

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

## **DOE M 231.1-2**

**OCCURRENCE REPORTING AND PROCESSING OF  
OPERATIONS INFORMATION**



**NATIONAL NUCLEAR SECURITY ADMINISTRATION  
SERVICE CENTER**

**DOE M 231.1-2  
OCCURRENCE REPORTING AND  
PROCESSING OF OPERATIONS INFORMATION  
FAMILIAR LEVEL**

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**OBJECTIVES**

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

1. State the purpose of DOE M 231.1-2 and how it supports the objectives of DOE O 231.1A, Environment, Safety and Health Reporting.
2. List the significance categories for occurrence reporting.
3. Define the following terms:
  - Condition
  - Event
  - Facility
  - Occurrence
  - Root cause
4. State the responsibilities of the following positions for ensuring compliance with this Manual:
  - Facility representative (FR)
  - Facility manager (FM)
  - Heads of field elements
  - Assistant Secretary, Office of Environment, Safety and Health
  - Program manager
5. List the information required in a final occurrence report.
6. Discuss the measures taken to keep classified and controlled information from entering the Occurrence Reporting and Processing System (ORPS).
7. State the ORPS training requirements.

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8. Describe the steps of the causal analysis process.
9. State the DOE Orders, manuals and standards that contain requirements for the notification of reportable events/conditions.
10. Describe the steps of an ORPS performance analysis.
11. Discuss the different types of occurrence reports.
12. Identify the occurrence reporting criteria.

**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 successfully complete the practice in this level before taking the criterion test.**

#### **RESOURCES**

DOE O 231.1A, Environment, Safety and Health Reporting, Change 1, 6/3/04.  
DOE M 231.1-2, Occurrence Reporting and Processing of Operations Information, 8/19/03.  
DOE G 231.1-1, Occurrence Reporting and Performance Analysis Guide, 8/20/03.  
DOE G 231.1-2, Occurrence Reporting Causal Analysis Guide, 8/20/03.  
DOE M 231.1-1A, Environment, Safety and Health Reporting Manual, Change 1, 9/9/04.

**Note: The following references, annotated in DOE M 231.1-2, may be required to answer questions in the practice and criterion test for this module.**

DOE O 151.1B, Comprehensive Emergency Management System, 10/29/03.  
DOE O 225.1A, Accident Investigations, 11/26/97.  
DOE Order 5400.5, Radiation Protection of the Public and the Environment, 1/7/93.  
DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities, Change 2, 10/23/01.  
DOE-STD-1045-93, Guide to Good Practices for Notifications and Investigation of Abnormal Events.  
DOE-STD-1063-2000, Facility Representatives

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DOE-STD-1098-99, Radiological Control.  
10 CFR 830, Nuclear Safety Management.  
10 CFR 835, Occupational Radiation Protection.  
29 CFR 1910, Occupational Safety and Health Administration, General Industry Standards.  
40 CFR 302, Designation, Reportable Quantities and Notification.  
40 CFR 355, Emergency Planning and Notification.  
49 CFR 171, Transportation – General Information, Regulations and Definitions.

## **INTRODUCTION**

The familiar level of this module is divided into two sections. In the first section, the module will present the purpose, applicability, and responsibilities sections of the manual. Section two presents the occurrence reporting process for and performance analysis of reportable events. Practices and several examples are provided 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 the DOE M 231.1-2 and the associated directives listed at the beginning of the 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. It is not necessary to obtain copies of the Code of Federal Regulations (CFR) references listed for this module. However, you should be familiar with these resources. You may need to refer to these documents to complete the examples, practices, and criterion test.

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## SECTION 1

### PURPOSE

DOE M 231.1-2 provides the requirements for occurrence reporting and processing of operations information. These requirements supplement DOE O 231.1A, Environment, Safety and Health (ES&H) Reporting. The objective of DOE O 231.1A is to ensure the timely collection, reporting, analysis, and dissemination of ES&H information. Ultimately, the data collected from occurrences will be used to analyze ES&H performance at DOE and National Nuclear Security Administration (NNSA) facilities.

### APPLICABILITY

DOE M 231.1-2 applies to the DOE and NNSA elements listed in attachment 1 of the manual. Attachment 2 of the manual contains the Contractor Requirements Document (CRD), which describes the requirements for contractors.

