U.S. Department of Energy Orders Self-Study Program

DOE O 440.1B

WORKER PROTECTION PROGRAM FOR DOE (INCLUDING THE NATIONAL NUCLEAR SECURITY ADMINISTRATION) FEDERAL EMPLOYEES

DOE O 440.1B
WORKER PROTECTION MANAGEMENT FOR DOE (INCLUDING THE NATIONAL NUCLEAR SECURITY ADMINISTRATION) FEDERAL EMPLOYEES
FAMILIAR LEVEL

OBJECTIVES

Given the familiar level of this module and the resources listed below, you will be able to answer the following questions:

1. What are the objectives of DOE O 440.1B?
2. What are the requirements that DOE elements must meet according to DOE O 440.1B?
3. What is the hazard prevention/abatement process that must be implemented according to DOE O 440.1B?
4. What are three responsibilities assigned by DOE O 440.1B for heads of field elements?
5. What are the elements of an acceptable fire protection program?
6. What are the requirements for firearm safety?
7. What are the elements that must be included in industrial hygiene?
8. What are the pressure safety requirements?
9. What are the areas that must be addressed in motor vehicle safety?

Note: If you think that you can complete the practice at the end of this level without working through the instructional material and/or the examples, complete the practice now. The course manager will check your work. You will need to complete the practice in this level successfully before taking the criterion test.

RESOURCES

DOE O 440.1B, *Worker Protection Management for DOE (Including the National Nuclear Security Administration) Federal Employees*. May 17, 2011.

Note: The following references, annotated in DOE O 440.1B, may be required to answer questions in the practice and criterion test for this module.

10 CFR 851, "Worker Safety and Health Program." January 1, 2011.
29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters." July 1, 2010.
DOE M 231.1-1A, *Environment, Safety and Health Reporting Manual*. September 9, 2004.
DOE M 440.1-1A, *DOE Explosives Safety Manual*. January 9, 2006.
DOE O 225.1B, *Accident Investigation.* March 4, 2011.
DOE O 231.1A, Chg 1, *Environment, Safety and Health Reporting*. June 3, 2004.
National Fire Protection Association, NFPA51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*. 2009.
National Fire Protection Association, Standard 101, *Life Safety Code*. 2009.
National Fire Protection Association, Standard 101A, *Alternate Approaches to Life Safety.* 2010.

INTRODUCTION

The familiar level of this module is divided into two sections. In the first section, we will discuss the objective, requirements, and the responsibilities assigned to the heads of field elements. In the second section, we will discuss the content of attachment 1, Functional Area Requirements. We have provided examples and a practice to help familiarize you with the material. The practice will also help prepare you for the criterion test.

Before continuing, you should obtain a copy of DOE O 440.1B. Copies of the Orders are available at https://www.directives.doe.gov/directives or through the course manager. It is not necessary to obtain copies of the other resources listed for this module. However, you should be familiar with these resources. You may need to refer to these documents to complete the examples, practice, and criterion test.

SECTION 1

Objective

To establish the framework for an effective worker protection program that will reduce or prevent injuries, illnesses, and accidental losses by providing DOE Federal workers with a safe and healthful workplace.

Requirements

Establish and implement a written worker protection program appropriate for the facility hazards that

- provides a place of employment free from recognized hazards that are causing or are likely to cause death or serious physical harm to their employees; and,
- integrates all requirements contained in DOE O 440.1B; program requirements contained in 29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters"; applicable functional area requirements contained in attachment 1; and other related site-specific worker protection activities.

Establish written policy, goals, and objectives for the worker protection program.

Use qualified worker protection staff to direct and manage the worker protection program.

Assign worker protection responsibilities, evaluate personnel performance, and hold personnel accountable for worker protection performance.

Encourage the involvement of employees in the development of program goals, objectives, and performance measures and in the identification and control of hazards in the workplace.

Provide workers the right, without reprisal, to

- accompany DOE worker protection personnel during workplace inspections;
- participate in activities provided for in DOE O 440.1B on official time;
- express concerns related to worker protection;
- decline to perform an assigned task because of a reasonable belief that, under the circumstances, the task poses an imminent risk of death or serious bodily harm to that individual, coupled with a reasonable belief that there is insufficient time to seek

effective redress through the normal hazard reporting and abatement procedures established in accordance with DOE O 440.1B;
- have access to DOE worker protection publications, DOE-prescribed standards, and the organization's own worker protection standards or procedures applicable to the workplace;
- observe monitoring or measuring of hazardous agents and have access to the results of exposure monitoring;
- be notified when monitoring results indicate they were overexposed to hazardous materials;
- receive results of inspections and accident investigations upon request;
- have limited information on any recordkeeping log (OSHA Form 300). Access is subject to Freedom of Information Act requirements and restrictions; and
- review the DOE Form 5484.3 that contains the employee's name as the injured or ill worker.

