Work on Facility Grade B Active Safety System, Defense-in-Depth, and credited

Design Features SSCs;

- QL-3 – Work on Facility Grade C Active Safety Systems, Defense-in-Depth and credited Design Features SSCs in Radiological facilities; and
- QL-4 – Work on Facility Grade D SSCs, and work not involving Active Safety System, Defense-in-depth, and credited Design Features SSCs in any grade facility. QL-4 applies to commercial practice and generally does not involve specified quality attributes beyond catalog description or company profile. QL-4+ is applied to items and services that, because of ISMS and quality considerations, warrant additional quality attributes (e.g. receipt inspection, laboratory [other] certification, certificate of calibration, certificate of conformance, license, independent testing, QA plan).

Facility grade levels are used to define the degree of rigor applied. DOE Standard 073-2003, Configuration Management, provides criteria for use in a graded approach process. Facilities and work activities have been evaluated using facility hazard category, SSC importance, safety, and facility remaining life criteria, and in some cases, facility operational status. As a result, PMA has elected to use four Facility Grade Levels (and corresponding QLs) for facilities and activities as indicated in Sects. 1.5.1 to 1.5.4:

1.5.1 Grade Level A (Quality Level 1) – High Pedigree

Applicable to:

- Hazard Category 1 nuclear facilities with facility life greater than two years, and
- Hazard Category 2 nuclear facilities with safety class SSCs and a facility life greater than five years.

The impact from physical changes must be closely controlled and managed to ensure compliance with facility safety basis and design basis. Level A facilities would include operational nuclear reactors.

NOTE: *There are currently no assigned facilities recommended at this grade level, and work or procurement activities recommended at this quality level.*

1.5.2 Grade Level B (Quality Level 2) – Augmented Standards

Applicable to:

- Hazard Category 1 nuclear facilities that have active safety systems or credited Design Features and have a remaining facility life greater than two years,
- Hazard Category 2 and 3 nuclear facilities that have active safety systems or credited Design Features and have a remaining facility life greater than five years, and
- Hazardous material facilities classified as High and a remaining life of greater than five years.

The impact from physical changes must be controlled and managed to ensure compliance to the facility safety basis.

NOTE: *There are currently no assigned facilities recommended at this grade level, and work or procurement activities recommended at this quality level.*

1.5.3 Grade Level C (Quality Level 3) – Standard Practice

Applicable to:

- Hazard Category 1 nuclear facilities that do not have active safety systems or credited Design Features and have a remaining facility life of less than five years;
- Hazard Category 2 and 3 nuclear facilities that have active safety systems or credited Design Features and have a remaining facility life of five years or less;
- Hazard Category 2 and 3 nuclear facilities that do not have active safety systems or credited Design Features regardless of remaining facility life;
- Hazard Category 2 and 3 nuclear facilities that do not have active safety systems or credited Design Features regardless of remaining facility life;
- Radiological and hazardous material facilities classified as High and have a remaining life of five years or less;
- Radiological and hazardous material facilities classified as Moderate or Low regardless of remaining facility life; and
- Inactive Waste Sites (IWS).

Control of facility changes is required to the extent that commitments in the facility safety basis (or other regulatory commitments such as environmental) are maintained.

NOTE: *There are currently no assigned facilities recommended at this grade level, and work or procurement activities recommended at this quality level.*

It is unlikely that work or procurement activities will be performed at this quality level other than possibly maintenance and calibration of equipment and non-radiological services (more complex than current custodial) performed in a nuclear/radiological/contaminated facility or area. On this basis, it is reserved for usage as appropriate.

1.5.4 Grade Level D (Quality Level 4 or 4+) – Commercial Practice

Applicable to:

- Other industrial facilities and standard industrial activities and facilities such as office buildings and warehouses which do not have radiological or hazardous materials or safety-related components requiring controlled storage environment.

Change control not required, no safety basis other than ISMS involved with facilities.

NOTE: *This grade level is currently applied to all assigned facilities, and this quality level or QL-4+ is applied to associated work and procurement activities.*

QL-4+ may be applied at the discretion of the Quality Manager to items and services that, because of ISMS and quality considerations, warrant additional quality attributes (e.g. receipt

inspection, laboratory [other] certification, certificate of calibration, certificate of conformance, license, independent testing, QA plan).

PMA applies the ISMS program, including pre-task hazard review and AHA, safety basis and change control to Grade Level D assigned facilities to ensure job hazards are not outside the established safety envelope.

In accordance with the contract, when PMA performs non-nuclear preventive and corrective maintenance activities in non-nuclear and nuclear facilities assigned to another contractor, PMA operates in accordance with the requirements of the safety basis maintained by the other contractor. PMA will work within the resources of the contractor maintaining the safety basis to resolve safety basis issues. The safety basis for Grade Level B and C facilities and activities (Category 2 and 3 nuclear facilities, radiological and Low, Moderate and High hazardous material facilities) is maintained by the ACP, D&D, and DUF6 conversion plant contractors. PMA will enhance its non-nuclear safety basis in accordance with changes in the contract scope of work, as assigned by the CO to meet changing needs.

1.6 Alternative Standards

Alternative QA standards may be applied to activities when approved by the CO through formal processes. The primary alternative standard included in this QAPP/QIP is ASME NQA-1-2004 and addenda through 2007, Quality Assurance Requirements for Nuclear Facility Applications. Although the DOE EM QAP has adopted NQA-1-2008 and addenda through 2009, PMA continues to invoke NQA-1-2004 in accordance with QAP, Sect. 3.0 Applicability: For those sites that use NQA-1-2004 with addenda through 2007, EM has completed the required review and concluded that the differences in the standard do not result in any additional risks to the quality of EM work, products or services. As such, a variance or exemption is not required to implement NQA-1-2004 with addenda through 2007.

Other alternative standards may be discussed in the various sections of this plan. Before additional alternative standards are applied, this QAPP/QIP will be revised to fully incorporate the standards. Some special program requirement documents and other consensus standards that may be considered in developing QAPP/QIP requirements that apply to a specific scope of work include the following:

- American National Standards Institute (ANSI)/American Society for Quality (ASQ) E-4, Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs, and
- International Organization for Standardization (ISO) 14001, Environmental Management Systems.

Safety of the public, workers, and the environment is ensured through the implementation, maintenance, update, and flowdown to subcontractors of the ISS contract Sect. J-1 and J-2, Lists A and B DLS, utilizing a graded approach described in Sect. 1.5 of this plan.

1.7 Integrated Safety Management Systems

The QAPP/QIP aligns with the DLS, and complements and is integrated with ISMS, as described in the Executive Summary of this plan. The ISMS Plan, PMA/PORTS-55, integrates ISMS, WSHP, and EMS, together with key elements of quality. The QAPP/QIP and ISMS Plans express a fundamental expectation that all work will be performed safely and correctly, and provide processes and tools for ensuring that the ISMS objectives are achieved. The DOE fundamental quality expectation is that all work is completed safely and correctly, in accordance with established requirements. In this regard, the QAPP/QIP ensures compliance with the approved safety and environmental standards so that the expectation for safe and environmentally responsible work within controls is met. This also ensures that workers, the environment, and the public are reasonably protected from harm. DOE quality and safety requirements share a project management systems approach to achieving their objectives. In addition, PMA integrates DOE VPP to promote workforce safety commitment and integration of safety into all operations through the five VPP tenants: 1. Management Leadership, 2. Employee Involvement, 3. Worksite Analysis, 4. Hazard Prevention and Control, and 5. Safety and Health Training. Shared attributes of quality and safety project management systems integrated in the QAPP/QIP are listed in Table 1.

Attribute	ISMS Principle/Function and VPP Tenants	Quality Criterion
Expectations for Implementation [Department of Energy Acquisition Regulation (DEAR) 970.5204-2 (C)]	ISMS Principle 7, Function 3 VPP Tenant 1	QA Criterion 1
Documentation of the Management System	ISMS Principle 7, Function 3 VPP Tenant 1	QA Criterion 1
Line Management Responsibility for Safety	ISMS Principle 1, Function 3 VPP Tenant 1	QA Criterion 1
Clear Roles and Responsibilities	ISMS Principle 2, Function 3 VPP Tenant 1	QA Criterion 1
Competence Commensurate with Responsibility (CCR)	ISMS Principle 3, Function 3 VPP Tenants 1 and 5	QA Criterion 2
Balanced Priorities (resources)	ISMS Principle 4, Function 4 VPP Tenant 1	QA Criterion 1
Identification of Safety Standards and Requirements	ISMS Principle 5, and Function 3 VPP Tenant 3	QA Criteria 1, 5, 6, 9, & 10
Hazard Control Tailored to the Work Being Performed (10 CFR 830.7, <i>Graded Approach</i>)	ISMS Principle 6, Function 3 VPP Tenant 4	QA Criteria 1 and 6
Operations Authorization	ISMS Principle 7, Function 4	QA Criterion 1

Attribute	ISMS Principle/Function and VPP Tenants	Quality Criterion
	VPP Tenant 1	
Worker Involvement	PMA Honorary ISMS Principle 8*, Functions 1-5 VPP Tenant 2	QA Criteria 1, 3 and 9
Define the Scope of Work	ISMS Principles 1-5, and PMA Honorary 8, Function 1 VPP Tenants 1 and 3	QA Criteria 1, 2, and 4-10
Analyze the Hazards	ISMS Principles 4, 5, 6 and PMA Honorary 8, Function 2 VPP Tenant 3	QA Criteria 4-10
Develop and Implement Hazard Controls	ISMS Principles 5, 6, and PMA Honorary 8, Function 3 VPP Tenant 4	QA Criteria 2, and 4-7
Perform Work Within Controls	ISMS Principle 7, Function 4 VPP Tenant 4	QA Criteria 4, 5, and 7-10
Provide Feedback and Continuous Improvement	ISMS Principles 6 and PMA Honorary 8, Function 5 VPP Tenants 1 and 2	QA Criteria 3-5, and 8-10

* Not cited in DOE O 450.2, Integrated Safety Management, but unofficially designated by PMA as an honorary principle 8 due the importance of worker involvement to effective hazard identification and control.

Table 1. Shared Attributes of Quality and Safety Project Management Systems

1.8 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this QAPP/QIP by the Quality function, and in the listed documents.

- PMA Organization Chart;
- RRAL Matrix;
- SME Matrix;
- PMA/PORTS-55, ISMS Plan;
- Contract DE-EM0004062 Sect. J-1 and J-2, Lists A and B DLS;
- FBP-EM-PL-00026:PMA/PORTS-20, Decontamination and Decommissioning and Facility Support Services Prime Contractors Joint Emergency Plan;
- PMA/PORTS-73, Site Security Plan;
- PMA/PORTS-76, Procurement Operating Practices for PMA;

- PMA/PORTS-0295, Project Controls System Description;
- PMA/PORTS/16-0761, Calendar Year Oversight Plan (2016);
- PMA-52301, Sustainable Environmental Business Practices;
- PMA-52701, Safety Policy;
- PMA-56002, Project Management Overview;
- PMA-56003, Discipline and Rigor of Operations;
- PMA-56005, Delegation of Authority;
- PMA-1700, Baseline Management and Change Control;
- PMA-1702, Definition and Organization of Work Scope;
- PMA-1705, Performance Measurement, Variance Analysis and Reporting;
- PMA-1800, Project Management;
- PMA-2200, PMA Emergency Management Program Description;
- PMA-2301, Identification of Environmental, Legal, and Other Requirements;
- PMA-2611, Readiness Reviews for Other Industrial Facilities/Activities;
- PMA-2614, Nuclear, Worker Safety and Health, and Security Noncompliance Determination and Reporting;
- PMA-2615, Graded Approach Application;
- PMA-2617, Senior Review Board;
- PMA-2711, Suspension/Stop Work;
- PMA-3107, Conduct of Operations for Projects, Facilities, and Activities;
- PMA-3204, Facility Management;
- PMA-3310, Conduct of Operations Matrix; and
- PMA-4100, Security Awareness Program.

2. PERSONNEL TRAINING AND QUALIFICATION

2.1 General

The Training Lead is responsible for development and implementation of the PMA Training Program. As previously discussed in the Executive Summary and Sect. 1, Program, of this plan, one of the two exceptions to the PMA current non-nuclear facilities and activities scope of work is in the Training Program. In accordance with contract clause C.2.7 “Training Services”, PMA is responsible for RADWORKER training for D&D, visitors, DOE, and DOE support contractor personnel, of which a portion of these personnel may work in nuclear facilities and perform

nuclear activities. On this basis, the PMA Training Program implements DOE 414.1D and applicable 10CFR830.120 Subpart A and NQA-1-2004 Part I criteria as aligned in Appendix A of this plan.

Although PMA does not manage nuclear facilities that are applicable to DOE O 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities* or the replacement DOE O 426.2 of same title (both of which are not included in Sect. J-2, List B DLS of the PMA contract), PMA does support contractors that manage nuclear facilities applicable to these orders. On this basis, PMA utilizes a graded approach as described in Sect. 1.5 of this plan in establishing a formal approach to maintaining training programs through the use of “The Systematic Approach to Training”, training analysis (e.g., job, needs, and task), employee qualification, and certification requirements. The program utilizes a graded approach to training as identified in DOE Handbook DOE-HDBK-1074-95, *Alternative Systematic Approaches to Training*, ensuring PMA employees, site personnel, subcontractors, and visitors are trained and qualified commensurate with their responsibilities, and that training is delivered in a cost-efficient manner. The qualification and training processes established by PMA ensure that personnel possess the experience, knowledge, skills, and abilities necessary to perform their assigned positions.

The Training Programs Lead is responsible for maintaining a database containing training requirements for PMA employees and other participating contractors. This system tracks the status of training, and subsequently, the Training function notifies the employee as well as the employee’s Line Management of pending expiration dates. Included in training files are copies of qualification and certification records or cards. The Training function issues “site access cards” displaying the expiration of site/facility specific training to be worn with the Security Identification Badge for easy identification of the status of site or facility specific training.

The Training function provides Line Management and employees training reports of, “due, coming due, and past due” training status. A training database records, documents, and tracks training completion for PMA and other participating contractors’ employees. Training reports are generated based on established “training requirements” as identified on individual Training

Training Position Descriptions (TPDs) developed for PMA and ISS contract named subcontractors (e.g., Wastren Advantage, Inc. (WAI)) employees based on their Position (i.e., job) Descriptions (PDs), and company and project specific requirements. PDs capture all the positions assigned to an employee. Training reports are automatically issued monthly out of the training database, and provide management and employees with a 90-day look ahead of training coming due. When training is coming due in less than 30 days, training reports are issued weekly.

When specific organizations (departments, functions or projects) generate special training needs such as Lessons Learned, work plans, AHA’s, and project-specific documentation, unless these special needs are coordinated with the Training function through Required Reading or other formal training processes, the organization’s Line Management is responsible for the documentation (logbook, other), tracking, and maintenance of the training records.

2.2 Training

Clear and unambiguous lines of authority and responsibility for ensuring safety are established and maintained at all levels. The training program is based upon the CCR principle. Line Management is responsible for ensuring that personnel possess the experience, knowledge, skills, and abilities necessary to fulfill their responsibilities and for issuing work restriction for employees who have not renewed assigned training. Support functions such as S&H, Security, IT/Telecommunications, HR, and Training assist Line Management in identifying training required for a particular position.

Line Management, with the assistance of the HR function, determines individual PDs, and with the assistance of the Training function, TPDs for PMA and ISS contract named subcontractors (e.g., WAI) personnel responsible for managing, planning, performing, controlling, and overseeing work. PDs are administered by the HR function and include roles and responsibilities, education, experience, skills, and qualification (e.g., registration, certification, regulatory compliance) criteria, and expected work locations (e.g., facility, other) and physical requirements (as applicable) TPDs are administered by the Training function and include company, function, position, and project and facility specific training requirements (i.e., training courses/modules, required reading) that achieve PDs criteria.

Personnel qualification and competencies are derived from the identified scope of work and associated hazards. Training requirements must be completed at or before the time of initial assignment or tasks associated with the training are restricted. Training specified on the TPDs ensures competency is maintained commensurate with the responsibilities and potential hazards of the assigned position description (PD). When performing OJT, before initial qualification, an unqualified employee works under the direction of a qualified person in the area of deficiency. On a scheduled basis or when an employee changes jobs or the conditions of a job change, Line Management, with the assistance of the HR function, re-evaluates and modifies the PD, as necessary, and with the assistance of the Training function, the same is completed for the TPD. Workers who have health and safety program responsibility, such as members of the ESH&Q and Training Department and Line Management, receive additional safety and health training to maintain certification, qualification, and competency for their positions. This additional training is also documented in the worker's TPD.

Training programs are established for personnel performing activities affecting quality to develop their knowledge and skills to perform job assignments. These programs are developed by SMEs and/or knowledgeable department, function and project personnel, under the direction of Line Management and the Training Lead. The programs are structured to be commensurate with specific position needs. Training programs consist of a combination of settings and methods based on the learning objectives for the needed skills and knowledge. Training methods may include lectures, seminars, computer-based training, structured self-study activities, OJT, on-the-job evaluation (OJE), JPM, and required reading. Training settings may include classroom, job site, simulation, or computer laboratories. Examinations and/or operational evaluations on material included in the training programs are administered and documented according to the established program requirements.

Training is grouped into three general categories:

- Mandatory site/facility-specific training conveys the safety, emergency plans, security, and operations information necessary for site personnel to prepare for and perform their assigned duties in the site/facility and for visitors to be aware of safety and security requirements. Line Management defines these training requirements and ensures that training is administered. Mandatory training requirements vary based on specific criteria in PDs. At a minimum, the following training is currently categorized as mandatory (training may be provided as separate modules or combined to facilitate efficiency and effectiveness):
 - GET
 - Workplace Violence Prevention
 - Diversity Awareness
 - Employee Conduct Training
 - Business Ethics/Standard of Conduct
 - Fire Extinguisher Training
 - General introduction to ISMS

The Training function is responsible for mandatory site/facility-specific training for PMA personnel and ISS contract named subcontractors (e.g., WAI) personnel, and GET training for D&D project personnel. Completion records for GET and selected training courses are documented in the PMA training database for issuance of GET site access cards for applicable personnel.

