

U.S. DEPARTMENT OF ENERGY
OFFICE/FACILITY-SPECIFIC
QUALIFICATION STANDARD

OFFICE OF ASSISTANT MANAGER FOR
CONSTRUCTION & ENGINEERING



OAK RIDGE OPERATIONS OFFICE

OCTOBER 1996
REVISION 0

CONCURRENCE AND APPROVAL

The DOE-Oak Ridge Operations Office (ORO) Engineering Services Division (ESD) Director and Project Management Division (PMD) Director are the management sponsors for this Construction & Engineering Organization Qualification Standard. As the management sponsors, the ESD and PMD directors are responsible for reviewing the qualification standard to ensure that the technical content is accurate and adequate for its intended application and for ensuring that the qualification standard is maintained current. Concurrence with this qualification standard by the ESD and PMD directors is indicated by signatures below.

The Training and Development Division (TDD) Director coordinates implementation of the technical qualification program and assists line managers in the development of ORO office/facility-specific qualification standards. Concurrence with this qualification standard by the TDD Director is indicated by signature below.

The ORO Assistant Manager for Construction and Engineering (AMCE) is the approval authority for this qualification standard. Approval of this qualification standard by the AMCE is indicated by signature below.

CONCURRENCE:

| | |
|--|-------------------------|
| <u><i>S. S. Waddle</i></u> S. S. Waddle, Engineering Services Division Director | <u>10/28/96</u> Date |
| <u><i>L. D. Boggs</i></u> L. D. Boggs, Project Management Division Director | <u>10/25/96</u> Date |
| <u><i>W. J. Vosburg</i></u> W. J. Vosburg, Training and Development Division Director | <u>10-29-96</u> Date |

APPROVAL:

| | |
|--|-------------------------|
| <u><i>G. W. Benedict</i></u> G. W. Benedict, Assistant Manager for Construction & Engineering | <u>10-29-96</u> Date |
|--|-------------------------|

CONTENTS

| | |
|--|----|
| Construction & Engineering Organization | 1 |
| Purpose | 1 |
| Qualification Standard Development | 2 |
| Applicability | 2 |
| Implementation Requirements | 2 |
| Duties and Responsibilities | 4 |
| Required Competencies | 4 |
| Evaluation Requirements | 5 |
| Continuing Training and Proficiency Requirements | 5 |
| Competencies | 7 |
| 1.0 General Technical Competencies | 7 |
| 2.0 Administrative Competencies | 10 |
| 3.0 Regulatory Competencies | 12 |
| 4.0 Management and Assessment Competencies | 14 |

U.S. DEPARTMENT OF ENERGY OFFICE/FACILITY-SPECIFIC QUALIFICATION STANDARD

CONSTRUCTION & ENGINEERING ORGANIZATION

The Construction & Engineering Organization is comprised of the Engineering Services Division (ESD) and the Project Management Division (PMD). ESD and PMD are Department of Energy Oak Ridge Operations Office (ORO) organizations. The ORO arena encompasses DOE facilities:

- Oak Ridge, TN
- Newport News, VA
- Portsmouth, OH
- Paducah, KY
- Weldon Springs, MO
- Superconducting Super Collider (SSC), TX
- Formerly Utilized Sites Remedial Action Program (FUSRAP), various locations nation wide

ESD and PMD include technical and administrative personnel who are assigned the responsibility to plan, execute, and manage projects and programs within the Oak Ridge Operations arena. In this role, ESD and PMD staff perform numerous tasks and activities for supporting line management's objective for the planning, cost estimating, design, construction, and maintenance of ORO facilities. Both groups also provide guidance for and evaluation of contractor programs associated with ORO defense nuclear facilities.

PURPOSE

The AMCE Office/Facility-Specific Qualification Standard defines the qualification competencies required for carrying out the duties and responsibilities outlined above and detailed on page 4. This standard is part of the Technical Qualification Program (TQP) required by DOE Order 360.1, Training, and supplements the department-wide General Technical Base and functional area qualification standards. It contains the competency requirements ESD and PMD staff assigned to the Technical Qualification Program need (as a composite) in order to perform assigned activities. Documented satisfactory completion of the competencies contained in this qualification standard ensures that the ESD and PMD staff are qualified to fulfill their duties and responsibilities.