### RESPONSIBILITIES

Specific organizational responsibilities are listed in DOE M 231.1-2 as well as DOE O 231.1A and include the following:

#### **Heads of Field Elements**

- Assess capability and performance of the facility personnel in carrying out the requirements of this Manual.
- Assess contractor capability and performance in carrying out the occurrence reporting requirements of this Order and take actions to correct any weaknesses.
- Provide technical support as necessary to facility representatives or line management staff responding to reportable occurrences.

#### **Assistant Secretary, Office of Environment, Safety and Health**

- Develops, promulgates, and maintains policies to implement and sustain an effective Occurrence Reporting Program, including the computerized ORPS.

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- Provides formal Departmental interpretation of the requirements of this Manual.
- Monitors reports relative to reporting activities at DOE facilities to assess implementation of this Manual and to identify needed improvements.
- Periodically analyzes occurrence reporting data to identify significant issues and trends across the Department.
- Establishes and maintains policies and guidance for the Occurrence Reporting Program and assesses implementation of occurrence reporting requirements to identify needed improvements,

#### **Secretarial Officers/Deputy Administrators**

- Delegate responsibilities and authority for implementing this Manual, including designating program managers.
- Review occurrence reporting data and identify circumstances that are indicative of deteriorating or poor program performance in their respective areas of authority.
- Provide the Headquarters (HQ) Operations Center (OC) with a prioritized list of emergency management duty officers and their contact numbers to permit notification on a 24-hour-a-day, 7-day-a-week basis.

#### **Director, Office of Security**

- Formulates Department-wide policy regarding the protection and control of both classified matter and unclassified controlled information.
- Resolves any security issues with respect to occurrence reporting.

#### **Director, Office of Operations Support**

- Maintains a 24-hour-a-day/7-day-a-week capability at the DOE HQ OC to receive and log operational emergency notifications per DOE O 151.1B, Comprehensive Emergency Management System.
- Ensures that the HQ OC is prepared to receive and record initial notifications of significant occurrences and to disseminate these reports to appropriate HQ organizations.

### **Director, Office of Emergency Operations, NNSA**

- Provides formal Departmental interpretation of the requirements for classifying operational emergencies.
- Develops, promulgates, and maintains guidance materials, and conducts workshops, as necessary, on identification and classification of operational emergencies.
- Monitors reports relative to reporting activities at DOE facilities to assess implementation of the operational emergency portion of the Occurrence Reporting Program and to identify needed improvements.

### **Program Managers (PMs)**

- Review activities related to reportable occurrences, including reporting and the development of programs and procedures.
- Ensure that a system for prompt notification and categorization of reportable occurrences has been established for their DOE programs and for facilities under their cognizance.
- Ensure that lessons learned and generic or programmatic implications are identified and elevated to the Secretarial Officer or Deputy Administrator (NNSA) for appropriate action.
- Ensure that actions are taken to prevent recurrence of significant events.
- Review and assess reportable occurrence information from facilities under their cognizance to assess the facility manager's and facility representative's evaluation of significance, causes, generic implications, and corrective actions implementation and closeout, and to ensure that DOE and contractor staff involved in these operations perform the related functions.
- Ensure that occurrence reports are prepared and transmitted in accordance with DOE information security requirements.

### **Facility Representatives (FRs) or Designee**

- Evaluate facility implementation of the notification and reporting process to ensure it is compatible with and meets the requirements of this Manual.
- Maintain day-to-day operational oversight of contractor activities.

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- Ensure that facility personnel act to minimize and prevent recurrence of significant events.
- Review and assess reportable occurrence information from facilities under their cognizance to determine the acceptability of the facility manager's evaluation of the significance, causes, generic implications, and corrective action implementation and closeout, and to ensure that facility personnel involved in these operations perform the related functions.



### EXAMPLE 1 SELF-CHECK

1. State the purpose of DOE M 231.1-2.

This manual provides detailed information for reporting occurrences and managing associated activities at DOE facilities, including NNSA facilities. It complements DOE O 231.1A, Environment, Safety, and Health Reporting and its use is required by that Order. Information gathered in response to the requirements in this Order and Manual is used for analysis of the Department's performance in environmental protection and the safety and health of its workers and the public.

2. List four responsibilities of FRs.

Note: Only four correct answers are required.

