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High-Level Waste Storage Tank Farms/242-A Evaporator Standards/Requirements Identification Document (S/RID), Vol. 2

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**Westinghouse
Hanford Company**

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Richland, Washington

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REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:

HIGH LEVEL WASTE STORAGE
TANK FARMS/242-A
EVAPORATOR

FUNCTIONAL AREA:

Quality Assurance

REVISION 0

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2.0 QUALITY ASSURANCE

INTRODUCTION

PURPOSE:

The Quality Assurance Functional Area Requirements Identification Document (RID), as defined by the ES&H Configuration Functional Area Guidelines, Draft C, addresses the programmatic requirements that (1) ensure risks and environmental impacts are minimized; (2) ensure safety, reliability, and performance are maximized through the application of effective management systems commensurate with the risks posed by the Tank Farm Facility and its operation. This RID incorporates guidance intended to provide Tank Farms management with the necessary requirements information to develop, upgrade, or assess the effectiveness of a Quality Assurance Program in the performance of organizational and functional activities to the recommendations of DNFSB 90-2/91-1 and DOE Order 5700.6c. This document will provide the specific requirements to meet DNFSB recommendations and the guidance provided in DOE Order 5700.6C, utilizing industry codes, standards, regulatory guidelines, and industry good practices that have proven to be essential elements for an effective and efficient Quality Assurance Program as the nuclear industry has matured over the last thirty years.

It is imperative to emphasize that the functional area of Quality Assurance is not an "end" but a "means". Quality Assurance is a rational extension and part of a management system for an organization that intends to perform in an effective and efficient manner to produce a high quality product or service.

Quality Assurance is defined as "all those planned and systematic actions necessary to provide adequate confidence that a facility, structure, system, or component will perform satisfactorily and safely in service."

The requirements of this RID are programmatic in nature and are to be applied in a graded manner consistent with the importance of an item or activity to nuclear safety, public and personnel safety, or the environment.

SCOPE:

This RID and its associated requirements are applicable to all areas, structures, systems, components, and activities that have potential to affect RID is also applicable to other areas, structures, systems, components, and activities that do not directly affect nuclear safety, but interface with those that do, at the area of interface, to ensure that the interface does not degrade the safety system or activity. The application of these criteria extends from the planning and conduct of basic research and development, scientific investigations, and engineering design to maintenance and repair, waste management, and eventual decommissioning and environmental restoration.

Site requirements that are applicable to multiple facilities at the Hanford Site, or which are managed by or are the responsibility of the WHC central support organizations, are not intentionally captured in this document.

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2.1

PROGRAM MANAGEMENT

Senior Management should provide direction and assume responsibility for QA Program implementation, assessment, and improvement. Senior Management should establish and cultivate principles that integrate quality requirements into daily work and should demonstrate commitment and leadership to achieve quality through active involvement in implementation of the Quality Assurance Program.

Senior Management should ensure that the organizational structure, functional responsibilities, levels of authority, and lines of communication for activities affecting quality are documented in a written Quality Assurance Program (QAP). The definition of the organizational structure and the associated responsibilities and authorities are essential in providing clear lines of authority and the free flow of communications in the performance of quality related activities. Organizational controls should be developed and implemented that:

- Establish the definition and evaluation of requirements for developing baseline staffing requirements.
- Establish the organizational structure to clearly define the responsibility and authority of each organization.
- Define QA requirements for Line and QA organizations, including structure, functional responsibilities, levels of authority, and lines of communication.
- Define the organizational independence of the QA organization.

Management associated with activities performed for Tank Farms should periodically assess their functional areas as defined in the QAP to determine the effectiveness and efficiency of overall performance (see Section 2.10 of this RID for management assessment requirements).

Senior Management shall assign the QA organization or group responsibility for ensuring that an appropriate Quality Assurance Program is established and maintained, and for providing independent verification that activities affecting quality are performed in accordance with the established program and controls to achieve an acceptable level of quality and safety. The QA organization should provide sufficient data and recommendations to senior management for their action to achieve an ever increasing standard of excellence and the highest level of quality and effectiveness possible.

The QA organization should have sufficient organizational independence, authority, and access to work areas and activities to accomplish the following:

- Identify quality problems.
- Initiate, recommend, or provide resolutions to quality problems through the appropriate process. ● Utilize appropriate verification techniques to ensure program compliance and product or service quality, including information on efficiency and effectiveness.
- Ensure that appropriate procedural controls are in place for the ongoing activities and that appropriate records are maintained, that adequately reflect the quality of the work performed.
- Ensure that inadvertent or improper processing, delivery, installation, or use of nonconforming materials, equipment, or services are controlled in an appropriate manner.

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The independence of the QA organization should be such that QA is independent of line organization cost and schedule, provides access to appropriate levels of management to address problems and affect appropriate and timely corrective actions, and affords the manager of the QA organization stop work authority as appropriate.

The senior Quality Assurance Manager for WHC should ensure that sufficient budget and trained and qualified resources are available to staff and support, to the level necessary, the following general QA activities:

- QAP development and review and procedure development and review.
- Performance of planned and scheduled audits and independent assessments.
- Quality engineering review of work packages, procedures, procurement activities.
- Performance of acceptance inspections of ongoing and completed physical work activities.
- Performance of surveillance/monitoring of ongoing activities to determine level of compliance performance.
- Corrective action tracking and trending for inspection and audit results, including root cause analysis and statistical analysis support.
- Quality improvement efforts through program development and facilitation.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Appendix 1A-1 Section 2

"ORGANIZATIONAL STRUCTURE In structuring the organization and assigning responsibility, quality assurance should be recognized as an interdisciplinary function involving many organizational components and, therefore, should not be regarded as the sole domain of a single quality assurance group. The quality assurance group, however, should be designated to describe, integrate, and monitor the agreed- upon quality assurance activities of the various disciplines. Quality assurance encompasses many functions and extends to various levels in all participating organizations, from the top executive to workers, such as designers, welders, inspectors, facility operators, craftsmen, and auditors, who perform activities affecting quality. Different organizational structures may be effective, depending on the portion of the project or job in which the implementing organization is involved."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 1

"ORGANIZATION

The organizational structure, functional responsibilities, levels of authority, and lines of communication for activities affecting quality shall be documented. Persons or organizations responsible for assuring that an appropriate quality assurance program has been established and verifying that activities affecting quality have been correctly performed shall have sufficient authority, access to work areas, and organizational freedom to:

- (1) identify quality problems;
- (2) initiate, recommend, or provide solutions to quality problems through designated channels;

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(3) verify implementation of solutions; and

(4) assure that further processing, delivery, installation, or use is controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred.

Such persons or organizations shall have direct access to responsible management at a level where appropriate action can be effected. Such persons or organizations shall report to a management level such that required authority and organizational freedom are provided, including sufficient independence from cost and schedule considerations."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 1S-1, Section 2.1

"RESPONSIBILITY

Purpose

The organizational structure and the responsibility assignments shall be such that:

(a) quality is achieved and maintained by those who have been assigned responsibility for performing work; and

(b) quality achievement is verified by persons or organizations not directly responsible for performing the work."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 1S-1, Section 2.2

"Delegation of Work The individual(s) or organization(s) responsible for establishing and executing a quality assurance program under this standard may delegate any or all of the work to others but shall retain responsibility therefor."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 1S-1, Section 3

"Where more than one organization is involved in the execution of activities covered by this Standard, the responsibility and authority of each organization shall be clearly established and documented."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.1.3

"3. Organizational responsibility and authority assignments are made and promulgated for activities affecting quality and activities to assure quality achievement."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.1.4

"4. Quality verification overview responsibility and authority has been assigned as a priority function, independent of programmatic responsibility. Effectiveness of implementation of the quality assurance program is determined through independent audits. A direct reporting line to top management is provided."

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SITE REQUIREMENT SOURCE: DOE/EH0135 QV.1.6

"6. Independent quality reviews are routinely performed."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.5.5

"5. Nonconformance reports are periodically analyzed by the QA organization to show quality trends; significant results are reported to upper management for review and assessment."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.7.5

"Organizational responsibilities, including those for the QA organization are described for qualification of special processes, equipment, and personnel."

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section D.2.a

"Quality Assurance Organization

Organizational responsibility for the establishment and execution of QA is required. The authority and duties of persons and organizations performing quality implementation and assurance functions shall be clearly established and delineated. QA requires management measures which provide for checking, auditing or otherwise verifying that procedural controls are defined and implemented, independent of the individual or group directly responsible for performing the specific activity."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.a

"Management

1. Criterion 1 -- Program

a. Senior management should develop and issue a written quality assurance policy statement which commits the organization to implement a formal Quality Assurance Program (QAP)."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.b

"Senior management should retain and exercise the responsibility for the scope and implementation of an effective QAP. Line management is responsible for the achievement of quality. Each individual is responsible for the quality of his/her work."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.d

"The QAP should be binding on all personnel, including those having responsibility for planning and scheduling. Management should take the necessary actions to ensure that the QAP is understood and implemented."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.a(1)

"Requirements

a. General

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(1) Senior management shall be responsible for Quality Assurance Program (QAP) implementation, assessment, and improvement. Departmental Elements and M&O contractors shall develop their QAPs by applying the quality assurance criteria specified in subparagraph 9b. The quality assurance program shall include a discussion of how the criteria will be satisfied by taking into consideration the risk associated with the work. Appropriate standards shall be used, wherever applicable, to develop and implement QAPs.

(The QA criteria specified in subparagraph 9b is addressed in subsequent elements of this RID as appropriate.)"

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(1)(a)

"Quality Assurance Criteria

Management

Criterion 1 - Program Organizations shall develop, implement, and maintain a written Quality Assurance Program. The QAP shall describe the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing adequacy of work. The QAP shall describe the management system, including planning, scheduling, and cost control considerations."

2.2.

QUALITY ASSURANCE PROGRAM

The Tank Farms and any contractors performing work or activities that affect or interface with structures, systems, or components that affect safety, personnel, or the environment should develop a Quality Assurance Program (QAP) that documents the quality assurance requirements applicable to their respective scope of work. The QAP should consist of a quality assurance program description and detailed implementing procedures covering quality achieving and assuring activities. The Quality Assurance Program (QAP) should describe the organizational structure, functional responsibilities, levels of authority, and interfaces with other programs for managing, performing, and assessing adequacy of work. The QAP describes the management system, including planning, scheduling, and cost control considerations, and should be binding on all personnel and activities associated with Tank Farms. The following aspects should be included:

- Quality Assurance Policy
- Management Responsibilities for Quality
- QAP Criteria including Exceptions/Exemptions
- Achievement of Performance Objectives
- Organization, Responsibilities, and Structure
- Quality Consistent with Risk - Graded QA
- Common Vocabulary
- Management Controls

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- Readiness Reviews
- Quality Assurance and Verification Independence
- Stop Work and Restart Authority

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 2

"QUALITY ASSURANCE PROGRAM

A documented quality assurance program shall be planned, implemented, and maintained in accordance with this Standard, or portions thereof. The program shall identify the activities and items to which it applies. The establishment of the program shall include consideration of the technical aspects of the activities affecting quality. The program shall provide control over activities affecting quality to an extent consistent with their importance. The program shall be established at the earliest time consistent with the schedule for accomplishing the activities. The program shall provide for the planning and accomplishment of activities affecting quality under suitably controlled conditions. Controlled conditions include the use of appropriate equipment, suitable environmental conditions for accomplishing the activity, and assurance that prerequisites for the given activity have been satisfied. The program shall provide for any special controls, processes, test equipment, tools, and skills to attain the required quality and for verification of quality. The program shall provide for indoctrination and training, as necessary, of personnel performing activities affecting quality to assure that suitable proficiency is achieved and maintained. Management of those organizations implementing the quality assurance program, or portions thereof, shall regularly assess the adequacy of that part of the program for which they are responsible and shall assure its effective implementation."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.1

"PERFORMANCE OBJECTIVE: Administrative programs and controls should be in place to ensure policies concerning quality are administered for each facility throughout the site."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.1.1

"1. A documented and approved quality verification plan which meets the requirements of DOE 5700.6C and program specific requirements (such as the 18 elements of ANSI/ASME NQA-1) is employed for each facility on the site."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.1.2

"2. The Quality Verification Program addresses all safety and personnel protection-related functions including operational, technical, and administrative functions."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.1.7

"7. Plans and actions to assure quality achievement in all operations onsite are in place."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.c

"The QAP should promote effective and efficient achievement of performance objectives."

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SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.d

"The QAP should be binding on all personnel, including those having responsibility for planning and scheduling. Management should take the necessary actions to ensure that the QAP is understood and implemented."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.e

"The quality of items and processes should be ensured to an extent consistent with their risk."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.f

"The QAP should describe or provide reference to organizational structure, functional responsibilities, levels of authority, and interfaces. The description should include the onsite and offsite organizational elements that function within the scope of the QAP. The organization should establish criteria for developing individual QAPs or combining similar work under a single QAP when appropriate. Functional responsibilities include work such as planning; training and personnel development; preparing, reviewing, approving, and verifying designs; qualifying suppliers; preparing, reviewing, approving, and issuing instructions, procedures, schedules, and procurement documents; purchasing; verifying supplier work; identifying and controlling hardware and software; manufacturing; managing and operating facilities; calibrating and controlling measuring and test equipment; conducting investigations and acquiring data; performing maintenance, repair, and improvements; performing assessments; and controlling records."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.g

"A common vocabulary that is consistent and representative of the work being performed should be adopted. Key terminology should be defined. Personnel indoctrination should include appropriate definitions to ensure consistent understanding and communications."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.h

"Work assigned to parties outside the organization should be identified. For assigned work, management controls should be established, responsibilities assigned, and lines of communication identified."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.j

"Readiness reviews should be performed prior to major scheduled or planned work and should be performed to verify at least the following characteristics: 1) Work prerequisites have been satisfied; 2) Detailed technical and QA procedures have been reviewed for adequacy and appropriateness. 3) Personnel have been suitably trained and qualified; and 4) The proper equipment, material, and resources are available."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.k

"Responsibility and authority to stop unsatisfactory work should be assigned such that planning and schedule considerations do not override safety considerations. A readiness review in accordance with paragraph A1j, above, should be performed prior to restarting work."

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SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.a(1)

"Requirements

a. General

(1) Senior management shall be responsible for Quality Assurance Program (QAP) implementation, assessment, and improvement. Departmental Elements and M&O contractors shall develop their QAPs by applying the quality assurance criteria specified in subparagraph 9b. The quality assurance program shall include a discussion of how the criteria will be satisfied by taking into consideration the risk associated with the work. Appropriate standards shall be used, wherever applicable, to develop and implement QAPs.

(The QA criteria specified in subparagraph 9b is addressed in subsequent elements of this RID as appropriate.)"

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.a(4)

"DOE contractors may, at any time, make changes to their DOE-approved QAPs. Changes made over the previous year to DOE-approved QAPs shall be submitted annually to the Lead PSO for review. All changes shall be regarded as approved by DOE 90 days after submittal, including any modifications which have been made or directed by DOE during this period, or receipt of a letter, whichever occurs first. The submittals shall identify the changes, the pages affected, the reason for the changes, and the basis for concluding that the revised program continues to satisfy the requirements of this Order. Changes made to correct spelling, punctuation, or other editorial items do not require explanation."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.a(5)

"Assessments of DOE and contractor work shall be conducted based on the DOE-approved quality assurance program."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.a(6)

"Programs, guides, and policies which implement this Order shall meet the requirements of DOE 1324.2A. (The Records and Reports Branch, AD-241.1, is available for any needed assistance regarding records management.)"

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(1)(a)

"Quality Assurance Criteria

Management

Criterion 1 - Program Organizations shall develop, implement, and maintain a written Quality Assurance Program. The QAP shall describe the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing adequacy of work. The QAP shall describe the management system, including planning, scheduling, and cost control considerations."

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2.3

PERSONNEL TRAINING AND QUALIFICATION

Personnel performing work activities at or for Tank Farms should be trained, qualified, and certified, as necessary, to ensure they are capable of performing their assigned work and duties. Training should include both education in work related principles and enhancement of skills and practices. Training should provide an understanding of processes or tools being used, the extent of variability of those processes or tools, and the degree of control available over those variables. Personnel should be provided with continuing training to ensure that job proficiency is maintained. The following aspects are included:

- Personnel Qualifications and Capabilities
- Personnel Training
- Training Plans
- Training Program Review

Programmatic controls should be developed and implemented to assure that indoctrination and training are commensurate with the scope and complexity of the activity, determine proficiency, provide for periodic assessment of adequacy of individual training, and provide appropriate training records.

With the exception of specialized training of inspection and audit personnel, discussed in detail in other elements of this RID, the details for this element are discussed in the Training and Qualification RID.

The QA Functional Area must provide input to and utilize the output from Training and Qualification Functional Area in general and specialized training within QA. The major interface for this element is with general employee training for quality assurance and corrective action, and the development of training modules for the specialized training within QA.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989 Supplement 2S-4, Section 4

"TRAINING

Training shall be provided, if needed, to:

- (a) achieve initial proficiency;
- (b) maintain proficiency; and
- (c) adapt to changes in technology, methods, or job responsibilities."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-4, Section 3

"INDOCTRINATION

Personnel shall be indoctrinated in the following subjects as they relate to a particular function:

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- (a) general criteria, including applicable codes, standards, and company procedures;
- (b) applicable quality assurance program elements; and
- (c) job responsibilities and authority."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-4, Section 5

"RECORDS

Records of the implementation of indoctrination and training may take the form of:

- (a) attendance sheets;
- (b) training logs; or
- (c) personnel training records."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-4, Sections 1 & 2

"1.0 GENERAL

This Supplement provides amplified requirements for the indoctrination and training of personnel performing or managing activities affecting quality. It supplements the requirements of Basic Requirement 2 of this Standard and shall be used in conjunction with that Basic Requirement when and to the extent specified by the organization invoking this Standard.

2.0 APPLICABILITY

This Supplement applies to personnel performing or managing activities affecting quality. Personnel to be indoctrinated or trained shall be identified. The extent of indoctrination and training shall be commensurate with the following:

- (a) the scope, complexity, and nature of the activity; and
- (b) the education, experience, and proficiency of the person. Activities affecting quality include designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, and modifying."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.1.5

"5. Quality verification personnel are trained, qualified, and adequate to support safe operations, quality achievement and quality verification."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.a

"Criterion 2 -- Personnel Training and Qualification

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a. Personnel performing work should be capable of performing their assigned tasks. Qualification requirements should be established for specific job categories, such as operators, designers, managers, supervisors, inspectors, welders, engineers, scientists, and independent assessment personnel. Training includes both education in principles and enhancement of skills and practices. Training should ensure the worker understands the processes and tools he/she is using, the extent and sources of variability in those processes and tools, and the degree to which he/she does and does not have control over that variability."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.b

"Training should emphasize correct performance of work and provide understanding of why quality requirements exist. In addition, training should provide an understanding of the fundamentals of the work and its context. Training instruction should address potential consequences of improper work and focus attention on "doing it right the first time."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.c

"Training plans should address and stimulate professional development. Training plans should provide for maintenance of proficiency and progressive improvement, and should not be limited to attainment of initial qualification. Training plans for management personnel should include professional managerial, communication, and interpersonal skills."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.d

"Personnel performing work that requires special skills or abilities should be qualified prior to performing work. Qualification should include demonstrated proficiency of each candidate and updated periodically thereafter to maintain skills to meet current practices."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.e

"Training should provide curricula that address specific needs, and it should be presented by qualified instructors."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.f

"Training should be subject to on-going review to determine program and instruction effectiveness. Training and qualification should be upgraded whenever needed improvements or other enhancements are identified."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(1)(b)

"Criterion 2 - Personnel Training and Qualification. Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained."

2.3.1

Training and Qualification for QA Auditors

The QA organization responsible for auditing Tank Farms should establish the qualification requirements for auditors and lead auditors and the requirements for use of technical specialists to assist in audits of the facility. These qualifications and requirements should be utilized in

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developing a training and certification program for auditors and lead auditors. This program should include the following aspects to assure a highly qualified and professional audit staff:

- General training in audit skills and techniques, quality assurance programs and standards
- Specific training in methods of examining, evaluating and documenting specific audit findings and closure of audit findings.
- On-the-job training, guidance, and counseling under the direct supervision of a lead auditor.
- Specific training for lead auditor in communication, corrective action, audit planning, and performance in the specific areas to be audited.
- Examination and certification of auditors and lead auditors.
- Ongoing training and development of audit staff.
- Maintenance of training and certification records.

Interfaces with Training and Qualifications Functional Area with input from QA for training and qualification requirements for auditors.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 2

"Responsibility of Auditing Organization

The responsible auditing organization shall establish the audit personnel qualifications and the requirements for the use of technical specialists to accomplish the auditing of quality assurance programs. Personnel selected for quality assurance auditing assignments shall have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited. Auditors shall have, or be given, appropriate training or orientation to develop their competence for performing required audits. Competence of personnel for performance of the various auditing functions shall be developed by one or more of the methods given in (a) through (c) below:

(a) orientation to provide a working knowledge and understanding of this Standard and the auditing organization's procedures for implementing audits and reporting results;

(b) training programs to provide general and specialized training in audit performance. General training shall include fundamentals, objectives, characteristics, organization, performance, and results of quality auditing. Specialized training shall include methods of examining, questioning, evaluating, and documenting specific audit items and methods of closing out audit findings;

(c) on-the-job training, guidance, and counseling under the direct supervision of a Lead Auditor. Such training shall include planning, performing, reporting, and follow-up action involved in conducting audits."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 3.0

"QUALIFICATION OF LEAD AUDITORS

An individual shall meet the requirements of paras. 3.1 through 3.4 below prior to being designated a Lead Auditor."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 3.1

"Communication Skills

The prospective Lead Auditor shall have the capability to communicate effectively, both in writing and orally. These skills shall be attested to in writing by the Lead Auditor's employer."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 3.2-3.2.2

"Training

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

3.2.1 Knowledge and understanding of this Standard and other nuclear-related codes, standards, regulations, and regulatory guides, as applicable.

3.2.2 General structure of quality assurance programs as a whole and applicable elements as defined in this Standard."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 3.2.3

"Auditing techniques of examining, questioning, evaluating, and reporting; methods of identifying and following up on corrective action items; and closing out audit findings."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 3.2.4

"Audit planning in the quality-related functions for the following activities: design, purchasing, fabrication, handling, shipping, storage, cleaning, erection, installation, inspection, testing, statistics, nondestructive examination, maintenance, repair, operation, modification of nuclear facilities or associated components, and safety aspects of the nuclear facility.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 3.2.5

"On-the-job training to include applicable elements of the audit program."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 3.3

"Audit Participation

The prospective Lead Auditor shall have participated in a minimum of five (5) quality assurance audits within a period of time not to exceed 3 years prior to the date of qualification, one audit of which shall be a nuclear quality assurance audit within the year prior to his qualification."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 3.4

"Examination

The prospective Lead Auditor shall pass an examination which shall evaluate his comprehension of and ability to apply the body of knowledge identified in para. 3.2 above. The test may be oral, written, practical, or any combination of the three types. The development and administration of the examination shall be in accordance with Section 5 of this Supplement."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 4.1

"MAINTENANCE OF QUALIFICATION

4.1 Maintenance of Proficiency

Lead Auditors shall maintain their proficiency through one or more of the following: regular and active participation in the audit process; review and study of codes, standards, procedures, instructions, and other documents related to quality assurance program and program auditing; or participation in training program(s). Based on annual assessment, management may extend the qualification, require retraining, or require requalification. These evaluations shall be documented."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 4.2

"Requalification

Lead Auditors who fail to maintain their proficiency for a period of 2 years or more shall require requalification. Requalification shall include retraining in accordance with the requirements of para. 3.2 above, reexamination in accordance with para. 3.4 above, and participation as an Auditor in at least one nuclear quality assurance audit."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 5.1

"ADMINISTRATION

5.1 Organizational Responsibility

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Training of auditors shall be the responsibility of the employer. The responsible auditing organization shall select and assign personnel who are independent of any direct responsibility for performance of the activities which they will audit. The Lead Auditor shall, prior to commencing the audit, concur that assigned personnel collectively have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 5.2

"Qualification Examination The development and administration of the examination for a Lead Auditor required by para. 3.4 above is the responsibility of the employer. The employer may delegate this activity to an independent certifying agency, but shall retain responsibility for conformance of the examination and its administration to this Standard. Integrity of the examination shall be maintained by the employer or certifying agency through appropriate confidentiality of files and, where applicable, proctoring of examinations. Copies of the objective evidence regarding the type(s) and content of the examination(s) shall be retained by the employer in accordance with the requirements of Section 6 below."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-3, Section 6

"RECORDS

6.1 General

Records of personnel qualifications for Auditors and Lead Auditors performing audits shall be established and maintained by the employer.

6.2 Certification of Qualification

Each Lead Auditor shall be certified by his employer as being qualified to lead audits. This certification shall, as a minimum, document the following:

- (a) employer's name;
- (b) Lead Auditor's name;
- (c) date of certification or recertification;
- (d) basis of qualification (i.e., education, experience, communication skills, training, examination, etc.);
- (e) signature of employer's designated representative who is responsible for such certification.

6.3 Updating of Lead Auditor's Records

Records for each Lead Auditor shall be maintained and updated annually."

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2.3.2

Training and Qualification for Inspection and Test Personnel

The QA or other organizations responsible for the inspection activities at Tank Farms should designate those activities that require qualified inspection and test personnel. The organization should develop the qualification requirements and establish a written program and procedures for the training, development, and certification of inspection and test personnel. The program should include special requirements for Non-Destructive Test personnel. This program should include the following aspects:

- Personnel selection using experience, training, and physical capabilities.
- Initial capability determination by examination and capability demonstration.
- Ongoing evaluation of performance with specific criteria for acceptance and continued certification.
- Records pertaining to training, physical capabilities, examination, capabilities demonstration, and certification.

Interfaces with Training and Qualification Area in development of training program and with Engineering Design, Maintenance, Construction, and Operations in identifying activities requiring certified personnel.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989 Supplement 2S-1, Section 3

"RECORDS

3.1 Record Files

Records of personnel qualifications shall be established and maintained by the employer. These records shall include the information required by para. 2.7 above."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Appendix 2A-1 Section 2

"FUNCTIONAL QUALIFICATIONS

Three levels of qualification may be utilized depending on the complexity of the functions involved. The recommendations for each level are not limiting with regard to organizational position or professional status but, rather, re limiting with regard to functional activities.

2.1 Level I Personnel Capabilities

A level I person should be capable of performing and documenting the results of inspections or tests that are required to be performed in accordance with documented procedures, acceptance standards, and/or industry practices as defined in user's written procedures.

2.2 Level II Personnel Capabilities

A Level II person should have all of the capabilities of a Level I person for the inspection or test category or class in question. Additionally, a Level II person should have demonstrated capabilities in planning inspections and tests; in setting up tests, including preparation and

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setup of related equipment, as appropriate; in supervising or maintaining surveillance over the inspections and tests; and in evaluating the validity and acceptability of inspection and test results.

2.3 Level III Personnel Capabilities

A Level III person should have all of the capabilities of a Level II person for the inspection or test category or class in question. In addition, the individual should also be capable of evaluating the adequacy of specific programs used to train and certify inspection and test personnel whose qualifications are covered by this Appendix."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Appendix 2A-1 Section 3

"EDUCATION AND EXPERIENCE QUALIFICATIONS

These education and experience recommendations should be considered with recognition that other factors commensurate with the scope, complexity, or special nature of the activity may provide reasonable assurance that a person can competently perform a particular task. Other factors which may demonstrate capability in a given job are previous performance or satisfactory completion of capability testing. These factors and the basis for their equivalency should be documented.

3.1 Level I

3.1.1 Two years of related experience in equivalent inspection or testing activities; or

3.1.2 High school graduation and 6 months of related experience in equivalent inspection or testing activities; or

3.1.3 Completion of college level work leading to an associate degree in a related discipline plus 3 months of related experience in equivalent inspection or testing activities.

3.2 Level II

3.2.1 One year of satisfactory performance as a Level I in the corresponding inspection or test category or class; or

3.2.2 High school graduation plus 3 years of related experience in equivalent inspection or testing activities; or

3.2.3 Completion of college level work leading to an associate degree in a related discipline plus 1 year of related experience in equivalent inspection or testing activities; or

3.2.4 Graduation from a 4 year college plus 6 months of related experience in equivalent inspection or testing activities.

3.3 Level III

3.3.1 Six years of satisfactory performance as a Level II in the corresponding inspection or test category or class; or

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3.3.2 High school graduation plus 10 years of related experience in equivalent inspection or testing activities; or high school graduation plus 8 years of experience in equivalent inspection or testing activities with at least 2 years as a Level II and with at least 2 years associated with nuclear facilities - or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility; or

3.3.3 Completion of college level work leading to an associate degree and 7 years of related experience in equivalent inspection or testing activities with at least 2 years of this experience associated with nuclear facilities - or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility; or

3.3.4 Graduation from a 4 year college plus 5 years of related experience in equivalent inspection or testing activities with at least 2 years of this experience associated with nuclear facilities - or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-1, Section 2.1

"Qualification Requirements

The responsible organization shall designate those activities that require qualified inspection and test personnel and the minimum requirements for such personnel. Further, the responsible organization shall establish written procedures for the qualification of inspection and test personnel and for the assurance that only those personnel who meet the requirements of this Supplement are permitted to perform inspection and test activities. When a single inspection or test requires implementation by a team or a group, personnel not meeting the requirements of this Standard may be used in data-taking assignments or in plant or equipment operation, provided they are supervised or overseen by a qualified individual."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-1, Section 2.2

"Personnel Selection

Personnel selected for performing inspection and test activities shall have the experience or training commensurate with the scope, complexity, or special nature of the activities."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-1, Section 2.3

"Indoctrination

Provisions shall be made for the indoctrination of personnel as to the technical objectives and requirements of the applicable codes and standards and the quality assurance program elements that are to be employed."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-1, Section 2.4

"Training

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The need for a formal training program shall be determined, and such training activities shall be conducted as required to qualify personnel who perform inspections and tests. On-the-job training shall also be included in the program, with emphasis on first-hand experience gained through actual performance of inspections and tests."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-1, Section 2.5

"Determination of Initial Capability

The capabilities of a candidate for certification shall be initially determined by a suitable evaluation of the candidate's education, experience, training, and either test results or capability demonstration."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-1, Section 2.6

"Evaluation of Performance

The job performance of inspection and test personnel shall be reevaluated at periodic intervals not to exceed 3 years. Reevaluation shall be by evidence of continued satisfactory performance or redetermination of capability in accordance with the requirements of para. 2.5 above. If during this evaluation or at any other time, it is determined by the responsible organization that the capabilities of an individual are not in accordance with the qualification requirements specified for the job, that person shall be removed from that activity until such time as the required capability has been demonstrated. Any person who has not performed inspection or testing activities in his qualified area for a period of 1 year shall be reevaluated by a redetermination of required capability in accordance with the requirements of para. 2.5 above."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-1, Section 2.7

"Certificate of Qualification

The qualification of personnel shall be certified in writing in an appropriate form, including the following information:

- (a) employer's name;
- (b) identification of person being certified;
- (c) activities certified to perform;
- (d) basis used for certification, which includes such factors as:
  - 1) education, experience, indoctrination, and training,
  - 2) test results, where applicable,
  - 3) results of capability demonstration;

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- (e) results of periodic evaluation;
- (f) results of physical examinations, when required;
- (g) signature of employer's designated representative who is responsible for such certifications;
- (h) date of certification and date of certification expiration."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-1, Section 2.8

"Physical

The responsible organization shall identify any special physical characteristics needed in the performance of each activity, including the need for initial and subsequent physical examination."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-2, Section 1

"GENERAL

This Supplement provides amplified requirements for the qualification of personnel who perform radiographic (RT), magnetic particle (MT), ultrasonic (UT), liquid penetrant (PT), eddy current (ET), neutron radiographic (NRT), and leak testing (LT) [hereinafter referred to as nondestructive examination (NDE)] to verify conformance to specified requirements. It supplements the requirements of Basic Requirement 2 of this Standard and shall be used in conjunction with the Basic Requirement when and to the extent specified by the organization invoking this Standard."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 2S-2, Section 2

"CERTIFICATION

2.1 Applicable Documents

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

2.2 Program

The responsible organization shall establish written procedures for the control and administration of NDE personnel training, examination, and certification.

2.3 Records

Records of personnel qualification shall be established and maintained by the employer."

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SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Introduction, Section 5

"Inspection, test, and nondestructive examination personnel and laboratory technicians shall be trained and qualified/certified in accordance with the applicable portions of ASME NQA-1. Professional personnel shall meet the requirements defined by the implementing organization in its position descriptions."

SITE REQUIREMENT SOURCE: DOE/EH-0135 TC.8.2

"Initial training develops necessary job related knowledge and skills, and includes the following areas:

- specific work control procedures;
- applicable codes, standards, and regulations;
- quality assurance and quality control fundamentals;
- inspection/examination equipment and procedures;
- job specific inspection/examination techniques;
- practical factor demonstration;
- in-house and industry operating experience;
- radiological protection; and
- industrial safety."

SITE REQUIREMENT SOURCE: DOE/EH-0135 TC.8.3

"On-the-job training requirements are identified, completed, and documented prior to assignment to the associated tasks."

SITE REQUIREMENT SOURCE: DOE/EH-0135 TC.8.4

"Continuing training maintains and improves job-related knowledge and skills in areas such as the following:

- inspection/examination equipment, technique, and procedure changes;
- applicable code, standard, and regulation changes;
- industry and in-house experience information;
- seldom used knowledge and skills that affect reliable operation; and
- selected topics from TC.8.2 to correct identified weaknesses."

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SITE REQUIREMENT SOURCE: DOE/EH-0135 TC.8.5

"Qualification standards and evaluation methods are adequate to verify trainee competence."

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TC.8

"PERFORMANCE OBJECTIVE: The quality control (QC) inspector and nondestructive examination (NDE) technician training and qualification programs should develop and improve the knowledge and skills necessary to perform assigned job functions."

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TC.8.1

"1. Programs are established and implemented for initial and continuing training."

2.4

QUALITY IMPROVEMENT

The QA organization and Management Systems for Tank Farms should establish and implement processes to detect and prevent quality problems and to ensure quality improvement. Items and processes that do not meet established requirements should be identified, controlled, and corrected. Corrections include identifying the causes of problems and preventing recurrence. Item reliability, process implementation, and other quality-related information should be reviewed and the data analyzed to identify items and processes needing improvement. The following aspects should be included:

- Processes for Quality Improvement
- Performance Data
- Nonconforming Items and Processes
- Management Involvement

Quality Improvement or Total Quality are concepts utilizing processes and management techniques that integrate quality into the administrative and production processes and allow for the quality to be measured at various intervals and provide opportunity for positive correction through analysis of data and intervention by those with direct control and responsibility. Quality improvement can only be achieved as the organization begins to understand and own the customer requirements and expectations. The ownership of the customer requirements and expectations must permeate the entire organization and all the processes.

Quality improvement interface takes place every time a product or service changes hands or organization and, therefore, is an ongoing interface at all levels and between all functional areas with primary focus on the customer that is to receive the final product or service. The Quality Assurance functional area should provide trends for quality indicators, Issues Management information and audit and assessment results to Management Systems for combination with the data provided by the line organizations through their process evaluations for analysis and action.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.a

"Criterion 3 -- Quality Improvement

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a. Processes should be established and implemented with the objectives of preventing problems and improving quality. Examples of planning and problem prevention include but are not limited to peer reviews, design reviews, probabilistic risk assessments safety analysis reports, and reliability/availability/maintainability analyses. The focus of quality improvement should be to reduce the variability of every process which influences the quality of the product."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(1)(c)

"Criterion 3 - Quality Improvement The organization shall establish and implement processes to detect and prevent quality problems and to ensure quality improvement. Items and processes that do not meet established requirements shall be identified, controlled, and corrected. Correction shall include identifying the causes of problems and preventing recurrence. Item reliability, process implementation, and other quality-related information shall be reviewed and the data analyzed to identify items and processes needing improvement."

SITE REQUIREMENT SOURCE: DOESAGD Section 3.1.7

"Atmosphere of Continual Quality Improvement. Striving for excellence through the process of continual performance improvement should be a way of doing business on a day-to-day basis. The attitudes, motivation, and morale of staff and work force personnel affect performance. The "continual performance improvement" culture should be fostered and supported with continual communication of goals and objectives of self-assessment and identifiable achievements and progress. In addition to fostering such a culture, there should be systematic efforts to evaluate the degree to which an atmosphere of continual quality improvement has been achieved and the nature, strength, and direction of organization culture. Functional Guidelines.

- There should be specific programs and activities designed to promote an atmosphere of continual quality improvement and a strong ES&H-S&S culture.
- Management should pursue new and additional methods and techniques that will provide mechanisms and reward incentives for improved performance.
- The need for improved performance should be recognized as a priority item and consideration as such during planning and budget reviews.
- A sense of pride and satisfaction for doing the right things right the first time should be the philosophy adopted at all levels and should be reflected in vision statements and goals and obligations which becomes endemic at all levels of the Department."

2.4.1

Leadership

The management of WHC and Tank Farms should provide leadership in quality improvement and total quality by establishing the quality and performance objectives and setting the tone and direction that encourages every individual associated with Tank Farms to assume the responsibility for achieving the highest levels of quality and performance possible. This leadership should include the encouragement of all personnel in the identification of problems and suggestions for improvements. Managers must set the example for quality through their own performance and the performance expectations that they establish with those that work with them and for them. Management should focus on why quality and performance does or

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does not meet expectations rather than who. Differing opinions should be handled in a prescribed manner that provides objective and professional solutions in a timely manner.

Ongoing interface at all levels and with all functional areas.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.f

"Management, at all levels, should foster a "no-fault" attitude to encourage the identification of nonconforming items and processes. Management should be involved in the quality improvement process to ensure that proper focus is given, adequate resources are allocated and difficult issues are resolved. A process for resolving professional differences of views and opinions should be established and implemented."

2.4.2

Information and Analysis

The focus of quality improvement or total quality for Tank Farms should be to reduce the variability of every process which influences quality of the product or service and identify any special actions or controls that would be required for areas of high variability. This information requires assessment of existing processes and the careful analysis of the data from the assessment to develop an action plan for improvement. The sources of information for the original assessment may come from self assessments, independent assessments, historical data concerning compliance, nonconformances, peer reviews, design reviews, maintenance and availability data, and so on. Another tool is benchmarking, that can be used to compare quality or performance with another similar type process or function either external or internal to the organization. The set of data must always include any and all information that is available from the customer of the product or service.

Various techniques should be considered in the analysis of the performance data. Risk assessment, fault tree analysis, root cause analysis, and barrier analysis are some of the more sophisticated techniques; however, the analysis should be appropriate for the data set and the problem being solved. The important essential is that the individual performing the analysis have a full understanding of the data set, of the analysis process being utilized and its limitations, and the problem to be solved.

All processes should be analyzed and quality indicators (QIs) and acceptable quality levels (AQLs) established for each process. The following aspects should be considered in the development and use of these indicators and levels:

- The QIs and AQLs should be developed and owned by the individual and organization directly responsible for the performance of the activity and agreed to and approved by management.
- The QIs must be relevant to the quality, effectiveness, or efficiency of the process or product based on identified standards.
- AQLs should be challenging, but achievable and always improving.
- The data related to quality and performance should be analyzed and acted upon on a continuing basis to improve quality and performance.
- QIs should be taken at meaningful intervals in the process to clearly reflect the quality of the product as it progresses through the process.

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- QIs should be dynamic and reflect changes in the process, quality and performance problems, and priorities based on risk and cost.
- Data that is not used by individuals and management to monitor performance and affect change is not worth gathering.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.b

"Performance data, internal and external failure costs, prevention costs, and other quality-related information should be analyzed to identify trends that adversely impact quality and to identify opportunities to improve items and processes. Examples of such information include increasing process capability studies which define assignable and inherent causes of process variability, failure rates, increasing corrective maintenance, and decreasing preventive maintenance resources. To identify commonalities, this analysis should consider information from external sources and not be limited to one type of work, one facility, or one contractor."

2.4.3

Strategic Quality Planning

The management of WHC and Tank Farms should establish a strategic planning process that includes quality and performance improvement goals and key initiatives. The inclusion of these aspects into the strategic planning process and the business plan is an opportunity for management to make a strong statement on their commitment to quality and performance improvement. It is important that once the strategic plan is developed, that it be clearly articulated to all personnel associated with Tank Farms. The strategic plan should clearly reflect the need for continuous improvement and be based upon factual data and analysis.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.c

"Processes should be established and implemented to promote continuous improvement. This includes the identification and improvement of expected performance standards and associated performance measures."

2.4.4

Human Resource Utilization

The utilization of resources associated with the Tank Farms should reflect the commitments made in the planning process. Personnel are the key ingredient in problem identification/resolution and quality improvement. The employees at Tank Farms should be involved in and empowered to accept the responsibility for quality improvement. Management should provide appropriate training to assure that the commitment, expectations, and process are understood in order to allow employees to make quality improvements in their respective areas. This process should not only encourage the identification and solution of problems, but should emphasize the prevention of problems. Management should encourage decision making and problem solving at the lowest possible level in the organization and should provide the guidance and training to facilitate this.

Interface with Management Systems and with Training and Qualification for the requirements development and personnel training.

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SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.d

"All personnel should identify nonconforming items and processes. All personnel should be encouraged by management to identify and suggest improvements. All personnel should be granted the freedom and authority to stop work until effective corrective action is taken."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.i

"Personnel responsible for analyzing and dispositioning nonconformances should have an adequate technical understanding of the area in which they are working and have access to pertinent background information relative to the nonconformance."

2.4.5

Management of Process Quality

The management of WHC and Tank Farms are responsible for quality and the implementation of the QAP and, therefore, responsible for Quality Improvement in all program areas and process activities. All levels of management must understand that their involvement on a continuing basis is required to successfully implement the quality culture required for excellence of performance at Tank Farms. Management must ensure that Quality processes and programs are implemented and fully utilized by those responsible for the product or service to result in requisite quality. The management of the quality process should include the following aspects:

- Documentation of the existing process or system.
- Use of existing measures and creating new measures to evaluate effectiveness.
- Identification of process/system changes that would result in measurable increases in quality or effectiveness.
- Training/Education of those involved.
- Hands on involvement through in-process monitoring and improvement.

Interfaces with all Functional Areas and with Management Systems.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.e

"Items and processes that do not meet established requirements, goals, or do not result in the anticipated quality should be promptly identified, documented, analyzed, resolved, and followed up. The extent of cause analyses for nonconforming items and processes should be commensurate with the importance or significance of the problem."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.h

"Reworked, repaired, and replacement items and processes should be inspected and tested in accordance with original requirements or specified alternative".

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2.5

DOCUMENTS AND RECORDS

Document controls should be established for the preparation, review, approval, issuance, and revision of documents which prescribe processes, specify requirements, or establish designs for Tank Farms. Records should be maintained to reflect completed work associated with these documents, including provisions for protection, preservation, traceability, accountability, and retrievability. The following aspects should be included:

- Documents to be controlled
- Approval Authorities
- Superseded or Canceled Document Controls
- Record Retention
- Special Record Processing and Storage Requirements
- Archival Storage

The Document Control and Records Storage and Retrieval processes are discussed in detail in the Management Systems Functional Areas RID.

Interfaces with Management Systems and other Functional Areas that generate QA records.

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(1)(d)

"Criterion 4 - Documents and Records Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained."

2.5.1

Document Control

Measures should be established to control the preparation, issue, and change of documents that specify quality requirements or prescribe activities affecting quality to assure that correct documents are being utilized at the work location, and that they were reviewed for adequacy and approved for release by authorized personnel. These documents include drawings, instructions, and procedures.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 6

"DOCUMENT CONTROL

The preparation, issue, and change of documents that specify quality requirements or prescribe activities affecting quality shall be controlled to assure that correct documents are being employed. Such documents, including changes thereto, shall be reviewed for adequacy and approved for release by authorized personnel."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 6S-1, Section 1

*GENERAL

This Supplement provides amplified requirements for a document control system. It supplements the requirements of Basic Requirement 6 of this Standard and shall be used in conjunction with that Basic Requirement when and to the extent specified by the organization invoking this Standard.

The documents which shall be controlled in accordance with this Supplement are only those documents which specify quality requirements or prescribe activities affecting quality such as instructions, procedures, and drawings.

The term "document control" used throughout this Supplement is defined as the act of assuring that documents are reviewed for adequacy, approved for release by authorized personnel, and distributed to and used at the location where the prescribed activity is performed."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 6S-1, Section 2

*DOCUMENT PREPARATION, REVIEW, APPROVAL, AND ISSUANCE

The control system shall be documented and shall provide for (a) through (c) below:

- (a) identification of documents to be controlled and their specified distribution;
- (b) identification of assignment of responsibility for preparing, reviewing, approving, and issuing document;
- (c) review of documents for adequacy, completeness, and correctness prior to approval and issuance."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 6S-1, Section 3

*DOCUMENT CHANGES

3.1 Major Changes

Changes to documents, other than those defined as minor changes in para. 3.2 below, are considered as major changes and shall be reviewed and approved by the same organizations that performed the original review and approval unless other organizations are specifically designated. The reviewing organization shall have access to pertinent background data or information upon which to base their approval.

3.2 Minor Changes

Minor changes to documents, such as inconsequential editorial corrections, shall not require that the revised documents receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type of minor changes that do not require

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review, the type of minor changes that do not require such a review and approval and the persons who can authorize such a decision shall be clearly delineated."

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section D.2.f

"Document Control. Document control is a means by which all program documentation can be controlled, tracked, and updated in a timely manner to ensure that applicability and correctness shall be established. The control measures, which should be initiated and followed, should assure that such documents are reviewed for adequacy, approved for release by authorized personnel, and are distributed to and used at the location of the prescribed activity."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.4.a(1)

"Criterion 4 -- Documents and Records

Documents

A process should be established and implemented to control preparation, review, approval, issuance, use and revision of documents that establish policies, prescribe work, specify requirements, or establish design."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.4.a(2)

"The scope of the document control system should be defined. Examples of documents to be controlled include drawings, data files (including various media), calculations, specifications, computer codes, purchase orders and related documents, vendor-supplied documents, procedures, work instructions, operator aids, and data sheets."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.4.a(3)

"Revisions to controlled documents should be reviewed and approved by the organization that originally reviewed and approved the documents. An alternative organization may be designated based on technical competence and capability. Timeliness guidelines should be implemented for distribution of new or revised controlled documents."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.4.a(4)

"Controlled documents should be distributed to and used by personnel performing work."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.4.a(5)

"Control of superseded and canceled documents should include measures to ensure that only correct documents are in use. Record copies should be marked "superseded" or "canceled" and kept for a specified retention period."

2.5.2

Records

QA records should be controlled and maintained in order to provide evidence that activities affecting quality have been satisfactorily accomplished. Controls should be established for records retention and to define the records filing system. The records management program should address records classification by type and include review for authenticity, legibility, and

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completeness. This program should also provide provisions for identification, indexing, and record retention times. Adequate controls should be established to protect records from damage, deterioration, and loss. These controls should address the type of storage facility, fire protection, and access control.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 17

"QUALITY ASSURANCE RECORDS

Records that furnish documentary evidence of quality shall be specified, prepared, and maintained. Records shall be legible, identifiable, and retrievable. Records shall be protected against damage, deterioration, or loss. Requirements and responsibilities for record transmittal, distribution, retention, maintenance, and disposition shall be established and documented."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 2.2

"Generation of Records

The applicable design specifications, procurement documents, test procedures, operational procedures, or other documents shall specify the records to be generated, supplied, or maintained by or for the Owner. Documents that are designated to become records shall be legible, accurate, and completed appropriate to the work accomplished."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 2.3

"Record Validation

Documents shall be considered valid records only if stamped, initialed, or signed and dated by the authorized personnel or otherwise authenticated. This authentication may take the form of a statement by the responsible individual or organization. Handwritten signatures are not required if the document is clearly identified as a statement by the reporting individual or organization. These records may be originals or reproduced copies."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 2.4

"Index

The records shall be indexed. The indexing system(s) shall include, as a minimum, record retention times and the location of the record within the record system."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 2.5

"Distribution

The records shall be distributed, handled, and controlled in accordance with written procedures."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 2.6

"Identification

Records and/or indexing system(s) shall provide sufficient information to permit identification between the record and the item(s) or activity(ies) to which it applies."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 2.7

"Classification

Records shall be classified as "Lifetime" or "Nonpermanent" by the Owner, or his agent when authorized, in accordance with the criteria given in paras. 2.7.1 and 2.7.2 below.

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

- (a) those which would be of significant value in demonstrating capability for safe operation;
- (b) those which would be of significant value in maintaining, reworking, repairing, replacing, or modifying an item;
- (c) those which would be of significant value in determining the cause of an accident or malfunction of an item;
- (d) those which provide required baseline data for in-service inspections.

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

2.7.2 Nonpermanent Records. Nonpermanent records are those required to show evidence that an activity was performed in accordance with the applicable requirements but need not be retained for the life of the item because they do not meet the criteria for lifetime records."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 4.4.3

"Temporary Storage. When temporary storage of records (such as for processing, review, or use) is required by an organization's procedures, the records shall be stored in a 1 hr fire rated container. The procedures shall specify the maximum allowable time limit for temporary storage. The container shall bear a UL label (or equivalent) certifying 1 hr fire protection or be certified by a person competent in the technical field of fire protection."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 5

"RETRIEVAL

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Storage systems shall provide for retrieval of information in accordance with planned retrieval times based upon the record type.

A list shall be maintained designating those personnel who shall have access to the files.

Records maintained by a Supplier at his facility or other location shall be accessible to the Purchaser or his designated alternate, e.g., the Owner."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 6

"DISPOSITION

Records accumulated at various locations, prior to transfer, shall be made accessible to the Owner directly or through the procuring organization. The custodian shall inventory the submittals, acknowledge receipt, and process these records in accordance with this Standard.

Various regulatory agencies have requirements concerning records that are within the scope of this Standard. The most stringent requirements shall be used in determining the final disposition.

The Supplier's nonpermanent records shall not be disposed of until the applicable conditions listed in (a) through (e) below are satisfied:

- (a) items are released for shipment, a Code Data Report is signed, or a Code Symbol Stamp is affixed;
- (b) regulatory requirements are satisfied;
- (c) operational status permits;
- (d) warranty consideration is satisfied;
- (e) Purchaser's requirements are satisfied."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 17-1, Section 2.8

"Retention of Records

Records shall be retained in accordance with the above classifications. The retention period for nonpermanent records shall be established in writing."

2.6

WORK PROCESSES

All work performed at or for Tank Farms should be performed to established technical standards and administrative controls. Work should be performed under controlled conditions using approved instructions, procedures, or other appropriate means. Where work activities are accomplished utilizing "skill of the craft" rather than detailed instructions, the line manager must ensure through training and/or demonstration of capability that the activity is within the skill of the person(s) performing the task or activity. Items and material should be identified

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and controlled to ensure their proper use and maintained to prevent damage, loss, or deterioration. Equipment used for process monitoring or data collection should be calibrated and maintained. The following aspects should be included in a program for the control of work processes:

- Conduct of Work
- Identification and Control of Items
- Handling, Storage, and Shipping
- Calibration and Maintenance of Monitoring and Data Collection Equipment
- Special Processes
- Inspection Test and Operating Status

Interfaces with Operations, Construction, Maintenance, Engineering Design, and Quality Assurance Functional Area RIDs. The control of work processes is an ongoing and continuous interface and is the single most important process to be accomplished to ensure that the work activity is completed in a efficient and effective manner with a high level of quality.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 5

"INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, or drawings of a type appropriate to the circumstances. These documents shall include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Introduction, Section 4.2

"Installation, inspection, test procedures, and work instructions identified during planning shall be prepared. Preparation and approval of the procedures/instructions shall be in advance of the need to use the documents. The documents shall be kept current and revised as necessary to assure that the work is performed in accordance with the latest approved information.

