

APPENDIX D
SAFETY SYSTEM OVERSIGHT, DUTIES, RESPONSIBILITIES,
KNOWLEDGE, SKILLS, AND ABILITIES

1. OVERVIEW. System Safety Oversight (SSO) personnel are a key technical resource qualified to oversee contractor management of safety systems at DOE defense nuclear facilities. Unlike Facility Representatives (FRs), who are responsible for monitoring the safety performance of DOE defense nuclear facilities and day-to-day operational status, staff members assigned to SSO are responsible for overseeing assigned systems to ensure they will perform as required by the safety basis and other applicable requirements. SSO personnel are highly qualified people who perform assessments and investigations to confirm performance of assigned safety systems in meeting established safety and mission requirements and review sections of the Documented Safety Analysis (DSA) related to these systems. DOE line management is responsible for oversight of safety at DOE facilities and for meeting mission objectives and goals. Integrated Safety Management (ISM) System processes help to ensure systems are able to perform their design safety functions. Effective implementation of ISM relies upon the ability to apply engineering expertise to maintain safety system configuration and assess system condition and effectiveness of safety management program implementation. Federal staff requires a working knowledge of assigned systems and the contractor's application of the cognizant system engineer concept and safety program management as described in DOE O 420.1B, *Facility Safety*.

The SSO Qualification Program is a key part of the Technical Qualification Program (TQP), considered an additional level of technical qualification, and builds upon technical discipline competencies.

2. DUTIES AND RESPONSIBILITIES.

- a. SSO Personnel.

- (1) Maintain communication and oversight of systems and monitor performance of the contractor's Cognizant System Engineer Program.
- (2) Attend selected contractor meetings with FRs and contractor personnel responsible for system performance (e.g., cognizant system engineers, design authorities, and program managers), review system health/status reports, review test results, interface with external organizations that can provide insights on performance, and perform other oversight activities on a routine basis.
- (3) Perform assessments, periodic evaluation of equipment configuration and material condition. The effect of aging on system equipment and components, the adequacy of application of work control and change control processes, and appropriateness of system maintenance and

surveillance should be considered with respect to reliable performance of safety functions.

- (4) In conjunction with FRs, perform evaluations of contractor troubleshooting, investigations, root cause evaluations, and selection and implementation of corrective actions. SSO personnel may also be requested to respond to off normal and/or off normal hours events and investigations and be able to provide relevant insights and serve as the DOE recognized expert on issues related to assigned areas.
- (5) Provide support to other Federal employees as appropriate. This may include program and project managers responsible for supervision of facility safety systems installed in new and modified facilities. It may also include those managing the implementation of ISM in the operation, maintenance, and configuration management of facility safety systems.
- (6) Assess contractor compliance with relevant DOE regulations, industry standards, contract requirements, safety basis requirements, and other system requirements.
- (7) Confirm configuration documentation, procedures, and other sources of controlling information are current and accurate.
- (8) Report potential or emergent hazards immediately to DOE line management and FRs, and stop tasks, if required, to prevent imminent impact to the health and safety of workers and the public, to protect the environment, or to protect the facility and equipment and immediately notify the on-duty or on-call FR.
- (9) May serve as a qualifying official in the development or revision of Functional Area Qualification Standards (FAQS), mentor assigned backups, and qualify other candidates to the same FAQS attained to achieve SSO qualification.
- (10) Maintain cognizance of the appropriate funding and resources to maintain and improve safety systems.
- (11) May perform additional duties and responsibilities, as assigned by their respective FEMs, if needed to meet specific requirements of their sites/facilities, systems/program activities, or other involved organizations.

b. Field Element Managers.

- (1) Establish SSO qualification programs as part of the TQP.

- (2) Establish appropriate training and performance requirements for SSO personnel and hold supervisors of SSO personnel accountable for achieving them.
- (3) Define SSO requirements and ensure that SSO staffing needs are filled.
- (4) Clearly define the functions, responsibilities, and authorities of personnel assigned to perform SSO and their interface/support of FRs. Ensure affected DOE and contractor managers understand their roles and relationships to FRs and the contractor's cognizant system engineers, and provide the necessary access and support.
- (5) Verify that SSO candidates possess the required level of knowledge or skills to perform assessments and investigations to confirm performance of safety systems in meeting established safety and mission requirements.
- (6) Assign qualifying officials to sign site-specific qualification cards.

c. Supervisors with Responsibilities for SSOs.

- (1) Maintain STSM qualification.
- (2) Develop site-specific SSO qualification standards and cards for safety systems and safety management programs.
- (3) Identify and approve candidate selection.
- (4) Establish SSO personnel qualification schedules.
- (5) Facilitate SSO qualification (e.g., ensure sufficient time and training is provided to complete qualification tasks).
- (6) Train and qualify SSO candidates so they are capable of performing assigned duties.
- (7) Ensure SSO responsibilities are included and maintained in individual performance plans.
- (8) Ensure SSO qualifications are maintained current by training and assignments planned in IDPs.
- (9) Periodically evaluate program effectiveness and serve as management advocates within their respective field elements to resolve programmatic issues.

3. SSO KNOWLEDGE, SKILLS, AND ABILITIES.

- a. Consistent with this Order, each field element organization develops a TQP to include the knowledge, skills, and abilities listed below for all SSO personnel. It is understood that as part of the TQP, all SSO personnel acquire the necessary basic technical knowledge and technical discipline competencies linked to their individual job descriptions. In addition, the overall competency expectation for SSO personnel is that they have a working knowledge of and ability to oversee those safety systems to which they have been assigned. The following knowledge, skills, and abilities were developed to meet this expectation.
- (1) Identify and describe the Authorization Basis (AB) documents and describe the function and purpose of the assigned safety systems and major components and how these functions support the full spectrum of system operations.
 - (2) Given the major design basis supporting analyses, system design descriptions, calculations, and other information sources, explain how system performance requirements satisfy the AB.
 - (3) Describe the maintenance requirements of the safety system, describe how to determine the status and adequacy of contractor maintenance activities, and explain how the contractor maintains the configuration of the safety system (both physical and document configuration) throughout the work control and design change processes.
 - (4) Describe the unreviewed safety question process and its importance for maintaining the original safety basis.
 - (5) Describe the contractor's Cognizant System Engineer Program, the program's role in maintaining and improving safety system performance, the key criteria for determining that this role is adequately performed, and how to assess the program to confirm it is fulfilling assigned responsibilities.
 - (6) Describe the key considerations in preparing and implementing a troubleshooting plan to determine the root cause for equipment failures (e.g., evidence preservation, need for contingencies, application of ISM to trouble shooting). Describe how to obtain related facility or industry experience to support the cause determination.
- b. In addition to evaluating and documenting how the above knowledge, skills and abilities have been achieved as part of the SSO personnel qualification, field element organizations should also use practical exercises such as the following to evaluate SSO staff knowledge, skills, and abilities.

- (1) Performing walk-downs of the system and/or contractor facilities to demonstrate how system requirements and performance data are gathered.
- (2) Conducting (preferably leading) performance-based assessments (through walk-downs, interviews, document reviews, and field observations) to confirm that
 - (a) AB documents are accurate and adequately maintained;
 - (b) system operation, maintenance, and performance is in accordance with this basis;
 - (c) the effect of aging on system equipment and components is addressed; and
 - (d) the contractor has an adequate Cognizant System Engineer Program (e.g., staffing, qualifications, responsibilities, programs) for monitoring, maintaining, and improving system performance.

Achievement and demonstration of knowledge, skills, abilities, and related practical factors are fully documented on the SSO candidate's qualification card.