Implement procedures to allow workers to stop work when they discover employee exposures to imminent danger conditions or other serious hazards. The procedure must ensure that any stop work authority is exercised in a justifiable and responsible manner.

Inform workers of their rights and responsibilities by appropriate means, including posting the occupational safety and health protection for DOE employees poster in the workplace where it is accessible to all workers.

Identify existing and potential workplace hazards and evaluate the risk of associated worker injury or illness.
- Analyze or review
    - designs for new facilities and modifications to existing facilities and equipment;
    - operations and procedures; and
    - equipment, product, and service needs.
- Perform routine job activity-level hazard analyses, if appropriate for the particular work environment or task.
- Assess worker exposure to chemical, physical, biological, or ergonomic hazards through appropriate workplace monitoring, biological monitoring, and observation. Monitoring results must be recorded. Documentation must describe the tasks and locations where monitoring occurred, identify workers monitored or represented by the monitoring, and identify the sampling methods and durations, control measures in place during monitoring, and any other factors that may have affected sampling results.
- Evaluate workplaces and activities accomplished routinely by workers, supervisors, and managers and periodically by qualified worker protection professionals.
- Report and investigate accidents, incidents, injuries, illnesses and analyze related data for trends and lessons learned. Requirements for accident, injury, and illness reporting and investigation and trending and lessons-learned are contained in DOE O 231.1A, Chg 1, *Environment, Safety and Health Reporting* and DOE O 225.1B, *Accident Investigations*.
- Review site safety and health experience information.

- Consider interactions between workplace hazards and other hazards such as radiological hazards, as appropriate.

Implement a hazard prevention/abatement process to ensure that all identified hazards are managed through final abatement or control.

- For hazards identified either in the facility design or during the development of procedures, controls must be incorporated in the appropriate facility design or procedure.
- For existing hazards identified in the workplace, abatement actions prioritized according to risk to the worker must be promptly implemented, interim protective measures must be implemented pending final abatement, and workers must be protected immediately from imminent danger conditions.
- Hazards must be addressed when selecting or purchasing equipment, products, and services.
- Hazard control methods must be selected based on the following hierarchy:
    - Substitution and/or elimination
    - Engineering controls
    - Work practices and administrative controls that limit worker exposures
    - Personal protective equipment

Provide workers, supervisors, managers, visitors, and worker protection professionals with worker protection training.

Develop and implement occupant emergency plans and procedures, conduct training, and emergency drills according to directives and guidance issued by DOE.

Comply with the worker protection requirements that are applicable to the hazards at the facility.

Responsibilities of the Heads of Field Elements

Ensure through the contracting officer that contractors implement the requirements of 10 CFR 851, "Worker Safety and Health Program."

Review contractor worker protection program budgets and provide recommendations to the funding official on the appropriateness of the budget request.

Provide contractors with technical direction on and criteria for the development of contractor goals, objectives, and performance measures.

Hold DOE line personnel accountable for providing technical direction to contractors that is consistent with the requirements contained in 10 CFR 851.

Evaluate the need for and direct the development of formal written agreements between departmental elements on their sites. These agreements must outline the respective roles, responsibilities, and authorities of each departmental element as they relate to compliance with DOE worker protection requirements and the resolution of cross-cutting worker protection-related issues.

Review and forward, to the DOE Chief Health, Safety and Security Officer all exemptions,

exceptions, and variances to mandatory worker protection requirements contained in DOE O 440.1B. Conduct an annual review of the status of all exemptions to the requirements contained in DOE O 440.1B to ensure that circumstances requiring the need for relief have not changed and that instituted controls are still implemented and appropriate.

Provide annually to the Office of Health, Safety and Security input for the Department of Labor's Federal Employee Occupational Safety and Health (FEOSH) report, including status of progress in meeting established goals, new initiatives, and other requested information.

Establish annually FEOSH program goals and objectives for promoting the program and for reducing accidents, injuries, and lost-time cases

Note: You do not have to do example 1 on the following pages, but it is a good time to check your skill and knowledge of the information covered. You may do example 1 or go to section 2.

EXAMPLE 1

Using the familiar level of this module and the resources, answer the following questions.