The documents shall include the following as applicable:

- (a) personnel safety and structure or facility protection considerations
- (b) precautions to be observed
- (c) work requirements including installation specifications
- (d) sequence of activities to be followed and steps within a given activity
- (e) prerequisites including preparatory checks and inspections
- (f) test and inspection objectives

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- (g) special equipment required
- (h) identification of inspection and test equipment and related calibration requirements including recalibration dates
- (i) sequence and frequency of inspection or test
- (j) acceptance criteria and methods for verifying
- (k) responsibility and required qualifications of personnel
- (l) approvals and authorizing or verifying signatures
- (m) specific document references
- (n) data or test report forms
- (o) information to be collected for plant records
- (p) processing inspection and test data and their analysis, evaluation, and final acceptance"

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Introduction, Section 8.1

"Instructions, procedures, or drawings shall be prepared to control installation, inspection, and testing activities at areas of interface between the new and existing units. These instructions, procedures, or drawings shall define the following as applicable:

- (a) the areas of interface between the new and existing units;
- (b) access control and authority for work at these interface areas;
- (c) nature of potential hazards to or from the existing equipment;
- (d) precautions required to be taken during installation;
- (e) supplementary objectives for inspection and testing."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.i

"Initial estimates, used in planning, should be based on sound data and assumptions relating to personnel, material/service costs, availabilities, and productivity."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.a(1)

"Performance

1. Criterion 5 -- Work Processes

a. Work

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(1) Personnel performing work are responsible for the quality of their work. Because the individual worker is the first line in ensuring quality, personnel should be knowledgeable of requirements for work they perform and the capability of the tools and processes they use."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.a(2)

"Line managers should ensure that personnel working under their supervision are provided the necessary training, resources, and administrative controls to accomplish assigned tasks. Criteria describing acceptable work performance should be defined for the worker."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.a(5)

"Work-related instructions, procedures, and other forms of direction should be developed, verified validated, and approved by technically competent personnel."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(2)(a)

"Performance

Criterion 5 - Work Processes Work shall be performed to established technical standards and administrative controls. Work shall be performed under controlled conditions using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained."

2.6.1

Conduct of Work Activities

All work performed at Tank Farms should be planned, authorized, and accomplished in a controlled manner using approved procedures, instructions, drawings, and appropriately trained and qualified personnel who recognize and accept their responsibility for quality, safety, efficiency, and effectiveness. Line management is always responsible for overall quality and safety; however, each worker performing an activity has individual responsibility for the quality and safety of work performed. It is imperative that each individual person recognize the importance of proper planning and coordination, of following approved procedures and instructions, being knowledgeable and trained/qualified in the assigned task, and free to stop or suspend the work if procedures are incorrect, questions arise, or quality or safety are in question. Management should ensure that work process controls clearly state the responsibilities of the individual organizations and personnel and acknowledge management's willingness to stop or suspend the activity if there is a question concerning process quality or safety. A program for the control of work processes should be developed for each group or organization performing work activities at Tank Farms that includes or considers the following aspects:

- Responsibility for Quality and Safety.
- Doing the "Right things, Right, the First Time."
- Following approved procedures and instructions that are current and correct for the assigned work activity.

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- Individual responsibility to stop or suspend unsatisfactory work.
- Training and qualifications of individuals to perform a specific task.
- Management oversight and assessment to ensure that the desired levels of quality, safety, efficiency, and effectiveness are being achieved.
- Planning and coordination of work with all necessary levels and parties prior to commencement.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 9

"CONTROL OF PROCESSES

Processes affecting quality of items or services shall be controlled. Special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive examination, shall be performed by qualified personnel using qualified procedures in accordance with specified requirements."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 9S-1, Section 2

"PROCESS CONTROL

Processes shall be controlled by instructions, procedures, drawings, checklists, travelers, or other appropriate means. These means shall assure that process parameters are controlled and that specified environmental conditions are maintained."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.a(3)

"Line managers should review work and related information to ensure that the desired quality is being achieved and to identify areas needing improvement."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.a(4)

"Work should be planned, authorized, and accomplished under controlled conditions using technical standards, instructions, procedures, or other appropriate means of a detail commensurate with the complexity and risk of the work."

2.6.2

Identification and Control of Items

Controls should be developed for Tank Farms to provide for traceability through physical identification of material, parts, components, items, and equipment to assure that only properly accepted material, parts, components, and equipment are installed and operated. This identification and control should be maintained from fabrication through installation and includes consumables and items with limited shelf life.

These controls must meet the requirements of the identified codes and standards in the Engineering Design specification.

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This element is discussed in greater detail in the Construction and Maintenance Functional Areas.

This interface has two primary components: (1) onsite from the time the material is received and (2) with the supplier to assure proper traceability from fabrication through shipping to the purchaser. The onsite interfaces primarily affect the Procurement area and its interface with Construction and/or Maintenance.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 8

*IDENTIFICATION AND CONTROL OF ITEMS

Controls shall be established to assure that only correct and accepted items are used or installed. Identification shall be maintained on the items or in documents traceable to the items, or in a manner which assures that identification is established and maintained."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 8S-1, Section 2

*IDENTIFICATION METHODS

2.1 Item Identification

Items of production (batch, lot, component, part) shall be identified from the initial receipt and fabrication of the items up to and including installation and use. This identification shall relate an item to an applicable design or other pertinent specifying document.

2.2 Physical Identification

Physical identification shall be used to the maximum extent possible. Where physical identification on the item is either impractical or insufficient, physical separation, procedural control, or other appropriate means shall be employed.

2.3 Markings

Identification markings, when used, shall be applied using materials and methods which provide a clear and legible identification and do not detrimentally affect the function or service life of the item. Markings shall be transferred to each part of an identified item when subdivided and shall not be obliterated or hidden by surface treatment or coatings unless other means of identification are substituted."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 8S-1, Section 3.1

*SPECIFIC REQUIREMENTS

3.1 Identification and Traceability of Items

When specified by codes, standards, or specifications that include specific identification or traceability requirements (such as identification or traceability of the item to applicable specification and grade of material; heat, batch, lot, part, or serial number; or specified

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inspection, test, or other records), the program shall be designed to provide such identification and traceability control."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 8S-1, Section 3.2

"Limited Life Items

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

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 8S-1, Section 3.3

"Maintaining Identification of Stored Items

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

- (1) provisions for maintenance or replacement of markings and identification records due to damage during handling or aging;
- (2) protection of identifications on items subject to excessive deterioration due to environmental exposure;
- (3) provisions for updating existing plant records."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.5.6

"6. Controls are established and described and described to identify and control hardware materials (including consumable), parts, and components including partially fabricated subassemblies through installation. The documentation includes organizational responsibilities."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.5.7

"7. Safety-related parts and components are properly controlled, segregated, and identified in the storeroom."

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section D.2.h

"Identification, Control, and Traceability of Materials, Parts, and Components This step addresses a configuration control system which should enable identification, control, and traceability of all materials, parts, and components in the system throughout all phases of construction and use. Supportive procedures are necessary for activities such as management approved control, coding, provisions for updating and changes, and the presentation format for systematized configuration control."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.b

"Identification and Control of Items

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- (1) Processes should be established and implemented to identify, control, and maintain items.
- (2) Identification of items should be maintained to ensure appropriate traceability.
- (3) Processes should be established and implemented to control consumable items and items with limited shelf life, prevent the use of incorrect or defective items, and control samples."

2.6.3

Handling, Storage, and Shipping

Tank Farms should develop controls for the handling, shipping, and storage of material, components, items, and equipment to prevent their degradation. These controls should be applied to items and equipment used in construction and maintenance, as well as materials used in the processes performed by or associated with Tank Farms. These controls are applicable to all parties including contractors, sub contractors, and suppliers and span from fabrication to installation and in place storage, if appropriate. These controls should consider the following aspects:

- Handling requirements during shipping, storage and installation including handling equipment, tools, and training and qualifications of personnel.
- Special shipping requirements and protective measures.
- Purchaser acceptance requirements, including supplier liabilities.
- Manufacturers recommendations and requirements for storage to maintain the the ability of the material or items to meet specifications.
- Identification and establishment of various storage levels based on environmental requirements.
- Establishment of specific separate areas for receipt of materials and equipment, for accepted material and equipment, and for segregation and control of non-conforming items.
- Marking and labeling including special requirements, status of acceptance and inspection, and traceability.
- Preventive maintenance and preservation requirements while in storage, including associated records.
- Controls for acceptance, release, and return of materials including custody and maintenance records and responsibilities.

There are a number of important interfaces for this subelement. The purchaser and supplier must clearly coordinate the identification of shipping, handling, and storage requirements prior to delivery or at delivery of the material or equipment. The Warehouse and Storage organization must coordinate and interface with QA and the ordering and using organizations.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 13

"HANDLING, STORAGE, AND SHIPPING

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Handling, storage, cleaning, packaging, shipping, and preservation of items shall be controlled to prevent damage or loss and to minimize deterioration."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1, Section 2

"INSTRUCTION

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

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1, Section 3.1

"General

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

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1, Section 3.2

"Procedures

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

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1, Section 3.3

"Tools and Equipment

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

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1, Section 3.4

"Operators

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

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**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1,
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*MARKING

Instructions for marking and labeling for packaging, shipment, handling, and storage of items shall be established as necessary to adequately identify, maintain, and preserve the item, including indication of the presence of special environments or the need for special controls."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.c

*Handling, Storing, and Shipping

(1) A process should be established and implemented to control the handling, storage, shipping, cleaning, and preservation of items to prevent damage, loss, or deterioration.

(2) Marking and labeling of items should be maintained throughout packaging, shipping, handling, and storage. Marking and labeling should provide information to identify items and provide instructions or special control to preserve items' integrity. Requirements for off-site transportation should be established and implemented.

(3) Special protective measures (such as containers, shock absorbers, accelerometers, inert gas atmospheres, and specific temperature and moisture levels) should be specified and provided when required to maintain acceptable quality."

2.6.4

Calibration and Maintenance of Monitoring and Data Collection Equipment

Installed monitoring and data collection equipment used at Tank Farms should be controlled to assure that such items and systems are of the proper type, range, accuracy, and tolerance to accomplish the intended task. These controls should include the calibration, maintenance, and control of this equipment. The following aspects should be considered in the development of these controls:

- Lists of equipment requiring calibration and control.
- Method and interval for calibration by specific equipment type.
- Equipment identification and calibration status.
- Calibration traceable to nationally recognized standards, if possible.
- Data systems utilizing software programs should be controlled and have the software validated and verified to assure the accuracy of data and any control activity provided.
- Calibration documentation and records.

Controls are covered in section 2.9.3 for measuring and test equipment (M&TE) used to calibrate installed monitoring and data collection equipment and for portable M&TE used for monitoring and data collection.

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The responsibility for this activity is usually shared in two different functional areas. Construction is usually responsible for M&TE type of non-installed equipment utilized to verify installation or modification work activities. Maintenance is usually responsible for installed and process equipment. Accuracy and tolerance information is usually provided by or through the Engineering function. Out of calibration information requires an interface between the using organization and the calibration organization for risk assessment and corrective action.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 12

"CONTROL OF MEASURING AND TEST EQUIPMENT

Tools, gages, instruments, and other measuring and test equipment used for activities affecting quality shall be controlled and at specified periods calibrated and adjusted to maintain accuracy within necessary limits."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 2

"SELECTION

Selection of measuring and test equipment shall be controlled to assure that such items are of proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to specified requirements."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 3.1

"Calibration

Measuring and test equipment shall be calibrated, adjusted, and maintained at prescribed intervals or, prior to use, against certified equipment having known valid relationships to nationally recognized standards. If no nationally recognized standards exist, the bases for calibration shall be documented."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 3.2

"Control

The method and interval of calibration for each item shall be defined, based on the type of equipment stability characteristics, required accuracy, intended use, and other conditions affecting measurement control. When measuring and test equipment is found to be out of calibration, an evaluation shall be made and documented of the validity of previous inspection or test results and of the acceptability of item previously inspected or tested. Out-of-calibration devices shall be tagged or segregated and not used until they have been recalibrated. If any measuring or test equipment is consistently found to be out of calibration it shall be repaired or replaced. A calibration shall be performed when the accuracy of the equipment is suspect."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 5

"RECORDS

Records shall be maintained and equipment shall be suitably marked to indicate calibration status.

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4

"PERFORMANCE OBJECTIVE: Provisions should be made to ensure that tools, gauges, instruments, and other measuring and testing devices are properly identified, controlled, calibrated, and adjusted at specified intervals."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.1

"1. Reference and transfer standards are traceable to nationally recognized standard. Where national standards do not exist, provisions are established to document the basis for the calibration."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.2

"2. Procedures are established and described for calibration (techniques and frequency), maintenance, and control of the equipment (instruments, tools, gauges, fixtures, reference and transfer standards, and non-destructive test equipment) that is used in measurements and inspections."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.3

"3. The scope of the program is described and the types of equipment to be controlled are established."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.4

"4. QA and other organizations' responsibilities are described for establishing, implementing, and assuring effectiveness of the calibration program including review and concurrences on procedures."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.5

" 5. Equipment is identified and traceable to the calibration test data."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.6

"6. Equipment is labeled or tagged or "otherwise controlled" to indicate due date of the next calibration. The method of "otherwise controlled" should be described."

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SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.7

"7. Equipment is calibrated at specified intervals based on the required accuracy, purpose, degree, of usage, stability characteristics, and other conditions affecting the measurement."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.8

"8. Calibration of equipment should be against standards that have an accuracy of at least four times the required accuracy of the equipment being calibrated. When this is not possible, the calibration of equipment should have an accuracy that assures the equipment being calibrated will be within required tolerance. The basis of acceptance is documented and authorized by responsible management. The management authorized to perform this function is identified. "As Found" and "As Left" conditions are recorded. The "As Left" conditions meet the acceptance criteria and the acceptance criteria are within the Technical Specification/Operational Safety Requirement."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.4.9

"9. Measures are taken and documented to determine the validity of previous inspections performed and the acceptability of items inspected or tested since the last calibration when measuring and test equipment is found to be out of calibration. Inspections or tests re repeated on items determined to be suspect."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.d

"Calibration and Maintenance of Monitoring and Data Collection Equipment (1) A process should be established and implemented to control the calibration, maintenance, and use of measuring and test equipment used for monitoring and data collection.

(2) Monitoring and data collection equipment should be of the accuracy and type suitable for the intended use. The types of equipment included should be specified. Equipment should have calibration certifications traceable to national standards, where possible."

2.6.5

Special Processes

Provisions should be established to ensure special processes such as welding, heat treating, non-destructive testing, chemical cleaning and etc. are controlled and performed in a manner to ensure the acceptability of the final product or process through the strict adherence to approved procedures by trained and qualified personnel. The following aspects should be considered in the development of these controls:

- Procedural and process requirements of applicable codes and standards.
- Qualification of procedures, personnel, and equipment.
- Criteria for essential variables of the process including records necessary to establish that the special process was adequately controlled.
- QA shall be the organization responsible for the independent verification of the process.

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The detailed discussion of this element is covered in the Maintenance and Construction Functional Area RIDs.

The major interfaces are Engineering Design output for process technical requirements and inspection criteria and the interface for verification witnessing and final acceptance between QA and Maintenance or Construction.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 9

*CONTROL OF PROCESSES

Processes affecting quality of items or services shall be controlled. Special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive examination, shall be performed by qualified personnel using qualified procedures in accordance with specified requirements."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 9S-1, Section 3.0

*SPECIAL PROCESSES

Each special process shall be performed in accordance with appropriate instructions which include or reference procedure, personnel, and equipment qualification requirements."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 9S-1, Section 3.1

*Responsibility

It is the responsibility of the organization performing the special process to adhere to the approved procedures and processes.

3.1.1 Qualification of personnel, procedures, and equipment shall comply with specified requirements.

3.1.2 Conditions necessary for accomplishment of the process shall be included in procedures or instructions. These conditions shall include proper equipment, controlled parameters of the process, and calibration requirement".

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 9S-1, Section 3.2

"Acceptance Criteria The requirements of applicable codes and standards, including acceptance criteria for the process, shall be specified or referenced in the procedures or instructions."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 9S-1, Section 3.3

*Records

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Records shall be maintained as appropriate for the currently qualified personnel, processes, and equipment of each special process."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 9S-1, Section 3.4

"Special Requirements

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

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.7.1

"Procedures, equipment, and personnel associated with special processes are qualified and are in conformance with applicable codes, standards, QA procedures, and specifications. The QA organization is involved in the verification activities to assure that they are satisfactorily performed."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.7.4

"The criteria for determining those processes that are controlled as special processes are described."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.7.5

"Organizational responsibilities, including those for the QA organization are described for qualification of special processes, equipment, and personnel."

2.6.6

Inspection Test and Operating Status

Controls used for the determination of systems and component inspection, test, and operating status should provide assurance that items or equipment which have not passed the required inspections and tests are not inadvertently installed, used, or operated at Tank Farms. Measures should be established and implemented to ensure that the status of inspection and test activities is appropriately identified on the item or equipment, or in documents directly traceable to the item or equipment. These controls should identify those measures necessary for the administration of status indicators and the responsibilities for the application and removal of these indicators. These controls may be administered by one single organization through a Management System type program, or as typically through the several different organizations that own or have control of the item or equipment at a specific time or for a specific activity. The Quality Assurance organization should be responsible for inspection status and quality related holds.

The Operations Functional Area RID will provide the specific details for the programmatic controls addressing operability status.

This element as well as other tagging or statusing programs require interface and coordination with all organizations and personnel who will have access to the items or equipment at any

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time. This is an important area of interface with the Training and Qualification Functional Area for general employee training.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 14

"INSPECTION, TEST, AND OPERATING STATUS

The status of inspection and test activities shall be identified either on the items or in documents traceable to the items where it is necessary to assure that required inspections and tests are performed and to assure that items which have not passed the required inspections and tests are not inadvertently installed, used, or operated. Status shall be maintained through indicators, such as physical location and tags, markings, shop travelers, stamps, inspection records, or other suitable means. The authority for application and removal of tags, markings, labels, and stamps shall be specified. Status indicators shall also provide for indicating the operating status of systems and components of the nuclear facility, such as by tagging valves and switches, to prevent inadvertent operation."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(3)

"Item and process test requirements and acceptance criteria should be provided by or approved by the organization responsible for design. Administrative controls and status indicators should be used to preclude inadvertent bypassing of required tests or operation of the item or process."

2.6.7

Control of Nonconforming Items

Items that do not conform to specified requirements shall be controlled to prevent inadvertent installation or use. Controls shall provide for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 15

"CONTROL OF NONCONFORMING ITEMS

Items that do not conform to specified requirements shall be controlled to prevent inadvertent installation or use. Controls shall provide for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 15S-1, Section 2

"IDENTIFICATION

(a) Identification of nonconforming items shall be by marking, tagging, or other methods which shall not adversely affect the end use of the item. The identification shall be legible and easily recognizable. (b) If identification of each nonconforming item is not practical, the container, package, or segregated storage area, as appropriate, shall be identified."

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**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 15S-1,
Section 3**

" SEGREGATION

(a) Nonconforming items shall be segregated, when practical, by placing them in a clearly identified and designated hold area until properly dispositioned.

(b) When segregation is impractical or impossible due to physical conditions such as size, weight, or access limitations, other precautions shall be employed to preclude inadvertent use of a nonconforming item."

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 15S-1,
Section 4.2**

"Responsibility and Authority

The responsibility and authority for the evaluation and disposition of nonconforming items shall be defined."

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 15S-1,
Section 4.3**

"Personnel

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

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 15S-1,
Section 4.4**

"Disposition

The disposition, such as use-as-is, reject, repair, or rework, of nonconforming items shall be identified and documented. Technical justification for the acceptability of a non-conforming item, dispositioned repair, or use-as-is shall be documented. Nonconformances to design requirements dispositioned use-as-is or repair shall be subject to design control measures commensurate with those applied to the original design. The as-built records, if such records are required, shall reflect the accepted deviation."

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 15S-1,
Section 4.5**

"Repaired or Reworked Items

Repaired or reworked items shall be reexamined in accordance with applicable procedures and with the original acceptance criteria unless the nonconforming item disposition has established alternate acceptance criteria."

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SITE REQUIREMENT SOURCE: DOE/EH0135 QV.5.3

- "3. Documentation identifies the nonconforming items; describes the nonconformance, the disposition of the nonconformance, and the inspection requirements; and includes signature approval of the disposition. Nonconformances are corrected or resolved prior to the initiation of the pre-operational test program on the item."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.3.g

"Nonconforming items and processes should be properly controlled to prevent their inadvertent test, installation, or use. They should be reviewed by the organization that originally reviewed and approved the items or processes or a designated organization that is qualified and knowledgeable. The justification for disposition should be appropriately documented."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.j

"In cases where there are indications that suppliers knowingly supplied items and services of substandard quality, this information should be forwarded to the DOE Office of Inspector General."

2.7

DESIGN

The Purchaser and Supplier should establish a documented process for the disposition of items and services that do not meet procurement document requirements. This process should address the following aspects:

- Evaluation of nonconformances.
- Submittal of Supplier nonconformance information, including recommended disposition to the Purchaser.
- Purchaser disposition of nonconformance and verification of disposition.
- Maintenance of records of nonconformances.

Interface: Input from Engineering Design for inspection criteria and hold points.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 3

"3 DESIGN CONTROL

The design shall be defined, controlled, and verified. Applicable design inputs shall be appropriately specified on a timely basis and correctly translated into design documents. Design interfaces shall be identified and controlled. Design adequacy shall be verified by persons other than those who designed the item. Design changes, including field changes, shall be governed by control measures commensurate with those applied to the original design."

RELATED REFERENCES

1. 10CFR50 Appendix A Criterion 1

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**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1,
Section 2**

"2 Design Input

Applicable design inputs such as design bases, performance requirements, regulatory requirements, codes, and standards, shall be identified and documented and their selection reviewed and approved on a timely basis by the responsible design organization. The design input shall be specified and approved on a timely basis and to the level of detail necessary to permit the design activity to be carried out in a correct manner and to provide a consistent basis for making design decisions, accomplishing design verification, and evaluating design changes. Changes from approved design inputs, including the reason for the changes, shall be identified, approved, documented, and controlled."

RELATED REFERENCES

1. 10CFR50 Appendix A Criterion 2
2. 10CFR50 Appendix A Criterion 4
3. ANSI-N45.2.11-1974 Section 3.1
4. 10CFR50 Appendix A Criterion 1

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1,
Section 3**

"3 Design Process

The responsible design organization shall prescribe and document the design activities on a timely basis and to the level of detail necessary to permit the design process to be carried out in a correct manner, and to permit verification that the design meets requirements. Design documents shall be adequate to support facility design, construction, and operation. Appropriate quality standards shall be identified and documented, and their selection reviewed and approved.

Changes from specified quality standards, including the reasons for the changes, shall be identified, approved, documented, and controlled. Design methods, materials, parts, equipment, and processes that are essential to the function of the structure, system, or component shall be selected and reviewed for suitability of application. Application information derived from experience, as set forth in reports or other documentation, shall be made available to cognizant design personnel. The final design (approved design output documents and approved changes thereto) shall:

(a) be relatable to the design input by documentation in sufficient detail to permit design verification; and

(b) identify assemblies and/or components that are part of the item being designed. When such an assembly or component part is a commercial grade item that, prior to its installation, is modified or selected by special inspection and /or testing to requirements that are more restrictive than the Supplier's published product description, the component part shall be

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represented as different from the commercial grade item in a manner traceable to a documented definition of the difference."

RELATED REFERENCES

1. ANSI-N45.2.11-1974 Section 4.1 2. 10CFR50 Appendix A Criterion 1

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 3.1

"3.1 Design Analyses

Design analyses shall be performed in a planned, controlled, and documented manner. Design analysis documents shall be legible and in a form suitable for reproduction, filing, and retrieval. They shall be sufficiently detailed as to purpose, method, assumptions, design input, references, and units such that a person technically qualified in the subject can review and understand the analyses without recourse to the originator. Calculations shall be identifiable by subject (including structure, system, or component to which the calculation applies), originator, reviewer, and date; or by other data such that the calculations are retrievable."

RELATED REFERENCES

1. 10CFR50 Appendix A Criterion 2 2. 10CFR50 Appendix A Criterion 4

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 3.1(a)

"(a) Computer programs may be utilized for design analysis without individual verification for each application provided:

- (1) the computer program has been verified to show that it produces correct solutions for the encoded mathematical model within defined limits for each parameter employed; and
- (2) the encoded mathematical model has been shown to produce a valid solution to the physical problem associated with the particular application.

Computer programs shall be controlled to assure that changes are documented and approved by authorized personnel. Where changes to previously verified computer programs are made, verification shall be required for the change, including evaluation of the effects of these changes on (1) and (2) above."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 3.1(b)

"(b) Documentation of design analyses shall include (1) through (6) below:

- (1) definition of the objective of the analyses;
- (2) definition of design inputs and their sources;

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- (3) results of literature searches or other applicable background data;
- (4) identification of assumptions and indication of those that must be verified as the design proceeds;
- (5) identification of any computer calculation, including computer type, computer program (e.g., name), revision identification, inputs, outputs, evidence of or reference to computer program verification, and the bases (or references thereto) supporting application of the computer program to the specific physical problem;
- (6) review and approval."

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1,
Section 4**

*4 Design Verification

Design control measures shall be applied to verify the adequacy of design, such as by one or more of the following: the performance of design reviews, the use of alternate calculations, or the performance of qualification tests. Verification of computer programs shall include appropriate testing. The responsible design organization shall identify and document the particular design verification method(s) used. The results of design verification shall be clearly documented with the identification of the verifier clearly indicated. Design verification shall be performed by any competent individual(s) or group(s) other than those who performed the original design but who may be from the same organization. This verification may be performed by the originator's supervisor, provided the supervisor did not specify a singular design approach or rule out certain design considerations and did not establish the design inputs used in the design or, provided the supervisor is the only individual in the organization competent to perform the verification. cursory supervisory review do not satisfy the intent of this Standard.

Verification shall be performed in a timely manner. Design verification, for the level of design activity accomplished, shall be performed prior to release for procurement, manufacture, construction, or release to another organization for use in other design activities except in those cases where this timing cannot be met, such as when insufficient data exist. In those cases, the unverified portion of the design shall be identified and controlled. In all cases the design verification shall be completed prior to relying upon the component, system, structure, or computer program to perform its function."

RELATED REFERENCES

1. ANSI-N45.2.11-1974 Section 6.1

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1,
Section 4.1**

*4.1 Extent of Design Verification

The extent of the design verification required is a function of the importance to safety, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proven designs. Where the design has been subject to a verification process in

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accordance with this Standard, the verification process need not be duplicated for identical designs. However, the applicability of standardized or previously proven designs, with respect to meeting pertinent design inputs, shall be verified for each application. Known problems affecting the standard or previously proven designs and their effects on other features shall be considered. The original design and associated verification measures shall be adequately documented and referenced in the files of subsequent application of the design.

Where changes to previously verified design have been made, design verification shall be required for the changes, including evaluation of the effects of those changes on the overall design and on any design analyses upon which the overall design and on any design analyses upon which the design is based that are affected by the change to previously verified design."

RELATED REFERENCES

1. ANSI-N45.2.11-1974 Section 6.2

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 4.2.1

"4.2 Methods

Acceptable verification methods include, but are not limited to, any one or a combination of the following: design reviews, alternate calculations, and qualification testing.

4.2.1 Design Reviews. These are critical reviews to provide assurance that the final design is correct and satisfactory. Where applicable, (a) through (f) below shall be addresses:

- (a) Were the design inputs correctly selected?
- (b) Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverifications when the detailed design activities are completed?
- (c) Was an appropriate design method used?
- (d) Were the design inputs correctly incorporated into the design?
- (e) Is the design output reasonable compared to the design inputs?
- (f) Are the necessary design input and verification requirements for interfacing organizations specified in the design documents or in supporting procedures or instructions?"

RELATED REFERENCES

1. ANSI-N45.2.11-1974 Section 6.3 2. ANSI-N45.2.11-1974 Section 6.3.1

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 4.2.2

"4.2 Methods

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Acceptable verification methods include, but are not limited to, any one or a combination of the following: design reviews, alternate calculations, and qualification testing.

[. . .]

4.2.2 Alternate Calculations. These are calculations or analyses that are made with alternate methods to verify correctness of the original calculations or analyses. The appropriateness of assumptions, input data used, and the computer program or other calculation method used shall also be reviewed."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 4.2.3.

"4.2 Methods

Acceptable verification methods include, but are not limited to, any one or a combination of the following: design reviews, alternate calculations, and qualification testing.

[. . .]

4.2.3 Qualification Tests. Where design adequacy is to be verified by qualification tests, the tests shall be identified. The test configuration shall be clearly defined and documented. Testing shall demonstrate adequacy of performance under conditions that simulate the most adverse design conditions. Operating modes and environmental conditions in which the item must perform satisfactorily shall be considered in determining the most adverse conditions. where the test is intended to verify only specific design features, the other features of the design shall be verified by other means. Test results shall be documented and evaluated by the responsible design organization to assure that the test requirements have been met.

If qualification testing indicates that modifications to the item are necessary to obtain acceptable performance, the modification shall be documented and the item modified and retested or otherwise verified to assure satisfactory performance. When tests are being performed on models or mockups, scaling laws shall be established and verified. The results of model test work shall be subject to error analysis, where applicable, prior to use in final design work."

RELATED REFERENCES

1. ANSI-N45.2.11-1974 Section 6.3.3

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 5

"5 Change Control

Changes to final designs, field changes, modifications to operating facilities, and nonconforming items dispositioned as use-as-is or repair shall be justified and subject to design control measures commensurate with those applied to the original design. These measures shall include assurance that the design analyses for the structure, system, or component are still valid. Changes shall be approved by the same affected groups or organizations which reviewed and approved the original design documents; except where an organization which originally

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was responsible for approving a particular design document is no longer responsible, then the Owner or his designee shall designate a new responsible organization which could be the Owner's engineering organization. The designated organization shall have demonstrated competence in the specific design area of interest and have an adequate understanding of the requirements and intent of the original design.

When a design change is approved other than by revision to the affected design documents, measures shall be established to incorporate the change into these documents, where such incorporation is appropriate.

Where significant design change is necessary because of an incorrect design, the design process and verification procedure shall be reviewed and modified as necessary."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 6

"6 Interface Control

Design interfaces shall be identified and controlled and the design efforts shall be coordinated among the participating organizations. Interface controls shall include the assignment of responsibility and the establishment of procedures among participating design organizations for the review, approval, release distribution, and revision of documents involving design interfaces.

Design information transmitted across interfaces shall be documented and controlled. Transmittals shall identify the status of the design information or document provided and, where necessary, identify incomplete items which require further evaluation, review, or approval. Where it is necessary to initially transmit design information orally or by other informal means, the transmittal shall be confirmed promptly by a controlled document."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 3S-1, Section 7

"7 Documentation and Records

Design documentation and records, which provide evidence that the design and design verification processes were performed in accordance with the requirements of this Standard, shall be collected, stored, and maintained in accordance with documented procedures.

The documentation shall include not only final design documents, such as drawings and specifications, and revisions there to but also documentation which identified the important steps, including sources of design inputs that support the final design."

RELATED REFERENCES

1. ANSI-N45.2.11-1974 Section 10

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section D.2.c

"Design Control. Design controls should be established to enable designs to be correctly translated into specifications, drawings, procedures, and instructions. The measures for

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accomplishing these translations and the attendant design reviews and provisions for independent assessment inputs should be addressed. Design change control, including field changes, should be subject to design control measures commensurate with those applied to the original design, and should be approved by the organization that performed the original design."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.a

"Criterion 6 -- Design

a. A process should be established and implemented for design using sound engineering/scientific principles and appropriate standards, such as the General Design Criteria (DOE/6430.1A). Provisions should include control of design requirements, inputs, processes, outputs, changes, records, and organizational interfaces."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.b

"Design input, such as the design bases, reliability requirements, and fire protection requirements, should be correctly translated into design output, such as specifications, drawings, procedures, and instructions."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.c

"Changes to final designs, field changes, modifications, and nonconforming items dispositioned "use as is" or "repair" should be justified and subject to design control measures commensurate with the original design. This work should include assurance that the design analyses for the items are still valid. Changes should be approved by the original design organization or a technically qualified designate."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.d

"Design interfaces should be identified and controlled and design efforts should be coordinated among and within participating organizations. Interface controls should include the assignment of responsibility and establishment of procedures among participating design organizations."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.e

"Design records, maintained to provide evidence that the design was properly accomplished, should include not only the final design output and its revision, but also important design steps (calculations, analyses, and computer programs, for example) and sources of input that support final output."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.f

"The acceptability of design work and documents, including design inputs, processes, outputs and changes, should be verified. Computer programs should be proven through previous use, or validated through testing or simulation prior to use."

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SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.g

"Design verification should be performed by qualified individual(s) or group(s) other than those who performed the original design - but who may be from the same organization. The extent of verification should be based on the complexity, risk, and uniqueness of the design."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.h

"Verification methods include, but are not limited to, design reviews, alternate calculations, and qualification testing. Separate verification may not be needed for multiple uses of identical or previously proven designs, unless they are intended for different applications or different performance criteria."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.i

"Testing to verify or validate acceptability of a specific design feature should demonstrate acceptable performance under conditions that simulate the most adverse design conditions. Operating or test modes and environmental conditions in which items must perform satisfactorily should be considered in determining the most adverse conditions."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.j

"Design verification should be completed before design output is used by other organizations or to support other work, such as procurement, manufacture, construction, or experiment. When this timing cannot be achieved, the unverified portion of the design should be identified and controlled. In all cases, design verifications should be completed before relying on the item to perform its function and before installation becomes irreversible (requiring extensive demolition or rework)."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(2)(b)

"Criterion 6 - Design Items and processes shall be designed using sound engineering/scientific principles and appropriate standards. Design work, including changes, shall incorporate applicable requirements and design bases. Design interfaces shall be identified and controlled. The adequacy of design products shall be verified or validated by individuals or groups other than those who performed the work. Verification and validation work shall be completed before approval and implementation of the design."

SITE REQUIREMENT SOURCE: DOE6430.1A Section 0140[05]

"The QA program shall include quality control functions in the following areas:

- The design will satisfy program and project requirements.
- The prepared drawings and construction specifications adequately incorporate QA, design, and codes and standards requirements and are available in a timely manner.
- Construction can be performed in accordance with design.
- Tests, reviews, or inspections confirm the adequacy of design and quality of construction and manufactured components, where appropriate.

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- Lock and tag systems are provided for turnover acceptance, maintenance and system outages."

2.8

PROCUREMENT

Procured items and services for Tank Farms, whether purchased directly or through contractors and subcontractors, should be controlled to assure conformance with procurement document requirements in order to meet the identified quality and technical requirements necessary for safe and reliable performance. The following aspects should be included:

- Procurement Planning
- Procurement Document Control
- Supplier Evaluation and Control
- Acceptance of Purchased Items and Services
- Control of Nonconforming Items and Services

Interfaces with Engineering Design, Construction, and Maintenance for acceptance criteria, contract approval, and source surveillance or receipt inspections. Procurement is an element of the Management System Functional Area RID that should be considered for further RID development in the future.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 7

"CONTROL OF PURCHASED ITEMS AND SERVICES

The procurement of items and services shall be controlled to assure conformance with specified requirements. Such control shall provide for the following as appropriate: source evaluation and selection, evaluation of objective evidence of quality furnished by the Supplier, source inspection, audit, and examination of items or services upon delivery or completion."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 6

"CONTROL OF SUPPLIER GENERATED DOCUMENTS

Supplier generated documents shall be controlled, handled, and approved in accordance with established methods. Means shall be implemented to assure that the submittal of these documents is accomplished in accordance with the procurement document requirements. These measures shall provide for the acquisition, processing, and recorded evaluation of technical, inspection, and test data against acceptance criteria."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 7

"CONTROL OF CHANGES IN ITEMS OR SERVICES

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"The Purchaser and Supplier shall assure that measures to control changes in procurement documents are established, implemented, and documented and are in accordance with this Standard."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.2.1

"1. Procurement of spare replacement parts is subject to QA program controls, to codes and standards, and to technical requirements."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.2.2

"2. Procedures are established to assure that procurements are reviewed and coordinated."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.2.3

"3. Organizational responsibilities are described for the control of purchased material, equipment, and services including interfaces between design, procurement, and QA organizations."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.2.4

"4. Procurement practices require that the supplier furnishes the specified records."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.2.6

"6. Mechanisms are in place to provide for the expeditious procurement of parts and material on a high priority basis when needed"

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.c

"Appropriate controls for the selection, determination of suitability, evaluation, and receipt of all purchased items, including commercial-grade items, should be imposed to ensure that they perform as expected."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(2)(c)

"Criterion 7 - Procurement The organization shall ensure that procured items and services meet established requirements and perform as specified. Prospective suppliers shall be evaluated and selected on the basis of specified criteria. The organization shall ensure that approved suppliers can continue to provide acceptable items and services."

2.8.1

Procurement Planning

Tank Farms should establish a systematic approach for the planning of procurement activities. This system should include the control of commercial grade "off-the-shelf" items and the expediting of high priority items. Planning should be accomplished as early as practical to assure proper coordination of all inputs and activities to provide the correct items, equipment, and services in a uniform and controlled manner. The planning process should include the integration and scheduling of the following aspects:

- Procurement documentation preparation, review, and change control

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- Source selection
- Bid evaluation and award
- Purchaser control of supplier performance
- Purchaser verification activities
- Control of nonconformances
- Acceptance of items or services
- Quality assurance records

This is a major interface between Engineering Design, Procurement, Contracts, the installing or using organization for the item, equipment, or service, and the Quality Assurance program.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 10

*COMMERCIAL GRADE ITEMS

Where the design utilizes commercial grade items, the following requirements are an acceptable alternate to other requirements of this Supplement, except as noted in (b) below and the requirements of Supplement 4S-1.

- (a) The commercial grade item is identified in an approved design output document. An alternative commercial grade item may be applied, provided the cognizant design organization provides verification that the alternate commercial grade item will perform the intended function and will meet design requirements applicable to both the replaced item and its application.
- (b) Source evaluation and selection, where determined necessary by the Purchaser based on complexity and importance to safety, shall be in accordance with para. 3.1 of this Supplement.
- (c) Commercial grade items shall be identified in the purchase order by the manufacturer's published product description (for example, catalog number).
- (d) After receipt of a commercial grade item, the Purchaser shall determine that:
  - (1) damage was not sustained during shipment;
  - (2) the item received was the item ordered;
  - (3) inspection and/or testing is accomplished, as required by the Purchaser, to assure conformance with the manufacturer's published requirements;
  - (4) documentation, as applicable to the item, was received and is acceptable."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 2

" **PROCUREMENT PLANNING** Procurement activities shall be planned and documented to assure a systematic approach to the procurement process. Procurement planning shall result in the documented identification of procurement methods and organizational responsibilities. Planning shall determine the following:

- (a) what is to be accomplished;
- (b) who is to accomplish it;
- (c) how it is to be accomplished;
- (d) when it is to be accomplished. Planning shall be accomplished as early as practicable, and not later than at the start of those procurement activities which are required to be controlled, to assure interface compatibility and a uniform approach to the procurement process.

Planning shall result in the documented identification of methods to be used in procurement activities, sequence of actions and milestones indicating the completion of these activities, and the preparation of applicable procedures prior to the initiation of each individual activity listed below. Planning shall provide for the integration of (a) through (i) below:

- (a) procurement document preparation, review, and change control;
- (b) selection of procurement sources;
- (c) bid evaluation and award;
- (d) Purchaser control of Supplier performance;
- (e) verification (surveillance, inspection, or audit) activities by Purchaser, including notification for hold and witness points;
- (f) control of nonconformances;
- (g) corrective action;
- (h) acceptance of item or service;
- (i) quality assurance records."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 3

"SUPPLIER SELECTION

3.1 Source Evaluation and Selection

The selection of Suppliers shall be based on evaluation of their capability to provide items or services in accordance with the requirements of the procurement documents prior to award of

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contract. Procurement source evaluation and selection measures shall be implemented by the Purchaser and shall provide for identification of the Purchaser's organizational responsibilities for determining Supplier capability. Measures for evaluation and selection of procurement sources, and the results therefrom, shall be documented and shall include one or more of (a) through (c) below: (a) evaluation of the Supplier's history of providing an identical or similar product which performs satisfactorily in actual use. The Supplier's history shall reflect current capability. (b) Supplier's current quality records supported by documented qualitative and quantitative information which can be objectively evaluated; (c) Supplier's technical and quality capability as determined by a direct evaluation of his facility and personnel and the implementation of his quality assurance program."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.2.7

"7. Selection of suppliers is documented and filed."

2.8.2

Procurement Document Control

Applicable technical, quality, and documentation requirements should be referenced in procurement documents for items and services. To the extent necessary, procurement documents should require Suppliers to have a quality assurance program.

A review of procurement documents should be made to assure that appropriate provisions are included to assure that items or services will meet specified requirements. Changes to procurement documents as a result of bid evaluations, precontract negotiations, etc., should be subject to the same degree of control as utilized in the preparation of the original documents.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 4

"PROCUREMENT DOCUMENT CONTROL

Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services. To the extent necessary, procurement documents shall require Suppliers to have a quality assurance program consistent with the applicable requirements of this Standard."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 4S-1, Section 2.0-2.2

"CONTENT OF THE PROCUREMENT DOCUMENTS

Procurement documents issued at all tiers of procurement shall include provisions for the following, as deemed necessary by the Purchaser.

2.1 Scope of Work

A statement of the scope of the work to be performed by the Supplier shall be in the procurement documents.

2.2 Technical Requirements

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Technical requirements shall be specified in the procurement documents. Where necessary, these requirements shall be specified by reference to specific drawings, specifications, codes, standards, regulations, procedures, or instructions, including revisions thereto that describe the items or services to be furnished. The procurement documents shall provide for identification of test, inspection, and acceptance requirements of the Purchaser for monitoring and evaluating the Supplier's performance.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 4S-1, Section 2.4

"Right of Access

At each tier of a procurement, the procurement documents shall provide for access to the Supplier's plant facilities and records for inspection or audit by the Purchaser, his designated representative, and/or other parties authorized by the Purchaser.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 4S-1, Section 2.6

"Nonconformances

The procurement documents shall include Purchaser's requirements for reporting and approving disposition of nonconformances."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 4S-1, Section 2.7

"Spare and Replacement Parts

The procurement documents shall require the identification of appropriate spare and replacement parts or assemblies and the appropriate delineation of the technical and quality assurance related data required for ordering these parts or assemblies."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 4S-1, Section 3

"PROCUREMENT DOCUMENT REVIEW

A review of the procurement documents and changes thereto shall be made to assure that documents transmitted to the prospective Supplier(s) include appropriate provisions to assure that items or services will meet the specified requirements.

Reviews shall be performed and documented to provide objective evidence of satisfactory accomplishment of such review prior to contract award. Changes made as a result of the bid evaluations or precontract negotiations shall be incorporated into the procurement documents. The review of such changes and their effects shall be completed prior to contract award. This review shall include the following considerations:

- (a) appropriate requirements specified in Section 2 of this Supplement;
- (b) determination of any additional or modified design criteria;

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(c) analysis of exceptions or changes requested or specified by the Supplier and determination of the effects such changes may have on the intent of the procurement documents or quality of the item or service to be furnished.

Reviews required by this Section shall be performed by personnel who have access to pertinent information and who have an adequate understanding of the requirements and intent of the procurement documents."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 4S-1, Section 4

"PROCUREMENT DOCUMENT CHANGES

Procurement document changes shall be subject to the same degree of control as utilized in the preparation of the original documents."

2.8.3

Supplier Evaluation and Control

The Procurement process for Tank Farms should include measures to evaluate and select suppliers based on their capability to provide items, equipment, and services that meet the requirements of the procurement document, on time and at cost. The following aspects should be included in this process:

- Preaward evaluation for the approval of suppliers based on historical and current performance, including review and approval of their QAP.
- Bid evaluation and award based on documented commitments to technical and quality requirements, including cost and schedule.
- Appropriate controls to assure that only suppliers that have been evaluated and approved will be considered for award.
- Verification of supplier activities as a function of importance, complexity, and quantity of the item or services procured and the supplier's quality performance.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 4S-1, Section 2.3

"2.3 Quality Assurance Program Requirements

Procurement documents shall require that the Supplier have a documented quality assurance program that implements portions or all of the requirements of this Standard. The extent of the program required shall depend upon the type and use of the item or service being procured. The procurement documents shall require the Supplier to incorporate appropriate quality assurance program requirements in subtier procurement documents."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 4

"BID EVALUATION

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Bid evaluation shall determine the extent of conformance to the procurement documents. This evaluation shall be performed by individuals or organizations designated to evaluate the following subjects, as applicable to the type of procurement:

- (a) technical considerations
- (b) quality assurance requirements
- (c) Supplier's personnel
- (d) Supplier's production capability
- (e) Supplier's past performance
- (f) alternates
- (g) exceptions

Prior to the award of the contract, the Purchaser shall resolve or obtain commitments to resolve unacceptable quality conditions resulting from the bid evaluation."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 5.0

"SUPPLIER PERFORMANCE EVALUATION

The Purchaser of items and services shall establish measures to interface with the Supplier and to verify Supplier's performance as deemed necessary by the Purchaser. The measures shall include (a) through (f) below:

- (a) establishing an understanding between Purchaser and Supplier of the provisions and specifications of the procurement documents;
- (b) requiring the Supplier to identify planning techniques and processes to be utilized in fulfilling procurement document requirements;
- (c) reviewing Supplier documents which are generated or processed during activities fulfilling procurement requirements;
- (d) identifying and processing necessary change information;
- (e) establishing method of document information exchange between Purchaser and Supplier;
- (f) establishing the extent of source surveillance and inspection activities.

These verification activities shall be conducted as early as practicable. The Purchaser's verification activities, however, shall not relieve the Supplier of his responsibilities for verification of quality achievement."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 5.1

"Extent of Activities

The extent of verification activities, including planning, shall be a function of the relative importance, complexity, and quantity of the item or services procured and the Supplier's quality performance. Verification activities shall be accomplished by qualified personnel assigned to check, inspect, audit, or witness the activities of Suppliers."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 5.2

"Records

Activities performed to verify conformance to requirements of procurement documents shall be recorded. Source surveillances and inspections, audits, receiving inspections, nonconformances, dispositions, waivers, and corrective actions shall be documented. The Purchaser shall assure that his documentation is evaluated to determine the Supplier's quality assurance program effectiveness."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.d

"Prospective suppliers should be evaluated to ensure that only qualified suppliers are selected."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.e

"Qualified suppliers and, as necessary, sub-tier suppliers should be monitored periodically to ensure that acceptable items and services continue to be supplied."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.h

"The actual performance of items should be compared with original performance criteria. User group surveys, supplier evaluations, inspection and test results, and performance data should be reviewed to determine procurement effectiveness."

2.8.4

Acceptance of Purchased Items and Services

The Purchaser for items or services for Tank Farms should establish a process for acceptance of procured items or related services based on Supplier furnished Certificate of Conformance, source surveillance/verification, receiving inspection, pre-installation testing, post-installation testing, or a combination of the above.

In certain cases involving procurement of services only; such as engineering and consulting services and installation, repair, overhaul, or maintenance work; the Purchaser should accept the service by any or all of the following methods:

- Technical verification of data produced;
- Surveillance and/or audit of the activity;

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- Review of objective evidence such as certifications, stress reports, etc.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 8.1

"ACCEPTANCE OF ITEM OR SERVICE

8.1 General

Methods shall be established for the acceptance of an item or service being furnished by the Supplier. Prior to offering the item or service for acceptance, the Supplier shall verify that the item or service being furnished complies with the procurement requirements. Where required by code, regulation, or contract requirement, documentary evidence that items conform to procurement documents shall be available at the nuclear facility site prior to installation or use."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 8.2.1

"Certificate of Conformance. When a Certificate of Conformance is used, the minimum criteria of (a) through (f) below shall be met.

- (a) The certificate shall identify the purchased material or equipment, such as by the purchase order number.
- (b) The certificate shall identify the specific procurement requirements met by the purchased material or equipment, such as codes, standards, and other specifications. This may be accomplished by including a list of the specific requirements or by providing, on-site, a copy of the purchase order and the procurement specifications or drawings, together with a suitable certificate. The procurement requirements identified shall include any approved changes, waivers, or deviations applicable to the subject material or equipment.
- (c) The certificate shall identify any procurement requirements that have not been met, together with an explanation and the means for resolving the nonconformances.
- (d) The certificate shall be signed or otherwise authenticated by a person who is responsible for this quality assurance function and whose function and position are described in the Purchaser's or Supplier's quality assurance program.
- (e) The certification system, including the procedures to be followed in filling out a certificate and the administrative procedures for review and approval of the certificates, shall be described in the Purchaser's or Supplier's quality assurance program.
- (f) Means shall be provided to verify the validity of Supplier certificates and the effectiveness of the certification system, such as during the performance of audits of the Supplier or independent inspection or test of the items. Such verification shall be conducted by the Purchaser at intervals commensurate with the Supplier's past quality performance."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 8.2.2

"Source Verification. When source verification is used, it shall be performed at intervals consistent with the importance and complexity of the item or service, and it shall be implemented to monitor, witness, or observe activities. Source verification shall be implemented in accordance with plans to perform inspections, examinations, or tests at predetermined points. Upon Purchaser acceptance of source verification, documented evidence of acceptance shall be furnished to the receiving destination of the item, to the Purchaser, and to the Supplier."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 8.2.3

"Receiving Inspection. When receiving inspection is used, purchased items shall be inspected as necessary to verify conformance to specified requirements, taking into account source verification and audit activities and the demonstrated quality performance of the Supplier. Receiving inspection shall be performed in accordance with established procedures and inspection instructions, to verify by objective evidence such features as proper configuration; identification; dimensional, physical, and other characteristics; freedom from shipping damage; and cleanness. Receiving inspection shall be coordinated with review of Supplier documentation when procurement documents require such documentation to be furnished prior to receiving inspection."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 8.2.4

"Post-Installation Testing. When post-installation testing is used, post-installation test requirements and acceptance documentation shall be mutually established by the Purchaser and Supplier."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 8.3

"Acceptance of Services Only

In certain cases involving procurement of services only, such as third party inspection; engineering and consulting services; and installation, repair, overhaul, or maintenance work, the Purchaser shall accept the service by any or all of the following methods:

- (a) technical verification of data produced;
- (b) surveillance and/or audit of the activity;
- (c) review of objective evidence for conformance to the procurement document requirements such as certifications, stress reports, etc."

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SITE REQUIREMENT SOURCE: DOES700.6C Attachment 1, Section B.3.f

"Purchased items and services should be accepted using specified methods (such as review of manufacturing process control data, source verification, receipt inspection, pre-installation and post-installation tests, certificates of conformance, or a combination of these methods)."

SITE REQUIREMENT SOURCE: DOES700.6C Attachment 1, Section B.3.g

"Before a procured item is used or placed in service, procurement specification, inspection, and test requirements are to be satisfied and nonconformance properly dispositioned."

2.8.5

Control of Nonconforming Items and Services

The Purchaser and Supplier should establish a documented process for the disposition of items and services that do not meet procurement document requirements. This process should address the following aspects:

- Evaluation of nonconformances.
- Submittal of Supplier nonconformance information, including recommended disposition to the Purchaser.
- Purchaser disposition of nonconformance and verification of disposition.
- Maintenance of records of nonconformances.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 7S-1, Section 9

"CONTROL OF SUPPLIER NONCONFORMANCES

The Purchaser and Supplier shall establish and document methods for disposition of items and services that do not meet procurement documentation requirements. These methods shall contain provision for (a) through (e) below:

(a) evaluation of nonconforming items;

(b) submittal of nonconformance notice to Purchaser by Supplier as directed by the Purchaser. These submittals shall include Supplier- recommended disposition (e.g., use-as-is- or repair) and technical justification. Nonconformances to the procurement requirements or Purchaser-approved documents, which consist of one or more of the following, shall be submitted to the Purchaser for approval of the recommended disposition:

(1) technical or material requirement is violated;

(2) requirement in Supplier documents, which has been approved by the Purchaser, is violated;

(3) nonconformance cannot be corrected by continuation of the original manufacturing process or by rework;

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(4) the item does not conform to the original requirement even though the item can be restored to a condition such that the capability of the item to function is unimpaired;

- (c) Purchaser disposition of Supplier recommendation;
- (d) verification of the implementation of the disposition;
- (e) maintenance of records of Supplier-submitted nonconformances."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.j

"In cases where there are indications that suppliers knowingly supplied items and services of substandard quality, this information should be forwarded to the DOE Office of Inspector General."

2.9

INSPECTION AND ACCEPTANCE TESTING

Inspection and acceptance testing of specified items, processes, and computer programs should be conducted using established acceptance criteria by qualified personnel. Equipment used for inspections and tests should be calibrated and maintained. The following aspects should be addressed:

- Inspection
- Acceptance Testing
- Measuring and Test Equipment

Interface: Input from Engineering Design on inspection criteria and hold points.

