

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

DOE O 151.1B

COMPREHENSIVE EMERGENCY MANAGEMENT SYSTEM



**NATIONAL NUCLEAR SECURITY ADMINISTRATION
SERVICE CENTER**

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**DOE O 151.1B
COMPREHENSIVE EMERGENCY MANAGEMENT SYSTEM
FAMILIAR LEVEL**

OBJECTIVES

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

1. List the objectives of DOE O 151.1B, Comprehensive Emergency Management System (EMS).
2. Describe the responsibilities assigned to the following positions or groups for implementation and management of the EMS:
 - Deputy Secretary
 - Director, Office of Emergency Operations
 - Emergency Management Advisory Committee
 - Program Secretarial Officer
 - Cognizant/field element managers
 - Site/facility managers
3. Describe the structure of the Headquarters (HQ) Emergency Management Team and the Emergency Management Team;
4. List three requirements for a hazard survey;
5. List three components of the planning process that should be addressed in an operational emergency base program;
6. Explain the emergency event classification system;
7. State the purpose of the Continuity of Government Operations Plan;
8. State the external notification requirements of the Emergency Management System;
9. List the requirements for an emergency public information plan; and
10. State the purpose of the Emergency Readiness Assurance Plan.

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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 151.1B, Comprehensive Emergency Management System, 10/29/03.

DOE G 151.1-1, Emergency Management Guide, volumes V1 through V7-3, 8/21/97.

INTRODUCTION

The familiar level of this module is divided into two sections. In the first section, we will discuss the objectives and responsibilities of DOE O 151.1B, Comprehensive Emergency Management System (EMS). In the second section, we will discuss the requirements included in the Order. We have provided several examples and practices throughout the module to help familiarize you with the material. The practices will also help prepare you for the criterion test.

Before continuing, you should obtain a copy of all the resources listed for this module. Copies of these documents are available on the Office of Management and Administration's Web site at <http://www.directives.doe.gov/> or through the course manager. Spend some time reviewing the documents so that you are familiar with the sections each contains. You will need to refer to these documents to complete the examples, practices, and criterion test.

SECTION 1, OBJECTIVES AND RESPONSIBILITIES

OBJECTIVES

- To establish policy and to assign and describe roles and responsibilities for the DOE EMS. The EMS provides the framework for development, coordination, control, and direction of all emergency planning, preparedness, readiness assurance, response, and recovery actions. The EMS applies to DOE and to the National Nuclear Security Administration (NNSA).
- To establish requirements for comprehensive planning, preparedness, response, and recovery activities of emergency management programs for DOE/NNSA or for organizations requiring DOE assistance.
- To describe an approach to effectively integrate planning, preparedness, response, and recovery activities for a comprehensive, all-emergency management concept.
- To integrate public information and emergency planning to provide accurate, candid, and timely information to site workers and the public during all emergencies.

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- To promote more efficient use of resources through greater flexibility in addressing emergency management needs consistent with the changing missions of the Department and its facilities.
- To ensure that the DOE EMS is ready to respond promptly, efficiently, and effectively to any emergency involving DOE/NNSA facilities, activities, or operations, or requiring DOE assistance.
- To integrate various requirements promulgated by other agencies into the Department's EMS.
- To eliminate duplication of emergency management effort within the Department.

RESPONSIBILITIES

In this section, we will discuss the major responsibilities associated with DOE O 151.1B. A complete list of responsibilities is available in chapter I of the Order.

Deputy Secretary

- Serves as senior emergency management policy official.

Director, Office of Security

- Manages, maintains and operates a 24-hour single point of contact for Headquarters emergency operations facilities.

Director, Office of Emergency Operations

- Issues all policy, requirements, and guidance for the DOE EMS.
- Coordinates and concurs on all emergency management activities, including intra- and inter-Departmental and international activities, Departmental commitments, and exercise and response activities.
- Ensures the EMS provides a comprehensive and integrated approach to emergency management, including planning, preparedness, response, and recovery.
- Serves as the Emergency Manager for all initial activations of the HQ Emergency Management team.
- Ensures emergency management program integrity through integration of all programs, systems, assets, capabilities, training, and response.

