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DOE STANDARD

SENIOR TECHNICAL SAFETY MANAGER FUNCTIONAL AREA QUALIFICATION STANDARD

DOE Defense Nuclear Facilities Technical Personnel

U.S. Department of Energy
Washington, D.C. 20585

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APPROVAL

The Federal Technical Capability Panel consists of senior U.S. Department of Energy managers responsible for overseeing the Federal Technical Capability Program. This Panel is responsible for reviewing and approving the Qualification Standard for Department-wide application. Approval of this Qualification Standard by the Federal Technical Capability Panel is indicated by signature below.

Roy J. Schepens
Chairman
Federal Technical Capability Panel

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ACKNOWLEDGMENT

The Oak Ridge Operations Office is the Sponsor for the Senior Technical Safety Manager Qualification Standard. The Sponsor is responsible for coordinating the development and/or review of the Functional Area Qualification Standard by subject matter experts to ensure that the technical content of the standard is accurate and adequate for Department-wide application for those involved in the STSM program. The Sponsor, in coordination with the Federal Technical Capability Panel, is also responsible for ensuring that the Functional Area Qualification Standard is maintained current.

The following subject matter experts participated in the development and/or review of this Qualification Standard:

Larry C. Kelly	Oak Ridge Operations Office (Team Leader)
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DOE-STD-1175-2003

U.S. DEPARTMENT OF ENERGY
FUNCTIONAL AREA QUALIFICATION STANDARD

Senior Technical Safety Manager

A Senior Technical Safety Manager (STSM) is that person who is usually at the GS/GM-15 or Senior Executive Service level and assigned the direct responsibility to manage technical programs, resources, and/or Department personnel who provide assistance, direction, guidance, oversight, or evaluation of contractor technical activities impacting the safe operation of defense nuclear facilities.

PURPOSE

DOE M 426.1-1, Federal Technical Capability Manual, commits the Department to continuously strive for technical excellence. The Technical Qualification Program, 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 the Technical Qualification Standards should be aligned with and integrated into the recruitment and staffing processes for technical positions. The Technical Qualification Standards should form the primary basis for developing vacancy announcements, qualification requirements, crediting plans, interviewing questions, and other criteria associated with the recruitment, selection, and internal placement of technical personnel. Office of Personnel Management (OPM) minimum qualifications standards will be greatly enhanced by application of appropriate materials from the technical Functional Area Qualification Standards.

The Technical Qualification Standards are not intended to replace the OPM Qualifications Standards nor other Departmental personnel standards, rules, plans, or processes. The primary purpose of the Technical Qualification Program is to ensure that employees have the requisite technical competency to support the mission of the Department. The Technical Qualification Program forms the basis for the development and assignment of DOE personnel responsible for ensuring the safe operation of defense nuclear facilities.

APPLICABILITY

The STSM Functional Area Qualification Standard establishes common functional area competency requirements for all DOE STSMs who provide assistance, direction, guidance, oversight, or evaluation of contractor technical activities that could impact the safe operation of DOE's defense nuclear facilities. The technical Functional Area Qualification Standard has been developed as a tool to assist DOE Program and Field offices in the development and implementation of the Technical Qualification Program in their organization. For ease of transportability of qualifications between DOE elements, Program and Field offices are expected to use this technical Functional Area Qualification Standard without modification or additions. Needed additional office/site/facility specific technical competencies should be handled separately. Satisfactory and documented attainment of the competency requirements contained in this technical Functional Area Qualification Standard ensures that STSMs possess the minimum requisite competence to fulfill their functional area duties and responsibilities. Additionally, Office/Facility-Specific Qualification Standards supplement this technical Functional Area Qualification Standard and establish unique operational competency requirements at the

Headquarters or Field element, site, or facility level.

It should be noted that the competency elements of management and leadership, general technical knowledge, regulations, administrative capability and assessment and oversight are all embodied in the competencies listed in this Standard. All of the factors above have a bearing on safety. Although the focus of this Standard is technical competence, elements such as good communication, recognized credibility, the ability to listen and process information and the ability to guide an effort to get it right the first time are recognized as important aspects of safety.

IMPLEMENTATION

This technical Functional Area Qualification Standard identifies the minimum technical competency requirements for DOE personnel. Although there are other competency requirements associated with the positions held by DOE personnel, this Functional Area Qualification Standard is limited to identifying the specific technical competencies. The competency statements define the expected knowledge and/or skill that an individual must meet. Each of the competency statements is further explained by a listing of supporting knowledge and/or skill statements.

The 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 reference appropriate materials and/or expert advice as 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.

Headquarters and Field elements shall establish a program and process to ensure that DOE personnel possess the competencies required of their position. That includes the competencies identified in this technical Functional Area Qualification Standard. Documentation of the completion of the requirements of the Standard shall be included in the employee's training and qualification record.