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(2)(d)

"Criterion 8 - Inspection and Acceptance Testing Inspection and acceptance testing of specified items and processes shall be conducted using established acceptance and performance criteria. Equipment used for inspections and tests shall be calibrated and maintained."

2.9.1

Inspection

Measures should be established to assure that the inspection processes utilized in determining the acceptability of items and activities are established and executed by the QA organization for Tank Farms. The implementation of an inspection program should include the following:

- Application of inspection hold points and or witness points.
- Planning of inspection activities including inspection processes, inspection characteristics, inspection methods, and acceptance criteria.
- Controls for the receipt inspection of procured items.
- Controls for the inspection and monitoring of items in-process.

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- Controls for documenting inspection results and review and approval of results.
- Controls for the definition of in-service inspection responsibilities for structures, systems, or components at predetermined intervals to assure continued and safe operation.
- Tracking and trending of inspection results and appropriate reporting to management of significant adverse trends.

The qualifications for personnel performing inspections is discussed in section 2.3.2 of this RID.

Major interface with Engineering Design, Construction, Maintenance, and Operation Functional Area RIDs in acceptance criteria and procedural development and maintenance.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 10

"INSPECTION

Inspections required to verify conformance of an item or activity to specified requirements shall be planned and executed. Characteristics to be inspected and inspection methods to be employed shall be specified. Inspection results shall be documented. Inspection for acceptance shall be performed by persons other than those who performed or directly supervised the work being inspected."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Section 2.1

"Reporting Independence

Inspection personnel shall not report directly to the immediate supervisors who are responsible for performing the work being inspected."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Section 2.2

"Qualification

Each person who verifies conformance of work activities for purposes of acceptance shall be qualified to perform the assigned inspection task. Inspections by persons during on-the-job training for qualification shall be performed under the direct observation and supervision of a qualified person and verification of conformance shall be by the qualified person until certification is achieved."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Section 3

"INSPECTION HOLD POINTS

If mandatory inspection hold points are required beyond which work shall not proceed without the specific consent of the designated representative, the specific hold points shall be indicated

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in appropriate documents. Consent to waive specified hold points shall be recorded prior to continuation of work beyond the designated hold point."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Section 4

"INSPECTION PLANNING

4.1 Planning

Planning for inspection activities shall be accomplished and documented. the documentation shall identify characteristics, methods, and acceptance criteria, and shall provide for recording objective evidence of inspection results.

4.2 Sampling

Where a sample is used to verify acceptability of a group of items, the sampling procedures shall be based on recognized standard practices."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Section 5.2

"Combined Inspection and Monitoring

5.2.1 A combination of inspection and process monitoring methods, when used, shall be performed in a systematic manner to assure that the specified requirements for control of the process and quality of the item are being achieved throughout the duration of the process.

5.2.2 Controls, where required, shall be established and documented for the coordination and sequencing of these activities at established inspection points during successive stages of the conducted process or construction."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Section 6

"FINAL INSPECTIONS

6.1 Resolution of Nonconformances

Final inspections shall include a records review of the results and resolution of nonconformances identified by prior inspections. The final inspection shall be planned to arrive at a conclusion regarding conformance of the item to specified requirements.

6.2 Inspection Requirements

Completed items shall be inspected for completeness, markings, calibration, adjustments, protection from damage, or other characteristics as required to verify the quality and conformances of the item to specified requirements. Quality records shall be examined for adequacy and completeness if not previously so examined.

6.3 Acceptance

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The acceptance of the item shall be documented and approved by authorized personnel.

6.4 Modifications, Repairs, or Replacements

Modifications, repairs, or replacements of items performed subsequent to final inspection shall require reinspection or retest, as appropriate, to verify acceptability."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Section 7

"INSERVICE INSPECTION

7.1 Planning and Performance

Required inservice inspection or surveillance of structures, systems, or components shall be planned and executed by or for the organization responsible for operation.

7.2 Methods

Inspection methods shall be established and executed to verify that the characteristics of an item continue to remain within specified limits. Inspection methods shall include evaluations of performance capability of essential emergency and safety systems and equipment, verification of calibration and integrity of instruments and instrument systems, and verification of maintenance, as appropriate."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Section 8

"RECORDS

Records shall, as a minimum, identify (a) through (f) below:

- (a) item inspected
- (b) date of inspection
- (c) inspector
- (d) type of observation
- (e) results or acceptability
- (f) reference to information on action taken in connection with nonconformances"

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 10S-1, Sections 5.0-5.1

"IN-PROCESS INSPECTION

5.1 Inspection

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Inspection of items in-process or under construction shall be performed for work activities where necessary to verify quality. If inspection of processed items is impossible or disadvantageous, indirect control by monitoring of processing methods, equipment, and personnel shall be provided. Both inspection and process monitoring shall be provided when control is inadequate without both."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.a(1)

"Criterion 8 -- Inspection and Acceptance Testing

a. Inspection

(1) A process should be established and implemented to specify when and what type of inspection (source, in-process, final, receipt, maintenance, and in-service, for example) are required. Administrative controls and status indicators should be used to preclude inadvertent bypassing of required inspections and to prevent inadvertent operation of the item or process."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.a(2)

"Inspections may be implemented by or for the organization performing the work to be inspected. Personnel may not inspect their own work for acceptance. The level of inspection and degree of independence of inspection personnel should be based on risk and complexity."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.a(3)

"Provisions to ensure inspection planning is properly accomplished should be established. Planning should identify item characteristics and processes to be inspected, inspection techniques, acceptance criteria, hold points, and the organization responsible for performing inspection."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.a(4)

"When acceptance criteria are not met, deficiencies should be resolved and reinspection should occur as required."

2.9.2

Acceptance Testing

A testing program should be established for Tank Farms to verify conformance of items, equipment, systems, or computer programs to specified requirements and to demonstrate satisfactory performance for service. Characteristics to be tested and test methods to be employed should be specified. Test results should be documented and their conformance with acceptance criteria evaluated. This program should include the following aspects:

- Overall testing program and schedule.
- Personnel Qualification and experience requirements.
- Detailed instructions and procedures.
- Test boundaries, controlling parameters and potential hazards.

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- Testing prerequisites and turnover and/or return to service requirements.
- Witness and hold points for inspections.
- Test documentation and records.

This element is discussed in detail in the Construction Functional Area RID.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 11

"TEST CONTROL

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

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-1, Section 2

"TEST REQUIREMENTS

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

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-1, Section 3

"TEST PROCEDURES

Test procedures shall include or reference test objectives and provisions for assuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, that necessary monitoring is performed, and that suitable environmental conditions are maintained. Prerequisites shall include the following, as applicable: calibrated instrumentation, appropriate equipment, trained personnel, condition of test equipment and the item to be tested, suitable environmental conditions, and provisions for data acquisition. In lieu of specially prepared written test procedures, appropriate sections of related documents, such as ASTM methods, Supplier manuals, equipment maintenance instructions, or approved drawings or travelers with acceptance criteria, can be used. Such documents shall include adequate instructions to assure the required quality of work."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-1, Section 4

"TEST RESULTS

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Test records shall, as a minimum, identify (a) through (g) below:

- (a) item tested
- (b) date of test
- (c) tester or data recorder
- (d) type of observation
- (e) results and acceptability
- (f) action taken in connection with any deviations noted
- (g) person evaluating test results"

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-2, Section 2.0

"TEST REQUIREMENTS

Test requirements and acceptance criteria shall be provided or approved by the organization responsible for the design or use of the program to be tested unless otherwise designated. Required tests including (as appropriate) verification tests, hardware integration tests, and in-use tests shall be controlled. Test requirements and acceptance criteria shall be based upon applicable design or other pertinent technical documents."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-2, Section 2.1

"Verification Tests

Verification tests shall demonstrate the capability of the computer program to produce valid results for tests problems encompassing the range of permitted usage defined by the program documentation. Acceptable test problem solutions are as follows:

- (a) hand calculations;
- (b) calculations using comparable proven programs; or
- (c) empirical data and information from technical literature.

For programs used for operational control, testing shall demonstrate required performance over the range of operation of the controlled function or process. Depending on the complexity of the computer program being tested, testing may range from a single test of the completed computer program to a series of tests performed at various stages of computer program development to verify correct translation between stages and proper working of individual modules, followed by an overall computer program test. Regardless of the number of stages of testing performed, verification testing shall be sufficient to establish that test requirements are satisfied and that the computer program produces a valid result for its intended function."

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SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-2, Section 2.2

"In-Use Tests

Test problems shall be developed and documented to permit confirmation of acceptable performance of the computer program in the operating system. Test problems shall be run whenever the computer problem is installed on a different computer, or when significant hardware or operating system configuration changes are made. Periodic in-use manual or automatic self-check routines shall be prescribed and performed for those applications where computer failures or drift can affect required performance."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-2, Section 3

"TEST PROCEDURES

Test procedures or plans shall specify the following, as applicable:

- (a) required tests and test sequence
- (b) required ranges of input parameters
- (c) identification of the stages at which testing is required
- (d) criteria for establishing test cases
- (f) requirements for hardware integration
- (g) anticipated output values
- (h) acceptance criteria
- (i) reports, records, standard formatting, and conventions"

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-2, Section 4

"TEST RESULTS

Test results shall be documented. Verification test results shall be evaluated by a responsible authority to assure that test requirements have been satisfied."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 11S-2, Section 5

"TEST RECORDS

- (a) Verification test records shall identify (1) through (10) below.
  - (1) computer program tested

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- (2) computer hardware used
- (3) test equipment and calibrations, where applicable
- (4) date of test
- (5) tester or data recorder
- (6) simulation models used, where applicable
- (7) test problems
- (8) results and acceptability
- (9) action taken in connection with any deviations noted
- (10) person evaluating test results

(b) In-use test results shall identify (1) through (6) below.

- (1) computer program tested
- (2) computer hardware used
- (3) test equipment and calibrations, where applicable
- (4) date of test
- (5) tester or data recorder
- (6) acceptability"

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(1)

"b. Acceptance Testing

(1) Testing processes should be established and implemented to demonstrate that items and processes will perform as intended. Testing should include, as appropriate, bench tests and proof tests before installation, pre-operational tests, post-maintenance tests, post-modification tests, and operational tests. Testing should be structured so that proving designs should not be confused with proofing the adequacy of work. "

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(2)

"Testing may be implemented by or for the organization performing the work to be tested. When an organization performs its own testing, personnel with the organization should not test their own work for acceptance."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(4)

"Test procedures should be developed and include:

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- (a) instructions and prerequisites to perform the test;
- (b) completeness and accuracy of data;
- (c) use of test equipment;
- (d) acceptance criteria;
- (e) inspection hold points as required; and
- (f) test article configuration."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(5)

"Retesting of items or processes to determine that they meet acceptance criteria is required after deficiencies are corrected."

2.9.3

Measuring and Test Equipment (M&TE)

Measuring and test equipment (instruments, tools, gauges, fixtures, reference and transfer standards, nondestructive test equipment, etc.) utilized at Tank Farms should be controlled and calibrated to assure accuracy during the performance of inspection and test activities. Equipment should be of the proper type, range, accuracy, and tolerance to accomplish the intended task. The following controls should be considered:

- Lists of M&TE under the calibration program should be developed and maintained;
- M&TE should be calibrated at prescribed intervals to verify the required accuracy. The interval between calibrations should be based upon experience, manufacturers' recommendations, inherent stability, purpose or degree of use, and the accuracy required of the equipment. Recalibration should be performed on or before the designated calibration date;
- M&TE should be calibrated using reference standards whose calibration has a known valid relationship to nationally recognized standards or accepted values of natural physical constants. If no national standard or accepted value exists, the basis for calibration should be documented and approved by cognizant management. Reference standards should be calibrated by qualified organizations;
- M&TE calibration standards should have an accuracy of at least four times greater than the required accuracy of the equipment being calibrated. When this is not possible, standards should have an accuracy that assures the equipment being calibrated will be within required tolerances. The basis for the calibration should be documented and approved by the cognizant manager;
- Personnel calibrating or using M&TE should be adequately trained;
- M&TE should be labeled to indicate its control status. The label should signify acceptable calibration, and indicate when the next calibration is due. When labeling is not practical, an identifying code may be used. If neither labeling or coding is practical, calibration procedures should require monitoring of records to ensure control;
- M&TE calibration status should be checked before use;

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- M&TE should be identified to provide traceability to calibration test data;
- M&TE found to be out of calibration should be identified as nonconforming and removed from service. Equipment tested or calibrated by the nonconforming equipment since the last calibration should be identified and sufficient investigations and reinspections performed to either re-establish the acceptability of the equipment or to confirm the nonconformance. The results of such investigations should be documented;
- M&TE should be stored, calibrated, and used in environments which will not adversely affect its accuracy;
- M&TE subjected to possible damage should be identified as nonconforming and removed from service until corrective measures are taken;
- Lost M&TE should be treated the same as M&TE found to be out of calibration.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 12

"CONTROL OF MEASURING AND TEST EQUIPMENT

Tools, gages, instruments, and other measuring and test equipment used for activities affecting quality shall be controlled and at specified periods calibrated and adjusted to maintain accuracy within necessary limits."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 2

"SELECTION

Selection of measuring and test equipment shall be controlled to assure that such items are of proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to specified requirements."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 3.1

"Calibration

Measuring and test equipment shall be calibrated, adjusted, and maintained at prescribed intervals or, prior to use, against certified equipment having known valid relationships to nationally recognized standards. If no nationally recognized standards exist, the bases for calibration shall be documented."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 3.2

"Control

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

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calibration, an evaluation shall be made and documented of the validity of previous inspection or test results and of the acceptability of item previously inspected or tested. Out-of-calibration devices shall be tagged or segregated and not used until they have been recalibrated. If any measuring or test equipment is consistently found to be out of calibration it shall be repaired or replaced. A calibration shall be performed when the accuracy of the equipment is suspect."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 4

"HANDLING AND STORAGE

Measuring and test equipment shall be properly handled and stored to maintain accuracy."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 12S-1, Section 5

"RECORDS

Records shall be maintained and equipment shall be suitably marked to indicate calibration status.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(1)

"Measuring and Test Equipment

(1) A process should be established and implemented to control calibration, maintenance, accountability, and use of equipment used to control any process parameter which influences the quality of an item's characteristics, or which is used for in-process or final inspection of an item."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(2)

"The types of equipment to be used, such as instruments, tools, gauges, reference and transfer standards, and nondestructive examination equipment, should be defined."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(3)

"Measuring and test equipment should be calibrated at specified intervals, or immediately before and after use, on the basis of the item's required accuracy, intended use, frequency of use, stability characteristics, and other conditions affecting its performance."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(5)

"Measuring and test equipment should be calibrated against standards having an accuracy that will ensure that equipment being calibrated will be within required tolerances. If nationally recognized standards exist, calibration standards should be traceable to such standards."

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2.10

MANAGEMENT ASSESSMENT

Planned and periodic management assessments should be performed to determine the overall efficiency and effectiveness of the integrated QAP for Tank Farms. The assessments should identify and document strengths and weaknesses and any management problems that hinder the organization from achieving its objectives in accordance with quality, safety, and environmental requirements. Management should evaluate the results of the assessments and establish specific measurable goals and time frames for identified areas for improvement. The following aspects should be considered:

- Senior management should retain overall responsibility for management assessments.
- All levels of management should be involved, as appropriate.
- Prompt action should be taken on recommendations.
- Follow-up should evaluate the effectiveness of management actions.

Management assessment is an element of self assessment that is covered in detail in the Management System Functional Area RID.

QA and Management Systems interface in the programmatic aspects for the assessment and possible support during assessment planning. All other functional areas interface with management systems to implement the assessments and correction of problems.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.1.a

"Assessment

Criterion 9 -- Management Assessment

Planned and periodic management assessments should be established and implemented as a way to improve quality. Management assessments should focus on how well the integrated quality assurance program is working and should identify management problems that hinder the organization from achieving its objectives in accordance with quality, safety, and environmental requirement".

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.1.b

"Senior management should retain overall responsibility for management assessments. Direct participation by senior management during management assessment is essential. This process should involve all levels of management, as appropriate."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.1.c

"Management assessment results should be documented. Senior management should take prompt action and document resulting decisions in response to recommendations resulting from the management assessment process. Follow-up should include an evaluation of the effectiveness of management's actions."

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SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(3)(a)

"Assessment

(a) Criterion 9 - Management Assessment Management at all levels shall periodically assess the integrated quality assurance program and its performance. Problems that hinder the organization from achieving its objectives shall be identified and corrected."

2.11

INDEPENDENT ASSESSMENTS AND AUDITS

The QA organization responsible for the QAP for Tank Farms should establish and implement a program for performing planned and periodic audits and assessments of the activities affecting quality to verify the adequacy of implementation of the QAP and the effectiveness of work processes and controls. This program should include provisions for external independent audits and assessments of the QA organization. The audit and assessment program should be developed in a manner that evaluates program adequacy, program compliance, process effectiveness, and product quality. To achieve this, the program should utilize both compliance and performance based techniques in auditing and assessing an activity or a product across a programmatic area or vertically through several programmatic or organizational areas. This program should include the following aspects:

- Audit and Assessment Planning
- Personnel Qualification and Selection
- Scheduling
- Corrective Action and Responses
- Follow-up and Closure

The area of audits and assessments is a major interface with all organizations in the dissemination of audit and assessment results and follow-up and closure on audit findings and assessment deficiencies or recommendations. There is also an interface with management on significant findings and with Management Systems in tracking and trending audit and assessment results. There is also an interface with the management of the area being audited or assessed before and after each audit or assessment.

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(3)(b)

"Criterion 10 - Independent Assessment Planned and periodic independent assessments shall be conducted to measure item quality and process effectiveness and to promote improvement. The organization performing independent assessments shall have sufficient authority and freedom from the line organization to carry out its responsibilities. Persons conducting independent assessment shall be technically qualified and knowledgeable in the areas assessed."

2.11.1

Audits

Audits are structured, planned and documented evaluations of activities to determine by investigation, examination, or evaluation of objective evidence the adequacy of compliance and effectiveness with established requirements. The audit program should address the training and

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qualification of auditors and lead auditors, the reporting methods for audit reports and audit findings, the response and corrective action responsibilities of the audited organization, and the verification and closure activities by the audit organization.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 18

"AUDITS

Planned and scheduled audits shall be performed to verify compliance with all aspects of the quality assurance program and to determine its effectiveness. These audits shall be performed in accordance with written procedures or checklists by personnel who do not have direct responsibility for performing the activities being audited. Audit results shall be documented and reported to and reviewed by responsible management. Follow-up action shall be taken where indicated."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 18-1, Section 4

"PERFORMANCE

Audits shall be performed in accordance with written procedures or checklists. Auditing shall begin as early in the life of the activity as practical and shall be continued at intervals consistent with the schedule for accomplishing the activity. Elements that have been selected for audit shall be evaluated against specified requirements. Objective evidence shall be examined to the depth necessary to determine if these elements are being implemented effectively. Audit results shall be documented by auditing personnel and shall be reviewed by management having responsibility for the area audited. Conditions requiring prompt corrective action shall be reported immediately to management of the audited organization."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 18-1, Section 5

"REPORTING

The audit report shall be signed by the audit team leader and issued, and it shall include the following information, as appropriate:

- (a) description of the audit scope;
- (b) identification of the auditors;
- (c) identification of persons contacted during audit activities;
- (d) summary of audit results, including a statement on the effectiveness of the quality assurance program elements which were audited;
- (e) description of each reported adverse audit finding in sufficient detail to enable corrective action to be taken by the audited organization.

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**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 18-1,
Section 8**

"RECORDS

Audit records shall include audit plans, audit reports, written replies, and the record of completion of corrective action."

2.11.2

Assessments

Assessments are planned and periodic evaluations of performance focusing on improving item quality and processes through the line organization. Assessments monitor work performance, identify abnormal performance and precursors of potential problems, and identify opportunities for improvement. Assessments allow the use of subjective evaluation and recommendations for improvement based on that evaluation.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.2.a

"Criterion 10 -- Independent Assessment

a. A process of planned and periodic independent assessments should be established and implemented by an independent assessment organization. Independent assessments should focus on improving items and processes by emphasizing line organization's achievement of quality."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.2.b

"Personnel performing independent assessment should act in a management advisory function. Their responsibilities are to monitor work performance, identify abnormal performance and precursors of potential problems, identify opportunities for improvement, report results to a level of management having the authority to effect corrective action, and verify satisfactory resolution of problems."

2.11.3

Assessment and Audit Planning Process

All audits and assessments should be performed in accordance with a documented and approved plan. This plan should be approved by the Audit manager or QA manager. The plan should include the following elements:

- Scope
- Requirements including management expectations
- Personnel, including technical specialists
- Activities being audited or assessed
- Organizations to be notified
- Applicable documents
- Schedule, including time and place for entrance and exit meetings

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• Applicable procedures and checklists

The auditing or assessing organization interfaces with the organization being evaluated during the preparation and performance stages of the audit or assessment.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 18-1, Section 3

"PREPARATION

3.1 Audit Plan

The auditing organization shall develop and document an audit plan for each audit. This plan shall identify the audit scope, requirements, audit personnel, activities to be audited, organizations to be notified, applicable documents, schedule, and written procedures or checklists.

3.2 Personnel

The auditing organization shall select and assign auditors who are independent of any direct responsibility for performance of the activities which they will audit. In the case of internal audits, personnel having direct responsibility for performing the activities being audited shall not be involved in the selection of the audit team. Audit personnel shall have sufficient authority and organizational freedom to make the audit process meaningful and effective.

3.3 Selection of Audit Team

An audit team shall be identified prior to the beginning of each audit. This team shall contain one or more auditors and shall have an individual appointed to lead the team who organizes and directs the audit, coordinates the preparation and issuance of the audit report, and evaluates responses. The audit team leader shall ensure that the audit team is prepared prior to initiation of the audit."

2.11.4

Personnel Qualification and Selection

Personnel performing independent assessments should be technically knowledgeable and not have direct responsibilities in the area they are assessing. In selecting personnel for assessment assignments, consideration should be given to special abilities, specialized technical training, prior experience, and education.

The requirements for auditor and lead auditor training and qualification is covered in section 2.3.1 Training and Qualification for QA Auditors.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 18-1, Section 3

"PREPARATION

3.1 Audit Plan

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The auditing organization shall develop and document an audit plan for each audit. This plan shall identify the audit scope, requirements, audit personnel, activities to be audited, organizations to be notified, applicable documents, schedule, and written procedures or checklists.

3.2 Personnel

The auditing organization shall select and assign auditors who are independent of any direct responsibility for performance of the activities which they will audit. In the case of internal audits, personnel having direct responsibility for performing the activities being audited shall not be involved in the selection of the audit team. Audit personnel shall have sufficient authority and organizational freedom to make the audit process meaningful and effective.

3.3 Selection of Audit Team

An audit team shall be identified prior to the beginning of each audit. This team shall contain one or more auditors and shall have an individual appointed to lead the team who organizes and directs the audit, coordinates the preparation and issuance of the audit report, and evaluates responses. The audit team leader shall ensure that the audit team is prepared prior to initiation of the audit."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.2.c

"Personnel performing independent assessment should be technically knowledgeable and focus on improving the quality of the processes that lead to the end product."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.2.d

"Personnel performing independent assessments should not have direct responsibilities in the area they are assessing."

2.11.5

Scheduling

Internal and external quality assurance audits and assessments should be scheduled in a manner to provide adequate coverage of programmatic areas and ongoing work activities. The frequency of audits for various areas should be commensurate with the importance of the activity and the potential for problems. The schedule should be periodically reviewed and revised to provide adequate coverage of areas.

Audit scheduling requires a periodic interface with Management Systems for activity schedule updates.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 18-1, Section 2

"SCHEDULING

Internal or external quality assurance audits, or both, shall be scheduled in a manner to provide coverage and coordination with ongoing quality assurance program activities. Audits shall be scheduled at a frequency commensurate with the status and importance of the activity. The audit schedule shall be reviewed periodically and revised as necessary to assure that

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coverage is maintained current. Regularly scheduled audits shall be supplemented by additional audits of specific subjects when necessary to provide adequate coverage."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.2.f

"Scheduling of assessments and allocation of resources should be based on the status, risk, and complexity of the item or process being assessed. Scheduling should be flexible and additional attention should be given to areas of questionable performance."

2.11.6

Corrective Action and Responses

Audit findings are a form of conditions adverse to quality and, therefore, should be documented, corrected, tracked, and trended. All audit findings and assessment recommendations should require a written response from the audited organization. The response should include the corrective actions to be taken and the date when the corrective actions will be completed. Significant conditions adverse to quality should be reported to appropriate levels of management and address recurrence control. Audit findings require follow up and closure by the audit organization.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 18-1, Section 6

"RESPONSE

Management of the audited organization or activity shall investigate adverse audit findings, schedule corrective action, including measures to prevent recurrence, and notify the appropriate organization in writing of action taken or planned. The adequacy of audit responses shall be evaluated by or for the auditing organization."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.2.h

"Responses to assessments should include the following, as applicable: action to correct the deficiency; cause identification; actions to prevent recurrence; lessons learned; and actions to be taken for improvement.

2.11.7

Follow Up and Closure

The audit organization should establish controls to ensure that responses to audit reports are timely, appropriate corrective actions are implemented, and audit findings are closed-out.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 18-1, Section 7

"FOLLOW-UP ACTION

Follow-up action shall be taken to verify that corrective action is accomplished as scheduled."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section C.2.g

"Assessment results should be tracked and resolved by management having responsibility in the area assessed. Follow up review of deficient areas should be initiated as necessary."

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2.12

CORRECTIVE ACTION

Conditions adverse to quality (CAQ) should be identified, documented, and corrected. Corrective actions should be tracked and trended through resolution and considered a part of quality records. Significant conditions adverse to quality should be reported to appropriate levels of management. The corrective action plan, resolution, and closure of CAQ's identified by the QA organization or those that are considered significant should be independently approved and verified by the QA organization. The corrective action plan for significant CAQ's should include a formal root cause analysis, extent of condition, and interim corrective action as appropriate.

The Corrective Action Program as a management program is discussed in greater detail in the Management Systems RID.

Interfaces occur on a continuing basis between the causing organization, affected organizations, Management Systems, and QA for the identification, documentation, tracking, trending, and closure of CAQ's.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 16

*CORRECTIVE ACTION

Conditions adverse to quality shall be identified promptly and corrected as soon as practical. In the case of a significant condition adverse to quality, the cause of the condition shall be determined and corrective action taken to preclude recurrence. The identification, cause, and corrective action for significant conditions adverse to quality shall be documented and reported to appropriate levels of management; follow-up action shall be taken to verify"

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.5.5

"5. Nonconformance reports are periodically analyzed by the QA organization to show quality trends; significant results are reported to upper management for review and assessment."

2.13

KEY PROGRAM INTERFACES

The Quality Assurance Functional Area interfaces with all functional areas on a generic basis by receiving programmatic inputs from those functional areas that are incorporated into the QAP that structures and defines the overall quality program for Tank Farms. The major functional area interfaces are:

Configuration Management Engineering Design

Emergency Preparedness Operational Readiness

Fire Protection Maintenance

Management Systems Nuclear Safety

Operations Radiological Protection

Training and Qualifications Construction

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Important specific areas of interface for this RID are identified in the individual elements.

WESTINGHOUSE HANFORD COMPANY

REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:

HIGH LEVEL WASTE STORAGE
TANK FARMS/242-A
EVAPORATOR

FUNCTIONAL AREA:

Training and Qualification

REVISION 0

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4.0 TRAINING AND QUALIFICATION

INTRODUCTION

SCOPE

The scope of the Training and Qualification Functional Area portion of the Tan Farms Facility Requirements Identification Document (RID) includes the programmatic controls and provisions needed to insure adequate and effective training and qualification of personnel involved in the operations, maintenance and technical support of DOE non-reactor nuclear facilities to help ensure safe and efficient operations that meet the standards suggested in the Defense Nuclear Facilities Safety Board (DNFSB) recommendations 90-2 and 91-1. The Training a Qualification Functional Area addresses requirements defined in DOE Order 5480.20, Chapter 1 (General) and Chapter 4, (Non-Reactor Nuclear Facilities). Chapters 2 and 3 contain specific requirements for category A and B reactors respectively and were not used in the development of this document. The requirements contained in this document reflect those that are unique to non-reactor facilities and those that are site-wide regardless of whether they apply to reactors or non-reactor nuclear facilities.

Training program accreditation, as an element of the Training and Qualification Functional Area, will be addressed in the Tank Farms RID to the degree that the adequacy of the Tank Farms training program contributes to the Hanford Site Training Program accreditation process. The detailed RID for the Tank Farms references the DOE Training Accreditation Program (TAP) manuals 1 and 2 (July 1991), as well as the DOE Technical Safety Appraisal (June 1990), and DOE 5700.6C, Quality Assurance. Training and qualification requirements apply to DOE employees, Westinghouse Hanford Company (WHC) personnel, subcontractors and visitors.

The elements of the Training and Qualification Functional Area define the controls and criteria that should be developed to establish communication, coordination, and training interfaces with essentially all of the other Functional Areas in both programmatic and technical areas and with offsite organizations and individuals who require access to Tank Farm facilities. The requirements for the Functional Area elements are identified and discussed in Sections 4.1 through 4.5.

KEY INTERFACES

The Training and Qualification Functional Area interfaces with most other Functional Areas through the provision of general Hanford training programs an support of Functional Area and Tank Farm specific training needs. Interfaces associated with the implementation of the training and Qualification Program include:

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Management Systems

The Management Systems Functional Area provides the basis for Tank Farms and Hanford management programs that are applicable to all Functional Areas. Management Systems provide the policy, commitment, and resources to implement the Environmental Safety and Health programs and to ensure consistent and adequate management oversight.

- **Management and Administration**

Management and Administration addresses general policy, plans, and procedure requirements; the organization; staffing; and training and qualification required to develop, document, and implement training programs.

The Tank Farms training policy statement should describe the scope, general philosophy, and standards which govern the Tank Farms training and qualification program.

A training plan should be developed for the Tank Farms to define the structure, scope, and goals of the training and qualification program. Procedures should be developed at the Hanford Training and Qualification organization which provide administrative and technical controls for the management and conduct of training program activities. Administrative procedures for the training and qualification program should reflect expectations and requirements derived from policies, plans, and applicable DOE Orders and Federal regulations or the Washington Administrative Code.

The Training and Qualification Program organizational structure, responsibilities, accountabilities, and authorities should be identified and communicated to the Tank Farm supervisory and functional staff.

The training staff for the Tank Farm training organization should be identified to the Hanford training organization and subsequently trained and qualified to conduct qualification training for Tank Farms specific job/tasks based on a training needs assessment.

- **Issue Management**

Issues (deficiencies) identified through self-assessment, Tiger Team assessments, or other internal/external audits should be examined for their impact on the training and qualification program. Corrective action may involve new procedures which would involve a change in training content, additional training for operators, or refresher training for instructors.

- **Document Control - Records Management**

The document control/records management process defines the method and procedures for the control of training and qualification records management to include computerized

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records, data, and information such that these records are identifiable, controllable, retrievable, and auditable.

- **Self Assessment**

Controls will be established to incorporate lessons learned and other assessment results, where applicable, into Training and Qualification Program needs. The conduct of needs assessment and job analysis, design and development, implementation, evaluation, maintenance of training an qualification dedicated facilities and equipment, training schedules, a other related performance-based program processes should be regularly performed. The self assessment process should evaluate the above areas compliance with the Code of Federal Regulations, DOE Orders, Washington Administrative Codes, and applicable industry standards and practices.

- **Occurrence Reporting**

Occurrence reporting is the process that identifies occurrences, including emergencies and "near misses" that could be precursors to more serious situations. The Tank Farms Training and Qualification Program should include training that will ensure recognition of occurrences, their correct categorization, and proper notification to ensure appropriate response.

- **Compliance Management**

Compliance management is a process that ensures requirements and commitments are identified and incorporated into implementing documents and the Tank Farms Training Program.

- **Operational Readiness Reviews**

The training, qualification, and certification process shall be conduct for all Tank Farms facility supervisory personnel and inspector staff involved with verifying the safe and efficient operation of the Tank Farms facility. This includes training in all aspects of operating and maintaining the Tank Farms facility inspection techniques, report preparation, and corrective action tracking.

Quality Assurance

General programmatic guidelines for Training and Qualification are detailed in the Training and Qualification Program, with specific requirements and standard outlined in DOE 5700.6C. Quality Assurance related training should be established for specific categories such as operators, designers, managers, supervisors, and inspectors. Training will be provided which addresses specify Quality Assurance Program needs and will be presented by qualified instructors Training plans shall reflect emphasis on correct performance of work, understanding of the purpose of

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quality standards, potential consequences of improper work, professional and managerial communication and interpersonal skills, special skills or abilities, and demonstrated proficiency for personnel performing work requiring special skills or abilities.

Emergency Planning and Preparedness

Emergency Planning and Preparedness involves the identification and assessment of job-related hazards, emergency procedures, and responses. These need to be incorporated into the training and qualification process for all Tank Farm staff. The Emergency Planning and Preparedness and Training and Qualification Functional Areas also have a need to coordinate the scheduling of drills and exercises to ensure that required training has occurred prior to a drill or exercise and to ensure that deficiencies or comings identified during a drill or exercise have been included for corrective action where required, in additional operator training, modification to training materials, or refresher training for instructors.

Safeguards and Security

Controls should be established to ensure that visitors or personnel requesting access to the Tank Farms have received appropriate Hanford site training. In addition, Tank Farms personnel require a site-wide security education and briefing program as outlined in the Safeguards and Security functional Area, a on specialized security procedures for classified computer and automated data processing systems.

Engineering Design

There are specific training requirements for Professional Engineers and Engineering Design instructions pertaining to their qualification/certification in the areas of design control, facility characteristics, safety and non-safety class systems, and hazard identification and categorization.

Construction

Construction supervisors and staff involved in new construction, modification, or repair of existing Tank Farms components shall be qualified and certified f the job or tasks involved.

Operations

Operations supervisors, staff, and shift operators involved with the conduct operations to include ALARA , operating procedures, safe practices, and operations records maintenance shall be trained, qualified, and certified according to the requirements outlined in DOE 5480.19 and Chapter IV, DOE 5480.20.

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Maintenance

Maintenance supervisors and staff involved with maintenance including tool and equipment control and decontamination, maintenance record keeping, work package development and tracking, equipment modification, and procedural modification shall be trained, qualified, and certified according to the requirements outlined in DOE 4330.4A.

Radiation Protection

HP technicians and managers who are involved in notification and response activities, radiological monitoring, personnel exposure, entry and exit control contamination controls, radioactive materials handling, radiological protection laboratory analysis, radiation protection quality assurance controls, and ALAR principles require qualification and certification in these activities.

In addition to the training of RP personnel responsible for the program, the R Functional Area has responsibility for input to the training of the Hanford site population. The RP training program should ensure that the general population of Hanford is aware of the hazards of radiation and the responsibility of each individual to demonstrate a disciplined and cautious attitude toward radiation and radioactivity.

Fire Protection

Qualification, certification, and requalification standards should be established for fire protection personnel to include apparatus drivers and operators, test and inspection personnel, nuclear facility operators, maintenance and technical support personnel, fire related occurrence investigators, emergency medical support personnel, and fire officers and fire service instructors.

Environmental Protection

Tank Farms facility personnel assigned to monitoring and surveillance systems, require training in inspection requirements and procedures, required permits, pollution control standards, pollution prevention procedures, record keeping a reports, and notification.

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4.1

PROGRAM MANAGEMENT

This element addresses the unique aspects of program management that are an essential part of an effective Training and Qualification program. Training a Qualification program management should ensure development and implementation of training related policy, training guidelines, and acceptable methodologies and practices associated with conduct of training. Controls should also address development of training modules and materials, performance validation and verification of training processes, qualification of instructors/trainers, training documentation and schedules, and general site training programs such as a General Employee Training (GET), visitor training, construction/area access training, etc.

Other Functional Area training program needs are supported by Training and Qualification, by providing specific personnel and information required to assist in the development, administration, and conduct of their particular Functional Area training requirements. Examples of information and support to be provided to the Training and Qualification program include:

- Identification of managers and supervisors to be trained
- Identification Subject Matter Experts (SMEs) for JTA/ course design, etc.
- Instructors to be trained, if appropriate
- Training Module Content/Curricula
- Qualification/Certification Expectations/Criteria
- Technical Information
- Scheduling

The Training and Qualification program should enhance the ability of employees to perform assigned duties and tasks by developing and improving knowledge and skill levels. On-the-job training should be provided to the degree necessary and practical, so that personnel receive training within the job environment. Continuing training includes provisions for introduction of new or revised subject matter, needed specialized courses and/or reviews of previously presented information as appropriate in order to maintain the proficiency of skills and knowledge required for acceptable performance. In addition, specific administrative controls associated with the Training and Qualification program should include:

- a. Definition of training interfaces between the Tank Farms and any supporting offsite organizations and programs requiring training.
- b. Development of an ongoing program for the qualification of instructors and non-instructor training personnel.
- c. Development of training goals, objectives, standards, and schedules for the training organization.
- d. Assistance with development of training goals, objectives, standards, and schedules for the Tank Farms; and
- e. Development of documentation which supports consistent, deliberate, and reliable approaches to training methods, practices, and implementation.

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- f. Definition of Tank Farms management investment with training program self-assessment activities.

Because training contributes to overall Tank Farm safety and reliability, Tank Farm management shall be directly involved in assessing training program effectiveness.

The program requirements that define this element are outlined in each of the sub-elements.

4.1.1

Program Policy

The Management Systems Functional Area addresses general policy and procedural guidelines regarding policy development, documentation, and implementation. Specific administrative controls associated with the Training and Qualification program Hanford training organization shall include:

- Definition of clear training interfaces between the facilities' training organizations and other Functional Area personnel requiring training.
- Development of criteria for the selection and on-going qualification of instructors and non-instructor training personnel.
- Development of training goals, objectives, standards, and schedules for the Hanford Site training organization.
- Assistance with the development of training goals, objectives, standards, and schedules for Tank Farm facility that promote safe, reliable, and effective conduct of program activities in support of overall Hanford site operations.
- Definition of expected performance levels and effectiveness measurements for conduct of Training and Qualification program activities.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.2

"Line management ensures that the content and conduct of the training and qualification programs will produce competent and professional workers and supervisors."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.3

"Actions needed to achieve high quality, job-related, performance-based training programs eligible for accreditation have been identified through a systematic evaluation of existing programs."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.4

"Written contractor and facility goals establish the required character and quality of key aspects of the training system. Supporting objectives are procedurally implemented at each organizational level."

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SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Paragraph 2

"The operating contractor shall establish an organization(s) within the line management organization that is responsible for the training of operating organization personnel. In some cases (e.g. Category B Reactors, low-hazard non-reactor nuclear facilities, or less complex, small facilities) this may be integrated into the operating organization and may not necessarily be officially designated as a training organization. The duties, responsibilities, qualifications, and authority of training organization personnel shall be documented, and managerial responsibilities and authority clearly defined. This organization may include subcontracted personnel who conduct training activities."

RELATED REFERENCES

1. DOE4330.4A Chapter II, Section 3.3.1

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Paragraph 7.b, Sentences 1 and 2

"Initial and continuing training programs shall be implemented to ensure that operating organization personnel are qualified to perform job requirements. This should be achieved by using a systematic approach to training such as performance-based training."

RELATED REFERENCES

1. DOE4330.4A Section 3.1

FACILITY REQUIREMENT SOURCE: WAC-173 Section 303-330 (1)

"(1) Training program. The facility owner or operator shall provide a program of classroom instruction or on-the-job training for facility personnel. This program must teach personnel to perform their duties in a way that ensures the facility's compliance with this chapter 173-303 WAC, must teach facility personnel dangerous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed, must ensure that facility personnel are able to respond effectively to emergencies, and shall include those elements set forth in the training plan required in subsection (2) of this section. In addition:

(a) The training program shall be directed by a person knowledgeable in dangerous waste management procedures, and must include training relevant to the positions in which the facility personnel are employed;

(b) Facility personnel must participate in an annual review of the training provided in the training program;

(c) This program must be successfully completed by the facility personnel:

- (i) Within six months after these regulations become effective; or
- (ii) Within six months after their employment at or assignment to the facility, or to a new position at the facility, whichever is later. Employees hired after the effective date of these regulations must be supervised until they complete the training program; and

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(d) At a minimum, the training program shall familiarize facility personnel with emergency equipment and systems, and emergency procedures. The program shall include other parameters as set forth by the department, but at a minimum shall include, where applicable:

- (i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;
- (ii) Key parameters for automatic waste feed cut-off systems;
- (iii) Communications or alarm systems;
- (iv) Response to fires or explosions;
- (v) Response to ground-water contamination incidents; and
- (vi) Shutdown of operations."

4.1.1.1

Responsibility, Authority, and Accountability

The Tank Farm training organization responsibilities include ensuring compliance with training related policy; following training guidelines established by DOE or WHC; identifying acceptable methodologies and practices associated with training at the Tank Farm facility; and providing training content, materials validation, and verification of training processes; instructors/trainers; training documentation and schedules; and ensuring that Tank Farm personnel are scheduled for general site training programs such as General Employee Training (GET), visitor training, construction/area access training, etc.

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 5.c

Item (1), the last portion of the sentence: "and control room manipulations" does not apply to REDOX.

"Supervisors. The supervisor training program shall include the categories and on-the-job training specified for operators and fissionable material handlers to the extent to which they are applicable. This training shall be of increased depth to reflect the added responsibility of the supervisor position. In addition, the supervisor training program shall include the following to the extent that it is applicable to job requirements:

- (1) Design, control, and operating limitations for the facility, including instrumentation characteristics and adjustment, facility operation, facility console control mechanisms, and control room manipulations;
- (2) Procedures for making design and operating changes, including changes in operating procedures;
- (3) Radiation hazards which may arise during the performance of experiments;
- (4) Nuclear and radiation theory, including details of the fission process neutron multiplication, source effects, and neutron poison effects;
- (5) Specific operating characteristics of the facility, such as causes and effects of temperature and pressure changes;
- (6) Procedures and limitations involved in initial equipment loading, alterations in fissionable material configuration, and determination of various internal and external effects on criticality safety;
- (7) Procedures, equipment, and facilities available for handling and disposing of radioactive materials and effluents;
- (8) Functions, assignments, and responsibilities of the maintenance organization as related to facility safety; and
- (9) Applicable portions of the facility Safety Analysis Report."

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4.1.1.2

Development of Training Goals, Objectives, and Standards

The Tank Farm facility training and qualification organization shall establish training and qualification program goals and objectives that enhance the ability of employees to perform assigned duties and tasks by developing and improving knowledge and skills. Such goals shall include, but not be limited to:

- Providing on-the-job training to the degree necessary and practical so that personnel receive training within the job environment.
- Developing and conducting a continuing training program that includes provisions for introduction of new or revised subject matter, needed specialized courses, and reviews of previously presented information as appropriate in order to maintain the proficiency of skills and knowledge required for acceptable performance.

SITE REQUIREMENT SOURCE: DOE-TAP-2 Section A, Sentences 4-9

"Therefore, achieving performance-based training require commitment from the organization for which training is provided. This commitment includes making subject matter experts available for participation in and review of the products of the performance-based training process. It also includes budgeting and scheduling the time required for both initial and continuing training. This commitment must be made by corporate and facility senior management from the beginning. Management must get involved at the start to ensure that they are not only cognizant of ongoing activities, but are also involved to the degree necessary to thoroughly understand the process. Policies implemented and support demonstrated by senior management provide the driving force to ensure that training programs receive the attention that is imperative if facility training programs are to be successful."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1

"PERFORMANCE OBJECTIVE: The training organization should ensure effective implementation and control of training activities."

4.1.2

Organizational and Programmatic Interfaces

Effective conduct of a Tank Farm training and qualification program shall be based upon communication, coordination, and integration with the Hanford training organization and the other Tank Farm Functional Area programs. This may also apply to certain offsite organizations. Formal definition of such internal and external interfaces is necessary to facilitate communication, coordination, and understanding; to ensure effective program execution; and to support overall safe and controlled Tank Farm operations. The administrative controls associated with this sub-element include:

- The definition of program interfaces, to include centralized training management and decentralized implementation, with the Hanford training organization and the other Functional Area supervisory staff at the Tank Farm facility;
- The definition of program interfaces with offsite organizations;
- The definition of interface responsibilities;

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- The integration of interface descriptions and responsibilities, when appropriate, into Tank Farms plans and procedures.

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 2

"Training Organization Requirements. The operating contractor shall establish an organization(s) within the line management organization that is responsible for the training of operating organization personnel. In some cases (e.g., Category B reactors, low-hazard non-reactor nuclear facilities, or less complex, small facilities) this may be integrated into the operating organization and may not necessarily be officially designated as a training organization. The duties, responsibilities, qualifications, and authority of training organization personnel shall be documented, and managerial responsibilities and authority clearly defined. This organization may include sub-contracted personnel who conduct training activities."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 4

"Personnel Selection Requirements.

- a. The operating contractor shall have a process for selection and assignment of personnel into the operating organization. This process should consider factors such as background, experience, and education and may involve a selection test. Selection should be based on the ability to meet job performance requirements.
- b. Education and experience requirements for Category A reactor facility personnel are contained in Chapter II. Requirements for Category B reactor facility personnel are contained in Chapter III. Requirements for non-reactor nuclear facility personnel are contained in Chapter IV. In those cases where an individual does not meet the literal experience requirements, consideration may be given to the collective experience of the operating organization. Individuals who do not meet the experience requirements for a position may be assigned to that position providing the overall operating organization is considered balanced and strong and that DOE approval is obtained on a case-by-case basis.
- c. Education and experience requirements may be met by development and implementation of accreditable performance-based training programs for applicable positions."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.a

"General. Training for operations and maintenance personnel should be based on analyzed needs such as would result from a needs analysis or job analysis. Training for technical support personnel should be based on the results of an assessment of position responsibilities. Training programs shall consist of a combination of classroom-type and on-the-job training, and include simulator and laboratory training as it applies to the position. Classroom-type training includes lectures, seminars, computer based, and structured self-study training activities.

- (1) Qualification programs shall be reviewed by contractor facility management and kept up to date to reflect changes to the facility, procedures, regulations, and quality assurance requirements as well as applicable industry operating

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experience. The concept of training personnel as a team, stressing team communications and interaction, shall be used where job functions require team solutions and activities.

- (2) A Training Implementation Matrix which defines and describes the application of the selection, qualification, and training requirements of this Order shall be prepared by the operating organization. The Matrix shall clearly define the organization, planning, and administration of the qualification program and set forth the responsibility, authority, and methods for conducting training. Suitable justification for exceptions shall be included in the Matrix for any requirement not implemented. This Matrix shall be submitted to the Head of the Field Organization for approval. At some sites with several facilities, a combined Training Implementation Matrix may be submitted.
- (3) The selection, qualification, and training program for low-hazard, non-reactor nuclear facilities should be developed based on the hazards involved and risk associated with the operation or activity. Accordingly, the level of detail and content of the Training Implementation Matrix should reflect the selection, qualification, and training needs associated with such facilities to assure personnel are qualified to carry out their assigned responsibilities."

RELATED REFERENCES

1. DOE5480.19 Chapter I, Section C.5
2. DOE5480.19 Chapter II, Section C.5, Paragraph 1
3. DOE5480.19 Chapter V, Section C.1
4. DOE5480.19 Chapter V, Section C.2
5. DOE5480.19 Chapter V, Section C.4
6. DOE5480.19 Chapter V, Section C.5
7. DOE5480.19 Chapter VI, Section C.7
8. DOE5480.19 Chapter VI, Section C.8
9. DOE5480.19 Chapter IX, Section C.10
10. DOE5480.19 Chapter IX, Section C.10.b
11. DOE5480.19 Chapter IX, Section C.10.c
12. DOE5480.19 Chapter IX, Section C.10.d
13. DOE5480.19 Chapter X, Section C.3

4.1.3

Training Organization Staffing and Training

The Tank Farm training and qualification program staff shall be comprised of qualified and experienced personnel to support safe, reliable, and efficient execution of program activities. This sub-element addresses the program controls for the training and qualification program personnel selection, their training and qualification, requalification, recertification and continuing training.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.e

"Training should provide curricula that address specific needs, and it should be presented by qualified instructors."

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4.1.3.1

Staffing

The Tank Farm training organization staffing needs shall be identified to ensure that program activities can be conducted in a formal, safe, and efficient manner. Staffing decisions also consider time required for personnel training and reliance upon use of overtime.

The administrative controls for implementation of this sub-sub-element include:

- Evaluation and identification of minimum staffing requirements to meet training program objectives, including support of multiple shifts and varying disciplines within each shift; and
- The development and implementation of a long-range staffing plan that anticipates personnel losses, and assures that sufficient resources are available to support planned activities and to maintain consistency and continuity of training and qualification program activities.

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.6

"Resources are allocated and established to accomplish assigned tasks. Training staff possess the necessary technical knowledge, experience, and instructional and developmental skills."

4.1.3.2

Selection and Qualification

Selection requirements shall be defined to ensure that training staff personnel have the knowledge, skills, and abilities to perform Training and Qualification program activities in a safe and reliable manner and in compliance with requirements. Formal qualification criteria shall be established to define the experience, education, capability, and training required to perform in a designated training job, position, or a specific task. Qualification programs are defined in a manner consistent with the hazard involved and the risk associated with the job function or task. Medical examination requirements shall be defined to specify the health and physical fitness necessary to enable personnel to safely perform their assigned training tasks.

The administrative controls necessary for implementation of this sub-sub-element include:

- Definition of the qualification and selection requirements for training positions at all levels;
- Definition of qualification/requalification criteria for personnel in each training position, including sub-contractor employees involved in training activities;
- Definition of requirements for reviews, evaluation, and updates of qualification/requalification criteria;
- Definition of medical examination requirements;
- Definition of alternatives to training, educational, or experience requirements;

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- Development of a process to control extensions of personnel qualification that may be necessary to support operational and scheduling commitments; and
- Definition of a process to evaluate the effectiveness of the training and qualification staff.

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 2

"Trainee candidates meet the minimum requirements for entry into the training program."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 2, Criteria 2.1

"Entry-level criteria include minimum educational, technical, and experience requirements; a medical evaluation; and certification of the physical capabilities identified for the position."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 2, Criteria 2.2

"Remedial training programs are provided, as necessary, to prepare the trainee to meet the identified training program entry-level requirements for areas where they may be deficient."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 3

"Subcontractor Personnel Qualification Requirements. The operating organization shall establish qualification criteria for subcontractor personnel who replace personnel in the operating organization. Subcontractor personnel shall meet the qualification requirements for the job function to be performed prior to active involvement in facility activities. For subcontractor personnel who do not meet the requirements, work activities on safety-related structures, systems, and components identified in the facility Safety Analysis Report shall be supervised by a person who meets the qualification criteria established by the operating organization for conduct of such activities. In addition, the operating organization shall ensure that subcontractor and temporary personnel who perform specialized activities such as radiation protection, maintenance, in-service inspection, radiography, and welding are qualified to perform their assigned tasks. This assurance shall be considered adequate with proper documentation of at least the following:

- a. The satisfactory result of an audit of subcontractor records which relates to qualification of the subcontractor personnel being considered for assignment by the operating organization; or
- b. Operating organization's previous verification (within 2 years) of the ability of the subcontractor employee to perform assigned tasks safely and efficiently; or
- c. Successful completion by the subcontractor employee of those segments of the operating organization's qualification program which are considered pertinent to accomplishment of the task to be performed."

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SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 4

"Personnel Selection Requirements.

- a. The operating contractor shall have a process for selection and assignment of personnel into the operating organization. This process should consider factors such as background, experience, and education and may involve a selection test. Selection should be based on the ability to meet job performance requirements.
- b. Education and experience requirements for Category A reactor facility personnel are contained in Chapter II. Requirements for Category B reactor facility personnel are contained in Chapter III. Requirements for non-reactor nuclear facility personnel are contained in Chapter IV. In those cases where an individual does not meet the literal experience requirements, consideration may be given to the collective experience of the operating organization. Individuals who do not meet the experience requirements for a position may be assigned to that position providing the overall operating organization is considered balanced and strong and that DOE approval is obtained on a case-by-case basis.
- c. Education and experience requirements may be met by development and implementation of accreditable performance-based training programs for applicable positions."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 5

"Qualifications Process Requirements. Qualification is defined in terms of education, experience, training, and any special requirements necessary for performance of assigned responsibilities. Personnel at DOE reactor and non-reactor nuclear facilities shall possess qualifications which provide reasonable assurance that their decisions and actions will ensure that assigned responsibilities are conducted properly and safely.