1. What is the objective of DOE O 440.1B?

2. What is the hierarchy used to determine appropriate hazard control methods?

3. Under what conditions does a worker have the right to decline to perform an assigned task?

Note: When you are finished, compare your answers to those contained in the example 1 self-check. When you are satisfied with your answers, go to section 2.

EXAMPLE 1 SELF-CHECK

1. What is the objective of DOE O 440.1B?
   To establish the framework for an effective worker protection program that will reduce or prevent injuries, illnesses, and accidental losses by providing DOE Federal workers with a safe and healthful workplace.

2. What is the hierarchy used to determine appropriate hazard control methods?
   Hazard control methods must be selected based on the following hierarchy:
   - Substitution and/or elimination
   - Engineering controls
   - Work practices and administrative controls that limit worker exposures
   - Personal protective equipment

3. Under what conditions does a worker have the right to decline to perform an assigned task?
   A worker can decline to perform an assigned task because of a reasonable belief that, under the circumstances, the task poses an imminent risk of death or serious bodily harm to that individual, coupled with a reasonable belief that there is insufficient time to seek effective redress through the normal hazard reporting and abatement procedures.

SECTION 2, FUNCTIONAL AREA REQUIREMENTS FOR DOE ELEMENTS (ATTACHMENT 1)

This section includes requirements and responsibilities for the following functional areas:

- Construction safety
- Fire protection
- Firearms safety
- Explosives safety
- Industrial hygiene
- Pressure safety
- Motor vehicle safety
- Training and information
- Recordkeeping and reporting

Construction Safety

The following responsibilities apply for construction projects above the monetary threshold established by the Davis-Bacon Act at government-owned or -leased facilities where the contract clause 'Safety and Health (Government-Owned or -Leased Facility)' applies.

Heads of Departmental Elements and Heads of Field Elements

1. Designate a project manager for each construction project.
2. Ensure that project managers are provided with the training, resources, and technical support necessary to perform the duties prescribed by DOE O 440.1B.
3. Develop formal written agreements/implementing instructions as needed to delineate the respective construction safety responsibilities/duties of DOE project management and technical support staffs.
4. Review safety and health programs developed for site maintenance and operational activities to determine their applicability and cost effectiveness on construction projects.
5. Direct the development and implementation of a system for evaluating the effectiveness of construction contractor safety and health programs on fixed-price construction projects and apply this system to the determination of bidder responsibility on future construction projects.
6. Ensure that applicable requirements of DOE O 440.1B are specified within construction project acquisition documents.

Construction Project Managers

1. Determine the necessity for requiring dedicated construction contractor safety and health personnel on project workplaces.
2. Ensure that construction project acquisition documents provide information or reference to existing documentation that describes known hazards to which project workers may be exposed.
3. Ensure that a prework safety meeting is conducted with the construction contractor to review project safety and health requirements.
4. Ensure that the project safety and health plan is approved prior to any onsite project work and that required hazard analyses are completed and approved prior to start of work on affected construction operations.

5. Ensure that project safety and health plans and hazard analyses are revised, as necessary, to address identified deficiencies in project safety and health performance or changes in project operations, contractors, or personnel.
6. Through personal onsite involvement and/or formal delegation to support staff and/or the construction manager, perform frequent and regular documented onsite reviews of construction contractor safety and health program effectiveness.
7. Ensure documentation exists for all formal contract actions taken to enforce construction contractor compliance with project safety and health requirements.

Fire Protection

Implement a comprehensive fire protection program with the objective of providing an acceptable level of safety from fire and related hazards for DOE Federal personnel and for the public. This includes appropriate facility and site-wide fire protection, fire alarm notification and egress features, and access to a fully staffed, trained, and equipped fire department that is capable of responding in a timely and effective manner to site emergencies.

An acceptable fire protection program includes those fire protection criteria and procedures, analyses, hardware and systems, apparatus and equipment, and personnel that comprehensively ensure that the above objective is met. This includes meeting applicable building codes and National Fire Protection Association (NFPA) codes and standards or exceeding them.

NFPA Standard 101, *Life Safety Code*, is applicable to most DOE facilities. DOE elements with Federal worker responsibility may determine that NFPA 101A, *Alternate Approaches to Life Safety*, can be applied to DOE facilities where an equivalent level of life safety to NFPA 101 is needed provided that such an alternative approach is determined by a qualified individual. DOE elements with Federal worker responsibility also should determine the additional or modified exit requirements needed for toxic and explosive environments if appropriate. The exit requirements for explosives environments should reflect the criteria contained in the DOE M 440.1-1A, *Explosives Safety Manual*. Additional fire protection features and personnel limits should be maintained where noncompliance with some NFPA standard 101 provisions are necessary to prevent creating serious hazards (e.g. as could occur in some containment structures).