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- Conducts emergency management program reviews and attends line management program reviews.
- Establishes, charters, administers, convenes, and chairs the Emergency Management Advisory Committee.
- Ensures the establishment of performance measures and criteria for development and approval of facility and site emergency plans and emergency planning zones, with the Office of the Assistant Secretary for Environment, Safety and Health.
- Provides an annual status report to the Deputy Secretary on DOE readiness assurance.

Program Secretarial Officers

- Ensure implementation of emergency management policy and requirements; maintain programs and systems consistent with policy and requirements.
- Ensure that funding and resources are adequate for DOE facilities and activities for the continuing and effective implementation of emergency management programs, and that emergency response assets and capabilities are appropriately maintained.
- Conduct line management reviews of program-specific emergency management activities.
- Coordinate the handling and control of information on emergency situations.

Cognizant/Field Element Managers

- Implement emergency management policy and requirements.
- Approve and submit approved site emergency plans to the Director, Office of Emergency Operations and the Program Secretarial Officer(s).
- Ensure emergency public information planning is integrated with the development and maintenance of emergency plans.
- Ensure effective communication systems and protocols are coordinated and maintained.
- Predesignate a DOE/NNSA employee as the on-scene coordinator when DOE/NNSA is the lead agency for federal responses.
- Review and approve emergency readiness assurance plans.

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- Ensure that hazard assessments and hazard surveys for emergency planning purposes are performed and documented adequately.
- Ensure operations offices and contractors participate in a continuing emergency preparedness program of training, drills, and exercises.
- Conduct assessments of facility emergency management programs and review contractor self-assessment programs.
- Ensure emergency plans and procedures are prepared, reviewed annually and, updated for their facilities.
- Implement corrective actions for lessons learned from actual emergency responses and findings from evaluations, assessments, and appraisals.

Site/Facility Manager

- Develops, implements, maintains, and updates an emergency management program.
- Directs appropriate emergency response actions within the area under his or her control.
- Participates in developing mutual assistance agreements with state, tribal, and local authorities.
- Establishes and maintains an internal assessment program to ensure the readiness of emergency response capabilities.

Administrator, NNSA

- Ensures implementation of emergency management policy and requirements at facilities and operations, and maintains programs and systems consistent with this policy and these requirements.
- Ensures funding and resources are adequate for NNSA facilities and activities.
- Coordinates the development of contractor performance measures and criteria.
- Ensures development of appropriate emergency plan implementing procedures for timely and accurate emergency classification, formulation of protective actions, notification, and reporting of emergency events for facilities under his or her cognizance.

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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.

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7. State the position that is responsible for ensuring that emergency planning hazards assessments and hazards surveys are conducted.

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. State in your words what DOE/NNSA hopes to achieve by implementing DOE O 151.1B.
 - To establish policy and to assign and describe roles and responsibilities for the DOE EMS. The EMS provides the framework for development, coordination, control, and direction of all emergency planning, preparedness, readiness assurance, response, and recovery actions. The EMS applies to DOE and to NNSA.
 - To establish requirements for comprehensive planning, preparedness, response, and recovery activities of emergency management programs for DOE/NNSA or for organizations requiring DOE assistance.
 - To describe an approach to effectively integrate planning, preparedness, response, and recovery activities for a comprehensive, all-emergency management concept.
 - To integrate public information and emergency planning to provide accurate, candid, and timely information to site workers and the public during all emergencies.
 - To promote more efficient use of resources through greater flexibility in addressing emergency management needs consistent with the changing missions of the Department and its facilities.
 - To ensure that the DOE EMS is ready to respond promptly, efficiently, and effectively to any emergency involving DOE or NNSA facilities, activities, or operations, or requiring DOE assistance.
 - To integrate various requirements promulgated by other agencies into the Department's EMS.
 - To eliminate duplication of emergency management effort within the Department.

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2. State the position that coordinates and develops contract performance measures for the emergency management program.

