

**U.S. DEPARTMENT OF ENERGY
OAK RIDGE OFFICE**



SAFETY BASIS

**OFFICE/FACILITY-SPECIFIC
QUALIFICATION STANDARD**

**Revision 2
February 2008**

CONCURRENCE AND APPROVAL

The DOE Oak Ridge Office (ORO) Human Capital Assessment Group (HCAG) is the sponsor for this Safety Basis Office/Facility-Specific (OFS) Qualification Standard. The HCAG organization, with subject matter assistance from the offices of Assistant Manager for Environment, Safety, and Health, Assistant Manager for Environmental Management, Assistant Manager for Science, and the Assistant Manager for Nuclear Fuel Supply is responsible for reviewing this 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 ORO management is indicated by the signatures below.

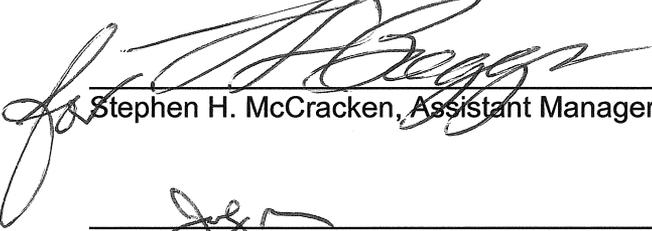
The Human Capital Assessment Group (HCAG) coordinates implementation of the Technical Qualification Program (TQP) and assists line managers in the development of ORO office/facility-specific qualification standards. Concurrence with this qualification standard by the Deputy Director of Human Resources is indicated by the signature below.

The ORO Federal Technical Capability Program (FTCP) Panel provides concurrence for this qualification standard and is indicated by the signature of the ORO FTCP Panel Chair below. In addition, approval of this qualification standard is indicated by the ORO Manager's signature below.

CONCURRENCE:



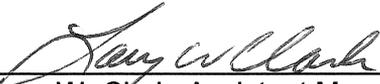
William D. (Jim) Vosburg, Deputy Director, ORO Human Resources Division
1-31-08
Date



Stephen H. McCracken, Assistant Manager for Environmental Management
1/31/08
Date



Johnny O. Moore, Assistant Manager for Science
2/4/08
Date



Larry W. Clark, Assistant Manager for Nuclear Fuel Supply
2/4/08
Date



Larry C. Kelly, Assistant Manager for Environment, Safety, and Health and
ORO FTCP Panel Chair
2-8-08
Date

APPROVAL:



Gerald G. Boyd, ORO Manager
2/12/08
Date

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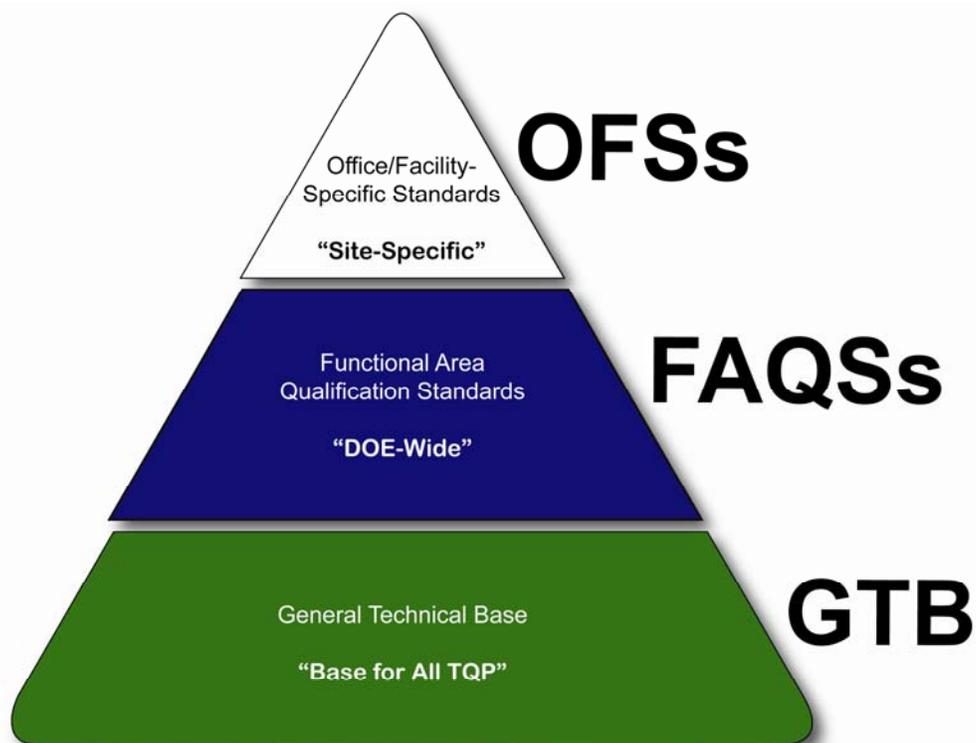
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PURPOSE