- a. Operating organization shall establish written procedures which clearly define qualification requirements for personnel in each functional level based on the criteria contained in this Order. The shift in relative importance of managerial and technical competence shall be considered by management in establishing these requirements. The need for specific knowledge, skills, and abilities differ for each level in the organization. At the higher functional level, managerial competence is the dominant need, whereas technical competence is the dominant need at other functional levels.
- b. Qualification may be granted only after assuring that all requirements (including training and examinations as required) and other specified requirements (e.g., medical examination) have been satisfactorily completed.
- c. Qualification shall be valid for a maximum of two years (unless revoked for cause) at which time the person shall be requalified in accordance with paragraph 10 of this Chapter."

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 3

"Medical Examination Requirements. For each type of operation, the operating organization shall determine the physical demands imposed upon certified personnel by the

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job tasks that are required to perform both routine and emergency functions. A medical examination shall be given to prospective employees and a reexamination shall be given at least every two years to certified operators, fissionable material handlers, and supervisors to verify health and physical fitness to safely perform their assigned tasks. Certified operators and supervisors must also be cleared by medical examination prior to returning to work following any serious illness or injury which keeps the person from performing their duties for a period exceeding one month. Medical examination requirements for other operating organization personnel shall be in accordance with the procedures of the operating contractor."

4.1.3.3

Train-the-Trainer

Training of the training and qualification program staff enhances the ability of this staff to perform assigned duties and tasks by developing and improving knowledge and training skill levels. On-the-job training shall be provided to the degree necessary and practical, so that personnel receive training within the job environment and with as much "hands-on" experience as possible. Continuing training includes provisions for introduction of new or revised subject matter, needed specialized courses, and/or reviews of previously presented information as appropriate in order to maintain the proficiency of training skills and knowledge required for acceptable instructor/trainer performance.

The administrative controls for implementation of this sub-sub-element include:

- Identification of the need for initial training, qualification, and continued training of Training and Qualification program staff based upon an assessment of training organization position or job duties;
- Development of a Tank Farms facility specific training plan based upon an assessment of Tank Farm facility positions or job duties requiring qualification;
- Approval of training content based upon the assessment of position or job duties;
- Establishment of a system for review of the initial and continuing training programs for instructors by persons other than those directly responsible for the training; and
- Definition of training program management needs.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.1

"Training staff responsible for program management, supervision, and development have and maintain the education, experience, and technical qualifications required for their jobs."

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SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.2

"Instructors have the technical qualifications, which include adequate theory, practical knowledge, and experience, for the subject matter that they are assigned to teach."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.3

"Developmental and instructional qualifications of instructors include theory, practical knowledge, and evaluated work experience in analyzing, designing, developing, conducting, and evaluating training, as appropriate to their job assignments."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.4

"Methods are implemented to ensure that individual instructors meet and maintain position qualification requirements."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.5

"When facility or subcontractor instructors have not yet attained the required instructional qualifications or instruct only occasionally, training quality is maintained through appropriate additional assistance and supervision."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.6

"The instructional skills training program develops the necessary instructor capabilities to fulfill training program requirements."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.7

"Instructor performance, in each training setting in which the individual instructs, is evaluated regularly by the individual's supervisor. Results are used to improve performance."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.8

"Continuing instructor training maintains, improves, and advances required knowledge and skills and is based, in part, on evaluations of instructor performance."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 3, Criteria 3.9

"The training staff maintains facility technical qualifications and familiarity with job requirements as appropriate to their job assignments."

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SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3

"PERFORMANCE OBJECTIVE: The nuclear facility operator and supervisor training and certification programs should be based on DOE 5480.20, as applicable, and should develop and improve the knowledge and skills necessary to perform assigned job functions. (Nuclear Facilities Only)"

4.1.4

Procedures

Training methods, practices, and activities shall be formally documented, implemented, and maintained such that all phases of instructional activities shall be conducted in a deliberate, consistent, and reliable manner.

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.13

"Learning objectives which specifically define the skills and knowledge expected upon training completion are provided to instructors and students."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.9

"A training system is defined and implemented for accomplishing the following:

- assessing trainee entry-level knowledge and skills;
- identifying and documenting tasks to be included in training;
- developing and modifying programs;
- planning and scheduling training activities;
- conducting on-the-job training;
- administering and controlling examinations to minimize the possibility of compromise;
- exempting personnel from training requirements;
- providing remedial training;
- maintaining current training materials; and
- including lessons learned from in-house and industry operating experience (actual events should be used to reinforce learning)."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.4

"On-the-job training programs are structured, and include appropriate performance measures."

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SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.5

"Written documentation of certification for all operators and supervisors is maintained. The certification examination is sufficiently comprehensive to verify that the trainee can properly perform assigned duties. The minimum acceptable grade is specified in a certification policy statement."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 16

"Contractors shall develop and implement administrative procedures that specify requirements for the maintenance of training, qualification, and certification for operating organization personnel."

- a. Qualification and certification of personnel shall be documented in an easily auditable format. Individual record documentation shall include:
  - (1) Education, experience, and employment history and most recent health evaluation summary.
  - (2) Training programs completed and qualification/certification achieved;
  - (3) Latest completed checklist, graded written examination (with answers corrected as necessary or examination keys), simulator examinations (where applicable), and operational evaluations used for qualification/certification. The record should include an evaluation of the knowledge and performance of the operator/supervisor during operational evaluations;
  - (4) Lists of questions asked and the examiner's overall evaluations of the operator/supervisor's responses on oral examinations;
  - (5) Correspondence relating to exceptions to training requirements and extensions of qualification/certification;
  - (6) Records of qualification for one-time-only special tests or operations; and
  - (7) Attendance records for required training courses or sessions.
- b. A historical record that documents initial qualification or certification, and applicable information from the above list that verifies the most recent qualification or certification shall be retained in individual records. Superseded information should be handled in accordance with the procedures contained in DOE 1324.2A, RECORDS DISPOSITION."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.a(1)

"Qualification programs shall be reviewed by contractor facility management and kept up to date to reflect changes to the facility, procedures, regulations, and quality assurance requirements as well as applicable industry operating experience. The concept of training personnel as a team, stressing team communications and interaction, shall be used where job functions require team solutions and activities."

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SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.a(2)

"A Training Implementation Matrix which defines and describes the application of the selection, qualification, and training requirements of this order shall be prepared by the operating organization. The matrix shall clearly define the organization, planning, and administration of the qualification program and set forth the responsibility, authority, and methods for conducting training. Suitable justification for exceptions shall be included in the Matrix for any requirement not implemented. This Matrix shall be submitted to the Head of the Field Organization for approval. At some sites with several facilities, a combined Training Implementation Matrix may be submitted."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.c

"Initial Training Requirements. An initial training program shall be established for operating organization personnel to develop or enhance their knowledge, skills, and ability to perform job assignments. Personnel in training shall not independently make decisions or take actions that could affect facility safety, nor shall personnel in training be placed in such positions. However, they may independently perform specific tasks or job assignments for which they are qualified."

4.2

ADMINISTRATION OF TRAINING

Controls should be established to ensure that a performance-based Training and Qualification program is executed in a manner such that personnel obtain the initial and continued training necessary to fulfill the responsibilities of their assigned positions. Training should be well-organized and presented in a timely manner using the most current subject matter and presentation techniques available. Instructors should be knowledgeable of the subject and be adequately prepared to ensure effective and consistent delivery of training materials.

The Training and Qualification program should establish controls to ensure that other functional areas requiring training support accomplish the following:

- a Identification of the need for initial training, qualification or certification and continued training of personnel based upon assessment of position or job duties;
- b. Development of a functional area specific training plan based upon assessment of positions or job duties;
- c. Approval of training content based upon an assessment of position or job duties;
- d. Identification of personnel exempt from training requirements;
- e. Periodic review of initial and continuing training programs by persons other than those directly responsible for the training; and
- f. Definition of management training needs.

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SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1

"The facility is organized, staffed, and managed to facilitate planning, directing, evaluating, and controlling a systematic training process that fulfills job-related training needs."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 10, Criteria 10.1

"OJT <On-the-Job Training> is delivered using well-organized and current performance-based training materials."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14

"A systematic evaluation of training effectiveness and its relation to on-the-job performance is used to ensure that the training program conveys all required skills and knowledge."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.10

"Training programs are systematically improved to ensure trainees maintain the required skills and knowledge. Feedback from job performance is used to evaluate and refine training programs."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.12

"Training personnel are actively encouraged and supported to develop improved methods of meeting training objectives and goals."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.16

"Performance indicators are established and used to improve training performance."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.3

"Records of each individual's training participation and performance are maintained (as applicable) in an auditable manner."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.8

"Classroom and individualized instruction are effectively presented, and instructor performance is routinely evaluated."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.9

"A training system is defined and implemented for accomplishing the following:

- assessing trainee entry-level knowledge and skills;
- identifying and documenting tasks to be included in training;

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- developing and modifying programs;
- planning and scheduling training activities;
- conducting on-the-job training;
- administering and controlling examinations to minimize the possibility of compromise;
- exempting personnel from training requirements;
- providing remedial training;
- maintaining current training materials; and
- including lessons learned from in-house and industry operating experience (actual events should be used to reinforce learning)."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 16

Due to Union requirements, operators do not have oral board examinations.

"Contractors shall develop and implement administrative procedures that specify requirements for the maintenance of training, qualification, and certification for operating organization personnel.

- a. Qualification and certification of personnel shall be documented in an easily auditable format. Individual record documentation shall include:
  - (1) Education, experience, and employment history and most recent health evaluation summary.
  - (2) Training programs completed and qualification/certification achieved;
  - (3) Latest completed checklist, graded written examination (with answers corrected as necessary or examination keys), simulator examinations (where applicable), and operational evaluations used for qualification/certification. The record should include an evaluation of the knowledge and performance of the operator/supervisor during operational evaluations;
  - (4) Lists of questions asked and the examiner's overall evaluations of the operator/supervisor's responses on oral examinations;
  - (5) Correspondence relating to exceptions to training requirements and extensions of qualification/certification;
  - (6) Records of qualification for one-time-only special tests or operations; and
  - (7) Attendance records for required training courses or sessions.
- b. A historical record that documents initial qualification or certification, and applicable information from the above list that verifies the most recent

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qualification or certification shall be retained in individual records. Superseded information should be handled in accordance with the procedures contained in DOE 1324.2A, RECORDS DISPOSITION."

FACILITY REQUIREMENT SOURCE: WAC-173 Section 303-330 (2)

"Written training plan. The owner or operator shall develop a written training plan which must be kept at the facility and which must include the following documents and records:

- (a) For each position related to dangerous waste management at the facility, the job title, the job description, and the name of the employee filling each job. The job description must include the requisite skills, education, other qualifications, and duties for each position;
- (b) A written description of the type and amount of both introductory and continuing training required for each position; and
- (c) Records documenting that facility personnel have received and completed the training required by this section."

4.2.1

Selection and Qualification

A formal process will be used by the Tank Farm organization to develop staff selection and qualification criteria which ensure that personnel can perform in a safe and reliable manner and in compliance with DOE and WHC requirements.

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 2.a

"Managers. The term "Manager" refers to a person whose assigned responsibilities include ensuring that a plant or facility is safely and reliably operated, and that supporting operational and administrative activities are properly controlled. Managers are responsible for nuclear safety, operational efficiency and reliability, control of onsite emergencies, and any other activities necessary to safeguard the health and safety of the workforce, the general public, and the environment. Operational responsibilities include prioritizing and assessing facility activities including modifications, and overseeing the operating organization. Administrative responsibilities include maintenance of a qualified staff, budgets, maintaining employee performance, administering disciplinary actions consistent with company policies, public information, and coordination with corporate offices. This functional level typically includes the Plant/Facility Manager or Director, the Operations Manager, the Maintenance Manager, the Training Manager, and the Technical Manager. Prior to assuming the duties of the assigned position, persons at the manager level shall meet the following requirements:

- (1) Education Baccalaureate in engineering or related science
- (2) Experience: Nuclear 4 years
- (3) Special Requirements:
  - (a) Education or experience that is job-related may be substituted for a degree on a case-by-case basis. The degree may fulfill 3 of the 4 years of nuclear experience required on a one-for-one time basis;

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(b) Managers shall receive facility-specific training based upon a comparison of the individual's background and abilities with the responsibilities and duties of the position; and

(c) The Training Manager shall have a baccalaureate including courses in education and technical subjects (baccalaureate need not be in engineering or related science)."

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 2.b

"Supervisors. This functional level describes those persons who are responsible for the quantity and quality of work and who direct the actions of operators, technicians, or maintenance personnel. Their duties include ensuring that work is performed in compliance with procedures, policies, and industrial safety practices. Prior to assuming the duties of the assigned position, supervisors shall meet the following requirements:

- (1) Education: High School Diploma*
- (2) Experience: Nuclear 3 years*
- (3) Special Requirement: Full-time academic training may be substituted on a one-for-one basis for 2 of the 3 years of required nuclear experience. "*

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 2.c

"Operators. Operators are persons responsible for performing operations associated with safety systems, operating support systems which could affect safety systems, or conducting activities with radioactive materials. Duties may include manipulating facility controls, monitoring parameters, and operating equipment in facility safety systems. Operators include fissionable material handlers, tritium facility operators, chemical process operators, waste tank operators, and enrichment facility operators.

- (1) Education: High School Diploma"*

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 2.d

"Technicians. Technicians are persons responsible for specific maintenance activities or analytical laboratory work. Their tasks include equipment maintenance, troubleshooting, repair, testing, instrument calibration, inspections, and data surveys. Technicians interpret and verify field data accumulated from tests such as radiation surveys, instrumentation systems tests, liquid and gaseous analysis, and calibration of electronic circuits.

- (1) Experience: Job related 1 year"*

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 2.e

"Maintenance Personnel. Maintenance personnel are responsible for the maintenance and repair of mechanical and electrical equipment.

- (1) Experience: Maintenance related 1 year"*

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FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 2.f

"Technical Support Personnel. Personnel in these positions are responsible for supervision and performance of technical support functions for the operating organization. Personnel involved in surveillance, testing, analyzing plant data, planning modifications, program review, and technical problem resolution in their area for expertise are also included. They have expertise in mechanical, electrical, instrumentation and control, chemistry, radiation protection, training, safety, or quality assurance. For personnel assigned to equivalent positions, non-reactor nuclear facilities should use the education and experience requirements contained in Chapter II, Category A Reactor Personnel, subparagraph 2.c. For positions for which there is no equivalent, the education and experience requirements are as listed below. Education and experience requirements are intended to apply to supervisory positions or positions with authority to review and concur, and not to entry-level positions.

- (1) Education: Baccalaureate in engineering or related science*
- (2) Experience: Job related 2 years; Nuclear 1 year"*

4.2.2

Training Needs Assessment

Training shall be based upon a formal needs assessment of applicable codes and standards, job analysis, and determination of required knowledge and skills required to perform tasks. A training requirements matrix shall be developed to document and manage information developed in this phase. Subject matter experts (SMEs) such as Tank Farm technical personnel, training staff specialists, or consultants should assist in the needs assessment activity as well as job analysis. Needs assessment and job analysis documentation should be periodically reviewed and updated, as necessitated by changes in procedures, Tank Farms systems and equipment, job scope, and advances in technology.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 6

"Training program content provides the trainee with the knowledge and skills needed to perform tasks associated with the position for which the training class is being conducted. The content of initial training prepares the trainee to meet the minimum criteria to perform the job for which the candidate is being trained. The content of continuing training maintains and improves incumbent job performance."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.1

"For each work classification, training and qualification/certification requirements based on assigned job tasks are established."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.1

"Selection criteria for operators exist and are established based on job requirements."

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SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.b

"Training Process. Initial and continuing training programs shall be implemented to ensure that operating organization personnel are qualified to perform job requirements. This should be achieved by using a systematic approach to training such as performance-based training. The basic elements of a performance-based training program include the following:

(1) Establishment of prerequisite standards of education, skills, and knowledge required for entry into the training program;

(2) A systematic analysis of the job to be performed. A job or task analysis should be conducted by the operating organization to identify training which provides the necessary skills and knowledge so that assigned tasks can be effectively performed. Initial and continuing training programs should be based on, and traceable to, the analysis. The analysis should include normal and emergency duties, and place emphasis on the role played by each member of the operating organization (and maintenance and technical support organizations as required) in assuring safe operation. Because of varied complexity and scope of job functions, the degree of analysis necessary to determine skill and knowledge requirements may vary. For example, a job analysis should be conducted for operations and maintenance personnel, whereas a less formal assessment of training needs may be appropriate for technical support personnel;

(3) Design and development of training programs based on job performance requirements and standards;

(4) Implementation of training programs which contain instruction appropriate to job performance; and

(5) Evaluation of trainees' ability to meet job performance requirements, and evaluation and revision of training programs."

4.2.3

Design and Development

Training content and format, where appropriate, shall be based upon needs assessment and job analysis, and reflected in the design and development of training courses. Learning objectives shall be designed to encompass minimum job performance expectations. Task complexity and level of detail shall be considered. Where possible, conditions associated with task performance such as tools, equipment, space and time constraints, and personnel protective equipment, shall reflect the actual job conditions. The process shall include establishment of program performance standards and the identification of the most appropriate training setting, such as classroom, simulator, laboratory, on-the-job training, or self-study. Training modules and support material (outlines, lesson plans, instructor guides, module descriptions) shall be designed and developed for the intended method of delivery and training setting. A training plan shall be developed during the design phase to guide the development phase of the training program.

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SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 8, Criteria 8.3

"Lesson plans and other training materials are developed or modified using learning objectives derived from job performance requirements."

SITE REQUIREMENT SOURCE: DOE/EH-0135 TC.8.3

"On-the-job training requirements are identified, completed, and documented prior to assignment to the associated tasks."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.11

"Training requirements for temporary employees, contract personnel, and transient workers are established and are appropriate for the tasks to be assigned."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.13

"Learning objectives which specifically define the skills and knowledge expected upon training completion are provided to instructors and students."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.9

"A training system is defined and implemented for accomplishing the following:

- assessing trainee entry-level knowledge and skills;*
- identifying and documenting tasks to be included in training;*
- developing and modifying programs;*
- planning and scheduling training activities;*
- conducting on-the-job training;*
- administering and controlling examinations to minimize the possibility of compromise;*
- exempting personnel from training requirements;*
- providing remedial training;*
- maintaining current training materials; and*
- including lessons learned from in-house and industry operating experience (actual events should be used to reinforce learning)."*

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.10

"PERFORMANCE OBJECTIVE: Training programs for supervisors, managers, and the technical staff should broaden overall knowledge of processes and equipment and develop supervisory and management skills."

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NOTE: This performance objective applies to those managers and supervisors to whom operations, maintenance, engineering, or technical personnel report. Technical personnel are those individuals whose job responsibilities affect the safe and reliable operation of each facility on the site, but who are not operators, maintenance, or quality control inspectors and non-destructive examination technical personnel. Examples of such positions are: engineers, engineering technicians, test/surveillance personnel, and chemists/chemistry technicians."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.10.2

"Training programs for supervisors, managers, and technical personnel are effective in supplementing previous training and experience to prepare individuals for assigned responsibilities. Areas such as the following are included (if applicable to the job):

- job-related technical areas;
- supervisory/management skills and practices;
- purchasing and material storage;
- modification planning and implementing;
- budgeting and cost control;
- interfacing with external groups and organizations;
- site emergency preparedness; and
- in-house and industry operating experience (including actual events)."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.4.1

"Programs are established and implemented for initial and continuing training."

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TC.8

"PERFORMANCE OBJECTIVE: The quality control (QC) inspector and nondestructive examination (NDE) technician training and qualification programs should develop and improve the knowledge and skills necessary to perform assigned job functions."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.9

"PERFORMANCE OBJECTIVE: The radiological protection personnel training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions."

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SITE REQUIREMENT SOURCE: DOE/EH0135 TC.9.1

"Programs are established and implemented for initial and continuing training."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.1

"In addition to the training specified in paragraph 7.h < DOE 5480.20 > , managers and first line supervisors shall receive training in the following as appropriate to their job responsibilities. Supervisory skills and management training need not be subject to examination as part of initial training, nor categorically repeated in their continuing training programs.

(1) Supervisory Skills Training. The supervisory skills training program shall include:

- (a) Leadership;**
- (b) Interpersonal communication;**
- (c) Command responsibilities and limits;**
- (d) Motivation of personnel;**
- (e) Problem analysis and decision making;**
- (f) Fitness for duty procedures; and**
- (g) Administrative policies and procedures.**

(2) Management Training. The management training program should include:

- (a) Supervisory skills training;**
- (b) Quality assurance and emergency plans;**
- (c) Facility security and emergency plans;**
- (d) Purchasing;**
- (e) Material storage;**
- (f) Facility modifications;**
- (g) Nuclear, industrial, and radiation safety;**
- (h) Environmental issues; and**
- (i) Budgeting."**

4.2.4

Implementation

Implementation of training shall ensure that the results of the design and development process are introduced into the training environment. Instructors responsibilities and assignments shall be established, trainees shall be evaluated and selected, training facilities and instructional settings shall be established, and training shall be conducted using appropriate training modules and support material.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.7

"Procedures are documented and implemented to ensure that all phases of instructional activities can be conducted reliably and consistently."

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SITE REQUIREMENT SOURCE: DOE/EH-0135 TC.8.4

"Continuing training maintains and improves job-related knowledge and skills in areas such as the following:

- inspection/examination equipment, technique, and procedure changes;*
- applicable code, standard, and regulation changes;*
- industry and in-house experience information;*
- seldom used knowledge and skills that affect reliable operation; and*
- selected topics from TC.8.2 to correct identified weaknesses."*

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.10.2

"Training programs for supervisors, managers, and technical personnel are effective in supplementing previous training and experience to prepare individuals for assigned responsibilities. Areas such as the following are included (if applicable to the job):

- job-related technical areas;*
- supervisory/management skills and practices;*
- purchasing and material storage;*
- modification planning and implementing;*
- budgeting and cost control;*
- interfacing with external groups and organizations;*
- site emergency preparedness; and*
- in-house and industry operating experience (including actual events)."*

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TC.10.3

"Continuing training programs maintain job-related knowledge and skills, with emphasis on seldom used information and changes to the areas identified in TC10.2."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.4

"On-the-job training programs are structured, and include appropriate performance measures."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.9

"Continuing training maintains and improves job-related knowledge and skills in such areas as:

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- *system and component changes;*
- *procedure changes;*
- *industry and in-house operating experience; and*
- *selected items from initial training program with emphasis on seldom used knowledge and skills."*

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.9.3

"Continuing training maintains and improves job-related knowledge and skills in areas such as the following:

- *subject matter that is not reinforced by frequent direct use;*
- *radiation protection theory;*
- *operation of seldom used radiation protection equipment;*
- *applicable radiological incidents that have modified safety practices or procedures; and*
- *modification to radiation protection regulations, procedures, and/or practices."*

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.a

"General. Training for operations and maintenance personnel should be based on analyzed needs such as would result from a needs analysis or job analysis. Training for technical support personnel should be based on the results of an assessment of position responsibilities. Training programs shall consist of a combination of classroom-type and on-the-job training, and include simulator and laboratory training as it applies to the position. Classroom-type training includes lectures, seminars, computer based, and structured self-study training activities.

(1) Qualification programs shall be reviewed by contractor facility management and kept up to date to reflect changes to the facility, procedures, regulations, and quality assurance requirements as well as applicable industry operating experience. The concept of training personnel as a team, stressing team communications and interaction, shall be used where job functions require team solutions and activities.

(2) A Training Implementation Matrix which defines and describes the application of the selection, qualification, and training requirements of this Order shall be prepared by the operating organization. The Matrix shall clearly define the organization, planning, and administration of the qualification program and set forth the responsibility, authority, and methods for conducting training. Suitable justification for exceptions shall be included in the Matrix for any requirement not implemented. This Matrix shall be submitted to the Head of the Field Organization for approval. At some sites with several facilities, a combined Training Implementation Matrix may be submitted.

(3) The selection, qualification, and training program for low-hazard, non-reactor nuclear facilities should be developed based on the hazards involved and risk associated

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with the operation or activity. Accordingly, the level of detail and content of the Training Implementation Matrix should reflect the selection, qualification, and training needs associated with such facilities to assure personnel are qualified to carry out their assigned responsibilities. "

RELATED REFERENCES

1. DOE5480.19 Chapter I, Section C.5
2. DOE5480.19 Chapter II, Section C.5, Paragraph 1
3. DOE5480.19 Chapter V, Section C.1
4. DOE5480.19 Chapter V, Section C.2
5. DOE5480.19 Chapter V, Section C.4
6. DOE5480.19 Chapter V, Section C.5
7. DOE5480.19 Chapter VI, Section C.7
8. DOE5480.19 Chapter VI, Section C.8
9. DOE5480.19 Chapter IX, Section C.10
10. DOE5480.19 Chapter IX, Section C.10.b
11. DOE5480.19 Chapter IX, Section C.10.c
12. DOE5480.19 Chapter IX, Section C.10.d
13. DOE5480.19 Chapter X, Section C.3

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.c

"Initial Training Requirements. An initial training program shall be established for operating organization personnel to develop or enhance their knowledge, skills, and ability to perform job assignments. Personnel in training shall not independently make decisions or take actions that could affect facility safety, nor shall personnel in training be placed in such positions. However, they may independently perform specific tasks or job assignments for which they are qualified. "

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter IV, Section 6

"Operator, Fissionable Materials Handler, and Supervisor Proficiency Requirements. In order to maintain proficiency, fissionable material handlers, fissionable material handler supervisors, and any other operators and/or supervisors identified by the operating organization to be certified, must actively participate in the job functions associated with their certification. The operating organization shall establish procedures which define requirements and frequency (i.e., 8 hours per month) necessary to maintain an active status. If established proficiency requirements are not met, certification shall be suspended and the person shall not be assigned certification duties until certification is regained. Certification may be regained by performing their duties under the direct supervision of a certified person in accordance with established procedures. If the facility is infrequently operated, certification shall be reinstated prior to facility operation by administering written and oral examinations to ensure adequate operational knowledge. "

4.2.5

Evaluation

All aspects of training shall be evaluated for effectiveness with a formal plan that includes performance indicators. Periodic reviews of course content and training materials, training approaches and methodologies (performance/skill or knowledge-based), and training delivery and instructional settings shall be

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evaluated for continued applicability. Instructor effectiveness shall be evaluated through feedback mechanisms such as course and instructor critiques and successful completion of training by trainees. Trainee mastery of learning objectives and training content shall be evaluated through the use of written/oral examinations or by performance demonstrated competency. Remedial or refresher training shall be provided where appropriate.

The primary indicator of training program effectiveness is performance. Because training contributes to overall Tank Farm safety and reliability, Tank Farm management shall be directly involved in assessing the training program effectiveness.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter I, Section C.2.e

"Evaluation includes procedures for program evaluation by a periodic review of the training materials. It also incorporates ideas and methods for soliciting feedback from former trainees and their supervisors on the effectiveness of training. The major outputs of evaluation are the decisions made to improve the training program. A number of evaluation instruments are provided."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter I, Section E.5

"a. Evaluation provides the critical feedback loop to ensure the training is up to date and reflective of the current job. Feedback obtained from instructors, students, and supervisors is reviewed for its potential impact on future training programs. Although presented as a separate phase, program evaluation is a continuing process occurring during all phases of performance-based training. The results are translated into action items or recommendations which are factored into program content. Specifically, training programs are evaluated using the following criteria: content adequacy, test adequacy, presentation adequacy, documentation adequacy, and after-training job performance.

b. The evaluation data generated at the conclusion of the program focuses on the consistency and relevance of the complete program. The suggestions received from the evaluation process are used to modify and improve program content and delivery. The program content should be continuously monitored and revisions made as a result of changes in areas such as policies and/or procedures, system or component design, job requirements, regulatory requirements, and industry guidelines or commitments. Adjustments should also be made as a result of analyses of operating experience information such as unusual occurrence reports, inspection reports, information notices, circulars, and bulletins."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.7

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"Procedures are documented and implemented to ensure that all phases of instructional activities can be conducted reliably and consistently."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14

"A systematic evaluation of training effectiveness and its relation to on-the-job performance is used to ensure that the training program conveys all required skills and knowledge."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.1

"A comprehensive evaluation of individual training programs is conducted by qualified individuals on a periodic basis to identify program strengths and weaknesses."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.2

"Training delivery is monitored in all instructional settings and evaluated with regard to instruction, materials, and instructor performance."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.3

"Feedback from trainee performance during training is used to evaluate and refine the training program."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.4

"Feedback from former trainees and their supervisors is used to evaluate and refine the training program."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.5

"Change actions (e.g., procedure changes, equipment changes, facility modifications) are monitored and evaluated for their applicability to the development or modification of initial and continuing training programs and are incorporated in a timely manner."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.6

"Facility and industry operating experience is monitored and evaluated for applicability to developments or modification of initial and continuing training programs and is incorporated in a timely manner."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.7

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"Improvements and changes to initial and continuing training are systematically initiated, evaluated, tracked, and incorporated to correct training deficiencies and performance problems."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.8

"Changes in job scope are evaluated to determine the need for development or modification of initial and continuing training programs."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 14, Criteria 14.9

"Subcontracted training is evaluated for its contribution to meeting job performance requirements and to ensure that its quality is consistent with the facility training standards."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.10

"Training programs are systematically improved to ensure trainees maintain the required skills and knowledge. Feedback from job performance is used to evaluate and refine training programs."

4.2.6

Facilities and Equipment

Training facilities, equipment, and materials shall effectively support training objectives. Classroom and other instructional facilities shall be adequate for effective group instruction. The necessary instructional aids and equipment shall exist as needed to support training material development and the presentation of training consistent with training objectives. Technical reference material, including Tank Farm operating procedures, drawings, and/or technical manuals shall be current and readily available to the trainees and instructors.

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 4, Criteria 4.1

"Classroom and other instructional facilities meet training needs."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 4, Criteria 4.2

"The training staff has necessary instructional aids and equipment to support training material development and presentation of classroom and practical demonstration training consistent with program learning objectives."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 4, Criteria 4.3

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"Technical reference materials including current facility procedures, drawings, or training manuals are readily available to the trainees and instructors."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.7.6

"During laboratory or shop training, conditions of task performance, tools, and equipment reflect the actual job to the extent possible."

4.2.7

Training Schedules

Individuals requiring training shall be identified, scheduled, and monitored to verify attendance and successful completion of required training. Sufficient time shall be allocated to fully train and qualify personnel. Management attention and support shall be directed to ensuring trainee attendance and active participation in scheduled training. Close coordination with all Functional Areas shall be maintained to ensure clear and consistent understanding of training needs, responsibilities, and authorities.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter I, Section E.4.a and b

"a. Implementation consist of activities related to the actual conduct of training as well as resource allocation, planning, and scheduling. Program implementation requires assigning instructors and support staff, and scheduling training and facilities. During implementation, qualified instructors conduct training.

b. Qualified personnel (who have satisfactorily completed training programs comparable in content and in performance standards) may be released from portions of training on an individual case basis. Exceptions from training should be based on a review of previous training records (i.e., transcripts), personal interviews, and on exams based on the objectives stated for the training program."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.15

"Training and retraining schedules are maintained to keep all personnel adequately qualified and/or certified."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.4

"Sufficient time is provided for training before significant procedure changes or system modifications are put into effect."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.4.6

"Verification that knowledge and practical abilities are maintained current is performed at least once every 2 years. This verification includes the following:

*- written examinations on basic technical knowledge and the application of this knowledge;
and*

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- demonstration of radiological protection practical abilities for those individuals required to enter radiologically controlled areas who have not used these abilities as a part of their work. "

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.4.8

"Personnel who do not complete continuing training and examination requirements satisfactorily within required time frames are not allowed to continue to work in radiologically controlled areas. "

4.2.8

Testing, Qualification, Certification, and Continued Training

4.2.8.1

Testing

Administration, control and security of written examinations, oral examinations, and performance evaluations shall be provided. Examinations and performance evaluations shall contain valid questions which are based upon job-related training objectives. Examinations and performance evaluations shall contain a representative cross-section of knowledge, skills, and/or abilities to ensure proficiency.

The content of examinations shall be changed at intervals sufficient to prevent compromise. Examination questions shall be referenced to one or more learning objectives. Acceptance criteria shall be defined in advance of an examination or performance evaluation. Management expectations and standards regarding ethical conduct shall be established for the conduct of examinations and testing. Consequences of unethical practices shall be clearly defined and communicated. Specifications and control shall exist to ensure the development, security, and maintenance of qualification documentation for required positions.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 13, Criteria 13.1

"Development, approval, security, administration, and maintenance of examinations and examination question banks are systematically controlled. "

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 13, Criteria 13.2

"Examinations and OJT/laboratory/simulator performance evaluations contain a representative cross-section of knowledge, skills, and abilities required for the position. "

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 13, Criteria 13.3

"Trainees and incumbents who fail examinations or OJT/laboratory/simulator performance evaluations are provided structured remedial training and reevaluated. Minimum progress standards are established. "

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SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 13, Criteria 13.4

"All examination questions are referenced to one or more learning objectives."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 13, Criteria 13.5

"The content of examinations is changed at intervals sufficient to prevent compromise."

FACILITY REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 13, Criteria 13.6

"Examinations and OJT/laboratory/simulator performance evaluations are administered and graded in a consistent manner. Acceptance criteria to be used are defined in advance of the examination and performance evaluation."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.4

"On-the-job training programs are structured, and include appropriate performance measures."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.5

"Written documentation of certification for all operators and supervisors is maintained. The certification examination is sufficiently comprehensive to verify that the trainee can properly perform assigned duties. The minimum acceptable grade is specified in a certification policy statement."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.6

"Retraining and recertification is up-to-date and individuals who fail a recertification examination are taken off their duties until they successfully meet the recertification requirements."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.7

"Recertification on abnormal operation procedures and emergency response is performed annually by means of written and/or oral exams. All other requirements of DOE 5480.20 are recertified biennially using written, oral, and demonstration examinations."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.4.7

"Training and examinations/demonstrations are completed prior to assigning personnel to tasks which require special knowledge and skills."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 5

"Qualifications Process Requirements. Qualification is defined in terms of education, experience, training, and any special requirements necessary for performance of assigned

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responsibilities. Personnel at DOE reactor and non-reactor nuclear facilities shall possess qualifications which provide reasonable assurance that their decisions and actions will ensure that assigned responsibilities are conducted properly and safely.

a. Operating organization shall establish written procedures which clearly define qualification requirements for personnel in each functional level based on the criteria contained in this Order. The shift in relative importance of managerial and technical competence shall be considered by management in establishing these requirements. The need for specific knowledge, skills, and abilities differ for each level in the organization. At the higher functional level, managerial competence is the dominant need, whereas technical competence is the dominant need at other functional levels.

b. Qualification may be granted only after assuring that all requirements (including training and examinations as required) and other specified requirements (e.g., medical examination) have been satisfactorily completed.

c. Qualification shall be valid for a maximum of two years (unless revoked for cause) at which time the person shall be requalified in accordance with paragraph 10 of this Chapter. "

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 6

"Certification Process Requirements. Certification is the process by which contractor facility management endorses and documents, in writing, the satisfactory achievement of qualification of a person for a position.

a. The program leading to certification shall be governed by written procedures which include requirements for documented assessment of the person's qualifications through examinations and operational evaluations.

b. Certification may be granted only after assuring that all qualification requirements (including written and oral examinations and operational evaluations) and other specified requirements (e.g., medical examination) have been satisfactorily completed, and management has assured that the person is capable of safely performing all functions of the position. Satisfactory completion of qualifications which result in certification shall be verified by a person or group other than the person or group that provided the training or the candidate's immediate supervisor. Certification shall be valid for a maximum for two years (unless revoked for cause) at which time the person shall be recertified in accordance with paragraph 10 of this Chapter.

c. Reactor operators, senior reactor operators, and shift supervisors at DOE Category A and B reactors and fissionable material handlers and fissionable material handler supervisors at DOE non-reactor nuclear facilities shall be certified. For all other operators and their immediate supervisors, the operating organization shall identify in the Training Implementation Matrix any additional positions that will be subject to certification (i.e., tritium facility operators, enrichment facility operators, tank farm operators, and their supervisors).

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 8, Sentence 1

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"Written and oral examinations and operational evaluations shall be prepared and administered to demonstrate that certified operators and supervisors possess the required knowledge and skills."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 8.a

"Written procedures shall be established for written and oral examinations and operational evaluations (as required). These procedures shall address examination/evaluation development, approval, security, administration, and maintenance of examination question banks."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 9, Sentences 1 and 2

"Reexamination for certified and qualified operators and supervisors shall include subjects in which the person is expected to be proficient and emphasize those subjects covered by the continuing training program. The contractor shall administer biennial written and oral examinations and operational evaluations, or administer periodic examinations throughout the cycle that cover all continuing training program subject/elements."

4.2.8.2

Qualification and Requalification

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 5, Paragraph 1

"Qualification is defined in terms of education, experience, training, and any special requirements necessary for performance of assigned responsibilities. Personnel at DOE reactor and non-reactor nuclear facilities shall possess qualifications which provide reasonable assurance that their decisions and actions will ensure that assigned responsibilities are conducted properly and safely."

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 5.a

"Operating organizations shall establish written procedures which clearly define qualification requirements for personnel in each functional level based on the criteria contained in this order. The shift in relative importance of managerial and technical competence shall be considered by management in establishing these requirements. The need for specific knowledge, skills, and abilities differ for each level in the organization. At the higher functional level, managerial competence is the dominant need, whereas technical competence is the dominant need at other functional levels."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 5.b

"Qualification may be granted only after assuring that all requirements (including training and examinations as required) and other specified requirements (e.g., medical examination) have been satisfactorily completed."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 5.c

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"Qualification shall be valid for a maximum of two years unless revoked for cause at which time the person shall be requalified in accordance with paragraph 10 of this chapter < DOE 5480.20 >."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 9, Sentences 1 and 2

"Reexamination for certified and qualified operators and supervisors shall include subjects in which the person is expected to be proficient and emphasize those subjects covered by the continuing training program. The contractor shall administer biennial written and oral examinations and operational evaluations, or administer periodic examinations throughout the cycle that cover all continuing training program subject/elements."

SITE REQUIREMENT SOURCE: DOE5480.20 Section 10.a(b)

Due to Union requirements, operators will not be given oral examinations.

"Employees shall not be allowed to function as qualified/certified operators and supervisors if they have not completed all of the requalification program elements within two years. If an operator or supervisor fails a requalification examination, or shows serious job performance deficiencies which indicate that he or she may perform in an unsafe manner, the person shall be removed from activities requiring qualification.

a. Requalification may be regained after completing remedial training designed to correct the deficiency(s) and a reexamination is administered. In addition, recertification of operators and supervisors shall be based on the following:

(1) A review of individual operating performance during the past certification period by either line management, by a committee, or by a person designated by management; and

(2) A current medical examination as required by Chapter II paragraph 3, Chapter III paragraph 3, or Chapter IV paragraph 3.

b. When a certified operator or supervisor has been absent from certification duties for greater than 3 months, but less than 12 months, selected retraining (including written and oral examinations and operational evaluations) shall be given as deemed necessary prior to reassignment to certification duties. The certification base date remains the same as it was before the absence. However, if the absence is greater than 12 months, comprehensive written and oral examinations and operational evaluations (as required of initial candidates) shall be given to determine weak areas. Retraining and reexamination shall be required in areas of weakness, and upon successful completion, a new certification date may be established."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.a

"Criterion 2 -- Personnel Training and Qualification

a. Personnel performing work should be capable of performing their assigned tasks. Qualification requirements should be established for specific job categories, such as operators, designers, managers, supervisors, inspectors, welders, engineers, scientists,

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and independent assessment personnel. Training includes both education in principles and enhancement of skills and practices. Training should ensure the worker understands the processes and tools he/she is using, the extent and sources of variability in those processes and tools, and the degree to which he/she does and does not have control over that variability."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.d

"Personnel performing work that requires special skills or abilities should be qualified prior to performing work. Qualification should include demonstrated proficiency of each candidate and updated periodically thereafter to maintain skills to meet current practices."

4.2.8.3

Certification and Recertification

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 6

"Certification Process Requirements. Certification is the process by which contractor facility management endorses and documents, in writing, the satisfactory achievement of qualification of a person for a position.

- a. The program leading to certification shall be governed by written procedures which include requirements for documented assessment of the person's qualifications through examinations and operational evaluations.*
- b. Certification may be granted only after assuring that all qualification requirements (including written and oral examinations and operational evaluations) and other specified requirements (e.g., medical examination) have been satisfactorily completed, and management has assured that the person is capable of safely performing all functions of the position. Satisfactory completion of qualifications which result in certification shall be verified by a person or group other than the person or group that provided the training or the candidate's immediate supervisor. Certification shall be valid for a maximum for two years (unless revoked for cause) at which time the person shall be recertified in accordance with paragraph 10 of this Chapter.*
- c. Reactor operators, senior reactor operators, and shift supervisors at DOE Category A and B reactors and fissionable material handlers and fissionable material handler supervisors at DOE non-reactor nuclear facilities shall be certified. For all other operators and their immediate supervisors, the operating organization shall identify in the Training Implementation Matrix any additional positions that will be subject to certification (i.e., tritium facility operators, enrichment facility operators, tank farm operators, and their supervisors).*

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 9, Sentences 1 and 2

"Reexamination for certified and qualified operators and supervisors shall include subjects in which the person is expected to be proficient and emphasize those subjects covered by the continuing training program. The contractor shall administer biennial written and oral examinations and operational evaluations, or administer periodic examinations throughout the cycle that cover all continuing training program subject/elements."

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SITE REQUIREMENT SOURCE: DOE5480.20 Section 10.a(b)

"Employees shall not be allowed to function as qualified/certified operators and supervisors if they have not completed all of the requalification program elements within two years. If an operator or supervisor fails a requalification examination, or shows serious job performance deficiencies which indicate that he or she may perform in an unsafe manner, the person shall be removed from activities requiring qualification.

a. Requalification may be regained after completing remedial training designed to correct the deficiency(s) and a reexamination is administered. In addition, recertification of operators and supervisors shall be based on the following:

(1) A review of individual operating performance during the past certification period by either line management, by a committee, or by a person designated by management; and

(2) A current medical examination as required by Chapter II paragraph 3, Chapter III paragraph 3, or Chapter IV paragraph 3.

b. When a certified operator or supervisor has been absent from certification duties for greater than 3 months, but less than 12 months, selected retraining (including written and oral examinations and operational evaluations) shall be given as deemed necessary prior to reassignment to certification duties. The certification base date remains the same as it was before the absence. However, if the absence is greater than 12 months, comprehensive written and oral examinations and operational evaluations (as required of initial candidates) shall be given to determine weak areas. Retraining and reexamination shall be required in areas of weakness, and upon successful completion, a new certification date may be established."

4.2.8.4

Continued Training

Continued training includes provisions for the introduction of new or revised subject matter, needed specialized courses, and reviews of previously presented information as appropriate in order to maintain the proficiency of skills and knowledge required for acceptable performance.

Controls should be established to ensure that a performance based training and qualification program is executed in such a manner that personnel obtain the continued training necessary to fulfill the responsibilities of their assigned positions.

Identification of the training need for continued training of personnel is based upon assessment of position or job duties.

Periodic review of continuing training program should be performed by persons other than those directly responsible for the training.

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.d, Items 1-4

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*Continuing training programs shall be designed and implemented to maintain and enhance the proficiency of operating organization personnel who perform functions associated with safety-related structures, systems, and components identified in the facility Safety Analysis Report.

- (1) These programs shall be structured commensurate with specific position needs, and shall be administered on a biennial cycle.
- (2) Periodic written and oral examinations and/or operational evaluations shall be administered and documented throughout the cycle on material included in the training programs.
- (3) Training and examination covering abnormal facility procedures and emergencies shall be required at least annually for certified operations personnel.
- (4) Continuing training programs for certified operations personnel shall consist of preplanned classroom-type training, On-The-Job training, and operational evaluations on a regular and continuing basis, and shall include, as a minimum, the following as related to job performance:
  - (a) Training in significant facility system and component changes, applicable procedure changes, applicable industry operating experience, selected fundamentals with emphasis on seldom used knowledge and skills necessary to assure safety, and other training as needed to correct identified performance problems;
  - (b) Drills shall be conducted in the facility to enable personnel and operating teams to maintain proficiency in their ability to respond to abnormal or accident situations;
  - (c) Instruction in the use of facility systems to control or mitigate accidents. Such training shall include both classroom-type training and training conducted in the facility;
  - (d) Training, as applicable to the position, in the following subjects where examinations and experience (industry and facility-specific or other evidence indicate emphasis in scope and depth of coverage is needed:
    - 1 Theory and principles of facility operation;
    - 2 General and specific facility operating characteristics;
    - 3 Facility instrumentation and control;
    - 4 Facility protection system;
    - 5 Engineered Safety Features;
    - 6 Normal, abnormal, and emergency procedures;
    - 7 Radiation control and safety; and
    - 8 Technical Specifications/Operational Safety Requirements."

4.2.9

Revision and Update of Training

Controls which address the maintenance, revision, and update of training materials shall be in place. Training shall be evaluated for effectiveness,

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currency, and continued applicability. Periodic reviews of course content and training materials, training approaches and methodologies (performance/skill or knowledge-based), training delivery, and instructional settings shall be evaluated through feedback mechanisms such as course and instructor critiques and successful completion of training by trainees. Trainee mastery of learning objectives and training content shall be evaluated through use of written/oral examination or by performance demonstrated competency.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 5, Criteria 5.4

"The facility-specific list of tasks selected for training and the comparison to training materials are reviewed periodically and updated as necessitated by changes in procedures, facility systems/equipment, job scope, and advances in technology."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 6, Criteria 6.5

"Initial training program content is modified to reflect the results of program review and evaluation by facility and training staff personnel."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.9

"A training system is defined and implemented for accomplishing the following:

- assessing trainee entry-level knowledge and skills;*
- identifying and documenting tasks to be included in training;*
- developing and modifying programs;*
- planning and scheduling training activities;*
- conducting on-the-job training;*
- administering and controlling examinations to minimize the possibility of compromise;*
- exempting personnel from training requirements;*
- providing remedial training;*
- maintaining current training materials; and*
- including lessons learned from in-house and industry operating experience (actual events should be used to reinforce learning)."*

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.a(1)

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"Qualification programs shall be reviewed by contractor facility management and kept up to date to reflect changes to the facility, procedures, regulations, and quality assurance requirements as well as applicable industry operating experience. The concept of training personnel as a team, stressing team communications and interaction, shall be used where job functions require team solutions and activities."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Chapter II, Section A, Criterion 2.f

"Training should be subject to on-going review to determine program and instruction effectiveness. Training and qualification should be upgraded whenever needed improvements or other enhancements are identified."

4.2.10

Extension, Exceptions, and Alterations

A process shall exist for review, approval, and documentation of exceptions or exemptions to training requirements. Initial training programs are developed for persons with entry-level knowledge and skills. Some candidates may already possess the necessary knowledge and skills for their job, and may be excepted from areas of the training program on the basis of prior education, experience, and training. Proficiency testing is the preferred method of excepting persons from specific areas of training. In all cases the requisite examinations to establish qualification shall be completed. A process shall exist for review, approval, and documentation of exceptions or exemptions to training requirements.

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.8

"Training to be completed prior to qualification/certification is clearly defined. Trainee and incumbent exceptions from training may be granted when justified and supported by a documented examination of prior training and experience."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.9

"A training system is defined and implemented for accomplishing the following:

- assessing trainee entry-level knowledge and skills;*
- identifying and documenting tasks to be included in training;*
- developing and modifying programs;*
- planning and scheduling training activities;*
- conducting on-the-job training;*
- administering and controlling examinations to minimize the possibility of compromise;*

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- *exempting personnel from training requirements;*
- *providing remedial training;*
- *maintaining current training materials; and*
- *including lessons learned from in-house and industry operating experience (actual events should be used to reinforce learning)."*

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.8

"Any waivers of training are documented and meet the requirements of DOE 5480.20."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 11.b

"Any exception from certification or qualification requirements shall be approved by contractor management."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 12, Sentence 1

"An extension of certification or qualification may be granted to persons on a case-by-case basis in order to support operational scheduler commitments."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 12.a

"The operating organization shall establish an administrative procedure which addresses extensions to ensure timely completion of requirements associated with certification or qualification. This procedure should include as a minimum:

- (1) Responsibility for approval of the extension;*
- (2) Length of extension;*
- (3) Explanation of circumstances that prevented the person from completing the requirements; and*
- (4) Description of the operational and/or schedular situation which necessitated the extension."*

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 12.b

"Extensions of certification of operators and supervisors shall be approved by the field organization. Extensions of qualification of other personnel shall be approved by contractor facility management."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 14

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"Experience in design, construction, and operational training may be considered applicable nuclear experience and should be evaluated on a case-by-case basis.

a. Where course work is related to job assignments, post-secondary education may be substituted. Formal education shall not be allowed to substitute for more than 50 per cent of the experience requirement unless otherwise stated in Chapters II, III, or IV <DOE 5480.20>.

b. Job-related training in the position sought may qualify as equivalent to nuclear experience on a one-for-one basis for up to a maximum of two years."

4.3

TRAINING CATEGORIES AND TRAINING SUBJECT IDENTIFICATION

Identification and establishment of training categories and specific subjects shall meet the collective needs of Hanford and Tank Farm facility specific personnel, subcontractors, and visitors. Examples of these training categories are shown in sub-element 4.3.1, Training Categories. Other organizational elements at the Tank Farm shall identify their particular training needs to the Training and Qualification Program staff. These include:

- Tank Farm Operations
- Maintenance
- Quality Control and Nondestructive Examination
- Radiation Protection
- Simulator Training
- Tank Farm Facility Emergency Drills and Exercises

A formal process shall be established by the Training Program staff in conjunction with, and in support of, other organizational elements at the Tank Farm to identify positions requiring personnel qualification and/or certification. Qualification documentation such as Qualification Cards shall be generated, updated, and maintained.

This sub-element has two sub-sub-elements; Training Categories and Training Subject Identification. cific requirements for each are listed under the sub-sub-element.

4.3.1

Training Categories

This sub-element addresses the required Tank Farm specific training categories designed to meet the collective needs of the Hanford Site-wide and Tank Farm specific personnel, subcontractor, and visitor training programs. Training categories include:

- General Employee Training (GET)
- Advanced Radworker Training
- Respiratory Protection Training
- Safety Training
- Personnel Protection Training

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- Construction Personnel Training
- Maintenance Personnel Training
- Other Sub-contractor and Visitor Training
- Tank Farm Specific Qualification/Certification Training
- On-the-Job Training (OJT)
- Quality Control Inspector and Nondestructive Examination Technicians
- Offsite Organizations Training
- Tank Farm Emergency Exercises

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.10

"PERFORMANCE OBJECTIVE: Training programs for supervisors, managers, and the technical staff should broaden overall knowledge of processes and equipment and develop supervisory and management skills.

NOTE: This performance objective applies to those managers and supervisors to whom operations, maintenance, engineering, or technical personnel report. Technical personnel are those individuals whose job responsibilities affect the safe and reliable operation of each facility on the site, but who are not operators, maintenance, or quality control inspectors and non-destructive examination technical personnel. Examples of such positions are: engineers, engineering technicians, test/surveillance personnel, and chemists/chemistry technicians."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.10.2

"Training programs for supervisors, managers, and technical personnel are effective in supplementing previous training and experience to prepare individuals for assigned responsibilities. Areas such as the following are included (if applicable to the job):

- *job-related technical areas;*
- *supervisory/management skills and practices;*
- *purchasing and material storage;*
- *modification planning and implementing;*
- *budgeting and cost control;*
- *interfacing with external groups and organizations;*
- *site emergency preparedness; and*
- *in-house and industry operating experience (including actual events)."*

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TC.11

"PERFORMANCE OBJECTIVE: Simulator training and/or facility exercises should be conducted utilizing methods and techniques that are effective in developing and maintaining team and individual knowledge and skills in responding to abnormal and emergency events, and in integrated operations. (Reactors and Nuclear Facilities Only)

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NOTE: The exercises referred to in this performance objective are not events that necessitate implementation of the site or facility emergency plan, but rather are abnormal or emergency situations to which the operations shift is expected to respond."