Program Secretarial Officer

3. State the position that chairs the Emergency Management Advisory Committee.

Director, Office of Emergency Operations

4. List the responsibilities of the Emergency Management Advisory Committee.

Provide support to the Director, Office of Emergency Operations, in identifying and resolving department-wide emergency management issues.

5. State the position that is responsible for developing a site-specific emergency management program.

Site/facility manager

6. State the position that is responsible for ensuring that funding and resources are available for emergency management programs.

Program Secretarial Officer or the Administrator, NNSA

7. State the position that is responsible for ensuring that emergency planning hazards assessments and hazards surveys are conducted.

Cognizant/field element

SECTION 2, REQUIREMENTS

This section presents the operational emergency events and conditions and the Comprehensive Emergency Management Systems requirements as well as the program administration and readiness assurance elements of the order.

OPERATIONAL EMERGENCY EVENTS AND CONDITIONS

To ensure that proper actions to respond to an emergency can be initiated at all levels of DOE, a system of categorization and classification has been established. An operational emergency exists when site safety is degraded and does not require categorization.

Examples are:

- health and safety
- environment
- security and safeguards
- off-site DOE transportation

Events requiring classification present a significant threat to workers and the public due to the release of hazardous materials. Classification levels of these release events are:

- alert
- site area emergency
- general emergency

Alert

An alert must be declared when events are predicted, are in progress, or have occurred that result in one or more of the following:

- an actual or potential substantial degradation in the level of control over hazardous materials;
- an actual or potential substantial degradation in the level of safety or security of a nuclear weapon, component, or test device that would not pose an immediate threat to workers or the public; or

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- an actual or potential substantial degradation in the level of safety or security of a facility or process that could, with further degradation, produce a site area emergency or general emergency.

Site Area Emergency

A site area emergency must be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations:

- an actual or potential major failure of functions necessary for the protection of workers or the public;
- an actual or potential threat to the integrity of a nuclear weapon, component, or test device that may adversely impact the health and safety of workers in the immediate area, but not the public; or
- an actual or potential major degradation in the level of safety or security of a facility or process that could, with further degradation, produce a general emergency.

General Emergency

A general emergency must be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations:

- an actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of hazardous materials to the environment; or
- an actual or likely catastrophic failure in safety or security systems threatening the integrity of a nuclear weapon, component, or test device that may adversely impact the health and safety of workers and the public.

COMPREHENSIVE EMERGENCY MANAGEMENT SYSTEM

Each DOE/NNSA site or facility must develop and participate in an integrated and comprehensive EMS to ensure appropriate response measures are taken to protect workers, the public, the environment, and the national security. These response actions are captured in the Operational Emergency Base Program. As part of the Operational Emergency Base Program, a hazards survey is conducted which is used to determine which DOE/NNSA sites or facilities may be required to establish and maintain a quantitative hazards assessment. The quantitative hazards assessment defines the provisions in the Operational Emergency Hazardous Material Program. The following elements of the Comprehensive Emergency Management System have the three common phases of planning, preparedness, and response:

- Operational Emergency Base Program
- Operational Emergency Hazardous Material Program
- Energy Emergency Program
- Emergency Assistance Program
- communications requirements
- public affairs policy
- program administration

Planning

Emergency planning includes the identification of hazards and threats, hazard mitigation, development and preparation of emergency plans and procedures, and identification of personnel and resources needed for an effective response.

Operational Emergency Base Program

A hazards survey (i.e. qualitative examination) must be used to identify the conditions to be addressed in the program. A hazards survey must: (1) identify the emergency conditions; (2) describe the potential health, safety, or environmental impacts; and (3) summarize the planning requirements which apply. The response requirements identified in the hazards survey must be used in the integrated planning identified in the Operational Emergency Base Program.

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Existing plans for responding to emergencies can be referenced or incorporated into the Operational Emergency Base Program. The Operational Emergency Base Program has specific areas which must be addressed and are listed in DOE O 151.1B.