DOE M 426.1-1, *Federal Technical Capability Manual*, commits the Department to continuously strive for technical excellence. The Technical Qualification Program (TQP), along with the supporting technical qualification standards, complements the personnel processes that support the Department's drive for technical excellence. In support of this goal, the competency requirements defined in this technical qualification standard should be aligned with and integrated into the recruitment and staffing processes for technical positions. This OFS qualification standard contributes to the basis for developing vacancy announcements, qualification requirements, crediting plans, interviewing questions, and other criteria associated with the recruitment, selection, and internal placement of Safety Basis personnel.

This ORO OFS qualification standard is required by DOE M 360.1-1, *Federal Employee Training Manual*, DOE O 360.1, *Federal Employee Training*, and DOE M 426.1-1, *Federal Technical Capability Manual*, as part of the Technical Qualification Program (TQP) and as outlined in the illustration below, supplements the department-wide General Technical Base (GTB) qualification standard and Functional Area Qualification Standards (FAQSs).

Safety Basis OFS competencies are assigned to each of the ORO positions with safety basis responsibilities and are listed in the Safety Basis Competencies-by-Position Matrix, which is available at the HCAG web site, <http://www.ornl.gov/tdd/QualPrgm/qualprgm3.htm>. Individuals in these Safety Basis positions are expected to add these Safety Basis competencies to their individual development plans and TQP.



APPLICABILITY

This ORO OFS qualification standard establishes common office/facility-specific area competency requirements for all ORO Safety Basis personnel who provide assistance, direction, guidance, oversight, or evaluation of contractor technical activities that could impact the safe operation of DOE's nuclear and non-nuclear facilities.

IMPLEMENTATION

This ORO OFS qualification standard identifies the minimum technical competency requirements for DOE ORO Safety Basis personnel. The competency statements define the expected knowledge and/or skill that an individual must meet. Each of the competency statements is further described by a listing of supporting knowledge and/or skill statements, which although not required, do describe the intent of the competency statements.

The format of this standard is consistent with the department-wide functional area qualification standards developed by the DOE FTCP Panel. The nine safety basis competencies are organized by specificity of application into three overlapping groups. Within each group are three levels indicating the depth and breadth of the knowledge or skill.

Generally, TQP competencies identify a familiarity level, a working level, or an 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 recognize the need to seek and obtain appropriate expert advice (e.g., technical, legal, safety) or consult appropriate reference materials required to ensure the safety of Departmental 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.

Equivalencies should be used sparingly and with the utmost rigor and scrutiny to maintain the spirit and intent of the TQP. Equivalencies may be granted for individual competencies based on objective evidence of previous education, training, certification, or experience. Objective evidence includes a combination of transcripts, certifications, and in some cases, a knowledge sampling through a written and/or oral examination. Equivalencies shall be granted in accordance with the TQP Manual and the supporting knowledge and/or skill statements should be considered before granting equivalency for a competency.