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TC.11.3

"Simulator and/or facility exercises are effective in developing, reinforcing, and evaluating necessary job-related knowledge and skills in the following areas:

- application of theory to practical situations;
- predicting instrument response and use of instruments available;
- understanding alarm and annunciators and taking appropriate action;
- facility procedures and Technical Specifications/Operational Safety Requirements;
- application of good operating philosophies and practices;
- manipulate the controls in a safe and competent manner;
- diagnosing facility conditions during normal, off-normal, and emergency conditions; and
- communication and ability of the operating crew to work as a team."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3

"PERFORMANCE OBJECTIVE: The nuclear facility operator and supervisor training and certification programs should be based on DOE 5480.20, as applicable, and should develop and improve the knowledge and skills necessary to perform assigned job functions. (Nuclear Facilities Only)"

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.4

"PERFORMANCE OBJECTIVE: General Employee and personnel training programs should ensure that site/facility personnel, subcontractors and visitors have an understanding of their responsibilities and expected safe work practices, and have the knowledge and practical abilities necessary to effectively implement personnel protection practices associated with their work."

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TC.8

"PERFORMANCE OBJECTIVE: The quality control (QC) inspector and nondestructive examination (NDE) technician training and qualification programs should develop and improve the knowledge and skills necessary to perform assigned job functions."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.9

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"PERFORMANCE OBJECTIVE: The radiological protection personnel training and qualification program should develop and improve the knowledge and skills necessary to perform assigned job functions."

4.3.2

Training Subject Identification

A formal process shall be used by the Hanford Training Organization in conjunction with the Tank Farms Facility to identify positions or personnel requiring qualification/certification. The specific training subject material required to qualify an individual for his or her position shall be identified through a training needs assessment and a corresponding job/task analysis (JTA). (See sub-element 4.2.2) Qualification documentation such as Qualification Cards shall be generated on the basis of the JTA, updated, and maintained. Learning objectives shall be designed to encompass minimum job expectations and courses shall be developed to support these learning objectives. (See sub-element 4.2.3)

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.8

"Training to be completed prior to qualification/certification is clearly defined. Trainee and incumbent exceptions from training may be granted when justified and supported by a documented examination of prior training and experience."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 5

"The tasks required for competent job performance are identified, documented, and included in the training program, as appropriate."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 6

"Training program content provides the trainee with the knowledge and skills needed to perform tasks associated with the position for which the training class is being conducted. The content of initial training prepares the trainee to meet the minimum criteria to perform the job for which the candidate is being trained. The content of continuing training maintains and improves incumbent job performance."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 6,

"Tasks are analyzed as necessary, to determine the task's supporting skills and knowledge to be included in training programs."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 6, Criteria 6.3

"Personnel qualified in the position for which training is being developed and conducted help determine training content and confirm its completeness."

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SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 6, Criteria 6.4

"Current facility procedures, technical and professional references, and facility/industry operating experience are used to identify training content facility-specific information for use in developing training materials."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 6, Criteria 6.5

"Initial training program content is modified to reflect the results of program review and evaluation by facility and training staff personnel."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 6, Criteria 6.6

"Continuing training content includes refresher training on selected initial training topics, facility and industry events, facility and procedure modifications, retraining addressing task performance deficiencies, and refresher training on infrequently performed tasks."

SITE REQUIREMENT SOURCE: DOE/EH-0135 TC.8.3

"On-the-job training requirements are identified, completed, and documented prior to assignment to the associated tasks."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.1

"For each work classification, training and qualification/certification requirements based on assigned job tasks are established."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.11

"Training requirements for temporary employees, contract personnel, and transient workers are established and are appropriate for the tasks to be assigned."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.5.2

"On-the-job training requirements are identified, completed, and documented prior to assignment to perform the tasks independently."

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.f

"For those facilities for which a PRA < Probabilistic Risk Assessment > has been performed, initial and continuing training programs for operations and technical support personnel shall include training on the principal results of the PRA. This training shall address the following:

- (1) The importance of facility systems in preventing damage or severe accidents;

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- (2) Locations of all significant amounts of radioactive and other hazardous materials, and measures to prevent its release; and
- (3) The importance of maintaining operational limits and conditions, and the consequences of violating those limits."

FACILITY REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 7.h, Item Paragraphs (1),(2)

"Technical support personnel are typically involved in surveillance, testing, analyzing facility data, planning modifications, program review, and technical problem resolution in their area of expertise (e.g., electrical, mechanical, instrumentation and control, chemistry, health physics, safety, quality assurance, facility engineering).

- (1) Training shall be provided to entry-level personnel who provide technical support to the operating organization.
- (2) The contractor shall develop a list of specific technical support personnel positions that may have direct impact on employee, facility, or public safety. Training in facility-specific subject areas shall be included as appropriate to the position."

4.4

TRAINING RECORDS AND DOCUMENTATION

Training records shall support management information needs and provide appropriate data for each individual on required job training, training completed, qualification status, and certification records. Controls shall be established to ensure that training records are generated, reviewed, approved, and maintained in a retrievable and auditable manner which supports such information needs. Specifications and controls shall exist which ensure the development, security, and maintenance of qualification, requalification, and certification documentation for required positions, and shall include:

- Initial, continuing, and requalification training content
- Instructor qualification
- Examination results
- Certification
- Attendance rosters
- Training exceptions
- Training needs assessment and task analysis

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.7

"Procedures are documented and implemented to ensure that all phases of instructional activities can be conducted reliably and consistently."

SITE REQUIREMENT SOURCE: DOE-TAP-1 Chapter II, Objective 1, Criteria 1.9

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"Training records are maintained in an auditable manner consistent with DOE requirements."

SITE REQUIREMENT SOURCE: DOE/EH-0135 TC.8.3

"On-the-job training requirements are identified, completed, and documented prior to assignment to the associated tasks."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.1.3

"Records of each individual's training participation and performance are maintained (as applicable) in an auditable manner."

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TC.11.1

"Simulator training and/or facility exercise programs are developed, documented, and implemented for initial and continuing training and competency demonstrations."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.5

"Written documentation of certification for all operators and supervisors is maintained. The certification examination is sufficiently comprehensive to verify that the trainee can properly perform assigned duties. The minimum acceptable grade is specified in a certification policy statement."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.3.8

"Any waivers of training are documented and meet the requirements of DOE 5480.20."

SITE REQUIREMENT SOURCE: DOE/EH0135 TC.5.2

"On-the-job training requirements are identified, completed, and documented prior to assignment to perform the tasks independently."

SITE REQUIREMENT SOURCE: DOE5480.20 Chapter I, Section 16

"Contractors shall develop and implement administrative procedures that specify requirements for the maintenance of training, qualification, and certification for operating organization personnel."

- a. *Qualification and certification of personnel shall be documented in an easily auditable format. Individual record documentation shall include:*
- (1) Education, experience, and employment history and most recent health evaluation summary.*
  - (2) Training programs completed and qualification/certification achieved;*
  - (3) Latest completed checklist, graded written examination (with answers corrected as necessary or examination keys), simulator examinations (where*

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applicable), and operational evaluations used for qualification /certification. The record should include an evaluation of the knowledge and performance of the operator/supervisor during operational evaluations;

(4) Lists of questions asked and the examiner's overall evaluations of the operator/supervisor's responses on oral examinations;

(5) Correspondence relating to exceptions to training requirements and extensions of qualification/certification;

(6) Records of qualification for one-time-only special tests or operations; and

(7) Attendance records for required training courses or sessions.

- b. A historical record that documents initial qualification or certification, and applicable information from the above list that verifies the most recent qualification or certification shall be retained in individual records. Superseded information should be handled in accordance with the procedures contained in DOE 1324.2A, RECORDS DISPOSITION. "*

SITE REQUIREMENT SOURCE: DOES700.6C Preamble, Section 9.b(1)(d)

"(d) Criterion 4--Documents and Records. Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained."

FACILITY REQUIREMENT SOURCE: WAC-173 Section 303-330 (3)

"Training records. Training records on current personnel must be kept until closure of the facility. Training records on former employees must be kept for at least three years from the date the employees last worked at the facility. Personnel training records may accompany personnel transferred within the same company."

4.5

ACCREDITATION

A training accreditation program founded upon evaluation and recognition of the performance-based training approach to training shall be used to assist in achieving training and qualification program excellence for the Hanford site training program to include facility level training programs for those facilities that are classified as a high-hazard or moderate hazard operation such as the Tank Farm facility. The accreditation process shall include:

- Initial Training Program self-evaluation**
- Development of a training program accreditation plan**
- Follow-up Tank Farm self-evaluation**
- Accrediting Board decision**
- Maintenance and renewal of accreditation**

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NOTE: Training program accreditation is a DOE requirement levied on the Hanford training organization. The Tank Farm facility is responsible for compliance with the accreditation program requirement to the degree that it fulfills its training and qualification requirements to qualify, certify, and requalify/recertify assigned personnel using approved training materials and procedures.

WESTINGHOUSE HANFORD COMPANY

REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:

**HIGH LEVEL WASTE STORAGE
TANK FARMS/242-A
EVAPORATOR**

FUNCTIONAL AREA:

***Emergency Planning
and Preparedness***

REVISION 0

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5.0 EMERGENCY PLANNING AND PREPAREDNESS

INTRODUCTION

Tank Farms is composed of six nuclear facilities: Single Shell Tank Farm, Double Shell Tank Farm, 242-A Evaporator, 242-S, T Evaporators, Liquid Effluent Retention Facility, and Purgewater Storage Facility. A full and complete state of emergency preparedness is required to support Tank Farms. This document identifies requirements which describe that full and complete state of emergency preparedness.

Emergency planning and preparedness includes the organization and administration of both program management functions and the emergency response organization (ERO); the emergency plan and procedures; ERO and general employee training; facilities, equipment and supplies; classification, notification and reporting; personnel protection including protective actions, recovery and reentry; public information; coordination with offsite agencies; and demonstrating, monitoring and improving performance.

Emergency planning and preparedness exists to ensure the safety and health of workers and the public and to protect property and the environment in the event of an emergency. The technical basis for the emergency planning is provided by the hazards identification and assessment, which is used to determine the extent and scope of emergency planning and preparedness activities.

Emergency planning and preparedness programs comply with the DOE 5500 series of Orders, two of which provide extensive overview and structure. DOE Order 5500.1B, Emergency Management System, discusses programmatic considerations, and DOE Order 5500.3A, Planning and Preparedness for Operational Emergencies, focuses on key operational response elements. In addition, several DOE Emergency Management Guides have been issued which provide valuable detail and clarification.

The following elements reflect an attempt to accommodate and integrate critical information from all these documents and others.

5.1 ORGANIZATION AND ADMINISTRATION

Tank Farms must demonstrate an administrative and management framework which provides both effective emergency planning and preparedness and also an effective emergency response organization capability.

For a program to function effectively there must be an administrative and management framework which defines the program's purpose and relationship to the overall mission, and clearly establishes policies on how to approach and conduct the work. An emergency planning and preparedness program organization structure and chain of command must also be established.

In the case of emergency planning and preparedness, this must be provided both for the staff who conduct ongoing planning and preparedness, and for the Emergency Response Organization which comes together during an emergency response.

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This element establishes the emergency planning and preparedness program and the Emergency Response Organization (ERO) capability by defining and communicating key responsibilities, accountabilities, and authorities as well as management's philosophies, expectations, goals, and standards.

5.1.1

Program Policy

Emergency preparedness program policy is generally determined by senior management and demonstrated throughout emergency planning, preparedness and response programs. Tank Farms emergency plans, procedures, training, drills and exercises must reflect and demonstrate appropriate policy.

Policies must clearly address planning and preparedness scope, responsibilities and limitations, providing management's philosophies, standards, goals, and expectations to facility personnel. Policies must also address emergency response scope, responsibilities and limitations.

This is demonstrated by the existence of written upper tier commitments to:

- Maintain a standard of excellence in performance of planning, preparedness, and response obligations.
- Protect worker and public health and safety and mitigate consequences to the environment.
- Conduct those planning and preparedness activities necessary to ensure a timely effective and efficient response capability.
- Coordinate planning and preparedness activities within DOE, regional Federal agencies, state, tribal and local authorities to ensure effective integrated response.
- Develop program of assessments, audits, appraisals and emergency readiness assurance to ensure emergency planning and preparedness is continuously and appropriately upgraded.
- Respond to emergencies in an effective and timely manner to mitigate consequences and bring the emergency under control.
- Coordinate emergency response with appropriate offsite agencies.
- Operate under an open information policy and provide timely and accurate information to the public and the media in an emergency.

SITE REQUIREMENT SOURCE: DOE5000.3B Section 6

"6. POLICY. It is the policy of the Department to encourage a positive attitude toward reporting occurrences and that occurrences be consistently reported to assure that both DOE and DOE contractor line management, including the Office of the Secretary, are kept fully and currently informed of all events which could:

- (1) affect the health and safety of the public;
- (2) seriously impact the intended purpose of DOE facilities;
- (3) have a noticeable adverse effect on the environment;

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- (4) endanger the health and safety of workers; or
- (5) adversely affect national security or the security interests of the DOE.

It is also the policy of the Department that there be a system for determining appropriate corrective action and for ensuring that such action is effectively taken. Specifically, it is DOE policy to ensure:

- a. Timely identification, categorization, notification, and reporting to DOE management of all Reportable Occurrences at DOE-operated facilities or DOE-owned, contractor-operated facilities;
- b. Timely evaluation of and implementation of appropriate corrective actions;
- c. Maintenance of a central DOE Occurrence Reporting and Processing System (ORPS) data base containing all unclassified Occurrence Reports;
- d. Review of Reportable Occurrences to assess significance, root causes, generic implications, and the need for corrective action; and
- e. Dissemination of Occurrence Reports to DOE operations and facilities to prevent similar occurrences."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 7

"Policy. It is DOE policy to establish and maintain readiness assurance for all portions of the DOE EMS through development of:

- a. Emergency Readiness Assurance Plans (ERAPs) to ensure that emergency plans, implementing procedures, and resources are adequate and sufficiently maintained, exercised, and evaluated; and
- b. Appraisal Programs to assure that stated emergency capabilities are sufficient to implement emergency plans and that appropriate and timely are made in response to needs identified through coordinated emergency planning, resource allocation, training, drills, exercises, and evaluations."

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 8.a

"It is the policy of DOE to:

- a. Develop and maintain an emergency management system capable of responding to and mitigating the consequences resulting from Operational, Energy, and Continuity of Government (COG) Emergencies by:
  - (1) Operating facilities and conducting operations and activities in a responsible manner, thereby assuring the safety and health of workers and members of the general public and protecting the environment;
  - (2) Developing and maintaining emergency planning, preparedness, and response capabilities, as well as effective public and interagency communications, to minimize the consequences to workers, national security, the public, and the environment from incidents involving DOE operation;

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(3) Identifying emergency events, making appropriate notifications, and responding to emergencies in an effective and timely manner to mitigate the consequences and bring the emergency situation under control."

FACILITY REQUIREMENT SOURCE: DOE500.1B Section 8.b

"Use appropriate organizations, plans, and implementing procedures; an integrated program of training, drills, and exercises; and appropriate procurement and maintenance of response resources, to minimize the consequences of emergencies to workers, national security, the public, and the environment by:

- (1) Maintaining consistency in the general approach and nomenclature of emergency planning and preparedness among elements within DOE, other Federal agencies, private industry, and state, tribal, and local authorities;
- (2) Providing support, within resource constraints, to other local, state, Federal agencies, and international organizations, as requested, and in accordance with pertinent Federal regulations and plans, appropriate interagency agreements, and international conventions;"

FACILITY REQUIREMENT SOURCE: DOE500.1B Section 8.b(3)-(4)

"(3) Complying with the provisions of applicable legislation, implementing regulations, Executive Orders, and Federal plans, such as:

- (a) The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA);
- (b) The Resource Conservation and Recovery Act (RCRA);
- (c) The Emergency Planning and Community Right-to-Know Act (EPCRA);
- (d) Executive Orders 12580 and 12656;
- (e) Title 40 CFR 300, NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN;
- (f) Title 40 CFR 302, DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION; and
- (g) The various Federal Plans for responses to manmade and natural disasters (e.g., the Federal Radiological Emergency Response Plan, the Federal Radiological Monitoring and Assessment Plan, and the Federal Response Plan).

(4) Establishing and maintaining readiness assurance for all aspects of the DOE EMS through development of Emergency Readiness Assurance Plans (ERAPs) and Appraisal Programs."

FACILITY REQUIREMENT SOURCE: DOE500.2B Section 8 General

"Policy. It is DOE policy to promptly and accurately categorize all occurrences as part of the comprehensive reporting system outlined in DOE 5000.3A, determine the appropriate category and class of events categorized as emergencies, and make appropriate notifications and reports.

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Emergencies are continually monitored for the purpose of reclassification as they evolve towards increased or decreased severity."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 8 General

"Policy. It is DOE policy to:

- a. Operate facilities and conduct operations and activities in a responsible manner, thereby ensuring the safety and health of workers and members of the general public, as well as protecting the environment;
- b. Develop and maintain emergency planning, preparedness, and response capabilities, as well as effective public and interagency communications, in order to minimize the consequences to workers, national security, the public, and the environment from incidents involving DOE operations;
- c. Respond to emergencies in an effective and timely manner to mitigate the consequences and bring the emergency situation under control;
- d. Maintain consistency in the general approach and nomenclature of emergency planning and preparedness among elements within DOE, other Federal agencies, private industry, and state, tribal, and local authorities;
- e. Provide support, within resource constraints, to other local, state, tribal, and Federal agencies and international organizations, as requested, and in accordance with pertinent Federal regulations and plans, appropriate interagency agreements, and international conventions; and
- f. Comply with the provisions of applicable legislation, implementing regulations, Executive Orders, and Federal plans, such as:
  - (1) The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Superfund Amendments and Reauthorization Act of 1986 (SARA);
  - (2) The Resource Conservation and Recovery Act (RCRA);
  - (3) The Emergency Planning and Community Right-to-Know Act (EPCRA);
  - (4) Executive Orders 12580 and 12656;
  - (5) Title 40 CFR 300, NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN;
  - (6) Title 40 CFR 302, DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION; and
  - (7) The various Federal Plans for responses to manmade and natural"

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SITE REQUIREMENT SOURCE: DOE5500.4A Section 5

"POLICY. It is the policy of DOE to provide accurate and timely information to the public by the most expeditious means whenever possible in all situations involving the Department's response to any emergency that may affect onsite personnel, public health and safety, and the environment. DOE operates under an open information policy in the release of accident or other emergency information in conformance with established DOE information policies, the Freedom of Information Act and the Privacy Act, except for the release of information classified for national security purposes or otherwise legally prohibited from release. DOE is responsible for public affairs actions taken in emergencies at DOE facilities. Such actions shall be coordinated with other agencies when appropriate."

5.1.2

Duties, Responsibilities, and Authorities for Program Management

Tank Farms must ensure that the duties, responsibilities and authorities for managing the emergency planning and preparedness program efforts are defined and implemented.

Emergency planning and preparedness responsibilities are multiple and wide-ranging, requiring active participation from many organizations and functional areas. To ensure these activities are focused and organized, an emergency planning and preparedness team must be assembled to create an emergency plan, determine and acquire resources necessary to implement that plan, and manage the system required to support continued preparedness.

This emergency planning and preparedness organization must be clearly defined, with responsibilities, authorities, and chain of command specified.

This can be accomplished by producing:

- Statement of emergency planning and preparedness program mission, functions and authorities.
- Organization charts indicating management structure and functional interrelationships.
- Position descriptions for all personnel.
- Communications flow chart which describes information flow up, down and out.

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 10.w(1)

"w. The Heads of Field Elements shall:

(1) Establish and maintain an effective, integrated emergency preparedness program consistent with the scope of operations, potential emergencies, and requirements in the DOE 5500 series and other applicable Orders for those facilities under their cognizance. Coordinate plans and procedures, through the cognizant PSO, with the DEO to ensure that appropriate and coordinated DOE notifications and reports are made;"

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 10.w(2)

"(2) In coordination with the cognizant PSO, establish and maintain necessary resources to implement the requirements of this Order and their integrated emergency preparedness

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program for facilities under their jurisdiction; and ensure that annual budgets and mission and function statements reflect implementation policies and decisions;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(1)

"e. The Heads of DOE Field Elements shall:

(1) Implement the directives and criteria for emergency management;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(2)

"(2) Establish organizational structure and administrative mechanisms to ensure line organization responsibility and accountability for emergency management. Coordinate the development and implementation of each contractor's emergency management program;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(4)

"(4) Ensure that emergency management programs are established, maintained, and commensurate with the respective potential hazards;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(8)

"(7) Establish a field level emergency management program to coordinate the development and implementation of contractor emergency management programs. The purpose of this coordination is to ensure effective and consistent emergency management systems as prescribed by DOE 5500.1B; and"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(8)(a)

"(a) Develop, implement, and maintain an emergency management program commensurate with the facility's potential hazards;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.a

"General Requirements. As part of the EMS, DOE elements and DOE contractors shall establish and maintain emergency management consisting of plans and procedures for response to Operation Emergencies involving or affecting DOE facilities, including DOE transportation activities. These emergency management programs must be commensurate with the assessment of potential hazards and targets and must include the following elements: Emergency Response organization, Offsite Response Interfaces, Operational Emergency Event Classes, Notification, Consequence Assessment, Protective Actions, Medical Support, Recovery and Reentry, Public Information, Emergency Facilities and Equipment, Training, Drills and Exercises, and managers/administrators of DOE- or contractors-operated facilities shall establish Emergency Readiness Assurance Programs, as set forth in DOE 5500.10. DOE emergency management programs must comply with, but are not limited to, the requirements for hazards assessment, program elements, and documentation set forth in this Order."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(13)

"Program Administration. Provisions must be in place for the continued administration of the emergency management program as follows:

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(a) Each PSO, each Head of Field Element, and each contractor facility subject to this Order shall designate an individual to administer the emergency management program for their program, Field Element, or facility. This individual's responsibilities shall include development and maintenance of the emergency plan, development of the Emergency Readiness Assurance Plan (ERAP), and annual updates, development and conduct of training and exercise programs, coordination of assessment activities, development of related documentation, and coordination of emergency resources.

(b) The emergency plan and implementing procedures shall be controlled distribution documents and shall be annually reviewed and updated.

(c) An internal assessment of all aspects of the emergency management program must be conducted annually by persons not directly responsible for administration of the program or response activity being assessed."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(13)(a)

"(13) Program Administration. Provisions must be in place for the continued administration of the emergency management program as follows:

(a) Each PSO, each Head of Field Element, and each contractor facility subject to this Order shall designate an individual to administer the emergency management program for their program, Field Element, or facility. This individual's responsibilities shall include development and maintenance of the emergency plan, development of the Emergency Readiness Assurance Plan (ERAP) and annual updates, development and conduct of training and exercise programs, coordination of assessment activities, development of related documentation, and coordination of emergency resources."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 5.b.

"b. This Order extensively revises the previous criteria used to establish and maintain emergency planning, preparedness, and response programs for DOE facilities. Emergency planning and preparedness programs are expanded herein to cover all DOE facilities, not just reactor and non-reactor nuclear facilities. The Order identifies 13 elements for an emergency management program:

- (1) Emergency Response Organization;
- (2) Offsite Response Interfaces;
- (3) Operational Emergency Event Classes;
- (4) Notification;
- (5) Consequence Assessment;
- (6) Protective Actions;
- (7) Medical Support;
- (8) Recovery and Reentry;

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- (9) Public Information;
- (10) Emergency Facilities and Equipment;
- (11) Training;
- (12) Drills and Exercises;
- (13) Program Administration."

5.1.3

Duties, Responsibilities, and Authorities for ERO

The emergency planning and preparedness team is distinct from the Emergency Response Organization (ERO). The first team plans and prepares and the ERO responds. Tank Farms must ensure that the Emergency Response Organization also has clearly defined duties, responsibilities and authorities.

The emergency planning and preparedness team must plan for response to a variety of emergencies from limited in scope to large and complex. The skills and resources needed to mitigate and control an emergency situation could vary widely. Hence the ERO must be capable of responding to the worst-case-scenario accident, with provision for response to lesser events.

This can be accomplished for the ERO, just as for the emergency planning and preparedness team, by producing:

- Statement of ERO program mission, functions and authorities.
- ERO organization charts indicating management structure and functional interrelationships.
- Position descriptions for all personnel.
- Communications flow chart which describes information flow up, down, and out.

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.52 (d)

"Content of contingency plan. The plan must list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see 265.55), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.55

"Emergency coordinator. At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility

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layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 8.a.(2)

"(2) Appropriate immediate response(s) shall be taken by contractor operations personnel to stabilize or return the facility/operation to a safe condition."

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(19)

"(19) Ensure that effective communications and coordination are maintained with the HQ EOC regarding emergencies involving or affecting facilities or materials under DOE jurisdiction or requiring DOE assistance;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)2

"2 Ensure immediate mitigative and corrective emergency response actions and appropriate protective action recommendations to minimize the consequences of the emergency, protect worker and public health and safety, provide security, and ensure the continuance of such actions until the emergency is resolved;"

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 10.w(4)

"(4) Ensure that effective management is provided for response to any emergency affecting facilities under their jurisdiction;"

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 10.w(5)

"(5) Ensure that immediate emergency response actions are initiated, to include shutdown or other operating actions, for maximum onsite and public health and safety. If practical, prior to shutdown or as time permits, notify the cognizant PSO and the HQ EMT of the decision to start shutdown operations;"

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 9.c(2)

"DOE has developed a three-tiered organizational approach that follows the line management chain within the Department for responding to Operational Emergencies. Responsibility begins at the facility level, rises through the cognizant DOE Field Element, and culminates at the cognizant HQ Program Office.

(a) The manager of the facility, whether a DOE or DOE contractor employee, is responsible for:

- 1 Initial identification and categorization of an event;
- 2 Prompt initial notification of an Operational Emergency, including notifications to local, state, tribal, and Federal authorities offsite as required by DOE Orders, such as DOE 5500.2B and 5000.3A, the provisions of legislation, such as CERCLA, RCRA, and EPCRA, or implementing regulations, such as 40 CFR 302;

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- 3 Taking immediate mitigative and corrective actions to minimize the consequences to worker and public health and safety and environment. Mitigative and corrective actions include recommending appropriate protective actions to local authorities;
- 4 Continuing such actions until the emergency is resolved;
- 5 Informing DOE line management about all aspect of response to the emergency; and
- 6 Determining the root cause of the emergency and taking appropriate corrective actions following the emergency."

SITE REQUIREMENT SOURCE: DOE5500.2B Section 10.c(5)(d)

"(d) Directs and takes appropriate emergency response actions within the site boundary under its control and at the scene of the emergency."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(1)

"(1) Emergency Response Organization. An element with clearly specified authorities and responsibilities for emergency response and mitigation which must be established and maintained for each facility. It must have overall responsibility for the initial and ongoing response to, and mitigation of, an emergency, and must:

- (a) Perform, but not be limited to, the following functions: event categorization, determination of the emergency class, notification, provision of protective action recommendations, management and decision making, control of onsite emergency activities, consequence assessment, protective actions, medical support, public information, activation and coordination of onsite response resources, security, communications, administrative support, and coordination and liaison with offsite support and response organizations;
- (b) Consist of an adequate number of experienced and trained personnel, including designated alternates, for timely performance of the functions identified above;
- (c) Assign emergency response responsibilities and tasks to specific individuals identified by name, title, or position; and
- (d) Integrate local agencies and organizations which would be relied upon to provide onsite response services and include those contractor and private organizations that may be relied upon to provide specialized expertise and assistance to all emergency planning, preparedness and readiness assurance activities."

SITE REQUIREMENT SOURCE: WAC-173-303-360 Section (1)

"360 (1) Emergency coordinator.

At all times, there must be at least one employee either on the facility premises or on call with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, required by WAC 173-303-350(2), all operations and activities at the facility, the location and

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properties of all wastes handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan."

5.2

PLAN AND PROCEDURES

A comprehensive Tank Farms emergency plan must be developed which addresses all the necessary elements of an effective emergency response. This document provides the background, overview and scope of the emergency planning and preparedness effort. Implementing procedures must then be developed which are consistent and compatible with the plan and which provide detailed information and instructions. Both the emergency plan and the implementing procedures must be reviewed and updated annually.

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(10)

"(10) Ensure that emergency plans and procedures are prepared and updated, at least annually, for all facilities under their jurisdiction and integrated within the overall Field Element emergency preparedness program, to include:"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(10)(a)

"(a) Identify and analyze preventive and mitigative response actions for potential emergencies, to include Emergency Action Levels (EALs) and designation of Emergency Planning Zones (EPZs), as appropriate;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(10)(b)

"(b) Review and concur with emergency plans and the appropriate analytical basis for plan content. Submit copies, and any subsequent revisions, to the cognizant PSO for review and final approval, with the DEO providing concurrence;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(10)(f)

"(f) Establish a formal transmittal and filing system for ensuring that controlled copies of emergency plans, procedures, and associated documents are up to date and accessible at locations where they may be needed during an emergency."

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(12)

"(12) Ensure that emergency preparedness documents, such as plans, procedures, scenarios, and assessments are reviewed for classified and unclassified controlled nuclear information;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)

"(a) Prepare and maintain emergency plans, procedures, and technical resource capabilities that:"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)6

"6 Comply with the requirements of applicable legislation, such as EPCRA and RCRA, and implementing regulations, such as 40 CFR 302; and"

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SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(c)

"(c) Provide emergency plans and procedures, through intermediate level line management organization (e.g., area office), if any, to the cognizant Field Element for review and concurrence;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(9)

"(9) Submit proposed EPZs and supporting documentation to the appropriate PSO for approval, with the DEO providing concurrence;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(13)(b)

"(b) The emergency plan and implementing procedures shall be controlled distribution documents and shall be annually reviewed and updated."

5.2.1

Technical Basis

The Tank Farms emergency plan and implementing procedures must be based on a site specific hazards assessment which considers a broad range of emergency events that could affect the facility. This information may be derived from existing documentation such as SARs, PRAs, EISs, and vulnerability and target analyses.

The Tank Farms emergency planning program must be demonstrably commensurate with potential hazards and targets.

The technical basis for the Tank Farms emergency planning program can be demonstrated by:

- A hazards assessment methodology which describes how the technical basis is derived, including assumptions, models and evaluation techniques.
- Documentation of the site specific hazards assessment results and emergency planning implications including an Emergency Planning Zone (EPZ).

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(21)

"(21) Ensure that hazards assessments for emergency planning purposes are adequately performed and documented;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(3)

"(3) Ensure that hazards assessments are adequately performed and documented;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(4)

"(4) Ensure that emergency management programs are established, maintained, and commensurate with the respective potential hazards;"

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FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(8)(b)

"(b) Perform and document hazards assessments;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.b

"Hazards Assessment.

(1) A hazards assessment shall be prepared and maintained for each facility and shall be used for emergency planning purposes. This hazards assessment provides the technical basis for the emergency management program and shall include information sufficient to determine the scope and extent of the program elements comprising the emergency management program for the respective facility. This hazards assessment shall be derived from information provided by the assessment of the potential DOE requirements. The use of vulnerability and target analyses may include sensitive or classified information which will need special handling.

(2) The hazards assessment shall consider the broad range of emergency events that could affect the facility. These emergency events may result from operation of the facility; accidents; hostile attack, terrorism, sabotage, or malevolent acts; or earthquakes or other natural phenomena. The hazards assessment shall include descriptions of those hazards relevant to potential Operational Emergencies and characterizations of the potential consequences on workers, the public, and the environment. For each potential Operational Emergency events, accident mechanisms, equipment or system failures, event indications, contributing events, source terms, material release characteristics, topography, environmental transport and diffusion, and exposure considerations.

(3) Assumptions, methodology, models, and evaluation techniques used in the hazards assessment shall be fully documented. Also, the hazards assessment shall include a determination of the size of the EPZ, i.e., the area surrounding the facility for which special planning and preparedness efforts are required to ensure that prompt and effective protective actions can be taken to minimize the risk to workers, the general public, and the environment."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.b(4)-(5)

"(4) DOE requirements for assessment of hazards, primarily in DOE 5481.1B and 5630.11, are longstanding. Safety Analysis Reports, as defined by DOE 5481.1B, address identification of hazards, probability of occurrence and predicted consequences of hazards expressed in administrative controls to prevent or mitigate potential accidents, and the potential accidents associated with the hazards. Safety Analysis Reports provide analyses and consequences of the worst credible and/or Design Basis Accidents (DBAs). These analyses are used to determine the design and performance specifications of safety features. DBAs and their associated assumptions can be used as a starting point for emergency response planning. However, their use for emergency response conservative assumptions that may not be appropriate. A spectrum of potential accidents ranging from minor to beyond-the-design basis should be postulated and realistically analyzed. The emergency response plan must be responsive to this full spectrum of accidents. The vulnerability and target analyses performed in accordance with DOE 5630.11 are used to determine the appropriate level of protection for each identified target. The analyses and level of protection are then documented in facility-specific master Safeguards and Security Agreements (MSSAs).

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(5) Other hazards assessments are documented in Material Safety Data Sheets; Safety Assessments; Spill Prevention, Control and Countermeasure Plans; Pre-Fire Plans; Environmental Assessments and Impact Statements (EAs and EISs); PRAs; Severe Accident Analyses; and the Emergency and Hazardous Chemical Inventory Forms and Toxic Chemical Release Forms, prepared pursuant to the requirements of the Emergency Planning and Community Right-to-Know Act (SARA Title III)."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 5.c.

"c. The technical basis for the emergency management program is provided by the hazards assessment, which is used to determine the extent and scope of emergency planning and preparedness activities. This hazards assessment is to be derived from existing documentation such as: Safety Analysis Reports; vulnerability and target analyses; probabilistic risk assessments (PRAs); environmental assessments; environmental impact statements; and other assessment, planning, and material inventory documents."

SITE REQUIREMENT SOURCE: WAC-173-303-355 Section (2)

"355 (2) Appropriate and generally accepted computer models should be utilized to determine the impacts of a potential catastrophic air release due to fire, explosion, or other accidental releases of hazardous constituents. Evacuation plans prepared pursuant to WAC 173-303-350(3)(d) shall include those effected persons and areas identified through these modelling efforts."

5.2.2

Emergency Plan

Emergency plans describe provisions for response to and mitigation of accidents. The Tank Farms emergency plan must address background, overview, scope, and the thirteen requirements specified in DOE 5500.3A, and must be annually reviewed, updated, coordinated, approved, and fully exercised.

The requirements for an emergency plan can be met by:

- Documentation that the emergency plan is commensurate with the hazards described in the site specific hazards assessment.
- Confirmation that the plan adequately addresses the 13 requirements specified in DOE 5500.3A. These requirements are Emergency Response Organization, Offsite Response Interfaces, Operational Emergency Event Classes, Notification, Consequence Assessment, Protective Actions, Medical Support, Recovery and Reentry, Public Information, Emergency Facilities and Equipment, Training, Drills and Exercises, and Program Administration.
- Evidence that the emergency plan incorporates response plans for specific hazards such as fire, spills, etc.
- Evidence that the emergency plan is annually reviewed, updated, coordinated, and approved.
- Evidence that the emergency plan is annually tested in a full scale exercise.

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- Evidence that the emergency plan can respond to and resolve conditions indicating a possible loss of nuclear materials.
- Evidence that OSHA and CERCLA requirements are addressed.

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.38 (a)(1)

"Employee emergency plans and fire preventions. Emergency action plan -- Scope and application. This paragraph (a) applies to all emergency action plans required by a particular OSHA standard. The emergency action plan shall be in writing (except as provided in the last sentence of paragraph (a)(5)(iii) of this section) and shall cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.38 (a)(2)

"Employee emergency plans and fire preventions. Emergency action plan. Elements. The following elements, at a minimum, shall be included in the plan:

- (i) Emergency escape procedures and emergency escape route assignments;
- (ii) Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
- (iii) Procedures to account for all employees after emergency evacuation has been completed;
- (iv) Rescue and medical duties for those employees who are to perform them;
- (v) the preferred means of reporting fires and other emergencies; and
- (vi) Names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.38 (a)(4)

"Employee emergency plans and fire preventions. Emergency action plan. Evacuation. The employer shall establish in the emergency action plan the types of evacuation to be used in emergency circumstances."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.51

"Purpose and implementation of contingency plan.

- (a) Each owner or operator must have a contingency plan for his facility. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

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(b) The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste constituents which could threaten human health or the environment."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.52 (a)

"Content of contingency plan. The contingency plan must describe the actions facility personnel must take to comply with 265.51 and 265.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.52 (f)

"Content of contingency plan. The plan must include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires)."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.53 (a)

"Copies of contingency plan. Maintained at the facility;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(10)(e)

"(e) Ensure that emergency plans satisfy all requirements of DOE Orders; legislation, such as EPCRA and RCRA; and applicable implementing regulations, such as 40 CFR 302;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.d(1)

"Documentation. PSOs, Heads of Field Elements, and all managers/administrators of a DOE- or contractor-operated facility shall develop and maintain an emergency plan and associated procedures to document their emergency management program. These documents must be controlled distribution documents. The documentation shall include:

(1) An emergency plan which describes the provisions for response to an operational emergency.

(a) The plan must contain information to describe each element of the emergency management program, describe the overall picture of emergency response capabilities, and include material necessary for the understanding of the plans (e.g., diagrams, illustrations, maps, and transportation routes). The emergency plan must reference procedures and supporting material (i.e., PRAs, MSSAs, EAs, EISs, etc.) which may be used by emergency response personnel.

(b) The emergency plan must describe the EPZs applicable to the facility to include topographical features, demographic information, transportation routes, land use, major industrial facilities, public facilities, and jurisdictional boundaries.

(c) The emergency plan must be consistent with other plans for similar DOE facilities and coordinated and compatible with other applicable DOE, Federal, state, tribal, and

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local emergency plans. The emergency plan must integrate the response plans for specific incidents (e.g., fire medical, security, and natural phenomena)."

SITE REQUIREMENT SOURCE: WAC-173-303-350 General

"350 (1) Purpose. The purpose of this section and WAC 173-303-360 is to lessen the potential impact on the public health and the environment in the event of an emergency circumstance, including a fire, explosion, or unplanned sudden or nonsudden release of dangerous waste or dangerous waste constituents to air, soil, surface water, or ground water by a facility. A contingency plan must be developed to lessen the potential impacts of such emergency circumstances, and the plan shall be implemented immediately in such emergency circumstances.

350 (2) Contingency plan. Each owner or operator must have a contingency plan at his facility for use in emergencies or sudden or nonsudden releases which threaten the public health and the environment. If the owner or operator has already prepared a spill prevention control and countermeasures (SPCC) plan in accordance with Part 112 of Title 40 CFR or Part 1510 of chapter V, or some other emergency or contingency plan, he need only amend that plan to incorporate dangerous waste management provisions that are sufficient to comply with the requirements of this section and WAC 173-303-360.

350 (3) The contingency plan must contain the following:

350 (3) (a) A description of the actions which facility personnel must take to comply with this section and WAC 173-303-360;

350 (3) (b) A description of the actions which shall be taken in the event that a dangerous waste shipment, which is damaged or otherwise presents a hazard to the public health and the environment, arrives at the facility, and is not acceptable to the owner or operator, but cannot be transported, pursuant to the requirements of WAC 173-303-370(5), Manifest system, reasons for not accepting dangerous waste shipments;

350 (3) (c) A description of the arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services;

350 (3) (d) A current list of names, addresses, and phone numbers (office and home) of all persons qualified to act as the emergency coordinator required under WAC 173-303-360(1). Where more than one person is listed, one must be named as primary emergency coordinator, and others must be listed in the order in which they will assume responsibility as alternates. For new facilities only, this list may be provided to the department at the time of facility certification (as required by WAC 173-303-810 (14)(a)(i)), rather than as part of the permit application;

350 (3) (e) A list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities; and

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350 (3) (f) An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.

350 (4) Copies of contingency plan. A copy of the contingency plan and all revisions to the plan shall be:

350 (4) (a) Maintained at the facility; and

350 (4) (b) Submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services.

350 (5) Amendments. The owner or operator shall review and immediately amend the contingency plan, if necessary, whenever:

350 (5) (a) Applicable regulations or the facility permit are revised;

350 (5) (b) The plan fails in an emergency;

350 (5) (c) The facility changes (in its design, construction, operation, maintenance, or other circumstances) in a way that materially increases the potential for fires, explosions, or releases of dangerous waste or dangerous waste constituents, or in a way that changes the response necessary in an emergency;

350 (5) (d) The list of emergency coordinators changes; or

350 (5) (e) The list of emergency equipment changes."

SITE REQUIREMENT SOURCE: WAC-296-62 Section 3140(8)(a)(b)

"Emergency response program.

(a) Emergency response plan. An emergency response plan shall be developed and implemented by all employers. Such plans need not duplicate any of the subjects fully addressed in the employer's contingency planning required by permits, such as those issued by the United States Environmental Protection Agency, provided that the contingency plan is made part of the emergency response plan. The emergency response plan shall be a written portion of the employer's safety and health program required in this section. Employers who will evacuate their employees from the worksite requirements of WAC 296-62-3140(1) if they provide an emergency action plan complying with WAC 296-24-567.

(b) Elements of an emergency response plan. The employer shall develop an emergency response plan for emergencies which shall address, as a minimum, the following areas to the extent that they are not addressed in any specific program required in this section:

- (i) Preemergency planning and coordination with outside parties.
- (ii) Personnel roles, lines of authority, and communication.
- (iii) Emergency recognition and prevention.
- (iv) Safe distances and places of refuge.
- (v) Site security and control.
- (vi) Evacuation routes and procedures.
- (vii) Decontamination procedures.

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- (viii) Emergency medical treatment and first aid.
- (ix) Emergency alerting and response procedures.
- (x) Critique of response and follow-up.
- (xi) PE and emergency equipment."

5.2.3

Emergency Implementing Procedures

Tank Farms emergency procedures must contain the detailed information and specific instructions to implement the Emergency Plan (E Plan), and must be consistent and compatible with the E Plan. The procedures must include both emergency implementing procedures which are created to implement the E plan, and those standard operating procedures (chemistry, radiological protection, fire protection, etc.) which would be used in an emergency. Like the plan, emergency procedures must be annually reviewed, updated, coordinated, approved and exercised.

The requirements for emergency procedures can be met by:

- Documentation that emergency procedures (Emergency Plan Implementing Procedures and designated Standard Operating Procedures) contain the detailed information and specific instructions, prerequisites and precautions necessary to implement the E plan.
- Documentation that the emergency procedures are consistent with and compatible with the E plan.
- Evidence that procedures are annually reviewed, updated, coordinated, approved and exercised.

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (a)

"Emergency procedures. Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

- (1) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and
- (2) Notify appropriate State or local agencies with designated response roles if their help is needed."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(10)(b)

"(b) The staffing, operation, and response activities pertaining to the EOC, and each additional emergency facility, must be predetermined and documented in procedures for a timely and coordinated overall emergency response. The EOC must be habitable following an emergency (e.g., shielded, ventilated) or an alternate EOC must be available if the primary EOC becomes uninhabitable."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.d(2)

"Procedures which describe how the emergency plan shall be implemented.

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(a) Procedures must consist of special emergency plan implementing procedures (e.g., EALs, event categorization, notification, EOC operation) as well as other procedures currently in use (e.g., equipment operation, chemistry controls, radiological monitoring, and maintenance) which would be utilized in, or associated with, emergency response activities.

(b) Procedures must be consistent and compatible with the emergency plan. Emergency procedures must contain the detailed information and the specific instructions needed to carry out the emergency plan during a drill, exercise, or actual emergency. Procedures must clearly and concisely identify the individual(s) responsible for performance of response activities and delineate the specific actions/steps to be performed. Procedures must identify the relevant prerequisites (i.e., conditions which must exist prior to specific actions being performed) and precautions (regarding personnel safety and equipment operation) associated with the response actions."

SITE REQUIREMENT SOURCE: WAC-173-303-360 Section (2)

"360 (2) Emergency procedures. The following procedures shall be implemented in the event of an emergency.

360 (2) (a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

360 (2) (i) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

360 (2) (ii) Notify appropriate state or local agencies with designated response roles if their help is needed.

360 (2) (b) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials.

360 (2) (c) Concurrently, the emergency coordinator shall assess possible hazards to human health and the environment (considering direct, indirect, immediate, and long-term effects) that may result from the release, fire, or explosion.

360 (2) (d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health or the environment, he must report his findings as follows:

360 (2) (i) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

360 (2) (ii) He must immediately notify the department and either the government official designated as the on-scene coordinator, or the National Response Center (using their 24-hour toll free number (800) 424-8802).

360 (2) (e) His assessment report must include:

360 (2) (i) Name and telephone number of reporter;

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360 (2) (ii) Name and address of facility;

360 (2) (iii) Time and type of incident (e.g., release, fire);

360 (2) (iv) Name and quantity of material(s) involved, to the extent known;

306 (2) (v) The extent of injuries, if any; and

360 (2) (vi) The possible hazards to human health or the environment outside the facility.

360 (2) (f) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

360 (2) (g) If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

360 (2) (h) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

360 (2) (i) The emergency coordinator must ensure that, in the affected area(s) of the facility:

360 (2) (i) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

360 (2) (ii) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

360 (2) (j) The owner or operator must notify the department, and appropriate local authorities, that the facility is in compliance with

360 (2) (i) of this subsection before operations are resumed in the affected area(s) of the facility.

360 (2) (k) The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within fifteen days after the incident, he must submit a written report on the incident to the department. The report must include:

360 (2) (i) Name, address, and telephone number of the owner or operator;

360 (2) (ii) Name, address, and telephone number of the facility;

360 (2) (iii) Date, time, and type of incident (e.g., fire, explosion);

360 (2) (iv) Name and quantity of material(s) involved;

360 (2) (v) The extent of injuries, if any;

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360 (2) (vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable;

360 (2) (vii) Estimated quantity and disposition of recovered material that resulted from the incident;

360 (2) (viii) Cause of incident; and

360 (2) (ix) Description of corrective action taken to prevent reoccurrence of the incident."

SITE REQUIREMENT SOURCE: WAC-296-62 Section 3140(8)(d)

"Procedures for handling emergency incidents.

- (i) In addition to the elements for the emergency response plan required in (b) of this subsection, the following elements shall be included for emergency response plans to the extent that they do not repeat any information already contained in the emergency response plan:
  - (A) Site topography, layout, and prevailing weather conditions.
  - (B) Procedures for reporting incidents to local, state, and federal governmental agencies.
- (ii) The emergency response plan shall be compatible and integrated with the disaster, fire, and/or emergency response plans of local, state, and federal agencies.
- (iii) The emergency response plan shall be rehearsed regularly as part of the overall training program for site operations.
- (iv) The site emergency response plan shall be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.
- (v) An employee alarm system shall be installed in accordance with WAC 296-24-631 to notify employees of an emergency situation; to stop work activities if necessary; to lower background noise in order to speed communication; and to begin emergency procedures.
- (vi) Based upon the information available at time of the emergency, the employer shall evaluate the incident and the site response capabilities and proceed with the appropriate steps to implement the site emergency response plan."

5.3

TRAINING

A formal training program must be in place which addresses three specific groups. Everyone on plant site needs to know basic emergency planning information, and this is normally provided through General Employee Training (GET).

The Tank Farms Emergency Response Organization needs detailed training on the chain of command, the E plan, their procedures, facilities, equipment, and functional interfaces, among other topics. This training must be conducted to the standards set by Performance Based Training requirements.

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Training is also offered to offsite responders, emphasizing facility specific information.

5.3.1

EP&P Content for General Employee Training

General Employee Training (GET) is normally developed and conducted by site training staff and meets the standards set by Performance Based Training requirements. Emergency planning and preparedness staff ensure accurate information is provided for inclusion in the instructor materials. This includes all information that workers onsite might need to know including how they would be notified of an emergency situation (sirens, etc.), what actions they might need to take (assembly and evacuation), as well as other site specific information.

Tank Farms emergency planners may contribute information for inclusion in the GET course, and all Tank Farms personnel must participate in GET training as dictated by site training standards.

This can be demonstrated by providing:

- Training records showing EP portions of GET lesson plans and attendance records.
- Evidence of annually updated instructional information provided to Training by emergency planning and preparedness staff.

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(11)(a)

"Training must be provided annually to workers who may have to take protective actions (e.g., assembly, evacuation) in the event of an emergency."

5.3.2

Emergency Response Organization (ERO) Training

The Tank Farms Emergency Response Organization must receive training on the E plan, emergency procedures, emergency operations facilities and equipment, chain of command and functional interfaces, and other topics as detailed by emergency planning and preparedness staff. Training is conducted according to the standards established by the Training Program. Training is provided at least annually for each member of the Tank Farms ERO. Training is revised annually to reflect changes in the plan and procedures and lessons learned.

Adequate and appropriate ERO training can be demonstrated by:

- Evidence of instructor qualifications.
- Instructor lesson plans for modules taught.
- Attendance records showing each ERO member has completed annual training.
- Evidence of annual revisions and updates to lesson plans reflecting changes in plans and procedures and lessons learned.

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.38 (a)(5)

"Employee emergency plans and fire preventions. Emergency action plan. Training.

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- (i) Before implementing the emergency action plan, the employer shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.
- (ii) The employer shall review the plan with each employee covered by the plan at the following times:
  - (A) Initially when the plan is developed,
  - (B) Whenever the employee's responsibilities or designated actions under the plan change, and
  - (C) Whenever the plan is changed.
- (iii) The employer shall review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept at the workplace and made available for employee review. For those employers with 10 or fewer employees the plan may be communicated orally to employees and the employer need not maintain a written plan."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(11)(b)

"A formal training program must be in place for the instruction and qualification of all personnel (i.e., primary and alternate) comprising the facility emergency response organization to include initial training and annual retraining for both onsite and offsite incidents, including transportation incidents;

1 All training must be systematic and performance based, i.e., based on an analysis of tasks to be performed during an emergency, and developed with performance objectives, emphasis on team training, and facility-specific emergency response scenarios.

2 Annual retraining shall include training on weaknesses detected during drills and exercises, changes to plans and procedures, and lessons learned from emergencies at DOE and other industrial facilities."

FACILITY REQUIREMENT SOURCE: WAC-296-62 Section 3140(8)(c)

"Training.

- (i) Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn, and procedures for handling emergency incidents.

Exception 1: An employer need not train all employees to the degree specified if the employer divides the workforce in a manner such that a sufficient number of employees who have responsibility to control emergencies have the training specified, and all other employees, who may first respond to an emergency incident, have sufficient awareness training to recognize that an emergency response situation exists and that they are

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instructed in that case to summon the fully trained employees and not attempt to control activities for which they are not trained.

Exception 2: An employer need not train all employees to the degree specified if arrangements have been made in advance for an outside fully trained emergency response team to respond in a reasonable period and all employees, who may come to the incident first, have sufficient awareness training to recognize that an emergency response situation exists and they have been instructed to call the designated outside fully trained emergency response team for assistance.

- (ii) Employee members of TSD facility emergency response organizations shall be trained to a level of competence in the recognition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk from safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the safe operating procedures to be used at the incident scene; in the techniques of coordination with other employees to minimize risks; in the appropriate response to over exposure from health hazards or injury to themselves and other employees; and in the recognition of subsequent symptoms which may result from over exposures.
- (iii) The employer shall certify that each covered employee has attended successfully completed the training required in this subsection, or shall certify the employee's competency at least yearly. The method used to demonstrate competency for certification of training shall be recorded and maintained by the employer."

5.3.3

Offsite Training

Tank Farms must ensure that offsite responders receive periodic training as appropriate. This training is offered to provide information necessary for effective planning, including background on Tank Farms specific hazards, procedures which would be used in determining offsite protective action recommendations, possible assistance that might be requested from offsite authorities, and how response coordination would take place, etc.

Adequate and appropriate offsite training can be demonstrated by:

- Evidence of instructor qualifications.
- Instructor lesson plans for modules taught.
- Attendance records.
- Evidence of revisions and updates to lesson plans reflecting changes in plans and procedures.

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(11)(c)

"Offsite state, tribal, and local emergency response organizations must be offered facility-specific orientation training and information on hazards and emergency response annually. Information on hazards and emergency response must also be provided to the media and the public, as appropriate."

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5.4

FACILITIES, EQUIPMENT, AND RESOURCES

Tank Farms must have available adequate facilities, equipment and resources to address the hazards identified.