Operational Emergency Hazardous Material Program

The results of the quantitative analysis of the release or loss of control of hazardous materials will be used to determine the necessary personnel, resources, and equipment for the Operational Emergency Hazardous Material Program. The quantitative analysis or emergency planning hazards assessment is to be conducted annually and updated prior to significant changes to the site/facility or hazardous materials inventories.

An emergency response organization (ERO) must be established and maintained for each site. The ERO has the following responsibilities:

- implement initial and ongoing response to an emergency
- establish and control at the event/incident scene
- integrate local agencies and organizations which provide on-site response services

A consequence assessment is to be conducted during the emergency to assess the results of the emergency and must (1) be timely; (2) integrated with event classification and protective action process; (3) incorporate monitoring activities; and (4) be coordinated with other organizations.

Under this program, the protective actions are to be determined for on-site personnel and the public, and includes the following:

- methods to control, monitor, and maintain personnel exposure records
- plans to shelter and/or evacuate workers
- methods to control access to contaminated areas
- techniques to decontaminate personnel exiting areas
- actions needed to increase the effectiveness of protective actions
- methods to provide recommendations to appropriate organizations on protective actions
- protective action guides and emergency response planning guidelines should be prepared and used for protective action decision making

Provisions for medical support in accordance with DOE O 440.1A must be planned and documented. Additionally, emergency facilities and equipment are to be available and maintained including:

- a command center facility
- alternate command center location
- personal protective equipment and other equipment as identified in the emergency planning hazards assessment.

Energy Emergency Program

To ensure the capability to mitigate energy supply crises, hazard assessments are conducted by the Energy Information Administration and the Assistant Secretary of Policy and International Affairs. The planning documents (HQ Energy Emergency Management Plan and implementing procedures) have specific requirements.

Emergency Assistance Program

Emergency assistance planning must include the capability to provide support and direction as described in the Federal Radiological Emergency Response Plan, the National Contingency Plan, and the Federal Response Plan. Additional requirements are provided in the Headquarters Emergency Assistance Plan and implementing procedures, and procedures for the Department's radiological emergency response assets.

Communications Requirements

Provisions for worker and emergency response personnel notifications must be available initially and throughout the event. Reporting and notifications are to be completed in accordance with plans and agreements.

Public Affairs Policy

Public affairs policy and planning requirements apply for all emergencies or when the Department is obligated by law, executive order, interagency agreement, or other accord to provide technical support and assistance in accidents, defense mobilization, war, or other emergencies, including those involving another government agency, private organization, or nation. The Department must establish an emergency public information program that

includes adequate plans for all emergencies at DOE, NNSA, or contractor facilities and potential off-site emergencies that may involve DOE/NNSA resources or personnel.

Each field element and facility must prepare an emergency public information plan, but the same plan can cover multiple facilities if they are located on a contiguous site. The plans must provide the following:

- identification of personnel, resources, facilities, and coordination procedures to provide emergency public information;
- training and exercises for joint information center personnel;
- a method for informing workers and the public of DOE/NNSA emergency plans and protective actions, before and during emergencies; and
- coordination of public information efforts with state, local, and tribal governments and federal emergency response plans.

Preparedness

Preparedness is the acquisition and maintenance of resources, training, drills, and exercises. Training evolutions are to be coordinated to simulate actual response conditions.

Operational Emergency Base Program

Training, drills, and exercises are used to test systems created for preparedness during an emergency. Training and periodic drills are provided to workers required to take protective actions. On-site specific conditions and hazards for emergencies is to be made available to off-site personnel who may need to respond. Each site/facility must conduct building evacuations, as needed, to ensure employees can safely evacuate. Communication systems are to be tested at least annually to determine operability.

Operational Emergency Hazardous Material Program

Initial and annual training are provided for personnel identified as primary and alternates for the emergency response organization. Additionally, drills are to be supervised and involve hands-on training. The exercises for the emergency management program are to be validated over a five-year period through critiqued scenarios.

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Specific sites and facilities are to exercise emergency response capabilities annually with a facility-level critique. At least once every three years, an exercise must involve a radiological emergency response scenario with Department resources.