When applicable, fire watcher requirements in NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*, should be expanded to include responsibility for the safety of the welder(s) in addition to that of the facility.

Firearms Safety

Establish firearms safety policies and procedures for security operations and training to ensure proper accident prevention controls are in place. Written procedures must address firearms safety, engineering and administrative controls, as well as personal protective equipment requirements. At a minimum, procedures must be established for the following:

- Storage, handling, cleaning, inventory and maintenance of firearms and associated ammunition.

- Activities such as loading, unloading, and exchanging firearms. These procedures must address use of bullet containment devices and those techniques to be used when no bullet containment device is available.
- Use and storage of pyrotechnics, explosives, and/or explosive projectiles.
- Handling misfires, duds, and unauthorized discharges.
- Live fire training, qualification, and evaluation activities.
- Training and exercises using engagement simulation systems.
- Training and exercises using obscurant-generating devices.
- Emergency responses at firearms training facilities.
- Use of firing ranges by personnel other than DOE or DOE contractor protective forces personnel.

Ensure that personnel responsible for the direction and operation of the firearms safety program are professionally qualified and have sufficient time and authority to implement the established program.

Ensure that firearms instructors and armorers have been certified by the Safeguards and Security National Training Center (NTC). Personnel must be professionally qualified through DOE NTC, military, or factory training to conduct the level of activity they provide.

Conduct formal appraisals assessing implementation of procedures, personnel responsibilities, and duty assignments to ensure overall policy objectives.

Implement provisions related to firearms training, live fire range safety, qualification, and evaluation activities.

Personnel must successfully complete and demonstrate understanding of initial firearms safety training before being issued any firearms. Authorization to remain in armed status will continue only if the employee demonstrates the technical and practical knowledge of firearms safety semi-annually.

Personnel authorized to carry firearms must have access to instruction manuals or materials for each type of firearm with which they are armed while on duty.

Authorized armed personnel must demonstrate technical and practical knowledge of firearms handling and safety on a semi-annual basis. This demonstration must be supported by limited scope performance tests, and the results of such testing must be documented.

All firearms training lesson plans must incorporate safety for all aspects of firearms training task performance standards. Lesson plans must follow the standards and criteria set forth by the NTC's safeguards and security standard training program.

Firearms safety briefings must immediately precede training, qualifications, and evaluation activities involving live fire and/or engagement simulation systems.

A safety analysis approved by DOE line management must be developed for the facilities and

operation of each live fire range. A safety analysis must be completed and approved prior to implementation of any new training, qualification, or evaluation activity. Results of these analyses must be incorporated into procedures, lesson plans, exercise plans, and limited scope performance tests.

Firing range safety procedures must be conspicuously posted at all primary range facilities.

Live fire ranges must be properly sited to protect personnel on the range, as well as personnel and property not associated with the range. Approval for the location and use of live fire range must be obtained from the DOE field element manager. Develop a safety or risk analysis for all facilities or areas in which firearms will be introduced in accordance with the local protection strategy. Such analyses must be approved by DOE line management.

Ensure that the transportation, handling, placarding, and storage of munitions conform to the applicable requirements of DOE M 440.1-1A, *DOE Explosives Safety Manual*.

Explosives Safety

Ensure that applicable explosives operations comply with DOE M 440.1-1A. Facility management must determine the applicability of the requirements to research and development laboratory type operations consistent with the DOE level of protection criteria in the manual. The administration and management of DOE M 440.1-1A, and any deviations from it, must follow the process specified in chapter I, paragraphs 3 and 4, of the manual. Revisions to the manual are made through concurrence of the DOE Explosives Safety Committee.

Industrial Hygiene

Implement a comprehensive and effective industrial hygiene program to reduce the risk of work-related disease or illness at affected facilities. Industrial hygiene programs shall include the following elements:

1. Initial or baseline surveys of all work areas or operations to identify and evaluate potential worker health risks.
2. Coordination with planning and design personnel to anticipate and control health hazards that proposed facilities and operations would introduce.
3. Coordination with cognizant occupational medical, environment, health physics, and work planning professionals.
4. Policies and procedures to mitigate the risk from identified and potential occupational carcinogens.
5. Professionally and technically qualified industrial hygienists to manage and implement the industrial hygiene program.
6. Periodic resurveys and/or exposure monitoring as appropriate.
7. Documented exposure assessment for chemical, physical, and biological agents and ergonomic stressors using recognized exposure assessment methodologies and use of accredited industrial hygiene laboratories.
8. Specification of appropriate engineering, administrative, work practice, and/or personal protective control methods to limit hazardous exposures to acceptable levels.
9. Worker education, training, and involvement.