- Company training conveys general information about the company's mission, vision, core values, goals, and management system. It also includes general knowledge or skills training and is applicable to PMA personnel.

The Training function is responsible for company training for PMA personnel and ISS contract named subcontractor personnel.

- Project/task-specific training imparts the knowledge required for site personnel to perform their assigned duties safely and successfully. This training includes project/task goals and schedules, implementing procedures, safety and hazard controls, methods, requirements, process metrics, and skills.

The Training function is responsible for project/task-specific training for PMA personnel and ISS contract named subcontractors (e.g., WAI) personnel, and for training D&D project personnel in the areas of RADWORKER program (initial, I, and II), Security, Cyber Security, and Information Technology.

HAZWOPER training is administered separately by the United Steel Workers, through a grant program contracted directly with DOE.

In cooperation with the Training Lead, training goals, lesson plans, and other training materials are developed by SMEs in department, function or project areas, reviewed by experienced personnel, and approved by Line Management and the Training Lead. Training materials are

controlled by the Training function to ensure that the latest approved versions are used. The Training Lead reviews and approves all training material developed by vendors before training is provided.

Continued training may be utilized to maintain and promote improved job performance. Line Management, in conjunction with the Training Lead, structures these programs commensurate with specific job needs. Continuing training may include project, facility, system or component changes, applicable procedure changes, applicable OELL, selected fundamentals, with emphasis on the knowledge and skills necessary to assure safety, and other training as needed to correct identified performance problems.

2.3 Qualification of Personnel

Policies and procedures that describe personnel selection and qualification are established for departments, functions, and projects by HR and associated Line Management. They identify the minimum applicable requirements for education, experience, skill level, and physical condition, and form the basis for the development of PDs. Before personnel are allowed to work independently, Line Management ensures personnel have the necessary experience, knowledge, skills, and abilities. Qualification is based on the following, as applicable:

- Previous experience, education, and training;
- Completion of on-site training (formal, OJT, or required reading); and
- A performance demonstration or test to verify acquired skills.

Qualification programs are periodically reviewed by the responsible Line Management and are maintained to reflect changes to the program, project, facility, procedures, QA requirements, and regulations, as well as applicable industry operating experience.

In cooperation with and under the oversight of the Training function, Line Management defines its training needs in TPDs to meet applicable requirements specified by Federal, State, and local regulations in PDs. All qualification and training programs for facilities and projects are developed and implemented in a manner consistent with the hazards and risks associated with the operation of the facility or performance of the activity. These programs are consistent with the CRD of DOE O 420.1C, Facility Safety, which defines requirements for contractor personnel with nuclear facility operation and system engineer responsibilities.

2.4 Training Documents

Training requirements for specific positions are identified by Line Management, with the assistance of the Training function, utilizing TPDs administered by the Training function. Additional training needs specific to an assignment are also recorded on a TPD. Copies of TPDs reside with the Training function in the Learning Management System. Because the PMA Learning Management System is computer based and online, TPDs are available to Line Management and employees at any time.

Training is tracked and monitored by the Training function in the training database and reported to Line Management and employees to ensure scheduled retraining is completed prior to expiration. The training organization issues training notifications and deficiency reports to

employees and their Line Management as retraining deadlines approach or expire respectively. Line Management is responsible for ensuring retraining is completed prior to expiration. Personnel whose training has expired are restricted in accordance with PMAF-1414, Work Restriction Acknowledgment, by their Line Management from performing associated activities until training has been successfully completed or personnel have been reassigned to other positions where training for those activities is not required.

2.5 Instruction Qualification

The Training Lead is responsible for establishing qualifications for instructors in accordance with PMA-1406, Instructional Staff Training and Qualification Program. Instructors shall possess the technical knowledge, experience, development and instructional skills commensurate with the subject material and the level of instruction that is provided.

2.6 Training Effectiveness and Monitoring

Training effectiveness is monitored by the Training Lead. Worker performance is evaluated, through testing or during demonstrations, surveillances, assessments, or daily operations, to ensure that the training program conveys all required knowledge and skills, and to ensure that requisite course learning objectives are adequately met. Feedback from personnel performance, former trainees and supervisors, occurrences, operating experiences and lessons learned, and assessments is used to determine effectiveness of training. Most site/facility specific training and company training contain a form (electronic or paper) for immediate feedback on the training material and method of presentation. The results of these and other evaluations are used as the basis for improving the training program.

2.7 Integrated Safety Management Systems

The following ISMS Principles and Core Functions are integrated into this QA criterion:

- Principle 2, Clear Roles and Responsibilities;
- Principle 3, CCR, Implement Controls;
- Core Function 3, Develop and Implement Hazard Controls;
- Core Function 4, Perform Work Within Controls; and
- Core Function 5, Provide Feedback and Continuous Improvement.

2.8 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this QAPP/QIP by the Quality function, and in the listed documents.

- PMA/PORTS-61400, Training Program;
- PMA-1401, Site Access;
- PMA-1402, Conduct of Training;

- PMA-1404, Training Analysis, Development, Evaluation, and Revision;
- PMA-1405, Training Records Management;
- PMA-1406, Instructional Staff Training and Qualification Program;
- PMA-1410, Required Reading Program;
- PMA-1411, Work Restrictions;
- PMA-51402, External Training and Professional Memberships; and
- PMAF-1414, Work Restriction Acknowledgment.

3. QUALITY IMPROVEMENT

3.1 General

The ESH&Q Manager, through the Quality Manager, is responsible for development and implementation of the PMA Quality Improvement Program and Corrective Action System. The PM is responsible for ensuring that all departments, functions, and projects personnel identify quality problems in accordance with the established Quality Improvement Program. Line Management encourages employees to plan, develop, explore and implement new ideas for improving products, processes, and services through the Quality Improvement Program. Employees are involved in the identification of problems, extent of condition, causal analysis, resolution of issues, and distribution of operating experiences and lessons learned. Implementation activities and corrective actions are reviewed for effectiveness.

3.2 Quality Improvement Program

PMA has implemented an effective quality management system, which integrates strategic plans, processes, and procedures to prevent or mitigate quality problems through company policies and procedures. A quality problem is a collective term that may include:

- Deficiency in an activity, product, service, item characteristic, or process parameter;
- A non-compliance with a legal, contractual, or other requirement; or
- The existence of a substandard condition or a suspect/counterfeit item.

Quality improvement is a disciplined management process based on the premise that all work can be planned, performed, measured, and improved. An effectively planned and implemented quality management system is one that:

- Encompasses problem prevention, detection, extent of condition, correction, and continuous improvement;
- Uses feedback information to improve items, services, and processes (ISP) that produce them;
- Prevents or minimizes quality problems;
- Corrects problems that occur; and

- Uses performance measures that identify strengths and weaknesses.

Preventive action ensures that a quality problem does not occur. Methods used for problem prevention include: peer reviews, design reviews, procurement document reviews, pre-task hazard reviews, AHA, radiological surveys, readiness reviews, pre-job safety briefings, and in-process OAs (e.g., inspections). These activities comply with DLS requirements and applicable industry standard requirements for protection of the health and safety of employees and the public. The SRB provides a key role in quality improvement through an additional upper level safety and rigor and discipline of operations review of selected activities including, but not limited to, new/revised documents, readiness evaluations, incident reviews, assessment and other issues, and occurrence and enforcement reports.

PMA prioritizes and focuses resources on preventive actions and on those quality problems that have the greatest potential for:

- Posing adverse risks to human health and the environment;
- Impacting the safety and reliability of operations and products; and
- Affecting the ability to meet customer requirements.

Detection of quality problems is accomplished through the performance of reviews, inspections, tests, assessments, and trend analysis for repetitive deficiencies. Identification and correction of quality problems is addressed in Sect. 3.3 of this plan.

Regarding continuous improvement, one objective is to reduce the variability of processes that directly or indirectly influence the quality of products and services provided to internal and external customers. It is the responsibility of PMA to achieve quality in the products produced and services provided. The individual worker's role is to meet the quality requirements and to recommend improvements in item and process quality by way of both verbal and documented feedback.

Another objective of continuous improvement is met by measuring and evaluating performance against key performance indicators or standards. Item characteristics, process implementation, and other quality-related information are reviewed and the data are analyzed to identify ISP needing improvement. These data are used to identify trends that adversely impact quality and opportunities to improve items and processes. Examples of quality related information used include:

- Identification, notification and timely submittal of occurrences;
- Adherence to procedures or other work controlling documents;
- Failure rates;
- ISMS implementation; and
- Timeliness and responsiveness to findings or observations.

PMA policy encourages all personnel to control and continuously improve work performance in order to meet customer expectations of quality and to measure and produce results aligned with strategic objectives.

3.3 Corrective Action System

ISP that do not meet established requirements are identified, documented, controlled, evaluated, and corrected according to the importance of the problem and the work affected. Corrections are made by the department, function or project owning the issue with the assistance of the Quality function and include identifying the cause(s) of significant problems and taking action to prevent recurrence. The extent of causal analysis, review of extent of condition, corrective action development, and effectiveness review for non-conformances will be commensurate with the importance (significance) of the problem in accordance with PMA-2607, Incident Reporting and Issues Management Program; PMA-2604, Occurrence Notification and Reporting; and PMA-2608, Causal Analysis. For straightforward problems, a simpler apparent cause process is applied according to PMA-2608, Causal Analysis. For more serious or complex problems, a disciplined root cause analysis process is applied.

The phrase “significant conditions adverse to quality” includes repetitive problems and potential programmatic issues. When these conditions occur, they are analyzed for cause and extent of condition in accordance with PMA-2607, Incident Reporting and Issues Management Program; PMA-2604, Occurrence Notification and Reporting; and PMA-2608, Causal Analysis. Significant conditions are documented and a root cause analysis is performed, which identifies the steps necessary to prevent recurrence. Line Management is involved in the evaluation of the significance of the issue, causal analysis, and approving corrective/preventive actions for significant quality problems and following them through to closure.

The PMA system for identifying and controlling non-conformances utilizes a number of problem identification and corrective action control documents. While the inputs to the system vary, the tools used to resolve each type of problem have specific scopes and applications to reduce the chance of redundant or nonexistent control. As a whole, these tools form a comprehensive system that applies to PMA, as defined in implementing procedures. Examples of these corrective action control documents include:

- Occurrence Reports;
- Nonconformance Reports;
- Incident Reports;
- Worker Involvement Network (WIN) for employee safety concerns;
- Corrective Action Plans;
- Operating Experiences and Lessons Learned;
- Non-compliance Tracking System (NTS) reports for potential enforcement non-compliances;
- Work Requests;
- Suspend/Stop Work Orders; and
- Punch lists.

The tracking and trending of issues is used to identify recurring conditions. The Quality function tracks issues through closure in CTS and trends this data. Issues identified from reporting processes, OAs, and customer interface, regardless of their source and significance, are entered into the tracking system in order to identify repeat or recurring issues. Implementation of the required corrective action is performed and documented by the responsible department, function or project and verified by the Quality function. Trends are evaluated by the Quality Manager on a regular basis and presented to Line Management for review and consideration for corrective action and follow-up.

Corrective action procedures require personnel to report nonconforming items and processes to their management and the Quality function. All personnel are granted the freedom and authority to identify those ISP determined to be nonconforming or request that work be suspended/stopped until effective corrective action is completed for safety issues. Procedures for bringing events, conditions, employee concerns, and issues to the attention of Line Management have been established by the PM. These procedures are in compliance with contract requirements for occurrence reporting and the processing of subcontract information, and encourage and support non-incriminatory identification and reporting of unsatisfactory conditions.

Controls exist for preventing the inadvertent testing, installation, or use of non-conforming items and processes. Established controls include tagging and/or segregation of items when possible. Recommended dispositions for non-conformances are reviewed and approved by the departments, functions or projects that reviewed and approved the original items or processes unless another organizational component with qualified and knowledgeable personnel is designated. Justification for the disposition action is documented in accordance with procedures for those items or processes not returned to their original, as-designed conditions.

Nonconforming items or processes subsequently reworked, repaired, or replaced are inspected and/or tested to meet either the original requirements or to specified alternative requirements. Such inspections or tests are conducted prior to the final acceptance and use of the item or process. Quality function responsibilities and activities associated with nonconforming items and processes include validation of the nonconformance, review of dispositions, verification of completion of disposition actions, and closure of the reporting document.

An important part of prevention is the Operating Experience/Lessons Learned Program, which is implemented in accordance with DOE O 210.2A, DOE Corporate Operating Experience Program. Experiences or issues that may impact departments, functions or projects are submitted by Line Management and entered into the DOE Operating Experiences/Lessons Learned database. Part of the quality improvement effort is to document issues and share them within the company and DOE. The Operating Experience/Lessons Learned database is an effective tool for use in planning and in daily work. The Quality function manages the Operating Experience/Lessons Learned program for PMA. Issues relevant to the contract scope are disseminated to Line Management for communication to workers and used in their pre-work sessions and in their work planning.

3.4 Integrated Safety Management Systems

The following ISMS Principles and Core Functions are integrated into this QA criterion:

- Principle 4, Balanced Priorities;
- Principle 6, Hazard Controls Tailored to Work Being Performed;
- Principle 7, Operations Authorization;
- PMA Honorary Principle 8, Worker Involvement (not cited in DOE O 450.2, Integrated Safety Management, but unofficially designated by PMA as an honorary principle 8 due to the importance of worker involvement to effective hazard identification and control);
- Core Function 3, Develop and Implement Hazard Controls;
- Core Function 4, Perform Work Within Controls; and
- Core Function 5, Provide Feedback and Continuous Improvement.

3.5 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this QAPP/QIP by the Quality function, and in the listed documents.

- PMA-1606, Cyber Security Incident Response;
- PMA-1625, SQA Problem Reporting and Issues Management Program;
- PMA-1628, Information Technology Service Failure (Outage);
- PMA-2302, Establishment of Environmental Objectives and Targets;
- PMA-2601, Oversight Activity - Independent Conformity Assessment;
- PMA-2602, Oversight Activity – Management Conformity Assessment;
- PMA-2603, Control of Nonconforming Items and Services;
- PMA-2604, Occurrence Notification and Reporting;
- PMA-2607, Incident Reporting and Issues Management Program;
- PMA-2608, Causal Analysis;
- PMA-2609, Operating Experience/Lessons Learned Program;
- PMA-2611, Readiness Reviews for Other Industrial Facilities/Activities;
- PMA-2614, Nuclear, Worker Safety and Health, and Security Noncompliance Determination and Reporting;
- PMA-2617, Senior Review Board;
- PMA-2619, Events, Investigations, and Critiques;
- PMA-2711, Suspension/Stop Work;
- PMA-2720, Safety Concerns/Workers Involvement Network (WIN);

- PMA-4330, Reporting Security Issues and Conducting Inquiries into Incident of Security Concerns;
- PMA-52617, Senior Review Board – Nuclear, Worker Safety and Health, and Security Noncompliance Determination and Reporting Subcommittee Charter;
- PMA-52618, Senior Review Board Configuration Management Subcommittee Charter;
- PMA-52702, WIN Committee Charter;
- PMA-52706, VPP Steering Committee Charter; and
- PMAF-6001, Customer Satisfaction Survey.

4. DOCUMENTS AND RECORDS

4.1 General

The ESH&Q Manager, through the Records Management Manager, is responsible for establishing and implementing the Records Management Program. As previously discussed in the Executive Summary and Sect. 1 Program of this plan, the second of the two exceptions to the PMA current non-nuclear facilities and activities scope of work, is in the Records Management Program. In accordance with contract clause C.3.6, “Records Management and Document Control”, PMA is responsible for managing documents and records including sensitive and classified information received from other contractors and DOE. PMA expects that several of these records will be associated with nuclear activities. On this basis, the PMA Records Management Program implements the DOE 414.1D and applicable 10 CFR 830.120 Subpart A and NQA-1-2004 Part I criteria as aligned in Appendix A of this plan.

The ESH&Q Manager, through the Quality Manager, is responsible for establishing and implementing the performance document program including: development/revision support, writing, validation support, review and approval, World Wide Web (Web) based access, configuration management, and history files. Performance documents include: plans, policies, directives, and procedures. These documents provide the primary basis for the performance of work. Although they are a component of records, they have web-based access and control for ease of daily work usage by Line Management and workers.

4.2 Documents

PMA Line Management identifies documents, primarily in performance documents (i.e., plans, policies, procedures), that must be developed and controlled. Under the oversight of Line Management, documents are prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Documents are written and electronic media or pictorial information are produced that describe, define, specify, report, or certify activities of requirements, procedures, results, or plant conditions.

PMA performance documents specify that documents such as procedures, instructions, and drawings are to be uniquely identified, controlled, maintained, stored, protected, and capable of being retrieved in a timely manner. Record copies of documents are submitted to Records

Management by functional Records Custodians and other personnel, and retained by Records Management for a specified retention period in accordance with the National Archives and Records Administration (NARA) with integration of NQA-1-2004 criteria, as appropriate) and DOE disposition schedules. The performance documents, the documents generated, quality record requirements, and the disposition schedule are incorporated into the Quality Records Crosswalk Matrix maintained by the Records Management and Quality functions to identify quality records.

Documents are prepared and, when specified, reviewed by cognizant individuals or departments, functions, and projects. Individuals or departments, functions, and projects responsible for developing, reviewing, approving, issuing, and revising documents are identified in performance documents. Among the specified reviewers are SMEs from ESH&Q, MSS, FSS, and Business Management departments. Guidelines for the distribution and effective dates of new or revised documents are established.

Line Management is responsible for revisions to their organization's documents and is responsible for ensuring that procedures are reviewed by appropriate organizations and approved prior to their issuance. Alternative organizations may be designated by the procedure owner to review and approve documents based on their technical competence and capability within the required work areas. The revision process provides for minor editorial changes and urgent changes to be processed expeditiously and that approved changes are incorporated in documents prior to issuance.

For new or revised procedures, a training analysis is completed to ensure that all required training, material deliveries, flow down to subcontracts, incorporation into subcontract documents, or applications for ongoing work are completed prior to becoming effective.