- Evaluate facility implementation of the notification and reporting process to ensure it is compatible with and meets the requirements of this manual.
- Maintain day-to-day operational oversight of contractor activities, as described in DOE-STD-1063-2000, Facility Representatives.
- Ensure that occurrences that may have generic or programmatic implications are identified and elevated to the head of the field element for appropriate action.
- Ensure that facility personnel act to minimize and prevent recurrence of significant events.
- Review and assess reportable occurrence information from facilities under their cognizance to determine the acceptability of the facility manager's evaluation of the significance, causes, generic implications, and corrective action implementation and closeout, and to ensure that facility personnel involved in these operations perform the related functions.
- Ensure that occurrence reports are prepared and transmitted in accordance with DOE information security requirements.
- Interact with facility personnel and field element oversight organizations as necessary and informing and advising their respective managements of their findings.

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- Elevating any unresolved issues regarding actions or determinations on a reportable occurrence to the program manager for resolution and direction.
  - Being available at all times to satisfy the requirements of this manual.
3. Identify the position that is responsible for monitoring and auditing implementation of DOE M 231.1-2.

Assistant Secretary for Environment, Safety, and Health monitors and audits implementation of the manual related to the Office of Environment, Safety, and Health functional areas of responsibility.

## SECTION 2

### OCCURRENCE REPORTING

For an occurrence report to be generated, a reportable event or condition must be identified. Prior to initiating the occurrence reporting process, actions must be taken immediately to place the facility/operation in a safe condition and ensure affected personnel are treated. Additionally, the incident scene must be preserved for the investigation to follow. The primary phases of the occurrence reporting process are categorization, notification, investigation, and reporting.

#### **Categorization**

The facility manager must categorize an event, except operational emergencies within two hours of discovery. If conditions change, the occurrence report categorization must be updated to reflect the event/condition. The following are the significance categories for occurrence reporting.

##### *Operational Emergencies*

Operational emergencies are defined in DOE O 151.1B, Comprehensive Emergency Management System. Operational emergency occurrences are the most serious occurrences and require an increased alert status for onsite personnel and, in specified cases, for offsite authorities.

##### *Significance Category I*

Occurrences in this category are those that are not operational emergencies and that have a significant impact on safe facility operations, worker or public safety and health, regulatory compliance, or public/business interests.

##### *Significance Category R*

Occurrences in this category are those identified as recurring, as determined from the periodic performance analysis of occurrences across a site. Recurring occurrences must be categorized and reported collectively as a significance category R occurrence, even if each

individual occurrence had been originally categorized at a higher or lower significance level.

#### *Significance Category 2*

Occurrences in this category are those that are not operational emergencies and that have a moderate impact on safe facility operations, worker or public safety and health, regulatory compliance, or public/business interests.

#### *Significance Category 3*

Occurrences in this category are those that are not operational emergencies and that have a minor impact on safe facility operations, worker or public safety and health, regulatory compliance, or public/business interests.

#### *Significance Category 4*

Occurrences in this category are those that are not operational emergencies and that have some impact on safe facility operations, worker or public safety and health, public/business interests.

### **Notifications**

The written notification report must be submitted according to the following schedule:

- Reports for operational emergencies and significance category 1 occurrences before the close of the next business day from the time of categorization (not to exceed 80 hours).
- Reports for significance categories R and 2 occurrences before the close of the next business day from the time of categorization.
- Reports for significance category 3 occurrences no later than close of business on the second business day from the time of categorization.
- Reports for significance category 4 occurrence only a short form report is required by close of business the second business day from the time of categorization.

### **Investigation**

The investigative process is used to gain an understanding of the occurrence, its causes, and the corrective actions necessary to prevent recurrence or only remedy the problem,

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based on the significance of the occurrence. If DOE is doing a Type A or B investigation, the contractor is not required to perform an identical investigation. However, the contractor is still required to do the preliminary assembly of information to turn over to the DOE Accident Investigation Board, in accordance with DOE O 225.1A, Accident Investigation.

The FM should use the graded approach described in the occurrence-reporting model (figure 1) when determining the level of effort required for the investigation into the causes of the occurrence. The graded approach is based on the significance, severity, or risk associated with the event or condition.

For operational emergencies, the investigation, problem analysis, and corrective action process should parallel the process for significance category 1 occurrences. However, the contractor should consider a graded approach when determining the level of effort for the investigation into the cause of the operational emergency. For this purpose, the graded approach is based on whether the operational emergency was directly caused by DOE operations or resulted from non-DOE operations or natural phenomena.