Equivalencies should be used sparingly and with the utmost rigor and scrutiny to maintain the spirit and intent of the Technical Qualification Program. Equivalencies may be granted for individual competencies based upon an 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 Technical Qualification Program Plan of the office qualifying the individual. The supporting knowledge and/or skill statements, while not requirements, should be considered before granting equivalency for a competency.

Training shall be provided to employees in the Technical Qualification Program who do not meet the competencies contained in the technical Functional Area Qualification Standard. Training may include, but is not limited to, formal classroom and computer based courses, self-study, mentoring, on the job training, and special assignments. Departmental training will be based upon appropriate supporting knowledge and/or skill statements similar to the ones listed for each of the competency statements. Headquarters and Field elements should use the supporting knowledge and/or skill statements as a basis for evaluating the content of any training used to provide individuals with the requisite knowledge and/or skill required to meet the technical Functional Area Qualification Standard competency statements.

EVALUATION REQUIREMENTS

Attainment of the competencies listed in this technical Functional Area Qualification Standard should be documented by a qualifying official, immediate supervisor, or the team leader of personnel in accordance with the Technical Qualification Program Plan of the office qualifying the individual.

CONTINUING EDUCATION, TRAINING, AND PROFICIENCY

DOE personnel 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 may include courses and/or training provided by:

- Department of Energy
- 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

A description of suggested learning proficiency activities and the requirements for the continuing education and training program for STSMs are included in Appendix A of this document.

DUTIES AND RESPONSIBILITIES

The following are the typical duties and responsibilities expected of personnel assigned to the STSM Functional Area:

1. Integrate safety into management and work practices to accomplish mission objectives, while ensuring worker and public health and safety, and the protection of the environment.

2. Comply with Departmental Directives, Federal and State Regulations and other binding agreements.

3. Direct and provide support, and allocate resources to meet the Department's mission safely.

4. Manage people, implement policies and procedures, perform technical reviews, and provide technical direction and feedback to contractor and federal employees.

5. Integrate monitoring and assessment activities and provide feedback to the contractors.

6. Recruit, select, train and qualify employees to establish and maintain technical competence.

7. Effectively communicate technical safety expectations and issues.

Position-specific duties and responsibilities for STSMs are contained in their Office/Facility-Specific Qualification Standard or Position Description.

BACKGROUND AND EXPERIENCE

The U.S. Office of Personnel Management's Qualification Standards Handbook establishes minimum education, training, experience, or other relevant requirements applicable to a particular occupational series/grade level, as well as alternatives to meeting specified requirements.

The preferred education and experience for STSMs are:

1. Education:

   An STSM shall possess a scientific or engineering degree with a major in an academic area that supports the functional responsibilities of the position. (Exceptions to this requirement should be considered only in rare circumstances, and then in accordance with OPM qualification standards). An advanced technical degree is considered to be an advantage. Additionally, professional credentials (such as Professional Engineer) and industry certifications are desirable.

2. Experience:

   STSMs should show a demonstrated capability to manage technical issues at the level the position requires. For example, for a management position that is narrow in scope with significant detail work, the STSM shall have a level of expertise close to that of a subject matter expert. For a management position that is very broad in scope, STSMs shall possess an interdisciplinary background, and shall also have demonstrated technical competence in a specific area at a previous point in their careers. For supervisory or managerial positions, STSMs should also have demonstrated leadership skills. Previous or current experience as a qualified DOE Facility Representative, Safety System Oversight, Technical Project Manager, Nuclear Regulatory Commission Site Resident, or equivalent position shall be considered highly beneficial.

There may be situations where the incumbent in an identified senior technical safety management position does not meet the education and experience requirements as discussed above. In these cases, Management has various options to address or compensate for this situation. In developing and implementing compensatory measures, it should be recognized that Management has the responsibility to create a situation where there is an unbroken chain of fully qualified STSMs in positions of authority. Examples of various options for compensatory measures can be found in the Federal Technical Capability Manual.

REQUIRED TECHNICAL COMPETENCIES

The competencies contained in this Standard are distinct from those competencies contained in the General Technical Base Qualification Standard. All STSMs must satisfy the competency requirements of the General Technical Base Qualification Standard prior to or in parallel with the competency requirements contained in this Standard. 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. The supporting knowledge and/or skill statements further describe the intent of the competency statements.

Note: When regulations, Department of Energy directives, or other industry standards are referenced in the Qualification Standard, the most recent revision should be used.

1. An STSM shall demonstrate the ability to effectively communicate technical safety expectations and issues, both orally and in writing.