QUALIFICATION STANDARD DEVELOPMENT

This qualification standard has been constructed using information from ESD and PMD position descriptions, procedures, and interviews with ESD and PMD staff. The format of this document follows the department-wide functional area qualification standards developed by DOE Human Resources' Office of the Technical Personnel Program Coordinator.

APPLICABILITY

This qualification standard applies to selected ESD and PMD staff, and other Federal personnel temporarily assigned to AMCE, who provide management direction or technical oversight that could impact the safe operation of an ORO defense nuclear facility.

IMPLEMENTATION REQUIREMENTS

The competencies contained in the Standard are divided into the following categories:

1. General Technical
2. Administrative
3. Regulatory
4. Management and Assessment

Each of the categories contains one or more competency statements indicated by bold print. The competency statements define the expected capabilities that an individual must possess. Division applicability is annotated at the end of the competency statement. Each of the competency statements is followed by a listing of supporting knowledge and/or skill statements that further amplify and describe the intent of the competency. The supporting knowledge and skill statements are not additional requirements and do not necessarily have to be fulfilled to meet the intent of the competency.

All of the competencies identify either a familiarity level, working level, or expert level of knowledge, or they require the individual to demonstrate the ability to perform a task or activity. These levels are defined as follows:

FAMILIARITY LEVEL is defined as basic knowledge of or exposure to the subject or process adequate to discuss the subject or process with individuals of greater knowledge.

WORKING LEVEL is defined as the knowledge required to monitor and assess operations/activities, to apply standards of acceptable performance, and to reference appropriate materials and/or expert advice as required to ensure the safety of Department activities.

EXPERT LEVEL is defined as a comprehensive, intensive knowledge of the subject or process sufficient to provide advice in the absence of procedural guidance.

DEMONSTRATE THE ABILITY is defined as the actual performance of a task or activity in accordance with policy, procedures, guidelines, and/or accepted industry or Department practices.

This qualification standard contains a composite of all the competencies applicable to the ORO AMCE staff as a group who are enrolled in the TQP. No one individual is expected to be qualified on all the competencies. The ESD Director and PMD Director assign to each participating ESD and PMD member respectively, the specific competencies from this qualification standard that the participant is required to complete.

Exemptions are not used in this phase of the qualification program. Only those competencies assigned by management are required to be completed. The AMCE reviews the competencies selected for the ESD and PMD directors to complete.

Equivalencies may be granted for individual competencies based upon an objective evaluation of the employee's prior education, training, and/or experience. Documentation of equivalencies shall indicate how the competency requirements have been met. The supporting knowledge and skill statements should be considered when evaluating an employee's ability with respect to each competency requirement.

Competencies can be achieved in numerous ways including on-the-job training; formal training and education courses, on and off the job; self-study; rotational assignments; mentoring; etc. Classroom instruction, computer-based training, interactive television broadcasts, and self-study guides are available to individuals preparing to meet competencies in their qualification standards. Training courses used to acquire needed competencies should be selected with care so as to best satisfy the competencies.

DOE orders are frequently referenced as standards for competencies. Individuals assigned such competencies and those evaluating the performance must be aware that many DOE orders in the directive system are being deleted, consolidated, or phased out. When DOE orders and other documents are referenced in the qualification standard, the most recent approved revision should be used for study and evaluation.

TQP participants use this qualification standard in conjunction with their Technical Qualification Records to document implementation and completion of the office/facility-specific qualification requirements. Documented completion of the requirements of this qualification standard will be included in the employee's training record.

DUTIES AND RESPONSIBILITIES

The following duties and responsibilities are in addition to those outlined in individual functional area qualification standards. These duties and responsibilities may be assigned to ORO AMCE staff whose position requires them to provide management direction or oversight that could impact the safe operation of a defense nuclear facility and who provide technical support to line management for review and assessment of management and operating (M&O) contractor construction, engineering, and infrastructure programs.