10. Use of appropriate industrial hygiene standards.
11. Use of respiratory protection equipment tested under the *DOE Respirator Acceptance Program for Supplied-air Suits* (DOE Technical Standard-117-2003) when National Institute for Occupational Safety and Health-approved respiratory protection does not exist for DOE tasks that require such equipment. For security operations conducted in accordance with Presidential Decision Directive 39, U. S. Policy on Counter Terrorism, use of Department of Defense military type masks for respiratory protection by security is acceptable.

Biological Safety

Implement and manage a program that confirms handling, transfer, use, and receipt of etiologic agents are conducted by professionally and technically qualified individuals in a manner consistent with the potential hazard.

Confirm that each DOE contractor performing work with etiologic agents establishes an institutional biosafety committee (IBC) or equivalent, which will be responsible for recommending approval and reviewing proposals and programs for compliance with the Centers for Disease Control (CDC), Department of Agriculture, National Institutes of Health, World Health Organization, and other international, Federal, state, and local regulations or guidelines for work with etiologic agents. This review should include assessment of containment level, facilities, procedures, practices, and training and expertise of personnel. In addition, this committee should review the site's security, safeguards, and emergency management plans and procedures to ensure that they adequately address work with etiologic agents. DOE staff, with the requisite technical expertise and training, should be included as a member of the facility IBC (or equivalent).

Be aware of each CDC registration certificate issued to a DOE facility registered and approved to transfer, receive, and handle select agents at biosafety level 2, 3, or 4 under their cognizance. The field elements must also be aware of each CDC Form EA-101, Transfer of Select Agents, for each select agent received or transferred by a registered facility under their cognizance.

Maintain a record of the status of etiologic agents at facilities under their authority, based on annual reports from contractors.

Pressure Safety

DOE elements must implement a comprehensive pressure vessel and pressure system safety program. This program must meet, at a minimum, the following criteria:

- Establish written and documented safety policies and procedures to ensure that all pressure vessels and systems are designed, fabricated, tested, procured, inspected, maintained, repaired, and operated by trained and qualified personnel in accordance with applicable and sound engineering principles.
- All pressure vessels, boilers, air receivers, and supporting piping systems must conform to the following applicable code or standard in place at time of installation or significant modification:
  - American Society of Mechanical Engineers (ASME) *Design and Construction of*

Boiler, Air Receivers, and Pressure Vessels
  - American National Standards Institute/ASME B.31 Piping Code
  - National Board Inspection Code NB-23
  - Department of Transportation, 49 CFR 100-199
  - Strictest applicable state and local codes

- If national consensus codes are not applicable, implementing measures must be established to provide equivalent protection and ensure safety equal to or superior to the intent of the ASME code. Measures must meet the following criteria:
  - Design drawings, sketches, and calculations must be reviewed and approved by an independent design professional. Documented organizational peer review is acceptable.
  - Qualified personnel must be used to perform examinations and inspections of materials, in-process fabrications, non-destructive tests, and acceptance tests.
  - Documentation, traceability, and accountability must be maintained for each pressure vessel or system, including descriptions of design, pressure, testing, operation, repair, and maintenance.

- Each pressure vessel or system, including the design, pressure ratings, traceability, inspection, testing, operations, repair, and maintenance requirements must be described and documented.
- All components in the pressure system, especially components of pressure relief devices and control valves, must be inspected, tested, and maintained as required by the above applicable standards. Inspections, testing, and maintenance may be done according to competently developed and peer-reviewed engineering and maintenance specifications, provided that they ensure safety equal to or superior to the intent of any applicable standard. This process must be documented.
- Qualified personnel must control the selection and use of the pressure hardware, including quality control requirements, procurement specifications, and assembly of pressure components.
- Personnel who design, build, and operate pressure systems must be trained and qualified through documented formal classroom attendance, testing, on-the-job experience and/or training.
- Worker involvement/safety committee(s) must recommend and/or review safety policies; address unusual problems and occurrences; and provide advice and assistance in pressure safety.