Supporting Knowledge and/or Skills:

a. Demonstrate the ability to represent and speak for the organizational unit on safety management issues (e.g., presenting, explaining, selling, defending, and negotiating) to those within and outside the Department.

b. Discuss the means of developing and/or enhancing alliances with external groups (e.g., other agencies and governments, Congress, and clientele groups).

c. Discuss the benefits to safety management of promoting effective communication and exchange across the Department including:

- Focused sharing of information
- Interaction and resolution of issues
- Use of lessons learned

d. Describe how the following expectations are effectively communicated within an organization to build a continuous improvement culture:

- Development and exploration of new ideas are encouraged
- Process quality and safety responsibilities within the organization are understood
- Individuals know how their work contributes to safety objectives and strategic goals
- Unsafe practices, nonconforming items and potential areas for improvement are readily identified
- Enhanced product and process safety and reliability are emphasized

e. Prepare and present a briefing to senior management or stakeholders on the state of safety for a given facility or site.

2. An STSM shall have a working level knowledge of the policies and procedures used to recruit, select, train, and qualify employees to establish and maintain technical competency.

Supporting Knowledge and/or Skills:

a. Discuss planning, recruitment, and selection processes that can be used to acquire a technically competent workforce with the necessary knowledge, skills, abilities, and/or potential to accomplish the goals of the organization.

b. Discuss the parameters of the Excepted Service Authority(ies), the circumstances which would dictate use of an Excepted Service Authority, and the process and procedures for using an Excepted Service Authority to recruit and hire.

c. Discuss ways to motivate, reward, recognize, and retain excellent employees or recognize a major contribution to the organization using local rewards programs or the programs described in DOE G 426.1-1, *Recruiting, Hiring, and Retaining High-Quality Technical Staff – A Manager's Guide to Administrative Flexibilities*.

d. Discuss the roles and responsibilities of the Federal Technical Capability Panel and Panel Agents in the recruitment, selection, training, and retention of technical personnel.

e. Describe methods used to assess an employee's unique developmental needs and why providing developmental opportunities to employees could contribute to the achievement of organizational goals.

f. Describe in general the training and qualification requirements for contractors specified in DOE O 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*.

g. Describe the Federal Technical Capability Program as defined in DOE M 426.1-1, *Federal Technical Capability Manual*, and discuss that application of the program in your organization.

h. Describe the following three types of mentoring relationships and discuss the types of goals that an organizationally sponsored mentoring program is intended to meet:

- Supervisor
- Informal
- Structured-Facilitated

i. Discuss the benefits to the Department and individual organizational units which could be realized through use of the following:

- EH Technical Assistance
- Mentoring Program
- Special assignment/detail

j. Describe the process to obtain technical assistance and the types of assets available.

k. Describe the process for enrolling or participating in the Department's technical assistance units.

l. Describe the process for obtaining the technical assistance of an individual from another office on a temporary or detail basis.

m. Describe other Departmental capabilities/resources that could be utilized to solve short-term technical safety issues.

n. Conduct a workforce analysis to determine the gap in needed critical technical competencies for a given facility or site.

3. An STSM shall have a working level knowledge of the roles and responsibilities for the Integrated Safety Management (ISM) System and the Department's philosophy and approach to implementing ISM.

Supporting Knowledge and/or Skills:

a. Describe the overall objective of the Department-wide DOE M 411.1-1B, *Safety Management Functions, Responsibilities, and Authorities Manual* and the similar lower-tier organization-level manuals developed by Headquarters Offices and Field Elements.

b. Give an example of a circumstance that might make it necessary or reasonable to deviate from the responsibilities and authorities identified in the Functions, Responsibilities, and Authorities Manual and describe the exemption process in DOE M 251.1-1A, *Directives System Manual*.

c. Describe how the seven Guiding Principles in the ISM Policy are used to implement an ISM philosophy in Headquarters and Field Element work activities.

d. Describe the five core safety management functions in the ISM Policy and discuss how they provide the necessary structure for specific and key Headquarters and Field Element work activities.

e. Identify and discuss the specific application of existing Department programs and initiatives that have led to successful implementation of ISM such as:

- Standards/Requirements Identification Documents (S/RIDs) and Work Smart Standards
- Contract reform and performance-based contracting [e.g., applicable DOE Acquisition Regulations (DEAR) clauses]
- Research and Development Laboratory activities related to safety management
- Operational Readiness Reviews (ORR)
- Readiness Assessments (RA)
- Nuclear Explosive Safety and Surety Program
- Enhanced work planning (from DOE G 450.3-2, *Attributes of Effective Implementation)*

- Voluntary Protection Program
- International Standard Organization (ISO) 14000

f. Explain the basis upon which the safety management functions could differ from facility to facility, and the basis to be used for applying ISM on a graded approach.

g. Discuss the underlying safety management issues affecting the design, construction, operation, and maintenance of the Department's facilities, activities, and assets.

h. Identify and lead the implementation of a significant site or Headquarters work activity that demonstrates the application of ISM principles.