All causes must be identified as required in the occurrence-reporting model and included in the occurrence report. Guidance on selecting the appropriate cause code is provided in DOE G 231.1-2, Occurrence Reporting Causal Analysis Guide. The cause description field should include a brief discussion to clearly link the event to the cause code(s).

For those occurrences that require a formal root cause analysis, any of the site approved root cause analysis methodologies are permitted. The methodology used must be included in the cause description field of the occurrence report. In addition to determining the causes of the occurrence, any weaknesses in the facility's implementation of the ISM program must be identified and entered in the ISM field, as discussed in DOE G 231.1-1, Occurrence Reporting and Performance Analysis Guide.

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		Significance Category					
		Operational Emergencies	1	R	2	3	4
<b>Investigation Method</b>	Trained Investigator	X	X	X	X		
	Team w/ Trained Investigator	X	X				
	Potential DOE Accident Investigation	X	X				
	Critique/Fact Finding					X	
	Contractor Defined Process						X
<b>Causal Analysis</b>	Root Cause Determined	X	X	X			
	Apparent Cause Determined				X	X	
	Contractor Defined Process						X
<b>Focus of Corrective Action</b>	Remedy Problem	X	X	X	X	X	
	Prevent Recurrence	X	X	X	X		
	Preclude Similar Problems	X	X	X			
	Contractor Defined Process						X

**Figure 1 – Occurrence Reporting Model**

### Reporting

After the investigation and analysis of the event or condition, a list of corrective actions is developed. All of the information, except for unclassified controlled nuclear information (UCNI) and classified data, is incorporated into the final report. The FM is to ensure the occurrence report (OR) does not include classified, UCNI or other controlled information. Other secure transmission methods are available to report events that contain classified or controlled information. An unclassified version of the report must be made available in the ORPS database. The final report is to be submitted within 45 calendar days of the initial categorization and must include the following:

- The significance, nature, and extent of the event or condition

- The causes of the event or condition (including the root cause, as required), using the codes provided in the causal analysis tree
- The weaknesses, as identified, in implementing the ISM program
- The immediate actions taken and the corrective action(s) to be taken), as required by the occurrence reporting model
- The lessons learned

#### *Update Reports*

An update report is submitted within 45 days when the final report is not ready within the same time frame. The update report is to include an explanation of the delay, the estimated date for final report submission, and the completed elements described for an OR.

#### *Final Reports*

The final report is to be reviewed and approved by the FR within 14 calendar days after receiving the final report for operational emergencies and significance categories 1, R and 2. Also, the PM must review and approve the final report within 14 days after FR submittal for operational emergencies and significance category 1 events. The PM and FM may add comments to the report to provide additional information about the event.

Corrective actions are often included in the report. The final report for an event with an accident investigation must also include all causes and the associated corrective actions. The corrective actions are to be tracked to completion in ORPS by referencing a local system or updating the ORPS report.

If the report is not approved by the FR or PM, the comment section should contain a reason for the rejection by the signatory. A revised final or update report will be submitted within 21 days of the rejection date.

#### *Short Form Reports*

DOE G 231.1-1, *Occurrence Reporting and Performance Analysis Guide*, describes the short form report. All significance category 4 occurrences must have a short form report submitted within two business days after the event has been categorized.

### *Recurring Occurrence Reporting*

Occurrences identified as recurring require a new occurrence report to be submitted for notification of the recurring issue, investigation, root cause analysis, and corrective actions subsequently required. These reports are designated as significance category R.

### *Reporting Criteria*

Ten major groups, which are listed below with the associated subgroups, capture the reporting criteria of categorized occurrences.

- Group 1:* Operational emergencies:
- Group 2:* Personnel safety:
  - A-Occupational illnesses/injuries
  - B-Fires/explosions
  - C-Hazardous energy control
- Group 3:* Nuclear safety basis:
  - A-Technical safety requirement violations
  - B-Documented safety analysis inadequacies
  - C-Nuclear criticality safety)
- Group 4:* Facility status
  - A-Safety structure/system/component degradation
  - B-Operations and suspect counterfeit
  - C-Defective items or material
- Group 5:* Environmental
  - A-Releases and ecological
  - B-Cultural resources
- Group 6:* Contamination/radiation control
  - A-Loss of control of radioactive materials
  - B-spread of radioactive contamination
  - C-Radiation exposure
  - D-Personnel contamination