Individuals are to ensure they are working to the latest approved revision of procedures.

Controlled copies of approved documents and recipients are designated by the document owners, and distributed or made available by Records Management (Document Control personnel) to the recipients. The recipients are individuals responsible for performing the assigned tasks or individuals with a need for awareness and periodic reference to the controlled document. The Document Control Program utilizes a process that controls the creation, identification, revision, transmittal, receipt, distribution, and update of controlled documents. Superseded or canceled documents are controlled to preclude their use and to ensure the use of correct revisions.

Documents are indexed to identify all revisions, listing the current revision last.

PMA departments and functions, and the contractors PMA supports, develop, issue and maintain other documents such as plans, procedures, reports, work packages, and AHA that are controlled documents from the aspect of configuration management (e.g., unique identifiers, revision status, and change control). The information contained in these documents, personnel involved in development and approval, recipients, usage, configuration management, and other requirements for these documents are identified in the DLS and/or procedures that govern their creation. These documents may, at the discretion of the PMA departments and functions and the contractors PMA supports, be designated as "controlled documents" and distributed by Records Management (Document Control personnel) under the requirements of the controlled documents process.

4.3 Records

A document becomes a record when the information is created for preservation as evidence of the organization, functions, policies, decisions, procedures, operations or other activities, or because of the informational value of the data in connection with business transactions under the provision of the contract. Records from departments, functions, and projects are specified, prepared, reviewed, approved, and maintained. Record maintenance includes provisions for record retention, protection, change, preservation, traceability, accountability, retrievability, and destruction utilizing the following processes:

- PMA-1300, Record Life Cycle and Retrieval;
- PMA-1301, Maintaining Privacy Act Records;
- PMA-1303, Records Destruction;
- PMA-1304, Records Management Within the X-1000 Limited Area Document Storage Area;
- PMA-1306, Record Transfer;
- PMA-1309, Vital Records;
- PMA-1310, Administrative Records Program;
- PMA-1311, Identifying, Filing and Maintaining Records;
- PMA-1312, File Plan Creation and Maintenance;
- PMA-1314, Storage and Inspection of Stored Records;
- PMA-1315, Documentum Record Processing; and
- PMA-1321, Quality Assurance Records.

These processes incorporate the QA records generation, authentication, classification, storage, maintenance, and retention requirements (lifetime or non-permanent) identified in NQA-1-2004, Part 1, in accordance with PMA-1321, Quality Assurance Records. These requirements are applied to records designated by PMA department, function, and project, and participating contractors' documents owners, as NQA-1 QA records, utilizing a graded approach as described in Sect. 1.5 of this plan. All other records (including non-NQA-1 quality records) are handled in accordance with NARA requirements. Quality records are identified in a Quality Records Crosswalk Matrix maintained by the Records Management and Quality functions.

Records come in a variety of forms and are stored as hard copy, electronic copy, microfilm, photographs, radiographs, magnetic media, or optical disks. Records requiring special processing and control, such as computer codes or information on high-density media or optical disks, are controlled to ensure their validity and usability. Procedures establish requirements for control and maintenance of hardware and software needed to access these records.

Record storage facilities are used for long-term retention of records. Records Management is responsible for maintaining the central records repository for DOE contractors, including PMA operations. The central records repository includes historic records maintained from

previous operations and contractors. Included in Records Management's tasks are the creation/receipt, identification/classification, distribution, tracking, indexing, turnover, scanning, storage/preservation, retrieval, scheduling and disposition of records. Departments, functions, and projects may establish, with Records Management approval, satellite storage areas for records maintained by Records Custodians, which are indexed and prepared for transfer to the central records repository when the records are inactive.

PMA Record Inventory and Disposition Schedules conform to the requirements of NARA; 36 CFR Chapter XII, Subchapter B, Records Management; DOE Administrative Record Schedule, DOE O 243.1B, Records Management Program; DOE O 200.1A, Information Technology Management and applicable records destruction moratoriums. Request for acceptance of nonscheduled records will be submitted to NARA for records that cannot be scheduled under the existing records schedule.

4.4 Integrated Safety Management Systems

The following ISMS Principles and Core Functions are integrated into this QA criterion:

- Principle 2, Clear Roles and Responsibilities;
- Principle 4, Balanced Priorities;
- Core Function 3, Develop and Implement Hazard Controls;
- Core Function 4, Perform Work within Controls; and
- Core Function 5, Provide Feedback and Continuous Improvement.

4.5 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this QAPP/QIP by the Quality function, and in the listed documents.

- PMA-1300, Record Life Cycle and Retrieval;
- PMA-1301, Maintaining Privacy Act Records;
- PMA-1302, Controlled Documents;
- PMA-1303, Records Destruction;
- PMA-1304, Records Management Within the X-1000 Limited Area Document Storage Area;
- PMA-1306, Record Transfers;
- PMA-1309, Vital Records;
- PMA-1310, Administrative Records Program;
- PMA-1311, Identifying, Filing and Maintaining Records;
- PMA-1312, File Plan Creation and Maintenance;

- PMA-1313, Decontamination and Decommissioning (D&D) Drawing Revision Control;
- PMA-1314, Storage and Inspection of Stored Records;
- PMA-1315, Documentum Record Processing;
- PMA-1321, Quality Assurance Records;
- PMA-2900, Performance Document Process;
- PMA-2902, Deliverables;
- PMA-51301, Records Management Policy;
- PMA-51303, E-Mail Retention and Storage; and
- Quality Records Crosswalk Matrix (maintained by the Records Management and Quality functions).

5. WORK PROCESSES

5.1 General

The FSS Manager, through the Work Control Manager and the Facility Manager, is responsible for establishing and maintaining the Work Control and Project Management programs. The FSS Manager through the Custodial, Mechanical, Grounds, Electrical, Materials, and Relief Supervisors, is responsible for establishing and maintaining preventive and corrective maintenance, the identification and control of items, shipping, handling, and storage, S/CI, and M&TE. The IT/Telecommunications and MSS Managers, through the Computer Support, Computer System, Database, Cyber Security, and Security Managers, Coordinators, Administrators, and Supervisors are responsible for establishing and maintaining computing and telecommunications systems infrastructure, SQA, and systems security. The Business Manager, with the Project Controls Manager, is responsible for establishing and maintaining the Performance Measurement Baseline.

GFS&I provided through DOE or contracts with other contractors include the following:

- Access to information and facilities required to support work;
- Technical services for health physics, radiological, and industrial hygiene;
- Laundry services for field work;
- Physical security;
- Emergency management and fire protection (including Plant Shift Superintendent);
- Utilities (sanitary water, sanitary sewage, recirculating cooling water, plant dry air, Electrical power distribution, steam, power administration, nitrogen system, street lights, and utilities inspection);
- Database and Systems Access - Documentum, Integrated Planning Accountability and Budget System (IPABS), Computerized Accident/Incident Reporting System (CAIRS);

and

- NTS, Occurrence Reporting and Processing System (ORPS), Foreign Access Central Tracking System, Performance Assessment Reporting System (PARS).

GFS&I are accessed directly from the providers utilizing the work processes established by the providers. PMA departmental managers through functional managers may establish work processes, as needed, to ensure effective organizational interfaces with the providers' representatives and processes.

5.2 Performance of Work

All work is performed consistent with technical standards, administrative controls, and other hazard controls adopted to meet regulatory requirements specified in the contract. The FSS Manager, through the Custodial, Mechanical, Grounds, Electrical, Materials, Work Control, and Relief Supervisors provides preventive and corrective maintenance using a graded approach, as described in Sect. 1.5 of this plan, on all facilities listed in the PMA contract, Sect. J Attachment 15 (Facilities/Areas Responsibility Matrix and Site Services). PMA employs the SOMAX automated maintenance management system that meets the requirements of DOE O 430.1B, Real Property and Asset Management, CRD Item 5, for all assigned facilities.

The FSS Manager, through the Work Control Manager, and the Custodial, Mechanical, Grounds, Electrical, Materials, and Relief Supervisors, utilize the SOMAX automated maintenance management system for work control program planning, scheduling, completing, closing, and tracking work activities. SOMAX is also utilized for work control program equipment, material and support services requisition submittal, review, and approval. The SOMAX process provides the Procurement/Contract function with the requisition approved scope and requirements, which is further processed through operating practices and guides, as appropriate.

PMA interfaces with the other PORTS contractors, ACP, D&D, and DUF6 conversion plant, as defined in DOE contracts and GFS&I agreements, and in PMA work authorization agreements or subcontracting agreements through the procurement process. Work for other site contractors' flows through the PMA work control and/or project management processes. Interface issues are addressed in periodic meetings in the form of daily or weekly information/discussion sessions, electronic mail messages and notifications, or phone discussions.

PMA performs FSS and other work activities in assigned facilities/areas in accordance with Contract scope of work elements and specifications including, but not limited to:

- Environmental, Safety, Health, & Quality Program;
- Engineering;
- Project Management;
- Property Management;
- Safeguards and Security;
- Computing, Telecommunications, and Cyber Security;
- Operations and Management of Assets (e.g., Maintenance Management);

- Facility Services (e.g., Grounds Maintenance);
- Records Management and Document Control;
- Mail, Shipping, and Receiving Services;
- EIC Operations; and
- Training Services.

All work is regarded as a process. Each work process consists of a series of actions planned and carried out by qualified workers using specified work processes and equipment under the controls established by the FSS and other departments to achieve required results. Special processes that control or verify quality, such as welding, heat-treating, and nondestructive examination, are performed by qualified personnel using qualified procedures. Under the current scope of work, welding is the only special process that would be performed. If other special processes are required to accomplish the scope of work, new procedures will be developed or the work will be subcontracted and requirements specified in the procurement documents.

Line Management ensures that the following are clearly identified and conveyed to workers prior to beginning work:

- Customer and data requirements for the work and final product;
- Acceptance criteria applicable to work and final product;
- Hazards associated with the work;
- Technical standards applicable to work and final product; and
- Safety, administrative, technical, and environmental controls to be employed during the work.

Line Management ensures that workers have the skills (including knowledge and understanding of the capabilities of the processes being used), equipment, work process documents, and resources needed to accomplish their work. Line Management and workers cooperate to identify processes that can be improved.

Work processes and special processes are controlled by written procedures, work instructions, or other means used to define the work. The scope and detail of documentation are commensurate with the complexity and importance of the work, the skills required to perform the work, and the hazards and risks or consequences of quality problems in the product, process, or service. Process controls, personnel, procedure, and equipment qualification requirements, process parameters, hazards, acceptance criteria, equipment, and calibration requirements are clearly specified, understood, and fully documented.

Workers are responsible for the quality of their work and are expected to do their work correctly the first time in accordance with the appropriate procedures and work instructions. Workers are involved in work process design, process evaluation, and providing the feedback necessary for improvement.

5.3 Identification and Control of Items

The FSS Manager, with the Facility Manager, and Custodial, Mechanical, Grounds, Electrical, Materials, Work Control, and Relief Supervisors, is responsible for ensuring that items are identified and controlled to ensure their proper use. Items are maintained to prevent damage, loss, or deterioration. Items include materials, equipment, components, appurtenances, assemblies, modules, parts, structures, sub-system units, sub-assemblies, and systems. A graded approach, described in Sect. 1.5 of this plan, is applied to material identification and traceability based on the specificity of the material identification, the end use, and the consequences of failure.

When required, identification of items is maintained either on the item or in documentation traceable to the item. Items are identified from initial receipt or fabrication up to and including installation or use. Suitable identification information includes the unique part, lot, heat, model, version, or serial numbers. Procedures are established to ensure that, when items having identification or traceability requirements are subdivided or sampled, identification will be transferred to each part, container of parts, or sample lot at the time of subdividing or sampling.

Controls are established and implemented to ensure only correct and accepted items are used and installed. Where specified, items having a limited shelf life, operating life, or cycle, are controlled to preclude use when such limits have been exceeded.

The FSS Manager, with the Facility Manager, and Custodial, Mechanical, Grounds, Electrical, Materials, Work Control, and Relief Supervisors, in accordance with DOE O 414.1D, Quality Assurance; Attachment 1, “CRD”, second paragraph; Attachment 3, “Suspect/Counterfeit Items (S/CI) Prevention”; and IAEA-TECDOC-1169, Managing S/CIs in the Nuclear Industry, is responsible for implementing S/CI controls to the extent commensurate with the risks posed to the SSC. S/CI controls implemented in accordance with PMA-2618, Identification, Control and Disposition of Suspect/Counterfeit Items, include:

- Identification of responsibilities;
- Engineering involvement;
- Training on processes and controls;
- Oversight program (incorporated into IOP, see Sect. 1.2, QA Program, and Sects. 9 Management Assessment and 10 Independent Assessment);
- Information awareness;
- Technical and quality requirements in procurement specifications;
- Acceptance to procurement specifications;
- Inspection (e.g. receipt, maintenance, inventory, storage) (incorporated into IOP, see Sect. 1.2, QA Program, and Sect. 9 Management Assessment);
- Identification and marking/segregating to prevent use;
- Reporting to DOE (PPPO and headquarters) and Office of Inspector General (OIG);

- Engineering evaluation for potential risks to environment, public, and workers, and cost/benefit analysis;
- Disposition coordination with OIG; and
- Trending and lessons learned development to prevent recurrence.

The S/CI program is applied to critical applications and/or critical load path applications. Critical applications include the use of components in nuclear or high hazard applications that potentially could harm workers or the public, or could adversely affect the environment. Critical load path applications include components in lifting, hoisting, and rigging applications whose failure has the potential to damage other components used in either nuclear or high hazard applications. All S/CIs identified in these applications are removed, replaced, reported, and dispositioned in accordance with DOE O 414.1D. Reporting to DOE (PPPO and headquarters) and to the OIG is conducted in accordance with DOE O 232.2, Occurrence Reporting and Processing of Operations Information, and DOE O 221.1A, Reporting Fraud, Waste, and Abuse to the Office of the Inspector General. The OIG is contacted before destroying or disposing of S/CIs and corresponding documentation, to determine whether the items and documentation need to be retained for criminal investigation or litigation. When S/CIs are identified and appropriate disposition is uncertain, the Construction Engineer and Facility Manager evaluate the impact of the S/CIs on the SSC and the potential risks to the public and workers, cost-benefit analysis, and replacement schedule.

The Quality function is responsible for oversight and maintenance of the S/CI program requirements. See Sect. 6.7, Suspect/Counterfeit Items; 7.2, Procurement Program Definition; and 7.4, Product Acceptance, of this plan for more S/CI information.

5.4 Handling, Storing, and Shipping

The FSS Manager, with the Facility Manager, and Custodial, Mechanical, Grounds, Electrical, Materials, Work Control, and Relief Supervisors, is responsible for establishing criteria in PMA procedures for handling, storing, shipping, cleaning, and preserving items to prevent damage, loss, or deterioration. If no standards exist, the control levels established for storing and shipping are derived from national consensus standards, environmental procedures, or technical documents.

Criteria are also established in PMA procedures for marking and labeling items for packaging, shipping, handling, and storing, as necessary, to adequately identify, maintain, and preserve item integrity, including indication of the need for special environments, controls, or safety handling requirements.

5.5 Status Indicators

Line Management that performs operating, support, or experimental functions are required to maintain physical status indicators and supporting documentation for the work processes under their control. PMA procedures are established that specify the status of ISP through inspection and test processes. ISP requiring examination are clearly marked or tagged to ensure that only those with acceptable inspection and test results are used. These procedures also specify the

content, application, updating, and removal of physical status indicators. Items requiring re-testing or re-inspection are marked and segregated, if possible. Employees working with these items are trained to recognize status markings and indicators.

5.6 Control of Computer Software

The IT/Telecommunications Manager, through the Computer Support, Computer System, and Database Coordinator, Administrators, and Supervisor, are responsible for computing and telecommunications systems for DOE and the PORTS contractors, including the management and control of software requirements and applications. The Cyber Security Manager is responsible for computing systems security.

Several databases are used and maintained for DOE and other contractors. Work process controls are applied throughout the life cycle of software and the items/processes it supports. DOE G 414.1-4, Safety Software Guide, is used for grading the application of requirements in DOE O 414.1D, Attachment 1, “CRD”, second paragraph, and Attachment 4, “Safety Software QA Requirements for Nuclear Facilities”. At present, PMA is primarily using commercially available software. Software control processes have been established and implemented to ensure that computer programs used for applications such as developing or verifying designs, performing safety analyses, establishing safety envelopes, and performing safety management functions perform as intended and cannot create a safety issue through failure or unexpected operational impacts. Proper implementation of DOE O 414.1D is enhanced by grading software based on its application. The grading levels and the software types, custom developed, configurable, acquired, utility calculations, and commercial design and analysis tools, are utilized to recommend how SQA work activities are applied within PMA. The grading levels are defined in DOE G 414.1-4, Sect. 2.2, Graded Approach.

PMA provides SQA controls in accordance with contract clause C.3.3.3.2.7, “Maintenance and Upgrades”: “The Contractor shall provide basic operating software for usage of the LANs and wireless local area networks (WLANs). The LANs and WLANs shall be available for use by the Contractor, the D&D contractor, authorized visitors, as well as onsite subcontractors at the Portsmouth site. The LANs and WLANs shall be configured to allow separation of multiple users. The LAN and WLAN support includes operation, maintenance, data backups, repairs and upgrades to the LAN and WLAN systems and components as necessary to provide reliable and ongoing connectivity” PMA currently does not utilize any software program meeting DOE O 414.1D and DOE G 414.1-4 definitions of “safety software.” Although PMA does not utilize software defined as “safety software”, PMA maintains SQA controls, including applicable NQA-1-2004, Part II, subpart 2.7 requirements, in a graded approach as described in Sect. 1.5 of this plan on in-house developed business and other applications utilizing the following processes:

- PMA-1601, SQA;
- PMA-1602, Application Life Cycle Management;
- PMA-1603, IT Systems Configuration Management; and
- PMA-1609, IT Systems and Services Acquisition.