4. An STSM shall have a working level knowledge of the general content of the safety basis requirements, as described in 10 Code of Federal Regulations (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 orders, standards, guides, and handbooks:

- DOE O 420.1A, *Facility Safety*
- 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 424.1-1*, Implementation Guide For Use In Addressing Unreviewed Safety Question Requirements*
- DOE O 425.1C, *Startup and Restart of Nuclear Facilities*
- DOE O 460.1, *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, *Natural Phenomena Hazards Performance Categorization Guidelines for Structures, Systems, and Components [SSCs]*
- DOE-STD-1022-94, *Natural Phenomena Hazards Characterization Criteria*
- DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports [SAR]*
- DOE-STD-1083-95, *Requesting and Granting Exemptions to Nuclear Safety Rules*
- DOE-STD-1104-96, *Review and Approval of Nonreactor Nuclear Facility Safety Analysis Reports*
- DOE-STD-1120-98*, Integration of Environment, Safety, and Health into Facility Disposition Activities, Volumes 1 and 2*

- DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Safety Analysis Reports*
- DOE-HDBK-3010-94, *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities*
- DOE-STD-3011-94, *Guidance for Preparation of DOE 5480.22 (TSR) and DOE 5480.23 (SAR) Implementation Plans*
- DOE-EM-STD-5502-94, *Hazard Baseline Documentation*
- 10 CFR 820, *Procedural Rules for DOE Nuclear Activities*
- 10 CFR 830, Subpart B, “Safety Basis Requirements”

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 in the context of safe operation of a nuclear facility:

- Authorization Agreements
- Authorization Basis
- Safety Basis
- USQ Process
- Safety Evaluation Report
- Documented Safety Analysis
- Safe Harbor Methodologies
- Preliminary Documented Safety Analysis
- TSR
- Potential Inadequacies of the Safety Analysis (PISA)
- Graded approach
- SSCs
- Safety significant SSCs
- Safety class SSCs
- Limiting conditions for operation
- Limiting control setting
- Safety limit
- Surveillance requirements
- Startup Notification Report
- ORR
- RA

e. Describe how the TSR is derived, how it is used, and what constitutes a violation.

f. Discuss the hazard categorization levels, chemical hazard classification levels, and the process utilized to determine the facility hazard category or classification.

g. Discuss the reasons for performing a USQ determination.

h. Discuss the responsibilities of DOE and contractors authorized to operate nuclear facilities for the performance of USQ determinations.

i. Discuss the actions to be taken by a contractor and DOE upon identifying information that indicates a potential inadequacy of the safety analysis.

j. Discuss the actions to be taken by a contractor and DOE if it is determined that a PISA exists.

k. Describe the safety basis documents for the facilities in the STSM's organization and how they are prepared, reviewed, approved, and updated:

- The safety basis documents for the facilities under the purview of the STSM's organization.
- The scope of operations, hazards, postulated accidents, and controls/requirements for the assigned facilities as documented in the safety basis documents.
- The safety basis documentation preparation, revision, and update processes and the associated responsibilities of the contractor and DOE.
- The review and approval processes for safety basis documents and the associated responsibilities of the contractor and DOE.
- The level of approval authority as it relates to Facility Hazard Categorization and Classification and safety basis documents.
- The steps in the preparation, review, and approval of a safety evaluation report.
- The process for flow down of controls and requirements and the derived operating procedures, processes, and programs.
- Identify the conditions and procedures used to maintain and modify safety documents.

l. Discuss the purpose, content, and philosophy, as appropriate to the position, of the following safety management standards for nuclear explosive safety:

- DOE O 452.1B, *Nuclear Explosive and Weapons Surety Program*
- DOE O 452.2B, *Safety of Nuclear Explosive Operations*
- DOE O 461.1, *Packaging and Transfer or Transportation of Materials of National Security Interest*
- DOE O 5610.13, *Joint Department of Energy/Department of Defense Nuclear Weapon System Safety, Security, and Control Activities*
- DOE O 5660.1B, *Management of Nuclear Materials*

m. Review and evaluate an unreviewed safety question (USQ).

n. Review and evaluate an Authorization Agreement.

o. Review and evaluate one or two chapters of a Documented Safety Analysis.

p. Walkdown a facility with a Facility Representative identifying the safety controls contained in a Technical Safety Requirements (TSR).