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. Each fulfillment method, such as those below, is required to be documented.

- Formal education (college courses and academic degrees)
- Training (DOE, DOE contractor, other agency, vendor)
- DOE experience
- Equivalencies for prior experience, education, and training
- Documented oral evaluation
- Documented observation of performance
- Documented results of a written examination

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 delegated management, or by a subject matter expert (SME) designated by ORO management. Any of the following methods may be used to evaluate a 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)

Whoever performs 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. Documented satisfactory completion of the competencies contained in this qualification standard ensures that the Safety Basis personnel enrolled in the TQP are qualified to fulfill their duties and responsibilities.

Safety Basis personnel input, track, and print completion reports on technical qualification competency information using DOE's web-based Employee Self Service (ESS), which is located at <http://mis.doe.gov/ess/>. Upon completion of the qualification standards, the completion reports are sent to the ORO Human Capital Assessment Group (HCAG) for input into a centralized TQP Administration Module database.

Participants should read the TQP Manual posted on the HCAG web site prior to inputting information in ESS. The TQP Manual and other TQP resources are available through the HCAG web site at <http://www.ora.gov/tdd/QualPrgm/qualprgm.htm>.

INITIAL QUALIFICATION, REQUALIFICATION, AND TRAINING

This ORO OFS qualification standard has been constructed using information from position descriptions, DOE and ORO orders, and discussions with incumbents. The format of this document follows the department-wide functional area qualification standards developed by the DOE Federal Technical Capability Program.

Qualification of Safety Basis personnel shall be conducted in accordance with the requirements of DOE O 360.1 *Federal Employee Training*, DOE M 360.1-1, *Federal Employee Training Manual*, and DOE M 426.1-1, *Federal Technical Capability Manual*. Personnel are not required to requalify; however, they shall participate in continuing education and training as necessary to improve their performance and proficiency and ensure that they stay up-to-date on changing technology and new requirements. This continuing education and training shall be documented in the employees Individual Development Plan (IDP) and may include courses and/or training provided by:

- DOE
- Other government agencies
- Outside vendors
- Educational institutions

Beyond formal classroom or computer-based courses, continuing training may include:

- Self-study
- Attendance at symposia, seminars, exhibitions
- Special assignments
- On-the-job experience
- Teach a safety basis-related course
- Lead a team in the preparation of a safety evaluation report
- Conduct a team walk-down of a contractor's safety or hazard analysis
- Complete an ORO-specific safety basis refresher course
- Complete a pre-approved self-instructional safety basis activity

In addition to the above, Safety Basis personnel with assigned expert-level safety basis responsibilities or competencies shall also complete refresher training in Unreviewed Safety Question Process every two years in order to maintain their proficiency in Safety Basis.

ORO management may also designate additional continuing training courses or activities based on overall organizational Safety Basis performance.

DUTIES AND RESPONSIBILITIES

Specific duties and responsibilities of personnel who fulfill this ORO OFS are contained in each employee's position description.

REQUIRED TECHNICAL COMPETENCIES

Each of the competency statements defines the level of expected knowledge and/or skill that an individual must possess to meet the intent of this standard. Each of the competency statements is further described by a listing of supporting knowledge and/or skill statements, which although not requirements, do describe the intent of the competency statement.

The typical method of accomplishing each competency is to complete the required training and the activities listed in the approved Safety Basis Competency Fulfillment Plan, or submit documentation of applicable equivalent experience. The Safety Basis Competency-to-Training Matrix and the Fulfillment Plan are posted on the HCAG web site at <http://www.ornl.gov/tdd/QualPrgm/qualprgm3.htm>.

Important Note: When regulations, DOE directives, or other industry standards are referenced in this OFS, the most recent revision should be used.

Group I: Demonstrate knowledge of the safety basis process requirements.