PMA establishes internal processes and provisions in procurement documents, as appropriate, to report defects and errors found with software including:

- Methods for documenting, evaluating and correcting software problems;
- Evaluation process for determining whether a reported problem is a defect or an error;
- Roles and responsibilities for disposition of problem reports, including notification to the originator of the results of the evaluation;
- Correlate errors with the appropriate software engineering elements, identify the potential impacts and risks to past, present, and future developmental operational activities, and support the development of mitigation strategies;
- Apprise all users of errors to ascertain any impacts upon safety basis decisions; and
- Problem reporting of defects and errors to the Supplier and vice versa, and Supplier responding to problem reports.

All other software defects and errors are reported through currently established IT processes.

SQA controls on other “safety software” and business applications installed for other contractors on the LAN administered by PMA are the responsibility of the contractors utilizing the software.

As noted in Sect. 6.2 of this plan, when the scope of work includes a design element, more rigorous QA controls will be applied for associated software. SQA controls require that access to software is limited to authorized individuals either by license restrictions, password protection, physical location network accessibility, or a combination of all four controls. Major systems also must have separated production and development environments to further protect data and performance.

5.7 Control of Processing Monitoring and Data Collection Equipment

The FSS Manager, through the Electrical Supervisor, is responsible for basic M&TE requirements described in Sect. 8.3 of this plan to ensure the adequacy of measurements. Work processes are established by the FSS Department and implemented to ensure that equipment used for process monitoring and data collection are of the proper type, range, and accuracy. This equipment is calibrated according to National Institute of Standards and Technology (NIST) technical standards applied through procedure PMA-2605, Control and Calibration of Measuring and Test Equipment, and maintained to ensure continuing data quality and process capability.

5.8 Integrated Safety Management Systems

The following ISMS Principles and Core Functions are integrated into this QA criterion:

- Principle 1, Line Management Responsibility for Safety;
- Principle 2, Clear Roles and Responsibilities;
- Principle 3, CCR;

- Principle 4, Balanced Priorities;
- Principle 6, Hazard Controls Tailored to Work Being Performed;
- PMA Honorary Principle 8, Worker Involvement (not cited in DOE O 450.2, Integrated Safety Management, but unofficially designated by PMA as an honorary principle 8 due the importance of worker involvement to effective hazard identification and control);
- Core Function 1, Define the Scope of Work;
- Core Function 2, Analyze Hazards;
- Core Function 3, Develop and Implement Hazard Controls; and
- Core Function 4, Perform Work Within Controls.

5.9 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this QAPP/QIP by the Quality function, and in the listed documents.

- PMA-1601, Software Quality Assurance;
- PMA-1602, Application Life Cycle Management;
- PMA-1603, Information Technology Systems Configuration Management;
- PMA-1604, Clearing, Purging, Destruction of Electronic Media;
- PMA-1605, IT Inventory Process;
- PMA-1608, Accounts and Passwords;
- PMA-1609, IT System and Services Acquisition;
- PMA-1610, System and Communication Protection;
- PMA-1611, Control of Portable Computing Device and Electronic Media;
- PMA-1625, SQA Problem Reporting and Issues Management Program;
- PMA-1800, Project Management;
- PMA-2605, Control and Calibration of Measuring and Test Equipment;
- PMA-2618, Identification, Control and Disposition of Suspect/Counterfeit Items;
- PMA-2708, Hoisting and Rigging;
- PMA-2714, Identification of Equipment and Piping Systems;
- PMA-2719, Accident/Equipment Control Tags;
- PMA-2725, Hoisting and Rigging Equipment – Inspection and Accountability;
- PMA-2804, Management of Wastes;

- PMA-2816, Preparing Samples and Laboratory Standards for Transport and Shipping;
- PMA-2900, Performance Document Process;
- PMA-3300, Integrated Work Control;
- PMA-3301, Work Packages;
- PMA-3501, Configuration Control;
- PMA-5312, Skill-Of-The-Craft Application;
- PMA-51601, Appropriate Use of Information Technology Computing Resources;
- PMA-56002, Project Management Overview;
- PMA-56003, Discipline and Rigor of Operations, and
- PMA-51606, Information Systems Change Management Policy.

6. DESIGN

6.1 General

The FSS Manager, with the Facility Manager, is responsible for providing the engineering support required to perform the Contract Scope of work, and establishing and implementing the PMA Design Program. The IT/Telecommunications Manager, through the Computer Support, Computer System, and Applications and Database Coordinator, Administrators, and Supervisor, are responsible for establishing and maintaining computing and telecommunications systems infrastructure and the management and control of software requirements and applications (i.e., SQA). PMA has established procedures and processes to ensure these design requirements are met. Items and processes are required to be designed using sound engineering, scientific principles, and appropriate standards. Design procedures address design requirements, data-collection operations, inputs, processes, outputs, changes, records, and organizational interfaces. Design controls will be applied to software development and used for specific activities in accordance with DOE O 414.1D, Attachment 1, CRD, second paragraph, and Attachment 4 - Safety Software QA Requirements for Nuclear Facilities (see Sect. 5.6 Control of Computer Software and 8.4 Software Testing of this plan for more information). Projects and designs are performed in a graded approach, as described in Sect. 1.5 of this plan. Various elements of the QA Program and administrative controls are applied in accordance with these classifications throughout the life of the design.

The contract scope of work is expected to primarily require simple designs to complete Grade Level D (commercial practice) preventive and corrective maintenance (primarily office remodeling). These designs are completed with simple sketches and revisions to existing drawings controlled by PMA Grade Level D configuration control, work package, and project management procedures. The PMA Design Authority for sketches is the applicable Line Manager, Work Planner, Supervisor, FSS Manager, PM, or vendor. The Design Authority for simple drawing changes is assigned by the Construction Engineer. The controls discussed in Sect. 6.2 to 6.6 of this plan will be applied for design inputs and outputs, interfaces, calculations,

checking/review, verification, validation, and change control to PMA simple designs in a graded approach commensurate with the hazards and risks associated with the operation of the facility or performance of the activity.

PMA may subcontract design work or develop enhanced work processes when requested to perform complex designs such as bridge and road construction, fire protection and HVAC systems, roof repair, and security modifications, and designs affecting the safety basis maintained by another contractor. The FSS Department will identify the Design Authorities for the more complex designs in the subcontract agreements or other work documents. Designs affecting the D&D scope of work (e.g., fire protection) shall be approved by the D&D contractor prior to implementation. Subcontract agreements and/or enhanced work processes will ensure the controls discussed in Sect. 6.2 to Sect. 6.6 of this plan for design inputs and outputs, interfaces, calculations, checking/review, verification, validation, and change control are formally established in work processes.

The Business Manager, through the Procurement Manager and Contract Administrator, is responsible for establishing and maintaining subcontract agreements. A subcontract formation team is established that includes SMEs from affected departments, functions, and projects. The team defines the scope of work, standards, ESH&Q, security, training, qualification, and other requirements; PMA processes flowdown, deliverables, and schedule. Subcontract formation teams involving complex designs include the FSS and other applicable departments, and Design Authorities representatives.

6.2 Design Process

Selection of design control requirements is based on safety analyses of SSCs and the safety significance of the functions they perform. Some design requirements are in DOE O 420.1C, Facility Safety. Design control measures correctly translate appropriate codes, standards, and quality requirements to ensure SSCs meet their specified design requirements. Requirements for determining design basis include:

- Basic function and performance requirements;
- Computer systems and applicable software programs;
- Design and environmental conditions;
- Material requirements;
- Interface requirements;
- Operational, inspection, testing, maintenance, constructability, and redundancy requirements; and
- Fire protection, safety, quality, and reliability requirements.

Requirements are typically contained in design criteria documents and performance requirements and are incorporated into design work and design changes.

Design input is based on contractual requirements and customer expectations and shall be technically correct and complete before design can begin. Design input may include design

bases, ESH&Q elements, life cycle information performance parameters, codes and standards, and reliability requirements. Design control procedures ensure that design input requirements are correctly translated into design outputs such as drawings, specifications, test/inspection plans, maintenance requirements, and reports. Design outputs support other processes such as dose and risk assessments, procurement, manufacturing, assembly, construction, testing, inspection, maintenance, and decommissioning. Design outputs are issued as controlled documents and are retained as quality records in accordance with Sect. 4 of this plan.

PMA will subcontract any scope of work that requires the use of computer software to originate or analyze design solutions during the design process. The software is to be validated for the intended use; otherwise, status of the code validation is identified and documented prior to use. The requirements in DOE O 414.1D, DOE G 414.1-2B, DOE G 414.1-4, and NQA-1-2004, Part II, subpart 2.7 will be applied to subcontract work for computer software.

6.3 Design Interfaces

Design interfaces are identified and controlled using procedures, instructions, and/or formal agreements to provide effective coordination of design effort among and within participating organizations. These controls include a description of the responsibilities of the affected organizations for initiation, development, review, approval, release, distribution, revision of design documents, and management of the overall design tasks. PMA interfaces with the other PORTS contractors, ACP, D&D, and DUF₆ conversion plant, as defined in DOE contracts and GFS&I agreements, and in PMA work authorization agreements or subcontracting agreements through the procurement process. Work for other site contractors flows through the PMA work control and/or project management processes. PMA participates in the Shared Site committee led by the D&D contractor to identify and implement appropriate controls for site activities impacting multiple users.

6.4 Design Verification/Validation

The FSS Manager, with the Facility Manager, is responsible for ensuring verification and validation is completed before approval and implementation of the design. These evaluations are performed by qualified individuals, other than those who performed the work, and individuals knowledgeable in the application of the design and capable of performing similar design activities.

The FSS Manager, with the Facility Manager, is responsible for the design input/output alignment, including drawings, calculations/analyses, and supporting documentation. The Construction Engineer is an integral part of the design verification process performed during various phases of the design to ensure that the applicable requirements are properly incorporated. The extent and number of design verifications are based on a graded approach as described in Sect. 1.5 of this plan, and depend on the designed product's complexity and importance to safety and project success. Adequacy of design output is verified prior to release for use by other organizations or to support processes such as procurement, manufacturing, construction, and equipment operations. If any portion of the design cannot be verified prior to release, the unverified portion of the design is identified, tracked, and controlled. Design verifications are

completed before relying on the system, structure, or component to perform its function and before installation become irreversible.

Design validation is accomplished using one or more of the following methods:

- Design review;
- Alternate calculations; or
- Qualification testing.

Separate validation is not required for multiple use of identical, previously proven, or validated designs unless they are intended for different applications or different performance criteria.

Formal design reviews are performed as defined in procedures. This review includes review of design inputs, processes, outputs, and changes. The extent of verification/validation is commensurate with hazard, complexity of design, degree of standardization, and uniqueness of the design. The design review process consists of peer reviews, interdisciplinary reviews, and reviews within design agencies.

Alternate calculations may be used to verify correctness of the original design calculations. The appropriateness of assumptions, input data used, and the computer program or other calculation methods used are also reviewed for accuracy.

Qualification tests may be used to verify adequacy of the design or portions of it in conjunction with other verification methods. These tests are conducted using approved procedures and include acceptance criteria that verify or validate acceptability of specific design features. Qualification tests are conducted on a timely basis under conditions that simulate the most adverse design conditions. Determination of the most adverse conditions takes into consideration operating modes and environmental conditions in which the item being tested is required to perform satisfactorily. Test results are documented, evaluated, approved, and retained. SSCs are put into operation only after successful completion of qualification tests. When only certain feature characteristics can be validated by qualification testing, the remaining features are verified by other appropriate methods (e.g., run-ins or monitored operations). Portions of the design to be validated are identified and the extent of the validation is defined and documented. The Construction Engineer is responsible for design verification and validation activities and requirements.

6.5 Design Change Control

The FSS Manager, with the Facility Manager, is responsible for establishing and maintaining the design and configuration control program. The departments, functions, and projects performing work are responsible for ensuring that design and configuration control changes are documented and approved in accordance with work processes.

The PMA configuration control procedure for Grade Level D (commercial practice) facilities and activities applies the controls described in this section of this plan in a graded approach as described in Sect. 1.5 of this plan, commensurate with the hazards and risks associated with the operation of the facility or performance of the activity. The configuration control procedure ensures that modifications, changes, and revisions applicable to documents, drawings, sketches,

and items (DDSI) are controlled in a manner to establish consistency throughout the life of the DDSI, and help assure ongoing protection of the safety and health of workers, the public, and the environment.

PMA may subcontract design and configuration control work or develop enhanced work processes when requested to perform complex work such as bridge and road construction, fire protection and HVAC systems, roof repair, and security modifications, and work affecting the safety basis maintained by another contractor. Subcontract agreements will ensure the design and configuration change controls discussed in this section of this plan are formally established in work processes.

Written procedures establish controls for final design and configuration control changes, field changes, field sampling, modifications, changes resulting from nonconforming items dispositioned as “use-as-is” or “repair,” and as-built approved changes. Procedures require technical justifications for design and configuration control changes, including the use of acceptance criteria if different from that specified in the original design. Design and configuration control changes are subject to the same controls as the original design and configuration. These controls ensure that the design and configuration analyses for the SSCs are still valid or are re-validated, as applicable. Procedures provide for changes to be approved by an in-house design and configuration control organization, or other technically qualified designee, assigned the responsibility for developing, reviewing, and approving the design and configuration. Formal design and configuration change control boards may be utilized, depending upon the impact of a change. PMA interfaces with the other PORTS contractors, ACP, D&D, and DUF₆ conversion plant, as defined in DOE contracts and GFS&I agreements, and in PMA work authorization agreements or subcontracting agreements through the procurement process. Work for other site contractors flows through the PMA work control and/or project management processes. PMA participates in the Shared Site committee led by the D&D contractor to identify and implement appropriate controls for site activities impacting multiple users. Designs affecting the D&D scope of work (e.g., fire protection) are approved by the D&D contractor prior to implementation.

6.6 Temporary Modifications

Temporary modifications receive the same levels of control as those of permanent design modifications. They are initiated by way of request to the appropriate technical organization responsible for the SSC. A technical evaluation is performed under the direction of the FSS Manager and Facility Manager for acceptability, a formal technical review is conducted by individuals qualified to evaluate the temporary modification, and the necessary approvals obtained.

6.7 Suspect/Counterfeit Items

The FSS Manager, with the Facility Manager, and Custodial, Mechanical, Grounds, Electrical, Materials, Work Control, and Relief Supervisors, in accordance with DOE O 414.1D; Attachment 1, “CRD”, 2nd paragraph; and Attachment 3, “S/CIs Prevention”, specify criteria in design documents to prevent the procurement and use of S/CIs. DOE O 414.1D; DOE G 414.1-2B, Quality Assurance Program Guide; DOE O 440.1B, Worker Protection Program; 10 CFR

830.120, Subpart A, Quality Assurance Requirements; and IAEA-TECDOC-1169, Managing S/CIs in the Nuclear Industry provide guidance to help the FSS department personnel develop appropriate design requirements to avoid the procurement and use of S/CI items. S/CIs identified are removed, replaced, reported, and dispositioned in accordance with DOE O 414.1D.

Reporting to DOE (PPPO and headquarters) and to the OIG is conducted in accordance with DOE O 232.2, Occurrence Reporting and Processing of Operations Information, and DOE O 221.1A, Reporting Fraud, Waste, and Abuse to the Office of the Inspector General. The OIG is contacted before destroying or disposing of S/CIs and corresponding documentation, to determine whether the items and documentation need to be retained for criminal investigation or litigation. When S/CIs are identified and appropriate disposition is uncertain, the FSS Manager and Facility Manager evaluate the impact of the S/CIs on the SSC and the potential risks to the public and workers, cost-benefit analysis, and replacement schedule. See Sect. 5.3, Identification and Control of Items, 7.2, Procurement Program Definition, and 7.4, Product Acceptance, of this plan for more S/CI information.

6.8 Integrated Safety Management Systems

The following ISMS Principles and Core Functions are integrated into this QA criterion:

- Principle 4, Balanced Priorities;
- Principle 5, Identification of Safety Standards and Requirements;
- Principle 6, Hazard Controls Tailored to Work Being Performed;
- Core Function 2, Analyze Hazards;
- Core Function 3, Develop and Implement Hazard Controls;
- Core Function 4, Perform Work Within Controls; and
- Core Function 5, Provide Feedback and Continuous Improvement.

6.9 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this QAPP/QIP by the Quality function, and in the listed documents.

- PMA-1601, Software Quality Assurance;
- PMA-1602, Application Life Cycle Management;
- PMA-1603, Information Technology Systems Configuration Management;
- PMA-1609, IT Systems and Services Acquisition;
- PMA-1800, Project Management;
- PMA-2613, Design;
- PMA-2618, Identification, Control and Disposition of Suspect/Counterfeit Items;

- PMA-3300, Integrated Work Control;
- PMA-3301, Work Packages;
- PMA-3204, Facility Management;
- PMA-3501, Configuration Control;
- PMA-51606, Information Systems Change Management Policy; and
- PMA-56003, Discipline and Rigor of Operations.

7. PROCUREMENT

7.1 General

The Business Manager, through the Procurement Department, is responsible for establishing and implementing the Procurement program utilizing a graded approach as described in Sect. 1.5 of this plan. The ESH&Q Manager, through the Quality Manager, is responsible for establishing and implementing the supplier selection and evaluation and product acceptance programs as they apply to items and services.

7.2 Procurement Program Definition

Procurement function PMA/PORTS-76, Procurement Operating Practices, includes 20 practices and guides for preparing, reviewing, and approving procurement bid packages, and other procurement documents. The requisitioned items and services are specified, procured, reviewed and approved utilizing the requirements as defined in the operating practices and guides. Standardized General T&Cs for individual, commercial, time and material, cost type, and fixed price contracts are utilized to flow down T&Cs to subcontractors. These T&Cs include Federal Acquisition Regulation (FAR), ES&H, Quality, S/CI and other requirements that flowdown from DLS. These specifications ensure the items and services perform as required and are delivered on time.

The FSS Manager, with the Facility Manager, and the Custodial, Mechanical, Grounds, Electrical, Materials, Work Control, and Relief Supervisors, utilizes the SOMAX automated maintenance management system for work control program equipment, material and support services requisition submittal, review, and approval. The SOMAX process provides Procurement/Contract with the requisition approved scope and requirements, which are further processed through the operating practices and guides, as appropriate.