5. An STSM shall have a working level knowledge of the application of environmental standards, laws, and regulations.

Supporting Knowledge and/or Skills:

a. Discuss the interrelationship between the following:

- Environmental law
- Statutory construction
- The United States Code
- The CFRs
- State Laws and Regulations

b. Describe the organization, mission, and enforcement authorities of the Environmental Protection Agency (EPA).

c. Discuss the applicability and timing for National Environmental Policy Act documentation and the role of the Department and contractor in implementation.

d. Discuss the responsibilities of the federal staff for oversight of the contractor organization for environmental compliance.

e. Discuss the enforcement of environmental statutes under civil and criminal authorities.

f. Discuss ISO 14000, Environmental Management Systems Standards, and their relevance to DOE and contractor performance.

g. Participate on an environmental assessment team, preparing and reporting the team's results to senior federal and contractor management.

6. An STSM shall have a working level knowledge of the application of worker protection standards and the Employee Concern's Program.

Supporting Knowledge and/or Skills:

a. Discuss the interrelationship between the following:

- Occupational safety and health laws
- Statutory construction
- The United States Code
- The CFRs
- State Laws and Regulations

b. Describe the organization, mission and enforcement authorities of the Occupational Safety and Health Administration (OSHA).

c. Discuss the enforcement of occupational safety and health statutes under civil and criminal statutes.

d. Describe the role(s) the contractor plays in implementing occupational safety and health regulations.

e. Describe the purpose, scope, and importance of the Department's Employee Concerns Program.

f. Describe the responsibilities of the following in implementing DOE O 442.1A,

Department of Energy Employee Concerns Program:

- Headquarters and Field Office Managers
- Employee Concerns Manager

g. Describe how employee concerns are reported, processed, and documented as stated in DOE O 442.1A and the DOE G 442.1-1, *Department of Energy Employee Concerns Program Guide*.

h. Describe the criteria for designating and processing occupational health and safety concerns.

i. Determine how worker protection standards are applied and enforced at a given facility or site.

7. An STSM shall have a working level knowledge of the Department's Emergency Management resources including emergency plans, external agency involvements, interagency relationships, and the command and control function during an emergency.

Supporting Knowledge and/or Skills:

a. Discuss the Department's three-tiered organizational approach to managing Operational Emergencies.

b. Discuss the general roles and responsibilities of the Departmental elements for management of the Department's Emergency Management System as defined in DOE O 151.1B, *Comprehensive Emergency Management System*.

c. Define "Operational Emergencies" and the circumstances to which they apply as defined in DOE O 151.1B, *Comprehensive Emergency Management System*.

d. Discuss the concept of Emergency Public Information and the different roles of the Department's Public Relations Office and the Joint Information Center in disseminating information in an emergency.

e. Discuss the concept and define the components of the Incident Command System in the context of on-site and off-site emergency response.

f. Discuss the involvement of external agencies in the Department's emergency management system.

g. Describe the contents, the requirements for, and where each of the following types of emergency plans can be located on-site:

- Site Emergency Plan
- Facility Emergency Plan
- Building Emergency Plan
- Security Emergency Plan
- Fire Prevention/ Suppression Plan
- Worker Safety Plan(s)

h. Participate in a significant leadership role in a site emergency management drill.

8. An STSM shall have working level knowledge of conduct of operations.

Supporting Knowledge and/or Skills:

a. Describe the reason for implementing conduct of operations at DOE facilities.

b. Discuss the requirements for implementing conduct of operations at DOE facilities and the associated impact on safety and efficiency of operations.

c. Discuss the purpose and describe the roles and responsibilities of the STSM in implementing DOE O 5480.19, *Conduct of Operations Requirements for DOE Facilities*.

d. Discuss the concept of "graded approach" and how it applies to the implementation of conduct of operations.

e. For each of the 18 chapters in Attachment I to DOE O 5480.19, describe in detail how each activity contributes to an effective and safe operational environment.

f. Describe the types of operations where formal conduct of operations apply.

g. Discuss how the self-assessment process is applied to ensure safe operations.

h. Spend a day with a DOE Facility Representative in his/her facility and review/assess the conduct of operations or work in progress in the facility. Develop a report of your findings and discuss it with the contractor facility management.

9. An STSM shall have a working level knowledge of waste management principles and practices.

Supporting Knowledge and/or Skills:

a. Define the following terms:

- Low level waste
- High level waste
- Transuranic waste
- Mixed waste

b. Discuss the Department's policy regarding the handling and management of waste as described in DOE O 435.1, *Radioactive Waste Management*.

c. Discuss the Department's performance objectives and performance assessment requirements as outlined in DOE O 435.1.

d. Discuss the Department's policies on waste management including:

- Generation reduction
- Segregation
- Minimization

- Pollution prevention
- Disposal

e. Discuss how the following Acts apply to and impact the Department's waste management programs:

- Federal Facility Compliance Act (FFCA)
- Pollution Prevention Act of 1990
- Superfund Amendment Reauthorization Act

f. Discuss the general requirements of the Resource Conservation and Recovery Act as it applies to hazardous and mixed waste.

g. Discuss the process for determining whether or not waste is classified as hazardous.

h. Describe the general requirements and issues associated with the transportation and packaging of radioactive wastes.

i. Prepare a position paper on how waste management practices can be improved at a given facility or site.