Energy Emergency Program

The HQ Energy Emergency Management Plan is to establish a readiness assurance program that includes training, drills, exercises and the evaluation of readiness for energy emergencies.

Emergency Assistance Program

The Emergency Assistance Program includes all activities whereby Departmental resources, emergency response assets, personnel, and/or facilities are deployed in support of Federal interagency plans; international agreements; Presidential direction; and State, local, or Tribal agreements of mutual aid

Communications Requirements

Notification and reporting requirements must be demonstrated during all emergency management exercises.

Public Affairs Policy

Adherence to emergency public information policies and requirements must be demonstrated during exercise evaluations, technical assistance appraisals, and approved training programs.

Response

Response activities include the application of resources to mitigate consequences to workers, the public, the environment, and the national security. Additional consideration must be given to reentry to prevent additional injuries to response personnel. This phase of an emergency serves as the initiation of recovery actions after an event that requires coordination of the affected site/facility, line management, and HQ offices. Plans for the actions needed to return the facility/operation to normal will be developed.

Operational Emergency Base Program

Prior to initiating emergency response activities, a hazards/safety briefing must be provided to the reentry team. Criteria must be established to define when the emergency state has terminated and when normal operations may be resumed.

Operational Emergency Hazardous Material Program

Response actions for emergencies involving hazardous materials are time-urgent. Event types define the associated response actions. Whether the event is classified as an “alert,” “site area emergency” or a “general emergency,” criteria for termination of the emergency must be defined. Additionally, the following are required:

- A means for estimating exposures to the public and workers must exist
- Procedures that describe the dissemination of information, decontamination actions, establishment of a recovery organization, reporting requirements, and criteria for resumption of normal operations.

Energy Emergency Program

Declaration of an energy emergency requires the availability of appropriate DOE personnel and resources to continually assess pertinent information.

Emergency Assistance Program

Radiological emergency response assets are deployed by the Administrator, NNSA. The HQ Emergency Manager must coordinate with appropriate response teams to ensure deployment of personnel.

Communications Requirements

During the response phase, the following types of communications are required:

Initial emergency notification: For operational emergencies, initial emergency notifications must be made to workers, emergency response personnel, and organizations, including DOE/NNSA elements and other local, state, tribal and federal organizations. The managers of DOE or contractor-operated facilities, HQ Operations Center staff and HQ emergency management personnel have specific notification and recording responsibilities specified in DOE O 151.1B.

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Emergency status updates: Emergency status reports must be forwarded to the next-higher emergency management team on a continuing basis until the emergency is terminated.

Responder communications: Effective communications methods must be established between event scene responders, emergency managers, and response facilities.

Final emergency report: Following termination of emergency response and in conjunction with the final occurrence report, each activated emergency management team must submit a final report on the emergency response to the emergency manager for submission to the Director, Office of Emergency Operations.

Recovery reporting: Reporting requirements must be specified during recovery planning.

Classified information reviews: All reports and releases must be reviewed for classified or unclassified controlled nuclear information (UCNI) before being provided to uncleared personnel, entered into unclassified databases, or transmitted using nonsecure communications equipment.

Public Affairs Policy

This Order must be applied during deployment of the following Departmental emergency response assets: the Aerial Measuring System, the Accident Response Group, the Atmospheric Release Advisory Capability, the Federal Radiation Monitoring and Assessment Center, the Nuclear Emergency Search Team, the Radiological Assistance Program, and the Radiological Emergency Assistance Center and Training Site.

The DOE/NNSA site office and contractor personnel must ensure that an adequate public information program is established and maintained, commensurate with site hazards, to ensure that information can be provided to the public and the media during an emergency. The emergency public information program must be adequately staffed with personnel trained to serve as spokesperson and news writer, and to provide support in media services, public inquiry, media inquiry, joint information center management and administrative activities, and media monitoring. Persons with technical expertise about the emergency

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and with spokesperson training must also be assigned to the emergency public information staff.

In situations involving classified information, the Department will provide sufficient unclassified information to explain the emergency response and protective actions required for the health and safety of workers and the public.