The three competencies in this group share the same supporting knowledge and/or skills, but each competency is differentiated by the depth and breadth of the level of application. The Group I competencies relate to the rules, orders, standards, guides, and handbooks associated with the safety basis process.

Competency 1. Demonstrate a familiarity level knowledge of purpose and intent of the safety basis requirements, as described in 10 CFR 830, Subpart B, and the related DOE orders, standards, and guides.

Competency 2. Demonstrate a working level knowledge of the general content of the safety basis requirements, as described in 10 CFR 830, Subpart B, and the related DOE orders, standards, and guides.

Competency 3. Demonstrate an expert level knowledge of the detailed content of the safety basis requirements, as described in 10 CFR 830, Subpart B, and the related DOE orders, standards, and guides.

Supporting knowledge and/or skills:

- a. Discuss the purpose and objectives of the nuclear facility safety basis program.
- b. Discuss each of the following nuclear safety rules, orders, standards, guides, and handbooks:
 - 10 CFR 830, *Nuclear Safety Management*, Subpart B, "Safety Basis Requirements"
 - DOE O 420.1B, *Facility Safety*
 - DOE G 420.1-1, *Nonreactor Nuclear Safety Design Criteria And Explosives Safety Criteria Guide for use with DOE O 420.1, Facility Safety*
 - DOE G 420.1-2, *Guide for the Mitigation of Natural Phenomena Hazards for DOE Nuclear Facilities and Non-Nuclear Facilities*

- DOE G 421.1-2, *Implementation Guide For Use in Developing Documented Safety Analyses to Meet Subpart B of 10 CFR 830*
 - DOE G 423.1-1, *Implementation Guide For Use In Developing Technical Safety Requirements*
 - DOE G 424.1-1A, *Implementation Guide For Use In Addressing Unreviewed Safety Question Requirements*
 - DOE O 425.1C, *Startup and Restart of Nuclear Facilities*
 - DOE O 460.1B, *Packaging and Transportation Safety*
 - DOE G 460.1-1, *Implementation Guide for Use with DOE O 460.1A, Packaging and Transportation Safety*
 - DOE-STD-1020-2002, *Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities*
 - DOE-STD-1021-93, Change Notice No. 1, *Natural Phenomena Hazards Performance Categorization Guidelines for Structures, Systems, and Components*
 - DOE-STD-1022-94, Change Notice No. 1, *Natural Phenomena Hazards Characterization Criteria*
 - DOE-STD-1027-92, Change Notice No. 1, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*
 - DOE-STD-1083-95, *Requesting and Granting Exemptions to Nuclear Safety Rules*
 - DOE-STD-1104-96, Change Notice No. 3, *Review and Approval of Nuclear Facility Safety Basis Documents (Documented Safety Analyses and Technical Safety Requirements)*
 - DOE-STD-1120-2005, *Integration of Environment, Safety, and Health into Facility Disposition Activities, Volumes 1 and 2*
 - DOE-STD-1186-2004, *Specific Administrative Controls*
 - DOE-STD-3009-94, Change Notice No. 3, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*
 - DOE-HDBK-3010-94, *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities, Volumes 1 and 2*
 - DOE-STD-3011-2002, *Guidance for Preparation of Basis for Interim Operations (BIO) Documents*
 - DOE-STD-3014-96, *Accident Analysis for Aircraft Crash into Hazardous Facilities*
- c. Discuss the development and maintenance of the requirements described in 10 CFR 830, Subpart B, "Safety Basis Requirements," for DOE and contractors authorized to operate nuclear facilities.
- d. Discuss the following items:
- Authorization Agreements
 - Authorization Basis
 - Safety Basis
 - Unreviewed Safety Question (USQ)
 - Safety Evaluation Report
 - Documented Safety Analysis
 - Safe Harbor Methodologies
 - Preliminary Documented Safety Analysis