10. An STSM shall have a working level knowledge of maintenance management as it relates to safety.

Supporting Knowledge and/or Skills:

a. Using DOE O 433.1, *Maintenance Management Program for DOE Nuclear Facilities*, explain the following:

- DOE's role in the oversight of contractor maintenance operations
- The intent of maintenance management programs
- The Department's policy and objectives for maintenance management
- The responsibilities and authorities for maintenance management programs

b. Discuss the requirements for the control and integration of Management & Operating (M&O) contractor and subcontractor personnel in maintenance activities.

c. Discuss the graded approach process by which Department line management determines an appropriate level of coverage by facility maintenance management personnel.

d. Discuss how maintenance activities interface with the following as it relates to safety:

- Conduct of operations
- Quality assurance
- Configuration management
- Safety structures, systems and components
- Authorization Basis
- Counterfeit/suspect items

e. Review and evaluate the adequacy of a work package

f. Observe in the field and evaluate the conduct of maintenance work utilizing a work package from start to finish

11. An STSM shall have a working level knowledge of formal configuration management as it relates to safety.

Supporting Knowledge and/or Skills:

a. Discuss the roles and responsibilities of the STSM related to implementing configuration management programs.

b. Discuss the concept of configuration management and its importance in ensuring operational safety.

c. For the elements identified above, describe the possible effects on safe operations if they are ineffectively implemented.

d. Describe a typical configuration management process.

e. Given DOE-STD-1073-93, *Guide for Configuration Management Programs*, discuss the system engineer concept as it applies to oversight of safety systems. Specifically address the areas of configuration management, assessment of system status and performance, and technical support for operation and maintenance activities or for Documented Safety Analysis reviews.

f. Discuss each of the following elements of configuration management and how they contribute to safety and an effective configuration management program.

- Program Management
- Document Control
- Change Control
- Graded Approach
- Design Requirements
- Assessments

g. Discuss approved/recommended compensatory actions where inadequate configuration management exists and work is ongoing or to be initiated.

h. Using system drawings, walkdown and assess the configuration management, operability, and reliability of a vital safety system in a facility with a system engineer.

12. An STSM shall have a working level knowledge of safeguards and security as it relates to safety practices.

Supporting Knowledge and/or Skills:

a. Define the terms “safeguards” and “security” as they apply to the DOE Safeguards and Security Program.

b. Discuss in detail the purpose, interrelationship, responsibilities and basic requirements for the following:

- Physical security
- Personnel security
- Material Control and Accountability

c. Describe the use of information security systems within DOE.

d. Discuss the interrelationship between safeguards and security to safety practices.

e. Discuss the security requirements associated with the Department's foreign visitor program.

f. Participate in an audit of safeguards and security practices at a given facility or site.

13. An STSM shall have a working level knowledge of the Department of Energy (DOE) Directives structure and their relationship to applicable laws, rules, Federal/State Regulations and industry standards.

Supporting Knowledge and/or Skills:

a. Discuss the purpose of, and the relationship between DOE Orders, Directives, Federal regulations, and state regulations.

b. Discuss the DOE Order development and approval process.

c. Discuss the DOE rule-making process.

d. Discuss the process for obtaining an exemption to an Order, and the process for an exemption to a Rule.

e. Discuss the relationship between the DOE and Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA).

f. Discuss the difference between a DOE Order and a Rule including enforcement and implementation differences.

g. Discuss the purpose and conditions of the Federal Facilities Compliance Act (FFCA).

h. Discuss the use of Memorandum of Understanding (MOU) and Memorandum of Agreement (MOA) with external agencies and organizations.

i. Discuss the purpose and scope of Standards/Requirements Identification Documents (S/RIDs), Work Smart Standards, and directives flowdown and their relationship to Contract List A and List B.

j. Discuss the relevance of Public Law 104-113 regarding the use of industry consensus standards.

14. An STSM shall have a working level knowledge of the Price-Anderson Amendments Act of 1988 (PAAA) and its impact on DOE nuclear safety activities.