In order to respond effectively and efficiently to an emergency the Emergency Response Organization needs to function from facilities which are designed or predesignated to support response activities. Special equipment and supplies are required. Resources to establish and maintain these physical assets must be identified during the preparedness stage, and available during the response stage.

Tank Farms must ensure that the need for emergency facilities, equipment and supplies is predetermined, and they are acquired, established, tested, surveiled, and maintained.

5.4.1

Emergency Response Facilities

Tank Farms must predetermine and make appropriate arrangements for emergency response facilities.

An emergency is generally managed on two fronts. A "Forward Command Center" is located at or near the accident scene and focuses on immediate mitigation activities. An Emergency Operations Center (EOC) provides direction and support as required, and takes charge of all other emergency response activities.

The Emergency Operations Center is a fixed facility. It is designed and arranged so that the Emergency Response Organization (ERO) can assess, evaluate, conduct or direct mitigation, notification, communication, coordination, recovery and reentry activities.

Additional emergency response facilities may be needed for technical support, security, assembly, decontamination, medical activities, process control, chemical/radiological analyses, etc.

Provision for emergency response facilities can be demonstrated by:

- Definition of the performance objectives for each facility.
- Definition of the functional criteria for each facility.
- Definition of the design requirements for each facility.
- Provision of the criteria for assessing facility adequacy.
- Documentation of facility surveillance and maintenance.

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 10.w(7)

"(7) Establish and maintain an EOC to respond to emergency events. Every DOE EOC shall be equipped in accordance with standardized communication, photo/video, and automatic data processing support specified by the DEO;"

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SITE REQUIREMENT SOURCE: DOE5500.2B Section 10.c(1)

"c. Heads of Field Elements shall:

(1) Upon determination of the need for an EOC, establish and maintain an EOC for emergency events. DOE EOCs shall be equipped with communication, photo/video, and automated data processing support in accordance with standards specified by the DEO;"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 10.c(5)(a)

"(5) Ensure that the Manager/Administrator of each DOE- or contractor-operated facility, as the first or operating level of the line management structure, shall:

(a) Upon determination of the need for an EOC, establishes and maintains an EOC for emergency events. The contractor EOC shall be equipped with communication, photo/video, and automated data processing support in accordance with standards specified by the DEO;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(10)(a)

"(10) Emergency Facilities and Equipment. Facilities and equipment, adequate to support emergency response, must be established and maintained as follows:

(a) An EOC must be established from which the emergency response organization assesses, evaluates, coordinates, and directs emergency response activities and communicates within DOE and with other Federal, state, tribal, and local response organizations. Additional emergency facilities must be designated commensurate with the scope and characteristics of response activities (e.g., technical support, security, personnel assembly, decontamination, medical services, process control, and chemical/radiological analyses)."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(10)(b)

"(b) The staffing, operation, and response activities pertaining to the EOC, and each additional emergency facility, must be predetermined and documented in procedures for a timely and coordinated overall emergency response. The EOC must be habitable following an emergency (e.g., shielded, ventilated) or an alternate EOC must be available if the primary EOC becomes uninhabitable."

5.4.2

Emergency Equipment and Supplies

Tank Farms must provide, maintain and utilize emergency equipment and supplies.

In addition to space, the Emergency Response Organization requires equipment and supplies to conduct response activities. Each key response function must be assessed to determine what equipment and supplies are needed, and Tank Farms must make provisions to ensure said equipment and supplies are available, and operable.

Provision for emergency equipment and supplies can be demonstrated by:

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- Results of functional review.
- Criteria for assessing equipment and supply adequacy.
- Documentation of equipment and supply surveillance and maintenance.

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.134 (a)(7) Last Sentence

"Respiratory protection. Permissible practice. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.134 (f)(2)(iv)

"Maintenance and care of respirators. A record shall be kept of inspection dates and findings for respirators maintained for emergency use."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.134 (f)(5)(iii)

"Maintenance and care of respirators. Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "use and care" instructions usually mounted inside the carrying case lid."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.52 (e)

"Content of contingency plan. The plan must include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(10)(d)

"(d) Adequate equipment and supplies must be available and operable for emergency response personnel to carry out their respective duties and responsibilities."

5.4.3

Communications Equipment

An effective, efficient response is dependent on communication of data, instructions, needs, and status. Communication is vital among technical experts, among decision makers, between onsite and offsite authorities, between responders and the public. Tank Farms must ensure that necessary communications equipment is predetermined, available, and operable.

Provision for emergency communications can be demonstrated by:

- Results of functional review.
- Redundant communications system.
- Criteria for assessing adequacy of primary and backup communications capability.

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- Evidence that communications systems are in place, sufficient, regularly tested, properly maintained, and operable.

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.165 (b)(1)

"Employee alarm systems. General requirements. The employee alarm system shall provide warning for necessary emergency action as called for in the emergency action plan, or for reaction time for safe escape of employees from the workplace or the immediate work area, or both."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.165 (b)(2)

"Employee Alarm systems. General requirements. The employee alarm shall be capable of being perceived above ambient noise or light levels by all employees in the affected portions of the workplace. Tactile devices may be used to alert those employees who would audible or visual alarm."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.165 (b)(3)

"Employee Alarm systems. General requirements. The employee alarm shall be distinctive and recognizable as a signal to evacuate the work area or to perform actions designated under the emergency action plan."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.165 (b)(4)

"Employee Alarm systems. General requirements. The employer shall explain to each employee the preferred means of reporting emergencies, such as manual pull box alarms, public address systems, radio or telephones. The employer shall post emergency telephone numbers near telephones, or employee notice boards, and other conspicuous locations when telephones serve as a means of reporting emergencies. Where a communication system also serves as the employee alarm system, all emergency messages shall have priority over all non-emergency messages."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.165 (b)(5)

"Employee Alarm systems. General requirements. The employer shall establish procedures for sounding emergency alarms in the workplace. For those employers with 10 or fewer employees in a particular workplace, direct voice communication is an acceptable procedure for sounding the alarm provided all employees can hear the alarm. Such workplaces need not have a back-up system."

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.38 (a)(3)

"Employee emergency plans and fire preventions. Emergency action plan. Alarm System. (i) The employer shall establish an employee alarm system which complies with 1910.165. (ii) If the employee alarm system is used for alerting fire brigade members, or for other purposes, a distinctive signal for each purpose shall be used."

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FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(10)(c)

"(c) Primary and backup means of communications must be available and capable of operating with other DOE elements, and with other Federal, state, tribal, and local response organizations."

SITE REQUIREMENT SOURCE: WAC-173-303-340 Section (1)

"Facilities shall be designed, constructed, maintained and operated to minimize the possibility of fire, explosion, or any unplanned sudden or nonsudden release of dangerous waste or dangerous waste constituents to air, soil, or surface or ground water which could threaten the public health or the environment. This section describes preparations and preventive measures which help avoid or mitigate such situations.

340 (1) Required equipment. All facilities must be equipped with the following, unless it can be demonstrated to the department that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

340 (1) (a) An internal communications or alarm system capable of providing immediate emergency instruction to facility personnel;

340 (1) (b) A device, such as a telephone or a hand-held, two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or state or local emergency response teams;

340 (1) (c) Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment; and

340 (1) (d) Water at adequate volume and pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems. All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency."

SITE REQUIREMENT SOURCE: WAC-173-303-340 Section (2)

"340 (2) Access to communications or alarms. Personnel must have immediate access to the signalling devices described in the situations below:

340 (2) (a) Whenever dangerous waste is being poured, mixed, spread, or otherwise handled, all personnel involved must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required in subsection (1) of this section;

340 (2) (b) If there is ever just one employee on the premises while the facility is operating, he must have immediate access to a device, such as a telephone or a hand-held, two-way radio, capable of summoning external emergency assistance, unless such a device is not required in subsection (1) of this section."

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5.5

CLASSIFICATION, NOTIFICATION, AND REPORTING

Tank Farms personnel must be prepared to identify, classify, notify and report on an accident.

Emergency response begins with the recognition of a non-normal event or accident situation. Certain prescribed actions need to take place promptly. First, a person qualified to do so must determine the type and significance of the event/accident. This is classification/categorization. Then a series of strictly regulated notifications must be conducted based upon the severity of the event/accident. Timely and accurate reports must be prepared, and information must be preserved and provided to those responsible for compiling these reports.

The Occurrence Reporting Program is responsible for identifying the standards which describe a mature classification, notification, and reporting process. OR issues the sitewide administrative procedures which prescribe these activities, for emergency situations as well as non-emergency abnormal events.

DOE Orders on Emergency Planning, Preparedness and Response (the 5500 series) also address these responsibilities in detail. Clear definition and understanding of the interfaces between the emergency planning staff and the Occurrence Reporting system is essential to ensure adequate and integrated response to events/accidents.

SITE REQUIREMENT SOURCE: DOE5000.3B Section 9.h.(2)

"(2) Concurring in the facility specific procedures and examples of reportable occurrences and categorizations to meet the requirements of this Order;"

SITE REQUIREMENT SOURCE: DOE5000.3B Section 9.h.(1)

"h. DOE Facility Representatives, shall carry out their responsibilities as noted in this Order which include but are not limited to:

- (1) Ensuring that contractors under their cognizance prepare and promulgate procedures for notification and reporting that are compatible with and serve the policies of this Order;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(17)

"Develop appropriate plans and procedures for timely and accurate determination of the emergency class, notification, and reporting of emergency events;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)1

"Ensure the proper identification, categorization, and notification of emergencies or other reportable occurrences to line management and the HQ EOC, in accordance with applicable DOE policies and requirements;"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 10.c(2)

"(2) Develop appropriate plans and procedures for timely and accurate determination of the emergency class, notification and reporting of emergency events, and oversight of contractor notifications to HQ, state, tribal, local, and regional Federal authorities. Plans and procedures

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shall be approved by the cognizant PSO, in consultation with the DEO to ensure that appropriate and coordinated DOE notifications and reports to Congressional offices, other Federal agencies, and the media are effectively addressed;"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 10.c(5)(b)

"Develops appropriate plans and procedures for timely and accurate determination of the emergency class, notification, and reporting of emergency events. Plans and procedures shall be approved by the cognizant Field Element and forwarded to the cognizant PSO for final approval, in consultation with the DEO, to ensure that appropriate and coordinated DOE notifications and reports to Congressional offices, other Federal agencies, and the media are effectively addressed;"

5.5.1

Event Classification

Tank Farms emergency planning and preparedness staff must ensure the E plan and procedures reflect OR guidance on event classification so that qualified personnel can promptly determine the nature and severity of an event/accident, and use Emergency Action Levels (EALs) to classify it appropriately. Personnel must also be able to utilize EALs to reclassify, upgrade or downgrade an event.

Provision for event classification can be demonstrated by:

- Ensuring E plan and procedures on event classification reflect OR guidance.
- Development of Emergency Action Level (EAL) procedure which enables response personnel to initially identify and accurately classify an event. Procedure must also address upgrade, downgrade and event reclassification.

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (b)

"Emergency procedures. Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount and a real extent of any released materials. He may do this by observation or review of facility records or manifests and, if necessary, by chemical analysis."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 7.a.

"Categorization. Categorization of Reportable Occurrences shall be made as soon as practical and, in all cases, within 2 hours of identification. If categorization is not clear, then the occurrence shall be initially categorized at the higher level being considered and DOE notified in accordance with this Order. The occurrence categorization shall either be elevated, maintained, or lowered as information is made available. The categories of Reportable Occurrences are:"

SITE REQUIREMENT SOURCE: DOE5000.3B Section 7.a.(1)

"(1) Emergencies. Emergencies are the most serious occurrences and require an increased alert status for onsite personnel and, in specified cases, for offsite authorities. The detailed definitions, criteria, and classifications of emergencies and appropriate emergency responses to

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be taken are provided in DOE 5500.2B. The types of occurrences that are to be categorized as emergencies are:

- (a) Any unintentional nuclear criticality that results or could result in actual or potential facility damage or release of radioactive material to the environment;
- (b) Any actual or potential release of material to the environment which results or could result in significant offsite consequences;
- (c) Any natural or man-made event posing an actual or potential threat to the integrity of the facility that results or could result in significant offsite consequences;
- (d) Any event in process or having occurred which involves an actual or potential substantial degradation of the level of safety of the facility that results or could result in significant offsite consequences;
- (e) Any safeguards or security event which is an actual or potential threat to DOE operations, facilities, or personnel, and results or could result in significant effects on the public health and safety and/or on national security; or
- (f) Any event which requires activation of the site emergency plan."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 8.a.(1)

"Occurrence Categorization and Notification Process.

The facility staff and operators shall identify and promptly notify the Facility Manager of abnormal events and conditions and record and archive all information pertaining to such occurrences."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 8.a.(3)

"The Facility Manager shall categorize the occurrence as required in Paragraph 7a of this Order utilizing the facility specific procedures developed in accordance with Paragraph 8d(2) of this Order. For occurrences resulting from and directly related to a previously identified cause which is currently documented in a nonfinalized Occurrence Report, the Facility Manager, with concurrence from the Facility Representative and Program Manager, may submit a 10-Day Update Report in lieu of a new Occurrence Report."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 8.a.(4)

"(4) The Facility Manager shall be available at all times to carry out the requirements of this Order."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a(1)

"Emergency classes for each category of DOE emergency are defined as follows:

- a. Operational Emergencies.

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(1) Operational Emergencies are significant accidents, incidents, events, or natural phenomena which have, or can potentially, seriously degrade the safety or security of DOE facilities. Operational Emergencies apply to DOE reactors and other DOE facilities (nuclear and non-nuclear) involved with hazardous materials; DOE-controlled nuclear weapons, components, or test devices; DOE safeguards and security events; and transportation accidents involving hazardous material under DOE control."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a(2)

"The three classes of Operational Emergencies are defined as follows, listed in order of increasing severity: Alert, Site Area Emergency, and General Emergency. Differentiation of these classes by severity is for the purpose of specifying appropriate emergency actions, including required response activities and notifications, commensurate with the degree of hazard presented by the event. Less severe events are reported through the "Unusual Occurrence" and "Off-Normal Occurrence" process described in DOE 5000.3A."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a(2)(a)

"Alert. Declaration of an Operational Alert requires the availability of personnel and resources to:

- 1 Provide continuous assessment of pertinent information for DOE decision makers, offsite authorities, the public, and other appropriate entities;
- 2 Conduct appropriate assessments, investigations, or preliminary or confirmatory sampling and monitoring;
- 3 Mitigate the severity of the occurrence or its consequences; and
- 4 Prepare for other response actions should the situation become more serious, requiring emergency response organizations to mobilize or activate resources."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(a)4b

"Non-reactor Facilities. An Alert shall be declared when events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the facility. Any release of hazardous materials (radiological or non-radiological) is expected to be limited to small fractions of the appropriate PAG or ERPG exposure limits."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(a)4c

"Nuclear Weapons, Components, or Test Devices. An Alert shall be declared when events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the weapon, component, or test device. The degradation would not involve an immediate threat to the facility nor to the general public."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(a)4d

"Safeguards and Security. An Alert shall be declared when events are in progress, have occurred, or are anticipated which could involve an actual or potential substantial degradation in the level of protection of the facility or the loss or possible loss of Special Nuclear Material

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(SNM). Pre-emergency conditions which warrant increased safeguards and security measures shall be reported in accordance with DOE 5000.3A, Attachment 2 Group 5, procedures for non-emergency occurrences."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(a)4e

"Transportation. An Alert shall be declared when events are in progress or have occurred which involve an actual or potential substantial degradation of the safety of the shipment. Any release of hazardous materials (radiological or non-radiological) is expected to be limited to small fractions of the appropriate PAG or ERPG exposure levels."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)

"Site Area Emergency. Declaration of an Operational Site Area Emergency requires initiation of predetermined protective actions for onsite personnel and the notification and assembly of emergency response personnel and equipment to activate response centers to provide:

- 1 Continuous assessment of pertinent information for DOE decision makers, offsite authorities, and other appropriate entities;
- 2 Establish communications, consultation, and liaison with offsite authorities;
- 3 Provide information to the public through offsite authorities and the media;
- 4 Conduct or assist in any evacuations and sheltering;
- 5 Conduct appropriate assessments, investigations, or sampling and monitoring;
- 6 Mitigate the severity of the actual or potential consequences; and
- 7 Mobilize appropriate emergency response groups or security forces for immediate dispatch should the situation become more serious."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)7.b

"Non-reactor Facilities. A Site Area Emergency shall be declared when events are in progress or have occurred which involve actual or likely major failures of facility functions needed for protection of workers and the public. Any release of hazardous materials (radiological or non-radiological) is expected to exceed appropriate PAG or ERPG exposure levels onsite but is not expected to exceed the appropriate PAGs or ERPGs offsite."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)7.c

"Nuclear Weapons, Components, or Test Devices. A Site Area Emergency shall be declared when events are in progress or have occurred which involve actual or potential safety or security system failures that threaten the integrity of the unit and may adversely impact the safety and health of the workers in the immediate area, but not personnel in a general public area."

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FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)7.d

"Safeguards and Security. A Site Area Emergency shall be declared when events are in progress or have occurred which involve actual malevolent acts resulting in major failures of protective systems."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(b)7.e

"Transportation. A Site Area Emergency shall be declared when events are in progress or have occurred which involve an actual or potential major reduction in the safety of the shipment. Any release of hazardous materials (radiological or non-radiological) is expected to exceed appropriate PAG or ERPG exposure levels in the immediate vicinity of the accident or incident but is not expected to exceed the appropriate PAGs or ERPGs in a general public area."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(c)

"General Emergency. Declaration of an Operational General Emergency requires the notification, mobilization, and dispatch of all appropriate emergency response personnel and equipment including appropriate DOE national response assets to:

- 1 Activate the response centers and other emergency assets to provide continuous assessment of information;
- 2 Establish communications, consultation, and liaison with offsite authorities and recommend predetermined protective actions for the public;
- 3 Provide information to the public through offsite authorities and the media;
- 4 Conduct of assist evacuations and sheltering;
- 5 Conduct appropriate assessments, investigations, or sampling and monitoring;
- 6 Mitigate the severity of the actual or potential consequences; and
- 7 Mobilize and dispatch appropriate emergency response groups or security forces."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(c)7.b

"Non-reactor Facilities. A General Emergency shall be declared when events are in progress or have occurred which involve actual or imminent catastrophic reduction of facility safety systems with potential for loss of containment or confinement integrity, (e.g., release of large quantities of hazardous materials to the environs) and/or release of hazardous materials (radiological or non-radiological) that can reasonably be expected to exceed appropriate PAG or ERPG exposure levels offsite."

FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(c)7.d

"Safeguards and Security. A General Emergency shall be declared when events are in progress or have occurred which involve malevolent action resulting in catastrophic degradation of protection systems that could lead to substantial offsite impacts."

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FACILITY REQUIREMENT SOURCE: DOE5500.2B Section 11.a.2(c)7.e

"Transportation. A General Emergency shall be declared when events have occurred which involve an actual or imminent catastrophic reduction in the safety of the shipment. Any release of hazardous materials (radiological or non-radiological) is expected to exceed appropriate PAG or ERPG exposure levels in a general public area. If the event has occurred on a DOE site, the release is expected to exceed appropriate PAG or ERPG exposure levels offsite. "

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(3)

"Operational Emergency Event Classes. Operational Emergencies involving or affecting DOE facilities must be characterized as one of the Operational Emergency classes (e.g., Alert, Site Area Emergency, or General Emergency) in accordance with DOE 5500.2B. EALs, the specific criteria used to recognize and categorize events, must be developed for the spectrum of potential Operational Emergencies identified by the hazards assessment. EALs form the basis for notification and participation of offsite organizations and for determining what and when protective measures will be implemented. EAL initiating conditions (i.e., individual instrument readings, equipment status, valve positions, parameter values, onsite and/or offsite monitor readings, etc.) must be specifically identified in procedures and must be observable and recognizable in a timely manner by responsible personnel. The EALs and related information must be consistent and integrated with the emergency plans and procedures of offsite Federal, state, tribal, and local organizations, and should be reviewed annually, as appropriate, by all parties involved in response activities."

5.5.2

Notifications

Notifications are crucial in an emergency situation. They allow for movement of people away from the threat and mobilization of resources to combat the emergency.

Tank Farms emergency planning and preparedness staff must ensure the E plan and procedures reflect OR guidance on notifications. Tank Farms emergency response personnel must be able to use notification procedures to conduct accurate, timely and complete initial and follow up notifications.

The ability to conduct appropriate emergency notifications can be demonstrated by:

- Developing procedures which provide for accurate, timely and complete initial and follow up notifications to all designated parties.
- Ensuring E plan and notification procedures reflect OR guidance.

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (d)

"Emergency procedures. If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows:

- (1) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

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(2) He must immediately notify either the government official designated as the on-scene coordinator for that geographical area (in the applicable regional contingency plan under part 1510 of this title), or the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include:

- (i) Name and telephone number of reporter;
- (ii) Name and address of facility;
- (iii) Time and type of incident (e.g., release, fire);
- (iv) Name and quantity of material(s) involved, to the extent known;
- (v) The extent of injuries, if any; and
- (vi) The possible hazards to human health, or the environment, outside the facility."

FACILITY REQUIREMENT SOURCE: 40CFR302 Part 302.6 (a)

"Notification requirements. Any person in charge of a vessel or an offshore or an onshore facility shall, as soon as he has knowledge of any release (other than a federally permitted release or application of a pesticide) of a hazardous substance from such vessel or facility in a quantity equal to or exceeding the reportable quantity determined by this part in any 24-hour period, immediately notify the National Response Center (800) 424-8802; in Washington, D.C. (202) 426-2675."

FACILITY REQUIREMENT SOURCE: 40CFR355 Part 355.40 (a)(1)

"Emergency release notification. Applicability. The requirements of this section apply to any facility: (i) at which a hazardous chemical is produced, used or stored and (ii) at which there is release of a reportable quantity of any extremely hazardous substance or CERCLA hazardous substance."

FACILITY REQUIREMENT SOURCE: 40CFR355 Part 355.40 (b)(1)

"Emergency release notification. Notice requirements. The owner or operator of a facility subject to this section shall immediately notify the community emergency coordinator for the local emergency planning committee of any area likely to be affected by the release and the State emergency response commission of any State likely to be affected by the release. If there is no local emergency planning committee, notification shall be provided under this section to relevant local emergency response personnel."

FACILITY REQUIREMENT SOURCE: 40CFR355 Part 355.40 (b)(2)

"Emergency release notification. Notice requirements. The notice required under this section shall include the following to the extent known at the time of notice and so long as no delay in notice or emergency response results:

- (i) The chemical name or identity of any substance involved in the release.
- (ii) An indication of whether the substance is an extremely hazardous substance.
- (iii) An estimate of the quantity of any such substance that was released into the environment.
- (iv) The time and duration of the release.
- (v) The medium or media into which the release occurred.

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- (vi) Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals.
- (vii) Proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordination pursuant to the emergency plan).
- (viii) The names and telephone number of the person or persons to be contacted for further information."

FACILITY REQUIREMENT SOURCE: 40CFR355 Part 355.40 (b)(3)

"Emergency release notification. Notice requirements. As soon as practicable after a release which requires notice under (b)(1) of this section, such owner or operator shall provide a written follow-up emergency notice (or notices, as more information becomes available) setting forth and updating the information required under paragraph (b)(2) of this section, and including additional information with respect to:

- (i) Actions taken to respond to and contain the release, and,
- (ii) Any known or anticipated acute or chronic health risks associated with the release, and,
- (iii) Where appropriate, advice regarding medical attention necessary for exposed individuals."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 7.b.

"Notification. The emphasis for both oral and documented notifications is on providing clear and succinct descriptions of the occurrence, and brief, concise descriptions of both the operating conditions of the facility at the time of the occurrence and the immediate actions taken, including results, if known. Requirements for oral and documented notification of Reportable Occurrences are as follows:

(1) **Emergencies.** Oral notification to DOE and offsite authorities of emergencies shall be made within 15 minutes or less of categorization. However, recognizing that the majority of, if not all, emergency occurrences will result in generating external interest, oral notification to DOE should be accomplished as soon as possible. Emergency criteria are defined by DOE Order 5500.2B. Facility implementation procedures for DOE Order 5500.2B should identify the specific criteria for emergencies. These should be included or referenced in the facility specific procedures developed as required by Paragraph 8d of this Order. If the requirements of DOE Order 5500.2B have been implemented, then all oral notification requirements shall be satisfied in accordance with DOE Order 5500.2B. A Notification Report shall be prepared and submitted as soon as practical but, in all cases, before the close of the next business day from the time of categorization (not to exceed 80 hours).

(2) **Unusual Occurrences.** Oral notification to DOE of unusual occurrences shall be as soon as sufficient information is obtained to indicate the general nature and extent of the occurrence but, in all cases, within 2 hours of categorization. However, oral notification to DOE should be accomplished as soon as possible for those occurrences judiciously determined to likely generate external interest. A Notification Report shall be prepared and submitted before the close of the next business day from the time of categorization (not to exceed 80 hours).

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(3) **Off-Normal Occurrences.** For off-normal occurrences, oral notification to DOE is not mandatory; however, a Notification Report shall be prepared and submitted before the close of the next business day from the time of categorization (not to exceed 80 hours).

(4) **Categorization Changes.** Any changes in categorization shall be documented in a 10-Day Occurrence Report and submitted before the close of the next business day from the time of recategorization (not to exceed 80 hours). A justification for the new categorization shall be included in the report."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 7.b.(1)

"(1) **Emergencies.** Oral notification to DOE and offsite authorities of emergencies shall be made within 15 minutes or less of categorization. However, recognizing that the majority of, if not all, emergency occurrences will result in generating external interest, oral notification to DOE should be accomplished as soon as possible. Emergency criteria are defined by DOE Order 5500.2B. Facility implementation procedures for DOE Order 5500.2B should identify the specific criteria for emergencies. These should be included or referenced in the facility specific procedures developed as required by Paragraph 8d of this Order. If the requirements of DOE Order 5500.2B have been implemented, then all oral notification requirements shall be satisfied in accordance with DOE Order 5500.2B. A Notification Report shall be prepared and submitted as soon as practical but, in all cases, before the close of the next business day from the time of categorization (not to exceed 80 hours)."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 7.c.

"Follow-up Notification. In addition to the initial oral notifications required in Paragraph 7b, follow-up oral notification shall also be made to DOE for any of the following:

(1) Any further degradation in the level of safety of the facility or other worsening conditions, including those that require the declaration of any emergency class as defined by DOE Order 5500.2B, if such a declaration has not been previously made;

(2) Any change from one emergency class (as defined in DOE Order 5500.2B) or category (as defined by this Order) to another; or

(3) Termination of an emergency."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 8.a.(5)

"For oral notification, the Facility Manager shall simultaneously contact the DOE Facility Representative and the Headquarters (HQ) Emergency Operations Center (EOC) through which the DOE Program Manager and any other necessary program staff can be located and direct communications links with the Facility Manager established. The HQ EOC function here is to facilitate communications within line organizations and to record and archive conversations. To facilitate this archival function, the oral notification shall include as many of the required report fields [see discussion in Attachment II, Section 1, regarding Fields 1-18 identified with an asterisk (*)] as known at the time of the oral notification with particular emphasis on clear and succinct descriptions of the occurrence (Field 15); brief, concise descriptions of the operating conditions of the facility at the time of the occurrence (Field 16); and immediate actions taken, including results, if known (Field 18). The Facility Manager may use the local Field/Site EOC to expedite establishing the direct communication link required above. To

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promote common understanding, the use of jargon should be avoided and uncommon or facility/ site-specific abbreviations and acronyms should be fully described in oral notifications and spelled out in subsequent written reports."

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(18)

"(18) Oversee the contractor notifications to HQ and state, tribal, local, and regional Federal authorities;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(20)

"(20) Establish criteria for the pre-authorization of DOE and contractor emergency management personnel to disseminate notifications and emergency information;"

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 10.w(3)

"(3) Ensure that facilities and intermediate level line management organizations (e.g., area offices) possess the capability to promptly and simultaneously notify line management and the HQ PM, through the HQ EOC, of emergencies and other reportable occurrences at facilities under their cognizance, in accordance with applicable DOE notification and reporting policies;"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 10.c(3)

"(3) Ensure that effective communications and coordination are maintained with the HQ EOC regarding emergencies involving or affecting facilities or materials under DOE jurisdiction or requiring DOE assistance;"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 10.c(4)

"(4) Establish criteria for the pre-authorization of DOE and contractor emergency management personnel to disseminate notifications and emergency information; and"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 12 General

"12. NOTIFICATION REQUIREMENTS. All communications concerning an emergency shall be reviewed for classified information and unclassified controlled nuclear information prior to transmittal and shall be protected accordingly."

SITE REQUIREMENT SOURCE: DOE5500.2B Section 12.b(2)(a)

"(2) The Manager/Administrator of each DOE- or contractor-operated facility shall:

(a) Concurrently notify the HQ EOC and the Field Element of the emergency as soon as crucial information is available but no later than 15 minutes after categorization of the event as an Emergency;"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 12.b(2)(b)

"(b) Concurrently notify the HQ EOC and the Field Element of all changes in the emergency class within 15 minutes of the redesignation;"

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SITE REQUIREMENT SOURCE: DOE5500.2B Section 12.b(2)(c)

"(c) Concurrently notify the HQ EOC and the Field Element within 15 minutes of the occurrence of an emergency involving a complete nuclear weapon or test device and transmit follow-up reports as soon as possible thereafter;"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 12.b(2)(e)

"(e) Notify appropriate regional Federal, state, tribal, and local agencies in accordance with the approved emergency plans and procedures and appropriate memoranda of understanding or other written agreements. Verbal notifications shall be made within 15 minutes of the categorization of the event as an emergency."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(4)

"Notification. Notification and communication of emergency information must be consistent with the requirements of DOE 5000.3A and 5500.2B. Provisions must be in place for prompt initial notification of appropriate DOE elements and other Federal, state, tribal, and local organizations, and for continuing effective communication among the response organizations throughout an emergency. The content and format of the initial notification and follow-up messages must be prearranged and standardized in the emergency plan. The handling of classified and/or controlled information during an emergency must be in accordance with established procedures and DOE requirements. "

SITE REQUIREMENT SOURCE: WAC-173-303-360 Section (2)(d)

"360 (2) (d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health or the environment, he must report his findings as follows:

360 (2) (i) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

360 (2) (ii) He must immediately notify the department and either the government official designated as the on-scene coordinator, or the National Response Center (using their 24-hour toll free number (800) 424-8802).

360 (2) (e) His assessment report must include:

360 (2) (i) Name and telephone number of reporter;

360 (2) (ii) Name and address of facility;

360 (2) (iii) Time and type of incident (e.g., release, fire);

360 (2) (iv) Name and quantity of material(s) involved, to the extent known;

306 (2) (v) The extent of injuries, if any; and

360 (2) (vi) The possible hazards to human health or the environment outside the facility."

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5.5.3

Reporting and Event Investigations

During an emergency most information is transferred via notification forms and update bulletins. As control is established over the emergency, the need for report development and transmittal becomes significant. Reports may cover topics from the root cause of the emergency and reconstruction of the response, through establishment and conduct of recovery operations.

Tank Farms emergency response personnel must be able to provide timely and accurate reports during the emergency as appropriate, and preserve and provide information for follow-up reports and investigations.

Provision for reporting and investigating emergency events can be demonstrated by:

- Establishing emergency procedures which direct response personnel to provide timely and accurate reports during the emergency, as appropriate.
- Establishing emergency procedures which direct all response personnel to preserve and provide information for follow up reports and investigations.
- Ensuring E plan and procedures on reporting and investigations reflect OR guidance.

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (j)

"Emergency procedures. The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he must submit a written report on the incident to the Regional Administrator. The report must include:

- (1) Name, address, and telephone number of the owner or operator;
- (2) Name, address, and telephone number of the facility;
- (3) Date, time and type of incident (e.g., fire, explosion);
- (4) Name and quantity of material(s) involved;
- (5) The extent of injuries, if any;
- (6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material that resulted from the incident."

SITE REQUIREMENT SOURCE: DOE5000.3B Section 8.a.(10)

"The Facility Manager shall prepare and submit the Notification Report (fields 1 through 18 of the Occurrence Report), and distribute it to the DOE Facility Representative and Program Manager before the close of the next business day from the time of categorization (not to exceed 80 hours). When an unclassified Notification Report is submitted using the

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computerized DOE ORPS data base, Paragraph 8c(1) below, the distribution requirement is automatically satisfied."

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)5

"Provide for investigation of root cause(s) and corrective actions to prevent recurrence;"

SITE REQUIREMENT SOURCE: DOE5500.2B Section 12.b(2)(d)

"Provide written reports concerning the emergency event as soon as practical but within 24 hours of event categorization; and"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.d(3)

"Emergency records which contain information for review and reconstruction of major communications and actions taken during a emergency. These records include operator logs and documentation produced by the emergency response organization. These records shall be maintained by the individual responsible for program administration."

SITE REQUIREMENT SOURCE: WAC-173-303-360 Section (2)(k)

"360 (2) (k) The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within fifteen days after the incident, he must submit a written report on the incident to the department. The report must include:

360 (2) (i) Name, address, and telephone number of the owner or operator;

360 (2) (ii) Name, address, and telephone number of the facility;

360 (2) (iii) Date, time, and type of incident (e.g., fire, explosion);

360 (2) (iv) Name and quantity of material(s) involved;

360 (2) (v) The extent of injuries, if any;

360 (2) (vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable;

360 (2) (vii) Estimated quantity and disposition of recovered material that resulted from the incident;

360 (2) (viii) Cause of incident; and

360 (2) (ix) Description of corrective action taken to prevent reoccurrence of the incident.

5.6

EVENT CONTAINMENT AND PERSONNEL PROTECTION

The primary reason for establishing an emergency response capability is to contain the event, to protect workers and the public, and to minimize impacts on the environment in case of an accident. To ensure this capability, Tank Farms must provide for: immediate and continuous

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response capability; efficient, effective and continuing consequence assessment; timely and conservative protective actions; accountability of personnel and evacuation of appropriate populations; and prompt medical response capability.

Tank Farms personnel have immediate and continuing personnel protection duties in case of an accident at the facility.

5.6.1

Event Containment and Consequence Assessment

The prime responsibility is to respond to and contain the event by utilizing the plan, emergency implementing procedures, Emergency Response Organization, equipment and facilities as needed.

Concurrently, the ERO determines what the consequences of the event/accident are at present and projects what the impact might become. This provides a rational basis for taking protective actions.

Tank Farms must make provisions to assess the consequences of an accident including: timely initial assessment, continuous sampling/monitoring and in-depth assessment, and integration of those assessments into decision making about protective actions.

Provisions for event containment and consequence assessment can be demonstrated by:

- Tested emergency plan and procedures
- Development of methodology for conduct of consequence assessment.
- Establishing criteria for interpretation of consequence assessment data.
- Development of emergency procedures which ensure timely initial and continuous in-depth consequence assessment.
- Ensuring integration of consequence assessment projections into Protective Action Recommendations.

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.120 (q)(3)(ii)

"Emergency response to hazardous substance release. Procedures for handling emergency response. The individual in charge of the ICS shall identify, to the extent possible, all hazardous substances or conditions present and shall address as appropriate site analysis, use of engineering controls, maximum exposure limits, hazardous substance handling procedures, and use of any new technologies."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (c)

"Emergency procedures. Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosions)."

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FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (e)

"Emergency procedures. During an emergency the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operation, collecting and containing released waste, and removing or isolating containers."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (f)

"Emergency procedures. If the facility stops operations in response to a fire, explosion or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(5)

"Consequence Assessment. Provisions must be in place to adequately assess the actual or potential onsite and offsite consequences of an emergency and must include:

- (a) Timely initial assessment of the actual or potential consequences of an emergency and continuous, in-depth assessment of events throughout an emergency;
- (b) Integration of the consequence assessment process with the process for categorization of an event as an emergency, determination of the appropriate emergency class, and protective action decision making, including projections of onsite and offsite consequences;
- (c) Monitoring and evaluation of the specific indicators necessary to continually assess the consequences of emergency events and to monitor safety, health, environmental, and security conditions which may affect or exacerbate the emergency; and
- (d) Coordinate with Federal, state, tribal, and local organizations to locate and track hazardous materials released to the environment; estimate the integrated impact of such release on the public and the environment; and locate and recover materials, especially those with national security implications."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(6)(e)

"(e) Determination of the area surrounding the specific facility actually affected by an Operational Emergency; and"

5.6.2

Protective Actions

Tank Farms must be prepared to make immediate and continuing protective action recommendations, and to implement those recommendations.

Protective actions are actions taken to minimize exposures and consequences to workers, the public and the environment. Personnel protective actions may include taking shelter from the hazard, or evacuating the area where the hazard presents risk. Protective actions are based on consequence assessments.

Provision for protective action can be demonstrated by:

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- Development of Protective Action Guides (PAGs) and Emergency Response Planning Guidelines (ERPGs) for use in protective action decision making.
- Ensuring E plan and procedures provide for timely and appropriate onsite protective actions and Protective Action Recommendations (PARs) to offsite authorities.
- Provision for radiological and/or hazardous material decontamination of workers and equipment.

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(6)

"Protective Actions. Provisions must be in place for specific, predetermined actions to be taken in response to emergency conditions to protect onsite personnel and the public and must include:

- (a) Protective Action Guides (PAGs) and Emergency Response Planning Guidelines (ERPGs), prepared in conformance with DOE approved guidance applicable to the actual or potential release of hazardous materials to the environment for use in protective action decision making;
- (b) Control, monitoring, and maintenance of records of onsite personnel exposures to hazardous materials;
- (c) Accountability for all facility personnel, within 30 minutes (not to exceed 45 minutes) of emergency determination, and timely sheltering and/or evacuation of workers, to include predetermined criteria, procedures, assembly areas, transportation methods, and routes;
- (d) Radiological and/or hazardous material decontamination of workers and equipment evacuated from the site;
- (e) Determination of the area surrounding the specific facility actually affected by an Operational Emergency; and
- (f) Timely recommendation to appropriate state, tribal, or local authorities of protective actions, such as sheltering and/or evacuation, for the general public."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(6)(a)

"(a) Protective Action Guides (PAGs) and Emergency Response Planning Guidelines (ERPGs), prepared in conformance with DOE approved guidance applicable to the actual or potential release of hazardous materials to the environment for use in protective action decision making;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(6)(b)

"(b) Control, monitoring, and maintenance of records of onsite personnel exposures to hazardous materials;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(6)(d)

"(d) Radiological and/or hazardous material decontamination of workers and equipment evacuated from the site;"

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FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(6)(f)

"(f) Timely recommendation to appropriate state, tribal, or local authorities of protective actions, such as sheltering and/or evacuation, for the general public."

5.6.3

Accountability and Evacuation

Tank Farms must be prepared to evacuate and account for personnel. It is necessary to account for all personnel to ensure everyone has taken appropriate protective action. It is also necessary to predetermine how personnel would be evacuated, and how recommendations for protective actions for the general public would be provided to those offsite officials who would initiate those actions.

Provisions for accountability and evacuation can be demonstrated by:

- Development of accountability methodology.
- Establishment of criteria for evaluating accountability methodology.
- Establishment of detailed emergency procedures for personnel accountability.
- Designation of adequate assembly areas for monitoring and decontamination.
- Conduct of evacuation studies for onsite and EPZ offsite populations.
- Establishment of evacuation methodology.
- Establishment of detailed onsite evacuation procedures.
- Clarification of onsite role in offsite evacuations.

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(6)(c)

"(c) Accountability for all facility personnel, within 30 minutes (not to exceed 45 minutes) of emergency determination, and timely sheltering and/or evacuation of workers, to include predetermined criteria, procedures, assembly areas, transportation methods, and routes;"

5.6.4

Emergency Medical Response Capability

Tank Farms must ensure appropriate medical response capability is in place. In an emergency situation medical help may be needed immediately, and the injured personnel may be contaminated. In a worst case situation, large numbers of personnel could require medical help, requiring offsite assistance and provision for transportation to offsite medical facilities.

Medical response capability can be demonstrated by:

- Assessment of medical response capability to cope with design basis accident scenario.
- Development of medical response plan and emergency response procedures which are integrated into site E plan and procedures.

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- Designation of medical staff, training and facilities.
- Documentation of immediate onsite first aid and EMT capability.
- Documentation of arrangements with offsite medical facilities to accept and treat personnel, including contaminated injured personnel.
- Documentation of arrangements to transport injured contaminated onsite personnel to offsite medical facilities.

FACILITY REQUIREMENT SOURCE: 29CFR1910 Part 1910.120 (q)(9)(ii)

"Medical surveillance and consultation. Any emergency response employees who exhibits signs or symptoms which may have resulted from exposure to hazardous substances during the course of an emergency incident, either immediately or subsequently, shall be provided with medical consultation as required in paragraph (f)(3)(ii) of this section."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(7)

"Medical Support. Provisions must be in place for medical support for workers, including those with radiological and/or hazardous material contamination, and must include:

- (a) Immediate, onsite first aid and emergency medical treatment capability;
- (b) Transportation of injured onsite personnel to onsite or offsite medical facilities, as appropriate; and
- (c) Documented arrangements with onsite and offsite medical facilities to accept and treat contaminated, injured personnel."

SITE REQUIREMENT SOURCE: WAC-173-303-340 Section (4)(b)

"340 (4) (b) Arrangements to familiarize local hospitals with the properties of dangerous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility;"

5.7

REENTRY AND RECOVERY

Tank Farms must have provision for reentry and recovery operations to conduct search, rescue, and repair missions and restore the site to normal operations.

5.7.1

Reentry and Recovery

Reentry addresses going back into the hazard zone to conduct search, rescue, or repair missions. Once the event/accident is controlled, recovery operations begin to restore the site to normal operations. Recovery addresses activities such as termination of the emergency, continued provision of information to offsite organizations, and the relaxation of protective actions.

Tank Farms must ensure that personnel protection continues to be a mandate throughout reentry and recovery operations. During reentry and recovery the means must exist for

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estimating dosage and for protecting emergency teams from hazardous exposure. Tank Farms must further ensure the establishment of a recovery organization and development of criteria for the resumption of operations.

Provisions for reentry and recovery can be demonstrated by:

- E plan and procedures which detail requirements which must be addressed by the accident-specific recovery organization and plan.
- Development of generic reentry and recovery methodology.
- Development of criteria for evaluating recovery and reentry operations.
- Development of emergency exposure guidelines, and inclusion of guidelines in appropriate procedures.

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (g)

"Emergency procedures. Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (h)

"Emergency procedures. The emergency coordinator must ensure that, in the affected area(s) of the facility:

- (1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
- (2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.56 (i)

"Emergency procedures. The owner or operator must notify the Regional Administrator, and appropriate State and local authorities, that the facility is in compliance with paragraph (h) of this section before operations are resumed in the affected area(s) of the facility."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(8)

"Recovery and Reentry. Provisions must be made for recovery from an Operational Emergency and reentry into the affected facility.

- (a) The approach and general procedures for recovery include: decision making and communications associated with termination of an emergency; dissemination of information to Federal, state, tribal, and local organizations regarding the emergency and relaxation of public protective actions; establishment of a recovery organization; and establishment of general criteria for resumption of normal operations.

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(b) The means must exist for estimating dosage and for protecting workers and the general public from hazardous exposure during recovery and reentry activities."

SITE REQUIREMENT SOURCE: WAC-173-303-360 Section (2)(h)(i)(j)

"360 (2) (h) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

360 (2) (i) The emergency coordinator must ensure that, in the affected area(s) of the facility:

360 (2) (i) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

360 (2) (ii) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

360 (2) (j) The owner or operator must notify the department, and appropriate local authorities, that the facility is in compliance with

360 (2) (i) of this subsection before operations are resumed in the affected area(s) of the facility."

5.8

PUBLIC INFORMATION

Tank Farms must ensure that appropriate, complete, timely and accurate information is made available to employees, offsite emergency planners, the general public and the news media. This information must be made available before, during, and after an emergency.

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)4

"4 Provide for public information activities and coordination with state, tribal, and local authorities;"

SITE REQUIREMENT SOURCE: DOE5500.4A General

DOE Order 5500.4A, Public Affairs Policy and Planning Requirements for Emergencies, discusses in detail those actions necessary to ensure accurate and timely information can be made available to the media and public during an emergency.

5.8.1

Public and Media Education

Tank Farms must ensure that appropriate public education on emergency preparedness and response is provided to employees, residents and businesses within the offsite Emergency Planning Zone (EPZ), the general public, and the news media.

The educational information provided includes: the nature of the hazard; protective actions an offsite population might need to take in a severe accident; how they would receive instructions in an emergency; and how they can get additional information now. This basic information should be provided annually in a written form residents would be likely to keep around. The

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annual mailing may be supplemented by town meetings, meetings with education and service clubs/organizations, etc.

Similar background and overview information should be provided annually to the media. This assists the news media in serving the public more effectively in an emergency and covering the story more accurately. Continuing media contact is desirable to establish credibility, and might include editorial boards, talk shows, news releases/fact sheets, etc.

Evidence of an adequate public education program might include:

- A public and media education action plan which defines measurable objectives, audiences, messages, delivery systems, and schedules.
- Development of public education materials for public and media distribution.
- Development of criteria to determine effectiveness of public and media education activities.

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(11)

"(11) In accordance with DOE policies, ensure that public affairs considerations are taken into account in all aspects of emergency planning and response, and ensure that:

(a) Emergency planning information and requirements are periodically disseminated to employees, state, tribal, and local planning offices, and, as required, to the public and the media. This shall include applicable educational background information on specific hazards, availability of additional information, and information on protective measures and points of contact for public information releases in an emergency. The degree of implementation of this responsibility should be consistent with the degree of hazard potential and security classification constraints; and

(b) Periodic meetings are held, as necessary, with state, tribal, and local public information authorities and media in the vicinity of DOE facilities to inform them of plans for public information activities during an emergency."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(9)

"Public Information. An emergency public information program, consistent with DOE 5500.4, must be established and integrated into the emergency management program and must include:

(a) Methods and procedures for the timely release of accurate information regarding an emergency to the news media and the coordination of this information within DOE and with other Federal, state, tribal, and local response organizations;

(b) A designated spokesperson and staff able to access emergency information; exchange information with spokespersons of Federal, state, tribal, and local organizations; disseminate information to the news media; and manage public inquiries;

(c) A predesignated facility to accommodate members of the news media and to facilitate the coordination of press releases; and

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(d) An ongoing public information program, operated in conjunction with state, tribal, and local governments and the news media, to distribute realistic planning information on an appropriate basis that describes an emergency and includes sources of public information, evacuation routes, sheltering recommendations, etc."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(9)(d)

"(d) An ongoing public information program, operated in conjunction with state, tribal, and local governments and the news media, to distribute realistic planning information on an appropriate basis that describes an emergency and includes sources of public information, evacuation routes, sheltering recommendations, etc."

5.8.2

Emergency Public Information Response

Tank Farms must ensure that timely, accurate, coordinated information is provided to the public and the media during emergencies. This includes emergency instructions, and the supplementary information that makes those instructions credible.

To achieve this, designated staff must have: access to verified information; the authority to release that information; sufficient equipment and supplies to create and distribute written materials; a facility for meeting with the media and conducting briefings; provision for coordinating briefing materials and news releases with offsite public information representatives prior to release to the media and public; ability to respond to incoming telephone calls from the media and general public; ability to spot and respond to rumors and misinformation.

Evidence of an adequate emergency public information response capability can be demonstrated by:

- An emergency information response plan which addresses the above requirements, and is incorporated in the Tank Farms E plan and emergency procedures.
- Designated emergency public information staff, training, equipment and facilities.
- Verification in offsite procedures of public information coordination methodology.

SITE REQUIREMENT SOURCE: DOE5500.2B Section 10.c(2)

"(2) Develop appropriate plans and procedures for timely and accurate determination of the emergency class, notification and reporting of emergency events, and oversight of contractor notifications to HQ, state, tribal, local, and regional Federal authorities. Plans and procedures shall be approved by the cognizant PSO, in consultation with the DEO to ensure that appropriate and coordinated DOE notifications and reports to Congressional offices, other Federal agencies, and the media are effectively addressed;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(9)

"Public Information. An emergency public information program, consistent with DOE 5500.4, must be established and integrated into the emergency management program and must include:

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- (a) Methods and procedures for the timely release of accurate information regarding an emergency to the news media and the coordination of this information within DOE and with other Federal, state, tribal, and local response organizations;
- (b) A designated spokesperson and staff able to access emergency information; exchange information with spokespersons of Federal, state, tribal, and local organizations; disseminate information to the news media; and manage public inquiries;
- (c) A predesignated facility to accommodate members of the news media and to facilitate the coordination of press releases; and
- (d) An ongoing public information program, operated in conjunction with state, tribal, and local governments and the news media, to distribute realistic planning information on an appropriate basis that describes an emergency and includes sources of public information, evacuation routes, sheltering recommendations, etc."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(9)(a)

"(9) Public Information. An emergency public information program, consistent with DOE 5500.4, must be established and integrated into the emergency management program and must include:

- (a) Methods and procedures for the timely release of accurate information regarding an emergency to the news media and the coordination of this information within DOE and with other Federal, state, tribal, and local response organizations;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(9)(b)

"(b) A designated spokesperson and staff able to access emergency information; exchange information with spokespersons of Federal, state, tribal, and local organizations; disseminate information to the news media; and manage public inquiries;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(9)(c)

"(c) A predesignated facility to accommodate members of the news media and to facilitate the coordination of press releases; and"

5.9

COORDINATION WITH OFFSITE AGENCIES

Tank Farms must ensure offsite emergency planning authorities have appropriate, complete, timely and accurate information. Tank Farms must further ensure that emergency response actions are coordinated appropriately. Local, tribal, and state agencies have a mandate to protect the public health and safety, and the legal authority to implement public protective actions. They need information about hazards in their jurisdictions in order to conduct advance planning and preparedness activities.

During an emergency response, offsite agencies need timely accurate and continuing information in order to make appropriate decisions which protect the public health and safety. Coordination between onsite decision makers and offsite decision makers is essential.

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FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(10)(c)

"(c) Primary and backup means of communications must be available and capable of operating with other DOE elements, and with other Federal, state, tribal, and local response organizations."

5.9.1

Planning and Preparedness Coordination

Tank Farms must ensure emergency planning and preparedness activities are coordinated appropriately with offsite agencies. Offsite response agencies need full and thorough briefings on the nature of onsite hazards, the findings of hazard assessment studies, and onsite planning and preparedness activities. Agreements which would ensure a coordinated response to an emergency should be negotiated. Joint document review, joint training, and joint drills and exercises should be conducted on an annual basis.

Offsite planning and preparedness coordination can be demonstrated by:

- Documented Memorandums of Understanding.
- Evidence of annual joint plan and procedure review.
- Evidence of joint training on E plans and procedures.
- Evidence of joint participation in drills and exercises.
- Evidence that communications systems between onsite and offsite responders are in place, sufficient, regularly tested, and operable.

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.52 (c)

"Content of contingency plan. The plan must describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to 25.37."

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.53 (b)

"Copies of contingency plan. Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services."

FACILITY REQUIREMENT SOURCE: 40CFR355 Part 355.30 (b)

"Emergency planning notification. The owner or operator of a facility subject to this section shall provide notification to the Commission that it is a facility subject to the emergency planning requirements of this part. Notification shall be provided: on or before May 17, 1987 or within sixty days after a facility first becomes subject to the requirements of this section, whichever is later."

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FACILITY REQUIREMENT SOURCE: 40CFR355 Part 355.30 (c)

"Emergency planning. Facility emergency coordinator. The owner or operator of a facility subject to this section shall designate a facility representative who will participate in the local emergency planning process as a facility emergency response coordinator. The owner or operator shall notify the local emergency planning committee (or the Governor if there is no committee) of the facility representative on or before September 17, 1987 or 30 days after establishment of a local emergency planning committee, whichever is earlier."

FACILITY REQUIREMENT SOURCE: 40CFR355 Part 355.30(d)(1)

"Provision of information.

(1) The owner or operator of a facility subject to this section shall inform the local emergency planning committee of any changes occurring at the facility which may be relevant to emergency planning."

FACILITY REQUIREMENT SOURCE: 40CFR355 Part 355.30(d)(2)

"Upon request of the local emergency planning committee, the owner or operator of a facility subject to this section shall promptly provide to the committee any information necessary for development or implementation of the local emergency plan."