The selection of procurement requirements is commensurate with the importance of the purchased items or service. Technical, administrative, and quality requirements applicable to items or services being procured are identified and specified in procurement documents. These requirements include applicable codes, regulations, industry standards, specifications, tests, inspections, acceptance methods, criteria for acceptance or rejection of items or service, traceability, special procedures or instructions, required submittals, and any other requirements referenced in the design documents. Standardized T&Cs flow down the criteria of DOE 414.1D, 10 CFR 830.120 Subpart A, and NQA-1-2004, Parts I and II, and other DLS, as applicable to the

scope of work utilizing a graded approach as described in Sect. 1.5 of this plan. T&Cs contain language to prevent the procurement and installation of S/CI, provide indemnity from loss, injury or damage, and provide for recovery and reporting.

Procurement documents (purchase requisitions in SOMAX, and associated specifications), developed for items or services, are routinely reviewed and approved by the Accounting, Procurement/Contract, Project Controls, Quality, S&H, Environmental, Training, and Security functions, and other applicable Line Management. On the basis of PMA non-nuclear, facility Grade Level D, Standard Industrial, scope of work, items and services are generally purchased as QL-4 or QL-4+, commercial-grade. QL-4+ may be applied at the discretion of the Quality Manager to items and services that, because of ISMS and quality considerations, warrant additional quality attributes (e.g. receipt inspection, laboratory [other] certification, certificate of calibration, certificate of conformance, license, independent testing, QA plan). The Quality function establishes quality criteria for selected items and services in SOMAX based on their importance and end use, and identifies items requiring receipt inspection by a Quality Specialist. The Quality function also evaluates selected suppliers for items and services with greater importance and end use, to determine that quality programs (ISO and other certifications, codes, plans, processes, etc.) are adequate to provide desired end products. A list of suppliers selected for evaluation is maintained by the Quality function.

The Quality Manager, supported by the FSS department, is responsible for procedures that define appropriate controls for the selection, suitability determination, evaluation, and receipt of items or services being procured. On the basis of PMA non-nuclear, facility Grade Level D, Standard Industrial, scope of work, PMA does not have the need or plan to procure off-the-shelf, commercial-grade items and dedicate these items for safety related applications. If and when this need should arise, PMA will develop and implement a commercial grade dedication process before procuring any such items.

Facility Grade D items or services may be procured as commercially available. Application of the controls described above is applied utilizing a graded approach as described in Sect. 1.5 of this plan.

7.3 Supplier Selection and Evaluation

The Quality Manager, supported by the Procurement Manager, Contracts Administrator, and Facility Manager, is responsible for supplier selection and evaluation. On the basis of PMA non-nuclear, facility Grade Level D, Standard Industrial, scope of work, items and services are generally purchased as QL-4 or QL-4+, commercial-grade. QL-4+ may be applied at the discretion of the Quality Manager to items and services that, because of ISMS and quality considerations, warrant additional quality attributes (e.g. receipt inspection, laboratory [other] certification, certificate of calibration, certificate of conformance, license, independent testing, QA plan). The Quality function establishes quality criteria for selected items and services in SOMAX based on their importance and end use, and identifies items requiring receipt inspection by a Quality Specialist. The Quality function also evaluates selected suppliers for items and services with greater importance and end use, to determine that quality programs (ISO and other certifications, codes, plans, processes, etc.) are adequate to provide desired end products. A list of suppliers selected for evaluation is maintained by the Quality function.

The objective of evaluating suppliers is two-fold: (1) to verify the supplier has implemented a QA program that conforms to contract requirements, and (2) to verify that the supplier is capable of providing the items or services identified in the contract. In addition, the safety performance [Occupational Safety and Health Administration (OSHA) statistics] of service suppliers (e.g., construction) are evaluated to select the best value suppliers most closely meeting the ISMS objectives identified in Sect. 1.7 of this plan.

Supplier evaluations are commensurate with the importance of the end use of the purchased item or service. Potential suppliers are evaluated early in the design and procurement process in order to determine their capability to meet performance and schedule requirements as defined in the SOMAX purchase requisitions. The methods for evaluating potential suppliers may include a review of the suppliers' QA program and an in-plant assessment of the suppliers' capabilities, as needed. These methods may be replaced by or used in combination with any of the following methods depending on the importance and complexity of the item or service:

- A review of the supplier's history for providing identical or similar items or services;
- A review of shared supplier quality information;
- An evaluation of certifications or registrations awarded by nationally accredited third parties; or
- An evaluation of documented qualitative and quantitative information provided by the supplier.

The method or combination of methods chosen provides adequate confidence that the supplied item or service will meet requirements. Items or services are procured from suppliers whose evaluation results satisfy the requirements of the procurement specifications. In addition, supplier's performance shall be evaluated periodically during the life of the contract to verify ongoing compliance with the procurement requirements. Suppliers are monitored to ensure that acceptable items or services are produced and schedule requirements are being met. The supplier evaluations are tracked by the Quality and Procurement/Contract functions. Monitoring may include:

- Surveillance of work activities,
- Inspection of facilities and processes,
- Review of plans and progress reports,
- Processing of change information,
- Review and disposition of non-conformances, and
- Review of the supplier's selection, qualification, and performance monitoring of sub-tier suppliers.

PMA has established operating practices to ensure that the required clauses, policies, provisions, guidance, scopes of work, directives, and other T&C are contractually flowed down to approved suppliers. QA Program requirements are identified in subcontracts. For subcontractors who will be providing scopes of work associated with Facility Grade D, Standard Industrial, the

subcontract may require the development of a QAPP/QIP that addresses the requirements of DOE O 414.1D and applicable criteria in NQA-1-2004 utilizing a graded approach as described in Sect. 1.5 of this plan. Companies performing limited scopes of work may be allowed to follow relevant portions of the PMA QAPP/QIP. The subcontract also states that the supplier is subject to enforcement actions under 10 CFR 851 and 10 CFR 824, pertaining to worker safety and health and classified information security, respectively. For subcontractors who will be providing scopes of work associated with Facility Grade B and Grade C active safety systems, defense-in-depth, or credited design features, the subcontract requires the development of a QAPP/QIP that addresses the requirements of 10 CFR 830.120, Subpart A and applicable criteria in NQA-1-2004. The subcontract also states that the supplier or subcontractor is subject to enforcement actions under 10 CFR 820, 10 CFR 830, 10 CFR 835, 10 CFR 851, and 10 CFR 824, pertaining to nuclear safety, worker safety and health, and classified information security.

Procedures and processes are in place to provide the Procurement Representative and other PMA oversight and subcontract administrators adequate tools and training to enforce appropriate subcontract performance. These procedures are written to ensure that three essential elements are provided in all subcontracts. These three elements are: clear specifications and work scope, pre-qualification of selected suppliers and subcontractors, and adequate oversight processes. Roles and responsibilities for the various exhibits/subcontract documents are specifically identified.

7.4 Product Acceptance

Purchased items or services are accepted by the method(s) specified by the requisition or design documents and are commensurate with the importance of, and the end use of, the purchased item or service. Items are accepted by one or more of the following methods: source verification, receiving inspection, or post-delivery testing. In addition, a Certificate of Conformance, with the appropriate receipt inspection, can be used for acceptance of certain standard items. The Certificate of Conformance is traceable to the item and identifies the specific requirements met by the purchased item. Procured services may be accepted by the review and technical validation of data or reports submitted by the supplier, performance of walkthroughs, or surveillance of the activity. Performance of source verification and receiving inspection activities utilize acceptance criteria specified or referenced in procurement documents.

Purchased items are routinely examined for potential S/CI characteristics. S/CIs identified are removed, replaced, reported, and dispositioned in accordance with DOE O 414.1D, Quality Assurance, Attachment 3, "Suspect/Counterfeit Items Prevention". Reporting to DOE (PPPO and headquarters) and to the OIG is conducted in accordance with DOE O 232.2, Occurrence Reporting and Processing of Operations Information, and DOE O 221.1A, Reporting Fraud, Waste, and Abuse to the Office of the Inspector General. The OIG is contacted before destroying or disposing of S/CIs and corresponding documentation, to determine whether the items and documentation need to be retained for criminal investigation or litigation. When S/CIs are identified and appropriate disposition is uncertain, the FSS Manager and Facility Manager evaluate the impact of the S/CIs on the SSC and the potential risks to the public and workers, cost-benefit analysis, and replacement schedule. See Sect. 5.3, Identification and Control of Items, 6.7, Suspect/Counterfeit Items, and 7.2, Procurement Program Definition, of this plan for more S/CI information.

Receipt inspection is generally performed by the organization purchasing the item in conjunction with Safety and Business Systems SMEs and Quality function, as appropriate. The Quality function establishes quality criteria for selected items and services in SOMAX based on their importance and end use and identifies items requiring receipt inspection by a Quality Specialist.

Supplier-generated documents are reviewed and accepted prior to acceptance of the item or service. These documents are processed in accordance with the Records Management requirements in Sect. 4 of this plan.

Procured items are put into service when the acceptance requirements of the procurement documents have been satisfied. This process is performed by the organization procuring the item, and assisted by the Materials Supervisor and Quality function, as appropriate. If an item does not meet a specified requirement or has a documentation deficiency, a Nonconformance Report is initiated to document such deficiency. Identified deficiencies are rejected/dispositioned and corrective action is taken and verified prior to use of the item. Information from these nonconformance reports is input into the CTS for tracking, trending, and to provide historical information for future supplier performance evaluations. Receipt inspections results are used as continuing feedback on the supplier's performance and are used to ensure that approved suppliers continue to provide acceptable items and services.

Post-maintenance, functional, or pre-operational testing is performed after installation of procured items when specified in work documents. These tests verify actual performance of the item against established criteria for the item and the system. Tests, in-service inspections, and preventive maintenance programs monitor the performance of the procured item against established criteria, as applicable. The FSS Department is responsible for this testing with oversight by the Quality function.

7.5 Integrated Safety Management Systems

The following ISMS Principles and Core Functions are integrated into this QA criterion:

- Principle 4, Balanced Priorities;
- Principle 5, Identification of Safety Standards and Requirements;
- Core Function 1, Define Scope of Work;
- Core Function 3, Develop and Implement Hazard Controls;
- Core Function 4, Perform Work Within Controls; and
- Core Function 5, Provide Feedback and Continuous Improvement.

7.6 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this QAPP/QIP by the Quality function, and in the listed documents.

- PMA-1609, IT Systems and Services Acquisition;
- PMA-1625, SQA Problem Reporting and Issues Management Program;

- PMA-2606, Inspection and Test Control;
- PMA-2618, Identification, Control and Disposition of Suspect/Counterfeit Items;
- PMA-2621, Supplier Quality Program Evaluation;
- PMA-52301, Sustainable Environmental Business Practices;
- PMA/PORTS-76, Procurement Operating Practices for PMA;
- Procurement Guides;
- SOMAX Automated Maintenance Management System (Purchase Requisition Module);
and
- Standard T&Cs.

8. INSPECTION AND ACCEPTANCE TESTING

8.1 General

The FSS Manager, with the Facility Manager, and the Mechanical, Electrical, Materials, Work Control, and Relief Supervisors, is responsible for establishing and implementing an Inspection and Acceptance Testing Program for SSCs. The Electrical Supervisor is responsible for establishing and maintaining the M&TE Control Program.

8.2 Inspection and Acceptance Testing

Inspection and acceptance testing of specified ISP is conducted using established acceptance and performance criteria identified in applicable codes and standards. Inspections and tests are identified early in the design process and specified in the design output documents. Examples of inspections and acceptance testing include source, in-process, final, receipt, maintenance, bench tests and proof tests before installation, pre-operational tests, post-maintenance tests, post-modification tests, and operational tests. These are structured to clearly distinguish between those that verify design requirements and those that verify operation within safety limits and requirements. The inspection/testing process verifies that specified ISP meet or exceed specified requirements. Administrative controls, including the use of status indicators, are used to preclude inadvertent bypassing of required inspections or tests and inadvertent operation of nonconforming or indeterminate items or processes.

Inspections and tests are performed either by or for organizations performing work on SSCs. Inspections/tests are performed by technically qualified personnel who have the authority to access appropriate information and facilities in order to verify acceptance. These personnel are independent of the activities being inspected or tested and have the freedom to report the results of the inspections/tests.

The FSS Manager, with the Facility Manager, and the Mechanical, Electrical, Materials, and Work Control Manager, with Quality Manager concurrence, are responsible for ensuring inspection/test planning procedures are developed to ensure that inspection/test requirements are properly incorporated into documents. Departments, functions, and projects performing

inspections/tests are responsible for inspection/test planning. Inspection/test planning includes, at a minimum:

- Item and process characteristics to be inspected (e.g. S/CI);
- Type of item and the length of time it is expected to remain in inventory/storage;
- Inspection/test techniques and equipment to be used (including calibration requirements);
- Acceptance criteria (including tolerances);
- Hold and witness points;
- Identification of the organization performing inspection/tests;
- Required independence and qualifications of individuals who perform examinations;
- Suitable environmental conditions;
- Required safety measures;
- Requirements to ensure completeness and accuracy of data; and
- Test article configuration.

The FSS Manager, with the Facility Manager, and the Mechanical, Electrical, Materials, and Work Control Managers, with Quality Manager concurrence, establish level, extent, and acceptance criteria for inspections/tests based on the critical characteristics or functional classification of the item. For equipment or systems being tested, designated operations personnel review the test packages for impact on, and interface with, operating systems and confirm that proposed testing will provide adequate validation that the equipment will perform its design functions.

Final inspections are distinct from inspections conducted during the work process. Final inspection confirms the item, service, or process is ready for acceptance testing and/or operation. As such, it includes completeness, cleanliness, identification/markings, calibration, alignment/adjustment, adequate records, or other characteristics indicating conformance to requirements. Tests and inspections are the responsibility of the FSS department with oversight by the Quality function.

The results of inspections and test are documented. Inspection and test records identify at a minimum the:

- Item;
- Date;
- Name of individual performing inspection/test;
- Observations;
- Results and acceptability; and
- Action taken concerning quality problems noted.

Under the FSS department, inspection/test results are evaluated and verified by authorized personnel to document that all requirements have been satisfied. Final acceptance is verified and documented by the organization having final responsibility for the item or process. The Quality function provides oversight and concurrence of the process and results. Records are handled in accordance with requirements as discussed in Sect. 4 of this plan.

When acceptance criteria are not met, nonconforming items and processes being inspected/tested are controlled in accordance with PMA-2603, Control of Nonconforming Items and Services. After verification of corrective action implementation, the item or process is re-inspected/tested to the original or approved alternative acceptance criteria prior to being used or returned to service.

Application of these controls for Facility Grade D items and processes is optional according to the graded approach as discussed in Sect.1.5 of this plan.

8.3 Measuring and Test Equipment

The FSS Manager, through the Electrical Supervisor, is responsible for establishing and maintaining the M&TE Control Program. The Quality function provides oversight of the M&TE Control Program. M&TE typically includes instruments, tools, gages, reference and transfer standards, and nondestructive examination equipment. M&TE controls include: selection, identification, handling, transportation and storage, inventory, environmental conditions, calibration method, standard, and frequency, traceability, responsible personnel training, status, tracking, segregation, repair, and documentation and records. PMA is responsible for calibrating and maintaining monitoring and survey equipment needed to perform its scope of work. Equipment used for inspections and acceptance testing is also calibrated and maintained in accordance with written procedures or manufacturer's instructions.

On the basis of PMA primarily non-nuclear, Standard Industrial, Commercial Practice, scope of work, the PMA M&TE program addresses M&TE used for both essential data and reference data to the extent commensurate with the risks posed to personnel, the public, the environment, and mission objectives. M&TE used for essential data is calibrated to the extent and intervals necessary to adequately perform the measurements involved. M&TE used for reference data does not require calibration, but may be calibrated at the discretion of Line Management for reference checks. This ensures that emphasis is placed on equipment that has the greatest effect on personnel, safety and health, environment, data quality, cost, performance and schedule.

The M&TE Control Program is performed in accordance with PMA-2605, Control and Calibration of Measuring and Test Equipment, and related forms PMAF-2632, M&TE Identification and Inventory Log; PMAF-2633, M&TE Essential Data Calibration Log; and PMAF-2634, M&TE Reference Data Calibration Log.

M&TE is properly selected of the type, range, accuracy, and precision to perform the intended task.

M&TE users are appropriately trained and/or qualified to ensure they have the education, knowledge, and experience to perform their assigned tasks.

M&TE is properly handled, stored, transported, calibrated, and utilized in suitable environmental conditions that will not adversely affect the integrity, condition, calibration, or measurement results.

Calibration of essential data M&TE is performed to manufacturer recommendations at specified intervals, or prior to and after use. The Electrical Supervisor, through interaction with users, is responsible for defining M&TE calibration frequencies if other than manufacturers' recommendations. Calibration frequencies are based on required accuracy, intended use, frequency of use, stability characteristics, and other conditions affecting M&TE performance.

Accuracy of essential data M&TE calibration standards is established to ensure equipment being calibrated will be within required tolerances. Calibration standards are traceable to NIST or other nationally recognized standards.

Traceability and accountability of M&TE is also required. M&TE is inventoried, labeled, tagged, segregated, tracked or otherwise controlled to indicate calibration status. M&TE identification provides traceability to calibration and test data. Essential data M&TE is labelled as Essential Data with calibration information. Reference M&TE is labelled as Reference Data and may be labelled with calibration information at the discretion of Line Management (e.g., used for Reference checks of other equipment).

M&TE is checked prior to its use to ensure that it is of the proper type, range, accuracy, and that it is uniquely identified and traceable to its calibration data, as applicable.

M&TE found to be out of calibration or out of tolerance is tagged or segregated and reported in accordance with the nonconformance reporting procedure. Such M&TE is not used until it has been either successfully recalibrated or replaced. The M&TE Control Program requires formal, documented review of the usage of such equipment dating back to its last known in-calibration date (reverse traceability). This review is to determine if the use of the M&TE resulted in the acceptability of items or processes becoming either invalid or indeterminate. The basis for acceptance of these nonconforming or indeterminate items and processes is formally evaluated and documented.