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- Group 7:* Nuclear explosive safety
- Group 8:* Transportation
- Group 9:* Noncompliance notifications
- Group 10:* Management concerns/issues

Exposure and quantity limits are referenced in the reporting criteria. Some of these limits are defined in regulatory standards, which include:

- 10 CFR 830, Nuclear Safety Management
- 10 CFR 835, Occupational Radiation Protection
- 29 CFR 1910, Occupational Safety and Health Administration, General Industry Standards
- 40 CFR 302, Designation, Reportable Quantities and Notification
- 40 CFR 355, Emergency Planning and Notification
- 49 CFR 171, Transportation – General Information, Regulations and Definitions

Additional instructions are provided in DOE M 231.1-2 for determining occurrence reporting criteria.

### **Training**

ORPS training programs must be established for DOE/NNSA and contractor personnel and must include the following:

- Indoctrination in the objectives and process of occurrence reporting as defined in the occurrence reporting requirements documents
- Identification of reportable occurrences and their categorization, notification, and associated reporting requirements; analysis, determination, and coding of causes; identification of generic implications; and management of corrective actions
- Utilization of ORPS, including input of occurrence reports and obtaining information from the database
- Utilization of the causal analysis tree

- Where applicable, the preparation of occurrence reports that may include classified information or unclassified controlled information (e.g., official use only [OUO] or UCNI), including the sanitization of the report for entry into ORPS.

## PERFORMANCE ANALYSIS

The analysis of occurrence-related data is necessary to ensure that recurring events are identified, and, more importantly, that both DOE and DOE contractors are focused on analyzing events of lower significance to prevent more serious events from occurring. Portions of DOE M 231.1-2 and DOE G 231.1-1, Occurrence Reporting and Performance Analysis Guide, provide requirements and a description of the performance analysis process.

Each contractor at a site and managers at DOE-owned and DOE-operated sites must analyze events quarterly for a 12-month period to identified performance trends. The DOE HQ Office of Environment, Safety, and Health must perform a semiannual analysis of all reportable occurrences during a 12-month period to identify trends. Performance analysis consists of the following five basic steps:

- Gathering DOE ORPS data and site-specific data for non-reportable events
- Reviewing various elements and groupings of the data
- Identifying potential areas of recurring problems
- Analyzing potential areas for recurrence
- Documenting the results of the performance analysis activity

A brief description of each step is provided below.

### **Gather the Data**

The organization should identify all events as listed in the ORPS for at least the previous one-year period. Site-specific data for non-reportable events should also be used in the analysis, if available.

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### **Search and Sort by Grouping**

ORPS reports can be searched and sorted using the element groupings. The organization performing the analysis determines the elements based on management direction, site status, or a previous analysis.

### **Identify and Analyze Recurring Problems**

Significant distributions can be determined when the results are analyzed by groupings. Analyze the desired sorts using the grouping to identify other potential trends. Attachments 5 and 6 of DOE G 231.1-1 provide techniques to determine if recurring issues exist.

### **Reporting and Documenting the Analysis**

Recurring issues should be detailed as a significance category R occurrence report. When specific reporting criteria cannot be identified, group 10, criteria 2 is to be used. If the event resulted in the generation of an occurrence report, the analysis should be documented in a performance analysis report. Attachment 7 of DOE G 231.1-1 recommends a structure for reporting the results of a performance analysis activity.

<b>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 the practice.</b>
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3. Explain the process for keeping classified and controlled information from entering ORPS.

4. List the different types of occurrence reports.

**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. Define the following terms:
  - a. Occurrence: One or more (i.e., recurring) events or conditions that adversely affect, or may adversely affect, DOE (including NNSA) or contractor personnel, the public, property, the environment, or the DOE mission. Events or conditions meeting the criteria thresholds identified in this Manual or determined to be recurring through performance analysis are occurrences.
  - b. Root cause: The most basic cause(s) that explains why the event happened, that can reasonably be identified, that senior management has the control to fix, and for which effective recommendations for corrective action(s) to remedy the problem, prevent specific recurrence of the problem, and preclude occurrence of similar problems can be generated, if necessary. This is typically one level further in analysis beyond the apparent causes(s) (i.e., one level beyond the Level C node of the causal analysis tree).
2. List the minimum required information in a final occurrence report.
  - The significance, nature, and extent of the event or condition
  - The causes of the event or condition (including the root cause, as required) using the codes provided in the causal analysis tree
  - The immediate actions taken and the corrective action(s) to be taken, as required by the occurrence reporting model
  - The lessons learned
3. Explain the process for keeping classified and controlled information from entering ORPS.