A DOE/NNSA or contractor public information officer must be assigned to the emergency public information response team involved in a significant off-site response deployment.

Program Administration

Personnel Requirements

Each cognizant field element manager, and each manager/administrator of a DOE-, NNSA- or DOE/NNSA contractor-operated facility subject to this Order, must designate an individual to administer emergency management. This individual must develop and maintain the emergency plan, develop the Emergency Readiness Assurance Plan and annual updates, develop and conduct training and exercise programs, coordinate assessment activities, develop related documentation, and coordinate emergency resources.

Classification Review

If the relevant facility/activity is generating classified information or UCNI, or is conducting operations that are classified or UCNI, then all emergency preparedness documents, such as plans, procedures, scenarios, and assessments, must be reviewed for classified and UCNI by an authorized derivative classifier or UCNI reviewing official.

Emergency Plans

The emergency plan must document the emergency management program and describe the provisions for response to an operational emergency.

Emergency Plan Implementing Procedures

Emergency plan implementing procedures must describe how emergency plans must be implemented.

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Lessons Learned

The emergency management program must include a system to track and verify correction of findings or lessons learned from training, drills, exercises, and actual responses.

Emergency Operating Records Protection Program

A program must be established to ensure that vital records, regardless of media, essential to the continued functioning or reconstitution of an organization during and after an emergency, are available, per 36 CFR 1236.

Evaluations and Readiness Assurance

Evaluations consist of line/program reviews conducted by the Director, Office of Emergency Operations. Readiness assurance consists of emergency readiness assurance plans and appraisal and assessment programs.

- Evaluations validate or identify weaknesses and/or findings in emergency management programs.
- Emergency readiness assurance plans ensure that emergency plans, implementing procedures, and resources are adequate and sufficiently maintained and exercised.
- Appraisal and assessment programs ensure that emergency capabilities are sufficient to implement emergency plans and that appropriate and timely improvements are made in response to needs identified through coordinated emergency planning, resource allocation, training, drills, and exercises.

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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 directly to the practice.

EXAMPLE 2 SELF-CHECK

1. State the activities included in the following:
 - a. emergency planning: identification of hazards and threats, hazard mitigation, development and preparation of emergency plans and procedures, and identification of personnel and resources needed for an effective response.
 - b. emergency preparedness: acquisition and maintenance of resources, training, drills and exercises.
 - c. emergency response: application of resources to mitigate consequences to workers, the public, the national security and the initiation of recovery from an emergency.

2. State the purpose of a hazard survey.

The hazard survey describes the potential impacts of emergency events or conditions and summarizes the planning and preparedness requirements that apply.

3. State the conditions under which a facility is required to develop an emergency hazardous material program.

A facility is required to develop an emergency hazardous material program if the hazard survey identifies hazardous materials at the facility/site in excess of predetermined thresholds.

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10. List and describe the sections you would expect to be included in an emergency readiness assurance plan.

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**DOE O 151.1B
COMPREHENSIVE EMERGENCY MANAGEMENT SYSTEM
GENERAL LEVEL**

OBJECTIVES

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

1. List the key elements you would look for in the contractor's action plan to correct the situation described in the scenario; and
2. State which requirements, sections, or elements of DOE O 151.1B 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

DOE Orders Self-Study Program, DOE O 151.1B, Comprehensive Emergency Management System, Familiar level, 9/24/04.

DOE O 151.1B, Comprehensive Emergency Management System, 10/29/03.

DOE G 151.1-1, Emergency Management Guide, volumes V1 through V7-3, 8/21/97.