Supporting Knowledge and/or Skills:

a. Describe the purpose and scope of the PAAA.

b. Discuss the Act's applicability to the Department's nuclear safety activities, and specifically to each of the site's facilities and major activities.

c. Discuss the civil and criminal penalties imposed on the Department, contractors, and subcontractors as the result of a violation of applicable rules and regulations related to nuclear safety.

d. Discuss the requirements associated with the topics below, as they are affected by rule-making aspect of the PAAA:

- Procedural Rules for DOE Nuclear Activities (10 CFR 820)
- Documented Safety Analyses (10 CFR 830 Subpart B)
- Unreviewed Safety Questions (10 CFR 830 Subpart B)
- Quality Assurance Requirements (10 CFR 830 Subpart A)
- Technical Safety Requirements (10 CFR 830 Subpart B)
- Occupational Radiation Protection (10 CFR 835)

e. Discuss the role of STSM with respect to implementing the requirements of the PAAA.

f. Discuss the role of the site's PAAA Coordinator.

g. Review the recent PAAA notices and decisions with the site's PAAA Coordinator to determine close-out status and verification of corrective actions.

15. An STSM shall have a working level knowledge of the Defense Nuclear Facilities Safety Board's (DNFSB) charter and their interaction with the DOE.

Supporting Knowledge and/or Skills:

a. Discuss the enabling legislation and the purpose of the DNFSB.

b. Identify and discuss applicable Defense Nuclear Facility Safety Board Recommendations.

c. Identify and discuss Department Implementation Plans and commitments made in responses to DNFSB Recommendations.

d. Discuss the roles and responsibilities of the Departmental Representative to the DNFSB as described in DOE M 140.1-1B, *Interface with the Defense Nuclear Facilities Safety Board*.

e. Prepare and/or participate in a briefing to the DNFSB on the status of a Departmental activity or initiative.

16. An STSM shall have a working level knowledge of problem identification, solving, and decision making techniques.

Supporting Knowledge and/or Skills:

a. Describe and explain the application of problem analysis techniques including the following:

- Root Cause Analysis
- Causal Factor Analysis
- Change Analysis
- Barrier Analysis

b. Describe and explain the application of the following Root Cause Analysis processes in the performance of occurrence investigations:

- Events and causal factors charting
- Root cause coding
- Recommendation generation

c. Describe the elements of an effective issue management system and its importance to safety.

d. Describe the following types of accident investigations and discuss an example of the application of each:

- Type A
- Type B

e. Discuss the necessary considerations that must be addressed when developing a corrective action.

f. Discuss the immediate, short-term, and long-term actions taken as the result of problem identification or an occurrence.

g. Given the data for an event, determine the root cause and develop corrective actions. Compare the results with that of the originator. Discuss any differences.

h. Describe the assessment requirements and limitations associated with the interface with contractor employees.

i. Explain the essential elements and processes associated with the following assessment activities including:

- Investigation
- Fact Finding
- Reporting
- Tracking to Closure
- Follow up
- Corrective Action Implementation.

j. Describe the actions to be taken if the contractor challenges the assessment findings and explain how such challenges can be avoided.

k. Lead a team to conduct compliance-based and performance-based assessments. Identify the differences in outcomes and the reasons for these differences.

l. Write, or review and approve, an assessment report.

m. Based on an evaluation of contractor activities, review and approve corrective actions and recommendations, and communicate the results to contractor management.

n. Participate in formal meetings between Department management and assessed organizations management to discuss the results of the assessments.

o. Discuss the key processes used in the trending and analysis of operations information.

p. Discuss the key process to develop and implement metrics and performance measures, validate performance against metrics and performance measures, and trend/analyze data to establish a continuous improvement program.

q. Discuss the importance and key elements of the following:

- Maintenance history
- Operational incident/occurrence report data
- Security infractions
- Safety incidents
- Radiation exposure and incident reporting
- Schedule variances
- Counterfeit and suspect parts

r. Using DOE O 231.1A, *Environment, Safety, and Health Reporting*, and DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, discuss the role of an STSM related to reportable occurrences. Given an occurrence report, determine whether:

- Review processes are adequate
- Causes are appropriately defined
- Corrective actions address causes
- Lessons learned are appropriate
- Corrective actions are completed

s. Given incident/occurrence report data for a specified period, analyze the information for contributing factors and safety trends.

17. An STSM shall have a working level knowledge of technical contract management to assess contractor performance.

Supporting Knowledge and/or Skills:

a. Identify the three major DOE contract types and describe the characteristics, and the advantages and disadvantages of each.

b. Identify and discuss the types of contracting processes that are used to put major contracts in place.

c. Discuss the following terms as they apply to financial accountability for the contractor:

- Incentives
- Fines and Penalties
- Third-Party Liabilities
- Loss of, or damage to, Government property
- Allowable and Non-Allowable Costs

d. Discuss the technical oversight and qualifications required to assess contractor performance and the training of contractor employees.

e. Discuss the fee-based evaluation process including the development of performance criteria, conduct of the evaluation, and documentation and transmittal requirements for performance.

f. Identify who can make contractual requests or approvals of contract provisions, and the qualifications required of that individual(s).

g. Discuss the intent of the revised Department of Energy Acquisition Regulations (DEAR) Clause, 970.5223-1, regarding safety and the impact of contract reform on safety.

h. Participate on a business management review team focusing on the contractor's subcontracting practices.