Facility managers must ensure that a review is performed prior to ORPS data entry to preclude contamination of the database with classified, UCNI, official use only, or other controlled information. Any ORPS report determined to be classified or controlled by current classification or control guidance must be submitted using the appropriate secure transmission means. However, with the exception of entry into the ORPS database, all other reporting requirements identified in this Manual must

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be met. In addition, an unclassified version of the occurrence report that has been sanitized of all controlled information must be submitted to ORPS.

4. List the different types of occurrence reports.
  - Notification
  - Short form
  - Update report
  - Final

## **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 Directives 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. Fill in the blanks with the correct term or phrase.
  - a. An \_\_\_\_\_ is something significant and that happens real time.
  - b. A \_\_\_\_\_ is an as-found state that may have adverse safety, health, quality assurance, operationa,l or environmental implications.
  - c. An \_\_\_\_\_ is one or more events or conditions that adversely affect, or may adversely affect, people, property, environment, or mission.
  - d. Under no circumstances will ORs containing \_\_\_\_\_ be entered into the ORPS database.

2. Identify the appropriate significance category for the events/conditions that follow the list by placing the letter of the correct category in the space provided. Each category may be used more than once or not at all.

List of categories:

- (A) Operational emergencies
- (B) Significance category 1
- (C) Significance category R
- (D) Significance category 2
- (E) Significance category 3
- (F) Significance category 4

**Events**

- \_\_\_\_\_ a. An occurrence report was initiated to address the discovery of beryllium in multiple facilities at the site from operations with materials not containing beryllium.
- \_\_\_\_\_ b. A shipment of nuclear explosive-like assemblies were damaged during an accident on the highway. Radioactive material spilled onto the highway and one device was broken. For clean-up, the HQ OC was activated and teams dispatched to coordinate with highway patrol to control the area.
- \_\_\_\_\_ c. A mobile crane removed and replaced three heating, ventilation, and air conditioning (HVAC) units from a facility while personnel were in the building. No personnel were injured. This is a violation of 29 CFR 1910.179.
- \_\_\_\_\_ d. A discrepancy between the description of transportainers (used for shipping radioactive waste) in the Transportation Safety Document (TSD) and actual transportainer configuration was noted. The TSD serves as a documented safety analysis. After corrective actions were taken, a Department of Transportation (DOT) inspector determined the transportainers were acceptable and met the requirements of the TSD.



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6. List the type of information to be included in an ORPS training program.

7. State the criterion for the following reporting criteria codes.

a. 5A(4)

b. 10(3)

c. 8(3)

d. 4B(1)

e. 3C(2)

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8. State the DOE Directives that contain notification requirements for reportable events/conditions.

9. State the purpose of the causal analysis tree.

10. State the purpose of DOE M 231.1-2.

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**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.**

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PROCESSING OF OPERATIONS INFORMATION  
GENERAL LEVEL**

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**OBJECTIVES**

Given the familiar level of this module and a scenario, you will be able to do the following:

1. Determine the reporting criteria for an event/condition.
2. Categorize the cause of the occurrence.
3. Determine if an occurrence report meets the requirements described in the Order.
4. Prepare for a performance analysis of ORPS data.

<b>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 example, complete the practice now. The course manager will check your work. You will need to successfully complete the practice in this level before taking the criterion test.</b>
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**RESOURCES**

DOE O 151.1B, Comprehensive Emergency Management, 11/01/2000.  
DOE O 231.1A, Environment, Safety and Health Reporting, Change 1, 6/3/04.  
DOE G 231.1-1, Occurrence Reporting and Performance Analysis Guide, 8/20/03.  
DOE G 231.1-2, Occurrence Reporting Causal Analysis Guide, 8/20/03.  
DOE M 231.1-2, Occurrence Reporting and Processing of Operations Information, 8/19/03.  
DOE M 231.1-1A, Environment, Safety and Health Reporting Manual, Change 1, 9/9/04.