M&TE controls are documented, as appropriate, in logbooks, databases, work packages, and through other means to support the use, status, and acceptability of results.

Records associated with M&TE are maintained in accordance with requirements discussed in Sect. 4 of this plan.

8.4 Software Testing

The IT/Telecommunications Manager, through the Database Supervisor and the IT PM, is responsible for establishing and maintaining the software testing program. The activities necessary to show the acceptability of the software against the approved requirements, and to verify the functionality of the software, are identified. Planning addresses the review and testing activities throughout the software life cycle. Software testing includes evaluating whether the software adequately and correctly performs all intended functions. Software testing is performed in accordance with DOE O 414.1D, Quality Assurance, and DOE G 414.1-4, Safety Software Guide. See Sect. 5.6 and 6.2 of this plan for more information.

8.5 Integrated Safety Management Systems

The following ISMS Principles and Core Functions are integrated into this QA criterion:

- Principle 1, Line Management Responsibility for Safety;
- Principle 2, Clear Roles and Responsibilities;
- Principle 3, CCR;
- Principle 4, Balanced Priorities;
- Principle 5, Identification of Safety Standards and Requirements;
- Principle 7, Operations Authorization;
- Core Function 1, Define the Scope of Work;
- Core Function 3, Develop and Implement Hazard Controls;
- Core Function 4, Perform Work within Controls; and
- Core Function 5, Provide Feedback and Continuous Improvement.

8.6 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this plan by the Quality function, and in the listed documents.

- PMA-1314, Storage and Inspection of Stored Records;
- PMA-1601, Software Quality Assurance;
- PMA-1602, Application Life Cycle Management;
- PMA-1603, Information Technology Systems Configuration Management;
- PMA-1625, SQA Problem Reporting and Issues Management Program;
- PMA-2407, Testing and Inspection of Emergency Eyewash and Shower Equipment;
- PMA-2605, Control and Calibration of Measuring and Test Equipment;
- PMA-2606, Inspection and Test Control;
- PMA-3300, Integrated Work Control;
- PMA-3301, Work Packages; and
- PMA/PORTS/16-0761, Calendar Year Oversight Plan (2016).

9. MANAGEMENT ASSESSMENT

9.1 General

The PM is responsible for establishing and implementing the three-tiered IOP discussed in Sect. 1.2 of this plan. OAs are performed as part of each tier of the program (see Fig. 1). The ESH&Q Manager, through the Quality Manager, is responsible for establishing and implementing the PMA MA Program based on the guidelines of DOE O 226.1B, Implementation of Department of Energy Oversight Policy; DOE G 414.1-1C, Management and Independent Assessments Guide; and DOE P 450.4A, Integrated Safety Management System Policy. PMA uses the MA process defined in PMA-2602, Oversight Activity – Management Conformity Assessment, and PMA-2620, Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments, to assess departments, functions, and projects to determine how well they meet customer and performance expectations and mission objectives, identify strengths or improvement opportunities, and correct problems. MA also address the effective use of resources to achieve the organization’s goals and objectives. MAs are used to determine whether an integrated management system exists and whether it focuses on meeting both customer and performance requirements and strategic goals. Line Management assesses the performance of the activities assigned to their departments, functions, and projects. The scope of MAs is based on the associated risks according to previous findings and according to a graded approach as described in Sect. 1.5 of this plan.

MAs are planned, scheduled, performed, and documented as an ongoing activity to verify conformance to applicable requirements and identify opportunities to improve performance and cost-effectiveness. MAs are identified and scheduled in the annual IOP plan developed by the Quality function. Line Management assesses their processes for planning, organizational interfaces (internal and external to the organization), integration of management systems (e.g., safety, quality, and project), use of performance metrics, training and qualifications, and supervisory oversight and support. Line Management participates in the assessment process in order to evaluate the organization as a total system and to effect change. Emphasis is placed on the observation and assessment of work activities in the field. ESH&Q Department interaction and oversight, supervisory logs and checklists are included in these evaluations along with worker performance. MAs may also include an evaluation of such conditions as: the state of employee knowledge, motivation, and morale, communication among workers, the existence of an atmosphere of creativity and improvement, and the adequacy of human and material resources to achieve the organization’s goals and objectives. The MAs also include an introspective evaluation to determine if an integrated management program exists and if it focuses on meeting both customer requirements and strategic goals.

In accordance with the graded approach, commensurate with the hazards and risks associated with the operation of the facility or performance of the activity, personnel performing management assessments are designated Assessors and Assessor Coordinators, and require qualification in accordance with PMA-2620, Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments. Qualification may include formal assessor training, knowledge, experience, and orientation and on-the-job mentoring by the Quality function. The primary requirements for selection of Assessors and Assessor Coordinators

are knowledge of the area being assessed, questioning attitude, and objective evaluation. Cognizant technical or operational personnel (e.g., Assessors, SMEs) may be included as team members to provide expert specialty knowledge. Assessor Coordinators, supported by the Quality Manager, are responsible for determining the need for specialized expertise to perform the assessment.

Results and conclusions from these assessments are documented, entered into the CTS and results are evaluated by Line Management. The extent of causal analysis, review of extent of condition, corrective action development, and effectiveness review for non-conforming results will be commensurate with the importance (significance) of the problem in accordance with PMA-2607, Incident Reporting and Issues Management Program; PMA-2604, Occurrence Notification and Reporting; and PMA-2608, Causal Analysis. These results become part of the tracking and trending evaluation.

The PM and department managers review and evaluate data from MAs and various other internal and external sources, including knowledge based on their own experience, to identify problems that hinder the organization's ability to achieve its mission and performance objectives. An SRB, as discussed in Sect. 3.2, may be convened at the discretion of the PM and Quality Manager to provide an additional upper level review of selected MA to facilitate causal analysis, review of extent of condition, and corrective action development. Strengths and weaknesses affecting the achievement of organizational objectives are identified so that meaningful action can be taken to improve processes. These MAs utilize an integrated management evaluation process to examine both facility and programmatic performance, with emphasis on areas or activities that present the greatest consequences of failure and the greatest benefit from improvements, if implemented. Particular emphasis is focused on those areas that could have an adverse impact on worker and public safety or on the environment.

When problems are identified from the MAs, responsibility for corrective actions are developed, assigned, and scheduled by Line Management. Corrective actions are taken to resolve identified problems and to achieve continuous improvement. Provisions are included to track and for Line Management to follow up on planned corrective actions. The corrective actions are tracked to completion in the CTS. The Quality function provides support to Line Management during this process and has final review of closure evidence.

9.2 Integrated Safety Management Systems

The following ISMS Principle and Core Function are integrated into this QA criterion:

- Principle 4, Balanced Priorities;
- Core Function 4, Perform Work Within Controls; and
- Core Function 5, Provide Feedback and Continuous Improvement.

9.3 Implementing Performance Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this plan by the Quality function, and in the listed documents.

- PMA-1607, Audit and Accountability of IT Systems and Networks;
- PMA-2602, Oversight Activity – Management Conformity Assessment;
- PMA-2611, Readiness Reviews for Other Industrial Facilities/Activities;
- PMA-2620, Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments; and
- PMA/PORTS/16-0761, Calendar Year Oversight Plan (2016).

10. INDEPENDENT ASSESSMENT

10.1 General

The PM is responsible for establishing and implementing the three-tiered IOP discussed in Sect. 1.2 of this plan. IAs are performed as part of the Quality function and external OA tiers (see Fig. 1). The ESH&Q Manager, through the Quality Manager, is responsible for establishing and implementing the PMA IA Program based on the guidelines of DOE O 226.1B, Implementation of Department of Energy Oversight Policy; DOE G 414.1-1C, Management and Independent Assessments Guide; and DOE P 450.4A, Integrated Safety Management System Policy. PMA uses the IA process defined in PMA-2601, Oversight Activity – Independent Conformity Assessment, and PMA-2620, Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments, to assess departments, functions, and projects to evaluate programmatic requirements in the execution of both self-performed and subcontracted field activities. Emphasis is placed on the observation and assessment of work activities in the field. ESH&Q Department interaction and oversight, and supervisory logs and inspection checklists are included in these evaluations along with worker performance. Scope and status of MAs are also evaluated. The results of IAs provide an objective form of feedback to the PM and department managers that is used to confirm acceptable performance and for identifying improvement opportunities for both self-performed and subcontracted work. These planned assessments are separate from, and in addition to, the MAs identified in Sect. 9 of this plan and are identified and scheduled in the annual IOP plan developed by the Quality function. IAs are performed by the Quality function or external organizations. Assessment schedules, and the allocation of resources needed to meet these schedules, are based on the status, hazard, and complexity of the activity or process being assessed. Schedule flexibility allows performance of additional assessments of PMA and subcontractor activities for identified areas of concern. The assessment process includes follow-up by Line Management to assure corrective actions are implemented when deficiencies are identified.

Planning and conducting IAs are based on QA requirements, Scope of Work, findings from previous assessments and trend analysis, and risk as discussed in Sect. 1.5 of this plan. PMA reserves the right to perform IAs of subcontractors through the subcontract language. Independent assessments performed on department, function or project activities evaluate subcontractor performance and implementation of requirements contained in work controlling documents.

The IA process is a performance-based approach. Emphasis is placed on results with compliance viewed as the baseline. During the conduct of assessments, work is monitored to identify problems, abnormal performance, and their precursors. IAs also evaluate and report on the effectiveness of the PMA and subcontractor self-assessment programs in the achievement of quality. Performance-based assessments are conducted on activities that:

- Relate directly to final objectives;
- Emphasize safety and reliability; and
- Measure item or service performance.

The IA process also includes verification of the adequacy of corrective actions, including actions identified to prevent recurrence or to otherwise improve performance.

IAs provide feedback to the PM and department managers on the quality of ISP produced by or for the organization. The process for selecting and overseeing assessment teams is the responsibility of the ESH&Q Manager, through the Quality Manager, who both have an independent line of reporting to the PMA BOD. Therefore, personnel performing IAs report to a sufficiently high level in the overall organization and have sufficient authority and freedom to carry out their responsibilities. The Quality Manager ensures that personnel performing IAs do not have direct responsibilities in the area they are assessing. Participation by individuals outside PMA may be used to complement the IA program.

In accordance with the graded approach, commensurate with the hazards and risks associated with the operation of the facility or performance of the activity, personnel performing independent assessments are designated Assessors (i.e., Auditors) and Lead Assessors (i.e., Lead Auditors), and require qualification in accordance with PMA-2620, Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments. Assessors are qualified the same as MA Assessors. Lead Assessors qualification includes formal NQA-1 Lead Auditor certification or if other certification, lead assessors must additionally pass an examination to evaluate their understanding, comprehension, and ability to apply the NQA-1 body of knowledge as applicable to the PMA contract and their work area. Cognizant technical or operational personnel (e.g., Assessors, SMEs) may be included as team members to provide expert specialty knowledge. Lead Assessors, supported by the Quality Manager, are responsible for determining the need for specialized expertise to perform the assessment. Qualification of Assessors and Lead Assessors is the responsibility of the Quality Manager. The ESH&Q Manager approves the Lead Assessor certification of the Quality Manager.

Assessment results are documented and provided to Line Management being assessed. The extent of causal analysis, review of extent of condition, corrective action development, and effectiveness review for non-conforming results are commensurate with the importance (significance) of the problem in accordance with PMA-2607, Incident Reporting and Issues Management Program; PMA-2604, Occurrence Notification and Reporting; and PMA-2608, Causal Analysis. An SRB, as discussed in Sect. 3.2, may be convened at the discretion of the PM and Quality Manager to provide an additional upper level review of selected IA to facilitate causal analysis, review of extent of condition, and corrective action development. Line Management has the authority to implement necessary corrective actions and verify that issues identified have been satisfactorily resolved under the oversight of the Quality Manager.

Non-conformances and deficiencies as well as opportunities for improvement are identified, and corrective action plans are developed and implemented. Provisions are included to track and follow up on planned corrective actions. The corrective actions are tracked to completion in the CTS. Organizations responsible for responding to issues identified in assessment reports address the following, as applicable:

- Identification of cause;
- Actions needed to correct the identified deficiencies;
- Actions required to prevent recurrence;
- Operating experiences and lessons learned and actions to be taken for improvement of the activity or process; and
- Determination if similar quality problems exist elsewhere in the organization.

In addition to IAs, requirements for Readiness Assessments (RAs) or Internal Field Reviews (IFR) for new projects or new on-site subcontractor scopes of work are established and documented and are the responsibility of the Quality Manager. RAs or IFRs are performed at the request of Line Management responsible for the activity under review to ensure effective readiness to perform work. Line Management selects the team leader and approves the team members, with the support of the Quality Manager. RAs and IFRs are independent of other management activities to the extent necessary to provide an unbiased perspective. RAs and IFRs include, at a minimum, verification of the following characteristics:

- Work prerequisites are satisfied;
- Detailed technical and QA procedures, applicable to the work to be performed, are reviewed for adequacy and appropriateness;
- Personnel are suitably trained and qualified; and
- Proper equipment, material, and resources are available.

10.2 Third Party Assessments

A third-party may be used to assess PMA performance as part of an IA or MA. These third-party assessments are performed by agencies, individuals, or groups not associated with PMA or DOE Line Management, or the PMA department, function or project performing work. These individuals must have the adequate experience/qualifications to perform assessments of the programs or services in question. Before a third-party assessment is commissioned, the PM will consider the cost and determine the value of the assessment and consult with the DOE customer before proceeding. DOE input and concurrence will be obtained to ensure that the statement of work, criteria used, and the results will be acknowledged/accepted by DOE. The ESH&Q Manager, through the Quality Manager, has responsibility for this process according to the guidance and requirements in DOE O 414.1D, Quality Assurance, DOE G 414.1-1C, Management and Independent Assessments Guide, and DOE G 414.1-2B, Quality Assurance Program Guide.

10.3 Integrated Safety Management Systems

These processes support the following ISMS Principles and Core Functions:

- Principle 4, Balanced Priorities;
- Core Function 4, Perform Work Within Controls; and
- Core Function 5, Provide Feedback and Continuous Improvement.

10.4 Implementing Documents and Authority

PMA uses the following documents to satisfy the requirements of this section of this plan. RRAL and SME are identified in a RRAL Matrix and SME Matrix, respectively, maintained separately from this plan by the Quality function, and in the listed documents.

- PMA-2601, Oversight Activity – Independent Conformity Assessment;
- PMA-2611, Readiness Reviews for Other Industrial Facilities/ Activities;
- PMA-2620, Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments; and
- PMA /PORTS/16-0761, Calendar Year Oversight Plan (2016).



APPENDIX A
QUALITY IMPLEMENTATION PLAN (QIP)
STANDARDS CROSSWALK
WITH THE QAPP/QIP (PMA/PORTS-77 R0)

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
M A N A G E M E N T	<p>1. Program 1.1 Quality Policy 1.2 QA Program 1.3 Organization and Responsibilities 1.4 Management Processes 1.5 Graded Approach 1.6 Alternative Standards 1.7 ISMS 1.8 Implementing Procedures and Authority</p>	<p>1.0 Purpose and Objective 2.0 Scope 3.0 Applicability 4.0 Requirements and References 5.0 Definitions and Acronyms 6.0 Responsibilities 7.0 EM QA Program 7.1 Management/ Program (Criterion 1)</p> <p>NQA-1-2008 (and Addenda through 2009): Requirement 1 – Organization 100 – Basic 200 – 202 Structure and Responsibility 300 – Interface Control</p> <p>Requirement 2 – Quality Assurance Program 100 – Basic 200 – 202 Indoctrination and Training 300 – 305 Qualification Requirements 400 – Records of Qualification 500 – Records (Note: 200-500 requirements are aligned with Sect. 2. Personnel</p>	<p>1. Program – (a) Establish an organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing work. (b) Establish management processes, including planning, scheduling, and providing resources for work.</p>	<p>Part 1 – 1. Organization 100 Basic ✓ 200 to 202 Structure and Responsibility ✓ 300 Interface Control ✓</p> <p>2. Quality Assurance Program 100 Basic ✓</p>	<ul style="list-style-type: none"> - Organization Chart - Roles, Responsibilities, Authorities, and Lines of Communication Matrix - Subject Matter Expert Matrix - FSS/PORTS-55, <i>ISMS Plan</i> - Contract DE-EM0004062 Section J-1 and J-2, <i>Lists A and B Directives, Laws, and Standards</i> - FBP-EM-PL-00026: <i>FSS/PORTS-20, Decontamination and Decommissioning and Facility Support Services Prime Contractors Joint Emergency Plan</i> - PMA/PORTS-73, <i>Site Security Plan</i> - PMA/PORTS-76, <i>Procurement Operating Practices for PMA</i> - PMA/PORTS-295, <i>Project Controls System Description</i> - PMA /PORTS/16-0761, <i>Calendar Year Oversight Plan (2016), Calendar Year Oversight Plan (2016)</i> - PMA-52301, <i>Sustainable Environmental Business Practices</i> - PMA-52701, <i>Safety Policy</i> - PMA-56002, <i>Project Management Overview</i> - PMA-56003, <i>Discipline and Rigor of Operations</i>



Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
M A N A G E M E N T		Training and Qualification in PMA /PORTS-77 R0 QAPP/QIP) Non-Mandatory Appendices 1A-1 and 2A-1 should be considered to aid in Organizational development during QA documentation. 7.1.1 Management Expectations 7.1.2 Implementation			<ul style="list-style-type: none"> - PMA-56005, <i>Delegation of Authority</i> - FSS-1700, <i>Baseline Management and Change Control</i> - PMA-1702, <i>Definition and Organization of Work Scope</i> - PMA-1705, <i>Performance Measurement, Variance Analysis and Reporting</i> - PMA-1800, <i>Project Management</i> - PMA-2200, <i>PMA Emergency Management Program Description</i> - PMA-2301, <i>Identification of Environmental, Legal and Other Requirements</i> - PMA-2611, <i>Readiness Reviews for Other Industrial Facilities/Activities</i> - PMA-2614, <i>Nuclear, Worker Safety and Health, and Security Noncompliance Determination And Reporting</i> - PMA-2615, <i>Graded Approach Application</i> - PMA-2617, <i>Senior Review Board</i> - PMA-2711, <i>Suspension/Stop Work</i> - PMA-3107, <i>Conduct of Operations for Projects, Facilities, and Activities</i> <ul style="list-style-type: none"> - PMA-3204, <i>Facility Management</i> - FSS-3310, <i>Conduct of Operations Matrix</i> - PMA-4100, <i>Security Awareness Program</i>
	2. Personnel	7.2 Management/	2. Personnel Training	Part 1 –	- PMA/PORTS-61400, <i>Training Program</i>