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INTRODUCTION

The familiar level of this module introduced DOE O 151.1B, Comprehensive Emergency Management System. Several responsibilities and requirements from DOE O 151.1B and the Emergency Management Guide (EMG) were discussed. In the general level of this module, students are asked to apply the information contained in the familiar level, the Order, and the EMG to a series of questions related to the Order. Students are also presented with a scenario that depicts a work situation related to the Order. 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 requirements were cited in each situation. Please refer to the Order and EMG 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.
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EXAMPLE SCENARIO

On October 8, 1997, fire department personnel responded to an alarm and discovered that a transformer was on fire. An electrician also responded to the alarm and used a disconnect switch to de-energize the transformer. While he was de-energizing the transformer, he noticed the firefighter cutting the transformer compartment door lock with bolt cutters and directed him to stop. Investigators determined that because the electrical condition of the transformer was unknown the potential existed for the compartment and the lock to be energized. Failure to understand the potential danger exposed the firefighter to an electrical hazard that could have resulted in an injury or fatality.

Investigators believe that the firefighter cut the lock with intent of accessing and removing the transformer fuses. However, they determined that removing the fuses inside the compartment would not have de-energized the transformer. The investigation revealed that the firefighter did not have any electrical training or sufficient knowledge of the transformer design to attempt to de-energize the transformer. The facility manager held a critique. Critique members determined that cutting the compartment lock potentially exposed the firefighter to 13.8 kilovolts because he accessed equipment that could have been energized. They also determined that the line side of the compartment fuses was energized to 13.8 kilovolts. Finally, the critique members noted that the last time the site conducted any kind of an emergency response drill was July 8, 1994. The facility manager developed the following corrective actions:

- Develop a procedure for de-energizing a transformer in case of an emergency.
- Develop and present a training program to the firefighters that explains what their responsibilities are in case of an electrical fire. The training will emphasize that firefighters do not have responsibility for de-energizing transformers.

Take some time to review the example scenario and the actions the contractor took to correct the situation. Then decide if the contractor's actions were complete and correct. Finally, identify the requirements, sections, or elements of DOE O 151.1b or DOE G 151.1-1 that apply to this scenario. Write your answer below and then compare your answer to the one contained in the example self-check.

EXAMPLE SELF-CHECK

Your answer does not have to match the following exactly. You may have added more corrective actions or cited other requirements from the Order that apply. To be considered correct your answer must include at least the following.

The corrective actions the contractor took are acceptable. Two additional actions should be considered:

- The facility manager should review the emergency plans to ensure that they include provisions that clearly integrate the activities of the firefighters and the electricians.
- Schedule and conduct an emergency response drill.

The requirements from DOE O 151.1B that apply to this situation include the following:

- The cognizant field element manager is responsible for establishing and maintaining an effective, integrated emergency management program. (Chapter 1, section 8b, page 1-4)
- Initial training and periodic drills must be provided to all workers who may be required to take protective actions. (Chapter 3, section 4a.[1], page 3-3)

PRACTICE

This practice is required if your proficiency is to be verified at the general level. If you are to be qualified at the general level, the practice will prepare you for the criterion test. You will need to refer to the Order and the EMG 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.

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 complete and correct? If not, state the correct or omitted requirements.

SCENARIO

On July 17, 1996, a vacuum cleaner caught fire while being used to clean up titanium powders in a glove box. The laboratory technician cleaning the glove box immediately stopped the vacuum and carried it outside the building. The technician used a fire extinguisher to extinguish the smoldering fire. The vacuum cleaner, valued at \$3,000, was a total loss. The laboratory hazard assessment was reviewed on May 3, 1994. However, it had not been updated to include titanium powder. Therefore, the laboratory workers did not understand the hazards associated with this combustible metal.

An investigation revealed that laboratory personnel were experimenting with titanium metal powder while researching the production of solid products from a powder form. Investigators determined that the authorization basis for use of this material had not been updated because titanium metal powder had never been used at the facility. Investigators believe that static produced during vacuuming may have ignited the titanium powders in the vacuum cleaner bag. The vacuum cleaner was neither grounded nor explosive resistant. Investigators estimated the amount of powder vacuumed from the glove box was a quarter of a cup.

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Corrective actions taken by the contractor:

- The technical department manager immediately prohibited laboratory use of titanium until further notice.
- The experimental procedure was revised.

Requirements stated in this module that are related to this scenario include the following:

- None. This incident is related to fire protection.

Write your answers below 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.