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## INTRODUCTION

The familiar level of this module introduced DOE M 231.1-2, Occurrence Reporting and Processing of Operations Information, and the related DOE Directives, which provide information for the occurrence reporting process. In the general level of this module, students are asked to apply the information contained in the familiar level and the listed resources to

- answer questions related to the Order,
- use ORPS designated fields to search/sort data,
- determine the significance category and reporting criteria for an event/condition,
- determine the correct category for the cause of the occurrence, and
- given a scenario and a completed occurrence report, determine if the occurrence report meets the requirements described in the manual.

<b>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.</b>
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**EXAMPLE**

1. Review the following occurrence summaries with the reporting criteria for the events. Determine if the correct reporting category is assigned for the event/condition. If not, provide the correct category.
  - a. A category B nuclear reactor was operated by the staff in a low power steady state mode for 20 minutes without the staff first performing two required surveillances of the fuel temperature channels. All required safety equipment were operating within normal limits at all times.  
The reporting category was 3A(4).
  - b. An employee was struck by the bucket of a CAT 320 trackhoe. The employee was transported to the hospital. The worker was examined and internal injuries were found.  
The reporting category was 2A(1).
  - c. While conducting the quarterly performance analysis of ORPS data, the following was noted: The concentration of copper in the SNL/CA sanitary sewer effluent exceeded the discharge permit on March 1, 2002; July 27, 2002; August 17, 2002; and December 8, 2002. Reports were submitted to inform local agencies of the permit violation. There are strong indications that the site infrastructure and external sources, such as local soils are the main contributors.  
These occurrences were not categorized as reportable.

Write your answers below, and then compare your answers to those contained in the example self-check.

2. A site has reported multiple occurrences with worker injuries in 2004, and the facility representatives state hazard controls are in place. However, in many of the cases, the injured workers were not following procedures when the events occurred. A performance analysis has been requested to determine the number of ORPS events where the work was not performed within controls in 2004. State the

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elements in the grouping for the ORPS search/sort to be performed and include the field number (as noted in DOE G 231.1-1) in the occurrence report.

**EXAMPLE SELF-CHECK**

1. Review the following occurrence summaries with the reporting category. Determine if the correct reporting category is assigned for the event/condition. If not, provide the correct category.
  - a. Correct.
  - b. Not correct. The correct category is 2A(6)(d).
  - c. Not correct. The correct category is 5A(4).
  
2. A site has reported multiple occurrences with worker injuries in 2004, and the facility representatives state the controls are in place. However, in many of the cases, the injured workers were not following procedures when the events occurred. A performance analysis has been requested to determine the number of ORPS events where the work was not performed within controls in 2004. State the elements in the grouping for the ORPS search/sort to be performed and include the field number in the occurrence report.
  - Discovered Date - #18
  - Integrated Safety Management, 4 - #35
  - Site - #4

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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 manual 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.

### **PRACTICE**

Review the scenario and answer the questions that follow it.

### **SCENARIO**

About 5:00 P.M., Wednesday, 10/16/91, two police officers were shot and injured by a gunman in an area across the river from a DOE-owned facility. The gunman fled the scene of the shooting, and a massive manhunt involving local law enforcement agencies and the FBI ensued. At about 6:00 A.M., Thursday, 10/17/91, a 14-ft-long, flat-bottom John boat with no motor, believed to be registered to the gunman, was found floating adrift close to the DOE facility. The FBI then notified DOE management that the fugitive gunman might possibly be on DOE property and requested that DOE security personnel be on the lookout for him. The contractor, after consulting with the DOE's security staff, directed increased patrolling of the roads surrounding the property. At about 7:45 A.M., DOE advised the contractor that the DOE Emergency Operations Center (EOC) had been activated to monitor this situation and requested that the contractor activate its EOC, which was done at 7:50 A.M. Between 8:30 A.M. and 12:30 P.M., numerous actions were taken to cordon off the area where the gunman was suspected to be located, until FBI search parties would be available. As a precautionary measure, at 8:38 A.M., all operations were terminated, and all personnel were evacuated to a safe area. Several announcements were made on the contractor's public address system informing all employees that an FBI search was underway on the site, and they were instructed to stay away from the cordoned-off area. About 1:30 P.M., 10/17/91, an FBI search party found the fugitive gunman. When FBI agents approached him, he shot and killed himself. Upon confirmation of this information, the FBI terminated the security operation.

### **3. QUESTIONS**