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation √	Number/Title
M A N A G E M E N T	<u>Training and Qualification</u> 2.1 General 2.2 Training 2.3 Qualification of Personnel 2.4 Training Requirements 2.5 Instruction Qualification 2.6 Training Effectiveness Monitoring 2.7 ISMS 2.8 Implementing Procedures and Authority	<u>Personnel Training and Qualification (Criterion 2)</u> NQA-1-2008 (and Addenda through 2009): <u>Requirement 2 – Quality Assurance Program</u> 100 – Basic 200 – 202 Indoctrination and Training 300 – 305 Qualification Requirements 400 – Records of Qualification 500 – Records Non-Mandatory Appendices 2A-1 and 2A-3 should be considered to aid in the development of the QAP. 7.2.1 Management Expectations 7.2.2 Implementation	<u>and Qualification –</u> a) Train and qualify personnel to be capable of performing assigned work. (b) Provide continuing training to personnel to maintain job Proficiency.	<u>2. Quality Assurance Program</u> 100 Basic √ 200-202 Indoctrination and Training √ 300-304 Qualification Requirements √ <u>(301 to 304 & 400 only for nuclear related facilities & activities)</u> 400 Certification of Qualification √ 500 Records √	- PMA-1401, <i>Site Access</i> - PMA-1402, <i>Conduct of Training</i> - PMA-1404, <i>Training Analysis, Development, Evaluation, and Revision</i> - PMA-1405, <i>Training Records Management</i> - PMA-1406, <i>Instructional Staff Training and Qualification Program</i> - PMA-1410, <i>Required Reading</i> - PMA-1411, <i>Work Restrictions</i> - PMA-2620, <i>Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments</i> - PMA-51402, <i>External Training and Professional Memberships</i> - PMAF-1414, <i>Work Restriction Acknowledgement</i>
	<u>3. Quality Improvement</u> 3.1 General 3.2 Quality improvement Program 3.4 ISMS 3.5 Implementing	<u>7.3 Management/ Quality Improvement (Criterion 3)</u> NQA-1-2008 (and Addenda through 2009): <u>Requirement 2 – Quality Assurance Program</u>	<u>3. Quality Improvement –</u> (a) Establish and implement processes to detect and prevent quality problems. (b) Identify, control, and correct items,	Part 1 – <u>5. Instructions, Procedures and Drawings</u> 100 Basic √ <u>15. Control of Nonconforming Items</u> 100 Basic √ 200 Identification √	- PMA-1606, <i>Cyber Security Incident Response</i> - PMA-1607, <i>Audit and Accountability of IT Systems and Networks-</i> PMA-1625, <i>Software Quality Assurance Problem Reporting and Issues Management Program</i> - PMA-1628, <i>IT Service Failure (Outage)</i> - PMA-2302, <i>Establishment of Environmental</i>

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation √	Number/Title
M A N A G E M E N T	<p>Procedures and Authority</p> <p>3.3 Corrective Action System</p> <p>3.4 ISMS</p> <p>3.5 Implementing Procedures and Authority</p>	<p>100 – Basic</p> <p>200 – 202 Indoctrination and Training</p> <p>300 – 305 Qualification Requirements</p> <p>400 – Records of Qualification</p> <p>500 – Records</p> <p>(Note: 100-500 requirements are aligned with Sects. 1. Program and 2. Personnel Training and Qualification in PMA /PORTS-77 R0 QAPP/QIP)</p> <p><u>Requirement 15 – Control of Nonconforming Items</u></p> <p>100 – Basic</p> <p>200 – Identification</p> <p>300 – Segregation</p> <p>400 – 405 Disposition</p> <p><u>Requirement 16 – Corrective Action</u></p> <p>100 – Basic</p> <p>Non Mandatory Appendices 2A-4, 16A-1, and Subpart 4.5 should be considered to aid in Quality Improvement implementation.</p>	<p>services, and processes that do not meet established requirements.</p> <p>(c) Identify the causes of problems, and include prevention of recurrence as a part of corrective action planning.</p> <p>(d) Review item characteristics, process implementation, and other quality-related information to identify items, services, and processes needing improvement.</p>	<p>300 Segregation √</p> <p>400 to 405 Disposition √</p> <p>Part 1 –</p> <p><u>14. Inspection, Test, and Operating Status</u></p> <p>100 Basic √</p> <p><u>16. Corrective Action</u></p> <p>100 Basic √</p>	<p><i>Objectives and Targets</i></p> <ul style="list-style-type: none"> - PMA-2601, <i>Oversight Activity - Independent Conformity Assessment</i> - PMA-2602, <i>Oversight Activity - Management Conformity Assessment</i> - PMA-2603, <i>Control of Nonconforming Items and Services</i> - PMA-2604, <i>Occurrence Notification and Reporting</i> - PMA-2607, <i>Incident Reporting and Issues Management Program</i> - PMA-2608, <i>Causal Analysis</i> - PMA-2609, <i>Operating Experience/Lessons Learned Program</i> - PMA-2611, <i>Readiness Reviews for Other Industrial Facilities/Activities</i> - PMA-2614, <i>Nuclear, Worker Safety and Health, and Security Noncompliance Determination and Reporting</i> - PMA-2617, <i>Senior Review Board</i> - PMA-2619, <i>Events, Investigations, and Critiques</i> - PMA-2711, <i>Suspension/Stop Work</i> - PMA-2720, <i>Safety Concerns/Workers Involvement Network (WIN)</i> - PMA-4330, <i>Reporting Security Issues and Conducting Inquiries into Incident of Security Concern</i> - PMA-52617, <i>Senior Review Board – Nuclear, Worker Safety and Health, and Security Noncompliance Determination and Reporting Subcommittee Charter</i> - PMA-52618, <i>Senior Review Board Configuration Management Subcommittee Charter</i> - PMA-52702, <i>WIN Committee Charter</i>
M A					

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
N A G E M E N T		7.3.1 Management Expectations 7.3.2 Implementation			- PMA-52706, <i>VPP Steering Committee Charter</i> - PMAF-6001, <i>Customer Satisfaction Survey</i>
M A N A G E M E N T	4. Documents and Records 4.1 General 4.2 Documents 4.4 ISMS 4.5 Implementing Performance Documents and Authority 4.3 Records 4.4 ISMS 4.5 Implementing Procedures and Authority	7.4 Management/ Documents and Records (Criterion 4) NQA-1-2008 (and Addenda through 2009): Requirement 5 – Instructions, Procedures, and Drawings 100 – Basic Requirement 6 – Document Control 100 – Basic 200 – Document Control 300 – 302 Document Changes Requirement 17 – Quality Assurance Records 100 – Basic 200 – Generation of Records 300 – Authentication of Records	4. Documents and Records (a) Prepare, review, approve, issue, use, and revise documents to prescribe processes, specify requirements, or establish design. (b) Specify, prepare, review, approve, and maintain records.	Part I – 5. Instructions, Procedures and Drawings 100 Basic ✓ 6. Document Control 100 Basic ✓ 200 Document Control ✓ 300 to 302 Document Changes ✓ Part I – 17. Quality Assurance Records (as further defined by DOE Cincinnati Business Center, Records Management Field Officer) 100 Basic ✓ 200 Generation of Records ✓ 300 Authentication of Records ✓ 400 to 402 Classification ✓ 500 Receipt Control of Records ✓ 600 Storage ✓ 700 Retention ✓ 800 Maintenance of Records ✓	- PMA-1300, <i>Record Life Cycle and Retrieval</i> - PMA-1301, <i>Maintaining Privacy Act Records</i> - PMA-1302, <i>Controlled Documents</i> - PMA-1303, <i>Records Destruction</i> - PMA-1304, <i>Records Management Within the X-1000 Limited Area Document Storage Area</i> - PMA-1306, <i>Record Transfer</i> - PMA-1309, <i>Vital Records</i> - PMA-1310, <i>Administrative Records Program</i> - PMA-1311, <i>Identifying, Filing and Maintaining Records</i> - PMA-1312, <i>File Plan Creation and Maintenance</i> - PMA-1313, <i>Decontamination and Decommissioning (D&D) Drawing Revision Control</i> - PMA-1314, <i>Storage and Inspection of Stored Records</i> - PMA-1315, <i>Documentum Record Processing</i> - PMA-1321, <i>Quality Assurance Records</i> - PMA-2900, <i>Performance Document Process</i> - PMA-2902, <i>Deliverables</i> - - PMA-51301, <i>Records Management Policy</i> - PMA-51303, <i>E-Mail Retention and Storage</i> - Quality Records Crosswalk Matrix

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation √	Number/Title
M A N A G E M E N T		400 – 402 Classification 500 – Receipt Control of Records 600 – 603 Storage 700 – Retention 800 – Maintenance of Records Non-Mandatory Appendices 17A-1, 17A- 2, and Subpart 4.4 should be considered to aid in development of document and records efforts. 7.4.1 Management Expectations 7.4.2 Implementation			
P E R F O R M A N C E	5. Work Processes 5.1 General 5.2 Performance of Work 5.8 ISMS 5.9 Implementing Performance Documents and Authority 5.3 Identification and Control of Items 5.8 ISMS 5.9 Implementing Performance Documents and	7.5 Performance/ Work Processes (Criterion 5) NQA-1-2008 (and Addenda through 2009): Requirement 5 – Instructions, Procedures, and Drawings 100 – Basic Requirement 8 – Identification and Control of Items 100 – Basic	5. Work Processes (a) Perform work consistent with technical standards, administrative controls, and hazard controls adopted to meet regulatory or contract requirements using approved instructions, procedures, etc. (b) Identify and control items to ensure their proper use. (c) Maintain items to	Part I – 5. Instructions, Procedures and Drawings 100 Basic √ Part 1 – 8. Identification and Control Items 100 Basic √ 200 to 202 Identification Methods √ (202 only for Grade Level B & C facilities & activities) 300 to 303 Specific Requirements √ (only for Grade Level B & C facilities & activities) Part 1 –	- PMA-1601, <i>Software Quality Assurance</i> - PMA-1602, <i>Application Life Cycle Management</i> - PMA-1603, <i>Information Technology Systems Configuration Management</i> - PMA-1604, <i>Clearing, Purging, Destruction of</i>

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation √	Number/Title
P E R F O R M A N C E	Authority	200 – 202 Identification Methods	prevent their damage, loss, or deterioration. (d) Calibrate and maintain equipment used for process monitoring or data collection.	9. Control of Special Processes 100 Basic √ 200 to 203 Process Controls √ (only for Grade Level B & C facilities & activities) 300 Responsibility √ 400 Records √	<i>Electronic Media</i>
	5.4 Handling Storing and Shipping 5.8 ISMS 5.9 Implementing Performance Documents and Authority	300 – 303 Specific Requirements Requirement 9 – Control of Special Processes 100 – Basic 200 – 203 Process Control 300 – Responsibility 400 – Records			13. Handling Storage and Shipping 100 Basic √ 200 Special Requirements √ (only for Grade Level B & C facilities & activities) 300 Procedures √ (only for Grade Level B & C facilities & activities) 400 Tools and Equipment √ (only for Grade Level B & C facilities & activities) 500 Operations √ (only for Grade Level B & C facilities & activities) 600 Marking or Labeling √ (only for Grade Level B & C facilities & activities)
	5.5 Status Indicators 5.7 Control of Process Monitoring and Data Collection Equipment 5.8 ISMS 5.9 Implementing Performance Documents and Authority	Requirement 12 – <u>Control of Measuring and Test Equipment</u> 100 – Basic 200 – Selection 300 – 304 Calibration and Control 400 – 402 Records (Note: 100-402 requirements are aligned with Sect. 8. Inspection and Acceptance Testing in PMA /PORTS-77 R0 QAPP/QIP)		Part I – 14. Inspection, Test, and Operating Status 100 Basic √	<i>Acquisition</i> - PMA-1610, <i>System and Communication</i> <i>Protection</i> - PMA-1611, <i>Control of Portable Computing</i>
	5.6 Control of Computer Software 5.8 ISMS 5.9 Implementing Performance Documents and Authority	Requirement 13 – Handling, Storage, and Shipping 100 – Basic 200 – Special Requirements		Part II – 2.7 Quality Assurance Requirements for Computer Software for Nuclear Facility Applications 100 to 102 General √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B &	<i>Device and Electronic Media</i> - PMA-1625, <i>SQA Problem Reporting and issues Management Program</i> - PMA-1800, <i>Project Management</i> - PMA-2605, <i>Control and Calibration of Measuring and Test Equipment</i> - PMA-2618, <i>Identification, Control, and Disposition of Suspect/Counterfeit Items</i>

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation √	Number/Title
P E R F O R M A N C E		300 – Procedures 400 – Tools and Equipment 500 – Operators 600 – Marking or Labeling <u>Requirement 14 – Inspection, Test, and Operating Status</u> 100 – Basic Requirement NQA-1 Part I – Introduction <u>Requirement NQA-1 Part II, Subpart 2.7 – Quality Assurance Requirements for Computer Software for Nuclear Facility Applications</u> 100 – 102 General 200 – 204 General Requirements 300 – 302 Software Acquisition 400 – 407 Software Engineering Method 500 – Standards, Conventions, and Other Work Practices 600 – 602 Support Software 700 – References		C facilities & activities) 200 to 204 General Requirements √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 300 to 302 Software Acquisition √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 400 to 407 Software Engineering Method √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 500 Standards, Conventions, and Other Work Practices √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 600 to 602 Support Software √ 700 References √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities)	- PMA-2708, <i>Hoisting and Rigging</i> - PMA-2714, <i>Identification of Equipment and Piping Systems</i> - PMA-2719, <i>Accident/Equipment Control Tags</i> - PMA-2725, <i>Hoisting and Rigging Equipment</i> - <i>Inspection and Accountability</i> - PMA-2804, <i>Management of Wastes</i> - - PMA-2900, <i>Performance Document</i> <i>Process</i> - PMA-3107, <i>Conduct of Operations for Projects, Facilities, and Activities</i> - PMA-3204, <i>Facility Management</i> - PMA-3300, <i>Integrated Work Control</i> - PMA-3301, <i>Work Packages</i> - FSS-3310, <i>Conduct of Operations Matrix</i> - PMA-3501, <i>Configuration Control</i>

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation √	Number/Title
		7.5.1 Management Expectations 7.5.2 Implementation			<ul style="list-style-type: none"> - PMA-5312, <i>Skill-of-the-Craft Application</i> - PMA-51601, <i>Appropriate Use of Information Technology Computing Resources</i> - PMA-56002, <i>Project Management Overview</i> - PMA-56003, <i>Discipline and Rigor Operations</i> - PMA-51606, <i>Information Systems Change Management Policy</i>
P E R F O R M A N C E	6. Design 6.1 General 6.2 Design Process 6.3 Design Interfaces 6.4 Design Verification/ Validation 6.5 Design Change Control 6.6 Temporary Modifications 6.7 Suspect/ Counterfeit Items 6.8 ISMS 6.9 Implementing Performance	7.6 Performance/ Design (Criterion 6) NQA-1-2008 (and Addenda through 2009): Requirement 3 – Design Control 100 – Basic 200 – Design Input 300 – Design Process 400 – 402 Design Analyses 500 – 501.3 Design Verification 600 – 601.9 Change Control 700 – Interface Control	6. Design (a) Design items and processes using sound engineering/ scientific principles and appropriate standards. (b) Incorporate applicable requirements and design bases in design work and design changes. (c) Identify and control design interfaces. (d) Verify/validate the adequacy of design	Part I – 3. Design Control 100 Basic √ 200 Design Input √ 300 Design Process √ 400 to 402 Design Analysis √ (only for Grade Level B & C facilities & activities) 500 to 501 Design Verification √ 600 to 601 Change Control √ (601 only for Grade Level B & C facilities & activities) 700 Interface Control √ (only for Grade Level B & C facilities & activities) 800 to 802 Software Design Control √ (only for Grade Level B & C facilities & activities)	<ul style="list-style-type: none"> - PMA-1601, <i>Software Quality Assurance</i> - PMA-1602, <i>Application Life Cycle Management</i> - PMA-1603, <i>Information Technology Systems Configuration Management</i> - PMA-1609, <i>IT Systems and Services Acquisition</i>

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation √	Number/Title
P E R F O R M A N C E	Documents and Authority Note: computer software is primarily discussed in Sects. 5. Work Processes (5.6, Control of Computer Software and 8. Inspection and Acceptance Testing (8.4 Software Testing) in PMA /PORTS-77 R0 QAPP/QIP)	800 – 802.3 Software Design Control 900 – Documentation and Records Requirement NQA-1 Part II, Subpart 2.7 – Quality Assurance Requirements for Computer Software for Nuclear Facility Applications 100 – 102 General 200 – 204 General Requirements 300 – 302 Software Acquisition 400 – 407 Software Engineering Method 500 – Standards, Conventions, and Other Work Practices 600 – 602 Support Software 700 – References Non-Mandatory Appendix 3A-1, and Subpart 4.1, should be considered to aid in the development of Design Control. 7.6.1 Management Expectations 7.6.2 Implementation	products using individuals or groups other than those who performed the work. (e) Verify/validate work before approval and implementation of the design.	900 Documentation and Records √ Part II – 2.7 Quality Assurance Requirements for Computer Software for Nuclear Facility Applications 100 to 102 General √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 200 to 204 General Requirements √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 300 to 302 Software Acquisition √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 400 to 407 Software Engineering Method √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 500 Standards, Conventions, and Other Work Practices √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities) 600 to 602 Support Software √ 700 References √ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities)	- PMA-1800, <i>Project Management</i> - PMA-2613, <i>Design</i> - PMA-2618, <i>Identification, Control and Disposition of Suspect/Counterfeit Items</i> - PMA-3107, <i>Conduct of Operations for Projects, Facilities, and Activities</i> - PMA-3300, <i>Integrated Work Control</i> - FSS-3310, <i>Conduct of Operations Matrix</i> - PMA-3301, <i>Work Packages</i> - PMA-3204, <i>Facility Management</i> - PMA-3501, <i>Configuration Control</i> - PMA-51606, <i>Information Systems Change Management Policy</i> - PMA-56003, <i>Discipline and Rigor of Operations</i>