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(10)(d)

"(d) Ensure that emergency plans and procedures:

- 1 Are coordinated with the appropriate DOE Elements and where applicable, with state, tribal, and local governments;
- 2 Supporting mutual assistance agreements are developed with state, tribal, and local governments, where appropriate; and
- 3 Copies of such agreements to the cognizant PSO;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(13)

"(13) When the EPZ extends beyond the site boundaries, assist state, tribal, and local governments in development of emergency plans, in coordination with the Federal Emergency Management Agency regional office, other Federal agencies, and state, tribal, and local governments, as appropriate;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(b)

"(b) Coordinate and execute, where necessary, mutual assistance agreements with state, tribal, and local authorities and provide copies of these to the cognizant Field Element;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(2)

"Offsite Response Interfaces. Provisions must be in place for interface and coordination with Federal, state, tribal, and local agencies and organizations responsible for offsite emergency

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response and for protection of the environment and the health and safety of the public. Where possible, interrelationships with Federal, state, tribal, and local organizations must be prearranged and documented in formal plans, agreements, understandings, and/or other pre-arrangements for mutual assistance which detail the emergency measures to be provided by non-DOE entities. State, tribal, and local governments should be encouraged to prepare their own response plans for those facilities where the EPZ extends beyond DOE property. If state, tribal, and local governments refuse to participate, DOE should probably include state and local response activities in DOE plans."

SITE REQUIREMENT SOURCE: WAC-173-303-340 Section (4)

"340 (4) Arrangements with local authorities. The owner or operator shall attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations, unless the hazards posed by wastes handled at the facility would not require these arrangements:

340 (4) (a) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of dangerous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes;

340 (4) (b) Arrangements to familiarize local hospitals with the properties of dangerous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility;

340 (4) (c) Agreements with state emergency response teams, emergency response contractors, and equipment suppliers; and

340 (4) (d) Where more than one party might respond to an emergency, agreements designating primary emergency authority and agreements with any others to provide support to the primary emergency authority."

SITE REQUIREMENT SOURCE: WAC-173-303-355 Section (1)

"355 (1) Owners or operators shall coordinate preparedness and prevention planning and contingency planning efforts, conducted under WAC 173- 303-340 and 173-303-350, with local emergency planning committees established pursuant to Title III of the 1986 Superfund Amendments and Reauthorization Act."

5.9.2

Response Coordination

Tank Farms must ensure that response to emergencies is coordinated appropriately with offsite response agencies. The ability to coordinate onsite and offsite response efforts during an emergency is critical. The primary coordination effort focuses on offsite protective action recommendations and implementation. Offsite medical and fire protection support are other examples of response coordination. Offsite response coordination can be demonstrated by:

- Emergency response procedures which reflect integrated command and control.
- Prompt and continuing notification of emergency status and response activities to offsite agencies.

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- Use of Protective Action Guides to substantiate protective action recommendations for offsite populations.
- Redundant communications system between onsite and offsite responders.

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 10.w(6)

"(6) Ensure that liaison personnel are dispatched, when requested, to support activation of a HQ, state, tribal, or local EMT/EOC;"

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 9.c(2)(b)

"The cognizant DOE Field Element is responsible for:

- 1 Assuring prompt initial notification to state, tribal, and local governments and others, as appropriate;
- 2 Assuring proper response by facility managers to any emergency within their facilities;
- 3 Providing additional technical assistance and support;
- 4 Monitoring the facility response activities and recommending additional actions, as necessary;
- 5 Predesignating an On Scene Coordinator for Federal responses under the National Contingency Plan (NCP);
- 6 Ensuring emergency response actions are coordinated with the cognizant local, tribal, and Federal regional organizations;
- 7 Coordinating additional DOE and other Federal agency resources, as required; and
- 8 Overseeing the local investigation and closeout of occurrence, in coordination with the HQ Program Manager (PM)."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(10)(c)

"(c) Primary and backup means of communications must be available and capable of operating with other DOE elements, and with other Federal, state, tribal, and local response organizations."

5.10

DEMONSTRATING, MONITORING, AND IMPROVING PERFORMANCE

Tank Farms must ensure the emergency response capability is demonstrated, monitored and continually improved.

The drill and exercise program demonstrates response capability before an actual emergency, and provides valuable on-the-job training. The drill and exercise program allows Tank Farms to monitor and improve response performance through exercise control, evaluation, and critiques.

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Planning and preparedness performance is monitored and improved by using a variety of reviews, audits and evaluations. A comprehensive performance review is contained in the annual Emergency Readiness Assurance Plan (ERAP) document.

Critiques, reviews, audits and evaluations are designed to identify existing program deficiencies. Corrective actions are implemented to correct those deficiencies, and those actions are tracked to verified completion. Plans, procedures and training materials are updated to reflect improvements.

5.10.1

Drill and Exercise Program

Tank Farms must demonstrate and improve their emergency response capability through a drill and exercise program.

Emergency response capability can be demonstrated by responding to a real event, or to a drill or exercise scenario which presents emergency situations and problems for the response organization to resolve.

Drills and exercises are used to develop and maintain skills, expertise and capabilities. To accomplish this, drills and exercises must be of sufficient scope to address key emergency response activities, and must be frequent enough for all members of the Emergency Response Organization to participate regularly.

A full participation exercise must be conducted annually, and must allow for appropriate offsite participation. Exercises are controlled and formally evaluated, and critiques are conducted. Deficiencies are addressed and entered into the corrective action tracking system.

A mature drill and exercise program can be demonstrated by:

- Evidence of a continuing program of drills and exercises of sufficient scope and frequency to test the ability of participants to perform key activities.
- Documentation of ERO participation in drills and exercises.
- Provision for and documentation of offsite agency participation in annual exercises.
- Description of exercise control and evaluation methodology.
- Description of criteria for deficiency and weakness identification.
- Description of critique methodology.
- Evidence of deficiency and weakness identification and determination of corrective action.
- Documentation of verified corrective action implementation.

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(10)(c)

"(c) Ensure that emergency plans and procedures provide for:

- 1 A continuing program of emergency drills and exercise;**

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2 Participation of workers in drills and exercises as required; and

3 Opportunities for participation by local, tribal, and state organizations in such drills and exercises;"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(a)3

"3 Ensure a continuing program of training, drills, and exercises for facility personnel, and provide for participation by state, tribal, and local authorities;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(5)

"(5) Ensure participation in a continuing program of emergency management drills and exercises;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(8)(c)

"(c) Schedule a continuing program of emergency management drills and exercises; and"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(12)

"Drills and Exercises. A coordinated program of drills and exercises must be an integral part of the emergency management program as follows:

(a) Drills must be used to develop and maintain personnel skills, expertise, and response capability. Drills must be of sufficient scope and frequency to ensure adequate response capability in all applicable areas. Drills must include emergency communication, fire, activities such as notification, emergency communication, fire, medical emergencies, hazardous material detection and monitoring, environmental sampling and analyses, security, personnel accountability, evacuation, emergency categorization, weapons handling, decontamination, facility activations, public information, and health physics. There must be at least one drill per year to train in notification and emergency communications with regional Federal, state, tribal, and local authorities and DOE HQ."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(12)(a)

"(a) Drills must be used to develop and maintain personnel skills, expertise, and response capability. Drills must be of sufficient scope and frequency to ensure adequate response capability in all applicable areas. Drills must include emergency response activities such as notification, emergency communication, fire, medical emergencies, hazardous material detection and monitoring, environmental sampling and analyses, security, personnel accountability, evacuation, emergency categorization, weapons handling, decontamination, facility activation, public information, and health physics. There must be at least one drill per year to train in notification and emergency communications with regional Federal, state, tribal, and local authorities and DOE HQ."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(12)(b)

"Exercises.

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- 1 A full participation exercise shall be conducted annually for at least one facility on each DOE site to test and demonstrate an integrated emergency response capability. For multiple-facility sites, the basis of the exercise scenario shall be rotated among those facilities with EPZs extending offsite;
- 2 Full participation exercises for the Department's radiological emergency response assets (e.g, ARG, NEST, FRMAC, AMS, ARAC, and REAC/TS) must be conducted periodically, at a minimum, once every three years;
- 3 Full participation exercises shall require the full participation of HQ and Field Elements. Federal, state, tribal, and local regulatory and/or emergency response organization participation shall be requested. When these groups respond affirmatively, they shall be accommodated;
- 4 A control group shall be established for each exercise to ensure that events occur which address the objectives for the exercise;
- 5 An evaluation group shall be established for each exercise to assess the performance of the exercise participants against the objectives; and
- 6 A critique process shall be conducted for each exercise to provide initial impressions of accomplishments and shortcomings discovered during the exercise;"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(12)(c)

"(c) Drills and exercises must be conducted in a manner which emphasizes facility-specific emergency events and response activities and which minimizes the use of generic, nonspecific simulations."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(12)(d)

"Each member of the emergency response organization shall participate in a drill or exercise at least annually to demonstrate proficiency in assigned response duties and responsibilities."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(12)(e)

"Emergency management improvements and corrective actions identified during actual emergencies or during drills and exercises must be incorporated into the emergency management program."

FACILITY REQUIREMENT SOURCE: DOE5632.8 Section 6.a(2)

"Emergency management performance tests shall be conducted in order to observe and evaluate the crisis management team in action when dealing with a simulated emergency of sufficient magnitude to justify the activation of the facility's Emergency Operations Center. Tests may involve active Emergency Operation Centers from Headquarters through operations offices down to separate facilities, or they may only involve a single center with higher and lower contacts simulated. These exercises may be announced or unannounced and may involve an actual call-in. Exercise scenarios duplicate situations to be protected against by the facility MSSA and/or site security plan. These situations or events include, but are not limited to,

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adversary acts, consistent with the generic threat guidance, and test scenarios must be realistic, credible, and specific to a site."

5.10.2

Reviews, Audits, and Evaluations

Tank Farms must conduct and/or support a variety of internally and externally conducted reviews, audits and evaluations. As examples, emergency planning staff annually review plans and procedures, and an internal assessment of the emergency management program is conducted annually by persons not directly responsible for the program.

Audits and evaluations are regularly conducted by the M&O and DOE.

Requirements to conduct or support reviews, audits and evaluations can be implemented by:

- Documentation of the conduct of annual review of plans and procedures.
- Documentation of annual internal assessment of emergency management program by persons not directly responsible for the program.
- Evidence of support provided for and results of reviews, audits, evaluations.
- Evidence of deficiency and weakness identification and determination of corrective action.
- Documentation of verified corrective action implementation.

FACILITY REQUIREMENT SOURCE: 40CFR265 Part 265.54

"Amendment of contingency plan. The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

- (a) Applicable regulations are revised;
- (b) The plan fails in an emergency;
- (c) The facility changes - in its design, construction, operation, maintenance, or other circumstances - in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
- (d) The list of emergency coordinators changes; or
- (e) The list of emergency equipment changes."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 10

"Emergency Readiness Assurance Appraisals. Appraisals assess the ability of DOE elements and DOE- or contractor-operated facilities to meet applicable requirements of the EMS. Appraisals shall be based on specific standards and criteria promulgated by the DOE in coordination with applicable DOE oversight elements. Full participation exercises, which test and demonstrate an integrated onsite and offsite emergency response capability, shall be

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appraised. Appraisals shall be scheduled, conducted, and reported in accordance with this Order, DOE 5482.1B, and DOE 5500.3A. The scheduling for all DOE and DOE contractor appraisals shall be coordinated with the DOE to minimize adverse impacts on field operations and maximize the efficiency of the overall appraisal program."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 10.a

"DOE- or contractor-operated facilities shall conduct annual internal readiness assurance assessments of their emergency management programs. These assessments shall be conducted by contractor personnel not directly responsible during an emergency for performing the functions being assessed. The assessment process will include implementation of management controls for evaluation and correction of assessment results. Assessment results shall be documented and reported to the Head of Field Element."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 10.b

"The DOE Heads of Field Elements shall conduct a validation assessment of all facility readiness assurance programs under their supervision on a schedule which will ensure that all elements of the program are validated annually."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 10.c

"In coordination with the appraisals conducted by the DOE, EH-1 shall perform periodic oversight of those DOE emergency readiness assurance elements applicable to environmental protection, radiation safety, and worker safety."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 10.d

"The DOE shall schedule and conduct periodic emergency readiness assurance oversight appraisals of HQ Program Offices and EMTs, Field Elements, and contractors, including DOE national response assets, as needed. These appraisals shall assure that the EMS is ready to respond promptly, efficiently, and effectively to any emergency involving DOE facilities or requiring DOE assistance. The DOE shall also schedule and conduct appraisals of full participation exercises to assure an integrated onsite and offsite emergency response capability."

SITE REQUIREMENT SOURCE: DOE5500.10 Section 8.d(7)(a)

"(7) Ensure that the Manager/Administrator of each DOE- or contractor-operated facility, as the first or operating level of the line management structure:

- (a) Performs internal EMS readiness assurance assessments of the facility, in coordination with the Head of Field Element; and"

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(14)

"(14) Assess the performance of facilities under their cognizance in implementing the requirements of DOE EMS and the Emergency Readiness Assurance Program. Assessments shall be performed at a frequency based on the potential credible hazards for the particular facility, but not less than annually;"

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SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(d)

"(d) Establish and maintain an internal assessment program to assure the readiness of emergency response capabilities and to ensure that requirements of the DOE emergency preparedness program are met; and"

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 10.e(8)(d)

"(d) Conduct assessments of their emergency management program to verify compliance with DOE directives and policy."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.c(13)(c)

"(c) An internal assessment of all aspects of the emergency management program must be conducted annually by persons not directly responsible for administration of the program or response activity being assessed."

5.10.3

Emergency Readiness Assurance Program

Tank Farms ensures the development of an Emergency Readiness Assurance Program DOE 5500.10 specifically requires a comprehensive program review document to be prepared, coordinated and provided annually. The document is titled the Emergency Readiness Assurance Plan (ERAP). It covers a planning cycle of 5 fiscal years, and is organized so each of the 10 specified sections contains background/stable material and annually updated information.

ERAP sections include an Executive Summary, Program Description, Exemptions, Hazards Assessment, External Coordination, Training, Appraisals, Findings and Corrective Actions, and Resource Requirements.

ERAPs are used as a baseline for evaluations, and as a planning tool for identifying needed resources and improvements.

Requirements to develop and submit ERAPs can be implemented by:

- Describing ERAP promulgation methodology.
- Creation/establishment of 5 year planning cycle.
- Assigning line responsibility for initial development and annual update of ERAP.
- Developing checklist/matrix to ensure ERAP fully addresses all specified requirements.
- Provision for submittal schedule as required.

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 11

"Implementing Schedule and Requirements. Within 6 months of the date of issuance of this Order, PSOs shall prepare and submit a plan, through the DOE, for Under Secretary approval

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describing how the required ERAPs will be prepared, including schedules, costs, and quality assurance activities for the phased implementation of the provisions of this Order."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 8.d(7)(b)

"Ensure that the Manager/Administrator of each DOE- or contractor-operated facility, as the first or operating level of the line management structure:

(a) Performs internal EMS readiness assurance assessments of the facility, in coordination with the Head of Field Element; and

(b) Prepares the ERAPs and annual updates required by this Order."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9 General

"Emergency Readiness Assurance Plans (ERAPs)

a. ERAPs addressing planning and preparedness for emergency response shall be developed for each facility. The initial ERAP and all annual updates shall cover a planning cycle of 5 fiscal years from the date of initial or updated ERAP. Each ERAP section should be organized so as to separate the following information:

(1) Background material and procedures not subject to change from year-to-year, unless the facility, operation or activity changes; and

(2) Annually updated information containing reports on the activities and accomplishments of the past year and plans, schedules, and budgets for the next 5 fiscal years."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.b

"The ERAP shall serve as the baseline document for emergency readiness assurance evaluation and as a planning tool to identify and develop needed resources and improvements. Annual updates to the ERAPs will contain the same types of information and have the same structure as the initial plan. All updated plans shall highlight any changes in planning bases, organizations, exemptions, etc., from previous ERAPs, as well as compare actual achievements to goals, milestones, and objectives."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c

"As a minimum, ERAPs shall contain the following sections:"

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(1)

"Executive Summary. A brief summary of the overall status of the emergency readiness assurance program plus pertinent aspects of current program and related issues."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(10)

"Other. A discussion of any other items pertinent to emergency readiness assurance programs."

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FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(2)

"Program Description. A description of the emergency readiness assurance program at a level of detail sufficient to ascertain programmatic adequacy, with references to current emergency plans and implementing procedures."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(3)

"Exemptions. A list of any approved or requested exemptions to requirements pertaining to the DOE EMS. A summary statement regarding changes to previous exemptions shall be included."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(4)

"Hazards Assessment. A brief discussion of the range of potential radiological and non-radiological emergencies applicable to the facility with references to appropriate resource documents. This section shall include a summary of the emergency classes and the emergency action level criteria that will be used to determine the need to notify Federal, state, tribal, or local agencies and to determine protective measures to be recommended."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(5)

"External Coordination. A summary of coordination activities pertaining to external emergency response and support. This section shall include a list of all current memoranda of understanding and agreements with external organizations that would provide support to the facility in the event of an emergency."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(6)

"Training. A summary of all applicable individual and collective training developed and conducted for the specific types of emergencies which could be expected at the facility. Emergency training plans and goals for the current fiscal and next fiscal year shall be identified. Additionally, drills and special training plans for the following 5 fiscal years shall be included to the extent known. All training drills and exercises conducted since the previous ERAP, including the participation of any external organization shall be described in this section. Information detailing the number and type of personnel trained, the results of training evaluations, and any significant training deficiencies shall be included."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(7)

"Appraisals. A description of the scheduling and appraisal process (for the 5 fiscal year period, to the extent known) and the identification of the organization conducting each appraisal."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(8)

"Findings and Corrective Actions. A summary of all outstanding appraisal findings, citing the priorities assigned for their correction based on management and technical considerations, as well as any corrective actions validated as resolved during the past fiscal year. A schedule for the resolution of all outstanding deficiencies shall be included."

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FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.c(9)

"Resource Requirements. A 5 fiscal year projection of major resources, capabilities, or any other sets of requirements, including information and management support systems, budget, personnel, and facilities needed to maintain an appropriate level of emergency preparedness."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.d(1)

"ERAP Submittal Schedule.

(1) Each facility, whether DOE or DOE contractor operated, shall submit an initial or updated ERAP to their respective Head of Field Element by September 30 each year. The ERAP shall cover the 5 fiscal year period beginning the next October 1, (e.g., an ERAP submitted September 30, 1991, will cover October 1, 1991, through September 30, 1996.)"

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.d(2)

"The Head of Field Element shall review and transmit facility ERAPs and annual updates to the responsible PSO by October 31 each year."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.d(3)

"The PSO shall review and approve each ERAP submitted, in coordination with EH-1, consolidate all ERAPs for each program, and submit the summary documents to the DOE by December 31 each year."

FACILITY REQUIREMENT SOURCE: DOE5500.10 Section 9.d(4)

"The DOE shall, in coordination with the cognizant PSO, prepare an annual status report which contains a summary of the programmatic consolidated plans and a list of the individually approved ERAP plans for submittal to the Under Secretary by March 31."

SITE REQUIREMENT SOURCE: DOE5500.1B Section 10.w(22)

"(22) Accept, review, and approve facility ERAPs and annual updates from subordinate organizations; and consolidate and submit approved ERAPs and annual updates to the appropriate HQ PSO for final approval, with the DOE providing concurrence;"

FACILITY REQUIREMENT SOURCE: DOE5500.1B Section 10.w(26)(e)

"(e) Prepare ERAPs and annual updates."

FACILITY REQUIREMENT SOURCE: DOE5500.3A Section 11.a

"General Requirements. As part of the EMS, DOE elements and DOE contractors shall establish and maintain emergency management consisting of plans and procedures for response to Operation Emergencies involving or affecting DOE facilities, including DOE transportation activities. These emergency management programs must be commensurate with the assessment of potential hazards and targets and must include the following elements: Emergency Response organization, Offsite Response Interfaces, Operational Emergency Event Classes, Notification, Consequence Assessment, Protective Actions, Medical Support,

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Recovery and Reentry, Public Information, Emergency Facilities and Equipment, Training, Drills and Exercises, and managers/administrators of DOE- or contractors-operated facilities shall establish Emergency Readiness Assurance Programs, as set forth in DOE 5500.10. DOE emergency management programs must comply with, but are not limited to, the requirements for hazards assessment, program elements, and documentation set forth in this Order."

5.10.4

Deficiency Identification and Correction

Tank Farms must ensure that identified deficiencies and weaknesses are collected and analyzed to determine appropriate corrective action. Action must be assigned to functional group with authority to make corrections, and the action must be tracked to a verified conclusion. Tank Farms must ensure E plans, procedures, and training materials reflect changes/improvements.

Deficiency identification and correction can be addressed by:

- Development of methodology for collecting and integrating input from drill and exercise critiques, reviews, audits and evaluations, ERAP reviews, and other sources.
- Establishing criteria for determination of appropriate corrective action to be implemented.
- Assignment of corrective action to appropriate organization for implementation.
- Tracking of corrective action to verified completion.
- Confirmation that changes/improvements are reflected in plans, procedures, training materials, and other appropriate documentation.

5.11

KEY PROGRAM INTERFACES

Both the emergency planning and preparedness team and the Emergency Response Organization (ERO) interface with many organizations, internal and external to Tank Farms.

Tank Farms must ensure these interfaces are defined so all parties understand and agree upon chain of command, performance of duties, and provision of resources.

This can be demonstrated by:

- Development of interface matrices describing both emergency planning team and ERO interrelationships. See below for list of functional areas with significant overlap/interdependency.
- Development of standard operating and emergency procedures which define and reflect technical, administrative and operational interfaces and authorities.
- Memorandas of Understanding or Mutual Aid Agreements as appropriate.

There are several key interfaces with other functional areas which are crucial to the success of the emergency planning and preparedness effort. These interfaces include:

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Engineering -

The Engineering Design functional area incorporates into its designs the facilities necessary to support emergency preparedness and management functions. Such facilities include those necessary to perform safety-related functions under emergency conditions, capabilities to monitor facility conditions, and to provide communications and other necessary support.

Environmental Protection -

Many environmental regulations address emergency responsibilities, and overlap with EP&P is necessary to insure preparedness addresses these requirements.

Environmental Restoration and Waste Management -

Many ER/WM regulations address emergency responsibilities, and overlap with ER/WM is necessary to insure preparedness addresses these requirements.

Fire Protection -

Many Fire Protection regulations address emergency responsibilities which must be incorporated into the facility emergency response plan and procedures. In addition, Fire Protection response plans for fires which are not classified as emergencies must be incorporated in the facility emergency response plan by reference. The facility fire protection organization must be involved in appropriate training, drills and exercises.

Maintenance -

This interface is necessary to insure emergency response facilities and equipment are maintained in proper working condition.

Management Systems -

The interface with Management and Administration, Document Control and Records Management, Policy and Procedure Systems, Compliance Management, Corrective Action, Lessons Learned, and Self-Assessment ensures that EP&P accurately integrates site standards. Particularly close coordination with Occurrence Reporting is crucial to a successful EP&P effort.

Nuclear Safety -

NS provides technical information to EP&P which assist in the development of response plans and procedures. NS notifies the EP organization if design conditions change.

Occupational Safety and Health -

The OS&H program provides EP&P with the necessary emergency planning support to ensure proper use and delineation of OSH regulations and procedures. The OS&H organization also provides support for exercises and training.

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Operations -

EP&P interfaces with Operations to ensure operations personnel are prepared to respond quickly and effectively to an emergency, and to ensure emergency plans and procedures accurately reflect operational conditions.

Packaging and Transportation -

Shipment of hazardous and/or nuclear materials includes emergency response information and carrier instructions including organizations and authorities to be notified in the event of release of materials. Coordination between the Transportation Program and EP&P ensures that commonly handled hazardous materials are known and included in emergency plans for the facility and that special equipment or vehicles for transportation are known and available for emergency situations.

Quality Assurance -

QA establishes the standards for and may conduct EP&P independent assessments and audits. QA also establishes standards for the EP&P corrective action program.

Radiological Protection -

RP expertise is necessary to determine appropriate protective measures for emergency response personnel, during response, reentry and recovery, and to determine adequacy of protective action recommendations for employees and other populations. This expertise is needed during planning and preparedness efforts, and RP skills are needed during response, reentry, and recovery.

Research and Development and Experimental Activities -

The programmatic controls of EP&P are applicable to R&D/EA programs. The potential use of hazardous materials with undetermined characteristics or unknown consequences, and of equipment under uncertain basis must be included in the technical basis for the emergency plan and procedures.

Safeguards and Security -

The EP&P program, plans and procedures must reflect input and consideration of safeguards and security requirements and constraints. Drill and exercise scenarios should reflect safeguards input and security threats. Joint drills with ERO and security personnel are essential.

Training -

Close interface between the Training organization and EP&P is necessary to ensure all site employees receive appropriate General Employee Training (GET) which addresses emergency plans, procedures, and communications. Training establishes the performance based standards by which all ERO and offsite responder training is conducted.

WESTINGHOUSE HANFORD COMPANY

REQUIREMENTS

IDENTIFICATION

DOCUMENT

FACILITY:

HIGH LEVEL WASTE STORAGE
TANK FARMS/242-A
EVAPORATOR

FUNCTIONAL AREA:

Construction

REVISION 0

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8.0 CONSTRUCTION

INTRODUCTION

The Construction functional area for the Hanford Site Tank Farm Facility includes the construction activities and processes necessary to support the facility mission. The facility mission is to maintain and upgrade those critical systems, structures, and components required to minimize the exposure of site personnel, the public, and the environment to contaminants and radiation processed at the Tank Farm Facility. Additionally, the Construction Functional Area includes major modifications that are not considered as maintenance activities due to size, complexity or applicable work controls. The Construction Functional Area described in this document represents the elements/subelements necessary to implement a comprehensive construction management program for the Tank Farm Facility. The element/subelement structure provided in this document for the Construction Functional Area is based upon the ES&H Configuration Guidelines, Draft C (issued May 6, 1993).

The Construction Requirements Identification Document (RID) provides the elements and programmatic controls necessary to promote safe, efficient, and productive conduct of construction activities at the Tank Farm Facility. This Requirements Identification Document identifies required activities and processes based upon the relevant DOE Orders, laws, regulations, nuclear industry standards, codes, and practices. The intent of the Construction RID is to address the recommendations of the Defense Nuclear Safety Board documents 90-2 and 91-1, which call for the enhancement of DOE facility activities through the identification and application of relevant standards, codes, and practices that supplement or exceed the requirements mandated by DOE Orders. The Construction RID does not attempt to identify all reference documents applicable to a Construction program, and focuses on those which directly support or supplement the existence of a particular element or subelement of the Construction Functional Area. The reference documents and requirements included herein are those that mandate the inclusion of an element or subelement as an essential component of a comprehensive construction management program.

The requirements referenced in this document should be applied using a graded approach that considers the following criteria:

- Nuclear Safety
- Environmental, Safety and Health (ES&H)
- Mission-Critical

As defined in DOE Order 6430.1A, "Safety class items are systems, components, and structures including portions of process systems, whose failure could adversely affect the environment or the safety and health of the public." Safety class SSCs are subjected to a higher standard of design, fabrication, and quality requirements commensurate with the associated risks and "design of systems, components, and structures that are not safety class items shall, and quality standards."

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The construction management requirements presented in this document should also be applied using a graded approach. As stated in DOE Order 4700.1, "Formality and documentation requirements will be significantly greater for Major System Acquisitions (MSA) and major projects, but this fact does not lessen the responsibility for proper planning and execution of any project." Further, "management differences between MSA's, major projects, and other projects have to do with substance, not intent. In other words, all projects must be managed; the extent and formality of that management is the only issue." These considerations establish the level of development for project management and controls based upon the size, complexity, and capital expenditure for construction activities.

The physical boundaries for the Construction Functional Area include the Single-Shell Tank Farms, Double-Shell Tank Farms, 242-A Evaporator- Crystallizer, 242-S and T Evaporators, the Liquid Effluent Retention Facility (LERF), the Purgewater Storage Facility (PWSF), and associated components. Systems and support facilities dedicated to the Tank Farm Facility are included within the scope of this RID; however, site controlled facilities and support services are excluded from the boundary definition of this document.

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8.1

PROGRAM MANAGEMENT

The scope and complexity of construction projects requires an effective, well organized project personnel team. Construction management should ensure that the programmatic controls necessary for the safe, efficient conduct of construction and modification activities are established and effectively communicated to personnel within the construction program. The framework for a formal standardized program approach is addressed in the Management and Administration section of the Management Systems Functional Area.

The efficient transition of a project from conception to completion necessitates the integration of planning, scheduling, cost and a clearly defined organizational structure. Construction management should document these important elements in a Project Management Plan (PMP), as necessary to effectively manage construction activities. The project management plan provides a consistent and controlled approach to conduct of construction project activities by defining the plans, organizations, and systems utilized by the those responsible for managing construction and modification activities. Construction management should implement a Quality Assurance Program as described in the Quality Assurance Functional Area to establish appropriate quality requirements for construction and modification activities.

Construction activities require the support, coordination, and communication with many organizations both onsite and offsite. The development of an integrated approach to construction at the facility should be established to promote working relationships among organizational units which support construction activities. The definition of interfaces between internal organizations performing program activities and the interfaces of external organizations performing reviews and approvals should be established. Organizational charts should be developed and maintained which provide the lines of responsibility, authorities, and interfaces of personnel performing and/or supporting construction program activities.

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter II, Section 2.d

"Project Management Plan. The project management plan (PMP), is the document which sets forth the plans, organization, and systems that shall be utilized by those responsible for managing the project. As a minimum, it should include the project objectives; the work plan; the work breakdown structure; the schedule through all applicable phases of the life cycle and the major milestones; the performance criteria; cost and manpower estimates; project functional support requirements; project management, measurement, and planning and control systems (technical cost and schedule); and information and reporting procedures."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(1)(a)

"Quality Assurance Criteria Management Criterion 1 - Program Organizations shall develop, implement, and maintain a written Quality Assurance Program. The QAP shall describe the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing adequacy of work. The QAP shall describe the management system, including planning, scheduling, and cost control considerations."

8.2

STAFFING AND TRAINING

Construction management should ensure that programmatic controls for staffing and training are implemented as provided in the Management Systems and Training and Qualification Functional Areas. The staffing and training programs should produce a sufficient number of

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qualified personnel for the accomplishment of construction and modification activities in a safe, efficient, and reliable manner.

8.2.1

Selection and Qualification

The personnel selection criteria for the construction and modification program should assemble a high quality project staff that possesses the requisite background and experience for performing assigned work and responsibilities in accordance with technical, quality, and programmatic requirements. The construction and modification qualification programs should ensure personnel have achieved the appropriate proficiency and competency to perform special processes in the work environment. The qualification program should encompass the techniques, parameters, and hazards associated with the performance of special processes. These programs should include provisions for periodic review, evaluation, and adequacy of the qualification and requalification criteria.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.a

"Criterion 2 -- Personnel Training and Qualification a. Personnel performing work should be capable of performing their assigned tasks. Qualification requirements should be established for specific job categories, such as operators, designers, managers, supervisors, inspectors, welders, engineers, scientists, and independent assessment personnel. Training includes both education in principles and enhancement of skills and practices. Training should ensure the worker understands the processes and tools he/she is using, the extent and sources of variability in those processes and tools, and the degree to which he/she does and does not have control over that variability."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.2.f

"Training should be subject to on-going review to determine program and instruction effectiveness. Training and qualification should be upgraded whenever needed improvements or other enhancements are identified."

8.2.1.1

Qualification of Testing Personnel

Construction management shall ensure that testing personnel are qualified and have the requisite experience for performing assigned activities and duties.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Appendix 2A-1 Section 2

"FUNCTIONAL QUALIFICATIONS Three levels of qualification may be utilized depending on the complexity of the functions involved. The recommendations for each level are not limiting with regard to organizational position or professional status but, rather, are limiting with regard to functional activities.

2.1 Level I Personnel Capabilities A level I person should be capable of performing and documenting the results of inspections or tests that are required to be performed in accordance with documented procedures, acceptance standards, and/or industry practices as defined in user's written procedures.

2.2 Level II Personnel Capabilities A Level II person should have all of the capabilities of a Level I person for the inspection or test category or class in question. Additionally, a Level II

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person should have demonstrated capabilities in planning inspections and tests; in setting up tests, including preparation and setup of related equipment, as appropriate; in supervising or maintaining surveillance over the inspections and tests; and in evaluating the validity and acceptability of inspection and test results.

2.3 Level III Personnel Capabilities A Level III person should have all of the capabilities of a Level II person for the inspection or test category or class in question. In addition, the individual should also be capable of evaluating the adequacy of specific programs used to train and certify inspection and test personnel whose qualifications are covered by this Appendix."

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Appendix 2A-1 Section 3

*EDUCATION AND EXPERIENCE QUALIFICATIONS These education and experience recommendations should be considered with recognition that other factors commensurate with the scope, complexity, or special nature of the activity may provide reasonable assurance that a person can competently perform a particular task. Other factors which may demonstrate capability in a given job are previous performance or satisfactory completion of capability testing. These factors and the basis for their equivalency should be documented.

3.1 Level I 3.1.1 Two years of related experience in equivalent inspection or testing activities; or

3.1.2 High school graduation and 6 months of related experience in equivalent inspection or testing activities; or

3.1.3 Completion of college level work leading to an associate degree in a related discipline plus 3 months of related experience in equivalent inspection or testing activities.

3.2 Level II 3.2.1 One year of satisfactory performance as a Level I in the corresponding inspection or test category or class; or

3.2.2 High school graduation plus 3 years of related experience in equivalent inspection or testing activities; or

3.2.3 Completion of college level work leading to an associate degree in a related discipline plus 1 year of related experience in equivalent inspection or testing activities; or

3.2.4 Graduation from a 4 year college plus 6 months of related experience in equivalent inspection or testing activities.

3.3 Level III 3.3.1 Six years of satisfactory performance as a Level II in the corresponding inspection or test category or class; or

3.3.2 High school graduation plus 10 years of related experience in equivalent inspection or testing activities; or high school graduation plus 8 years of experience in equivalent inspection or testing activities with at least 2 years as a Level II and with at least 2 years associated with nuclear facilities - or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility; or

3.3.3 Completion of college level work leading to an associate degree and 7 years of related experience in equivalent inspection or testing activities with at least 2 years of this experience

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associated with nuclear facilities - or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility; or

3.3.4 Graduation from a 4 year college plus 5 years of related experience in equivalent inspection or testing activities with at least 2 years of this experience associated with nuclear facilities - or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility."

8.3

WORK CONTROL

Construction management should establish processes which implement effective controls for construction and modification activities. These processes should ensure that construction activities are controlled and performed in accordance with design and quality requirements. Work control processes are provided through the integration of planning, scheduling, and cost for the accomplishment of project goals and objectives. Construction and modification activities are executed through the utilization of work packages or work plans which separate major scheduled activities into manageable work scopes for performance by craftsmen. The work package is the primary instrument for communication and documentation of requirements to complete construction and modification activities.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 9S-1, Section 2

"PROCESS CONTROL Processes shall be controlled by instructions, procedures, drawings, checklists, travelers, or other appropriate means. These means shall assure that process parameters are controlled and that specified environmental conditions are maintained."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.a(4)

"Work should be planned, authorized, and accomplished under controlled conditions using technical standards, instructions, procedures, or other appropriate means of a detail commensurate with the complexity and risk of the work."

SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(2)(a)

"Performance Criterion 5 - Work Processes Work shall be performed to established technical standards and administrative controls. Work shall be performed under controlled conditions using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained."

8.3.1

Planning

Construction management is responsible for the development and maintenance of the project plan. The plan identifies the essential elements of the project which include procurement, design, construction, testing, and inspection. The project estimate provides the basis for resource allocation for the project. An integrated plan should include the interdependencies of procurement, design, construction, testing, and inspection. The development of a realistic, achievable plan requires the input of design engineers, procurement personnel, construction supervision, test engineers, and quality inspectors. The planning process should identify key

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milestones which represent critical points in the progress of the project. Planning procedures should establish the appropriate controls for performance measurement, which provide information on the progress of activities and major milestones. The procedures should include processes for communicating deviations from the plan to the appropriate level of construction management in a timely manner. The project plan should be updated on a timely basis to reflect progress and changing conditions.

The establishment of an effective plan requires input from various site and facility organizations. The procedures for the planning effort should define the interfaces necessary for the development of the project plan. The interfaces should include Engineering Design, Quality Assurance, Environmental Protection, and Radiation Protection. Engineering provides the conceptual design and design changes for the development of the project baseline. Quality Assurance provides the plan for inspection of construction activities.

The Environmental Protection Functional Area provides the requirements for the permitting of construction activities and handling of construction end products (e.g., testing effluents and waste products). Radiation Protection provides the requirements for worker radiation protection and ALARA concerns. The planning process should ensure that all appropriate requirements for the project are considered for the development the plan. The plan should integrate these requirements to enable proper sequencing of the project and logical progression of scheduled activities.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Introduction, Section 4.1

"A Plan shall be developed outlining the work to be performed and the work procedures or instructions required to comply with the requirements of the defined work scope.

Planning shall include a review of the structure, system or component design/procurement specifications, materials, lists, drawings, construction work plans, and schedules to ensure that fabrication, installation, modification, inspection, testing, etc., activities have been incorporated; that the work can be accomplished as specified; and that time and resources, plus training, are sufficient to accomplish the work in accordance with the specified requirements.

Planning shall define the operations to be performed, the systematic sequential progression of operations, and the overall measures to be employed to preserve the quality of the work."

FACILITY REQUIREMENT SOURCE: DOE/EH-0135 TS.3.9

"All modification requests are reviewed by site/facility management for inclusion in the modification program and training program. Approved requests are identified, prioritized, scheduled, and tracked. Site/facility management monitors the modification schedule and takes appropriate action to ensure schedule adherence."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section A.1.i

"Initial estimates, used in planning, should be based on sound data and assumptions relating to personnel, material/service costs, availabilities, and productivity."

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8.3.2

Scheduling

The schedule provides the timetable for the implementation of the plan and the basis for progress measurement. The scheduling of construction program activities shall integrate the supporting schedules for engineering design, procurement, and testing to allow efficient performance and mitigate delays. The integrated project schedule provides identification of the critical path, potential schedule impacts, and projected dates for accomplishment of engineering design, procurement, and construction activities. The schedule should define work activities at a level which enables accountability, tracking, and monitoring of project completion. Schedules which provide intermediate levels of detail should be used by discipline organizations to update their segment of the integrated project schedule.

SITE REQUIREMENT SOURCE: DOE4700.5 A.2.a.(4).(b).2

"Develop schedules that integrate with the WBS and cost estimate, and represent all work scope regardless of funding source. Use activity logic to depict all work scope, constraints, and decision points. Estimate and assign durations to activities representing work accomplishment."

SITE REQUIREMENT SOURCE: DOE4700.5 A.2.a.(4).(b).3

"Establish an approved schedule baseline which clearly depicts critical path activities and milestones from which actual performance for all activities and milestones can be compared, and from which forecast data can be generated. Resource-load activities, as required and at the appropriate level, to develop time phased budgets that are integrated with the schedule. Permit only authorized changes to the schedule baseline."

SITE REQUIREMENT SOURCE: DOE4700.5 A.2.a.(4).(b).4

"Summarize the detail schedule activities to form master and intermediate level schedules as required. Maintain identification of milestones with appropriate schedule levels."

8.3.3

Work Package/Plan Development

The control of construction activity is established through the development of work packages which provide work instructions in the form of travelers, checklists, drawings, and other approved project documents. The work package identifies the material, equipment, procedures and inspection hold points necessary for the completion of work in a safe, efficient, controlled and consistent manner. The processes for work package development should include review and approval by the appropriate facility organizations required to ensure design and quality requirements are implemented. The work packages should be developed by construction engineers who are cognizant of the requirements for content, distribution, review and approval, issuance and recall, and tracking. The development of comprehensive work packages requires input from many facility support organizations such as engineering, operations, radiation protection, quality control, and quality assurance.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Introduction, Section 4.2

"Installation, inspection, test procedures, and work instructions identified during planning shall be prepared. Preparation and approval of the procedures/instructions shall be in advance of the

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need to use the documents. The documents shall be kept current and revised as necessary to assure that the work is performed in accordance with the latest approved information.

The documents shall include the following as applicable: (a) personnel safety and structure or facility protection considerations (b) precautions to be observed (c) work requirements including installation specifications (d) sequence of activities to be followed and steps within a given activity (e) prerequisites including preparatory checks and inspections (f) test and inspection objectives (g) special equipment required (h) identification of inspection and test equipment and related calibration requirements including recalibration dates (i) sequence and frequency of inspection or test (j) acceptance criteria and methods for verifying (k) responsibility and required qualifications of personnel (l) approvals and authorizing or verifying signatures (m) specific document references (n) data or test report forms (o) information to be collected for plant records (p) processing inspection and test data and their analysis, evaluation, and final acceptance"

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TS.3.10

"Design changes receive an effective review for ALARA, constructability, testability, operability and maintainability, with input from appropriate personnel. These would include personnel form operations, maintenance, radiation control, etc."

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TS.3.12

"12. Technical support work required at the facility, such as installing and testing modifications, is coordinated with and controlled by site/ facility personnel."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.a(5)

"Work-related instructions, procedures, and other forms of direction should be developed, verified validated, and approved by technically competent personnel."

8.3.4

Coordination of Construction/Modification Activities

Construction activities require support from many facility organizations to ensure efficient and effective work production. The construction organization should hold regular meetings to coordinate the required support for near term work activities. The meetings should involve job scheduling, work restraints, priorities, and identification of support required from other facility organizations. The meeting should be chaired by an individual who is closely involved with the planning and scheduling priorities for the construction of the facility. The meeting should be attended by construction supervisors and planners and the support organizations involved in scheduled construction activities.

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TS.3.8

"All activities related to modifications, including design, procurement, installation, testing, and closeout, are effectively controlled and coordinated among all responsible affected groups."

8.3.5

Change Control

Construction management should provide controls through written procedures which provide clear, concise direction for the processing of changes. The development of these controls

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should be consistent with the elements contained in the Engineering Design and Configuration Management Functional Areas. The change process should include an examination of the necessity, cost, schedule impact, and other relevant factors for baseline changes. The procedure for baseline changes should ensure review and approval by the appropriate level of management. Field initiated changes required due to deficiencies, and constructability problems shall be forwarded per applicable procedures to the engineering design organization for resolution. The change control procedures shall provide for timely response to minimize schedule impact.

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section 4.b(1)

"Change Control. (1) Changes affecting the configuration of an item are to be limited to those which are necessary or offer significant benefits to the Department. Changes are required to: (a) Correct deficiencies; (b) Incorporate approved changes in operational or logistic support characteristics; (c) Effect substantial life cycle cost savings; or (d) Correct safety deficiencies."

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section D.2.c

"Design Control. Design controls should be established to enable designs to be correctly translated into specifications, drawings, procedures, and instructions. The measures for accomplishing these translations and the attendant design reviews and provisions for independent assessment inputs should be addressed. Design change control, including field changes, should be subject to design control measures commensurate with those applied to the original design, and should be approved by the organization that performed the original design."

SITE REQUIREMENT SOURCE: DOE4700.5 A.2.2.c.(2).(b)

"Assure that baseline changes and thresholds are defined, documented, and approved, and authority and responsibilities for such approval are documented";

SITE REQUIREMENT SOURCE: DOE4700.5 A.2.2.c.(2).(c)

"Assure that timely decisions are made at the appropriate management level;";

SITE REQUIREMENT SOURCE: DOE4700.5 A.2.2.c.(2).(e)

"Designate allowable change processing time frames consistent with the level of change authority requested and urgency required;";

SITE REQUIREMENT SOURCE: DOE4700.5 A.2.2.c.(2).(f)

"Coordinate baseline replanning actions with the DOE project manager prior to the occurrence."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.2.c

"Changes to final designs, field changes, modifications, and nonconforming items dispositioned "use as is" or "repair" should be justified and subject to design control measures commensurate with the original design. This work should include assurance that the design

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analyses for the items are still valid. Changes should be approved by the original design organization or a technically qualified designate."

8.3.6

Cost Control

Construction management should provide cost control through a Work Breakdown Structure (WBS) which establishes a cost per activity analysis of the construction work scope. The level of detail of the WBS should be commensurate with the size, complexity, and capital expenditure of the project. The construction cost controls should include cost reporting, as applicable, that relate expenditures to the actual work performed. The reporting detail should enable construction management to monitor the performance of scheduled activities. Cost reports should be issued at sufficient intervals to enable management to detect schedule delays and possible cost overruns.

SITE REQUIREMENT SOURCE: DOE4700.5 A.2.2.a.(1).(b).2

"Define all authorized project work in a Work Breakdown Structure that represents the way the work will be estimated, scheduled, budgeted, performed, and managed. Maintain the WBS to be consistent with project needs throughout the life of the project, ensuring changes to the WBS are made within a formal change control process."

8.3.7

Work Package/Plan Closeout

Construction management shall provide programmatic controls through detailed instructions for the review, closure and storage of work packages and other permanent records. The control of construction records should be consistent with the practices and procedures described in the Document Control and Records Management Process of the Management Systems Functional Area. Work packages should be reviewed by the personnel responsible for their development to ensure that the completed package contains all necessary records for the work performed. The completed and reviewed package should be forwarded to the quality assurance organization for review of procedural compliance, accuracy and adequacy of documentation in accordance with procedures. The procedures should ensure the smooth transition of the project from construction and testing phases to operational control.

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TS.3.18

"18. Final documents (as-built drawings, procedures, etc.) are completed and issued in a timely manner to support close-out and the declaration of system operability."

FACILITY REQUIREMENT SOURCE: DOE/EH0135 TS.3.19

"19. The as-built configuration of modified systems is verified by comparisons with approved design criteria and design documents prior to operational acceptance by the site/facility staff. In addition, design, testing, and installation records are reviewed for completeness and accuracy prior to final acceptance of the modification."

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter V, Section C.3.d.(4).(d).1

"Upon substantial completion of construction and acceptance testing, a preliminary inspection usually should be made. This will establish the number of work items remaining to be completed and permit preparation of a list of exceptions. The A-E, construction manager,

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construction, and operating contractors should participate in the inspection. The field element may, as appropriate, assign Departmental personnel to participate in the inspection. A date should be set for the performance of the final inspection, allowing time for completion of exceptions."

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter V, Section C.3.d.(4).(d).2

"Final inspection should be made by all parties who participated in the preliminary inspections. They shall indicate in writing that such inspection was made and note any further exceptions. Upon cleanup of such exceptions, the work is finally accepted through the signing of documents by the field element, construction manager, A-E, and construction and operating contractors, as appropriate."

8.4

CONTROL OF SPECIAL PROCESSES

Construction management shall provide procedures for the control of special processes including welding, brazing, and heat treatment. The procedures shall ensure that the processes are performed by qualified personnel using qualified procedures in accordance with appropriate codes and standards.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 9

"CONTROL OF PROCESSES Processes affecting quality of items or services shall be controlled. Special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive examination, shall be performed by qualified personnel using qualified procedures in accordance with specified requirements."

SITE REQUIREMENT SOURCE: DOE/EH0135 QV.7

"Provisions should be established to ensure the acceptability of special processes such as welding, heat treatment, non-destructive testing, and chemical cleaning, and that special processes are performed by qualified personnel using qualified procedures and equipment."

8.4.1

Welding

Welding, brazing, and other similar processes require clear, concise programmatic controls to enable consistent achievement of quality standards. Construction management shall ensure control of welding activities through procedures which identify the training, qualification, requalification, processes, equipment, controlling parameters, acceptance (e.g. radiographic and nondestructive examination) requirements, and other relevant information. The procedures utilized for welding associated with construction activities should provide clear, concise, written requirements. These procedures should be revised per written procedures, which identify requalification, and review and approval requirements. The welding procedures and documents shall conform to the appropriate quality assurance program requirements.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Chapter II, Section 9

"CONTROL OF PROCESSES Processes affecting quality of items or services shall be controlled. Special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive examination, shall be performed by qualified personnel using qualified procedures in accordance with specified requirements."

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8.5

MATERIALS CONTROLS

Material control should be established prior to the procurement effort and continue throughout the life of the project. Material and equipment should be inspected, controlled, and maintained to ensure the facility meets the design, operational, and quality assurance requirements. The control of material is accomplished through material specifications, procurement procedures, receipt inspection/handling, material storage facilities, storage levels, preventative maintenance of stored items, and issue and return procedures. The material control program should be administered at the site level by a material management organization which has responsibility for procurement, expediting and other material issues. Construction personnel should prepare procurement documents in accordance with engineering material specifications, procedures and route these documents to the site material management organization for processing.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.c

"Handling, Storing, and Shipping (1) A process should be established and implemented to control the handling, storage, shipping, cleaning, and preservation of items to prevent damage, loss, or deterioration. (2) Marking and labeling of items should be maintained throughout packaging, shipping, handling, and storage. Marking and labeling should provide information to identify items and provide instructions or special control to preserve items' integrity. Requirements for off-site transportation should be established and implemented. (3) Special protective measures (such as containers, shock absorbers, accelerometers, inert gas atmospheres, and specific temperature and moisture levels) should be specified and provided when required to maintain acceptable quality."

8.5.1

Material Specification/Procurement

Material and equipment provided for the facility is controlled through the inclusion of engineering material specifications, quality and documentation requirements in the procurement documents. The procurement procedures should require suppliers meet applicable regulatory requirements and have a quality assurance program compatible with facility requirements.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 3.1

"General. This Section contains the requirements for packaging of items for protection against corrosion, contamination, physical damage, or any effect that would lower the quality or cause the items to deteriorate during the time they are shipped, handled, and stored. The degree of protection specified will vary according to conditions and duration of storage, shipping environment, and handling conditions. Implementation of this Section is accomplished by identifying the item and the appropriate criteria contained herein concerning cleaning, preservatives, desiccants, inert gas blankets, cushioning, caps and plugs, barrier and wrapping materials, tapes, blocking and bracing, containers, marking, other quality assurance provisions, and documentation."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 3.2.0

"Levels of Packaging. The packaging requirements shall be based on the protection that is necessary during shipping, handling and storage of the item to satisfy Level A, B, C, and D protection requirements set forth below. The requirements herein are intended to be in addition to industry classifications or tariff rules for rail, truck, air, and water shipments and regulatory agency rules already established in the transportation industry; and in no way are they intended

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to reduce the minimum standards established by these regulatory agency rules. The following packaging criteria are divided into four levels corresponding to the classification categories of para. 2.2 of this Part."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 4.1

"General. This Section covers the requirements for loading and shipment of items as defined in para. 2.2. The mode of transportation used shall be consistent with the protection classification of the item (see para. 2.1) and with the packaging methods employed (see para. 3.2)."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.a

"Criterion 7 – Procurement a. A process should be established and implemented to ensure that purchased items and services meet established requirements and perform as expected."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.b

"Applicable technical and administrative requirements, such as specifications, codes, standards, tests, and inspections should be invoked for procurement of items and services. Procurement documents should include acceptance criteria".

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.c

"Appropriate controls for the selection, determination of suitability, evaluation, and receipt of all purchased items, including commercial-grade items, should be imposed to ensure that they perform as expected."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.d

"Prospective suppliers should be evaluated to ensure that only qualified suppliers are selected."

8.5.2

Receipt Inspection/Handling

The receiving process ensures that receiving inspections include evaluations of incoming materials and equipment against the procurement specifications. Material or equipment purchased by construction or support organizations should be inspected by the quality control organization for heat numbers, serial numbers, material markings, appropriate documentation and other requirements as specified in the procurement specifications. This process enables timely detection of deficient material and documentation. During the receiving process material and equipment which requires special handling, storage and preventative maintenance is identified and maintained per applicable procedures.

SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1, Section 2

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

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**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1,
Section 3.1**

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

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1,
Section 3.2**

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

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1,
Section 3.3**

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

**SITE REQUIREMENT SOURCE: ASME-NQA-1-1989-1A Supplement 13S-1,
Section 3.4**

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

**SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.15 Appendix
Section 1**

"General. Part 2.15 provides guidance for the design and use of hoisting, rigging, and transporting equipment to maintain the quality of designated nuclear power plant items which require special handling, from the time these designated items are delivered at the point of receipt for the plant until the operating phase of the plant. The guidelines of the Part may also be extended to other appropriate parts of nuclear power plants when specified in contact documents."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 5.2.2

"Item Inspection. Unless the package marking prohibits unpacking, the contents of all shipments shall be visually inspected to verify that the specified packaging and shipping requirements have been maintained. When items are contained in transparent, separate moistureproof bags or envelopes, visual inspection without unpacking the contents shall be acceptable. Where specific inspection requirements can be achieved, statistical sampling methods may be used for groups of similar items. Care shall be taken to avoid contamination of the items during inspection. The inspections shall be performed in an area equivalent to the level of storage requirement for the item (see Section 6). These inspections and examinations shall include the following, as appropriate: (a) identification and marking - verification that

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identification and markings are in accordance with applicable codes, specifications, purchase orders, and drawings, and with requirements in this Standard; (b) manufacturing documentation - assurance that the item received was fabricated, tested, and inspected prior to shipment in accordance with applicable does, specification, purchase order, or drawings; (c) protective covers and seals - visual inspection to assure that covers and seals meet their intended function; (d) coatings and preservatives - verification that coatings and preservatives are applied in accordance with specifications, purchase orders, or manufacture's instructions; (e) inert gas blanket - verification that the inert gas blanket pressure is within the acceptable limits; (f) desiccant - verification that the desiccant is not saturated, as indicated, through the use of humidity indicators. Desiccants shall be regenerated or replaced as necessary in accordance with special instructions. (g) physical damage - visual inspection to assure that parts of items are not broken, cracked, missing, deformed, or misaligned, and that rotating parts turn without binding. Accessible internal and external areas shall be free of detrimental gouges, dents, scratches, and burrs. (h) cleanness - visual inspection to assure that accessible internal and external areas are within the specification requirements for dirt, soil, mill scale, weld splatter, oil, grease, or stains. If inspection for cleanness was performed prior to sealing and shipping, and inspection upon receipt indicates that there has been no penetration of the sealed boundary, then inspection for internal cleanness is optional.

Unless the completed item was inspected at the source, it shall be inspected at the point of receiving to verify that the following characteristics conform to the specified requirements. These inspections shall include such items as: (a) physical properties - assurance that physical properties conform to the specified requirements and that chemical and physical test reports, if required, meet the requirements; (b) dimensions - random visual inspection to assure that important dimensions conform with drawings and specifications, i.e., baseplate mounting holes, overall external size, and configuration and orientation of parts; (c) weld preparations - random verification that weld preparations are in accordance with applicable drawings and specifications; (d) workmanship - visual inspection of accessible areas to assure that the workmanship is satisfactory to meet the intent of the requirements; (e) lubricants and oils - verification of presence of proper lubricants and oils, if required, by either specification, purchase order, or manufacture's instructions; (f) electrical insulation - performance of insulation resistance tests for motors, generators, and control and power cable to ensure conformance with specifications."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 5.3

"5.3.1 Acceptable. Containers and items inspected and found in conformance with specified requirements shall be identified as acceptable (see para. 5.4.) and placed in a storage area for acceptable items, or moved to the final location for installation or use.

5.3.2 Nonconforming. Items which do not conform to the specified requirements shall be controlled in accordance with ASME NQA-1.

5.3.3 Conditional Release. If the nonconformance that caused the item to be classified unacceptable can be corrected after installation, the item may be released for installation on a conditional release basis. A statement documenting the authority and technical justification for the conditional release of the item for installation shall be prepared and made part of the documentation."

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SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.c

"Handling, Storing, and Shipping (1) A process should be established and implemented to control the handling, storage, shipping, cleaning, and preservation of items to prevent damage, loss, or deterioration. (2) Marking and labeling of items should be maintained throughout packaging, shipping, handling, and storage. Marking and labeling should provide information to identify items and provide instructions or special control to preserve items' integrity. Requirements for off-site transportation should be established and implemented. (3) Special protective measures (such as containers, shock absorbers, accelerometers, inert gas atmospheres, and specific temperature and moisture levels) should be specified and provided when required to maintain acceptable quality."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.3.g

"Before a procured item is used or placed in service, procurement specification, inspection, and test requirements are to be satisfied and nonconformance properly dispositioned."

8.5.3

Material Storage

Material and equipment is controlled prior to installation through storage procedures which clearly define storage requirements by item classification to prevent deleterious effects from the environment and physical damage. The material storage procedures should ensure the establishment of an accurate inventory control system which provides for effective location of material and equipment.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 2.2.0

"Classification of Items. Requirements are divided into four levels with respect to protective measures to prevent damage, deterioration, or contamination of the items based upon the important physical characteristics, and not upon the important functional characteristics of the item with respect to safety, reliability, and operation. It should be recognized, however, that within the scope of each level there may be a range of controls, and that the detailed requirements for an item are dependent on the importance of the item to safety reliability. For example, even though a reactor vessel and structural steel are classified as Level D, the degree of protection and control over the reactor vessel should exceed that of the structural steel. Each of the specific items governed by this Part shall be classified into one of these four levels by the buyer or the contractor. The manufacturer's documented standard or minimum requirements shall be considered when classifying the items. Items, once classified at a level, shall be restricted to that level or a higher level for each of the packaging, shipping, receiving, storage, and handling operations. Any package unit or assembly made up of items of different levels shall be classified to the highest level designated for any of the respective items. If the unit is disassembled, a level shall be indicated for each part. Items covered by this Part shall be categorized under the following levels."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 2.2.1

"Level A. Items classified to Level A are those that are exceptionally sensitive to environmental conditions and require special measures for protection from one or more of the following effects: (a) temperatures outside required limits (b) sudden temperature changes (c) humidity and vapors (d) accelerating forces (e) physical damage (f) airborne contamination (e.g., rain, snow, dust, dirt, salt spray, fumes) Types of items to be categorized under this

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classification level are: (a) special electronic equipment and instrumentation; (b) special materials, such as chemicals, that are sensitive to environment; (c) special nuclear material and sources. The requirements of the NRC fuel license and conditions and of other governmental agencies shall be met."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 2.2.2

"Level B. Items classified to Level B are those that are sensitive to environmental conditions and require measures for protection from the effects of temperature extremes, humidity and vapors, accelerating forces, physical damage, and airborne contamination and do not require special protection required for Level A items. Types of items to be categorized under this classification level are: (a) instrumentation (b) electrical penetrations (c) batteries (d) welding electrode and wire (Welding electrodes hermetically sealed in metal containers may be stored under conditions described in Level C, unless other storage requirement are specified by the manufacturers.) (e) control rod drives (f) motor control centers, switchgear, and control panels (g) motors and generators (h) precision machine parts (i) spares, such as gaskets, O-rings (j) air handling filters (k) computers"

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 2.2.3

"Level C. Items classified to Level C are those that require protection from exposure to the environment, airborne contamination, acceleration forces, and physical damage. Protection from water vapor and condensation is not as important as for Level B items. Types of items to be categorized under this classification level are: (a) pumps (b) valves (c) fluid filters (d) reactor internals (e) compressors (f) auxiliary turbines (g) instrument cable (unjacketed) (h) refueling equipment (i) thermal insulation (j) fans and blowers (k) cement (l) fabricated fuel rods and assemblies"

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 2.2.4

"Level D. Items classified to Level D are those that are less sensitive to the environment than those for Level C. These items require protection against the weather, acceleration forces, airborne contamination, and physical damage. Types of items to be categorized under this classification level are: (a) tanks (b) heat exchangers and parts (c) accumulators (d) demineralizers (e) reactor vessel (f) evaporators (g) steam generators (h) pressurizers (i) piping (j) electrical cable (jacketed) (k) structural items (l) reinforcing steel (m) aggregates"

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.1.c

"Handling, Storing, and Shipping (1) A process should be established and implemented to control the handling, storage, shipping, cleaning, and preservation of items to prevent damage, loss, or deterioration. (2) Marking and labeling of items should be maintained throughout packaging, shipping, handling, and storage. Marking and labeling should provide information to identify items and provide instructions or special control to preserve items' integrity. Requirements for off-site transportation should be established and implemented. (3) Special protective measures (such as containers, shock absorbers, accelerometers, inert gas atmospheres, and specific temperature and moisture levels) should be specified and provided when required to maintain acceptable quality."

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8.5.3.1

Storage Levels

Storage levels should be established to provide material protection commensurate with the importance and sensitivity of the item to changes in environmental conditions. The storage levels should be clearly defined in the material procedures to ensure materials are properly stored.

8.5.3.2

Storage Area Access

The access of personnel to storage areas should be controlled to minimize potential damage to stored material and equipment. The procedure should identify personnel which are authorized for access to storage areas for performing inspection, maintenance, and warehousing duties.

8.5.3.3

Control of Stored Items

The control of material storage should include a preventative maintenance program to monitor and maintain the condition of stored items. These controls involve monitoring inert gas atmospheres, desiccant packages, energization of equipment space heaters, and lubrication of rotating equipment. Stored items which have had a lapse in preventative maintenance should be addressed to engineering through the nonconformance process to confirm equipment condition.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.2, Section 6.4.2

"Care of Items. Requirements for proper maintenance during storage shall be documented. Care of items in storage (includes storage in place) shall be exercised in accordance with the following. (a) Items in storage shall have all covers, caps, plugs, or other closures intact. Methods used to seal openings shall be in accordance with Section 3. Covers removed for internal access shall be immediately replaced and resealed after completion of the purpose for removal. (b) Temporary preservatives shall be left intact during storage. Should reapplication of preservatives be required at the site, only those previously approved shall be used. (c) Items pressurized with inert gas shall be monitored at such a frequency as to ensure that the gas pressure is maintained within specified limits during storage. Desiccant humidity indicators shall also be monitored, and desiccants shall be changed or reprocessed when specified. (d) Instrumentation racks shall be energized as specified by the manufacturer. (e) Space heaters enclosed in electrical items shall be energized. (f) Rotating electrical equipment shall be given insulation resistance tests on a scheduled basis. (g) The shafts of rotating equipment shall be rotated on a periodic basis. The degree of turn shall be established so that the parts receive a coating of lubrication, where applicable, and so that the shaft does not come to rest in a previous position (90 deg. and 450 deg. rotations are examples). (h) Other maintenance requirements specified by the manufacturer's instructions for the item shall be performed."

8.5.4

Material Issue and Return

The material issue controls ensure the correct material is issued in accordance with engineering and quality requirements. Material issue requests should provide a link between the material and application. Nonconforming material should be identified and segregated to preclude issuance or unapproved use. The traceability of bulk materials should be maintained at issuance by transference of the heat number as appropriate per applicable material control procedures. Material which is returned to the storage facility shall be accompanied by all of the quality documentation provided during the issuance process.

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SITE REQUIREMENT SOURCE ASME-NQA-2-1989 Part 2.2, Section 6.5

"Removal of Items From Storage. Only items which have been inspected and are considered acceptable for installation or use in accordance with the receiving inspection procedure shall be removed from storage for installation or use (see Section 5). Items released from storage and placed in their final locations and items stored in place within the power plant shall be inspected and cared for in accordance with the requirements of paras. 6.4.1 and 6.4.2 and other standards, as applicable."

8.6

INSPECTIONS AND DOCUMENTATION

The quality of construction work is controlled through the implementation of the Quality Assurance Program and verified by the inspection plan. The inspection plan is the document which proceduralizes the frequency of inspections, type of inspection, hold points, and documentation of results. The inspection criteria are derived from engineering design specifications and procedures which identify the critical steps in the construction process requiring quality monitoring. Construction management is responsible for implementation and adherence to the Quality Assurance Program and inspection plan, however the control and enforcement is the responsibility of Quality Assurance. The Quality Assurance Program utilized for construction activities should be developed within the framework provided in the Quality Assurance Functional Area.

The inspection process ensures that the material/hardware and the processes utilized to construct the facility are in compliance with the design requirements. Construction management should coordinate construction and modification activities with the inspection organization to ensure sufficient inspection support and minimize schedule delays. Construction supervision should encourage craftsmen to inspect completed work with the appropriate measuring devices prior to requesting the quality inspector to improve efficiency. The inspection results are documented in the construction work package in accordance with the assigned hold points and guidelines prescribed in the Document Control and Records Management Program of the Management Systems Functional Area.

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section D.2.j

"Inspection. Inspection methods of activities affecting quality should be established and executed by or for the organization performing the activity. The inspection should validate conformance with the prescribed documented instructions, procedures, and drawings. Examinations, measurements, or tests of material or products processed should be performed for each work operation, where necessary, to assure quality. If inspection of processed material or products is impossible or not advantageous, indirect control by monitoring processing methods, equipment, and personnel should be provided. Both inspection and process monitoring should be provided when control is inadequate without both. If mandatory inspection points which require witnessing or inspection by the contractor's designated representative, and if work cannot proceed beyond these points without the consent of its designated representative, the specific points should be indicated in appropriate documents."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.a(2)

"Inspections may be implemented by or for the organization performing the work to be inspected. Personnel may not inspect their own work for acceptance. The level of inspection and degree of independence of inspection personnel should be based on risk and complexity."

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8.7

TESTING AND START-UP

The testing program should describe the scope of testing, provide detailed guidance for conduct of testing and control of equipment or system status, and include methods for evaluation of results of completed tests for conformance to design requirements. The program is implemented in a consistent and controlled manner through testing standards, test instructions, and test specifications. The test instructions, procedures, and specifications are prepared from test objectives and acceptance criteria provided by the engineering design organization. The testing program identifies the sequence for performance of system testing required to support individual system testing and turnover to succeeding testing programs. The transition of systems from testing to the operational phase is controlled through written turnover procedures.

An effective testing organization requires strong interfaces with the operations organization to promote safe and efficient testing activities. The establishment of this interface provides good coordination of testing activities on a daily basis and allows the testing and operating organizations to plan testing activities to meet schedule requirements in a safe and expeditious manner. The testing procedures and instructions should be reviewed by testing and operations personnel prior to conduct of testing to enhance the performance of these activities. The test instructions should be reviewed to identify equipment requiring operation, testing boundaries, controlling parameters, and possible hazards.

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter III, Section D.2.k

"Test Control. A test program should be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service, is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program should include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during facility operation of structures, systems, and components. Test procedures should include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that each test is performed under suitable environmental conditions. Test results should be documented and evaluated to assure that test requirements have been satisfied."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(2)

"Testing may be implemented by or for the organization performing the work to be tested. When an organization performs its own testing, personnel with the organization should not test their own work for acceptance."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(3)

"Item and process test requirements and acceptance criteria should be provided by or approved by the organization responsible for design. Administrative controls and status indicators should be used to preclude inadvertent bypassing of required tests or operation of the item or process."

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SITE REQUIREMENT SOURCE: DOE5700.6C Section 9.b(2)(d)

"Criterion 8 - Inspection and Acceptance Testing Inspection and acceptance testing of specified items and processes shall be conducted using established acceptance and performance criteria. Equipment used for inspections and tests shall be calibrated and maintained."

8.7.1

Functional

The testing organization shall establish a functional acceptance testing program to provide validation of facility systems, and components. The testing activities performed by this program shall be in accordance with written test procedures. The construction/startup testing program shall consist of prerequisite, preoperational, and post-modification testing. The test data and results shall be documented and receive a technical review to ensure satisfactory completion of testing goals, objectives and requirements.

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(1)

"b.Acceptance Testing (1) Testing processes should be established and implemented to demonstrate that items and processes will perform as intended. Testing should include, as appropriate, bench tests and proof tests before installation, pre-operational tests, post-maintenance tests, post-modification tests, and operational tests. Testing should be structured so that proving designs should not be confused with proofing the adequacy of work."

8.7.1.1

Prerequisite Testing

The testing organization shall perform prerequisite testing to provide verification of design configuration and system integrity for the facility. Testing and construction personnel shall perform system walkdowns to ensure that installations are in accordance with engineering design requirements. The results of the walkdowns should become the basis for the system turnover punchlist which identifies all incomplete and nonconforming items prior to system release for testing. The test engineer shall determine which items must be completed to support testing activities and prioritize the items for completion by the construction organization. The test engineer shall conduct the prerequisite testing activities in accordance with approved written test instructions and procedures. The prerequisite tests include circuit continuity checks, functioning of relays, pipe flushing, hydrostatic, pneumatic, rotating equipment, and other tests required to ensure proper component function prior to system operation.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.1, Section 2.1.0

"Cleaning and cleanness control activities for each phase (manufacturing, construction, modification, repair, etc.) shall be planned in accordance with the requirements of the Introduction to this Standard. The plan(s) shall define the cleaning and inspection operations to be used, the system, the responsibilities of the parties concerned for each operation, and the measures to be employed to preserve the cleanness of cleaned surfaces. In addition, planning shall consider the following factors, as appropriate, recognizing that this list may not be complete nor applicable to each phase covered by this Standard: (a) adequacy of vents, drains, inspection access points, and bypass or recirculation lines; (b) facilities for filters and flushing and drain connections in locations where dead legs are unavoidable; (c) design and installation of piping in a manner that minimizes the necessity for installing temporary piping during the cleaning operations, such as dividing the system into a number of separate cleaning circuits to

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facilitate cleanability; (d) sequencing of installation operations to provide for visual inspection of inside surfaces of large diameter piping; (e) control of installation operations so that piping and components that have already been installed are not subject to contamination when subsequent installation operations are performed; (f) adequacy of pumping and heating capacities when these are important factors in the cleaning operations; (g) disposal of cleaning solutions and waste water; (h) safety, fire protection, and other hazards."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.1, Section 2.2.1

"Written procedures and instructions for cleaning, cleanness control, inspections, and tests to verify cleanness of items shall be prepared in accordance with the requirements of the Introduction to this Standard."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.1, Section 3.1

"The level of cleanness required for any particular application is a function of the particular item under consideration. The assignment of a cleanness classification shall consider the following: (a) the function of the item to be cleaned; (b) the susceptibility of its materials of construction to various forms of corrosion, including intergranular cracking, or stress corrosion cracking under fabrication, installation, or operating conditions; (c) the consequences of malfunction or failure of the item; (d) the possibility of contaminants (introduced during fabrication, storage, installation, repairs, or service) contributing to or causing such malfunction or failure. Four classes of surface cleanness (Class A, B, C, and D) with criteria for each are provided in this Part. The cleanness class or classes applicable to the item or specific parts of the item shall be established and specified in the applicable drawings, specifications, or other appropriate documents. Different cleanness classes may be assigned to internal and external surfaces, or to different parts of the same item based on the cleanness needs of the specific item. Guidelines for assigning cleanness classifications are listed in the Appendix to this Part."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.1, Section 8.1

"Preparations. Insofar as practicable, cleaning and flushing operations shall be scheduled so as to minimize interference from other plant operations. Areas in which cleaning operations are being performed shall be isolated and marked to the extent that personnel performing other construction phase operations are aware that the cleaning operations are being conducted. Personnel shall be familiarized with the intended procedure and associated hazards. Means for communicating shall be provided between the local areas in which the cleaning is performed and any remote areas (e.g., control rooms) that may be related to the cleaning operations. Tools and other loose items in controlled areas shall be controlled as specified in Section 7. The actual circulating flow path shall be checked for agreement with specified requirements with regard to location, position, and status of all components. Critical valves, controls, and switches shall be tagged to prevent inadvertent actuation during the cleaning operation. The interior of all accessible components (i.e., tanks) and large diameter piping shall be inspected for cleanness; all debris and contamination shall be removed. Demineralizers, filters, instruments, valve internals, and other items that may be damaged by the cleaning process shall be blanked off, bypassed, or removed. Protective screens shall be installed on the suction side of all pumps and other components that may be subject to damage during the cleaning operations. Instrumentation (e.g., pressure, differential pressure temperature, and flow) shall be used as necessary to monitor flushing and recirculatory cleaning operations. Instrumentation installed in the system but not used to monitor the cleaning operations shall be isolated where

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necessary. Cleaning of the reactor vessel and reactor vessel internals shall be completed before installation of fuel and control rods. Provision shall be made to collect liquid leakage and to prevent wetting of insulation. Where the use of installed plant components such as pumps may be affected by the cleaning operations, recommendations shall be obtained from the component manufacturers regarding precautions to be taken for the use of their components. Procedures shall be established to protect or isolate installed components that could be adversely affected by cleaning or flushing operations."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.1, Section 8.2.1

"Flushing. If the intended level of cleanness has been maintained during erection of the part, only flushing or rinsing will normally be required. The system shall be filled with fluid of the type and quality specified and flushed in accordance with approved procedures. Completion of flushing shall be determined by filter, turbidimetric or chemical analysis, or any combination of these, as applicable. If flushes are directed toward the large components, provisions shall be made to prevent contaminants from collecting in areas where they cannot be removed in subsequent cleaning operations. Provision shall be made to assure that organics do not remain on the surfaces. After system flushing is completed, but before draining, all pockets and dead legs shall be thoroughly flushed. Where condition water is used, particular attention should be given to assure that large volumes of solvent do not remain trapped in the system. After cleaning, the item shall be sealed where appropriate to prevent the subsequent entry of contaminants. If no further cleaning is required, system layup shall be performed if specified."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.1, Section 9

"Layup and Post-Layup Cleaning. Upon completion of preoperational cleaning, unless the item is to be released for the next series of tests, the item shall be placed in layup condition by filling with dry, contaminant-free inert gas or dry air; the process fluid that will be used in the system during operation; fluid of purity equivalent to that used to make up the system; chemically conditioned fluid; or other specified method. Prior to the next series of operations or tests, residual cleaning solutions or layup media shall be removed, if required, from the item by flushing or by draining and filling until the effluent fluid from the item meets the preoperational test fluid quality requirements for the system."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.8, Section 4.4.1

"Cleaning. Installed systems and components shall be cleaned, flushed, and conditioned according to applicable requirements. (a) Chemical Conditioning. Procedures shall be prepared including the scope, acceptance criteria, sequence, temperatures, soak periods, and neutralizing solutions to be used. Checks shall be made to verify that proper chemicals at the designated strength and temperature are being used in the conditioning operations. Other operations shall be performed as specified in (c) below. (b) Flushing. Procedures shall be prepared including routes, boundaries, velocities and acceptance criteria, restoration, and layup for high integrity systems, where appropriate. Checks shall be made to verify that mechanical items are being flushed in accordance with specified requirements so that contaminants or flow velocities will not adversely affect subsequent operations. Other operations shall be performed as specified in (c) below. (c) Process Controls. Checks shall be performed to verify that controls are functioning for the following: (1) removal and installation of parts or components such as metering devices, orifice plates, and valve internals that are removed from the system to facilitate flushing; (2) installation and removal of temporary strainers, blind flanges, and piping; (3) isolation of sensitive instrumentation; (4) water and chemical quality; (5) acceptance

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data, specimens, or progressive samples, if required. Where appropriate for disassembly and reassembly of components, procedures or instructions shall be prepared or manufacturer's technical manuals shall be used to assure adherence to match marks, protection of seats, and proper reassembly and to preclude damage to the component."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.8, Section 4.4.2

"Pressure Testing. Checks shall be made to verify that mechanical items are being pressure tested in accordance with specified requirements to assure that the strength and integrity of the installed systems or portions thereof conform to specified requirements. The purpose of the test, scope, test boundary, duration for inspection, acceptance criteria, restoration, and layup shall be clearly established and documented. Checks shall include, but not be limited to, the following. (a) Appropriate pressures, temperatures, was chemistry, and pressure test cycles are established. (b) Sufficient time at test pressure is specified to determine acceptance. (c) Provisions are available to protect and isolate instrumentation during hydrostatic testing. (d) Items external to test boundary are protected to prevent inadvertent overpressurization. (e) Relief devices are controlled to prevent system overpressurization. (f) Gaggling and ungagging of relief vales. (g) Piping and equipment supports have hydrostatic pins installed where applicable for testing and are to be removed upon completion of testing. (h) Evidence of calibration of test gages."

SITE REQUIREMENT SOURCE: DOE4700.1 Attachment III, Section 4.3.a(1)

"Installation Checks. This phase will include a visual inspection by system of all components and equipment to assure that installation is in accordance with design plans. Fluid systems will be checked for proper arrangement, including locating and mounting of components, hanging and anchoring of piping, alignment and bolting of machinery locking devices, space envelopes required for maintenance, and the accessibility of operating parts of the system. Instrumentation and control systems will be checked for proper installation, including grounding, connections, mechanical operability of components, and proper wiring, including wrapping, servicing, sleeving, and marking. Circuit continuity, wiring, insulation, and proper ventilation will be checked, including heat dissipation features."

8.7.1.2

Preoperational Testing

The testing organization shall perform preoperational testing to assure the capability of all plant systems to operate within design parameters and functional requirements. The test engineer shall conduct these tests in accordance with approved test instructions and procedures. The preoperational test procedure shall verify and document the completion of all prerequisite testing and requirements prior to the start of the preoperational test.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.8, Section 5.2

"Preoperational Testing. This testing involves the operation of all items in a system(s) or partial system(s) to assure that operation is in accordance with the design criteria and functional requirements. The testing shall include, but not be limited to, the following: (a) systems integrity; (b) in-line instrument installation is consistent with specified flow directions; (c) sensing lines are phased correctly to in-line elements and sensors; (d) service requirements for initial operation such as flow alignments, limiting flow orificing, and relief devices have been performed; (e) operation of controls, valves, dampers, operators, and load limiting devices; (f) rotating equipment (motors, pumps, blowers), rotation, speed, vibration, noise,

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and no-load operation; (g) handling equipment (load tests of cranes, hoists, conveyors, hooks, handling adapters, and accessories); (h) containment systems; (i) air handling systems; (j) fuel storage and handling systems; (k) reactor component handling systems; (l) instrument air systems; (m) fluid service systems; (n) auxiliary building systems. Where mechanical equipment and systems interface with, and their operation must coordinate with, nonmechanical equipment or systems, the test performed shall include verifying the compatibility of interfacing equipment and functions."

8.7.2

Start-up/Turnover

The construction organization should perform component, system, and area turnovers in accordance with written procedures which define the process, scoping boundaries, walkdowns, acceptance criteria, and turnover packages required for a smooth transition from construction to the testing phase. The scoping documents should clearly define the structures, systems, and components included within the boundaries of the turnover package. The construction and turnover completion activities should be scheduled to support testing activities. The turnover procedures should specify adequate lead times for walkdowns to ensure completion of required items without impacting the testing schedule. Construction and Testing personnel should conduct joint walkdowns to identify incomplete, deficient, and exception items within the scoping boundaries of the turnover package. The walkdown results should be compiled and entered into a computerized database for punchlist development, which should be used for prioritization and tracking of items for the turnover package. The procedures should describe turnover acceptance criteria which can be easily interpreted by the construction and testing organizations. The acceptance criteria should establish guidelines for completeness, cleanliness, and other relevant factors. The turnover package contents document the transfer of control from construction to testing for the structures, systems, and components therein. The turnover package should include an equipment list, and a current punchlist which identifies incomplete, deficient, and exception items. The review and approval of the turnover package should be conducted by the appropriate personnel in accordance with the procedures.

The interface for the construction, testing, and operations organizations regarding jurisdictional control should be clearly defined in written procedures. The procedures should address testing and operations tagging, and the conduct of construction and modification activities for systems under the jurisdiction of testing and/or operations.

SITE REQUIREMENT SOURCE: INPO-86-023 Volume 5, Chapter II, Section 3

"Project procedures should assign the responsibilities described above, define the sequence of steps for processing a turnover, and ensure uniformity among department procedures. Project procedures also should define the criteria for acceptable systems, turnover packages, and exceptions. Department administrative instructions should be closely coordinated and should cover topics such as scoping, walkdowns, turnover package content, turnover package processing, and documentation."

SITE REQUIREMENT SOURCE: INPO-86-023 Volume 5, Chapter II, Section 5

"Scoping plans describe the boundaries for each turnover to clearly define the components. System turnover boundaries and sequence(s) should be established early to support development of system completion schedules. The scope typically is marked on drawings such as P&IDs and schematics. Equipment lists also are frequently used. The important

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consideration is that the scope should be sufficiently detailed for the system completion organization to understand what is included.

SITE REQUIREMENT SOURCE: INPO-86-023 Volume 5, Chapter II, Section 7

Walkdowns should be performed to determine which items remain to be completed on the system. Initial walkdowns should be performed well in advance of the scheduled turnover date so items that must be completed prior to turnover can be accomplished without impacting the schedule. Construction and startup system engineers should perform walkdowns to identify incomplete or deficient items, to determine which items are needed before turnover, and to organize the items in order of priority. Joint walkdowns may be useful for discussing specific details and alternatives.

SITE REQUIREMENT SOURCE: INPO-86-023 Volume 5, Chapter II, Section 8

The criteria for acceptance of turnovers should be clear to provide common understanding among construction and startup personnel. There should be project standards on the allowable incomplete work items, material condition, cleanliness, and turnover package content. The criteria should provide needed guidance and should be reinforced by management directives.

SITE REQUIREMENT SOURCE: INPO-86-023 Volume 5, Chapter II, Section 9

"A turnover package is used to document the transfer of jurisdiction of a system or area. Turnover package content and processing should be defined by project directives. Typical packages include the following items:

- scope description or documents (instrument index, valve list, equipment list, etc.)
- list of incomplete or deficient work items or reference to a punchlist
- copies of equipment preventative and corrective maintenance records
- Indication that test results are approved (for final system turnover)
- applicable open nonconformance reports

Package processing should be thorough and timely. Processing typically includes reviews by appropriate systems engineers and approval by managers in the submitting organization, quality assurance organization (if applicable), and the receiving organization."

8.7.3

Operational Readiness Review

The Operational Readiness Review (ORR) shall be conducted prior to facility operation and/or restart. The ORR is implemented by the plan-of-action which identifies the criteria for facility operation and/or restart. The plan-of- action shall be approved per procedure by the appropriate levels of management prior to implementation. The ORR shall be performed per the approved plan-of- action when startup activities have reached a sufficient state of readiness. Project management should select a team of technical personnel with appropriate training and qualifications for the performance of the ORR. The framework and guidelines for the review process is provided in the Management Systems Functional Area.

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SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 10.b(8)(a)

"The Contractor shall: Prepare a plan-of-action; (SEN-16B-91, Responsibilities, Contractor, 1st tick)"

REQUIREMENT AUTHORITY

1. SEN-16B-91 Attachment Paragraph 4
2. DOE-RL-9301143B Mandated EM Guidance

SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 10.b(8)(b)

"The Contractor shall: Request cognizant Field Office approval of the restart plans-of-actions; (SEN-16B-91, Responsibilities, Contractor, 2nd tick)"

REQUIREMENT AUTHORITY

1. SEN-16B-91 Attachment Paragraph 5
2. DOE-RL-9301143B Mandated EM Guidance

SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 10.b(8)(c)

"The Contractor shall: Conduct contractor's ORR and request that DOE perform the DOE ORR when satisfied that all applicable supporting activities have been completed; (SEN-16B-91, Responsibilities, Contractor, 3rd tick)"

REQUIREMENT AUTHORITY

1. SEN-16B-91 Attachment Paragraph 6
2. DOE-RL-9301143B Mandated EM Guidance

SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 10.b(8)(d)

"The Contractor shall: Request cognizant field office approval to perform a Type 1 restart; and (SEN-16B-91, Responsibilities, Contractor, 4th tick)"

REQUIREMENT AUTHORITY

1. SEN-16B-91 Attachment Paragraph 7
2. DOE-RL-9301143B Mandated EM Guidance

SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 10.b(8)(e)

"The Contractor shall: Approval all Type 6 restarts. [Procedure 6a5]"

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REQUIREMENT AUTHORITY

1. DOE-NE-RESTART-P Procedure Section 6.a.5)
2. DOE-RL-9201837B Mandated NE Guidance
3. DOE-RL-9301143B Mandated EM Guidance

SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 4

"POLICY. It is the Department's policy that new nuclear facilities shall not be started up, nor shall existing nuclear facilities be restarted, unless a documented review of readiness has been conducted and the approval specified in this Order has been received. The review shall in all cases demonstrate that it is safe to startup (or restart) the applicable facility."

REQUIREMENT AUTHORITY

1. DOE-NE-RESTART-P Procedure Section 4.
2. DOE-RL-9201837B Mandated NE Guidance
3. DOE-RL-9301143B Mandated EM Guidance

SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 7.a

"Contractors and Departmental Elements shall develop procedures to implement the startup/restart requirements included within this Order."

REQUIREMENT AUTHORITY

1. DOE-RL-9301143B Mandated EM Guidance
2. DOE-EM-23-T:3-7910 Attachment 1, Key ORR Element 1

SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 7.g

"For all types of restarts of nuclear facilities, except for Type 6, the facility contractor shall develop plans-of-action. DOE will also develop a plan-of-action for Type 1 restarts. The contractor and DOE plans-of-action for Type 1 restarts shall be submitted to the Director of the Office of Nuclear Safety (NS-1) and the Assistant Secretary for Environment, Safety, and Health (EH-1) for review and comment. The PSO approves the contractor's plans-of-action for Types 1, 2, and 3 restarts. The DOE Program Manager approves the contractor's plans-of-action for Type 4 restarts, and the Field Office manager approves the contractors' plans-of-action for Type 5 restarts."

REQUIREMENT AUTHORITY

1. SEN-16B-91 Attachment Paragraph 4
2. DOE-RL-9301143B Mandated EM Guidance

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3. DOE-EM-23-T:3-7910 Attachment 1, Key ORR Element 2

RELATED REFERENCES

1. DOE5480.RESTART Section 8.b

SITE REQUIREMENT SOURCE: DOE5480.RESTART Section 7.j

"Restarts of nuclear facilities shall be approved in accordance with paragraph 9."

8.7.4

Post-Modification

The Post-Modification testing program shall ensure functional and operational characteristics of systems which have been altered, modified, or disassembled. This testing shall be performed upon completion of system modifications which occurred after completion and approval of the prerequisite, preoperational, and operational testing programs or after facility operation. Post-modification tests shall be conducted by the Operations organization in accordance with the requirements of the Operations Functional Area.

8.7.5

Special Tests

Special tests should be conducted under the jurisdictional control of the Operations Functional Area. These tests are performed by the Operations organization to provide methods for varying the facility product parameters and quality of the end product.

8.7.6

Test Sequence

The testing organization shall establish a test sequence matrix to control the hierarchy for performing testing activities. The test sequence matrix shall identify the progression of testing activities to ensure prerequisites are completed for subsequent tests and the results of testing activities provide data which satisfies testing goals and objectives. The test sequence matrix should reviewed and approved in accordance with procedures.

SITE REQUIREMENT SOURCE: DOE4700.1 Attachment III, Section 4.4.d

"Project Test Sequence. The project test sequence consists of tests, parts of tests, and significant events for each plant arranged in order of performance so that all prerequisites for testing are met and so results will provide the data required to satisfactorily complete the test program and the sequence for project safety. The test sequence is prepared, reviewed, and approved, and issued in the same manner as specified in subparagraph 4c above, for the test index, and is submitted with or subsequent to the test index."

8.7.7

Test Documentation

The testing program shall be conducted through test specifications, and test procedures. The test specifications, which are developed from engineering criteria, provide the testing requirements for all facility systems and components. The testing organization shall develop the testing procedures, which provide the detailed instructions for performance of testing activities from the test specifications. The test procedures shall identify the prerequisites and precautions necessary to support the test. Test changes shall be performed in accordance with

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approved procedures. The test change process should include the reason, a technical evaluation, project impact, and review and approval commensurate with the scope of the change. The entire scope of facility testing should be compiled and documented in a test index to enable tracking and status of testing activities.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.1, Section 11

"Records. The following shall be prepared: (a) record copies of procedures; (b) reports; (c) test equipment calibration records (d) test deviation or exception records; (e) inspection and examination records; (f) other records necessary to document the cleaning and cleanliness history of the items during manufacture, shipment, storage, installation, preoperational cleaning, modifications, and repairs. These records shall be retained with other project records as required by code, standard, specification, or project procedures."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.1, Section 2.2.2

"Preparation of the actual cleaning procedures or instructions shall consider the following: (a) work practices, housekeeping, access control, and prevention of contamination and recontamination; (b) effectiveness of cleaning methods for removal of the contaminants; (c) effects of residual quantities of cutting fluids, liquid penetrants, weld fluxes, precleaning solutions, engineering test fluids, and other process compounds that may have been intentionally or advertently applied to the surface of the item during prior steps of manufacture, installation, or use; (d) corrosiveness of cleaning solutions in contact with the material of an item, particularly in the case of dissimilar metals and entrapment of cleaning solutions; (e) chemical composition, concentration, and temperature limits of cleaning solutions to avoid deleterious effects; (f) solution and metal temperatures, solution concentrations, velocity, and contact times during cleaning; (g) methods for monitoring cleaning solution concentration, temperatures, and velocities during cleaning operations; (h) identification of the items for which the procedures are to be used; (i) sequence of operations and methods of filling system circulation, draining, and flushing; (j)(1) equipment isolation (2) location of: (a) temporary piping and valves (b) strainers (c) temporary equipment (d) connections for filling, flushing, rinsing, and draining equipment (k) activities to be prohibited or constrained before, during, and after cleaning operations; (l) methods for rinsing and neutralizing, including estimated number of rinses; (m) methods for verifying cleanliness; (n) methods for drying and layup; (o) methods for protecting installed items which are not involved in the cleaning operation; (p) method of disposal of cleaning solution."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.8, Section 7

"Records. Record copies of procedures, reports, required qualification records, test equipment calibration records, test deviation or exception records, and inspection, examination, and check records shall be prepared. These records shall be retained with other project records as required by code, standard, specification, or project procedures."

SITE REQUIREMENT SOURCE: DOE4700.1 Attachment III, Section 4.4.a

"Test specifications. Specifications will establish test requirements and parameters for all levels of tests performed on major components, subsystems, or systems as applicable to ensure that essential design, interface, and performance requirements are met. The specifications will be developed as the system design evolves."

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SITE REQUIREMENT SOURCE: DOE4700.1 Attachment III, Section 4.4.b

"Test procedures. Test procedures are the basic documents of the project test program. They specify prerequisites, special equipment, precautions, and the steps to be followed during conduct of the test. Test requirements specify the testing to be performed and are used to prepare the detailed procedures for accomplishing testing."

SITE REQUIREMENT SOURCE: DOE4700.1 Attachment III, Section 4.4.b(5)

"Test Procedure Changes. Changes which unnecessarily increase the scope of existing procedures, and which are not required for safe operation or to correct errors, should not be submitted. Procedure change requests must be submitted to the plant contractor, must include the reason why the change is required, and must give a technical evaluation showing why the change is satisfactory. The contractor should obtain concurrence of the board in the need for a change prior to submitting the change request for approval."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.b(4)

"Test procedures should be developed and include: (a) instructions and prerequisites to perform the test; (b) completeness and accuracy of data; (c) use of test equipment; (d) acceptance criteria; (e) inspection hold points as required; and (f) test article configuration."

8.7.8

Evaluation of Test Data and Results

The testing program shall establish the acceptability of test data and results through a review process which involves engineering design, testing personnel, operations personnel, and quality assurance. The evaluation process shall be performed in accordance with approved procedures. The testing review committee shall document their review of the test data and results in the test procedure or turnover package. Approved test packages shall be forwarded per procedure to a records storage vault. Test packages which are reviewed and found to be deficient shall have retests performed in accordance with original test requirements.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.8, Section 6

"Data Analysis and Evaluation. Procedures shall be established for processing inspection and test data and their analysis, evaluation, and final acceptance. These procedures shall identify individuals or organizations responsible for the acquisitions and reduction of inspection and test data, and evaluation against acceptance criteria, operating limits, and performance standards. The data processing procedure shall provide for preliminary evaluation to determine the validity of the inspection and test results and the appropriateness of continuing the inspection or test. The data shall be analyzed and evaluated to verify completeness of results, achievement of inspection and test objectives, and operational proficiency of equipment and systems; to identify additional inspection or test requirement or both; and to identify necessary changes to the installation inspection or test procedures. Inspection and test results supported by the inspection and test data, together with a report of data analysis and evaluation, shall be provided as specified in Section 7."

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SITE REQUIREMENT SOURCE: DOE4700.1 Attachment III, Section 4.4.b (6)

"Review of Completed Test Procedure. Following the performance of testing, the members of the board review and concur with the data for the completed test and sign to the effect that the test has been satisfactorily completed."

8.8

CONSTRUCTION SAFETY

Construction management should ensure that a comprehensive and effective safety program is implemented for the facility. An industrial safety policy should be established and clearly communicated to all personnel performing construction activities. Management shall demonstrate the importance of adherence to program requirements and rules through their actions. Supervision should enforce rigid compliance to the safety program. An effective safety program should establish procedures which cover all aspects of worker safety. The procedures should provide detailed instructions commensurate with the health and safety risks associated to the task performed. Special consideration should be given to tasks involving confined spaces, scaffolding, personal safety equipment, and safety tagging. The program should be administered at the site level with execution through a facility safety supervisor. Provisions should be included for the establishment of a first aid facility with appropriate staffing to respond to on-site injuries and accidents. The safety supervisor should involve workers in weekly safety meetings which cover recent safety violations and encourage reporting of potential facility safety hazards. The programmatic controls and requirements for construction safety should encompass the guidelines provided in the Occupational Safety and Health Functional Area.

SITE REQUIREMENT SOURCE: DOE4700.1 Chapter V, Section A.2.1

"Construction Health and Safety. A comprehensive health and safety program must be established and utilized for all Departmental construction projects. The goals of this program are to protect DOE employees, contractor employees, and the general public from hazards; to protect property from damage, and to prevent delay or interruption in the Department's programs caused by accidents and fires in connection with construction activities. The authorities, responsibilities, and standards for construction safety are contained in DOE 5480.1A, DOE 5481.1A, and DOE 6430.1, Chapter 10. Consideration of safety requirements must begin early in the planning phase of a project to ensure that they are included in all plans, studies, schedules, and cost estimates. An example of a safety requirement which must begin early is the case in which additional real state may be required to achieve fire separations necessary to meet the improved risk criteria of DOE 5480.1A."

8.9

TOOLS AND EQUIPMENT

Measuring and test equipment used for establishing the quality of construction and testing shall be controlled by the facility. The programmatic controls involved are an equipment list, unique identification, traceability, issue control, return and recall, calibration, and storage.

SITE REQUIREMENT SOURCE: ANSI/ASQC-C1-85 Section 3.7.1

"Measuring Instruments. General. Validity of measurements and tests shall be assured through the use of suitable inspection measuring and test equipment of the range, accuracy, and precision necessary to determine conformance of articles. Calibration procedures shall be utilized and measurements shall be performed by qualified personnel in an environment

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controlled to the extent necessary to assure the required accuracy. At intervals established to ensure continued validity, measuring devices shall be verified or calibrated against certified standards that are traceable to national standards or naturally occurring physical constants. Tooling used as media of inspection shall be included in this program. Furthermore, every device so verified shall bear an indication attesting to the current status and showing the date (or other basis) on which inspection or recalibration is required next."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(1)

"Measuring and Test Equipment (1) A process should be established and implemented to control calibration, maintenance, accountability, and use of equipment used to control any process parameter which influences the quality of an item's characteristics, or which is used for in-process or final inspection of an item."

8.9.1

M&TE Equipment list

A measuring and test equipment list should be developed and maintained for the purpose of tracking equipment controlled by the program. The list should include the identification, calibration standard, and current status of each item.

SITE REQUIREMENT SOURCE: ANSI/IEEE-498-1985 Section 4.1

"Equipment identification. A list of measuring and test equipment, and reference standards and their assigned locations shall be prepared to specifically identify those items within the calibration program."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(2)

"The types of equipment to be used, such as instruments, tools, gauges, reference and transfer standards, and nondestructive examination equipment, should be defined."

8.9.2

M&TE Control, Issuance, Return and Recall

The equipment controlled by this program should have a unique number to provide positive identification. The identification number shall be secured to the equipment in an appropriate manner. Items having insufficient size for etching or inscribing of the number shall be tagged or utilize the serial number for identification. The calibration of Measuring and Test equipment should be performed at regular intervals to ensure that items controlled by the program maintain the required accuracy. The frequency of calibration should be based upon the amount of use, equipment history, stability, or accuracy required. M&TE calibrations shall be based upon standards which are traceable to nationally recognized standards. Equipment which does not have a national standard shall have the basis for calibration documented. The issuance process should ensure that only qualified personnel are allowed access to measuring and test equipment. The M&TE program should include an issuance facility which provides protection from changing environmental conditions and permits convenient access to the equipment by authorized users. The issuance facility should maintain records which provide the user's name, date of issuance and return, the plant equipment it was used on, and the related work documents for the application. Measuring and Test equipment which is determined to be out of calibration or damaged shall be removed from service and segregated from calibrated equipment. A recall system should be implemented to ensure that M&TE items are removed from service prior to expiration of their calibration. The recall of M&TE is facilitated through

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the issuance records which identify the user. Plant equipment which was calibrated or tested with deficient M&TE shall be identified for corrective action.

SITE REQUIREMENT SOURCE: ANSI/IEEE-498-1985 Section 5.2

"Environmental Controls. Measuring and test equipment and reference standards shall be transported, stored, and calibrated in environments that will not adversely affect their accuracy. Environmental factors that shall be considered include, but are not limited to temperature, humidity, vibration, radio-frequency interference, background radiation, dust, cleanliness, and fumes. When inaccuracy of measuring and test equipment or reference standards, because of environmental effects, cannot be avoided, compensating corrections shall be determined and applied."

SITE REQUIREMENT SOURCE: ANSI/IEEE-498-1985 Section 5.3

"Intervals of Calibration. The program shall require that measuring and test equipment and reference standards be recalled for recalibration at prescribed intervals to verify the required accuracy. Such intervals may be in calendar time or relate to usage. Interval selection should consider experience, inherent stability, purpose of use, and accuracy required. Historical records which contain sufficient experience data for evaluating and adjusting calibration intervals shall be maintained."

SITE REQUIREMENT SOURCE: ANSI/IEEE-498-1985 Section 5.4

"Traceability. Measuring and test equipment shall be calibrated utilizing reference standards whose calibration has a known valid relationship to nationally recognized standards or accepted values of natural physical constants. If no national standard exists, the basis for calibration shall be documented. Reference standards used in the calibration program shall be identified on calibration data records and supported by certificates, reports, or data sheets attesting to the calibration date, calibration facility, environmental conditions, and data that shows conformance to accuracy requirements."

SITE REQUIREMENT SOURCE: ANSI/IEEE-498-1985 Section 5.5

"5.5 Labeling. Measurement and test equipment shall be labeled to indicate their control status. The label shall indicate when the next calibration is due. When size or functional characteristics of measuring and test equipment or reference standards prevent the application of a label, an identifying code shall be applied to reflect status. When neither labeling nor coding is practical, the procedures shall provide for monitoring of records to ensure control. Measuring and test equipment whose use shall be limited shall be identified and controlled; for example, a multiscaled instrument which may be acceptable on one or more scales but limited on a specific scale or an instrument that is intended to be used for making preliminary checks."

SITE REQUIREMENT SOURCE: ANSI/IEEE-498-1985 Section 5.7

"Nonconformance. Measuring and test equipment and references found to be out of calibration or which have not been properly maintained or calibrated, or which have been subjected to possible damage shall be identified and removed from service until such time as corrective measures have been taken. All equipment tested or calibrated by the item since the last calibration shall be identified and sufficient investigations performed to either re-establish the

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acceptability of the equipment or to confirm a nonconformance. The results of such investigations shall be documented."

SITE REQUIREMENT SOURCE: ANSI/IEEE-498-1985 Section 5.8 (6)

"Limiting use to authorized personnel"

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(3)

"Measuring and test equipment should be calibrated at specified intervals, or immediately before and after use, on the basis of the item's required accuracy, intended use, frequency of use, stability characteristics, and other conditions affecting its performance."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(4)

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

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(5)

"Measuring and test equipment should be calibrated against standards having an accuracy that will ensure that equipment being calibrated will be within required tolerances. If nationally recognized standards exist, calibration standards should be traceable to such standards."

SITE REQUIREMENT SOURCE: DOE5700.6C Attachment 1, Section B.4.c(6)

"Measuring and test equipment found out-of-calibration or out-of-tolerance should be tagged or segregated and not used until it is successfully recalibrated. The acceptability of items or processes measured, inspected, or tested with an out-of-tolerance device should be determined."

8.9.3

Control of Construction Tools and Equipment

The construction organization should implement a program for the control and issuance of tools and equipment required for performance of work activities. The program should provide a facility for the storage, issuance and maintenance of tools and equipment for the construction work force. The facility should be located to provide easy access and availability of tools and equipment. Records should be maintained which identify the equipment user, purpose, date of issuance and return. The program should require the return of equipment at shift change or the signature of the worker using the equipment on the succeeding shift. Construction supervisors should provide input on the program to ensure that an adequate supply of tools is maintained for safe and efficient performance of work. The condition of tools and equipment should be inspected at regular intervals to ensure the removal of damaged items from service.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.15, Section 2.2.0

"Classification of Items Handled. The requirements for activities covered in this Part are based on classifying the items into three categories according to their important physical characteristics. It is recognized that within the scope of each category there may be a range of controls, and that the need for, and extent of detailed handling requirements for an item, is

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dependent on the importance of the item to safe, reliable operation of the plant and the complexity of the operation. Pertinent manufacturer's requirements shall be considered when classifying the items. Items for which handling activities are covered by this Part shall be classified into one of the three categories below. An item shall not be reclassified to a lower status without approval by the responsible organization which assigned the original category.

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.15, Section 8.1

"Person-In-Charge (PIC). The PIC of handling operations shall be designated by his management. He shall demonstrate supervisory experience in the hoisting, rigging, and transporting activities for which he is responsible, to the satisfaction of the cognizant management."

SITE REQUIREMENT SOURCE: ASME-NQA-2-1989 Part 2.3, Section 3.4

"Construction Tools, Supplies, and Equipment. The use, location, and deployment of construction tools, supplies, and equipment shall be controlled to keep access and work areas clear and to prevent conditions that will adversely affect quality. These provisions shall include, but are not limited to, such items as the movement of materials to the work area, welding and stress relieving leads, power leads, temporary heating equipment, pumps, air and water hoses, welding machines, air compressors, hoisting equipment, air tools, grinding tools, and burning tools."

8.10

KEY PROGRAM INTERFACES

The Construction Functional Area requires the support of many functional areas as defined in the ES&H guidelines to facilitate efficient and productive conduct of construction and modification activities. The following functional areas are considered key programmatic interfaces for the Construction Functional Area.

8.10.1

Training and Qualification

Training and Qualification provides criteria for initial training, qualification, requalification, recertification and recurrent training. General employee training, and continuing training are considered to be under the guise of the Training Organization. The construction program assumes responsibility for ensuring that all personnel performing construction/testing activities are qualified and trained to current programmatic requirements for the performance of assigned duties. Training within the construction area is limited to on-the-job training to enhance personnel performance and allow for advancement of personnel to higher levels of responsibility.

8.10.2

Engineering Design

Engineering Design provides the criteria for the construction of the facility through issuance of specifications, drawings, and change documents. These items provide the basis for development of construction procedures, policies, work control, material procurement, inspection criteria, and testing requirements, but are not considered to be part of the construction area. Construction provides input to Engineering in the form of as-builts, field initiated changes, and identification of nonconformances for resolution.

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8.10.3   **Quality Assurance**

Quality Assurance provides the controls within which the construction program operates. Quality Assurance provides the criteria for all programmatic activities which affect quality at the facility. The activities of the construction program shall be discussed in this document, however the inspections of construction activities, intervals of inspection, hold points, and documentation of inspection results are inherent to Quality Assurance and will not be covered.

8.10.4   **Occupational Safety and Health**

Occupational Safety and Health provides the criteria through procedures, policies and requirements for the development of the safety program for Construction. Construction management has the responsibility for the implementation, and enforcement of the safety program applied to construction activities.

8.10.5   **Operations**

Operations provides system lockout/tagout protection as requested by test engineers prior to the performance of testing to provide safe, isolated boundaries for these activities. Construction testing and start-up activities should be closely coordinated with Operations to prevent damage to plant systems and injury to personnel.

8.10.6   **Radiation Protection**

Radiation Protection provides the requirements for personnel exposure control, measurement, guidance, and ALARA concerns. The Radiation Protection programs and procedures establish the monitoring of radiation levels in the facility and provide work controls commensurate with personnel exposure requirements.

8.10.7   **Management Systems**

Management Systems provides the administrative programs and procedures for the control of activities in the Construction functional area. Management Systems provides controls for documentation, retention, retrieval, and surveillance of records for construction activities in accordance with the Quality Assurance functional area.

8.10.8   **Environmental Protection**

Environmental Protection provides the for the permitting of construction activities and handling of construction end products (e.g. testing effluents and waste products).

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