Motor Vehicle Safety

Implement a motor vehicle safety program to protect the safety and health of all drivers and passengers in government-owned or -leased motor vehicles and powered industrial equipment (i.e., fork trucks, tractors, platform lift trucks, and other similar specialized equipment powered by an electric motor or an internal combustion engine).

The motor vehicle safety program shall be tailored for the individual DOE site or facility, based on an analysis of the needs of that particular site or facility, and shall address the following areas:

1. Minimum licensing requirements (including appropriate testing and medical qualification) for personnel operating motor vehicles and powered industrial equipment

2. Requirements for the use of seat belts and provision of other safety devices
3. Training for specialty vehicle operators
4. Requirements for motor vehicle maintenance and inspection
5. Uniform traffic and pedestrian control devices and road signs
6. Onsite speed limits and other traffic rules
7. Awareness campaigns and incentive programs to encourage safe driving
8. Enforcement provisions

Electrical Safety

DOE elements must implement a comprehensive electrical safety program appropriate for the activities at the facility. The program must meet the applicable electrical safety codes and standards.

Training and Information

Develop and implement a worker safety and health training and information program to ensure that all Federal workers exposed or potentially exposed to hazards are provided with the training and information on that hazard to perform their duties in a safe and healthful manner.

Provide the following:

- Training and information for new Federal workers, before or at the time of initial assignment to a job involving exposure to a hazard
- Periodic training as often as necessary to ensure that Federal workers are adequately trained and informed
- Additional training when safety and health information or a change in workplace conditions indicates that a new or increased hazard exists

DOE must provide training and information to Federal workers who have worker safety and health program responsibilities that are necessary for them to carry out those responsibilities.

Recordkeeping and Reporting

Recordkeeping

Establish and maintain complete and accurate records of all hazard inventory information, hazard assessments, exposure measurements, and exposure controls.

Ensure that the work-related injuries and illnesses of Federal workers and contractor/subcontractor workers are recorded and reported accurately and consistent with DOE M 231.1-1A.

Comply with the applicable occupational injury and illness recordkeeping and reporting workplace safety and health standards.

Ensure that any information concerning non-compliance or potential noncompliance with the requirements in this document is not concealed nor destroyed.

Reporting and investigation

Report and investigate accidents, injuries and illness.

Analyze related data for trends and lessons learned.

Note: You do not have to do example 2 on the following page, but it is a good time to check your skill and knowledge of the information covered. You may do example 2 or go to practice.

EXAMPLE 2

1. What are the provisions that must be implemented regarding firearms safety training, qualification, or requalification?

2. What are the standards and/or codes related to pressure vessels, boilers, air receivers, and supporting piping systems?

3. What should be included in an acceptable fire protection program?

Note: When you are finished, compare your answers to those contained in the example 2 self-check. When you are satisfied with your answers, go on to the practice.

EXAMPLE 2 SELF-CHECK

1. What are the provisions that must be implemented regarding firearms safety training, qualification, or requalification?
    - Personnel shall successfully complete and demonstrate understanding of initial firearms safety training before being issued any firearms.
    - Personnel authorized to carry firearms shall have access to instruction manuals for each type of firearm with which they are armed while on duty.
    - Authorized armed personnel shall demonstrate technical and practical knowledge of firearms handling and safety on a semi-annual basis.
    - All firearms training lesson plans shall incorporate safety for all aspects of firearms training task performance standards.

2. What are the standards and/or codes related to pressure vessels, boilers, air receivers, and supporting piping systems?
    - American Society of Mechanical Engineers Boiler and Pressure Vessel Safety Code
    - American National Standards Institute B.31 Piping Code
    - National Board Inspection Code NB-23
    - Department of Transportation, 49 CFR 100-199
    - The strictest applicable state and local codes

3. What should be included in an acceptable fire protection program?
   An acceptable fire protection program includes those fire protection criteria and procedures, analyses, hardware and systems, apparatus and equipment, and personnel that comprehensively ensure that the above objective is met. This includes meeting applicable building codes and NFPA codes and standards.

PRACTICE

This practice is required if your proficiency is to be verified at the familiar level. The practice will prepare you for the criterion test. You will need to refer to the resources to answer the questions in the practice correctly. The practice and criterion test will also challenge additional analytical skills that you have acquired in other formal and on-the-job training.

1. What are two requirements of a written worker protection program?

2. What are the munitions hazard classes that the security force personnel are allowed to carry on their person while performing security duties? (Refer to DOE M 440.1-1A, DOE Explosives Safety Manual.)