1. Manage ORO assets in accordance with DOE Order 430.1, Life Cycle Asset Management.
2. Implement and support DOE Order 440.1, Worker Protection Management for DOE Federal and Contractor Employees.
3. Employ methods of performance-based contract management as it pertains to assigned Incentive Task Orders (ITO).
4. Ensure adherence to the Davis-Bacon and Service Contract Acts.
5. Serve as the Contracting Officer Representative (COR) for technical direction to prime contractors as required.
6. Manage assigned work in accordance with AMCE office manuals.
7. Utilize computer software systems (e.g., Windows 95, Netscape, WordPerfect 6.1, Ontime, Pagemet, and Travel Manager).

REQUIRED COMPETENCIES

The competencies contained in this qualification standard are distinct from those competencies contained in the General Technical Base Qualification Standard and the series of department-wide functional area qualification standards. Participating individuals must complete the competency requirements of the General Technical Base Qualification Standard and a primary functional area qualification standard prior to or in parallel with the completion of assigned competency requirements in this qualification standard.

Participating ESD and PMD staff should complete applicable training on such topics as general employee training, radiation worker training, and safeguards and security training as co-requisites to the requirements of this qualification standard. Most ORO sites have training requirements on these topics in order to access facilities to work. The specific training courses required for ESD and PMD staff should be identified in individual development plans (IDPs).

EVALUATION REQUIREMENTS

The evaluation process identified below serves as a measurement tool for assessing whether or not the participants have acquired the technical competencies in this qualification standard. The following requirements apply to the completion of this qualification standard.

Verifying and documenting that the competencies have been met may be accomplished by the respective division director, or by a subject matter expert (SME) designated by the division director. Any of the following methods may be used to evaluate incumbent competency. Each evaluation method is required to be documented.

- Formal education (college courses and academic degrees)
- Training (DOE, DOE contractor, other agency, vendor)
- DOE experience/on-the-job training
- Equivalencies for prior experience, education, and training
- Documented oral evaluation
- Documented observation of performance
- Written examination (including test out)

The division director or SME performing the verification must provide some level of evaluation to confirm the participant's level of understanding when self study of DOE orders, Federal and state/local regulations, procedures, or required reading is used to satisfy a competency. In all cases the evaluation is documented by signature on the participant's Technical Qualification Record.

CONTINUING TRAINING AND PROFICIENCY REQUIREMENTS

Requalification on the competencies contained in this qualification standard is not required. TQP-designated staff should participate in continuing learning activities in order to maintain and improve previously acquired knowledge and skills and to acquire new knowledge and skills where necessary. Continuing training and education to maintain technical proficiency includes the following elements:

1. Technical education and/or training on topics directly related to ESD/PMD duties and responsibilities.
2. Training on topics that address an individual's knowledge and/or skill deficiencies.
3. Training in areas added to the qualification standard since initial qualification.

Competencies added to the qualification standard are documented in the Technical Qualification Record and are addressed like other qualification standard competencies. Specific continuing training or education needs should be documented in IDPs.

1.0 GENERAL TECHNICAL COMPETENCIES

- 1.1 Construction & Engineering personnel shall demonstrate a familiarity level knowledge of the basic operations and processes for DOE-Oak Ridge defense nuclear facilities. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Discuss the primary mission(s) of ORO defense nuclear facilities (e.g., Y-12, ORNL Building 3019, K-25, Paducah and Portsmouth gaseous diffusion plants).
- b. Describe some of the key operations processes performed at ORO defense nuclear facilities.
- c. Discuss the major nuclear safety risks to workers and the public resulting from operations at ORO defense nuclear facilities.
- d. Identify the major non-nuclear hazards associated with ORO defense nuclear facility operations.

- 1.2 Construction & Engineering personnel shall demonstrate a working level knowledge of problem-solving and decision-making in order to manage activities and ensure issues are identified and appropriate actions taken to resolve and close them. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Explain the importance of problem identification and the use of occurrence reports, trending, and lessons learned for preventive and predictive actions.
- b. Explain the necessity of root cause determination in problem solving.
- c. Describe methods of root cause determination.
- d. Discuss problem solutions and weighing of risks.
- e. Explain progress monitoring and verification methods for closure of activities.