18. An STSM shall demonstrate the ability to effectively manage programs and projects utilizing the processes and procedures necessary to ensure the safety of departmental activities, including some knowledge of the mission and key programs.

Supporting Knowledge and/or Skills:

a. Describe the typical documents and data sources utilized in program management.

b. Define the following terms:

- Baseline
- Graded approach
- Infrastructure
- Life-Cycle
- Programmatic management
- Metrics and performance measures

c. Describe the key elements of supervising/monitoring program activities and contractors.

d. Describe the purpose of schedules, and discuss the use of milestones and activities.

e. Define and compare the terms cost estimate and budget.

f. Describe the process for preparing cost estimates and budgets.

g. Define and explain the relationship between following terms:

- Budgeted Cost of Work Scheduled
- Budgeted Cost of Work Performed
- Actual Cost of Work Performed

h. Discuss how priorities should be balanced to achieve the following:

- Resources are effectively allocated to address safety, programmatic, and operational considerations.
- Protecting the public, the workers, and the environment is a priority whenever activities are planned and performed.

i. Discuss the requirements to procure external products and services for DOE projects.

j. Describe the methods for procuring DOE or other government products and services.

k. Explain what is meant by “Make-or-Buy” in procuring products or services.

l. Discuss the Davis-Bacon Act as it relates to DOE financial management issues.

m. Discuss the responsibilities, authorities, and implementation requirements for DOE O 430.1B, *Real Property Asset Management*, at defense nuclear facilities.

n. Compare and contrast the project manager and program manager qualification requirements at a given office or site.

o. Manage or oversee the performance of a given project or program that has a minimum duration of six months.

19. An STSM shall have a working level knowledge of quality assurance policies, programs, and processes.

Supporting Knowledge and/or Skills:

a. Describe the general requirements, purpose, interrelationships and importance of DOE O 414.1A and 10 CFR 830.120, *Quality Assurance*.

b. Describe the DOE’s and the M&O/Management and Integrating contractor’s responsibilities and requirements for implementing a Quality Assurance Program (QAP).

c. Discuss the role of STSMs with respect to DOE O 414.1A and 10 CFR 830.120.

d. Describe the quality assurance criteria of DOE O 414.1A which address the following:

- Management
- Performance
- Assessment

e. Referring to DOE G 414.1-2, *Quality Assurance Management System Guide for use with 10 CFR 830.120 and DOE O 414.1*, discuss the implementation of an effective QAP.

f. Prepare and present a report of how quality assurance practices at a given office or site contribute to its Integrated Safety Management System.

APPENDIX A
CONTINUING EDUCATION, TRAINING AND PROFICIENCY PROGRAM

The following list represents suggested continuing education, training, and other opportunities that are available for STSMs after completion of the competency requirements in this technical Functional Area Qualification Standard. It is extremely important that STSMs with this program maintain their proficiency through continuing education, training, reading, or other activities such as workshops, seminars, and conferences. The list of suggested activities was developed by the Subject Matter Experts involved in the development of the Functional Area Qualification Standard and is not all-inclusive.

Based on the knowledge and experience of the Subject Matter Experts, it is suggested that the following activities support the maintenance of proficiency in the STSM functional area after completion of the competencies in the Standard and other requirements of the Technical Qualification Program.

LIST OF CONTINUING EDUCATION, TRAINING, AND OTHER ACTIVITIES

1. Federal Executive Institute
2. Executive Leadership Forum
3. Management Development Seminar
4. Media Skills for Executives
5. ISM Seminars or Training Activities
6. EEO and Diversity Training
7. Federal Appropriations Law/Updates
8. Employee Performance and Conduct
9. Program/Project Management Seminars or Training Activities

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CONCLUDING MATERIAL

Review Activity:
EM
NNSA
EH
NE
SC

Preparing Activity:
DOE-ORO

Project Number:
TRNG-0034

Field and Operations Offices
CBFO
CH
ID
OH
OR
ORP
RFFO
RL
SR

Area and Site Offices
Argonne Area Office
Brookhaven Area Office
Fermi Area Office
Kansas City Site Office
Livermore Site Office
Los Alamos Site Office
Nevada Site Office
Pantex Site Office
Princeton Area Office
Savannah River Site Office
Sandia Site Office
Y-12 Site Office