3. What is the frequency at which authorized, armed personnel are required to demonstrate technical and practical knowledge of firearms handling and safety?

4. What are three areas that must be addressed in a DOE site motor vehicle safety program?

5. What is the hierarchy that should be used to select hazard control methods?

6. Who is responsible for ensuring that the contractors implement the requirements of 10 CFR 851?

7. Who is responsible for ensuring that a pre-work safety meeting is conducted with the construction contractor to review project safety and health requirements?

8. Who approves the location and use of a live fire range?

Note: The course manager will check your practice and verify your success at the familiar level. When you have successfully completed this practice, go to the general level module.

DOE O 440.1B
WORKER PROTECTION PROGRAM FOR DOE (INCLUDING THE NATIONAL NUCLEAR SECURITY ADMINISTRATION) FEDERAL EMPLOYEES GENERAL LEVEL

OBJECTIVES

Given the familiar level of this module, a scenario, and an analysis, you will be able to answer the following questions:

1. What are the key elements you would look for in the contractor's action plan to correct the situation described in the scenario?
2. What are the requirements, sections, or elements of DOE O 440.1B that apply to the situation described in the scenario?

Note: If you think that you can complete the practice at the end of this level without working through the instructional material and/or the examples, complete the practice now. The course manager will check your work. You will need to complete the practice in this level successfully before taking the criterion test.

RESOURCES

29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters." July 1, 2010.
DOE M 440.1-1A *DOE Explosives Safety Manual*. March 29, 1996.
DOE Orders Self Study Program, DOE O 440.1B, Familiar Level. July 2011
DOE O 440.1B, *Worker Protection Program for DOE (Including the National Nuclear Security Administration) Federal Employees*. August 21, 2007.

INTRODUCTION

The familiar level of this module introduced DOE O 440.1B. Several requirements from DOE O 440.1B and the Orders and documents listed as resources were discussed. In the general level of this module, students are asked to apply the information contained in the familiar level and the Orders to a scenario that depicts a work situation related to the Orders contained in this module. The example scenario includes a situation, the actions taken to remedy the situation, and the requirements related to the situation. Students will be asked to review the contractor's actions and decide if they are correct. Students will also be asked to decide if the correct Order requirements were cited in each situation. Please refer to the Order to make your analysis and answer the questions. You are not required to complete the example. However, doing so will help prepare you for the criterion test.

Note: You do not have to do the example on the following page, but it is a good time to check your skill and knowledge of the information covered. You may do the example or go on to the practice.

EXAMPLE SCENARIO

A capacitor bank was being remotely energized by workers when an equipment failure resulted in an unexpected discharge of the capacitor bank. The resulting smoke from the discharge actuated the fire detection system and initiated a fire department response. The team leader (TL) immediately attempted to contact access control (AC). He then left the area and went to AC to meet the fire department. While the TL was meeting with the fire department, the remaining workers began working to ensure all systems were de-energized. To do this, they followed established procedural steps. The step-by-step procedure requires workers to perform a visual inspection of the capacitor bank using a TV camera. The workers entered the building, before the fire department arrived and visually confirmed, using the TV camera, there was not a fire in the capacitor bank room. They proceeded to place the capacitor bank in a safe configuration before exiting the facility because of the noise level of the smoke detector alarm.

The TL returned with the fire department and escorted them to the fire alarm panel.

While the above actions were taking place, the shift operations manager (SOM) was simultaneously responding to the event. The SOM, accompanied by the industrial hygienist (IH), observed the fire department exiting the facility using a pathway to the side of the level 1 gate, which was still lowered. Level 1 gates have a barricade with a sign stating "Level-1 Hazard–Do Not Pass." The SOM entered the facility using the pathway rather than notifying the firing leader (FL) to request permission to enter the facility, per requirements. It should be noted that the TL escorting the fire department did request, and received, access permission from the FL. The SOM and IH evaluated the situation and gathered information to assist categorization before returning to where the SOM made notification to the operations director.

Take some time to review the example scenario. Then, acting as the operations director, decide what concerns you may have about the emergency response. Write your answer below.

Note: When you are finished, compare your answers to those contained in the example self-check. When you are satisfied with your answers, go on to the practice.

EXAMPLE SELF-CHECK

Your answer does not have to match the following exactly. To be considered correct, your answer should include, at least the following.