- 1.3 Construction & Engineering personnel shall demonstrate the ability to communicate (both oral and written), when working or interfacing with the Headquarters, field elements, regulatory agencies, contractors, stakeholders, and internal/external entities. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Demonstrate written communications skills in the development of:
 - Assessment and evaluation reports
 - Technical reports
 - Technical papers
- b. Demonstrate effective and appropriate communication skills when providing specific work or task directions to contractors.
- c. Describe the Department's organization and discuss the Department's procedures for communicating between elements.
- d. Describe the Department's procedures and policy for communicating with regulatory agencies.
- e. Demonstrate facilitation skills to generate productive meeting and team-building to address programmatic problems.

- 1.4 Construction & Engineering personnel shall demonstrate a working level knowledge with DOE Order 440.1, including safety in ORO construction activities, and other appropriate safety management initiatives. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Discuss the purpose of project planning and analysis related to personnel safety.
- b. Discuss the purpose and application of appropriate preliminary and activity hazard analysis.
- c. Discuss construction safety hazards related to:
 - Excavation and trenching
 - Confined spaces
 - Electrical
 - Hoisting and rigging
 - Fall protection

- d. Discuss general personnel protective equipment requirements for construction safety.
- e. Discuss hazards and identify appropriate controls associated with construction equipment and operations (e.g., power tools, heavy equipment, chemicals, radiation).
- f. Discuss common industrial and maintenance operations (e.g., welding, material handling, machining, cleaning, coating) and the safety interfaces necessary to protect workers.
- g. Describe the considerations associated with the placement of operations and equipment (e.g., location of people in proximity of moving equipment or parts, traffic patterns, structural support for equipment).
- h. Discuss principles of appropriate machine guarding and hazards associated with point of operation of workplace equipment.
- i. Describe safety management initiatives resulting from DNFSB Recommendation 95-2, Integrated Safety Management.

2.0 ADMINISTRATIVE COMPETENCIES

- 2.1 Construction & Engineering personnel shall demonstrate a working level knowledge of performance-based contract management both within DOE in general and specifically at ORO. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Define performance-based contract management (PBCM) and discuss how it is being implemented at ORO.
- b. Discuss how the following PBCM elements are applied by ESD/PMD in managing activities:
 - Results oriented statements of work
 - Objectives, measures, and expectations
 - Performance incentives
- c. Explain performance-based contract management concepts as they pertain to Incentive Task Orders (ITO) projects.
- d. Describe performance-based practices used to evaluate project management, cost estimating, maintenance, real estate, and utilities (as appropriate) under the Life Cycle Asset Management implementation process.
- e. Explain the ESD/PMD staff's general duties and tasks in the contractor performance appraisal process.
- f. Participate in a contractor performance appraisal using appropriate site contractor performance objectives, measures, and expectations.

- 2.2 Construction & Engineering personnel shall demonstrate a working level knowledge of the contents and application of AMCE Manuals. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Discuss the guidelines provided in these documents and describe the process for using the guidelines. Include steps taken to ensure the guidelines are followed in the day-to-day operation of ESD/PMD.
- b. Describe the process for performing an assessment of these manuals and discuss the criteria that could be used during an assessment.
- c. Perform a review/assessment of each chapter of the AMCE Manuals.

- d. Describe the benefits of using the AMCE Manuals over the pre-existing AMCE Project and Facility Management Procedures.
- e. Discuss the relationship between the AMCE Manuals and DOE Order 430.1, Life Cycle Asset Management.

2.3 Construction & Engineering personnel shall demonstrate a working level knowledge of typically used computer software. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Discuss the capabilities of the following (or equivalent) software/programs:
 - WordPerfect 6.1
 - Pagnet
 - Netscape
 - Ontime
 - Travel Manager
 - Windows '95
- b. Gain access to the Internet through Netscape and locate a specified universal resource locator (URL) (e.g., LMES Central Engineering Services Workload forecast data).
- c. Describe the process used to contact an ESD/PMD employee via Pagnet.
- d. Demonstrate the use of Ontime and how group meetings including the directors of ESD/PMD can be arranged.