- Technical Safety Requirements
 - Potential Inadequacies of the Safety Analysis (PISA)
- e. Discuss the hazard categorization levels, non-nuclear hazard classification levels, and the process utilized to determine the facility hazard category or classification.
 - f. Discuss the reasons for performing a USQ determination.
 - g. Discuss the responsibilities of DOE and contractors authorized to operate nuclear facilities for the performance of USQ evaluations.
 - h. Discuss the actions to be taken by a contractor and DOE upon identifying information that indicates a potential inadequacy of the safety analysis.
 - i. Discuss the actions to be taken by a contractor and DOE if it is determined that a USQ exists.

Group II: Demonstrate the ability to implement the safety basis process and have knowledge of the safety basis documents.

The three competencies in this group share the same supporting knowledge and/or skills, but each competency is differentiated by the depth and breadth of the level of application. The focus of this group is to demonstrate the knowledge of the facility-specific safety basis documents (e.g., documented safety analyses, technical safety requirements) for the assigned facilities; and how to apply these requirements in the preparation, review, approval, revision, and update of safety basis documents. This also includes the preparation, review, and approval of safety evaluation reports.

Competency 4. Demonstrate a familiarity level knowledge of the safety basis documents for assigned facilities and how they are prepared, reviewed, approved, and updated.

Competency 5. Demonstrate a working level knowledge of the safety basis documents for assigned facilities and how they are prepared, reviewed, approved, and updated.

Competency 6. Demonstrate an expert level knowledge of the safety basis documents for assigned facilities and how they are prepared, reviewed, approved, and updated.

Supporting knowledge and/or skills:

- a. Discuss the safety basis documents for the assigned facilities.
- b. Discuss the scope of operations, hazards, postulated accidents, and controls/requirements for the assigned facilities as documented in the safety basis documents.

- c. Discuss the safety basis documentation preparation, revision, and update processes and the associated responsibilities of the contractor and DOE.
- d. Discuss the review and approval processes for safety basis documents and the associated responsibilities of the contractor and DOE.
- e. Discuss the level of approval authority as it relates to Facility Hazard Categorization and Classification and safety basis documents.
- f. Discuss the steps in the preparation, review, and approval of a safety evaluation report.

Group III: Demonstrate knowledge of the assigned facility and the flow down of safety basis documents.

The three competencies in this group share the same supporting knowledge and/or skills, but each competency is differentiated by the depth and breadth of the level of application. The focus of these competencies is an understanding of the “field” knowledge of DOE’s and the contractor’s safety basis documents and their flow down to facility operations. This includes a knowledge of the assigned facilities, and can range from simply referring to a list of facilities containing basic information of each facility’s hazard categorization and classification, scope of operation, and major hazards involved to intimate field knowledge of a facility and its operations (by being involved in the day-to-day activities and issues of the facility). Group III competencies also entail the demonstration of an understanding of how controls and requirements from the safety basis document are flowed down to the facility’s operating procedures, processes, and programs.

Competency 7. Demonstrate a familiarity level knowledge of the assigned facilities and how the safety basis documents flow down to operating procedures, processes, and programs and how these flow downs are maintained through the change-control process.

Competency 8. Demonstrate a working level knowledge of the assigned facilities and the operating procedures, processes, and programs that flow down from the facility-specific safety basis documents and the change-control process for flow downs.

Competency 9. Demonstrate an expert level knowledge of the assigned facilities and the operating procedures, processes, and programs that flow down from the facility-specific safety basis documents and the change-control process for flow downs.

Supporting knowledge and/or skills:

- a. Discuss the scope of operations of the assigned facility.
- b. Discuss the nuclear and non-nuclear hazards of the assigned facility.
- c. Discuss the controls and requirements derived from the safety basis documents.

- d. Discuss the process for flow down of controls and requirements and the derived operating procedures, processes, and programs.
- e. Discuss the change-control process for operating procedures, processes, and programs.