The operations director identified two primary concerns, including emergency response and post event release of facilities. The operations director's emergency response concern included the potential safety issues with entering a facility with smoke detectors alarming and without the fire department present, maintaining and following appropriate access control requirements during emergency response, and ensuring programmatic involvement during facility release after emergency response in cases where unique hazards may not be understood by operations personnel.

PRACTICE

This practice is required if your proficiency is to be verified at the general level. The practice will prepare you for the criterion test. You will need to refer to the resources to answer the questions in the practice correctly. The practice and criterion test will also challenge additional analytical skills that you have acquired in other formal and on-the-job training for the FR position.

Please review the following scenario and answer the following questions:

1. Was the situation handled correctly? If not, what should have been done?
2. Was the list of requirements, sections, and elements of DOE O 440.1B complete and correct? If not, state the correct or omitted requirements.

Scenario

A new construction contractor is contracted to excavate around ductwork on the exterior of a building. The project included the following tasks:

- Excavation of overburden to access ducting laterals and main duct branch in the area of the 13.2KV and 480V power lines on the exterior of the north side of the building
- Break up the concrete pad located under the drain line
- Remove the spoil piles located near the ductwork trenches on the north side of the building

The purpose of the work is to expose the ductwork and electric utility concrete encasement to prepare for the removal activity. The concrete pad is approximately 8 feet by 20 feet by 4 inches thick and is located approximately 3 to 4 feet above a buried 480V line that is encased in concrete. There is a 13.2KV line approximately 3 1/2 feet away from the 480V line that is also buried at approximately 3 to 4 feet and encased in concrete. A utility survey was conducted and the utilities were located before work began. Additionally, the underground concrete encased power lines had been previously exposed, and were in view approximately 3 feet below grade level. Construction workers knew the location of both lines and that they were energized.

On February 14, the project leader issued a verbal stop work activity to the construction contractor to prevent using a Daewoo Trackhoe with the hydraulic hammer to break up a concrete pad. The verbal stop work was issued because the contractor is contractually required to hand excavate within five feet of utility lines. The project leader also questioned the wisdom of using a jackhammer near utility lines when there were other effective options available. It was noted that at least one piece of the rubble had slid down onto the 480V encasement.

The facility manager requested that the environmental, safety, and health occupational safety section (ESHOSS) conduct a safety analysis of the current work effort for any safety concerns or violation of OSHA requirements. This action was initiated after the FR had expressed safety concerns due to the vibrations from the hydraulic hammer and the proximity of this operation to the 480V and 13.2KV power line.

ESHOSS conducted an onsite evaluation on February 15, and reported that there was no indication of any physical impact to the concrete encasement around the 480V and 13.2KV lines. ESHOSS also reported that the job was safe according to OSHA requirements, and they authorized the

construction contractor to continue.

The FR still had a safety concern about working within 5 to 6 feet of the energized lines. The FR attempted to discuss this concern with the contractor's safety personnel. However, no safety person from the contractor was available. The FR then called the project leader and was assured that the pad would be lifted up and moved away from the area with a backhoe. The FR agreed that this approach would be acceptable.

On February 16, work began on the concrete pad using the hydraulic hammer. The FR issued an oral stop work order at this time. The contractor did not have a safety person onsite.

Further investigation of the situation revealed the following:

- The utilities had been surveyed and marked or staked three times. However, the work in progress had covered up or removed some of the markings and stakes.
- The engineering contract coordinator had previously stopped the jack hammering operation and suggested an alternate means of removing the concrete slab. He felt this suggestion had been acknowledged by the work supervisor and therefore, believed that no further action was required.

Corrective actions taken by the contractor:

- The contractor was told that it must comply with the requirement to hand dig within five feet of utility lines.
- The contractor will discuss the requirement to hand dig within five feet of utility lines at a meeting with supervision. This will be the first such meeting held on this project.
- All project activities will include an onsite supervisor and a safety representative during the use of power equipment.

Requirements that are related to this scenario include the following:

- Determine the necessity for requiring dedicated construction contractor safety and health personnel on project workplaces. (Attachment 1, page 1)
- Ensure that a pre-work safety meeting is conducted with the construction contractor. (Attachment 1, page 1)
- The construction manager is required to conduct onsite reviews of safety program effectiveness. (Attachment 1, page 2)
- The safety programs for this operation should have been reviewed to determine their applicability and cost effectiveness.(Attachment 1, Section 1b.(1)(d))

Write your answers on the next page and then bring the completed practice to the course manager for review.

Note: The course manager will check your practice and verify your success at the general level. When you have successfully completed this practice, the course manager will give you the criterion test.