3.0 REGULATORY COMPETENCIES

- 3.1 Construction & Engineering personnel shall demonstrate a familiarity level knowledge of existing regulatory requirements within DOE which apply to construction, engineering, and infrastructure work. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Discuss the impact of rule making on DOE and its contractors and the basic process of implementing rules.
- b. Discuss the Work Smart Standards approach as it relates to compliance.
- c. Discuss ORO's use of the Standards/Requirements Identification Documents.

- 3.2 Construction & Engineering personnel shall demonstrate a familiarity level knowledge of the following regulations and their applicability to ORO activities: (ESD, PMD)

- Davis-Bacon Act
- Service Contract Act

Supporting Knowledge and/or Skills

- a. Discuss the requirements for each document and describe the process for reviewing the above listed documents.
- b. Describe the process for performing an assessment of the above listed documents and discuss the criteria that could be used during an assessment.
- c. Perform a review/assessment of each of the above listed documents.

- 3.3 Construction & Engineering personnel shall demonstrate a familiarity level knowledge of the Price-Anderson Amendment Act of 1988 and its impact on construction, engineering, and infrastructure activities. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Describe the purpose and scope of the Price-Anderson Amendment Act.
- b. Discuss the Act's applicability to ESD/PMD activities.

- c. Discuss the civil and criminal penalties imposed on the Department, management and operating contractors, and subcontractors as the result of a violation of applicable rules and regulations related to ORO ESD/PMD activities.
- d. Discuss the role of ESD/PMD personnel with respect to implementing the requirements of the Price-Anderson Amendment Act.

4.0 MANAGEMENT AND ASSESSMENT COMPETENCIES

- 4.1. Construction & Engineering personnel shall demonstrate the ability to manage ORO projects/programs in accordance with DOE Order 430.1, Life Cycle Asset Management, and the Joint Program Direction on Project Management (JPDOPM). (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Describe the process [Condition Assessment Survey (CAS)] for assessing the condition of ORO physical assets and how the process benefits ORO.
- b. Justify how the CAS process ensures activities are being executed in the most economical and effective manner as possible.
- c. Demonstrate use of the Condition Assessment Information System (CAIS) and describe the types of information available.
- d. Describe the process and conditions for acquiring approvals for projects relating to deficiencies identified through the CAS process from the sponsoring program office.
- e. Define the following terms related to life cycle asset management and provide examples of their application:
 - Disposition
 - Asset management systems
 - Commencement of execution
 - Infrastructure
- f. Outline the systems, controls, and processes used at ORO in the management of incentive and surplus facilities.
- g. Describe uses of the Facilities Information Management System (FIMS) in carrying out management and oversight functions.
- h. Describe the role and responsibilities of the AMCE Project Manager.
- i. Compare the various categories of performance objectives, measures and expectations and how they are used by ESD/PMD and the contractor to evaluate project/program performance.
- j. Describe the process for acquiring approvals for projects from the sponsoring program office and how the JPDOPM has affected this process.

- 4.2 Construction & Engineering personnel shall demonstrate a working level knowledge of the requirements and processes for the turnover of completed facilities to operations. (ESD, PMD)

Supporting Knowledge and/or Skills

- a. Describe the elements addressed in a facility turnover plan.
- b. Participate in the review and concurrence of a turnover plan for a facility to operations.
- c. Discuss the various tests and evaluations used to verify that facilities and equipment installed or modified by projects perform according to documented performance criteria.
- d. Discuss the purpose of ORRs as outlined in DOE Order 5480.31, Startup and Restart of Nuclear Facilities.
- e. Describe how operational readiness is verified for a construction project at ORO. Include the following:
 - Guidance covering the process
 - Checklist of performance resources/objective
 - Personnel selection and qualification
 - Documentation and reporting of findings
 - Corrective actions and planning for deficient conditions