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
P E R F O R M A N C E	<p>7. Procurement 7.1 General 7.2 Procurement Program Definition 7.5 ISMS 7.6 Implementing Performance Documents and Authority</p> <p>7.3 Supplier Selection and Evaluation 7.4 Product Acceptance 7.5 ISMS 7.6 Implementing Performance Documents and Authority</p> <p>Note: computer software is primarily discussed in Sects. 5. Work Processes (5.6, Control of Computer Software) and 8. Inspection and Acceptance Testing (8.4 Software Testing) in PMA /PORTS-77 R0 QAPP/QIP)</p> <p>Note: regarding commercial grade</p>	<p>7.7 Performance/ Procurement (Criterion 7)</p> <p>NQA-1-2008 (and Addenda through 2009): Requirement 4 – Procurement Document Control 100 – Basic 200 – 207 Content of Procurement Documents 300 – Procurement Document Review 400 – Procurement Document Changes</p> <p>Requirement 7 – Control of Purchased Items and Service 100 – Basic 200 – Supplier Evaluation and Selection 300 – Bid Evaluation 400 – Control of Supplier-Generated Documents 500 – 507 Acceptance of Item or Service 600 – Control of Supplier Nonconformances 700-705 Commercial Grade Items and Services 800 – Records</p>	<p>7. Procurement (a) Procure items and services that meet established requirements and perform as specified. (b) Evaluate and select prospective suppliers on the basis of specified criteria. (c) Establish and implement processes to ensure that approved suppliers continue to provide acceptable items and services.</p>	<p>Part I – 4. Procurement Document Control 100 Basic ✓ 200 to 207 Content of the Procurement Documents ✓ 300 Procurement Document Review ✓ 400 Procurement Document Changes ✓</p> <p>Part I – 7. Control of Purchased Material, Equipment, and Services 100 Basic ✓ 200 Supplier Evaluation and Selection ✓ 300 Bid Evaluation ✓ 400 Control of Supplier Generated Documents ✓ 500 to 507 Acceptance of Item or Service ✓ 600 Control of Supplier Non-conformances ✓ 700 to 705 Commercial Grade Items and Services ✓ (only for Grade Level B & C facilities & activities) 800 Records ✓</p>	<p>- PMA-1609, <i>IT Systems and Services Acquisition</i></p> <p>- PMA-1625, <i>SQA Problem Reporting and Issues Management Program</i></p> <p>- PMA-2606, <i>Inspection and Test Control</i></p> <p>- PMA-2618, <i>Identification, Control and Disposition of Suspect/Counterfeit Items</i></p> <p>- PMA-2621, <i>Supplier Quality Program Evaluation</i> - PMA-52301, <i>Sustainable Environmental Business Practices</i></p> <p>- PMA/PORTS-76, <i>Procurement Operating Practices for PMA (including Procurement Guides 1-20)</i></p> <p>- SOMAX Automated Maintenance Management System (Purchase Requisition Module)</p>



Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
P E R F O R M A N C E	dedication, PMA /PORTS-77 R0 QAPP/QIP, Sect. 7.2 Procurement Program Definition states: <i>On the basis of PMA non-nuclear, facility grade Level D, Standard Industrial, scope of work, PMA does not have the need or plan to procure off-the-shelf, commercial-grade items and dedicate these items for safety related applications. If and when this need should arise, PMA will develop and implement a commercial grade dedication process before procuring any such items.</i>	<u>Requirement NQA-1 Part II, Subpart 2.7 – Quality Assurance Requirements for Computer Software for Nuclear Facility Applications</u> 100 – 102 General 200 – 204 General Requirements 300 – 302 Software Acquisition 400 – 407 Software Engineering Method 500 – Standards, Conventions, and Other Work Practices 600 – 602 Support Software 700 – References (Note: 100-700 requirements are aligned with Sects. 5. Work Processes and 6. Design in PMA /PORTS-77 R0 QAPP/QIP) <u>Part II, Subpart 2.14 – Quality Assurance Requirements for Commercial Grade Items and Services</u> 100-101 – General 200 – CGI Definition Applications 300 – Utilization			- Standard T&C



Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
P E R F O R M A N C E		400-403 – Technical Evaluation 500 – Critical Characteristics 600-606 – Methods of Accepting Commercial Grade Items and Services 700 – Commercial Grade Services 800 – Documentation 900 – References (Note: 100-900 are not aligned with Sect. 7. Procurement or any other section in PMA /PORTS-77 R0 QAPP/QIP as this is not within the scope of the current PMA contract) Non-Mandatory Appendix 4A-1, 7A-1 should be considered to aid in the development of Procurement processes. 7.7.1 Management Expectations 7.7.2 Implementation			

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
P E R F O R M A N C E	<p>8. Inspection and Acceptance Testing</p> <p>8.1 General</p> <p>8.2 Inspection and Acceptance Testing</p> <p>8.5 ISMS</p> <p>8.6 Implementing Performance Documents and Authority</p> <p>8.2 Inspection and Acceptance Testing</p> <p>8.4 Software Testing</p> <p>8.5 ISMS</p> <p>8.6 Implementing Performance Documents and Authority</p> <p>Note: computer software is primarily discussed in Sect. 5. Work Processes (5.6, Control of Computer Software) in PMA /PORTS-77 R0 QAPP/QIP)</p> <p>8.3 Measuring & Test Equipment</p> <p>8.5 ISMS</p> <p>8.6 Implementing Performance</p>	<p>7.8 Performance/ Inspection and Acceptance Testing (Criterion 8)</p> <p>NQA-1-2008 (and Addenda through 2009): <u>Requirement 3 – Design Control</u></p> <p>100 – Basic</p> <p>200 – Design Input</p> <p>300 – Design Process</p> <p>400 – 402 Design Analysis</p> <p>500 – 501.3 Design Verification</p> <p>600 – 601.9 Change Control</p> <p>700 – Interface Control</p> <p>800 – 802.3 Software Design Control</p> <p>900 – Documentation and Records</p> <p>(Note: 100-900 requirements are aligned with Sect. 6. Design in PMA /PORTS-77 R0 QAPP/QIP)</p> <p><u>Requirement 8 – Identification and Control of Items</u></p> <p>100 – Basic</p> <p>(Note: 100 requirement is aligned with Sect. 5. Work Processes in PMA</p>	<p>8. Inspection and Acceptance Testing</p> <p>(a) Inspect and test specified items, services, and processes using established acceptance and performance criteria.</p> <p>(b) Calibrate and maintain equipment used for inspections and tests.</p>	<p>Part I –</p> <p>10. Inspection</p> <p>100 Basic ✓</p> <p>200 Inspection Requirements ✓</p> <p>300 Inspection Hold Points ✓</p> <p>400 to 402 Inspection Planning ✓</p> <p>500 In-Process Inspection ✓</p> <p>600 to 603 Final Inspections ✓</p> <p>700 Records ✓</p> <p>Part I –</p> <p>11. Test Control</p> <p>100 Basic ✓</p> <p>200 Test Requirements ✓</p> <p>300 Test Procedures (Other) ✓</p> <p>400 Computer Program Test Procedures ✓ (only for software meeting the DOE 414.1D definition of “safety software” for Grade Level B & C facilities & activities)</p> <p>500 Test Results ✓</p> <p>600 Test Records ✓</p> <p>Part I –</p> <p>12. Control of Measuring and Test Equipment</p> <p>100 Basic ✓</p> <p>200 Selection ✓</p> <p>300 to 304 Calibration and Control ✓</p> <p>400 to 402 Records ✓</p>	<p>- PMA-1314, <i>Storage and Inspection of Stored Records</i></p> <p>- PMA-1601, <i>Software Quality Assurance</i></p> <p>- PMA-1602, <i>Application Life Cycle Management</i></p> <p>- PMA-1603, <i>Information Technology Systems Configuration Management</i></p> <p>- PMA-1625, <i>Software Quality Assurance Problem Reporting and Issues Management Program</i></p> <p>- PMA-2407, <i>Testing and Inspection of Emergency Eyewash and shower equipment</i></p> <p>- PMA-2605, <i>Control and Calibration of Measuring and Test Equipment</i></p> <p>- PMA-2606, <i>Inspection and Test Control</i></p>
	P E				



Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
P E R F O R M A N C E	Documents and Authority	/PORTS-77 R0 QAPP/QIP) <u>Requirement NQA-1 Part II, Subpart 2.7 – Quality Assurance Requirements for Computer Software for Nuclear Facility Applications</u> 100 – 102 General; 200 – 204 General Requirements 300 – 302 Software Acquisition; 400 – 407 Software Engineering Method 500 – Standards, Conventions, and Other Work Practices 600 – 602 Support Software 700 – References 200 – 202 Identification Methods 300 – 303 Specific Requirements (Note: 100-700 and 200-303 requirements are aligned with Sects. 5. Work Processes and 6. Design in PMA /PORTS-77 R0 QAPP/QIP) <u>Requirement 10 – Inspection</u> 100 – Basic			- PMA-3300, <i>Integrated Work Control</i> - PMA-3301, <i>Work Packages</i> - PMA /PORTS/16-0761, <i>Calendar Year Oversight Plan (2016), Calendar Year Oversight Plan (2016)</i>



Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
P E R F O R M A N C E		200 – Inspection Requirements 300 – Inspection Hold Points 400 – 402 Inspection Planning 500 – In-Process Inspection 600 – 604 Final Inspections 700 – Inspections During Operations 800 – Records <u>Requirement 11 – Test Control</u> 100 – Basic 200 – Test Requirements 300 – Test Procedures (Other Than for Computer Programs) 400 – Computer Program Test Procedures 500 – Test Results 600 – 602 Test Records <u>Requirement 12 – Control of Measuring and Test Equipment</u> 100 – Basic 200 – Selection 300 – 304 Calibration and Control 400 – 402 Records			



Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
P E R F O R M A N C E		Requirement 14 – <u>Inspection, Test, and Operating Status</u> 100 – Basic (Note: 100 requirement is aligned with Sect. 5. Work Processes in PMA /PORTS-77 R0 QAPP/QIP) Non-Mandatory Appendices 10A-1 and 11A-1 should be considered to aid in development of inspection and testing processes. 7.8.1 Management Expectations 7.8.2 Implementation			

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation √	Number/Title
ASSESSMENT	<p>9. Management Assessment 9.1 General 9.2 ISMS 9.3 Implementing Performance Documents and Authority</p>	<p>7.9 Assessment/ Management Assessment (Criterion 9) NQA-1-2008 (and Addenda through 2009): Requirement 2 – Quality Assurance Program 100 – Basic 200 – 202 Indoctrination and Training; 300 – 305 Qualification Requirements; 400 – Records of Qualification 500 – Records <u>Requirement 16 – Corrective Action</u> 100 – Basic (Note: 100 requirement is aligned with Sect. 3. Quality Improvement in PMA /PORTS-77 R0 QAPP/QIP) <u>Requirement 18 – Audits</u> 100 – Basic 200 – Scheduling 300 – 303 Preparation 400 – Performance 500 – Reporting 600 – Response 700 – Follow-up Action</p>	<p>9. Management Assessment Ensure that managers assess their management processes and identify and correct problems that hinder the organization from achieving its objectives.</p>	<p>Part I – 2. QA Program 100 Basic √ 200 to 202 Indoctrination and Training √ 300 to 304 Qualification Requirements √ (301 to 304 only for Grade Level B & C facilities & activities) 400 Certification of Qualification √ (400 only for Grade Level B & C facilities & activities) 500 Records √</p>	<p>- PMA-1607, <i>Audits and Accountability of IT Systems and Network</i> - PMA-2602, <i>Oversight Activity – Management Conformity Assessment</i> - PMA-2611, <i>Readiness Reviews for Other Industrial Facilities/Activities</i> - PMA-2620, <i>Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments</i> - PMA /PORTS/16-0761, <i>Calendar Year</i> <i>Oversight Plan (2016), Calendar Year</i> <i>Oversight Plan (2016)</i></p>

Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
A S S E S S M E N T		<p>800 – Records (Note: 100-800 requirements are aligned with Sect. 10. Independent Assessment in PMA /PORTS-77 R0 QAPP/QIP)</p> <p>Non-Mandatory Appendices 2A-1, 2A-3, 2A-4, 18A-1, and Subpart 4.5 should be considered to aid in organizational development of assessment processes.</p> <p>7.9.1 Management Expectations</p> <p>7.9.2 Implementation</p>			
A S S E S S M E N T	<p>10. Independent Assessment 10.1 General 10.2 Third Party Assessments 10.3 ISMS 10.4 Implementing Performance Documents and Authority</p>	<p>7.10 Assessment/ Independent Assessment (Criterion 10) NQA-1-2008 (and Addenda through 2009): <u>Requirement 1 – Organization</u> 100 – Basic 200 – 202 Structure and Responsibility 300 – Interface Control</p>	<p>10. Independent Assessment (a) Plan and conduct independent assessments to measure item and service quality and the adequacy of work performance and to promote improvement. (b) Establish sufficient authority and freedom from line management</p>	<p>Part I – 18. Audits 100 Basic ✓ 200 Scheduling ✓ 300 to 303 Preparation ✓ 400 Performance ✓ 500 Reporting ✓ 600 Response ✓ 700 Follow-up Action ✓ 800 Records ✓</p>	<p>- PMA-2601, <i>Oversight Activity - Independent Conformity Assessment</i></p> <p>- PMA-2611, <i>Readiness Reviews for Other Industrial Facilities/Activities</i> - PMA-2620, <i>Qualification of Personnel for Oversight Activities – Management and Independent Conformity Assessments</i> - PMA/PORTS/16-0761, <i>Calendar Year</i></p>



Element	PMA /PORTS-77 R0 QAPP/QIP*	DOE EM-QA-001 R1 QAP*	DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria	ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*	PMA Implementing Performance Documents
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
A S S E S S M E N		600 – 604 Final Inspections 700 – Inspections During Operations 800 – Records (Note: 100-800 requirements are aligned with Sect. 8. Inspection and Acceptance Testing in PMA /PORTS-77 R0 QAPP/QIP) <u>Requirement 11 – Test Control</u> 100 – Basic 200 – Test Requirements 300 – Test Procedures (Other Than for Computer Programs) 400 – Computer Program Test Procedures 500 – Test Results 600 – 602 Test Records (Note: 100-602 requirements are aligned with Sect. 8. Inspection and Acceptance Testing in PMA /PORTS-77 R0 QAPP/QIP) <u>Requirement 15 – Control of Nonconforming Items</u> 100 – Basic			



<i>Element</i>	<i>PMA /PORTS-77 R0 QAPP/QIP*</i>	<i>DOE EM-QA-001 R1 QAP*</i>	<i>DOE Order 414.1D QA, 10 CFR 830.120, Subpart A, Quality Criteria</i>	<i>ANSI-NQA-1-2004 (and Addenda through 2007) Requirements*</i>	<i>PMA Implementing Performance Documents</i>
	Sect./Title	Sect./Title	Criterion/Title	Req./Title/PMA Implementation ✓	Number/Title
		independent assessment processes. 7.10.1 Management Expectations 7.10.2 Implementation			



APPENDIX B

QUALITY ASSURANCE SYSTEM (CAS) CROSSWALK WITH THE QAPP/QIP (PMA/PORTS-77R0), ISMS PLAN (PMA/PORTS-55R0), AND VPP TENETS

Integrated QAPP/QIP, ISMS Plan, and VPP Sections/Tenets Requirements (further described in PMA/PORTS/16-0756, CAS)	DOE 226.1B CAS CRD Requirements/Mechanisms (X is primary location in document)						
	Assignment of Management Responsibilities and Accountabilities - evidence work is being performed safely, securely, and in compliance with requirements - risks identified and managed - systems of control are effective and efficient	Validating the Effectiveness of Processes (e.g. audits, reviews, assessments, certification)	Self-assessment and Feedback and Improvement Activities - risk-informed - documented	Issues Management System - documented and readily available - program and performance deficiencies - timely reporting - compensatory corrective actions - categorize significance - higher significance (causal factors, corrective actions address cause(s), effectiveness review, documentation, communication for informed decisions)	Communication to the Contracting Officer (as requested, e.g. corrective action plans)	Continuous Feedback and Improvement - worker feedback mechanisms - work planning and hazard identification - lessons learned	Metrics and Targets to Assess Effectiveness
Assessment							
10. Independent Assessment	X	X	X	X	X	X	
PMA/PORTS-55/R0, Integrated Safety Management System Plan							
1. Scope	X						
2. Introduction	X		X				X
3. ISMS Goals, Objectives, and Performance Indicators	X	X			X	X	X
4. PMA Commitment To Integrated Safety Management	X				X	X	
5. Four Levels of ISMS	X					X	

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Implementation							
6. Rights, Roles, and Responsibilities	X	X	X	X	X	X	X
7. ISMS Guiding Principles	X		X	X	X	X	
8. Core Functions	X	X	X	X		X	X
9. Environmental Management System (EMS) Program elements	X	X	X	X	X	X	X
10. Worker Safety and Health Program Elements	X	X	X	X		X	X
Voluntary Protection Program (VPP) Tenets							
1. Management	X	X	X		X	X	X

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Leadership							
2. Employee Involvement		X	X	X		X	X
3. Worksite Analysis		X	X	X		X	X
4. Hazard Prevention and Control		X	X	X		X	
5. Safety and Health Training	X					X	